



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

February 1, 2012

MEMORANDUM TO: C. E. (Neil) Lassiter, Jr., P.E.
Division 2 Engineer

ATTENTION: Lang Jones
Division Design Engineer

FROM: *CAK for* K. J. Kim, Ph.D., P.E.
Eastern Regional Geotechnical Manager

STATE PROJECT: 45348.1.9 (BD-5102I)
FEDERAL PROJECT: BRZ-1319(18)
COUNTY: Jones

DESCRIPTION: Bridge No. 75 on SR 1319 (Henderson Rd.) over Musselshell Creek

SUBJECT: Bridge Foundation Recommendations

The Geotechnical Engineering Unit has completed the subsurface investigation and has prepared the foundation design recommendations for the above structure and presents the following project data:

- Bridge Inventory (7) pages
- Foundation Design Recommendations (3) pages
- Design Calculations () pages
- Special Provisions () pages

Please call Majid Khazaei, P.E. or Chris Kreider, P.E. at (919) 662-4710 if there are any questions concerning this memorandum.

KJK/CAK/MK
Attachment

MAILING ADDRESS:
EASTERN REGIONAL OFFICE
GEOTECHNICAL ENGINEERING UNIT
1570 MAIL SERVICE CENTER
RALEIGH NC 27699-1570

TELEPHONE: 919-662-4710
FAX: 919-662-3095

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
3301 JONES SAUSAGE RD., SUITE 100
GARNER, NC 27529-9489

FOUNDATION RECOMMENDATIONS

WBS: 45348.1.9

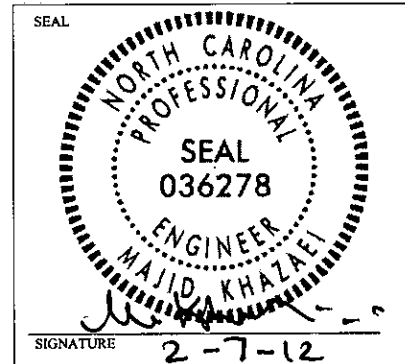
DESCRIPTION : Bridge No. 75 on SR 1319 (Henderson Rd.) over

T.I.P. NO.: BD-5102I

Musselshell Creek

COUNTY: Jones

STATION: 13+79.00 -L-



	INITIALS	DATE
DESIGN	MK	1/31/12
CHECK	CAK	2/1/12
APPROVAL	CAK	2/1/12

BENT	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	MISCELLANEOUS DETAILS
END BENT 1	13+32.51 -L-	Cap on HP 12x53 Steel Piles	55 tons/pile	Bottom of Cap El. = 19.5 ft ± Estimated Length of Pile = 40.0 ft ± Number of Piles = 5
BENT 1	13+58.74 -L-	Cap on HP 14x73 Steel Piles	90 tons/pile	Bottom of Cap El. = 19.5 ft ± Point of Fixity = -9 ft ± Tip Elevation No Higher than = -15.5 ft Estimated Length of Pile = 70 ft ± Number of Piles = 7
BENT 2	13+98.88 -L-	Cap on HP 14x73 Steel Piles	90 tons/pile	Bottom of Cap El. = 19.5 ft ± Point of Fixity = -9 ft ± Tip Elevation No Higher than = -15.5 ft Estimated Length of Pile = 70 ft ± Number of Piles = 7
END BENT 2	14+25.11 -L-	Cap on HP 12x53 Steel Piles	55 tons/pile	Bottom of Cap El. = 19.5 ft ± Estimated Length of Pile = 40.0 ft ± Number of Piles = 5

NOTES ON PLANS & COMMENTS

See Following Pages

FOUNDATION RECOMMENDATION NOTES ON PLANS

- 1) FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- 2) PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 55 TONS PER PILE.
- 3) DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 95 TONS PER PILE.
- 4) PILES AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.
- 5) DRIVE PILES AT BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 205 TONS PER PILE.
THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.
- 6) PILES AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.
- 7) DRIVE PILES AT BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 205 TONS PER PILE.
THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.
- 8) PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 55 TONS PER PILE.
- 9) DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 95 TONS PER PILE.
- 10) INSTALL PILES AT BOTH BENT NO. 1 AND BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN -15.5 FT.
- 11) STEEL H PILE POINTS ARE REQUIRED FOR STEEL H PILES AT END BENT NO. 1, END BENT NO. 2,
BENT NO. 1 AND BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- 12) THE SCOUR CRITICAL ELEVATION FOR BOTH BENT NO. 1 AND BENT NO. 2 IS ELEVATION 2.5 FT. SCOUR
CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- 13) IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF
35 to 45 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2.
THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING
EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- 14) IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF
40 to 75 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1 AND BENT NO. 2.
THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING
EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- 15) TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING
IS REQUIRED AT BENT NO. 1. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOUNDATION RECOMMENDATION COMMENTS

- 1) 1½:1 (H:V) SLOPE AT THE END BENTS ARE OK WITH SLOPE PROTECTION.
- 2) REINFORCED BRIDGE APPROACH FILLS ARE REQUIRED AT EACH END BENT.
- 3) USE BRACE PILES AT BOTH END BENT NO. 1 AND END BENT NO. 2.
- 4) THE DESIGN SCOUR ELEVATION FOR BENT NO. 1 IS 4.6 FT.
- 5) THE DESIGN SCOUR ELEVATION FOR BENT NO. 2 IS 11.3 FT.
- 6) NO WAITING PERIOD IS REQUIRED BEFORE BEGINNING ANY WORK FOR END BENT CONSTRUCTION
AFTER COMPLETION OF THE EMBANKMENT AT EACH END BENT.
- 7) SPUDDING MAY BE REQUIRED TO INSTALL PILES AT BENT NO. 1 AND BENT NO. 2.
THE ENGINEER WILL DETERMINE THE NEED FOR SPUDDING.

PILE PAY ITEMS

(For 2012 Lettings and Later - Revised 4/18/11)

WBS ELEMENT	45348.1.9		DATE	1/31/2012
TIP NO.	BD-5102I		DESIGNED BY	MK
COUNTY	Jones		CHECKED BY	<i>AK</i>
STATION	13+79.00 -L-			
DESCRIPTION	Bridge No. 75 on SR 1319 (Henderson Rd.) over Musselshell Creek			

NUMBER OF BENTS WITH PILES		} Only required for "Predrilling for Piles" & "Pile Excavation" pay items
NUMBER OF PILES PER BENT		
NUMBER OF END BENTS WITH PILES		
NUMBER OF PILES PER END BENT		

Bent # or End Bent #	PILE PAY ITEM QUANTITIES						PDA Testing (per each)
	Steel Pile Points (yes/no)	Pipe Pile Plates (yes/no/maybe)	Predrilling For Piles (per linear ft)	Pile Redrives (per each)	Pile Excavation (per linear ft)		
					In Soil	Not In Soil	
End Bent #1	yes			3			
Bent #1	yes			4			1
Bent #2	yes			4			
End Bent #2	yes			3			
TOTALS			0	14	0	0	1

Notes:

Blanks or "no" represent quantity of zero.

If steel pile points are required, calculate quantity of "Steel Pile Points" as equal to the number of steel piles.

If pipe pile plates are or may be required, calculate the quantity of "Pipe Pile Plates" as equal to the number of pipe piles.

If PDA testing may be required, show quantities of "PDA Testing" on the substructure plans as totals only. If PDA testing is required, show quantities of "PDA Testing" on the substructure plans for each bent or end bent.

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

**STRUCTURE
 SUBSURFACE INVESTIGATION**

PROJ. REFERENCE NO. 45348.1.9 (BD-51021) F.A. PROJ. BRZ-1319(18)
 COUNTY JONES
 PROJECT DESCRIPTION BRIDGE NO. 75 ON SR 1319 OVER
MUSSELL, SHELL CREEK AT -L- STA. 13+79

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4	PROFILE
5-7	BORE LOGS

STATE	FED. AID PROJECT	APPROXIMATE NO.	SERIAL	SHEET
N.C.	BD-51021		1	7

CAUTION NOTICE

The subsurface information and the subsurface investigation on which it is based were made available to the public under the provisions of the Freedom of Information Act. The information is provided for your information only and should not be used for any other purpose. The information is provided for your information only and should not be used for any other purpose. The information is provided for your information only and should not be used for any other purpose.

PERSONNEL
 D.N. ARGENBRIGHT
 J.R. SWARTLEY
 J.M. EDMONDSON
 CATLIN

INVESTIGATED BY D.N. ARGENBRIGHT
 CHECKED BY D.N. ARGENBRIGHT
 SUBMITTED BY D.N. ARGENBRIGHT
 DATE FEBRUARY 2012



NOTE - IF YOU HAVE REQUESTED THE INFORMATION THE CONTRACTOR SPECIFICALLY PROVIDES ANY CLAIMS FOR WORK DONE OR MATERIALS USED OR SERVICES OF THE ENGINEER OR ARCHITECT BY THESE SHEETS.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT Warranted OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE FOR IT IS CONSIDERED TO BE PART OF THE CLAIMS.

DESIGNED BY: C.P. TURNER

PROJECT: 45348.1.9 ID: BD-51021

SOIL DESCRIPTION				GRADATION				ROCK DESCRIPTION				TERMS AND DEFINITIONS			
<p>GENERAL CLASSIFICATION</p> <p>SOIL IS DESIGNATED BY THE LETTERS AND NUMBERS AS SHOWN IN THE TABLE. THE LETTERS INDICATE THE SOIL TYPE AND THE NUMBERS INDICATE THE PERCENTAGE OF SAND, SILT AND CLAY. SOILS WITH LESS THAN 5% CLAY ARE CLASSIFIED AS SANDS. SOILS WITH 5% TO 15% CLAY ARE CLASSIFIED AS SILTY SANDS. SOILS WITH 15% TO 40% CLAY ARE CLASSIFIED AS CLAYEY SANDS. SOILS WITH 40% TO 75% CLAY ARE CLASSIFIED AS SILT CLAYEY SOILS. SOILS WITH MORE THAN 75% CLAY ARE CLASSIFIED AS CLAYS. SOILS WITH MORE THAN 15% SAND AND MORE THAN 15% CLAY ARE CLASSIFIED AS SILTY CLAYS. SOILS WITH MORE THAN 15% SAND AND MORE THAN 40% CLAY ARE CLASSIFIED AS CLAYEY SILTY SOILS. SOILS WITH MORE THAN 15% SAND AND MORE THAN 75% CLAY ARE CLASSIFIED AS CLAYEY SILTY CLAYS. SOILS WITH MORE THAN 15% SAND AND MORE THAN 15% SILT AND MORE THAN 40% CLAY ARE CLASSIFIED AS SILTY CLAYEY SOILS. SOILS WITH MORE THAN 15% SAND AND MORE THAN 15% SILT AND MORE THAN 75% CLAY ARE CLASSIFIED AS CLAYEY SILTY CLAYEY SOILS.</p>				<p>MINERALOGICAL COMPOSITION</p> <p>CLAY TYPE: <input type="checkbox"/> KAOLINIC <input type="checkbox"/> ILLICITE <input type="checkbox"/> MONTMORILLONIC <input type="checkbox"/> MIXED</p> <p>PERCENTAGE OF SAND: 20-30% PERCENTAGE OF SILT: 50-60% PERCENTAGE OF CLAY: 10-20%</p>				<p>ROCK DESCRIPTION</p> <p>ROCK TYPE: <input type="checkbox"/> SANDSTONE <input type="checkbox"/> SANDY SILTSTONE <input type="checkbox"/> SILTY SANDSTONE <input type="checkbox"/> SILTY SHALE <input type="checkbox"/> SHALE <input type="checkbox"/> SLATE <input type="checkbox"/> MARBLE <input type="checkbox"/> GNEISS <input type="checkbox"/> GRANITE <input type="checkbox"/> DIORITE <input type="checkbox"/> ANDALUSITE <input type="checkbox"/> QUARTZITE</p> <p>ROCK TYPE: <input type="checkbox"/> CONGLOMERATE <input type="checkbox"/> BRECCIA <input type="checkbox"/> TUFF <input type="checkbox"/> LAVA <input type="checkbox"/> SANDSTONE <input type="checkbox"/> SILTSTONE <input type="checkbox"/> SHALE <input type="checkbox"/> SLATE <input type="checkbox"/> MARBLE <input type="checkbox"/> GNEISS <input type="checkbox"/> GRANITE <input type="checkbox"/> DIORITE <input type="checkbox"/> ANDALUSITE <input type="checkbox"/> QUARTZITE</p>				<p>TERMS AND DEFINITIONS</p> <p>ALLUVIAL MATERIAL - SOIL THAT HAS BEEN TRANSPORTED BY WATER.</p> <p>RESIDUAL SOIL - A SOIL DEVELOPED IN PLACE FROM PARENT MATERIAL.</p> <p>SAND - PARTICLES WHICH PASS A NO. 40 SIEVE AND ARE RETAINED ON A NO. 200 SIEVE.</p> <p>SILT - PARTICLES WHICH PASS A NO. 200 SIEVE AND ARE RETAINED ON A NO. 40 SIEVE.</p> <p>CLAY - PARTICLES WHICH PASS A NO. 40 SIEVE.</p> <p>GRAVEL - PARTICLES WHICH ARE RETAINED ON A NO. 75 SIEVE.</p> <p>COARSE SAND - SAND WITH MORE THAN 60% PASSING A NO. 60 SIEVE.</p> <p>MEDIUM SAND - SAND WITH 60% TO 75% PASSING A NO. 60 SIEVE.</p> <p>FINE SAND - SAND WITH 75% TO 100% PASSING A NO. 60 SIEVE.</p> <p>CLAYEY SAND - SAND WITH MORE THAN 15% CLAY.</p> <p>SILT CLAYEY SAND - SAND WITH 15% TO 40% CLAY.</p> <p>CLAYEY SILTY SAND - SAND WITH 40% TO 60% CLAY.</p> <p>SILT CLAYEY SAND - SAND WITH 60% TO 75% CLAY.</p> <p>CLAYEY SILTY SAND - SAND WITH 75% TO 100% CLAY.</p>			

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS				EQUIPMENT USED ON SUBJECT PROJECT			
<p>TESTING METHODS</p> <ul style="list-style-type: none"> STANDARD PENETRATION TEST (SPT) WATER CONTENT (W) LIQUID LIMIT (LL) PLASTICITY INDEX (PI) UNSATURATED WATERSHIP TEST (UW) COMPRESSION TEST (C) UNSATURATED SWELLING TEST (US) FIELD METER TEST (FM) FIELD PENETRATION TEST (FPT) FIELD SOIL BULK DENSITY TEST (FBD) FIELD SOIL TEMPERATURE TEST (FST) 	<p>MISCELLANEOUS SYMBOLS</p> <ul style="list-style-type: none"> ARTIFICIAL FILL ARTIFICIAL FILL OTHER THAN SAND ARTIFICIAL FILL OTHER THAN SAND AND GRAVEL ARTIFICIAL FILL OTHER THAN SAND AND GRAVEL AND SILT ARTIFICIAL FILL OTHER THAN SAND AND GRAVEL AND SILT AND CLAY ARTIFICIAL FILL OTHER THAN SAND AND GRAVEL AND SILT AND CLAY AND MARSH ARTIFICIAL FILL OTHER THAN SAND AND GRAVEL AND SILT AND CLAY AND MARSH AND WATER ARTIFICIAL FILL OTHER THAN SAND AND GRAVEL AND SILT AND CLAY AND MARSH AND WATER AND ROCK 	<p>APPROPRIATIONS</p> <ul style="list-style-type: none"> CONTRACTOR STATE FEDERAL GOVERNMENT MUNICIPALITY OTHER 	<p>REMARKS</p> <ul style="list-style-type: none"> TESTING METHOD TEST RESULTS TEST DATE TEST LOCATION TEST OPERATOR TEST COMMENTS 				

SOIL MOISTURE - CORRELATION OF TERMS			
WETTER	MOIST	WET	WETTER
4 TO 19	19 TO 26	26 TO 32	32 TO 50
0.25 TO 0.30	0.30 TO 0.35	0.35 TO 0.40	0.40 TO 0.50

TEXTURE OR GRAIN SIZE			
WETTER	MOIST	WET	WETTER
4 TO 19	19 TO 26	26 TO 32	32 TO 50
0.25 TO 0.30	0.30 TO 0.35	0.35 TO 0.40	0.40 TO 0.50

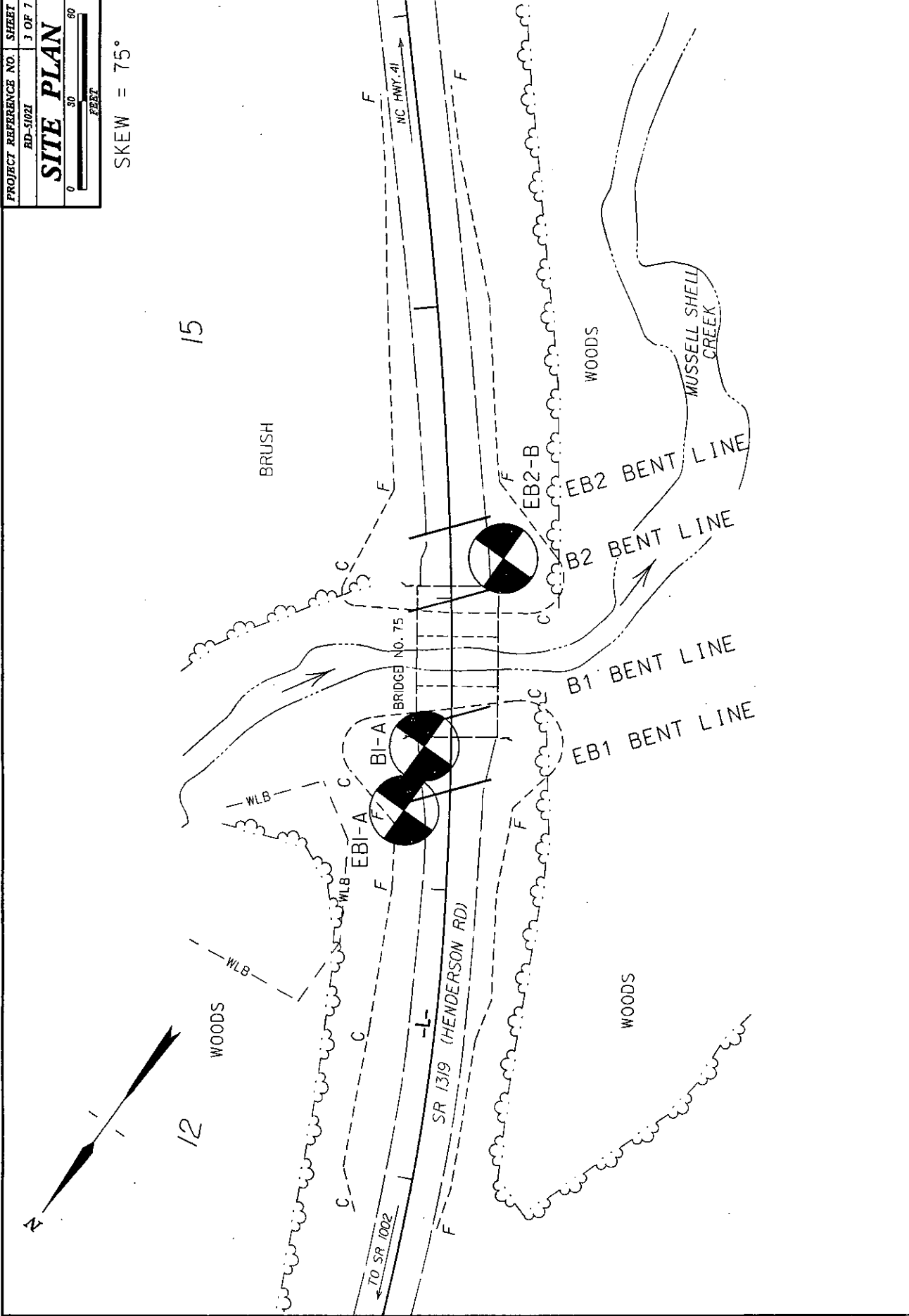
CORRELATION OF TERMS			
WETTER	MOIST	WET	WETTER
4 TO 19	19 TO 26	26 TO 32	32 TO 50
0.25 TO 0.30	0.30 TO 0.35	0.35 TO 0.40	0.40 TO 0.50

PROJECT REFERENCE NO. RD-51021 SHEET 3 OF 7

SITE PLAN



SKEW = 75°

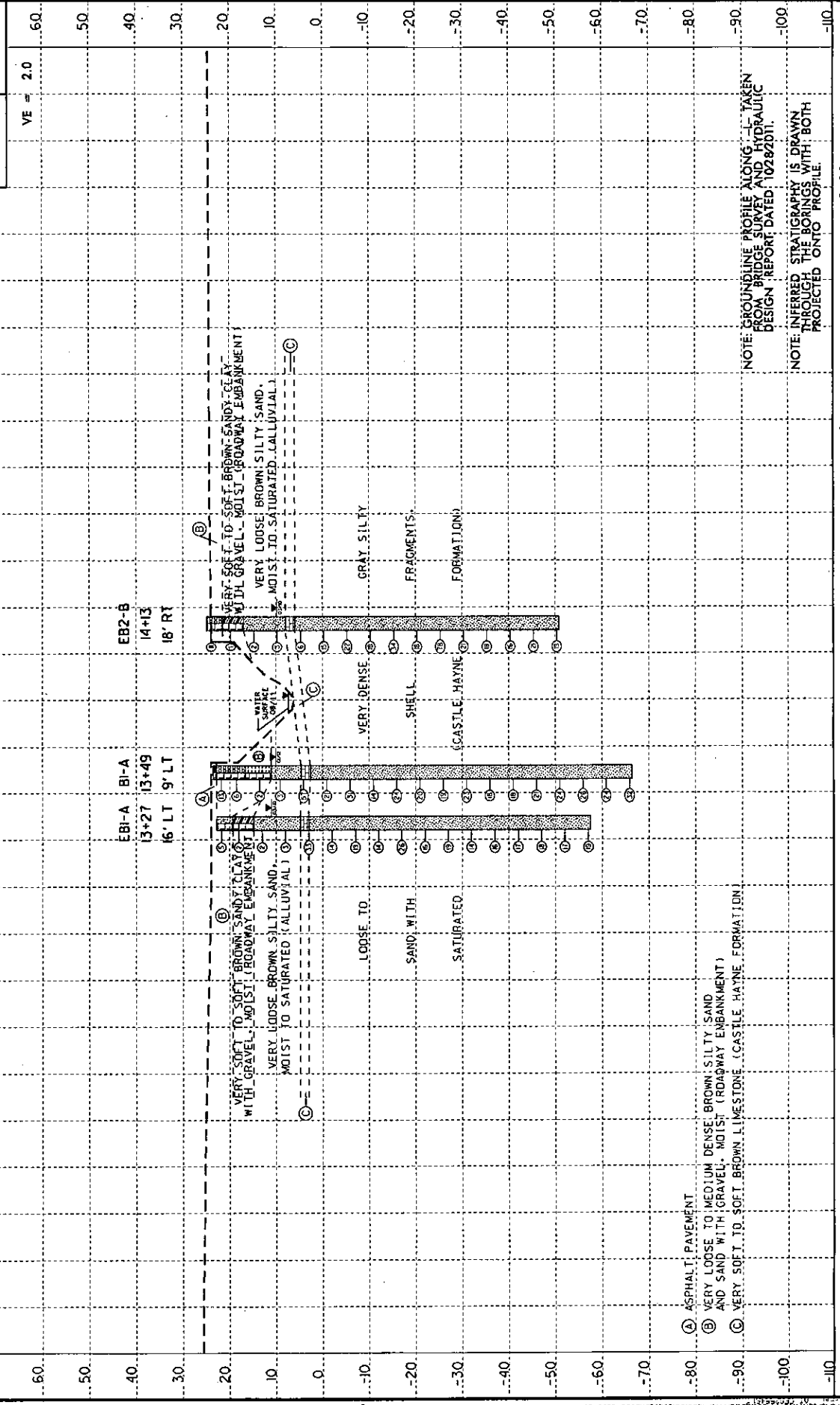


PROJECT REFERENCE NO. **80-5027**
 ROADWAY DESIGN
 INCHES

SHEET NO. **4 OF 7**
 HYDRAULIC
 DESIGNER

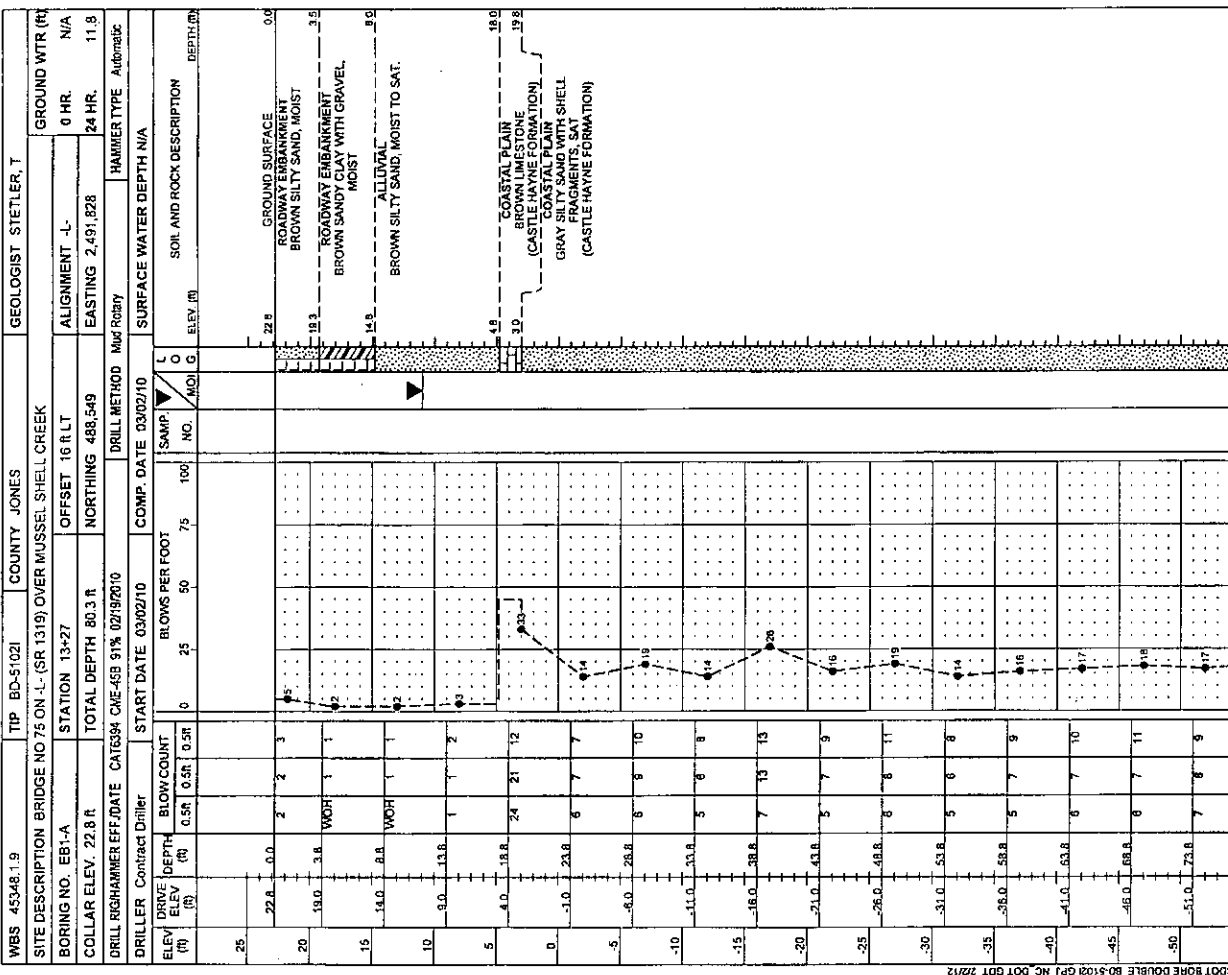
INCOMPLETE PLANS
 DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

PROFILE THROUGH BORINGS PROJECTED ALONG -L-



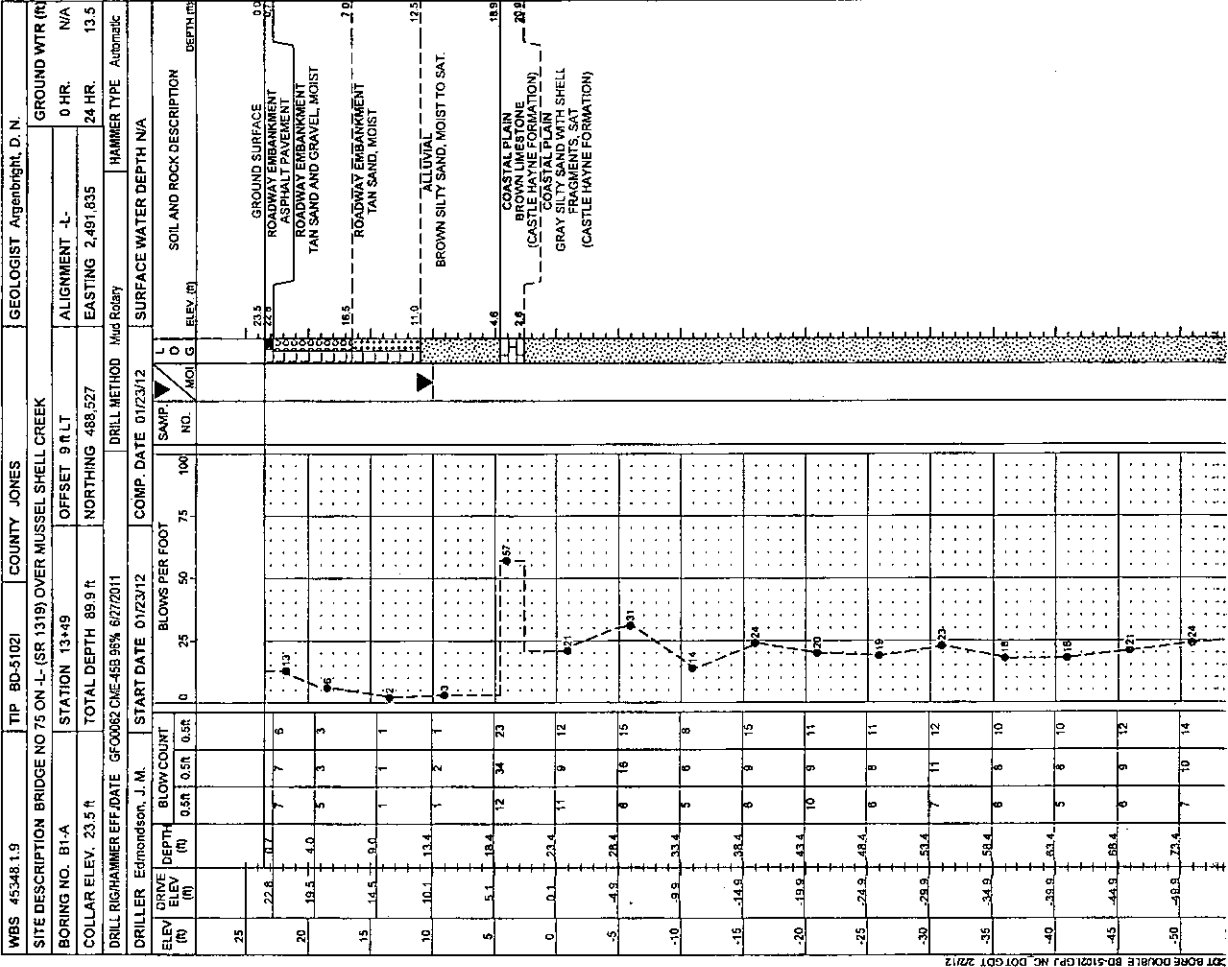
NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 45348.1.9		TIP BD-51021		COUNTY JONES		GEOLOGIST STETLER, T	
SITE DESCRIPTION BRIDGE NO 75 ON -L- (SR 1319) OVER MUSSEL SHELL CREEK							
BORING NO. EB1-A		STATION 13+27		OFFSET 16 R LT		ALIGNMENT -L-	
COLLAR ELEV. 22.8 R		TOTAL DEPTH 80.3 R		NORTHING 488,549		EASTING 2,491,828	
DRILL RIG/HAMMER EFF./DATE CAT394 CME-458 91% 02/19/2010		DRILL METHOD Mud Rotary		START DATE 03/02/10		SURFACE WATER DEPTH N/A	
DRILLER Contract Driller		COMP. DATE 03/02/10		SAMP. NO.		GROUND WTR (R)	
ELEV (ft)		BLOW COUNT		BLOWS PER FOOT		SOIL AND ROCK DESCRIPTION	
DRIVE ELEV (ft)		0.5R 0.5R 0.5R		0 25 50 75 100		0 HR. N/A	
DEPTH (ft)		0.5R 0.5R 0.5R		0 25 50 75 100		24 HR. 11.8	
DEPTH (ft)		0.5R 0.5R 0.5R		0 25 50 75 100		HAMMER TYPE Automatic	
DEPTH (ft)		0.5R 0.5R 0.5R		0 25 50 75 100		SURFACE WATER DEPTH N/A	
DEPTH (ft)		0.5R 0.5R 0.5R		0 25 50 75 100		SOIL AND ROCK DESCRIPTION	
DEPTH (ft)		0.5R 0.5R 0.5R		0 25 50 75 100		Match Line	
DEPTH (ft)		0.5R 0.5R 0.5R		0 25 50 75 100		Boring Terminated at Elevation -57.5 ft in medium dense sand	



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 45348.1.9		TIP BD-51021		COUNTY JONES		GEOLOGIST Aggenbright, D. N.	
SITE DESCRIPTION BRIDGE NO 75 ON -L- (SR 1319) OVER MUSSEL SHELL CREEK							
BORING NO. B1-A		STATION 13+49		OFFSET 9 ft LT		ALIGNMENT -L-	
COLLAR ELEV. 23.5 ft		TOTAL DEPTH 89.9 ft		NORTHING 488,527		EASTING 2,491,835	
DRILL RIG/HAMMER EFF./DATE GFO0082 ONE-488 95% 8/27/2011		START DATE 01/23/12		COMP. DATE 01/23/12		SURFACE WATER DEPTH N/A	
DRILLER Edmondson, J. M.		DRILL METHOD Mid Rotary		HAMMER TYPE Automatic		GROUND WTR (R) 0 HR. N/A	
DRIVE ELEV (ft)		BLOW COUNT		BLOWS PER FOOT		SOIL AND ROCK DESCRIPTION	
ELEV (ft)		0 0.5R 0.5L 0.5R		0 25 50 75 100		SAMP NO. / (ft) G	
25	22.8	7	5				
20	19.5	5	3				
15	14.5	1	1				
10	10.1	1	2				
5	5.1	12	34				
0	0.1	11	9				
-5	-4.9	6	15				
-10	-9.5	5	8				
-15	-14.5	6	15				
-20	-19.5	10	11				
-25	-24.5	6	11				
-30	-29.5	7	12				
-35	-34.5	6	10				
-40	-39.5	5	10				
-45	-44.5	6	12				
-50	-49.5	7	14				



DRIVE ELEV (ft) 22.8, 19.5, 14.5, 10.1, 5.1, 0.1, -4.9, -9.5, -14.5, -19.5, -24.5, -29.5, -34.5, -39.5, -44.5, -49.5

BLOW COUNT 7, 5, 1, 1, 12, 11, 6, 5, 10, 9, 11, 6, 7, 6, 5, 7, 10, 14

BLOWS PER FOOT 0, 0.5R, 0.5L, 0.5R 0, 25, 50, 75, 100

SOIL AND ROCK DESCRIPTION ROADWAY EMBANKMENT (TAN SAND AND GRAVEL, MOIST), ALLUVIAL BROWN SILTY SAND, MOIST TO SAT., COASTAL LIMESTONE (CASTLE HAYNE FORMATION), COASTAL PLAIN GRAY SILTY SAND WITH SHELL FRAGMENTS, SAT (CASTLE HAYNE FORMATION), COASTAL PLAIN GRAY SILTY SAND WITH SHELL FRAGMENTS, SAT (CASTLE HAYNE FORMATION)

Match Line

COASTAL PLAIN GRAY SILTY SAND WITH SHELL FRAGMENTS, SAT (CASTLE HAYNE FORMATION)

Boring Terminated at Elevation 56.4 ft in dense sand

NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

WBS 45348.1.9		TIP BD-51021		COUNTY JONES		GEOLOGIST STETLER, T	
SITE DESCRIPTION BRIDGE NO 75 ON -L-, (SR 1319) OVER MUSSEL SHELL CREEK							
BORING NO. EB2-B		STATION 14+13		OFFSET 18 R RT		ALIGNMENT -L-	
COLLAR ELEV. 24.9 R		TOTAL DEPTH 75.7 R		NORTHING 488.459		EASTING 2,491,851	
DRILL RIG/MANUFACTURE CAT8394 CME-458 91% 02/19/2010		START DATE 03/01/10		COMP. DATE 03/01/10		SURFACE WATER DEPTH N/A	
DRILLER Contract Driller		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		GROUND WTR (ft)	
						0 HR. N/A	
						24 HR. 15.2	

ELEV. (ft)	DRIVE ELEV. (ft)	BLOW COUNT	BLOWS PER FOOT	SAMP. NO.	L	O	M	D	G	ELEV. (ft)	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
25	24.9	0	0							24.9	GROUND SURFACE	0.0
20	20.7	4	11							21.4	ROADWAY EMBANKMENT TAN SAND AND GRAVEL, MOIST	3.5
15	15.7	4	15							18.9	ROADWAY EMBANKMENT BROWN SANDY CLAY, MOIST	8.0
10	10.7	4	16							17.0	ALLOUVIAL BROWN SILTY SAND, MOIST TO SAT.	17.0
5	5.7	4	19							19.9	COASTAL PLAIN BROWN LIMESTONE (CASTLE HAYNE FORMATION)	19.9
0	0.7	4	27							29.9	COASTAL PLAIN GRAY SILTY SAND WITH SHELL FRAGMENTS, SAT (CASTLE HAYNE FORMATION)	29.9
-5	-4.3	7	34									
-10	-9.3	7	39									
-15	-14.3	8	48									
-20	-19.3	7	66									
-25	-24.3	7	70									
-30	-29.3	8	10									
-35	-34.3	7	9									
-40	-39.3	7	8									
-45	-44.3	8	10									
-50	-49.3	6	9									

Boring terminated at Elevation -50.8 ft in medium dense sand