

REFERENCE: B-5601

PROJECT: 45556

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<u>SHEET NO.</u>	<u>DESCRIPTION</u>
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**STATE OF NORTH CAROLINA**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**GEOTECHNICAL ENGINEERING UNIT**

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY WASHINGTON  
PROJECT DESCRIPTION BRIDGE NO. 11 ON -L- (NC 308)  
OVER MACKEY'S CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5601	1	11

**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

R.E. SMITH

D.G. PINTER

J.M. EDMONDSON

D.N. ARGENBRIGHT

T.C. BOTTOMS

INVESTIGATED BY T.C. BOTTOMS

DRAWN BY T.C. BOTTOMS

CHECKED BY D.N. ARGENBRIGHT

SUBMITTED BY D.N. ARGENBRIGHT

DATE MARCH 2017



DocuSigned by:  
Tyler Bottoms 3/29/2017  
48A2D3BD08CE46 SIGNATURE DATE

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

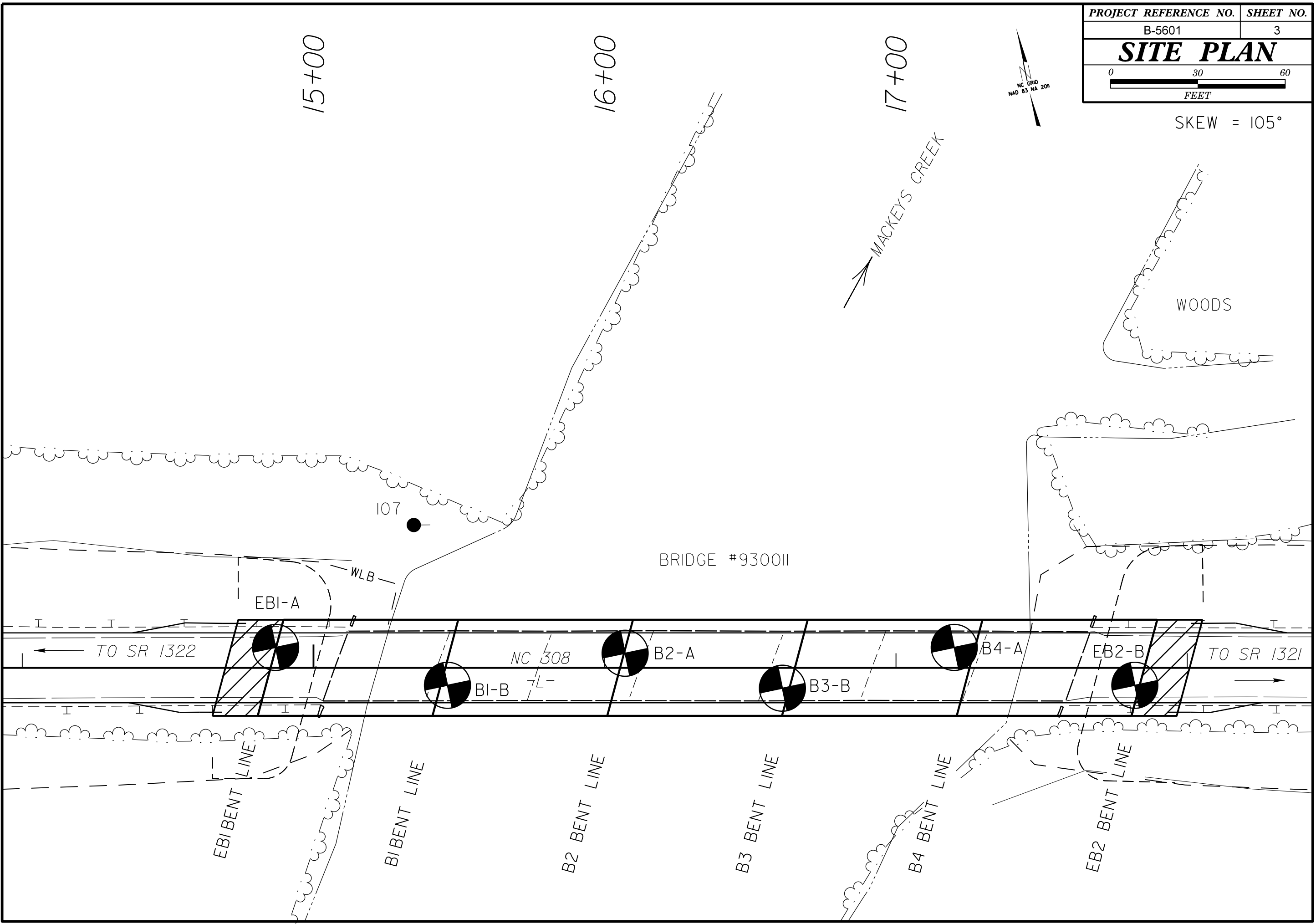
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. Includes sub-sections for SOIL LEGEND AND CLASSIFICATION, MINERALOGICAL COMPOSITION, WEATHERING, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, and INDRURATION.

PROJECT REFERENCE NO.	SHEET NO.
B-5601	3
<b>SITE PLAN</b>	
 0                      30                      60 FEET	



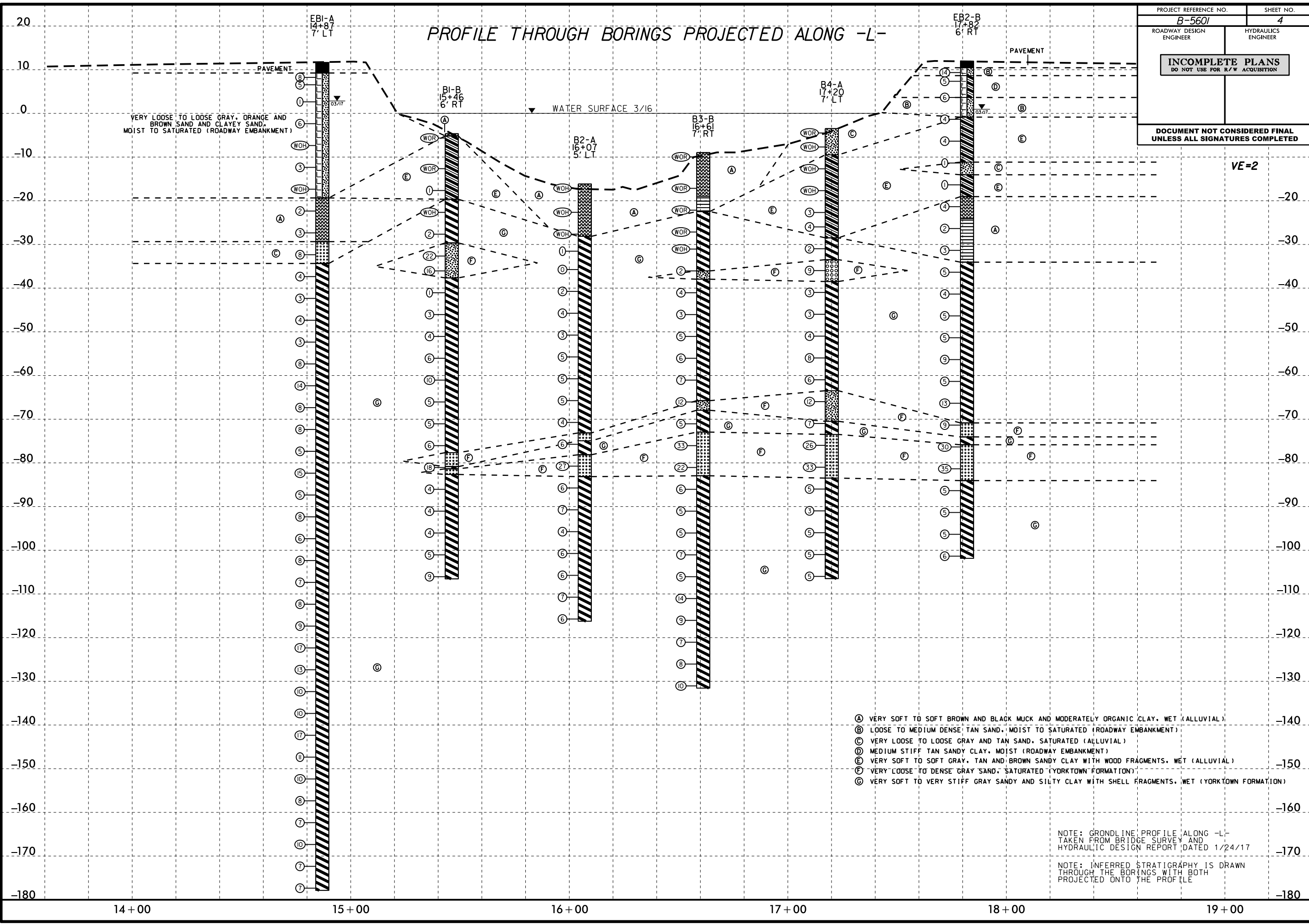
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PROJECT REFERENCE NO. <b>B-5601</b>	SHEET NO. <b>4</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

# PROFILE THROUGH BORINGS PROJECTED ALONG -L-



- (A) VERY SOFT TO SOFT BROWN AND BLACK MUCK AND MODERATELY ORGANIC CLAY, WET (ALLUVIAL)
- (B) LOOSE TO MEDIUM DENSE, TAN SAND, MOIST TO SATURATED (ROADWAY EMBANKMENT)
- (C) VERY LOOSE TO LOOSE GRAY AND TAN SAND, SATURATED (ALLUVIAL)
- (D) MEDIUM STIFF TAN SANDY CLAY, MOIST (ROADWAY EMBANKMENT)
- (E) VERY SOFT TO SOFT GRAY, TAN AND BROWN SANDY CLAY WITH WOOD FRAGMENTS, WET (ALLUVIAL)
- (F) VERY LOOSE TO DENSE GRAY SAND, SATURATED (YORKTOWN FORMATION)
- (G) VERY SOFT TO VERY STIFF GRAY SANDY AND SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION)

NOTE: GRONLINE PROFILE ALONG -L- TAKEN FROM BRIDGE SURVEY AND HYDRAULIC DESIGN REPORT DATED 1/24/17

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

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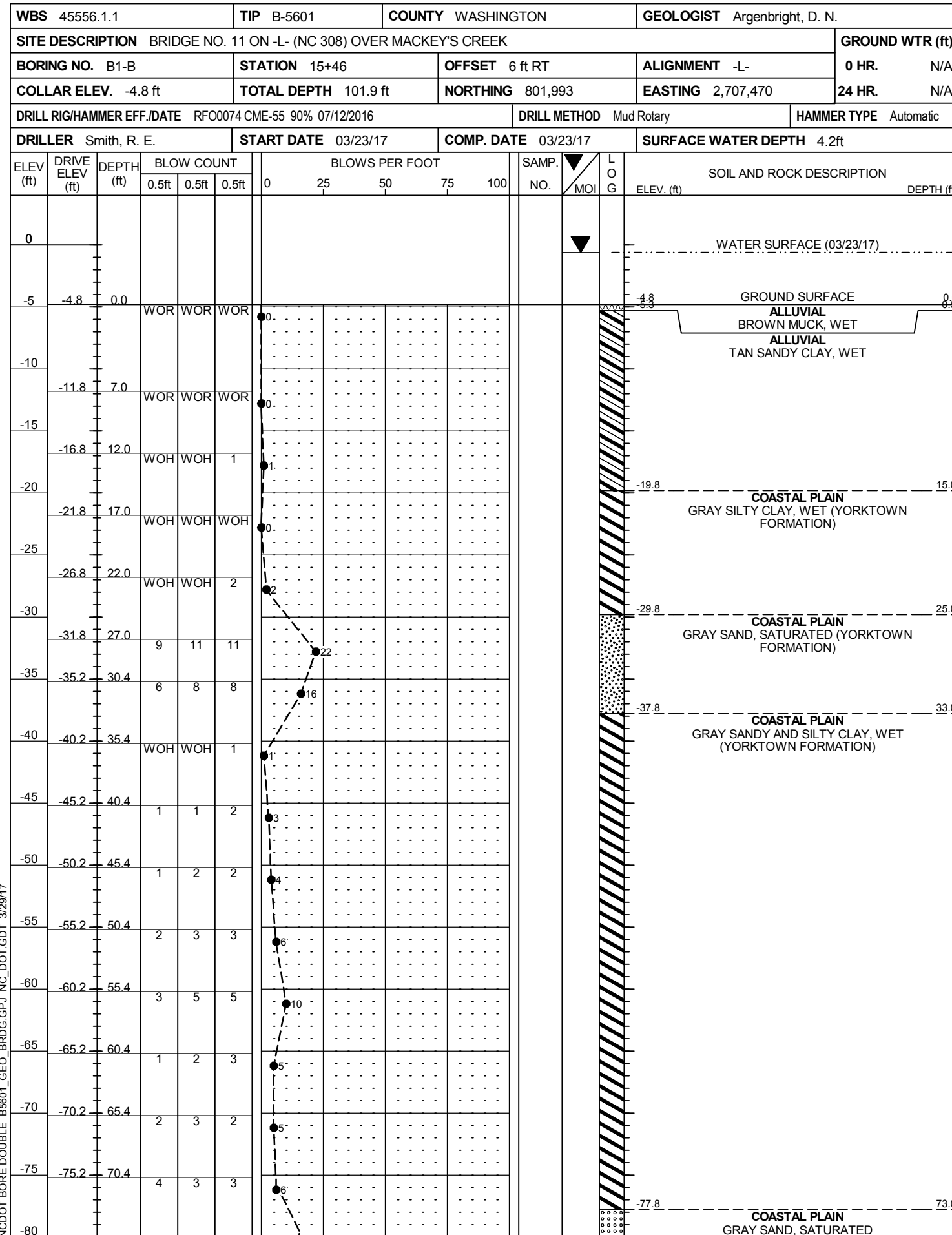
# GEOTECHNICAL BORING REPORT BORE LOG

<b>WBS</b> 45556.1.1		<b>TIP</b> B-5601		<b>COUNTY</b> WASHINGTON		<b>GEOLOGIST</b> Crenshaw, J. K.	
<b>SITE DESCRIPTION</b> BRIDGE NO. 11 ON -L- (NC 308) OVER MACKEY'S CREEK							<b>GROUND WTR (ft)</b>
<b>BORING NO.</b> EB1-A		<b>STATION</b> 14+87		<b>OFFSET</b> 7 ft LT		<b>ALIGNMENT</b> -L-	
<b>COLLAR ELEV.</b> 11.6 ft		<b>TOTAL DEPTH</b> 189.5 ft		<b>NORTHING</b> 802,018		<b>EASTING</b> 2,707,415	
<b>DRILL RIG/HAMMER EFF./DATE</b> GFO0075 CME-45C 83% 04/11/2016				<b>DRILL METHOD</b> Mud Rotary		<b>HAMMER TYPE</b> Automatic	
<b>DRILLER</b> Smith, R. E.		<b>START DATE</b> 03/13/17		<b>COMP. DATE</b> 03/14/17		<b>SURFACE WATER DEPTH</b> N/A	

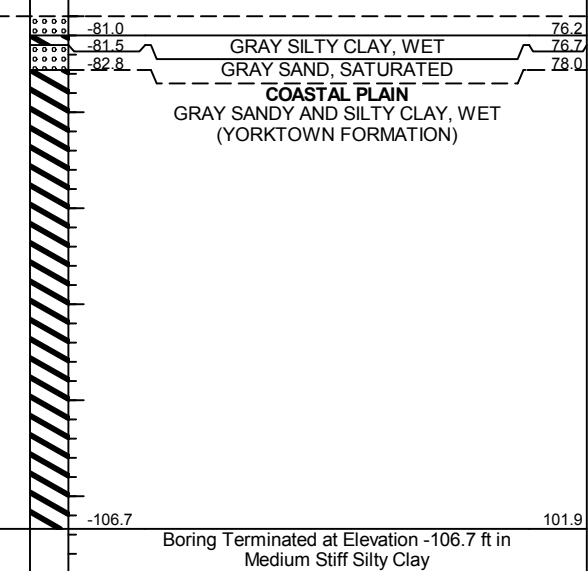
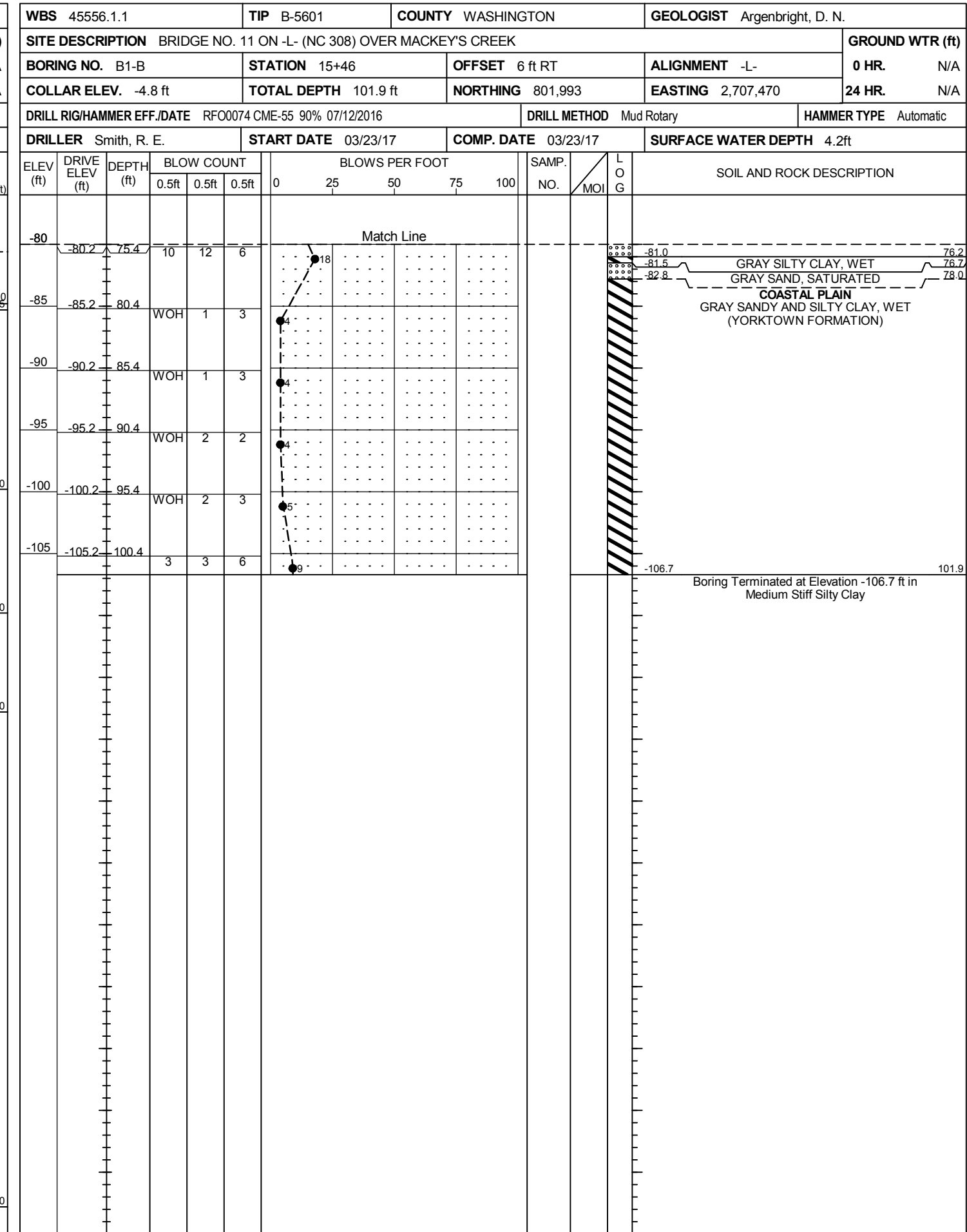
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION				
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)			
-145						Match Line											
	-146.4	158.0	3	3	8	0	25	50	75	100				COASTAL PLAIN GRAY SANDY AND SILTY CLAY WITH SHELL FRAGMENTS, WET (YORKTOWN FORMATION) <i>(continued)</i>			
	-151.4	163.0	2	3	7												
	-156.4	168.0	2	3	5												
	-161.4	173.0	WOH	2	5												
	-166.4	178.0	2	3	7												
	-171.4	183.0	WOH	1	6												
	-176.4	188.0	1	2	5												

NCDOT BORE DOUBLE B5601\_GEO\_BRDG.GPJ NC\_DOT.GDT 3/29/17

## GEOTECHNICAL BORING REPORT BORE LOG



NCDOT BORE DOUBLE B5601\_GEO\_BRDG.GPJ NC\_DOT.GDT 3/29/17







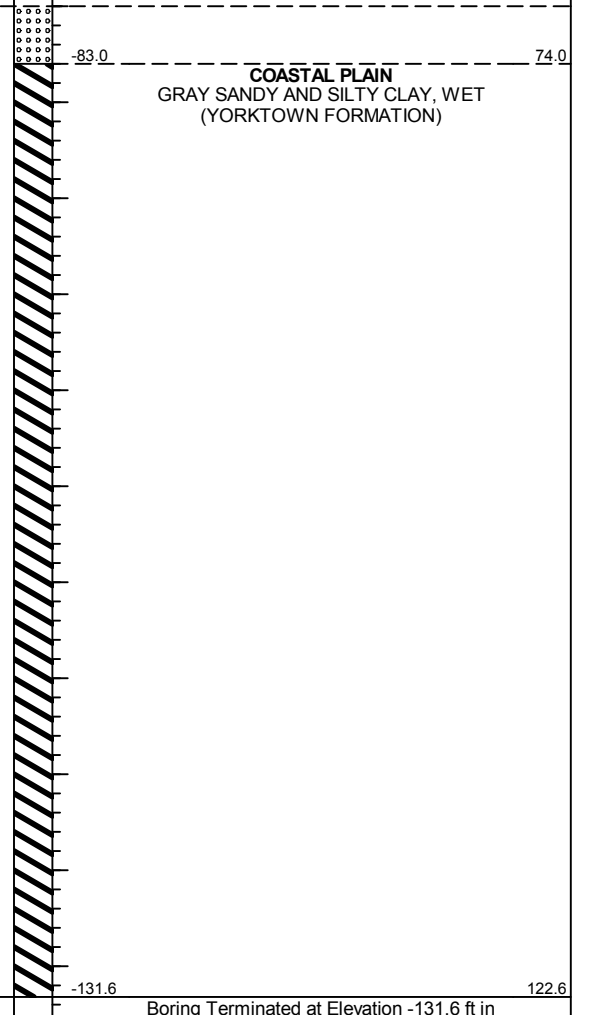
# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 45556.1.1		TIP B-5601		COUNTY WASHINGTON		GEOLOGIST Argenbright, D. N.										
SITE DESCRIPTION BRIDGE NO. 11 ON -L- (NC 308) OVER MACKEY'S CREEK							GROUND WTR (ft)									
BORING NO. B3-B		STATION 16+61		OFFSET 7 ft RT		ALIGNMENT -L-										
COLLAR ELEV. -9.0 ft		TOTAL DEPTH 122.6 ft		NORTHING 801,969		EASTING 2,707,582										
DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 90% 07/12/2016				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Smith, R. E.		START DATE 03/27/17		COMP. DATE 03/28/17		SURFACE WATER DEPTH 9.7ft										
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						
0																
-5																
-10	-9.0	0.0	WOR	WOR	WOR											
-15	-16.2	7.2	WOR	WOR	WOR											
-20	-21.2	12.2	WOR	WOR	WOR											
-25	-26.2	17.2	WOR	WOR	WOR											
-30	-30.1	21.1	WOR	WOR	WOH											
-35	-35.1	26.1	3	1	1											
-40	-40.1	31.1	1	1	3											
-45	-45.1	36.1	WOH	1	2											
-50	-50.1	41.1	1	2	3											
-55	-55.1	46.1	3	2	4											
-60	-60.1	51.1	3	3	4											
-65	-65.1	56.1	WOR	6	6											
-70	-70.1	61.1	2	3	2											
-75	-75.1	66.1	10	15	18											
-80																

WBS 45556.1.1		TIP B-5601		COUNTY WASHINGTON		GEOLOGIST Argenbright, D. N.										
SITE DESCRIPTION BRIDGE NO. 11 ON -L- (NC 308) OVER MACKEY'S CREEK							GROUND WTR (ft)									
BORING NO. B3-B		STATION 16+61		OFFSET 7 ft RT		ALIGNMENT -L-										
COLLAR ELEV. -9.0 ft		TOTAL DEPTH 122.6 ft		NORTHING 801,969		EASTING 2,707,582										
DRILL RIG/HAMMER EFF./DATE RFO0074 CME-55 90% 07/12/2016				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Smith, R. E.		START DATE 03/27/17		COMP. DATE 03/28/17		SURFACE WATER DEPTH 9.7ft										
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						
-80	-80.1	71.1	9	11	11											
-85	-85.1	76.1	WOH	2	4											
-90	-90.1	81.1	WOH	2	3											
-95	-95.1	86.1	WOH	1	4											
-100	-100.1	91.1	WOH	3	4											
-105	-105.1	96.1	WOH	1	4											
-110	-110.1	101.1	2	6	8											
-115	-115.1	106.1	1	4	5											
-120	-120.1	111.1	1	3	4											
-125	-125.1	116.1	3	3	5											
-130	-130.1	121.1	3	4	6											

NCDOT BORE DOUBLE B5601\_GEO\_BRDG.GPJ NC\_DOT.GDT 3/29/17



## GEOTECHNICAL BORING REPORT BORE LOG

<b>WBS</b> 45556.1.1		<b>TIP</b> B-5601		<b>COUNTY</b> WASHINGTON		<b>GEOLOGIST</b> Argenbright, D. N.										
<b>SITE DESCRIPTION</b> BRIDGE NO. 11 ON -L- (NC 308) OVER MACKEY'S CREEK							<b>GROUND WTR (ft)</b>									
<b>BORING NO.</b> B4-A		<b>STATION</b> 17+20		<b>OFFSET</b> 7 ft LT		<b>ALIGNMENT</b> -L-										
<b>COLLAR ELEV.</b> -3.5 ft		<b>TOTAL DEPTH</b> 103.0 ft		<b>NORTHING</b> 801,971		<b>EASTING</b> 2,707,643										
<b>DRILL RIG/HAMMER EFF./DATE</b> RFO0074 CME-55 90% 07/12/2016			<b>DRILL METHOD</b> Mud Rotary			<b>HAMMER TYPE</b> Automatic										
<b>DRILLER</b> Smith, R. E.		<b>START DATE</b> 03/21/17		<b>COMP. DATE</b> 03/22/17		<b>SURFACE WATER DEPTH</b> 3.3ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					ELEV. (ft)	DEPTH (ft)
0																WATER SURFACE (03/21/17)
-5	-3.5	0.0	WOR	WOR	WOR											GROUND SURFACE
	-6.7	3.2	WOH	WOH	WOH											ALLUVIAL TAN SAND, SATURATED
-10	-11.7	8.2	WOH	WOH	WOH											ALLUVIAL TAN AND GRAY SANDY CLAY WITH WOOD FRAGMENTS, WET
-15	-16.7	13.2	WOH	WOH	WOH											
-20	-21.7	18.2				2	1	2								
-25	-25.0	21.5				1	3	1								
-30	-30.0	26.5	WOH			1	1									COASTAL PLAIN GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
-35	-35.0	31.5				6	6	3								COASTAL PLAIN GRAY SAND, SATURATED (YORKTOWN FORMATION)
-40	-40.0	36.5				1	1	2								COASTAL PLAIN GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
-45	-45.0	41.5				1	1	2								
-50	-50.0	46.5				1	1	3								
-55	-55.0	51.5				2	3	5								
-60	-60.0	56.5				1	3	3								
-65	-65.0	61.5				4	5	7								COASTAL PLAIN GRAY SAND, SATURATED (YORKTOWN FORMATION)
-70	-70.0	66.5				3	3	4								COASTAL PLAIN GRAY SILTY CLAY, WET
-75	-75.0	71.5				3	9	17								COASTAL PLAIN GRAY SAND, SATURATED (YORKTOWN FORMATION)
-80																

NCDOT BORE DOUBLE B5601\_GEO\_BRDG.GPJ NC\_DOT.GDT 3/29/17

<b>WBS</b> 45556.1.1		<b>TIP</b> B-5601		<b>COUNTY</b> WASHINGTON		<b>GEOLOGIST</b> Argenbright, D. N.										
<b>SITE DESCRIPTION</b> BRIDGE NO. 11 ON -L- (NC 308) OVER MACKEY'S CREEK							<b>GROUND WTR (ft)</b>									
<b>BORING NO.</b> B4-A		<b>STATION</b> 17+20		<b>OFFSET</b> 7 ft LT		<b>ALIGNMENT</b> -L-										
<b>COLLAR ELEV.</b> -3.5 ft		<b>TOTAL DEPTH</b> 103.0 ft		<b>NORTHING</b> 801,971		<b>EASTING</b> 2,707,643										
<b>DRILL RIG/HAMMER EFF./DATE</b> RFO0074 CME-55 90% 07/12/2016			<b>DRILL METHOD</b> Mud Rotary			<b>HAMMER TYPE</b> Automatic										
<b>DRILLER</b> Smith, R. E.		<b>START DATE</b> 03/21/17		<b>COMP. DATE</b> 03/22/17		<b>SURFACE WATER DEPTH</b> 3.3ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					ELEV. (ft)	DEPTH (ft)
-80	-80.0	76.5				13	16	17								Match Line
-85	-85.0	81.5				3	2	3								COASTAL PLAIN GRAY SAND, SATURATED (YORKTOWN FORMATION) (continued)
-90	-90.0	86.5				WOH	WOH	3								COASTAL PLAIN GRAY SILTY CLAY, WET (YORKTOWN FORMATION)
-95	-95.0	91.5				WOH	1	4								
-100	-100.0	96.5				WOH	1	4								
-105	-105.0	101.5				1	2	3								
																Boring Terminated at Elevation -106.5 ft in Medium Stiff Silty Clay

