

REFERENCE: B-5156

PROJECT: 42331

CONTENTS

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE(S)
5-9	CROSS SECTION(S)
10-14	BORE LOG(S)
15	SOIL TEST RESULT(S)
16	SITE PHOTOGRAPHS)

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY PENDER
 SITE DESCRIPTION REPLACE BRIDGE NO. 28 OVER
LONG CREEK ON NC 210 AT -L- 22+90.50

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5156	1	16

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

M. DURWAY

CAROLINA DRILLING:

G. EISTER

S. MAYNARD

INVESTIGATED BY F&R, Inc.

DRAWN BY T.T. WALKER

CHECKED BY D. RACEY

SUBMITTED BY P. ALTON, P.E.

DATE AUGUST 2019

SINCE **Prepared in the Office of:**
F&R FROEHLING & ROBERTSON, INC.
 Engineering Stability Since 1881
 310 Hubert Street
 Raleigh, North Carolina 27603-2302 | USA
 T 919.828.3441 | F 919.828.5751
 www.fandr.com



DocuSigned by:

Patrick Alton

10/26/2022

A270EF78A687649

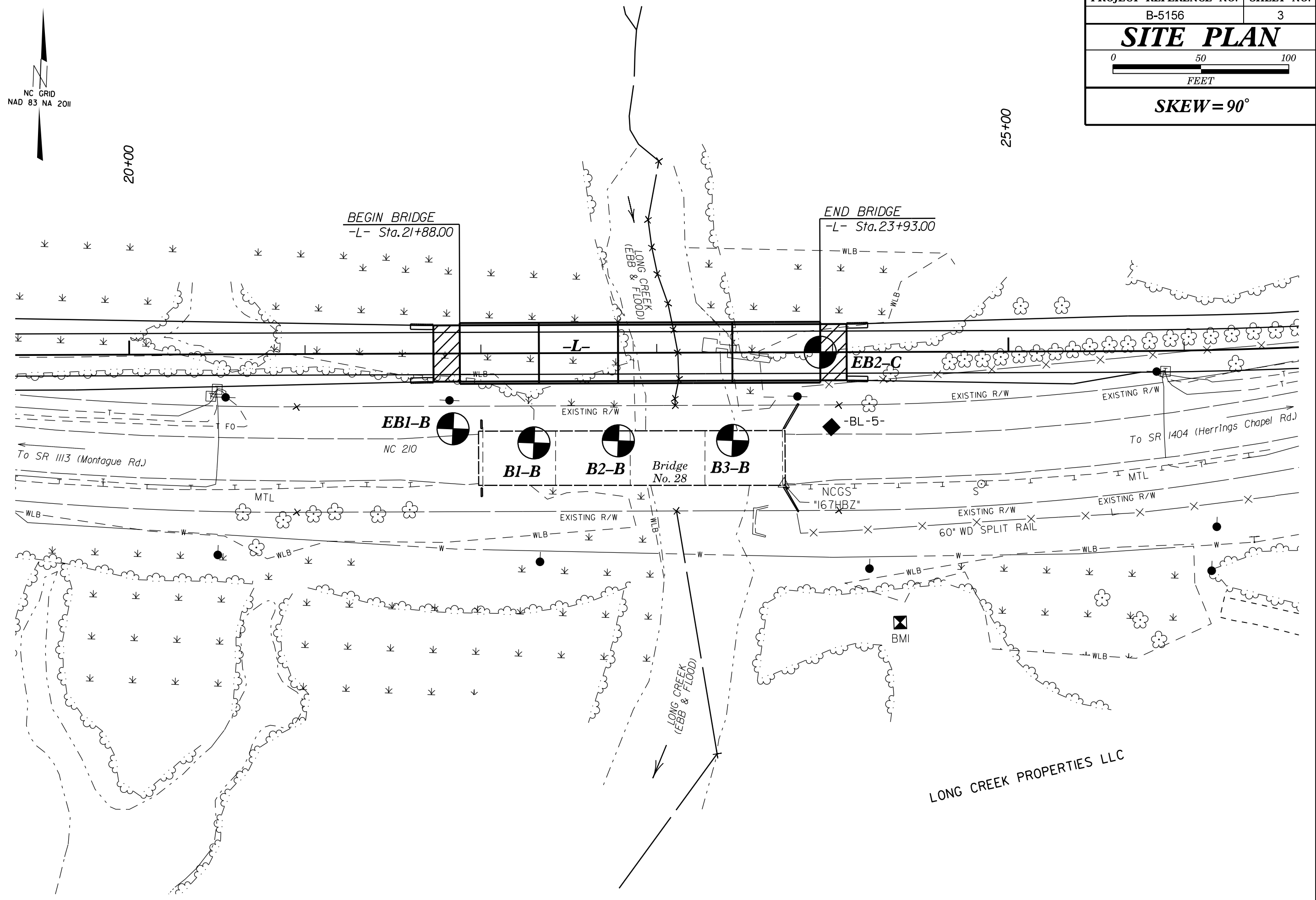
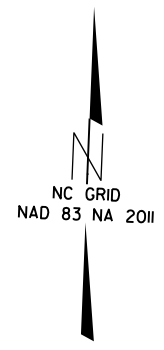
DATE

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

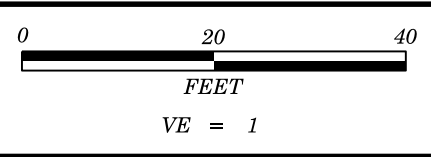
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with multiple columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, EQUIPMENT USED ON SUBJECT PROJECT, ROCK HARDNESS, FRACTURE SPACING, BEDDING, INDURATION.

PROJECT REFERENCE NO.	SHEET NO.
B-5156	3
SITE PLAN	
SKEW = 90°	

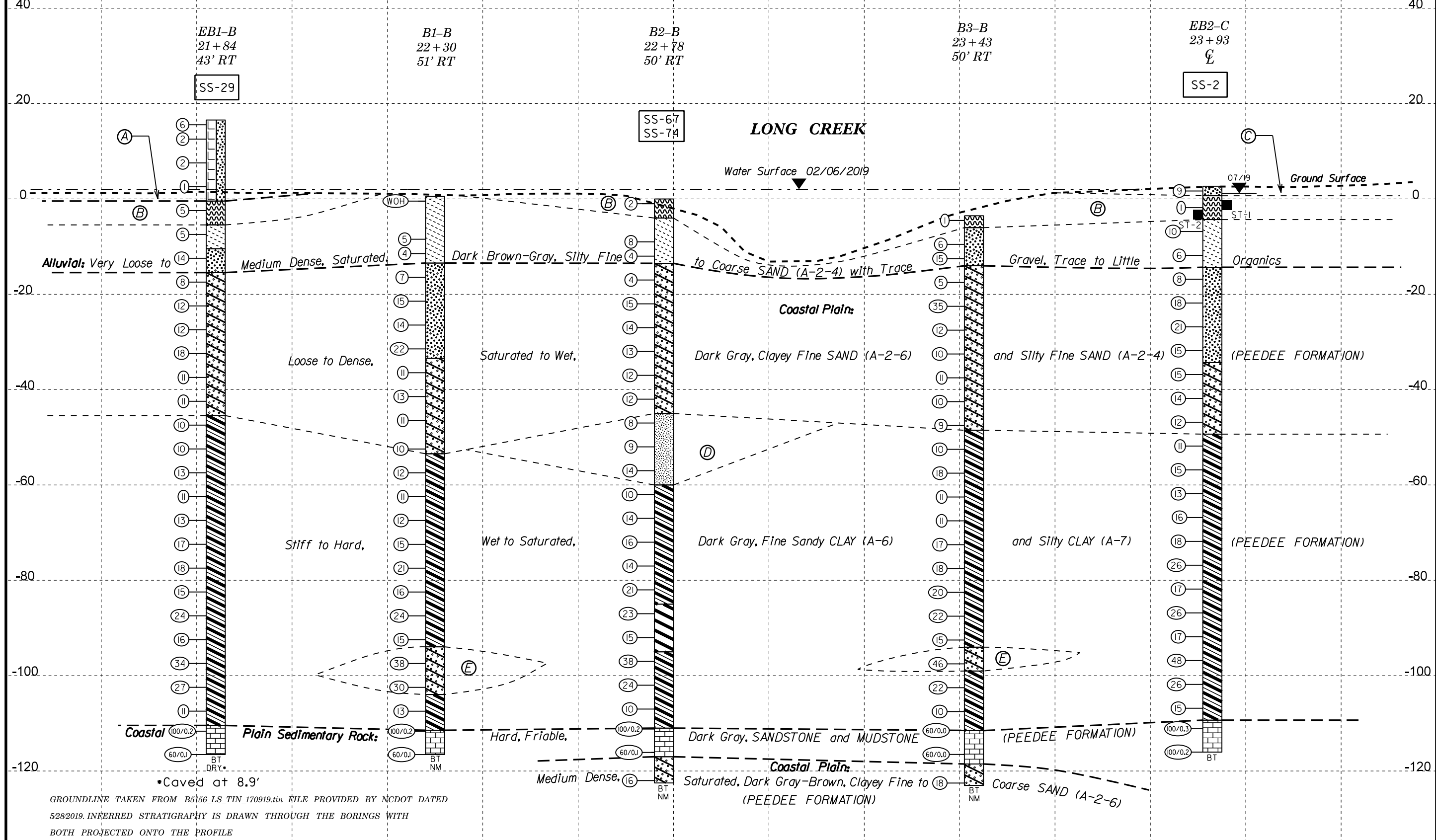


LONG CREEK PROPERTIES LLC



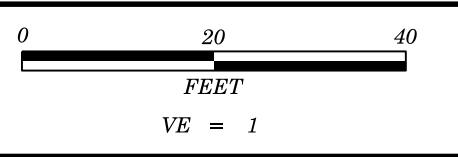
PROJECT REFERENCE NO.	SHEET NO.
B-5156	4
PROFILE BORINGS PROJECTED ALONG -L-	

- (A) **Roadway Embankment:** Very Loose to Loose, Moist to Saturated, Tan-Orange-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel
- (B) **Alluvial:** Very Soft to Medium Stiff, Saturated, Brown, MUCK with Trace Gravel
- (C) **Alluvial:** Loose, Gray-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics
- (D) **Coastal Plain:** Medium Stiff to Stiff, Saturated, Dark Gray, Clayey Fine Sandy SILT (A-4) with Trace Organics (PEEDEE FORMATION)
- (E) **Coastal Plain:** Medium Dense to Dense, Wet to Saturated, Dark Gray, Clayey Fine SAND (A-2-6) (PEEDEE FORMATION)

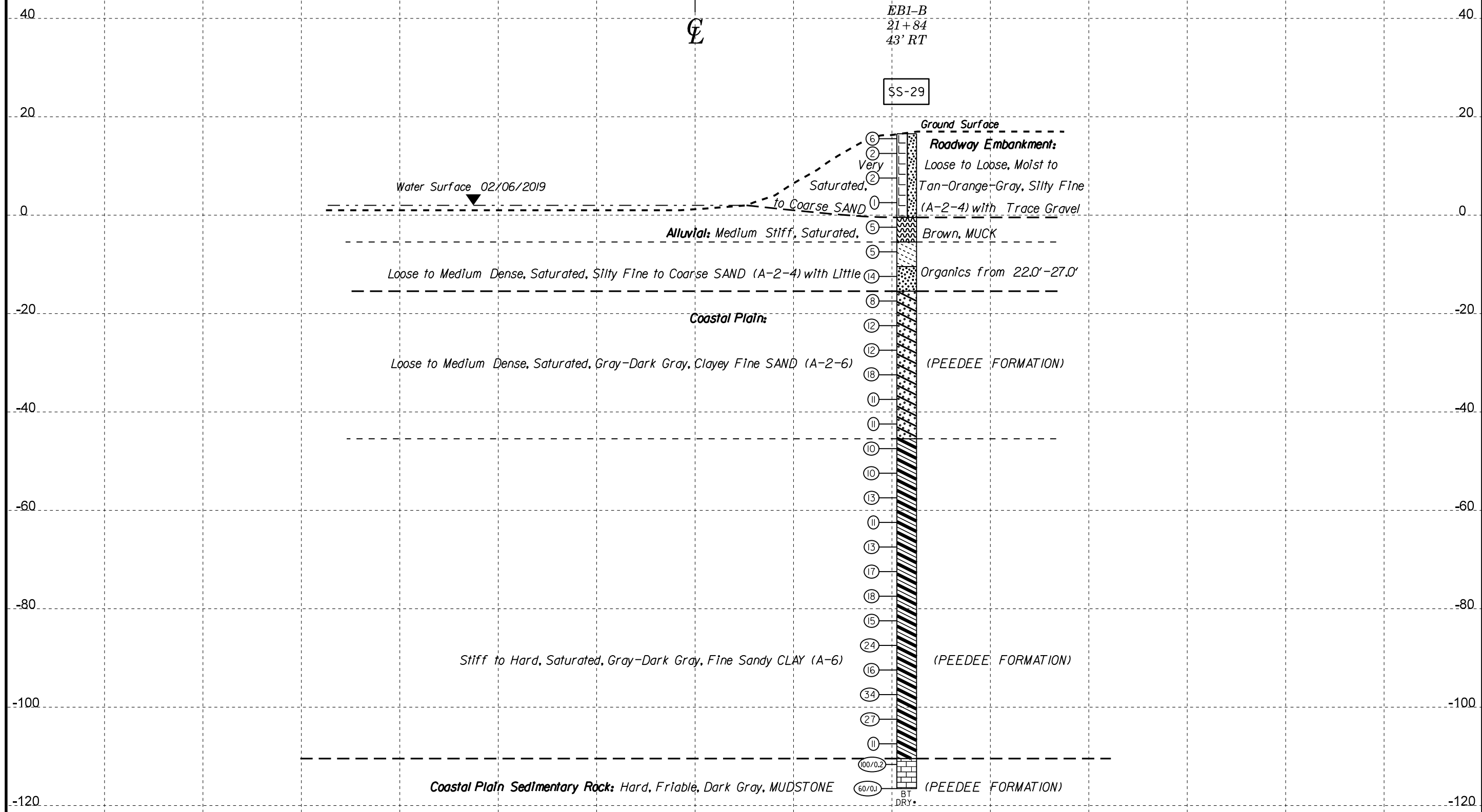


*Caved at 8.9'

GROUNDLINE TAKEN FROM B5156_LS_TIN_170919.tin FILE PROVIDED BY NCDOT DATED 5/28/2019. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

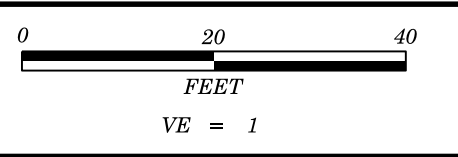


PROJECT REFERENCE NO.	SHEET NO.
B-5156	5
CROSS SECTION THROUGH END BENT 1	
AT -L- STATION 21+88	
SKEW = 90°	

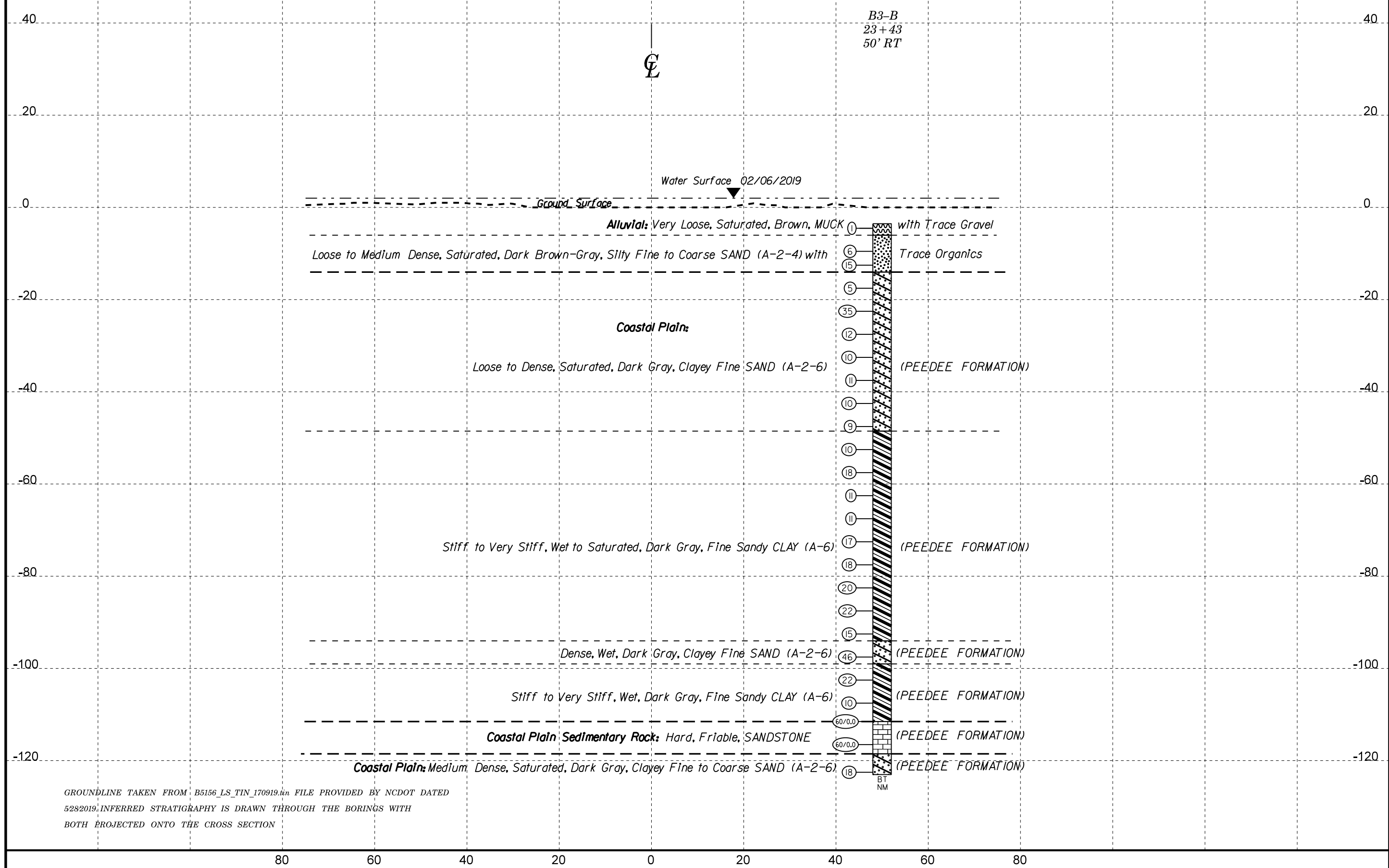


GROUNDLINE TAKEN FROM B5156_LS_TIN_170919.tin FILE PROVIDED BY NCDOT DATED 5/28/2019. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

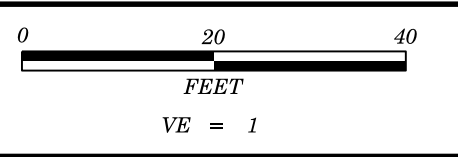
80 60 40 20 0 20 40 60 80



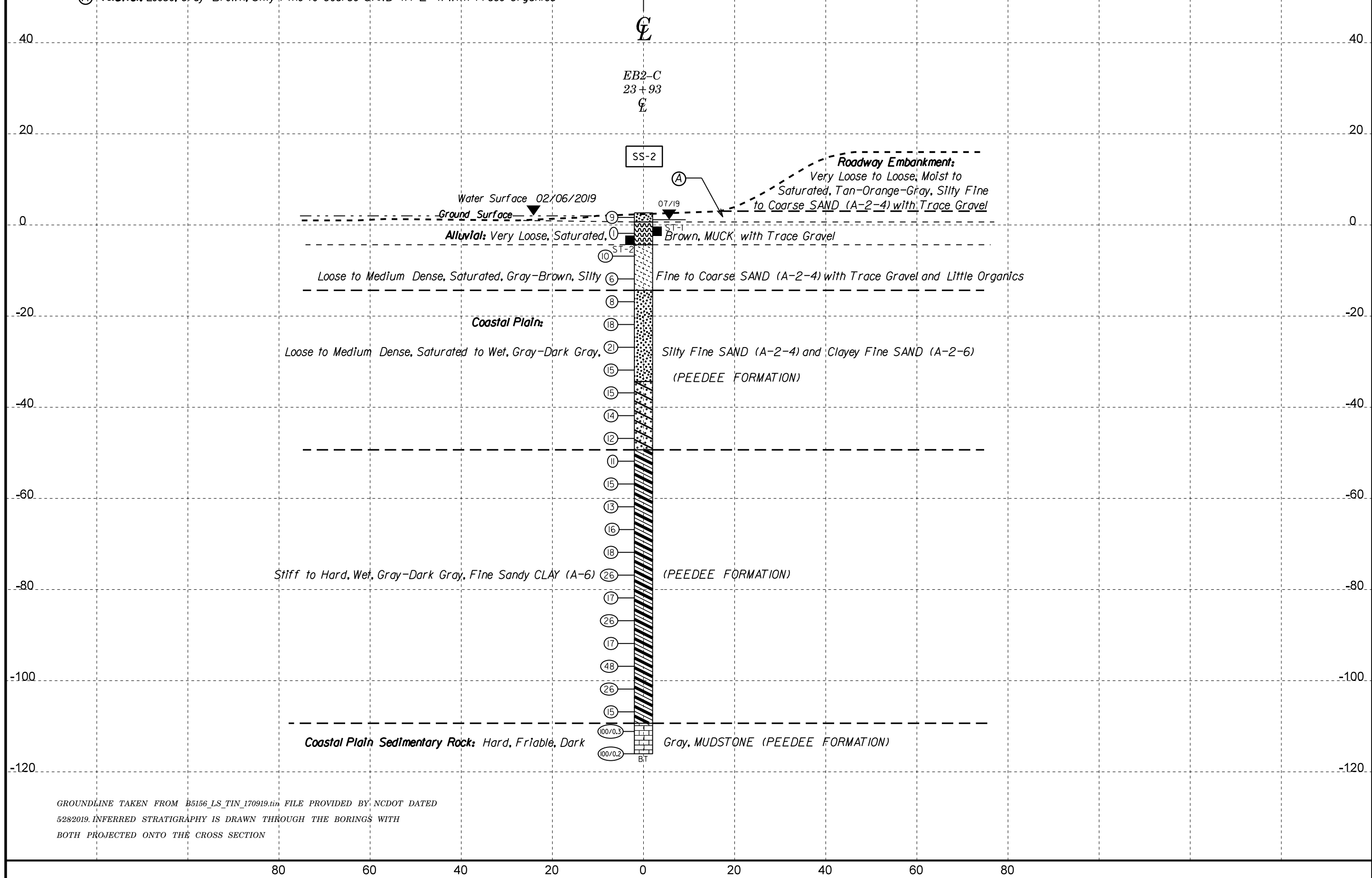
PROJECT REFERENCE NO.	SHEET NO.
B-5156	8
CROSS SECTION THROUGH BENT 3	
AT -L- STATION 23+43	
SKEW = 90°	



GROUNDLINE TAKEN FROM B5156_LS_TIN_170919.in FILE PROVIDED BY NCDOT DATED 5/28/2019. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION



PROJECT REFERENCE NO.	SHEET NO.
B-5156	9
CROSS SECTION THROUGH END BENT 2	
AT -L- STATION 23+93	
SKEW = 90°	



GROUNDLINE TAKEN FROM B5156_LS_TIN_170919.tin FILE PROVIDED BY NCDOT DATED 5/28/2019. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE CROSS SECTION

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 42331.1.2		TIP B-5156		COUNTY PENDER		GEOLOGIST M. Durway										
SITE DESCRIPTION Replace Bridge 28 over Long Creek on NC 210 at -L- 22+90.50							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 21+84		OFFSET 43 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 16.6 ft		TOTAL DEPTH 133.1 ft		NORTHING 252,303		EASTING 2,293,587										
DRILL RIG/HAMMER EFF./DATE BRI0674 CME-45C 95% 06/12/2019			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic										
DRILLER G. Eister		START DATE 07/10/19		COMP. DATE 07/11/19		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						
20																
	16.6	0.0	3	3	3										16.6	GROUND SURFACE
15	13.6	3.0	1	1	1											ROADWAY EMBANKMENT Tan-Orange-Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel
10	8.6	8.0	1	0	2											
5	3.6	13.0	1	0	1											
0	-1.5	18.0	1	2	3										-0.5	ALLUVIAL Brown, MUCK
-5	-6.5	23.0	3	3	2										-5.5	Gray, Silty Fine SAND (A-2-4) with Little Organics
-10	-11.5	28.0	7	6	8										-10.5	Gray, Silty Fine to Coarse SAND (A-2-4)
-15	-16.5	33.0	4	4	4										-15.5	COASTAL PLAIN Gray-Dark Gray, Clayey Fine SAND (A-2-6) (PEEDEE FORMATION)
-20	-21.5	38.0	5	5	7											
-25	-26.5	43.0	7	5	7											
-30	-31.5	48.0	7	8	10											
-35	-36.5	53.0	6	5	6											
-40	-41.5	58.0	6	5	6											
-45	-46.5	63.0	5	5	5										-45.5	Gray-Dark Gray, Fine Sandy CLAY (A-6) (PEEDEE FORMATION)
-50	-51.5	68.0	4	5	5											
-55	-56.5	73.0	4	6	7											
-60																

WBS 42331.1.2		TIP B-5156		COUNTY PENDER		GEOLOGIST M. Durway										
SITE DESCRIPTION Replace Bridge 28 over Long Creek on NC 210 at -L- 22+90.50							GROUND WTR (ft)									
BORING NO. EB1-B		STATION 21+84		OFFSET 43 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 16.6 ft		TOTAL DEPTH 133.1 ft		NORTHING 252,303		EASTING 2,293,587										
DRILL RIG/HAMMER EFF./DATE BRI0674 CME-45C 95% 06/12/2019			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic										
DRILLER G. Eister		START DATE 07/10/19		COMP. DATE 07/11/19		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						
-60																
	-61.5	78.0	5	5	6											Match Line
-65	-66.5	83.0	6	5	8											Gray-Dark Gray, Fine Sandy CLAY (A-6) (PEEDEE FORMATION) (continued)
-70	-71.5	88.0	6	8	9											
-75	-76.5	93.0	6	9	9											
-80	-81.5	98.0	7	7	8											
-85	-86.5	103.0	9	10	14											
-90	-91.5	108.0	8	7	9											
-95	-96.5	113.0	14	16	18											
-100	-101.5	118.0	11	13	14											
-105	-106.5	123.0	6	5	6											
-110	-111.5	128.0	100/0.2												-110.5	COASTAL PLAIN SEDIMENTARY ROCK Dark Gray, MUDSTONE (PEEDEE FORMATION)
-115	-116.5	133.0	60/0.1												-116.6	Boring Terminated at Elevation -116.6 ft in SEDIMENTARY ROCK (COASTAL PLAIN) Note: Surficial Organic Soil: 0.0-0.3'

NCDOT BORE DOUBLE B-5156_GEO_BH_BRD0028.GPJ NC_DOT_GDT_8/27/19

GEOTECHNICAL BORING REPORT

BORE LOG

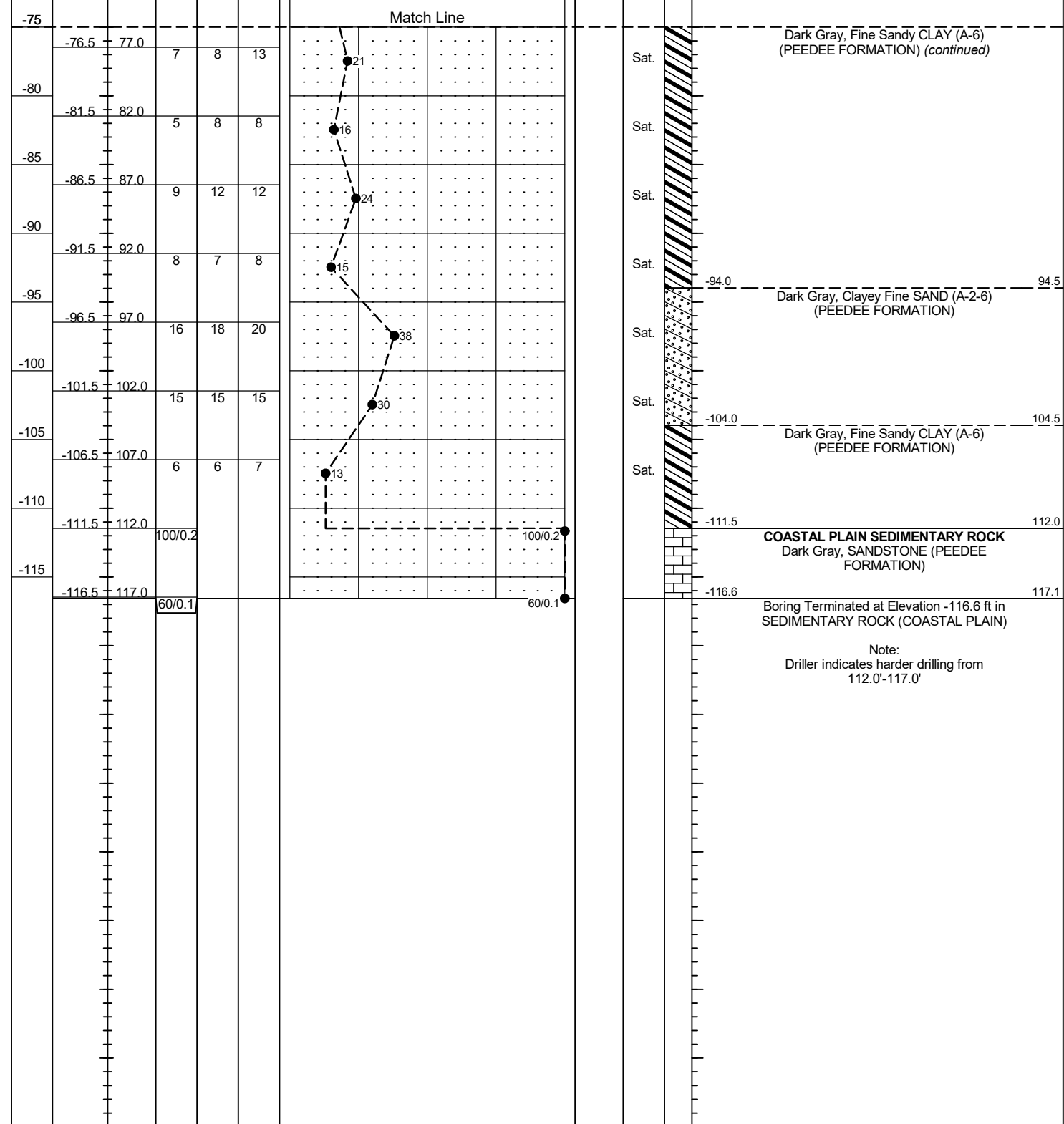
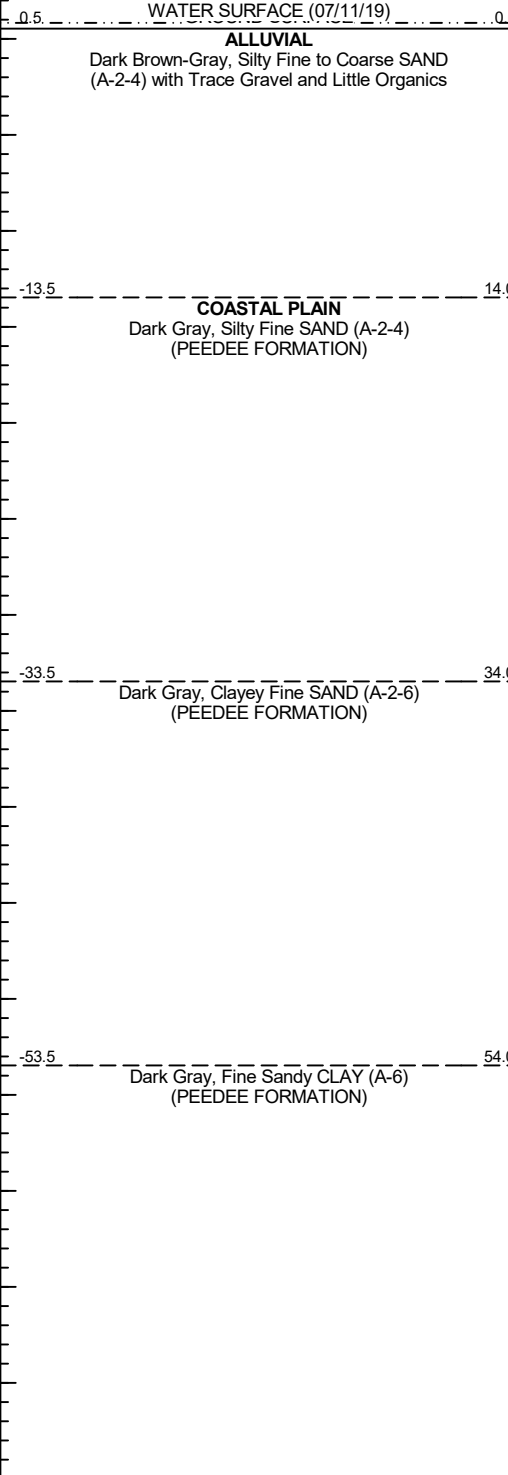
WBS 42331.1.2		TIP B-5156		COUNTY PENDER		GEOLOGIST M. Durway	
SITE DESCRIPTION Replace Bridge 28 over Long Creek on NC 210 at -L- 22+90.50							GROUND WTR (ft)
BORING NO. B1-B		STATION 22+30		OFFSET 51 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 0.5 ft		TOTAL DEPTH 117.1 ft		NORTHING 252,297		EASTING 2,293,633	
DRILL RIG/HAMMER EFF./DATE BRI0674 CME-45C 95% 06/12/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER G. Eister		START DATE 07/11/19		COMP. DATE 07/12/19		SURFACE WATER DEPTH 0.3ft	

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															
0	0.5	0.0	WOH	WOH	WOH										
-5	-7.5	8.0													
-10	-10.5	11.0													
-15	-15.5	16.0													
-20	-20.5	21.0													
-25	-25.5	26.0													
-30	-30.5	31.0													
-35	-35.5	36.0													
-40	-40.5	41.0													
-45	-45.5	46.0													
-50	-51.5	52.0													
-55	-56.5	57.0													
-60	-61.5	62.0													
-65	-66.5	67.0													
-70	-71.5	72.0													
-75															

WBS 42331.1.2		TIP B-5156		COUNTY PENDER		GEOLOGIST M. Durway	
SITE DESCRIPTION Replace Bridge 28 over Long Creek on NC 210 at -L- 22+90.50							GROUND WTR (ft)
BORING NO. B1-B		STATION 22+30		OFFSET 51 ft RT		ALIGNMENT -L-	
COLLAR ELEV. 0.5 ft		TOTAL DEPTH 117.1 ft		NORTHING 252,297		EASTING 2,293,633	
DRILL RIG/HAMMER EFF./DATE BRI0674 CME-45C 95% 06/12/2019			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER G. Eister		START DATE 07/11/19		COMP. DATE 07/12/19		SURFACE WATER DEPTH 0.3ft	

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					
-75															
-76.5	77.0	77.0	7	8	13										
-80	-81.5	82.0	5	8	8										
-85	-86.5	87.0	9	12	12										
-90	-91.5	92.0	8	7	8										
-95	-96.5	97.0	16	18	20										
-100	-101.5	102.0	15	15	15										
-105	-106.5	107.0	6	6	7										
-110	-111.5	112.0													
-115	-116.5	117.0	60/0.1												

NCDOT BORE DOUBLE B-5156_GEO_BH_BRDG0028.GPJ NC_DOT_GDT_8/27/19



Note:
Driller indicates harder drilling from 112.0'-117.0'

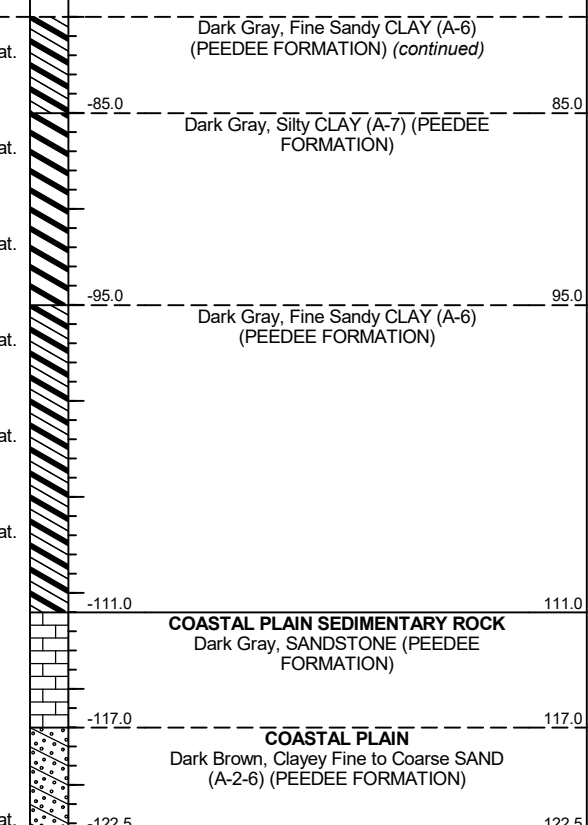
GEOTECHNICAL BORING REPORT

BORE LOG

WBS 42331.1.2		TIP B-5156		COUNTY PENDER		GEOLOGIST M. Durway										
SITE DESCRIPTION Replace Bridge 28 over Long Creek on NC 210 at -L- 22+90.50							GROUND WTR (ft)									
BORING NO. B2-B		STATION 22+78		OFFSET 50 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 0.0 ft		TOTAL DEPTH 122.5 ft		NORTHING 252,300		EASTING 2,293,681										
DRILL RIG/HAMMER EFF./DATE BRI0674 CME-45C 95% 06/12/2019			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic										
DRILLER G. Eister		START DATE 07/15/19		COMP. DATE 07/16/19		SURFACE WATER DEPTH 1.8ft										
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						
0	0.0	0.0	1	1	1										0.0	0.0
-5																
-10	-8.0	8.0	6	4	4											
-15	-11.0	11.0	4	2	2											
-20	-16.0	16.0	2	2	2											
-25	-21.0	21.0	4	6	9											
-30	-26.0	26.0	5	6	8											
-35	-31.0	31.0	7	7	6											
-40	-36.0	36.0	6	6	6											
-45	-41.0	41.0	5	6	6											
-50	-46.0	46.0	4	4	4											
-55	-51.0	51.0	4	4	5											
-60	-56.0	56.0	5	5	9											
-65	-61.0	61.0	5	4	6											
-70	-66.0	66.0	5	7	7											
-75	-71.0	71.0	6	8	8											
-80	-76.0	76.0	6	7	7											

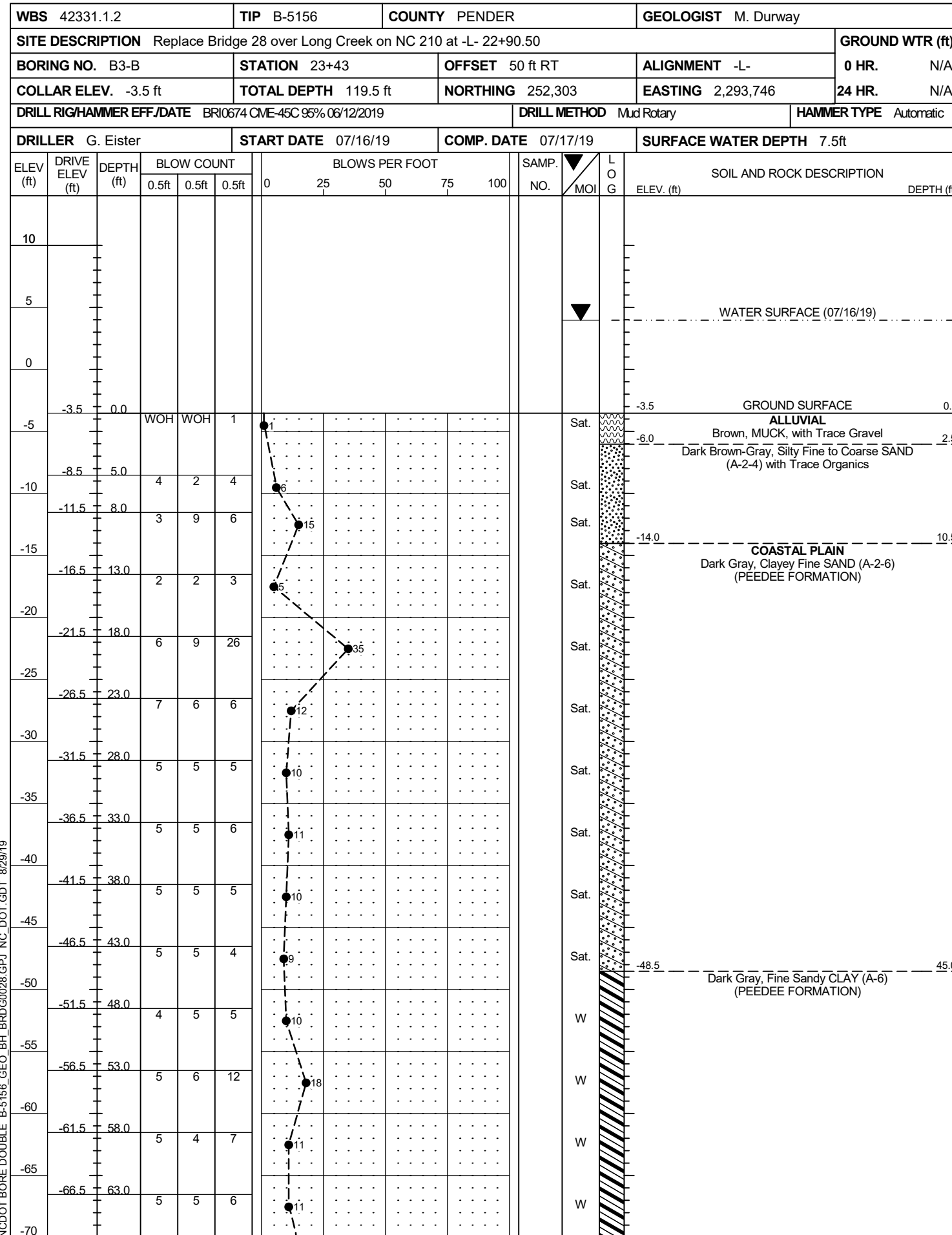
WBS 42331.1.2		TIP B-5156		COUNTY PENDER		GEOLOGIST M. Durway										
SITE DESCRIPTION Replace Bridge 28 over Long Creek on NC 210 at -L- 22+90.50							GROUND WTR (ft)									
BORING NO. B2-B		STATION 22+78		OFFSET 50 ft RT		ALIGNMENT -L-										
COLLAR ELEV. 0.0 ft		TOTAL DEPTH 122.5 ft		NORTHING 252,300		EASTING 2,293,681										
DRILL RIG/HAMMER EFF./DATE BRI0674 CME-45C 95% 06/12/2019			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic										
DRILLER G. Eister		START DATE 07/15/19		COMP. DATE 07/16/19		SURFACE WATER DEPTH 1.8ft										
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						
-80	-81.0	81.0	7	8	13											
-85	-86.0	86.0	9	12	11											
-90	-91.0	91.0	7	7	8											
-95	-96.0	96.0	19	17	21											
-100	-101.0	101.0	11	12	12											
-105	-106.0	106.0	5	5	5											
-110	-111.0	111.0	100/0.2													
-115	-116.0	116.0	60/0.1													
-120	-121.0	121.0	6	6	10											

NCDOT BORE DOUBLE B-5156_GEO_BH_BRD0028.GPJ NC_DOT_GDT_8/29/19

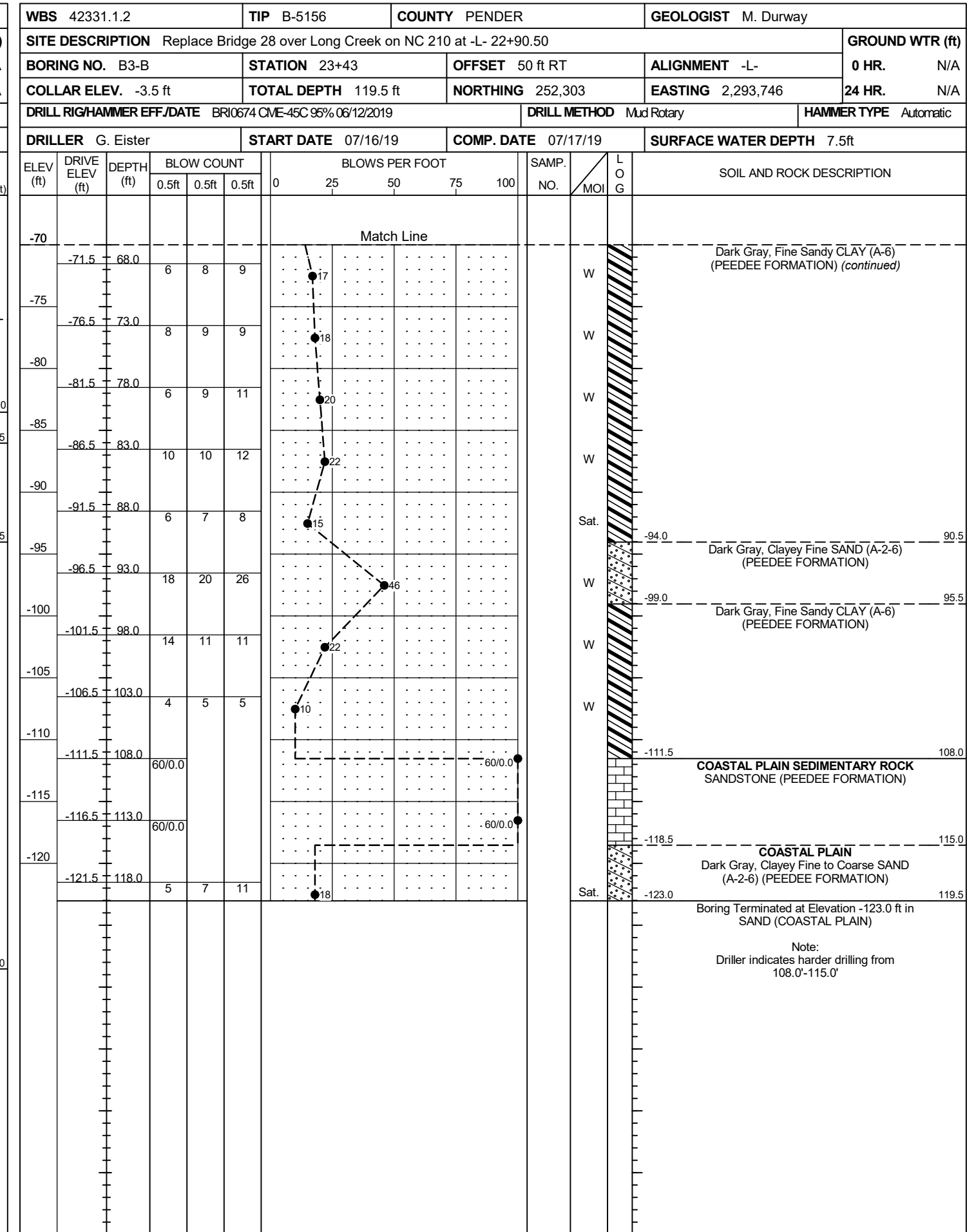


GEOTECHNICAL BORING REPORT

BORE LOG



NCDOT BORE DOUBLE B-5156_GEO_BH_BRD0028.GPJ NC_DOT_GDT_8/29/19



Note:
Driller indicates harder drilling from 108.0'-115.0'

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 42331.1.2		TIP B-5156		COUNTY PENDER		GEOLOGIST M. Durway	
SITE DESCRIPTION Replace Bridge 28 over Long Creek on NC 210 at -L- 22+90.50							GROUND WTR (ft)
BORING NO. EB2-C		STATION 23+93		OFFSET CL		ALIGNMENT -L-	
COLLAR ELEV. 2.7 ft		TOTAL DEPTH 118.7 ft		NORTHING 252,355		EASTING 2,293,794	
DRILL RIG/HAMMER EFF./DATE BRI0674 CME-45C 95% 06/12/2019			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic	
DRILLER G. Eister		START DATE 07/09/19		COMP. DATE 07/09/19		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					
5															
	2.7	0.0		4	4	5								2.7	GROUND SURFACE
0	-0.8	3.5	WOH	WOH	1								SS-2	96%	ALLUVIAL Gray-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics Brown, MUCK, with Trace Gravel
-5	-5.8	8.5		7	5	5							Sat.		Gray-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel and Little Organics
-10	-10.8	13.5		3	2	4							Sat.		
-15	-15.8	18.5		3	4	4							Sat.		COASTAL PLAIN Gray-Dark Gray, Silty Fine SAND (A-2-4) (PEEDEE FORMATION)
-20	-20.8	23.5		6	8	10							Sat.		
-25	-25.8	28.5		7	9	12							Sat.		
-30	-30.8	33.5		7	7	8							Sat.		
-35	-35.8	38.5		7	8	7							Sat.		Gray-Dark Gray, Clayey Fine SAND (A-2-6) (PEEDEE FORMATION)
-40	-40.8	43.5		5	7	7							W		
-45	-45.8	48.5		5	5	7							W		
-50	-50.8	53.5		4	6	5							W		
-55	-55.8	58.5		5	7	8							W		
-60	-60.8	63.5		6	6	7							W		
-65	-65.8	68.5		6	8	8							W		
-70	-70.8	73.5		7	9	9							W		
-75													W		

WBS 42331.1.2		TIP B-5156		COUNTY PENDER		GEOLOGIST M. Durway	
SITE DESCRIPTION Replace Bridge 28 over Long Creek on NC 210 at -L- 22+90.50							GROUND WTR (ft)
BORING NO. EB2-C		STATION 23+93		OFFSET CL		ALIGNMENT -L-	
COLLAR ELEV. 2.7 ft		TOTAL DEPTH 118.7 ft		NORTHING 252,355		EASTING 2,293,794	
DRILL RIG/HAMMER EFF./DATE BRI0674 CME-45C 95% 06/12/2019			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic	
DRILLER G. Eister		START DATE 07/09/19		COMP. DATE 07/09/19		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					
-75	-75.8	78.5		9	11	15									
-80	-80.8	83.5		7	7	10									
-85	-85.8	88.5		11	12	14									
-90	-90.8	93.5		7	7	10									
-95	-95.8	98.5		19	21	27									
-100	-100.8	103.5		14	14	12									
-105	-105.8	108.5		7	6	9									
-110	-110.8	113.5		100/0.3											
-115	-115.8	118.5		100/0.2											

Match Line

Gray-Dark Gray, Fine Sandy CLAY (A-6)
(PEEDEE FORMATION) (continued)

-109.3 COASTAL PLAIN SEDIMENTARY ROCK
Dark Gray-Gray, MUDSTONE (PEEDEE FORMATION)

-116.0 Boring Terminated at Elevation -116.0 ft in
SEDIMENTARY ROCK (COASTAL PLAIN)

Notes:
1. Surficial Organic Soil: 0.0-0.3'
Shelby tubes obtained in offset boring
23+91 (-L-) CL:
ST-1: 3.0'-5.0' (Not tested)
ST-2: 5.0'-7.0' (Tested)

NCDOT BORE DOUBLE B-5156_GEO_BH_BRDG0028.GPJ NC_DOT_GDT_8/28/19

**North Carolina Department of Transportation
Division of Highways
Materials and Test Unit
Soils Laboratory**

T.I.P. ID NO.: B-5156
DESCRIPTION: Replace Bridge 28 on NC 210 over Long Creek at -L- 22+90.50

REPORT ON SAMPLES OF: SOIL FOR QUALITY

F&R PROJECT #: 66X-0151
DATE SAMPLED: 7/19
SAMPLED FROM: -L-
SUBMITTED BY: P Alton

COUNTY: Pender
RECEIVED: 7/19
REPORTED: 8/19
BY: D. Council
Certification No.: 101-02-0603

TEST RESULTS

PROJ. SAMPLE NO.	SS-29	SS-67	SS-74	SS-2	ST-2								
BORING NO.	EB1-B	B2-B	B2-B	EB2-C	EB2-C								
Retained #4 Sieve %	NT	NT	0.0	NT	0.0								
Passing #10 Sieve %	NT	NT	100.0	NT	99.1								
Passing #40 Sieve %	NT	NT	100.0	NT	77.8								
Passing #200 Sieve %	NT	NT	62.5	NT	14.7								

SOIL MORTAR - 100%													
Coarse Sand Ret - #60 %	NT	NT	0.1	NT	32.0								
Fine Sand Ret - #270 %	NT	NT	65.5	NT	56.5								
Silt 0.053 - 0.010 mm %	NT	NT	17.5	NT	8.9								
Clay < 0.010 mm %	NT	NT	16.9	NT	2.6								
L.L.	ND	ND	27	ND	NP								
P.L.	ND	ND	23	ND	NP								
P.I.	ND	ND	4	ND	NP								
AASHTO Classification	ND	ND	A-4(1)	ND	A-2-4(0)								
Approximate Station	21+84	22+78	22+78	23+93	23+91								
Offset	43' RT	50' RT	50' RT	CL	CL								
Depth (ft)	18.0	0.0	46.0	3.5	5.0								
to	19.5	1.5	47.5	5.0	7.0								
Alignment	-L-	-L-	-L-	-L-	-L-								
Moisture Content (%)	206.5	82.7	24.8	95.6	66.2								
Organic Content (%)	43.4	19.3	1.9	10.3	30.4								

NP = Not plastic
NT = Not tested
ND = Not Determined
CL = Centerline

W.P. Alton, P.E.
Soils Engineer



Bridge No. 28 over Long Creek at -L- Station 22+90.50
SITE PHOTOGRAPHS



Photograph No. 1: View at existing Bent 3 looking northwest, drilling B2-B



Photograph No. 3: View looking west toward proposed End Bent 1



Photograph No. 2: View from existing End Bent 1 looking east at proposed End Bent 2



Photograph No. 4: View from existing End Bent 2 slope looking west toward proposed End Bent 1