

REFERENCE: B-4487

PROJECT: 33724

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY CRAVEN  
PROJECT DESCRIPTION BRIDGE NO. 2 ON SR 1715  
(BLADES ROAD) OVER MORTONS MILL POND  
AT STA. 13+35 -L-

**CONTENTS**

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4487	1	9

**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 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:
- 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.
  - 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

C.T. TANG, EI

CAROLINA DRILLING

M. RADFORD

W. HAMIL

INVESTIGATED BY C.T. TANG, EI

DRAWN BY C.T. TANG, EI

CHECKED BY D. BROWN, PE

SUBMITTED BY D. BROWN, PE

DATE DECEMBER 2017



DocuSigned by:

*Donald W. Brown, Jr.*

C06817F5F70411

SIGNATURE

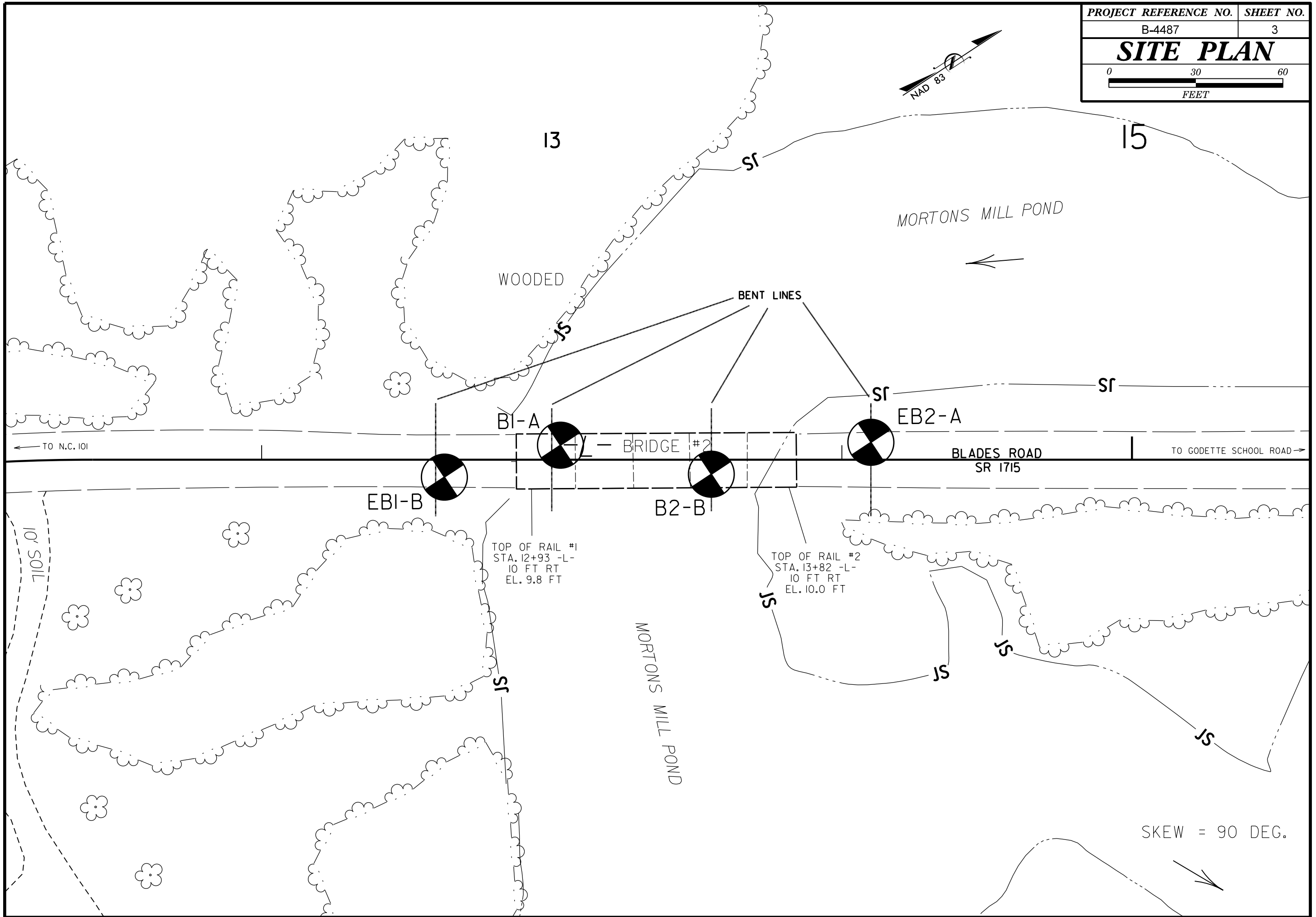
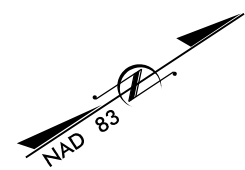
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DATE

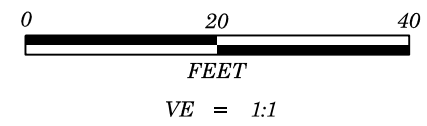
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

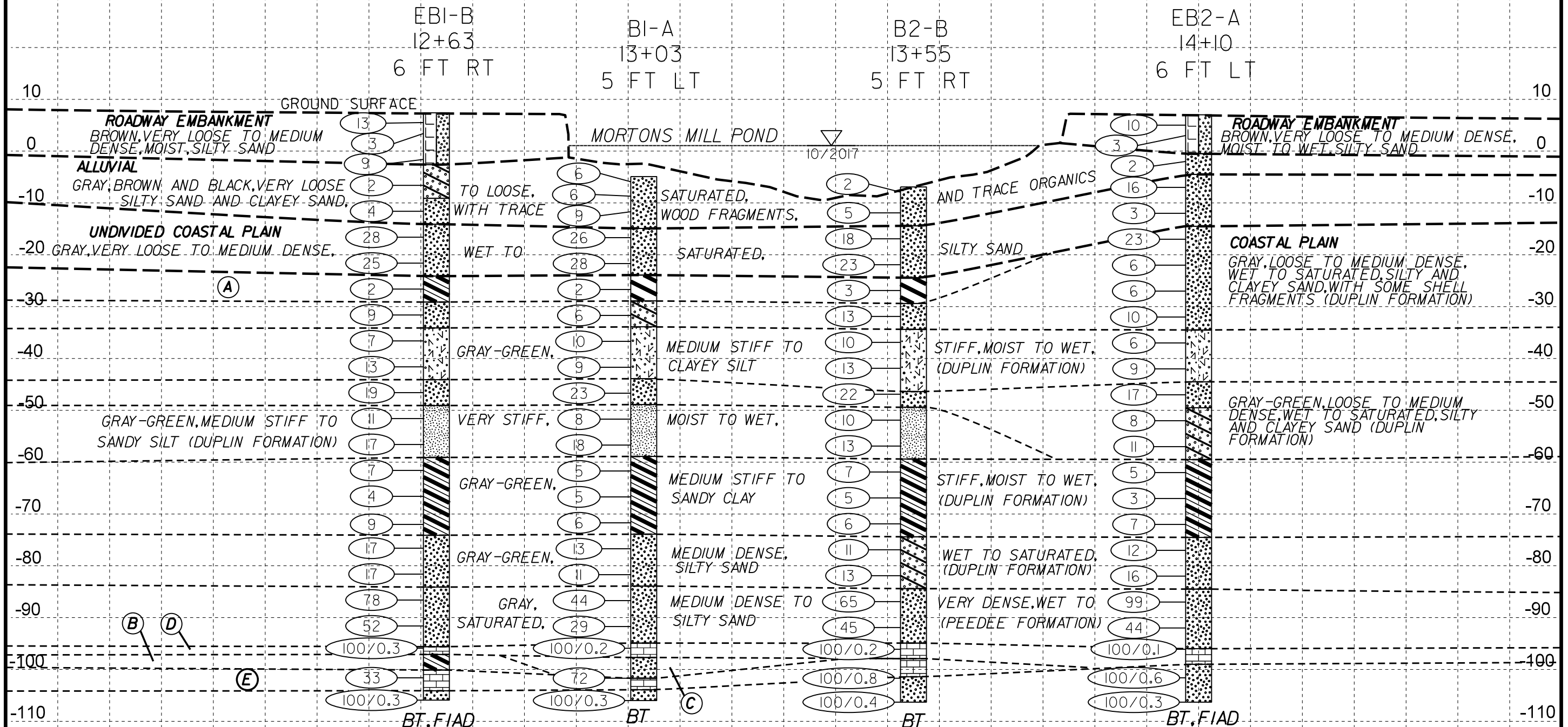
Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. It contains detailed technical specifications, classification charts, and definitions for geotechnical engineering.



- (A) COASTAL PLAIN DARK GRAY, VERY SOFT TO SOFT, WET, SANDY AND SILTY CLAY (DUPLIN FORMATION)
- (B) COASTAL PLAIN GRAY, HARD, WET, SANDY CLAY (PEEDEE FORMATION)
- (C) COASTAL PLAIN GRAY, MEDIUM DENSE, WET, SILTY SAND (PEEDEE FORMATION)
- (D) COASTAL PLAIN SEDIMENTARY ROCK TAN AND GRAY, MUDSTONE (PEEDEE FORMATION)
- (E) COASTAL PLAIN SEDIMENTARY ROCK LIMESTONE (PEEDEE FORMATION)



PROJECT REFERENCE NO.	SHEET NO.
B-4487	4
PROFILE ALONG -L- CENTERLINE	



NOTE: EXISTING GROUND SURFACE PROFILE OF -L- CENTERLINE TAKEN FROM ELECTRONIC TIN FILE (DATED FEB-2014) RECEIVED FROM NCDOT GEI. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 33724.1.1		TIP B-4487		COUNTY CRAVEN		GEOLOGIST C.T. Tang	
SITE DESCRIPTION Bridge No. 2 on SR 1715 (Blades Road) over Mortons Mill Pond							GROUND WTR (ft)
BORING NO. EB1-B		STATION 12+63		OFFSET 6 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 7.4 ft		TOTAL DEPTH 113.3 ft		NORTHING 412,736		EASTING 2,668,732	
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 85% 02/23/2017				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER M.Radford		START DATE 10/16/17		COMP. DATE 10/16/17		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							
10														7.4	GROUND SURFACE	0.0	
	6.5	0.9	8	7	6										ROADWAY EMBANKMENT		
5	4.4	3.0	2	1	2										Brown, Silty Sand		
0	-0.6	8.0	14	5	4										Wood from 8.5 to 10.0 feet	10.0	
-5	-5.6	13.0	1	1	1										ALLUVIAL		
															Gray and Brown, Clayey Sand, with Trace Coarse Sand		
-10	-10.6	18.0	5	2	2										Brown, Silty Sand	16.5	
-15	-15.6	23.0	7	13	15										UNDIVIDED COASTAL PLAIN	21.5	
															Dark Gray, Silty Sand		
-20	-20.6	28.0	11	14	11										COASTAL PLAIN	31.5	
															Dark Gray, Sandy Clay (Duplin Formation)		
-25	-25.6	33.0	1	1	1										COASTAL PLAIN	36.5	
															Dark Gray, Silty Sand, with Shell Fragments (Duplin Formation)		
-30	-30.6	38.0	5	4	5										COASTAL PLAIN	41.5	
															Dark Gray, Clayey Silt, with Trace Shell Fragments (Duplin Formation)		
-35	-35.6	43.0	2	4	3										COASTAL PLAIN	51.5	
															Gray, Silty Sand (Duplin Formation)		
-40	-40.6	48.0	3	4	9										COASTAL PLAIN	56.5	
															Gray, Sandy Silt (Duplin Formation)		
-45	-45.6	53.0	4	7	12										COASTAL PLAIN	66.5	
															Gray-Green, Sandy Clay (Duplin Formation)		
-50	-50.6	58.0	3	4	7										COASTAL PLAIN		
															Gray, Silty Sand (Pee Dee Formation)		
-55	-55.6	63.0	8	8	9										COASTAL PLAIN		
															Limestone (Pee Dee Formation)		
-60	-60.6	68.0	3	2	5										COASTAL PLAIN		
															Gray, Silty Sand (Pee Dee Formation)		
-65	-65.6	73.0	2	2	2										COASTAL PLAIN		
															Gray, Silty Sand (Pee Dee Formation)		
-70																Boring Terminated at Elevation -105.9 ft in Silty Sand	

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WBS 33724.1.1		TIP B-4487		COUNTY CRAVEN		GEOLOGIST C.T. Tang	
SITE DESCRIPTION Bridge No. 2 on SR 1715 (Blades Road) over Mortons Mill Pond							GROUND WTR (ft)
BORING NO. EB1-B		STATION 12+63		OFFSET 6 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 7.4 ft		TOTAL DEPTH 113.3 ft		NORTHING 412,736		EASTING 2,668,732	
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 85% 02/23/2017				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER M.Radford		START DATE 10/16/17		COMP. DATE 10/16/17		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						
-70																
	-71.0	78.4	4	4	5											
-75	-75.6	83.0	4	7	10											
-80	-80.6	88.0	5	6	11											
-85	-85.6	93.0	8	21	57											
-90	-90.6	98.0	18	19	33											
-95	-95.6	103.0	100/0.3													
-100	-100.6	108.0	10	11	22											
-105	-105.6	113.0	100/0.3													

Match Line

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 33724.1.1		TIP B-4487		COUNTY CRAVEN		GEOLOGIST C.T. Tang									
SITE DESCRIPTION Bridge No. 2 on SR 1715 (Blades Road) over Mortons Mill Pond							GROUND WTR (ft)								
BORING NO. B1-A		STATION 13+03		OFFSET 5 ft LT		ALIGNMENT -L-									
COLLAR ELEV. -4.9 ft		TOTAL DEPTH 101.1 ft		NORTHING 412,775		EASTING 2,668,745									
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 85% 02/23/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER M.Radford		START DATE 10/18/17		COMP. DATE 10/18/17		SURFACE WATER DEPTH 6.5ft									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
0															
-5	-4.9	0.0	2	3	3										
-10	-7.7	2.8	4	3	3										
-15	-10.7	5.8	4	4	5										
-20	-15.7	10.8	10	12	14										
-25	-20.7	15.8	7	11	17										
-30	-25.7	20.8	WOH	1	1										
-35	-30.7	25.8		1	3										
-40	-35.7	30.8		1	6										
-45	-40.7	35.8		3	3										
-50	-45.7	40.8		7	12										
-55	-50.7	45.8		3	3										
-60	-55.7	50.8		8	9										
-65	-60.7	55.8		2	2										
-70	-65.7	60.8		2	2										
-75	-70.7	65.8		2	3										
-80	-75.7	70.8		3	5										

WBS 33724.1.1		TIP B-4487		COUNTY CRAVEN		GEOLOGIST C.T. Tang									
SITE DESCRIPTION Bridge No. 2 on SR 1715 (Blades Road) over Mortons Mill Pond							GROUND WTR (ft)								
BORING NO. B1-A		STATION 13+03		OFFSET 5 ft LT		ALIGNMENT -L-									
COLLAR ELEV. -4.9 ft		TOTAL DEPTH 101.1 ft		NORTHING 412,775		EASTING 2,668,745									
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 85% 02/23/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER M.Radford		START DATE 10/18/17		COMP. DATE 10/18/17		SURFACE WATER DEPTH 6.5ft									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
-80	-80.7	75.8	4	4	7										
-85	-85.7	80.8	7	20	24										
-90	-90.7	85.8	14	15	14										
-95	-95.7	90.8	100/0.2												
-100	-100.7	95.8	9	11	61										
-105	-105.7	100.8	100/0.3												

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Match Line

Green-Gray, Silty Sand  
(Duplin Formation) (continued) 79.0

Gray, Silty Sand  
(Pee Dee Formation) 83.9

COASTAL PLAIN SEDIMENTARY ROCK  
Tan, Mudstone  
(Pee Dee Formation) 90.0

COASTAL PLAIN  
Gray, Silty Sand  
(Pee Dee Formation) 92.8

COASTAL PLAIN SEDIMENTARY ROCK  
Limestone  
(Pee Dee Formation) 96.8

COASTAL PLAIN  
Gray, Silty Sand  
(Pee Dee Formation) 99.0

Boring Terminated at Elevation -106.0 ft in  
Silty Sand 101.1

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 33724.1.1		TIP B-4487		COUNTY CRAVEN		GEOLOGIST C.T. Tang	
SITE DESCRIPTION Bridge No. 2 on SR 1715 (Blades Road) over Mortons Mill Pond							GROUND WTR (ft)
BORING NO. B2-B		STATION 13+55		OFFSET 5 ft RT		ALIGNMENT -L-	
COLLAR ELEV. -6.9 ft		TOTAL DEPTH 99.4 ft		NORTHING 412,813		EASTING 2,668,782	
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 85% 02/23/2017			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic	
DRILLER M.Radford		START DATE 10/17/17		COMP. DATE 10/17/17		SURFACE WATER DEPTH 8.3ft	

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					
-5															
	-6.9	0.0	2	1	1										-6.9
	-10.9	4.0	8	3	2										-10.9
	-15.9	9.0	7	8	10										-15.9
	-20.9	14.0	7	10	13										-20.9
	-25.9	19.0	2	1	2										-25.9
	-30.9	24.0	10	8	5										-30.9
	-35.9	29.0	2	2	8										-35.9
	-40.9	34.0	4	5	8										-40.9
	-45.9	39.0	8	11	11										-45.9
	-50.9	44.0	4	4	6										-50.9
	-55.9	49.0	5	6	7										-55.9
	-60.9	54.0	1	3	4										-60.9
	-65.9	59.0	2	2	3										-65.9
	-70.9	64.0	3	2	4										-70.9
	-75.9	69.0	4	5	6										-75.9
	-80.9	74.0	4	6	7										-80.9
	-85														-85

WBS 33724.1.1		TIP B-4487		COUNTY CRAVEN		GEOLOGIST C.T. Tang	
SITE DESCRIPTION Bridge No. 2 on SR 1715 (Blades Road) over Mortons Mill Pond							GROUND WTR (ft)
BORING NO. B2-B		STATION 13+55		OFFSET 5 ft RT		ALIGNMENT -L-	
COLLAR ELEV. -6.9 ft		TOTAL DEPTH 99.4 ft		NORTHING 412,813		EASTING 2,668,782	
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 85% 02/23/2017			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic	
DRILLER M.Radford		START DATE 10/17/17		COMP. DATE 10/17/17		SURFACE WATER DEPTH 8.3ft	

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					
	-85.9	79.0	5	16	49										-85.9
	-90.9	84.0	16	20	25										-90.9
	-95.9	89.0	100/0.2												-95.9
	-100.9	94.0	10	90/0.3											-100.9
	-105.9	99.0	100/0.4												-105.9

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# GEOTECHNICAL BORING REPORT

## BORE LOG

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SITE DESCRIPTION Bridge No. 2 on SR 1715 (Blades Road) over Mortons Mill Pond							GROUND WTR (ft)									
BORING NO. EB2-A		STATION 14+10		OFFSET 6 ft LT		ALIGNMENT -L-										
COLLAR ELEV. 7.0 ft		TOTAL DEPTH 113.3 ft		NORTHING 412,865		EASTING 2,668,803										
DRILL RIG/HAMMER EFF./DATE BRI2974 CME-45C 85% 02/23/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic											
DRILLER M.Radford		START DATE 10/19/17		COMP. DATE 10/19/17		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						
10																
	6.0	1.0														
5	4.0	3.0	5	5	5											
			2	2	1											
0	-1.0	8.0	WOH	1	1											
-5	-6.0	13.0		9	9	7										
-10	-11.0	18.0		1	2	1										
-15	-16.0	23.0		7	10	13										
-20	-21.0	28.0		5	4	2										
-25	-26.0	33.0		2	2	4										
-30	-31.0	38.0		5	6	4										
-35	-36.0	43.0		1	2	4										
-40	-41.0	48.0		3	4	5										
-45	-46.0	53.0		3	6	11										
-50	-51.0	58.0		3	3	5										
-55	-56.0	63.0		4	4	7										
-60	-61.0	68.0		2	1	4										
-65	-66.0	73.0		2	1	2										
-70																

WBS 33724.1.1		TIP B-4487		COUNTY CRAVEN		GEOLOGIST C.T. Tang										
SITE DESCRIPTION Bridge No. 2 on SR 1715 (Blades Road) over Mortons Mill Pond							GROUND WTR (ft)									
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DRILLER M.Radford		START DATE 10/19/17		COMP. DATE 10/19/17		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						
-70	-71.0	78.0		2	3	4										
-75	-76.0	83.0		3	4	8										
-80	-81.0	88.0		5	6	10										
-85	-86.0	93.0		8	30	69										
-90	-91.0	98.0		20	24	20										
-95	-96.0	103.0		100/0.1												
-100	-101.0	108.0		70	30/0.1											
-105	-106.0	113.0		100/0.3												

NCDOT BORE DOUBLE B4487\_GEO\_BRDG002\_BH.GPJ NC\_DOT.GDT 10/30/17



# SITE PHOTOGRAPH

## BRIDGE 2



PHOTOGRAPH NO.1. VIEW LOOKING NORTHWEST