

PROJECT: 17BP.3.R.78 REFERENCE: B-4813

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY SAMPSON  
 PROJECT DESCRIPTION BRIDGE NO. 810018 ON SR 1004  
(EDMOND MATTHIS ROAD) OVER CRANE CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4813	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 1919 T07-6850. 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

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NASH, A. A.

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 DATE NOVEMBER 2018

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 NC REGISTERED ENGINEERING FIRM: F-0869  
 NC REGISTERED GEOLOGIC FIRM: C-367



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																																																																																																																																									
<p>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 208, 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></p>																																																																																																																																																																							
<p><b>SOIL LEGEND AND AASHTO CLASSIFICATION</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>GENERAL CLASS.</th> <th colspan="5">GRANULAR MATERIALS (&lt;= 35% PASSING #200)</th> <th colspan="5">SILT-CLAY MATERIALS (&gt; 35% PASSING #200)</th> <th colspan="5">ORGANIC MATERIALS</th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1</td> <td>A-3</td> <td>A-2</td> <td>A-4</td> <td>A-5</td> <td>A-6</td> <td>A-7</td> <td>A-1, A-2</td> <td>A-3</td> <td>A-4, A-5</td> <td>A-6, A-7</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SYMBOL</td> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> <td colspan="5">[Pattern]</td> </tr> <tr> <td>% PASSING #10 #40 #200</td> <td colspan="5">[Table]</td> <td colspan="5">[Table]</td> <td colspan="5">[Table]</td> </tr> <tr> <td>MATERIAL PASSING #40 LL PI</td> <td colspan="5">[Table]</td> <td colspan="5">[Table]</td> <td colspan="5">[Table]</td> </tr> <tr> <td>GROUP INDEX</td> <td colspan="5">[Table]</td> <td colspan="5">[Table]</td> <td colspan="5">[Table]</td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td colspan="5">[Table]</td> <td colspan="5">[Table]</td> <td colspan="5">[Table]</td> </tr> <tr> <td>GEN. 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MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p><b>PERCHED WATER</b> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p><b>RESIDUAL (RES.) SOIL</b> - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p><b>ROCK QUALITY DESIGNATION (ROD)</b> - 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.</p> <p><b>SAPROLITE (SAP.)</b> - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p><b>SILL</b> - 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.</p> <p><b>SLICKENSIDE</b> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p><b>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT)</b> - 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.</p> <p><b>STRATA CORE RECOVERY (SREC.)</b> - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.</p> <p><b>STRATA ROCK QUALITY DESIGNATION (SROD)</b> - 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.</p> <p><b>TOPSOIL (TS.)</b> - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.</p>									
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<p><b>RECOMMENDATION SYMBOLS</b></p> <p> UNDERCUT</p> <p> SHALLOW UNDERCUT</p> <p> UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE</p> <p> UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK</p> <p> UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL</p>										<p><b>ABBREVIATIONS</b></p> <p>AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HI. - HIGHLY</p> <p>MED. - MEDIUM MICA. - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT V - VERY</p> <p>VST - VANE SHEAR TEST WEA. - WEATHERED UW - UNIT WEIGHT UG - DRY UNIT WEIGHT</p> <p><b>SAMPLE ABBREVIATIONS</b></p> <p>S - BULK SS - SPLIT SPOON ST - SHELBY TUBE RS - ROCK RT - RECOMPACTED TRIAXIAL CBR - CALIFORNIA BEARING RATIO</p>																																																																																																																																																													
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<p><b>INDURATION</b></p> <p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p> <p><b>FRIABLE</b> - RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p> <p><b>MODERATELY INDURATED</b> - GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p> <p><b>INDURATED</b> - GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.</p> <p><b>EXTREMELY INDURATED</b> - SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>										<p><b>NOTES:</b></p> <p>FIAD - FILLED IMMEDIATELY AFTER DRILLING</p>																																																																																																																																																													
<p><b>COLOR</b></p> <p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>										<p><b>BENCH MARK:</b> BL-2 (N: 402717.04; E: 2218881.844)</p> <p style="text-align: right;">ELEVATION: 55.49 FEET</p>																																																																																																																																																													

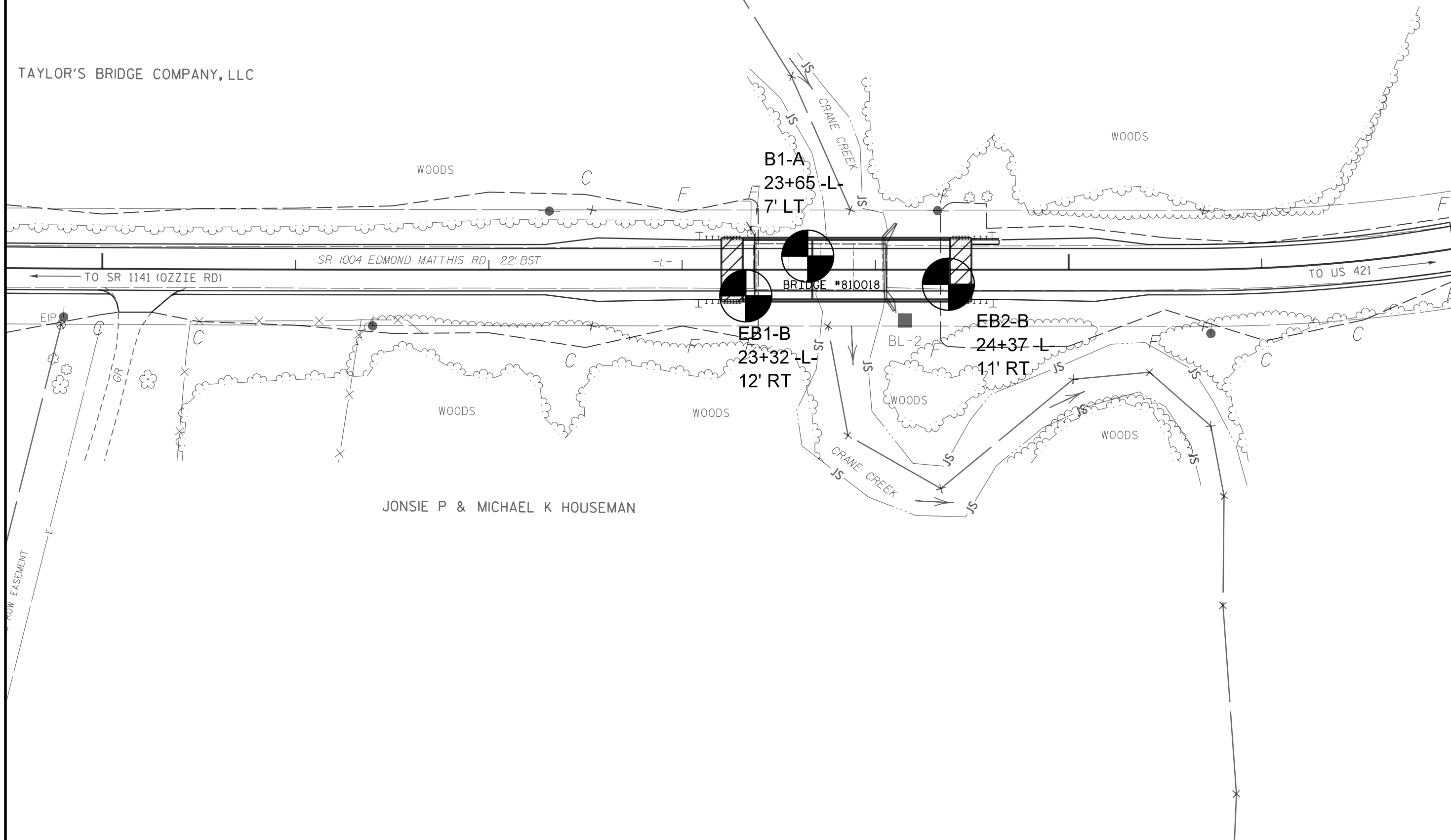
SKEW ANGLE = 90°

CHRISTINE E MATTHIS

20+00 -L-

25+00 -L-

TAYLOR'S BRIDGE COMPANY, LLC



JONSIE P & MICHAEL K HOUSEMAN

ROW EASEMENT

EIP

TO SR 1141 (OZZIE RD)

SR 1004 EDMOND MATTHIS RD, 22' BST

BRIDGE #810018

TO US 421

WOODS

WOODS

WOODS

WOODS

WOODS

WOODS

EB1-B

23+32 -L-

12' RT

EB2-B

24+37 -L-

11' RT

B1-A

23+65 -L-

7' LT

BL-2

CRANE CREEK

CRANE CREEK

GR

E

C

F

F

C

C

C

C

F

JS

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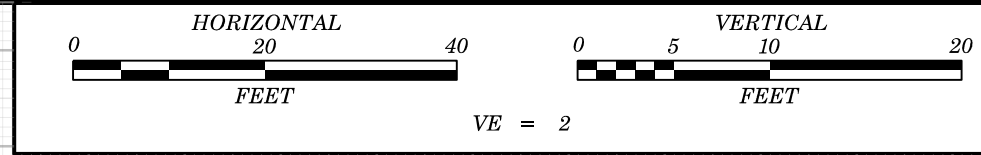
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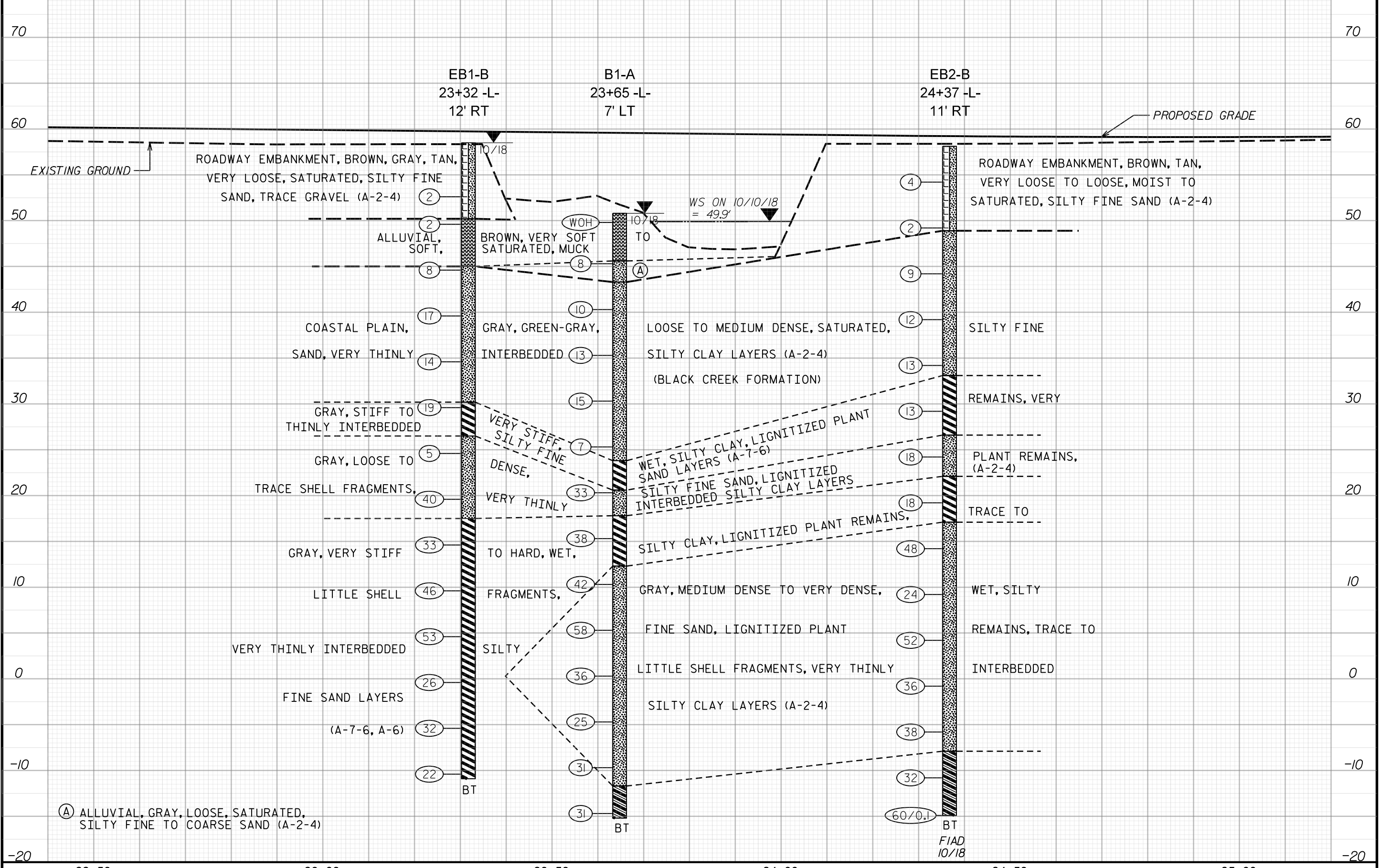
JS

JS

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ON TO THE EXISTING GROUND PROFILE ALONG THE CENTERLINE OF -L- TAKEN FROM THE PROVIDED PROJECT TIN FILE (B4813\_ls\_tin\_161115.tin).



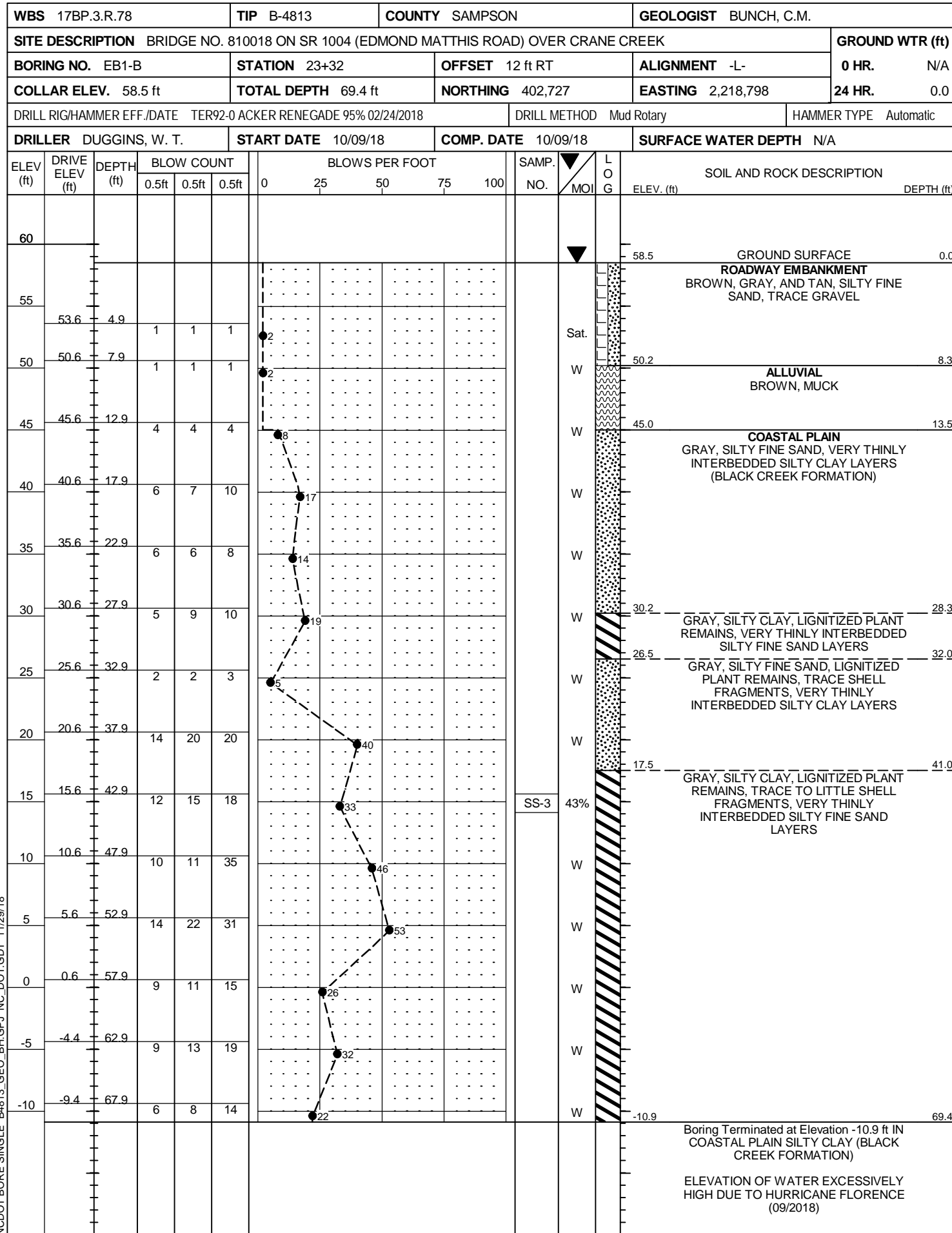
PROJECT REFERENCE NO.	SHEET NO.
B-4813	4
CENTERLINE PROFILE ALONG -L- AT BRIDGE NO. 810018	



(A) ALLUVIAL, GRAY, LOOSE, SATURATED, SILTY FINE TO COARSE SAND (A-2-4)

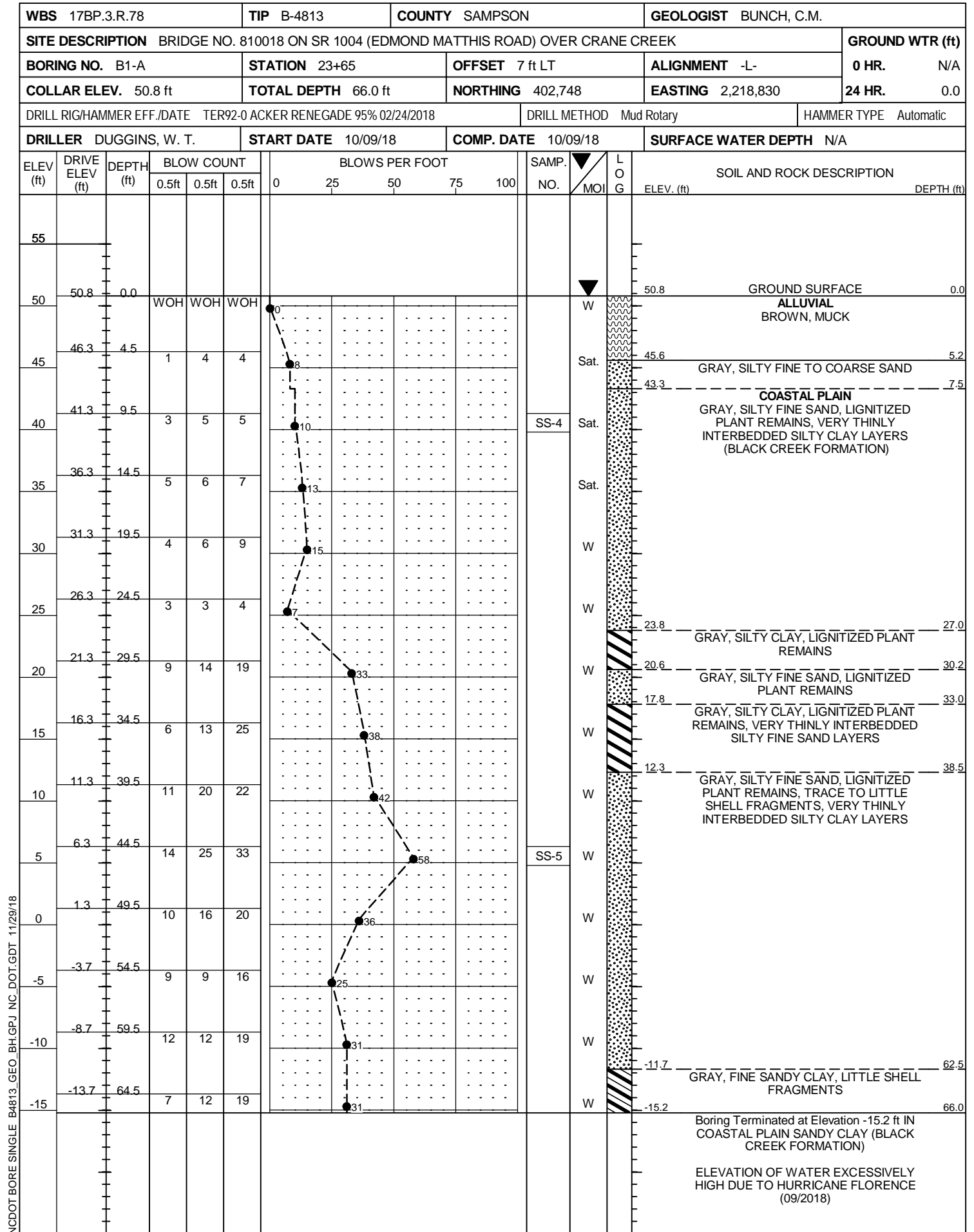


**GEOTECHNICAL BORING REPORT**  
**BORE LOG**



NCDOT BORE SINGLE B4813\_GEO\_BH.GPJ NC\_DOT.GDT 11/29/18

**GEOTECHNICAL BORING REPORT**  
**BORE LOG**



NCDOT BORE SINGLE B4813\_GEO\_BH.GPJ NC\_DOT.GDT 11/29/18



### LABORATORY TESTING SUMMARY

PROJECT NUMBER: 17BP.3.R.78

TIP: B-4813

COUNTY: SAMPSON

DESCRIPTION: BRIDGE NO. 810018 ON SR 1004 (EDMOND MATTHIS ROAD) OVER CRANE CREEK

Sample No.	Alignment	Station	Offset (feet)	Depth Interval (feet)	AASHTO Class.	L.L.	P.I.	% by Weight				% Retained #4 Sieve	% Passing (sieves)			% Moisture	% Organic
								Coarse Sand	Fine Sand	Silt	Clay		#10	#40	#200		
SS-1	-L-	24+37	11 RT	2.9 - 4.4	A-2-4 (0)	14	NP	50.7	37.2	4.5	7.6	0	98	70	14	--	--
SS-2	-L-	24+37	11 RT	7.9 - 9.2	A-2-4 (0)	18	NP	4.3	78.2	7.5	10.0	0	100	100	21	--	--
SS-3	-L-	23+32	12 RT	42.9 - 44.4	A-7-6 (33)	72	57	16.5	22.3	11.2	50.0	0	100	98	63	43.1	--
SS-4	-L-	23+65	7 LT	9.5 - 11.0	A-2-4 (0)	21	NP	23.0	61.0	5.8	10.2	0	100	97	17	--	--
SS-5	-L-	23+65	7 LT	44.5 - 46.0	A-2-4 (0)	20	NP	30.4	56.2	6.1	7.3	0	99	87	15	--	--

NP - NON-PLASTIC

*Stephanie H. Huffman*

\_\_\_\_\_  
Certified Lab Technician Signature

114-01-1203

\_\_\_\_\_  
Certification Number



# BRIDGE NO. 810018 SITE PHOTOGRAPHS

PROJECT REFERENCE NO.

B-4813

SHEET NO.

8



END BENT 2 (-L-) LOOKING SOUTHWEST



END BENT 2 (-L-) LOOKING WEST