

REFERENCE: B-5780

PROJECT: 45736

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY DAVIDSON  
PROJECT DESCRIPTION BRIDGE NO. 17 OVER  
SWEARING CREEK ON NC 47 BETWEEN SR 1396  
AND SR 1323  
SITE DESCRIPTION \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CONTENTS**

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-6	CROSS SECTION(S)
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11-12	CORE PHOTOS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5780	1	12

**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.

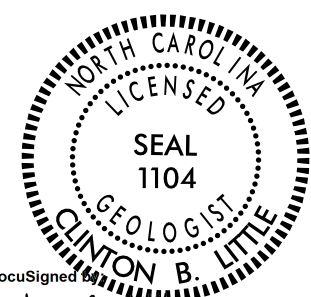
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT 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. STICKNEY  
C.L. SMITH  
M.R. MOORE

INVESTIGATED BY J.E. BEVERLY  
DRAWN BY J.E. BEVERLY *JEB*  
CHECKED BY C.B. LITTLE  
SUBMITTED BY C.B. LITTLE  
DATE FEBRUARY 2016



DocuSigned by  
*Clinton B. Little*  
930443D5AC8E452...

2/19/2016

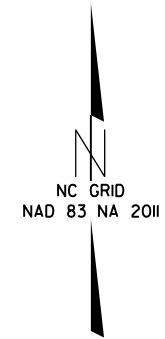
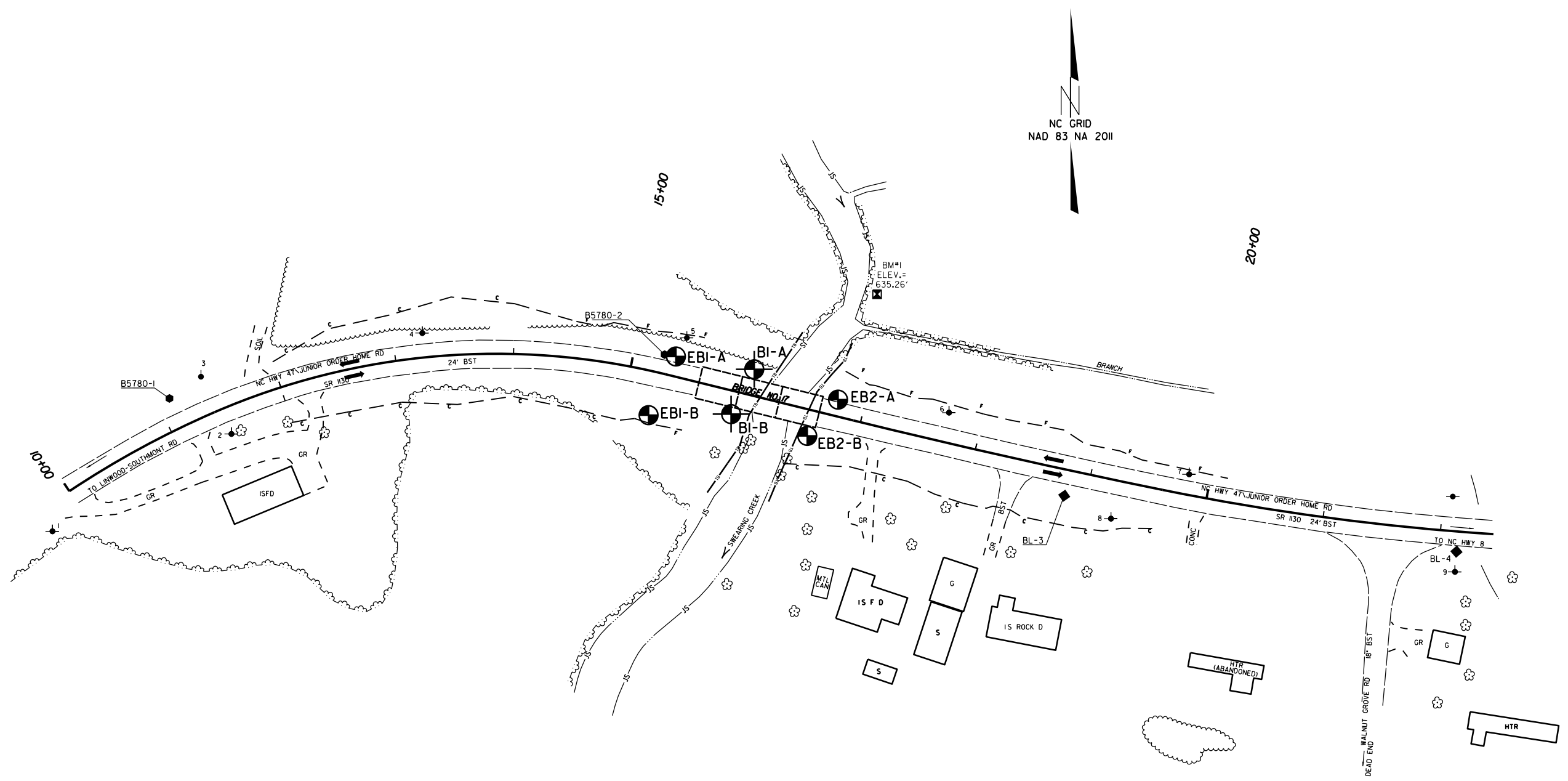
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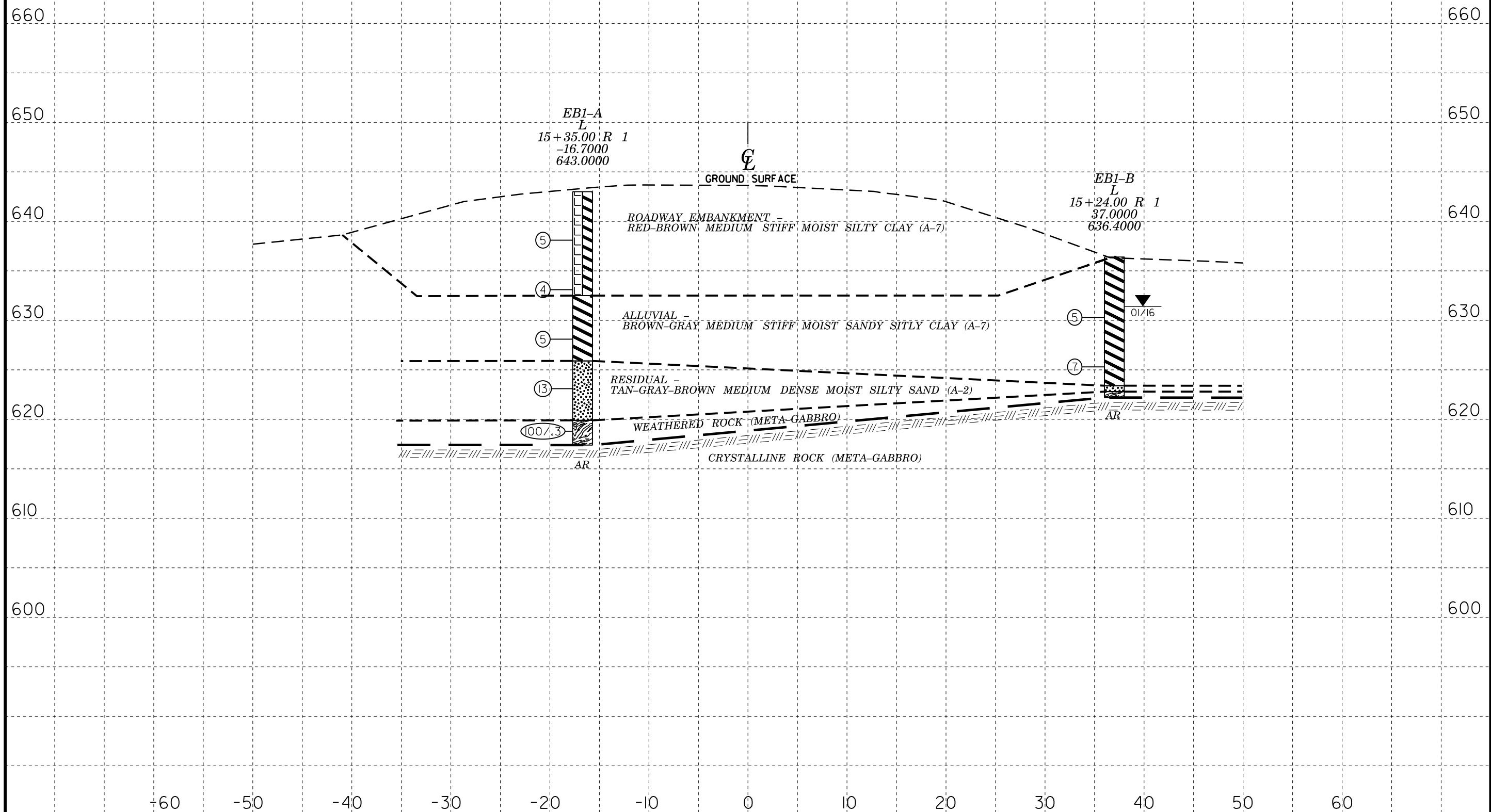
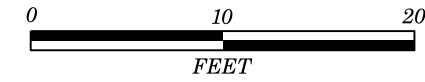
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

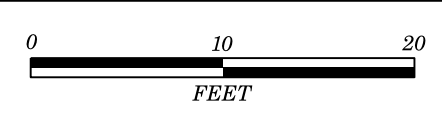
SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

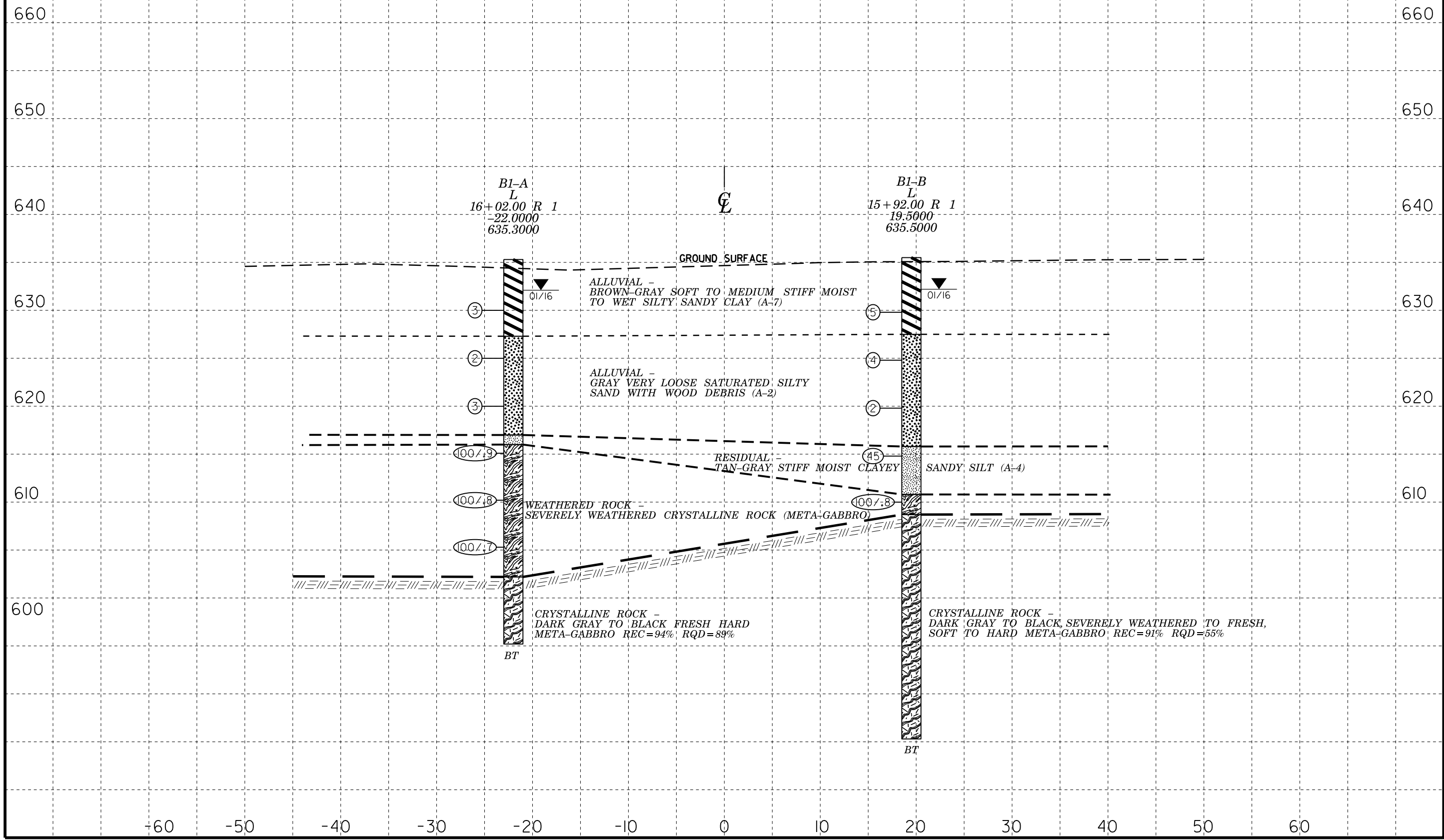
Table containing various sections: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, ANGULARITY OF GRAINS, MINERALOGICAL COMPOSITION, COMPRESSIBILITY, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, SOIL MOISTURE - CORRELATION OF TERMS, EQUIPMENT USED ON SUBJECT PROJECT, PLASTICITY, COLOR, FRACTURE SPACING, BEDDING, INDURATION, and NOTES.

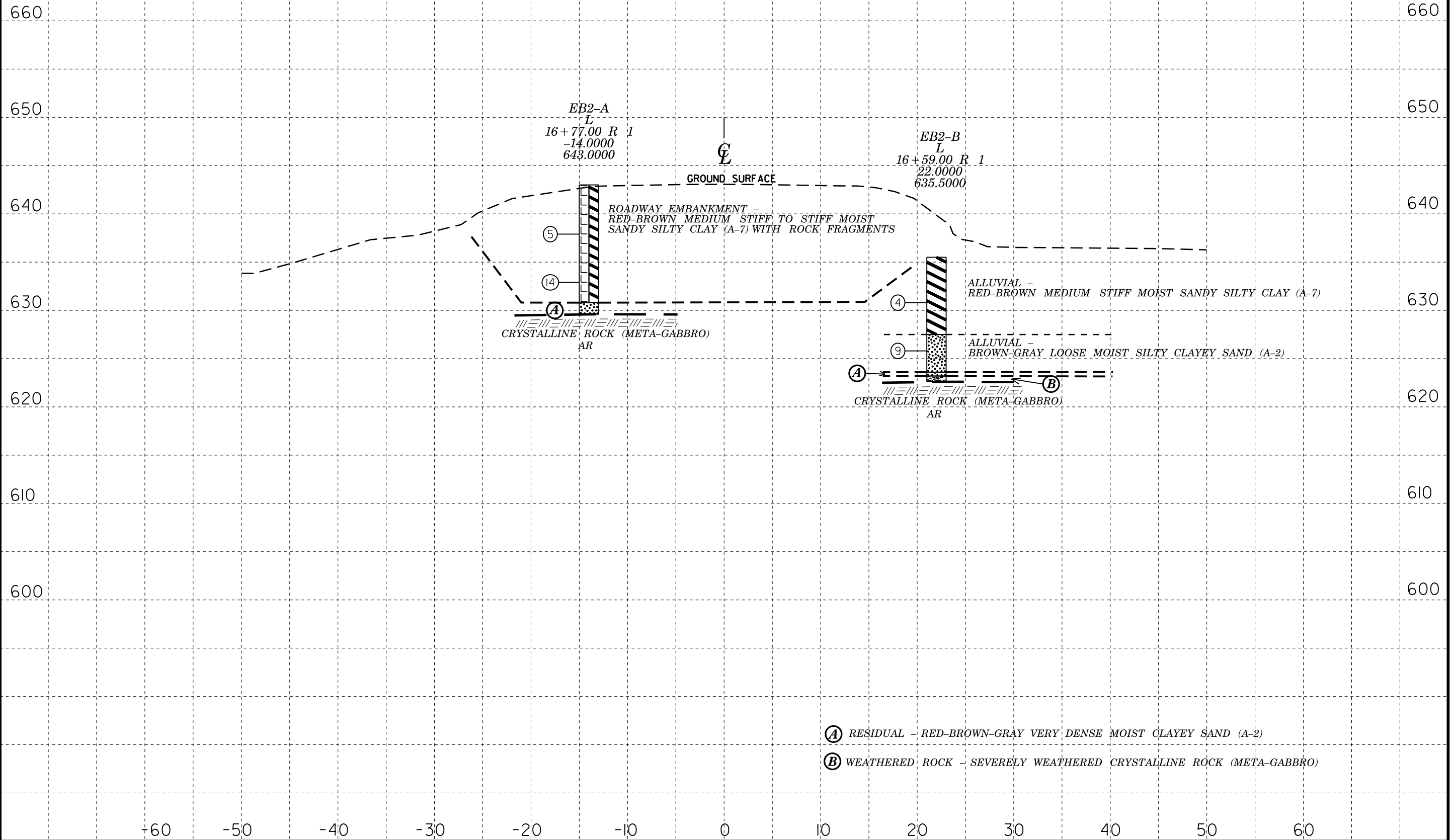
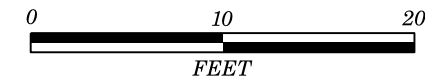






<b>PROJECT REFERENCE NO.</b>	<b>SHEET</b>
45736.1.1 (B-5780)	5
Section Through Bent One Sta. 16+00.50 -L- Skew = 105°	





# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 45736.1.1		TIP B-5780		COUNTY DAVIDSON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Bridge No. 17 over Swearing Creek on NC 47 between SR 1396 and SR 1323							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 15+35		OFFSET 17 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 643.0 ft		TOTAL DEPTH 25.6 ft		NORTHING 732,469		EASTING 1,612,454										
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Smith, C.L.		START DATE 01/21/16		COMP. DATE 01/21/16		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						
645															643.0	0.0
640	639.1	3.9	2	3	2							M		ROADWAY EMBANKMENT RED-BROWN MEDIUM STIFF MOIST SILTY CLAY (A-7)		
635	634.1	8.9	2	2	2							M				
630	629.1	13.9	3	2	3							M		ALLUVIAL BROWN-GRAY MEDIUM STIFF MOIST SANDY SILTY CLAY (A-7)	10.5	
625	624.1	18.9	3	5	8							M		RESIDUAL TAN-GRAY-BROWN MEDIUM DENSE MOIST SILTY SAND (A-2)	17.1	
620	619.1	23.9	100	3								M		WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK (META-GABBRO)	23.1	
														Boring Terminated by Auger Refusal at Elevation 617.4 ft ON CRYSTALLINE ROCK (META-GABBRO)	25.6	

WBS 45736.1.1		TIP B-5780		COUNTY DAVIDSON		GEOLOGIST Stickney, J. K.										
SITE DESCRIPTION Bridge No. 17 over Swearing Creek on NC 47 between SR 1396 and SR 1323							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 15+24		OFFSET 37 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 636.4 ft		TOTAL DEPTH 14.2 ft		NORTHING 732,420		EASTING 1,612,431										
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER Smith, C.L.		START DATE 01/19/16		COMP. DATE 01/19/16		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						
640															636.4	0.0
635															ALLUVIAL RED-BROWN MEDIUM STIFF MOIST SANDY SILTY CLAY (A-7)	
630	631.3	5.1	1	2	3							M				
625	626.3	10.1	2	3	4							M				
														RESIDUAL RED-BROWN-GRAY DENSE MOIST CLAYEY SAND (A-2)	13.0	
														WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK (META-GABBRO)	13.6	
														Boring Terminated by Auger Refusal at Elevation 622.2 ft ON CRYSTALLINE ROCK (META-GABBRO)	14.2	

NCDOT BORE DOUBLE B5780\_GEO\_BRD0017\_BORELOGS.GPJ NC\_DOT.GDT 2/18/16

# GEOTECHNICAL BORING REPORT BORE LOG

SHEET 8

WBS 45736.1.1		TIP B-5780		COUNTY DAVIDSON		GEOLOGIST Stickney, J. K.											
SITE DESCRIPTION Bridge No. 17 over Swearing Creek on NC 47 between SR 1396 and SR 1323							GROUND WTR (ft)										
BORING NO. B1-A		STATION 16+02		OFFSET 22 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 635.3 ft		TOTAL DEPTH 40.1 ft		NORTHING 732,458		EASTING 1,612,520											
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014				DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic											
DRILLER Smith, C.L.		START DATE 01/20/16		COMP. DATE 01/20/16		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
640																	
635															635.3	0.0	GROUND SURFACE
630	631.0	4.3	1	1	2												ALLUVIAL BROWN-GRAY SOFT MOIST TO WET SILTY SANDY CLAY (A-7)
625	626.0	9.3	1	1	1												ALLUVIAL GRAY VERY LOOSE SATURATED SILTY SAND WITH WOOD DEBRIS (A-2)
620	621.0	14.3	1	2	1												ALLUVIAL GRAY VERY LOOSE SATURATED SILTY SAND WITH WOOD DEBRIS (A-2)
615	616.0	19.3	39	61/4											617.0	18.3	RESIDUAL TAN-GRAY STIFF MOIST CLAYEY SANDY SILT (A-4)
610	611.0	24.3	51	49/3											616.0	19.3	WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK (META-GABBRO)
605	606.0	29.3	32	20	80/2												WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK (META-GABBRO)
600															602.2	33.1	CRYSTALLINE ROCK DARK GRAY TO BLACK FRESH HARD META-GABBRO REC=94% RQD=89%
															595.2	40.1	Boring Terminated at Elevation 595.2 ft IN CRYSTALLINE ROCK (META-GABBRO)

NCDOT BORE SINGLE B5780\_GEO\_BRD0017\_BORELOGS.GPJ NC\_DOT\_GDT 2/18/16

# GEOTECHNICAL BORING REPORT CORE LOG

SHEET 8

WBS 45736.1.1		TIP B-5780		COUNTY DAVIDSON		GEOLOGIST Stickney, J. K.						
SITE DESCRIPTION Bridge No. 17 over Swearing Creek on NC 47 between SR 1396 and SR 1323							GROUND WTR (ft)					
BORING NO. B1-A		STATION 16+02		OFFSET 22 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 635.3 ft		TOTAL DEPTH 40.1 ft		NORTHING 732,458		EASTING 1,612,520						
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014				DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic						
DRILLER Smith, C.L.		START DATE 01/20/16		COMP. DATE 01/20/16		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	RQD (%)		REC. (%)	RQD (%)			
602.2		33.1	2.0	1:15/1.0	(1.7)	(1.7)		(6.6)	(6.2)		Begin Coring @ 33.1 ft	33.1
600	600.2	35.1	5.0	1:05/1.0	85%	85%		94%	89%		CRYSTALLINE ROCK DARK GRAY TO BLACK FRESH HARD META-GABBRO WITH CLOSE FRACTURE SPACING R1=15, R2=17, R3=20, R4=20, R5=7 RMR=79 ROCK TYPE E	
					(4.9)	(4.5)						
					98%	90%						
											Boring Terminated at Elevation 595.2 ft IN CRYSTALLINE ROCK (META-GABBRO)	40.1

NCDOT BORE SINGLE B5780\_GEO\_BRD0017\_BORELOGS.GPJ NC\_DOT\_GDT 2/18/16



# GEOTECHNICAL BORING REPORT BORE LOG

WBS 45736.1.1		TIP B-5780		COUNTY DAVIDSON		GEOLOGIST Stickney, J. K.											
SITE DESCRIPTION Bridge No. 17 over Swearing Creek on NC 47 between SR 1396 and SR 1323							GROUND WTR (ft)										
BORING NO. B1-B		STATION 15+92		OFFSET 20 ft RT		ALIGNMENT -L-											
COLLAR ELEV. 635.5 ft		TOTAL DEPTH 50.2 ft		NORTHING 732,421		EASTING 1,612,501											
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014		DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic													
DRILLER Smith, C.L.		START DATE 01/19/16		COMP. DATE 01/19/16		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
640																	
635														635.5	0.0	GROUND SURFACE	
630	630.8	4.7	0	1	4								M			ALLUVIAL BROWN-GRAY SOFT TO MEDIUM STIFF MOIST TO WET SILTY SANDY CLAY (A-7)	
625	625.8	9.7	1	2	2								Sat.			ALLUVIAL GRAY VERY LOOSE SATURATED SILTY SAND (A-2)	
620	620.8	14.7	1	1	1								Sat.				
615	615.8	19.7	12	17	28								M			RESIDUAL TAN-BROWN-GRAY STIFF TO HARD MOIST CLAYEY SANDY SILT (A-4)	
610	610.8	24.7	48	52/3												WEATHERED ROCK SEVERELY WEATHERED CRYSTALLINE ROCK (META-GABBRO)	
605																CRYSTALLINE ROCK DARK GRAY TO BLACK, SEVERELY WEATHERED TO FRESH, SOFT TO HARD META-GABBRO REC=91% RQD=55%	
600																	
595																	
590																	
																585.3	Boring Terminated at Elevation 585.3 ft IN CRYSTALLINE ROCK (META-GABBRO)

NCDOT BORE SINGLE B5780\_GEO\_BRD0017\_BORELOGS.GPJ NC\_DOT\_GDT 2/18/16

# GEOTECHNICAL BORING REPORT CORE LOG

WBS 45736.1.1		TIP B-5780		COUNTY DAVIDSON		GEOLOGIST Stickney, J. K.						
SITE DESCRIPTION Bridge No. 17 over Swearing Creek on NC 47 between SR 1396 and SR 1323							GROUND WTR (ft)					
BORING NO. B1-B		STATION 15+92		OFFSET 20 ft RT		ALIGNMENT -L-						
COLLAR ELEV. 635.5 ft		TOTAL DEPTH 50.2 ft		NORTHING 732,421		EASTING 1,612,501						
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014		DRILL METHOD NW Casing w/ Core		HAMMER TYPE Automatic								
DRILLER Smith, C.L.		START DATE 01/19/16		COMP. DATE 01/19/16		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN 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) %			
608.7	608.7	26.8	3.4	1:35/1.0	(3.4) 100%	(0.5) 15%		(21.3) 91%	(12.8) 55%		Begin Coring @ 26.8 ft	26.8
605	605.3	30.2	5.0	NM	(4.0) 80%	(1.6) 32%					DARK GRAY TO BLACK, SEVERELY WEATHERED TO FRESH, SOFT TO HARD META-GABBRO WITH VERY CLOSE TO CLOSE FRACTURE SPACING R1=15, R2=20, R3=10, R4=12, R5=7 RMR=64 ROCK TYPE E	
600	600.3	35.2	5.0	2:30/1.0	(4.3) 86%	(1.4) 28%						
595	595.3	40.2	5.0	1:45/1.0	(4.6) 92%	(4.5) 90%						
590	590.3	45.2	5.0	1:31/1.0	(5.0) 100%	(4.8) 96%						
	585.3	50.2									Boring Terminated at Elevation 585.3 ft IN CRYSTALLINE ROCK (META-GABBRO)	50.2

NCDOT CORE SINGLE B5780\_GEO\_BRD0017\_BORELOGS.GPJ NC\_DOT\_GDT 2/18/16

# GEOTECHNICAL BORING REPORT

## BORE LOG

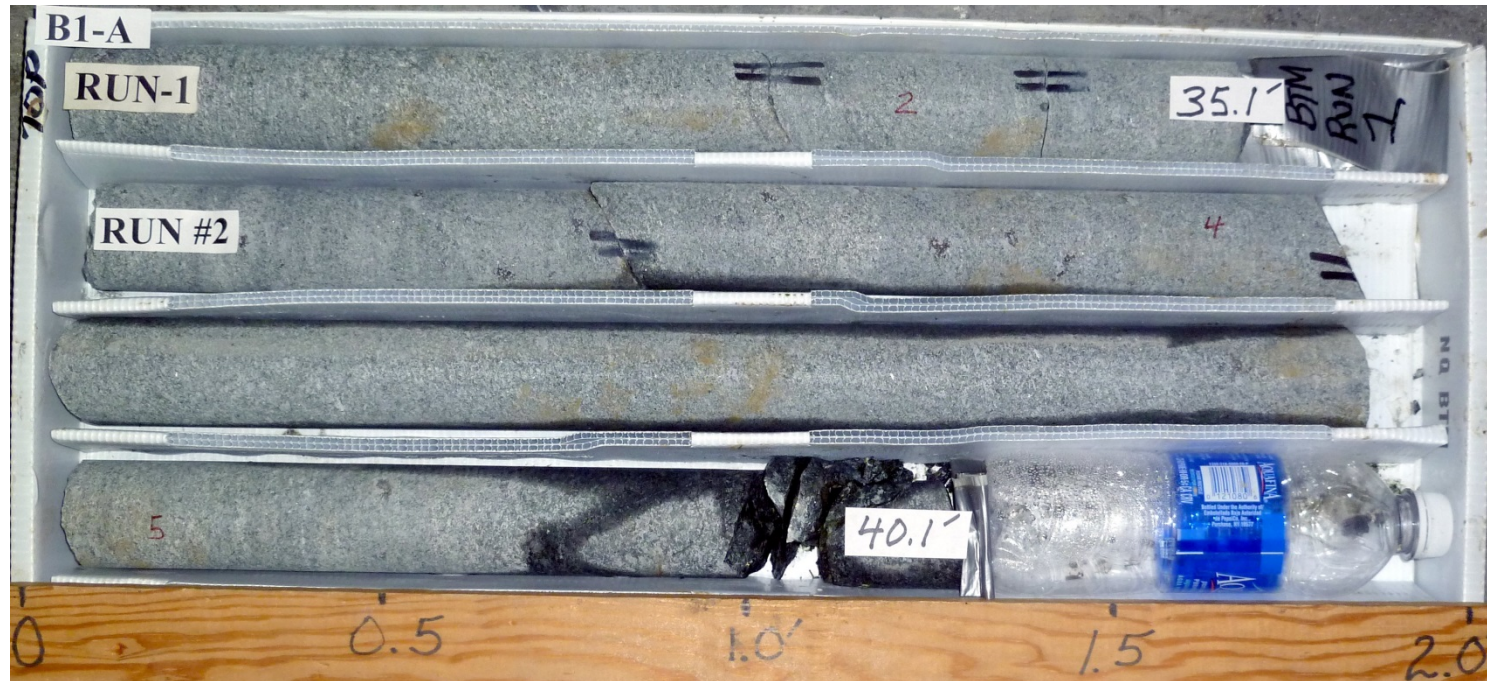
WBS 45736.1.1		TIP B-5780		COUNTY DAVIDSON		GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION Bridge No. 17 over Swearing Creek on NC 47 between SR 1396 and SR 1323							GROUND WTR (ft)								
BORING NO. EB2-A		STATION 16+77		OFFSET 14 ft LT		ALIGNMENT -L-									
COLLAR ELEV. 643.0 ft		TOTAL DEPTH 13.4 ft		NORTHING 732,433		EASTING 1,612,591									
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 01/21/16		COMP. DATE 01/21/16		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					
645															
640	638.9	4.1	2	2	3										
635	633.9	9.1	3	5	9										
630															

WBS 45736.1.1		TIP B-5780		COUNTY DAVIDSON		GEOLOGIST Stickney, J. K.									
SITE DESCRIPTION Bridge No. 17 over Swearing Creek on NC 47 between SR 1396 and SR 1323							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 16+59		OFFSET 22 ft RT		ALIGNMENT -L-									
COLLAR ELEV. 635.5 ft		TOTAL DEPTH 12.9 ft		NORTHING 732,402		EASTING 1,612,565									
DRILL RIG/HAMMER EFF./DATE HFO0072 CME-550 88% 03/19/2014			DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER Smith, C.L.		START DATE 01/19/16		COMP. DATE 01/19/16		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					
640															
635															
630	631.8	3.7	2	2	2										
625	626.8	8.7	3	4	5										

NCDOT BORE DOUBLE B5780\_GEO\_BRDG0017\_BORELOGS.GPJ NC\_DOT.GDT 2/18/16

45736.1.1 (B-5780)  
DAVIDSON COUNTY  
BRIDGE NO. 17 OVER SWEARING CREEK ON NC 47 BETWEEN SR 1369 (LINWOOD SOUTHMONT RD.) AND SR1323 PITTSBURG GLASS ACCESS RD.)

CORE PHOTOS



45736.1.1 (B-5780)  
DAVIDSON COUNTY  
BRIDGE NO. 17 OVER SWEARING CREEK ON NC 47 BETWEEN SR 1369 (LINWOOD SOUTHMONT RD.) AND SR1323 PITTSBURG GLASS ACCESS RD.)

CORE PHOTOS

