

REFERENCE: B-4484

PROJECT: 33723

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY CRAVEN
PROJECT DESCRIPTION BRIDGE NOS. 138 AND 139 ON
SR 1470 (MAPLE CYPRESS RD.) OVER NEUSE RIVER
AND NEUSE RIVER OVERFLOW
SITE DESCRIPTION BRIDGE NO. 139 ON SR 1470
(MAPLE CYPRESS RD.) OVER NEUSE RIVER
OVERFLOW

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN(S)
4	PROFILE(S)
5-9	BORE LOGS(S)
10	SOIL TEST RESULTS
11	SITE PHOTO(S)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4484	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:
- 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

J.R. SWARTLEY
MID-ATLANTIC
DRILLING, INC.

INVESTIGATED BY S&ME, Inc.
 DRAWN BY J.R. SWARTLEY
 CHECKED BY S.S. LANEY
 SUBMITTED BY J. DAILY
 DATE JANUARY 2019

 3201 SPRING FOREST ROAD
 RALEIGH, NC 27616
 (919) 872-2660

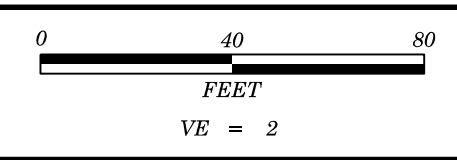


DocuSigned by:

 919459487833723
 SIGNATURE DATE 4/19/2019

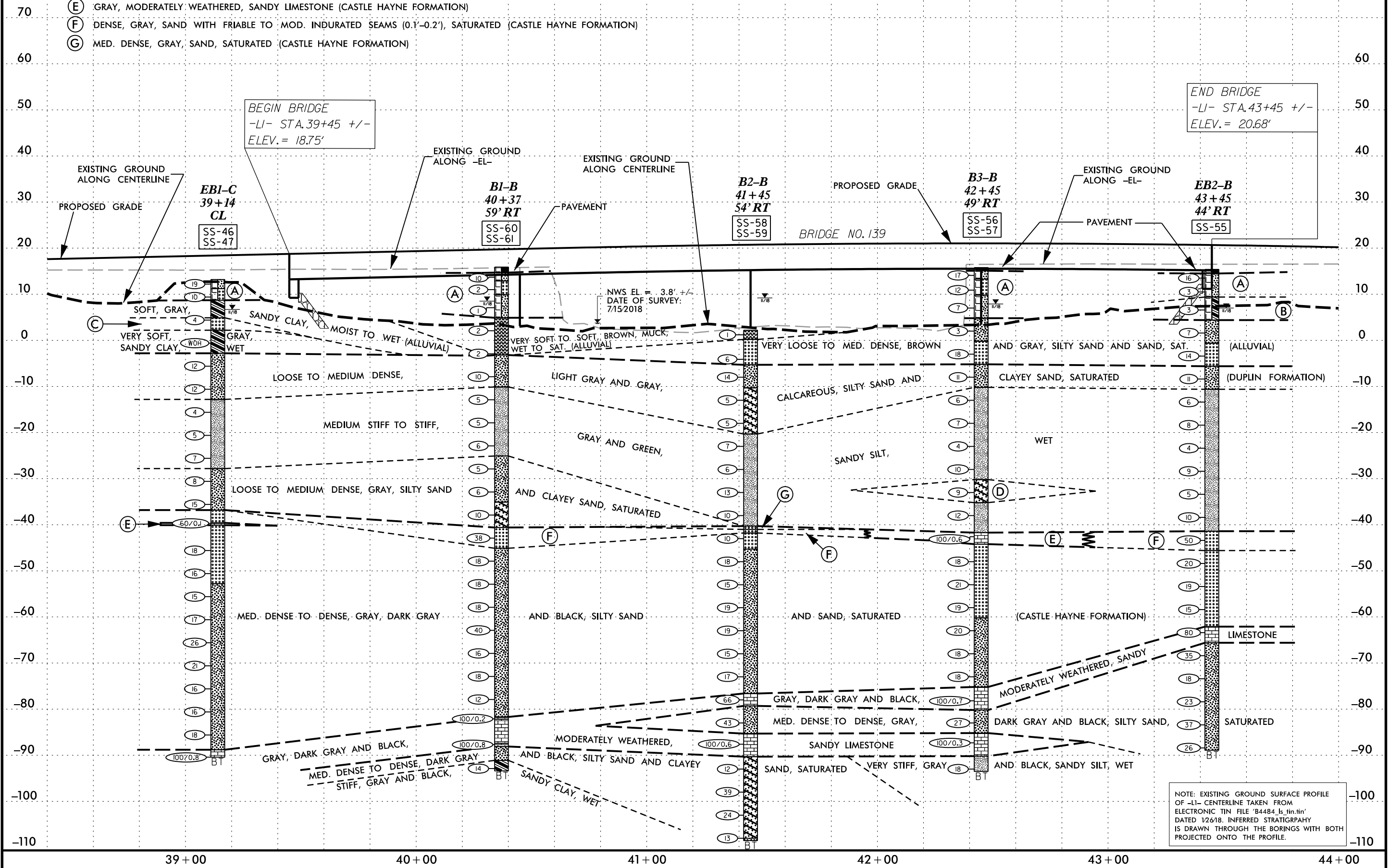
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

5/14/99



PROJECT REFERENCE NO.	SHEET NO.
B-4484	4
PROFILE PROJECTED ALONG -LI-	

- (A) VERY LOOSE TO MED. DENSE, TAN AND BROWN, SILTY SAND AND SAND, MOIST TO SAT. (ROADWAY EMBANKMENT)
- (B) SOFT, BROWN, SANDY CLAY, MOIST TO WET (ROADWAY EMBANKMENT)
- (C) LOOSE, GRAY, SAND, SATURATED (ALLUVIAL)
- (D) LOOSE, GRAY AND GREEN, CLAYEY SAND, SATURATED (DUPLIN FORMATION)
- (E) GRAY, MODERATELY WEATHERED, SANDY LIMESTONE (CASTLE HAYNE FORMATION)
- (F) DENSE, GRAY, SAND WITH FRIABLE TO MOD. INDURATED SEAMS (0.1'-0.2'), SATURATED (CASTLE HAYNE FORMATION)
- (G) MED. DENSE, GRAY, SAND, SATURATED (CASTLE HAYNE FORMATION)



NOTE: EXISTING GROUND SURFACE PROFILE OF -LI- CENTERLINE TAKEN FROM ELECTRONIC TIN FILE 'B4484_Is.tin.tin' DATED 12/6/18. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 33723.1.2		TIP B-4484		COUNTY CRAVEN		GEOLOGIST Swartley, J. R.									
SITE DESCRIPTION BRIDGE NO. 139 ON SR 1470 (-L1-) OVER NEUSE RIVER OVERFLOW							GROUND WTR (ft)								
BORING NO. B1-B		STATION 40+37		OFFSET 59 ft RT		ALIGNMENT -L1-									
COLLAR ELEV. 15.9 ft		TOTAL DEPTH 109.3 ft		NORTHING 573,926		EASTING 2,507,653									
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 87% 09/05/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Fowler, B.		START DATE 11/28/18		COMP. DATE 11/29/18		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															
15	14.7	1.2	7	5	5										
10	12.0	3.9	1	1	1										
5	8.1	7.8	1	0	1										
0	3.1	12.8	WOH	1	1										
-5	-1.9	17.8	WOH	1	1										
-10	-6.9	22.8		4	5	5									
-15	-11.9	27.8		3	2	3									
-20	-16.9	32.8		2	3	2									
-25	-21.9	37.8		7	3	3									
-30	-26.9	42.8		2	2	3									
-35	-31.9	47.8		9	3	3									
-40	-36.9	52.8		5	5	5									
-45	-41.9	57.8		56	18	20									
-50	-46.9	62.8		13	9	9									
-55	-51.9	67.8		9	8	10									
-60	-56.9	72.8		8	9	9									

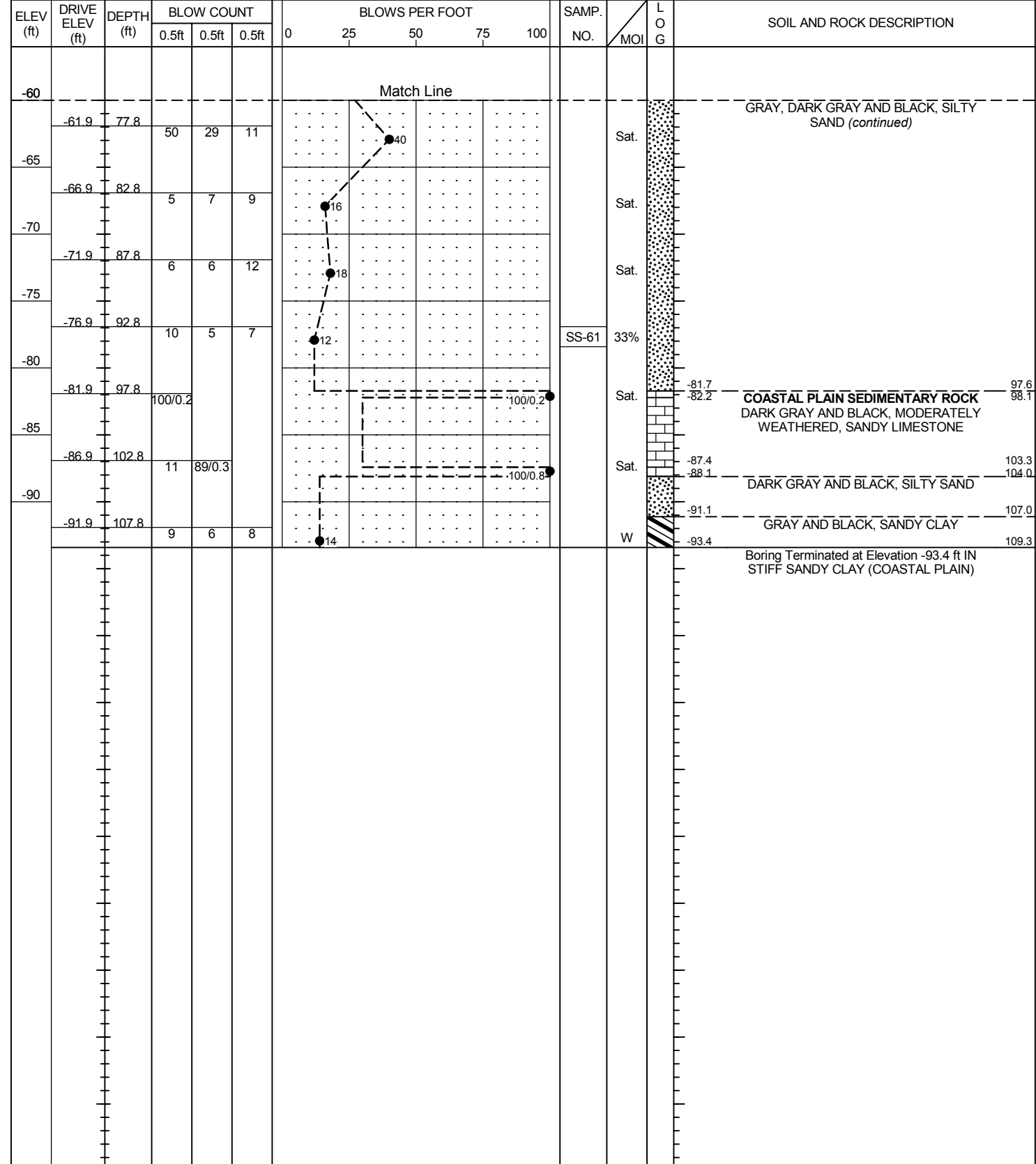
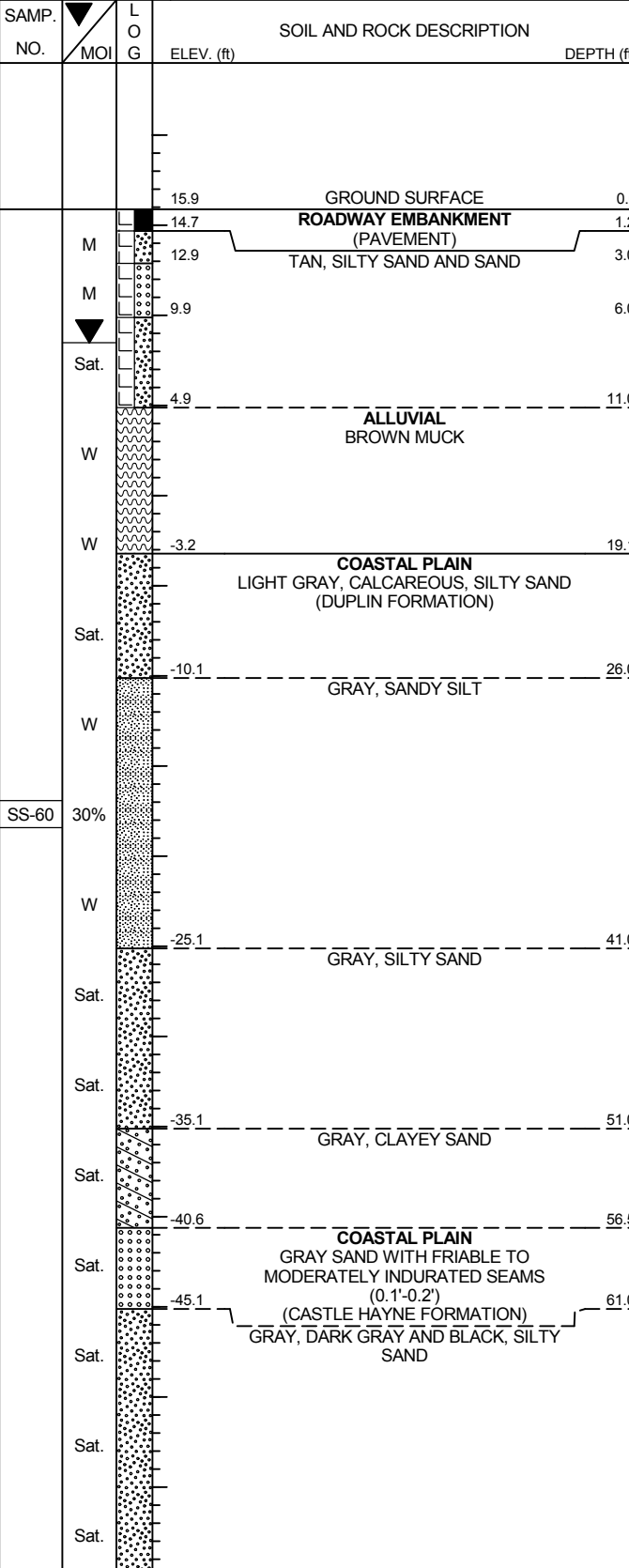
WBS 33723.1.2		TIP B-4484		COUNTY CRAVEN		GEOLOGIST Swartley, J. R.									
SITE DESCRIPTION BRIDGE NO. 139 ON SR 1470 (-L1-) OVER NEUSE RIVER OVERFLOW							GROUND WTR (ft)								
BORING NO. B1-B		STATION 40+37		OFFSET 59 ft RT		ALIGNMENT -L1-									
COLLAR ELEV. 15.9 ft		TOTAL DEPTH 109.3 ft		NORTHING 573,926		EASTING 2,507,653									
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 87% 09/05/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Fowler, B.		START DATE 11/28/18		COMP. DATE 11/29/18		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															
-65	-61.9	77.8	50	29	11										
-70	-66.9	82.8	5	7	9										
-75	-71.9	87.8	6	6	12										
-80	-76.9	92.8	10	5	7										
-85	-81.9	97.8	100/0.2												
-90	-86.9	102.8	11	89/0.3											
	-91.9	107.8	9	6	8										

NCDOT BORE DOUBLE B4484_GEO_BRDG00139.GPJ NC_DOT_GDT 1/2/19

SS-60 30%

SS-61 33%

Match Line



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 33723.1.2		TIP B-4484		COUNTY CRAVEN		GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION BRIDGE NO. 139 ON SR 1470 (-L1-) OVER NEUSE RIVER OVERFLOW							GROUND WTR (ft)
BORING NO. B3-B		STATION 42+45		OFFSET 49 ft RT		ALIGNMENT -L1-	
COLLAR ELEV. 15.8 ft		TOTAL DEPTH 109.3 ft		NORTHING 574,098		EASTING 2,507,772	
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 87% 09/05/2017				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Fowler, B.		START DATE 11/27/18		COMP. DATE 11/27/18		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															
15	15.1	0.7	12	9	8										
10	11.9	3.9	2	5	7										
5	8.0	7.8	3	4	3										
0	3.0	12.8	1	1	2										
-5	-2.0	17.8	7	7	11										
-10	-7.0	22.8	6	5	6										
-15	-12.0	27.8	2	2	4										
-20	-17.0	32.8	3	2	5										
-25	-22.0	37.8	3	1	3										
-30	-27.0	42.8	3	3	7										
-35	-32.0	47.8	9	5	4										
-40	-37.0	52.8	3	5	7										
-45	-42.0	57.8	86	140.1											100/0.6
-50	-47.0	62.8	15	10	8										
-55	-52.0	67.8	9	8	13										
-60	-57.0	72.8	7	8	11										

WBS 33723.1.2		TIP B-4484		COUNTY CRAVEN		GEOLOGIST Swartley, J. R.	
SITE DESCRIPTION BRIDGE NO. 139 ON SR 1470 (-L1-) OVER NEUSE RIVER OVERFLOW							GROUND WTR (ft)
BORING NO. B3-B		STATION 42+45		OFFSET 49 ft RT		ALIGNMENT -L1-	
COLLAR ELEV. 15.8 ft		TOTAL DEPTH 109.3 ft		NORTHING 574,098		EASTING 2,507,772	
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 87% 09/05/2017				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER Fowler, B.		START DATE 11/27/18		COMP. DATE 11/27/18		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															
-65	-62.0	77.8	15	12	8										
-70	-67.0	82.8	5	6	12										
-75	-72.0	87.8	5	7	11										
-80	-77.0	92.8	21	25	75/0.2										
-85	-82.0	97.8	21	7	20										
-90	-87.0	102.8	100/0.3												
-95	-92.0	107.8	30	8	10										

NCDOT BORE DOUBLE B4484_GEO_BRDG00139.GPJ NC_DOT_GDT 1/10/19

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 33723.1.2		TIP B-4484		COUNTY CRAVEN		GEOLOGIST Swartley, J. R.									
SITE DESCRIPTION BRIDGE NO. 139 ON SR 1470 (-L1-) OVER NEUSE RIVER OVERFLOW							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 43+45		OFFSET 44 ft RT		ALIGNMENT -L1-									
COLLAR ELEV. 15.4 ft		TOTAL DEPTH 104.3 ft		NORTHING 574,180		EASTING 2,507,828									
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 87% 09/05/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Fowler, B.		START DATE 11/17/18		COMP. DATE 11/26/18		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															
15	14.5	0.9	8	8	8										
10	11.5	3.9	1	2	1										
5	7.6	7.8	3	1	2										
0	2.6	12.8	4	2	5										
-5	-2.4	17.8	5	6	8										
-10	-7.4	22.8	3	4	7										
-15	-12.4	27.8	2	3	3										
-20	-17.4	32.8	3	3	5										
-25	-22.4	37.8	2	2	2										
-30	-27.4	42.8	2	4	5										
-35	-32.4	47.8	3	2	3										
-40	-37.4	52.8	7	4	6										
-45	-42.4	57.8	6	33	17										
-50	-47.4	62.8	10	9	11										
-55	-52.4	67.8	7	8	11										
-60	-57.4	72.8	8	7	8										

WBS 33723.1.2		TIP B-4484		COUNTY CRAVEN		GEOLOGIST Swartley, J. R.									
SITE DESCRIPTION BRIDGE NO. 139 ON SR 1470 (-L1-) OVER NEUSE RIVER OVERFLOW							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 43+45		OFFSET 44 ft RT		ALIGNMENT -L1-									
COLLAR ELEV. 15.4 ft		TOTAL DEPTH 104.3 ft		NORTHING 574,180		EASTING 2,507,828									
DRILL RIG/HAMMER EFF./DATE MID5464 CME-45C 87% 09/05/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic										
DRILLER Fowler, B.		START DATE 11/17/18		COMP. DATE 11/26/18		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															
-65	-62.4	77.8	36	22	58										
-70	-67.4	82.8	4	6	29										
-75	-72.4	87.8	5	7	11										
-80	-77.4	92.8	3	11	12										
-85	-82.4	97.8	5	29	8										
	-87.4	102.8	8	9	17										

NCDOT BORE DOUBLE B4484_GEO_BRDG00139.GPJ NC_DOT_GDT 1/2/19

SS-55 32%

Match Line

-62.1 77.5
-65.6 81.0
-88.9 104.3

GRAY SAND (continued)

COASTAL PLAIN SEDIMENTARY ROCK
DARK GRAY AND BLACK, MODERATELY WEATHERED, SANDY LIMESTONE

DARK GRAY AND BLACK, SILTY SAND

Boring Terminated at Elevation -88.9 ft IN MED. DENSE SILTY SAND (COASTAL PLAIN)



SUMMARY OF LABORATORY TEST DATA
Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #: 6235-18-035 Date Report: 11/26/2018

State Project No.: 33723.1.2 County: Craven Date Tested: 11/16-11/26/18

Federal ID No.: N/A TIP No.: B-4484

Project Name: Bridge No. 139 on SR 1470 (-L1-) over Neuse River Overflow

Client Name: NCDOT GEU Client Address: Raleigh, NC

Sample No.	Station	Offset	Alignment	Sample Depth (ft)	AASHTO Classification	Total % Passing					Total Mortar Fraction (%)				LL	PL	PI	Moist. %
						Sieve #					Coarse Sand	Fine Sand	Silt	Clay				
						10	40	60	200	270								
SS-46	39+14	CL	-L1-	27.8-29.3	A-4 (1)	99	91	86	56	51	13	35	22	30	26	20	6	30.4
SS-47	39+14	CL	-L1-	87.8-89.3	A-2-4 (0)	95	90	81	24	22	15	62	12	11	NP	NP	NP	34.5
SS-55	43+45	44 RT	-L1-	37.8-39.3	A-4 (0)	99	94	89	44	40	10	50	19	21	22	21	1	31.7
SS-56	42+45	49 RT	-L1-	27.8-29.3	A-4 (3)	100	95	90	64	59	10	30	28	32	28	21	7	32.3
SS-57	42+45	49 RT	-L1-	32.8-34.3	A-4 (0)	99	91	83	46	42	16	42	24	18	22	21	1	32.0
SS-58	41+45	54 RT	-L1-	69.2-70.7	A-2-4 (0)	100	96	83	18	16	17	66	8	9	NP	NP	NP	33.3
SS-59	41+45	54 RT	-L1-	94.2-95.7	A-2-6 (0)	100	98	83	31	28	17	55	9	19	36	22	14	30.9
SS-60	40+37	59 RT	-L1-	32.8-34.3	A-4 (0)	100	92	84	50	46	16	38	23	23	23	20	3	30.3
SS-61	40+37	59 RT	-L1-	92.8-94.3	A-2-4 (0)	97	92	83	29	26	15	58	17	10	NP	NP	NP	33.0

References / Comments / Deviations: ND=Not Determined. NP=Non-Plastic.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Mal Krajan, ET
Technician Name:


Signature

104-01-0703
Certification #

Thomas J. Daily, PE
Technical Responsibility:

Project Manager
Position

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SITE PHOTOGRAPH

Bridge No. 139 on SR 1470 (-L1-) over Neuse River Overflow



Looking North towards End Bent 2