

REFERENCE: I-5878

PROJECT: 53078

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY HARNETT
 PROJECT DESCRIPTION IMPROVE I-95 INTERCHANGES
AT US 421 AND SR 1793 (SPRING BRANCH /POPE RD)

SITE DESCRIPTION BRIDGE NO 73 ON -LREV- (I-95)
OVER -Y15- (US 421)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5878	1	19

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

E.G. BLONSHINE

T.J. HILL

T.J. WHITE

K.S. HARDEE

INVESTIGATED BY J.R. SWARTLEY

DRAWN BY J.R. SWARTLEY

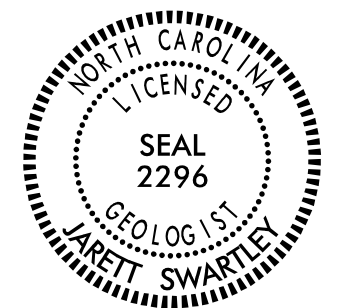
CHECKED BY S.S. LANEY

SUBMITTED BY S.S. LANEY

DATE NOVEMBER 2019



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



DocuSigned by:

Jarett Swartley
 919459487BA3471...

SIGNATURE

11/21/2019

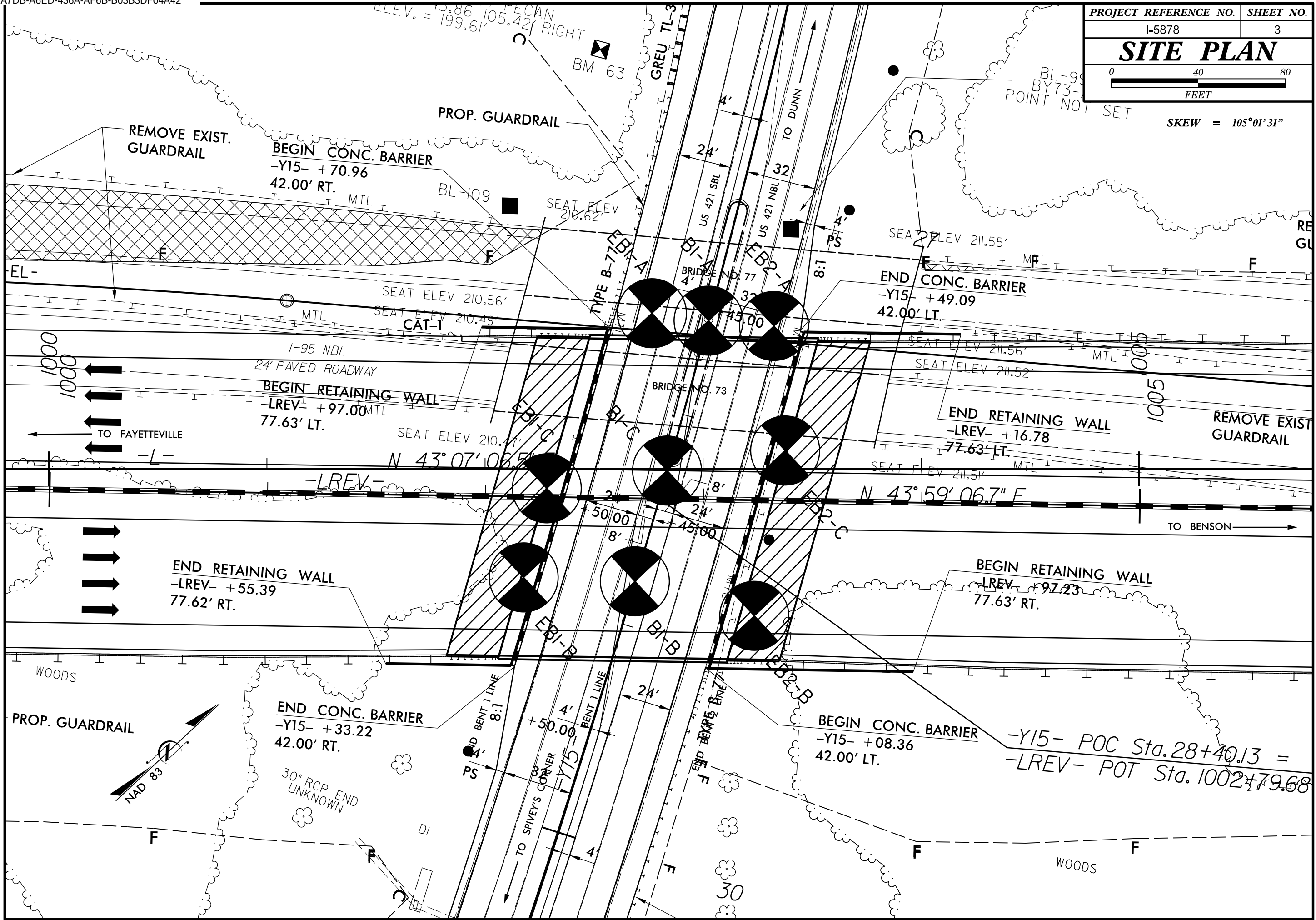
DATE

**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

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, MISCELLANEOUS SYMBOLS, RECOMMENDATION SYMBOLS, ABBREVIATIONS, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, INDURATION.

PROJECT REFERENCE NO.	SHEET NO.
I-5878	3
SITE PLAN	
 FEET	
SKEW = 105°01'31"	



REMOVE EXIST. GUARDRAIL

BEGIN CONC. BARRIER
-Y15- +70.96
42.00' RT.

PROP. GUARDRAIL

END CONC. BARRIER
-Y15- +49.09
42.00' LT.

BEGIN RETAINING WALL
-LREV- +97.00
77.63' LT.

END RETAINING WALL
-LREV- +16.78
77.63' LT.

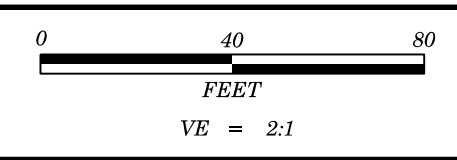
END RETAINING WALL
-LREV- +55.39
77.62' RT.

BEGIN RETAINING WALL
-LREV- +97.23
77.63' RT.

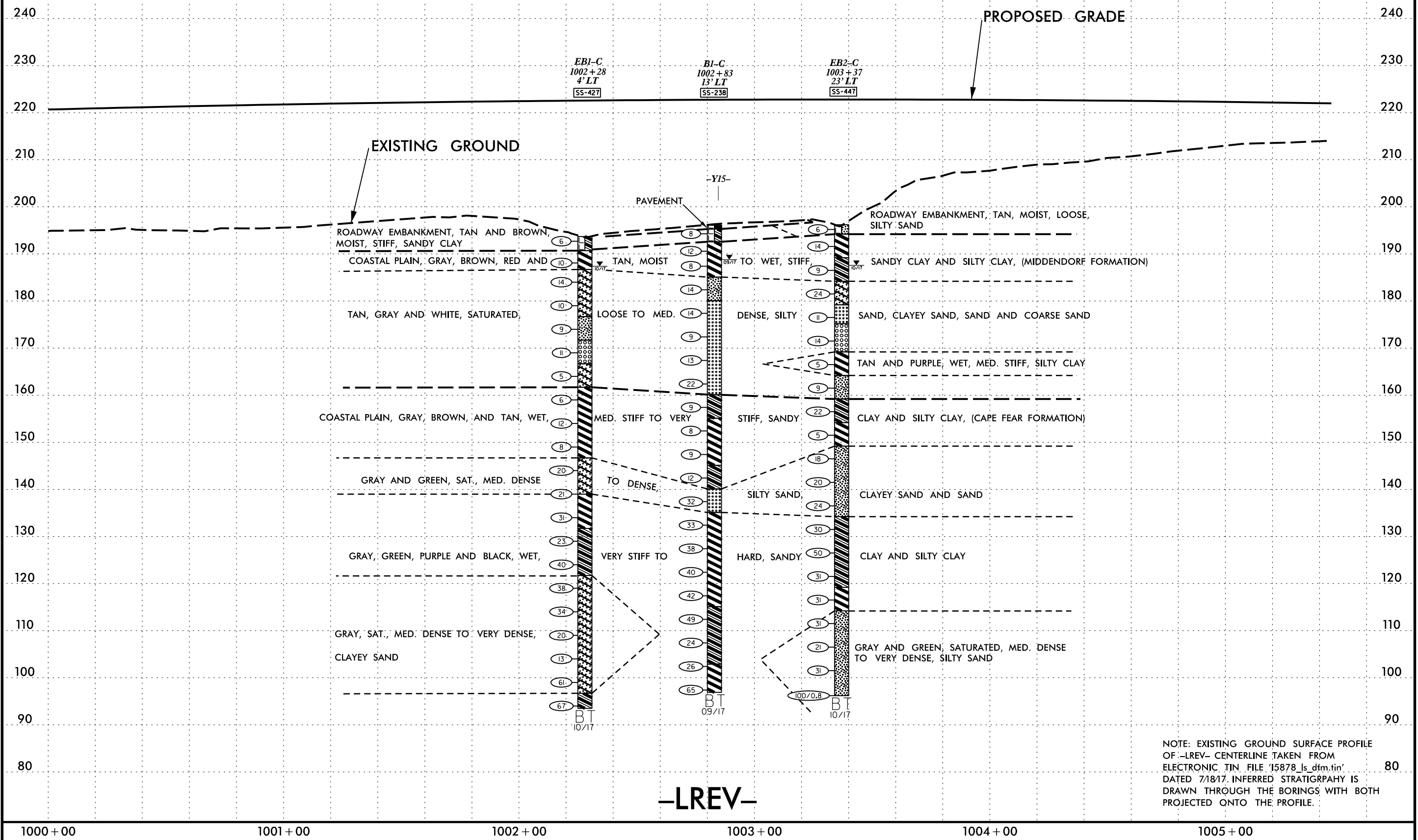
END CONC. BARRIER
-Y15- +33.22
42.00' RT.

BEGIN CONC. BARRIER
-Y15- +08.36
42.00' LT.

-Y15- POC Sta. 28+40.13 =
-LREV- POT Sta. 1002+79.68

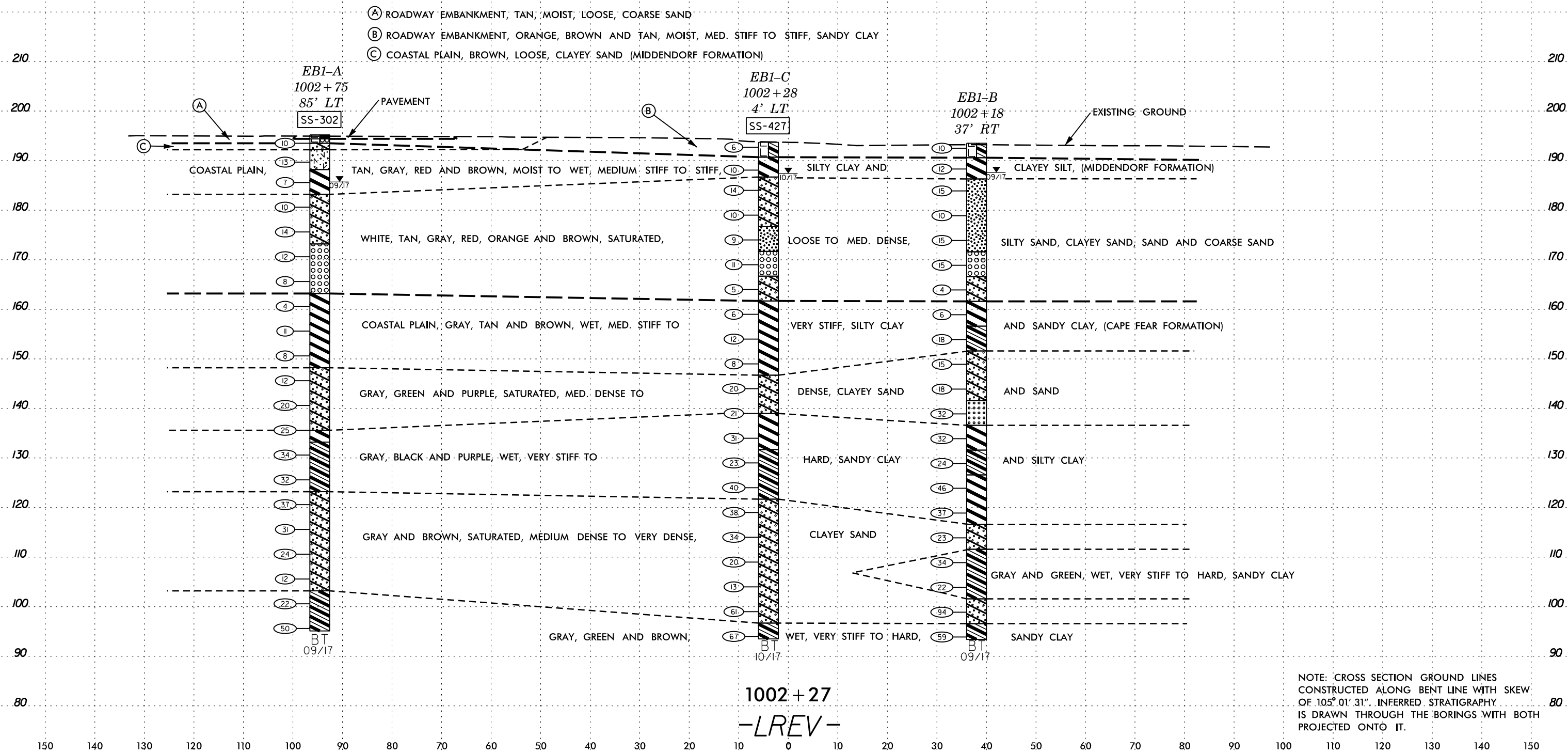


PROJECT REFERENCE NO.	SHEET NO.
I-5878	4
PROFILE PROJECTED ALONG -LREV-	



NOTE: EXISTING GROUND SURFACE PROFILE OF -LREV- CENTERLINE TAKEN FROM ELECTRONIC TIN FILE 'I5878_ls_dfm.tin' DATED 7/18/17. INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.

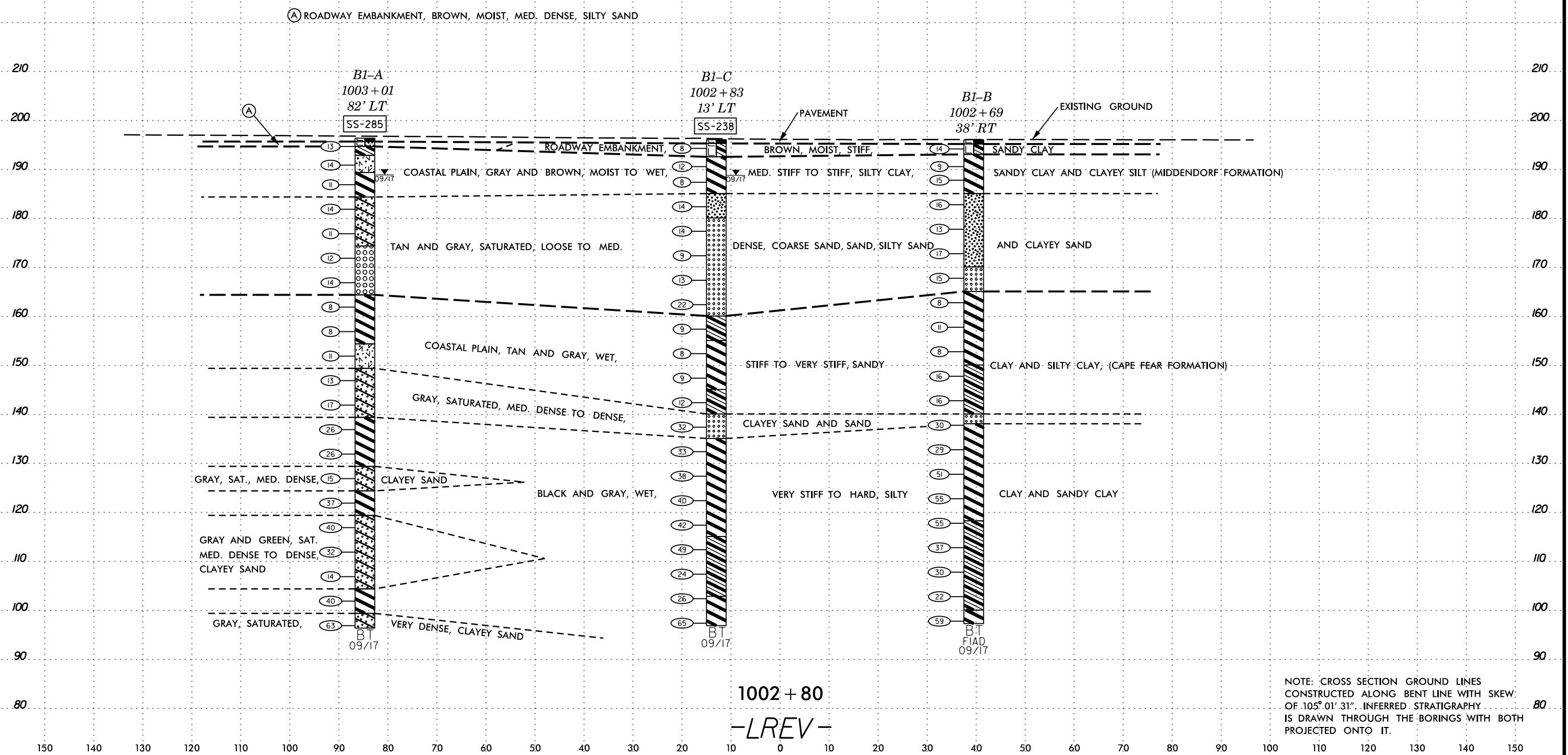
CROSS SECTION ALONG END BENT 1



NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 105° 01' 31". INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

BRIDGE NO. 73
SKEW = 105° 01' 31"

CROSS SECTION ALONG BENT 1

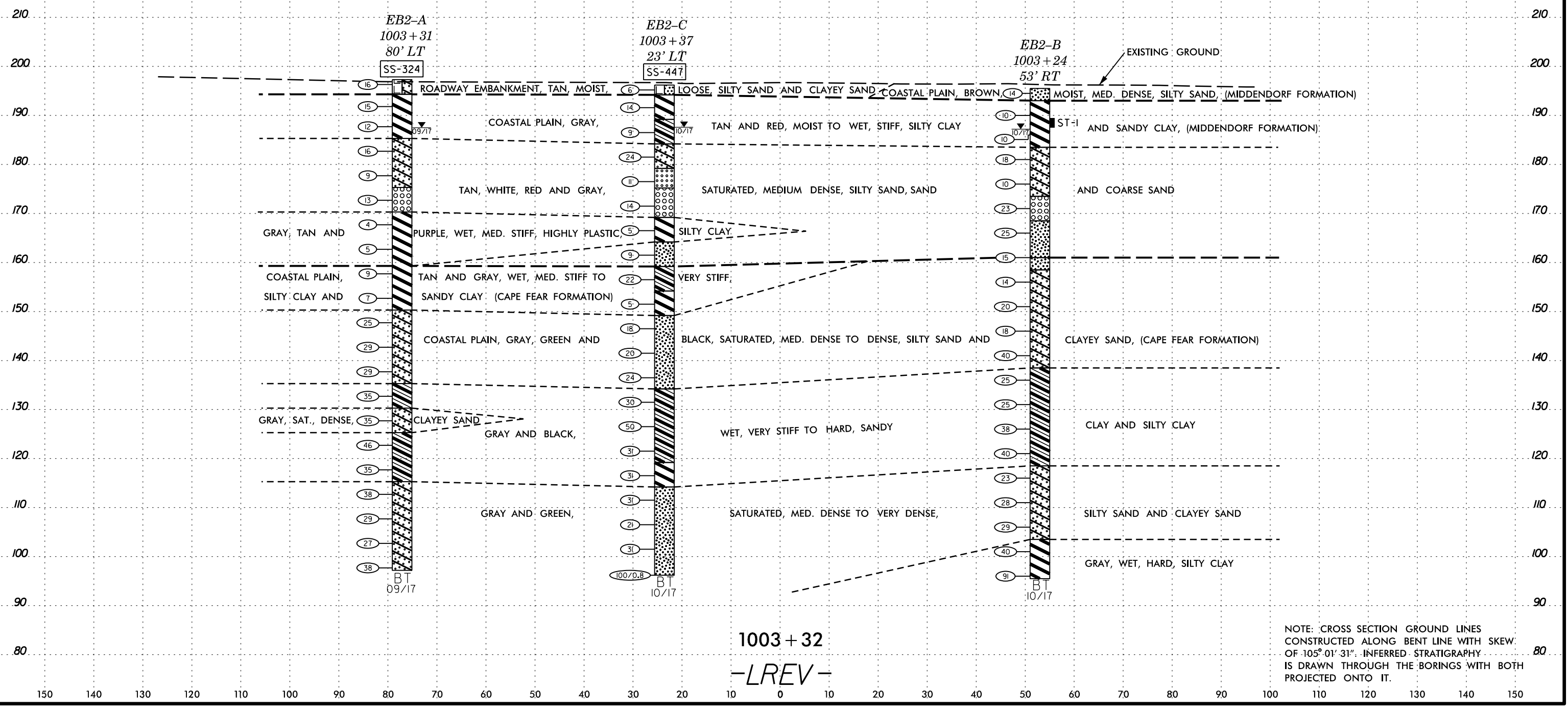


NOTE: CROSS SECTION GROUND LINES CONSTRUCTED ALONG BENT LINE WITH SKEW OF 105° 01' 31". INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO IT.

6/23/16
SCHEMATIC
CONSTRUCTION
SHEET
DATE
BY
CHECKED
APPROVED

BRIDGE NO. 73
SKEW = 105° 01' 31"

CROSS SECTION ALONG END BENT 2



NOTE: CROSS SECTION GROUND LINES
 CONSTRUCTED ALONG BENT LINE WITH SKEW
 OF 105° 01' 31". INFERRED STRATIGRAPHY
 IS DRAWN THROUGH THE BORINGS WITH BOTH
 PROJECTED ONTO IT.

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Blonshine, E.G.	
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)
BORING NO. EB1-A		STATION 1002+75		OFFSET 85 ft LT		ALIGNMENT -LREV-	
COLLAR ELEV. 195.2 ft		TOTAL DEPTH 100.1 ft		NORTHING 563,975		EASTING 2,119,735	
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER White, T.J.		START DATE 09/20/17		COMP. DATE 09/20/17		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					
200															
195	194.5	0.7	7	5	5										
190	190.7	4.5	2	5	8										
185	186.6	8.6	2	3	4										
180	181.6	13.6	5	4	6										
175	176.6	18.6	4	4	10										
170	171.6	23.6	4	5	7										
165	166.6	28.6	3	3	5										
160	161.6	33.6	1	1	3										
155	156.6	38.6	3	5	6										
150	151.6	43.6	3	4	4										
145	146.6	48.6	4	5	7										
140	141.6	53.6	8	9	11										
135	136.6	58.6	11	11	14										
130	131.6	63.6	12	14	20										
125	126.6	68.6	9	11	21										
120	121.6	73.6	13	15	22										

NCDOT BORE DOUBLE I5878 GEO_BRDG0073_SPT_BORINGS.GPJ NC_DOT_GDT 10/14/19

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Blonshine, E.G.	
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)
BORING NO. EB1-A		STATION 1002+75		OFFSET 85 ft LT		ALIGNMENT -LREV-	
COLLAR ELEV. 195.2 ft		TOTAL DEPTH 100.1 ft		NORTHING 563,975		EASTING 2,119,735	
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic	
DRILLER White, T.J.		START DATE 09/20/17		COMP. DATE 09/20/17		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					
120															
115	116.6	78.6	11	13	18										
110	111.6	83.6	9	11	13										
105	106.6	88.6	11	7	5										
100	101.6	93.6	6	9	13										
	96.6	98.6	14	20	30										

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 53078.1.1			TIP I-5878			COUNTY HARNETT			GEOLOGIST Goslin, G.H.		
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)								GROUND WTR (ft)			
BORING NO. EB1-B			STATION 1002+18			OFFSET 37 ft RT			ALIGNMENT -LREV-		
COLLAR ELEV. 193.5 ft			TOTAL DEPTH 100.1 ft			NORTHING 563,849			EASTING 2,119,783		
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic		
DRILLER White, T.J.			START DATE 09/27/17			COMP. DATE 09/27/17			SURFACE WATER DEPTH N/A		

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						
195		0.0													193.5	0.0
	193.5	0.0	4	4	6											
190		4.2													190.6	2.9
	189.3	4.2	3	4	8											
185		8.6													186.3	7.2
	184.9	8.6	6	7	8											
180		13.6													179.9	13.6
	179.9	13.6	4	5	5											
175		18.6													174.9	18.6
	174.9	18.6	6	6	9											
170		23.6													169.9	23.6
	169.9	23.6	5	9	6											
165		28.6													164.9	28.6
	164.9	28.6	2	2	2											
160		33.6													159.9	33.6
	159.9	33.6	2	3	3											
155		38.6													154.9	38.6
	154.9	38.6	5	8	10											
150		43.6													149.9	43.6
	149.9	43.6	5	7	8											
145		48.6													144.9	48.6
	144.9	48.6	6	8	10											
140		53.6													139.9	53.6
	139.9	53.6	7	14	18											
135		58.6													134.9	58.6
	134.9	58.6	7	14	18											
130		63.6													129.9	63.6
	129.9	63.6	6	11	13											
125		68.6													124.9	68.6
	124.9	68.6	11	19	27											
120		73.6													119.9	73.6
	119.9	73.6	12	16	21											
115																

WBS 53078.1.1			TIP I-5878			COUNTY HARNETT			GEOLOGIST Goslin, G.H.		
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)								GROUND WTR (ft)			
BORING NO. EB1-B			STATION 1002+18			OFFSET 37 ft RT			ALIGNMENT -LREV-		
COLLAR ELEV. 193.5 ft			TOTAL DEPTH 100.1 ft			NORTHING 563,849			EASTING 2,119,783		
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic		
DRILLER White, T.J.			START DATE 09/27/17			COMP. DATE 09/27/17			SURFACE WATER DEPTH N/A		

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						
115		78.6														
	114.9	78.6	6	10	13											
110		83.6													111.6	81.9
	109.9	83.6	8	12	22											
105		88.6													101.6	91.9
	104.9	88.6	7	10	12											
100		93.6													96.6	96.9
	99.9	93.6	12	41	53											
95		98.6													93.4	100.1
	94.9	98.6	17	27	32											

NCDOT BORE DOUBLE I5878_GEO_BRDG0073_SPT_BORINGS.GPJ_NC_DOT_GDT_10/14/19

GEOTECHNICAL BORING REPORT

BORE LOG

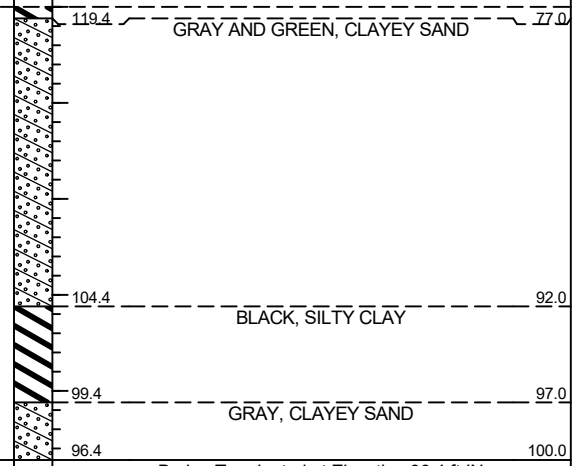
WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Blonshine, E.G.									
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)								
BORING NO. B1-A		STATION 1003+01		OFFSET 82 ft LT		ALIGNMENT -LREV-									
COLLAR ELEV. 196.4 ft		TOTAL DEPTH 100.0 ft		NORTHING 563,992		EASTING 2,119,755									
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic									
DRILLER White, T.J.		START DATE 09/19/17		COMP. DATE 09/19/17		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					
200															
195	195.7	0.7	8	6	7										
190	191.9	4.5	2	6	8										
185	187.9	8.5	4	5	6										
180	182.9	13.5	7	7	7										
175	177.9	18.5	4	5	6										
170	172.9	23.5	5	5	7										
165	167.9	28.5	5	6	8										
160	162.9	33.5	2	3	5										
155	157.9	38.5	3	4	4										
150	152.9	43.5	4	4	7										
145	147.9	48.5	4	6	7										
140	142.9	53.5	4	6	11										
135	137.9	58.5	12	13	13										
130	132.9	63.5	9	11	15										
125	127.9	68.5	7	7	8										
120	122.9	73.5	11	16	21										

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Blonshine, E.G.									
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)								
BORING NO. B1-A		STATION 1003+01		OFFSET 82 ft LT		ALIGNMENT -LREV-									
COLLAR ELEV. 196.4 ft		TOTAL DEPTH 100.0 ft		NORTHING 563,992		EASTING 2,119,755									
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic									
DRILLER White, T.J.		START DATE 09/19/17		COMP. DATE 09/19/17		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					
120															
115	117.9	78.5	11	17	23										
110	112.9	83.5	9	14	18										
105	107.9	88.5	7	6	8										
100	102.9	93.5	12	17	23										
	97.9	98.5	20	28	35										

NCDOT BORE DOUBLE I5878_GEO_BRDG0073_SPT_BORINGS.GPJ_NC_DOT_GDT_10/14/19

SS-285

Match Line



GEOTECHNICAL BORING REPORT

BORE LOG

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Hill, T.J.									
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)								
BORING NO. B1-B		STATION 1002+69		OFFSET 38 ft RT		ALIGNMENT -LREV-									
COLLAR ELEV. 196.1 ft		TOTAL DEPTH 98.8 ft		NORTHING 563,885		EASTING 2,119,819									
DRILL RIG/HAMMER EFF./DATE SVE9563 CME-550X 88% 8/10/2017				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER White, T.J.		START DATE 09/15/17		COMP. DATE 09/15/17		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					
200															
195	195.2	0.9	7	8	6										
190	191.6	4.5	1	4	5										
	188.8	7.3	4	6	9										
185	183.8	12.3	4	6	10										
180	178.8	17.3	5	6	7										
175	173.8	22.3	7	8	9										
170	168.8	27.3	7	8	7										
165	163.8	32.3	1	3	5										
160	158.8	37.3	3	5	6										
155	153.8	42.3	5	3	5										
150	148.8	47.3	7	7	9										
145	143.8	52.3	7	8	8										
140	138.8	57.3	10	13	17										
135	133.8	62.3	9	12	17										
130	128.8	67.3	14	22	29										
125	123.8	72.3	14	23	32										
120															

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Hill, T.J.									
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)								
BORING NO. B1-B		STATION 1002+69		OFFSET 38 ft RT		ALIGNMENT -LREV-									
COLLAR ELEV. 196.1 ft		TOTAL DEPTH 98.8 ft		NORTHING 563,885		EASTING 2,119,819									
DRILL RIG/HAMMER EFF./DATE SVE9563 CME-550X 88% 8/10/2017				DRILL METHOD Mud Rotary		HAMMER TYPE Automatic									
DRILLER White, T.J.		START DATE 09/15/17		COMP. DATE 09/15/17		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					
120															
	118.8	77.3	12	27	28										
115	113.8	82.3	12	15	22										
110	108.8	87.3	11	12	18										
105	103.8	92.3	9	9	13										
100	98.8	97.3	28	29	30										

NCDOT BORE DOUBLE I5878_GEO_BRDG0073_SPT_BORINGS.GPJ NC_DOT_GDT 10/14/19

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Hill, T.J.									
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)								
BORING NO. B1-C		STATION 1002+83		OFFSET 13 ft LT		ALIGNMENT -LREV-									
COLLAR ELEV. 196.1 ft		TOTAL DEPTH 99.2 ft		NORTHING 563,931		EASTING 2,119,792									
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic									
DRILLER White, T.J.		START DATE 09/14/17		COMP. DATE 09/14/17		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					
200															
195	195.3	0.8	3	3	5										
190	191.6	4.5	2	4	8										
185	188.4	7.7	2	3	5										
180	183.4	12.7	2	6	8										
175	178.4	17.7	6	7	7										
170	173.4	22.7	4	4	5										
165	168.4	27.7	5	3	10										
160	163.4	32.7	7	12	10										
155	158.4	37.7	3	3	6										
150	153.4	42.7	3	3	5										
145	148.4	47.7	3	4	5										
140	143.4	52.7	4	5	7										
135	138.4	57.7	9	13	19										
130	133.4	62.7	10	14	19										
125	128.4	67.7	11	16	22										
120	123.4	72.7	13	17	23										

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Hill, T.J.									
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)								
BORING NO. B1-C		STATION 1002+83		OFFSET 13 ft LT		ALIGNMENT -LREV-									
COLLAR ELEV. 196.1 ft		TOTAL DEPTH 99.2 ft		NORTHING 563,931		EASTING 2,119,792									
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic									
DRILLER White, T.J.		START DATE 09/14/17		COMP. DATE 09/14/17		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					
120															
115	118.4	77.7	14	18	24										
110	113.4	82.7	20	22	27										
105	108.4	87.7	11	12	12										
100	103.4	92.7	7	11	15										
	98.4	97.7	15	23	42										

NCDOT BORE DOUBLE I5878_GEO_BRDG0073_SPT_BORINGS.GPJ NC_DOT_GDT 10/14/19

GEOTECHNICAL BORING REPORT BORE LOG

WBS 53078.1.1			TIP I-5878			COUNTY HARNETT			GEOLOGIST Blonshine, E.G.			
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)								GROUND WTR (ft)				
BORING NO. EB2-A			STATION 1003+31			OFFSET 80 ft LT			ALIGNMENT -LREV-			0 HR. N/A
COLLAR ELEV. 197.3 ft			TOTAL DEPTH 100.1 ft			NORTHING 564,012			EASTING 2,119,777			24 HR. 9.8
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic			
DRILLER White, T.J.			START DATE 09/21/17			COMP. DATE 09/21/17			SURFACE WATER DEPTH N/A			

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
200																
197.3	197.3	0.0	5	10	6										197.3	GROUND SURFACE
195	192.8	4.5	5	6	9										194.3	ROADWAY EMBANKMENT BROWN, CLAYEY SAND
190	188.7	8.6	3	5	7										185.3	COASTAL PLAIN GRAY, TAN AND RED, SILTY CLAY (MIDDENDORF FORMATION)
185	183.7	13.6	8	7	9										185.3	TAN, CLAYEY SAND
180	178.7	18.6	5	4	5										175.3	TAN AND GRAY, COARSE SAND
175	173.7	23.6	6	6	7										170.3	GRAY AND PURPLE, HIGHLY PLASTIC, SILTY CLAY
170	168.7	28.6	4	2	2										160.3	COASTAL PLAIN GRAY AND TAN, SILTY CLAY (CAPE FEAR FORMATION)
165	163.7	33.6	1	2	3										150.3	GRAY AND GREEN, CLAYEY SAND
160	158.7	38.6	3	4	5										135.3	BLACK, SANDY CLAY
155	153.7	43.6	3	3	4										130.3	GRAY, CLAYEY SAND
150	148.7	48.6	7	12	13										125.3	BLACK, SANDY CLAY
145	143.7	53.6	9	13	16											
140	138.7	58.6	7	13	16											
135	133.7	63.6	14	15	20											
130	128.7	68.6	11	16	19											
125	123.7	73.6	15	21	25											
120																

NCDOT BORE DOUBLE I5878 GEO_BRDG0073_SPT_BORINGS.GPJ NC_DOT_GDT 10/14/19

WBS 53078.1.1			TIP I-5878			COUNTY HARNETT			GEOLOGIST Blonshine, E.G.			
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)								GROUND WTR (ft)				
BORING NO. EB2-A			STATION 1003+31			OFFSET 80 ft LT			ALIGNMENT -LREV-			0 HR. N/A
COLLAR ELEV. 197.3 ft			TOTAL DEPTH 100.1 ft			NORTHING 564,012			EASTING 2,119,777			24 HR. 9.8
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017						DRILL METHOD Mud Rotary			HAMMER TYPE Automatic			
DRILLER White, T.J.			START DATE 09/21/17			COMP. DATE 09/21/17			SURFACE WATER DEPTH N/A			

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
120																
	118.7	78.6	13	15	20										115.3	BLACK, SANDY CLAY (continued)
115	113.7	83.6	14	17	21										82.0	GRAY AND GREEN, CLAYEY SAND
110	108.7	88.6	11	12	17											
105	103.7	93.6	10	13	14											
100	98.7	98.6	13	16	22										97.2	Boring Terminated at Elevation 97.2 ft IN DENSE CLAYEY SAND (COASTAL PLAIN)

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Blonshine, E.G.									
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 1003+24		OFFSET 53 ft RT		ALIGNMENT -LREV-									
COLLAR ELEV. 195.5 ft		TOTAL DEPTH 100.0 ft		NORTHING 563,914		EASTING 2,119,868									
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic									
DRILLER White, T.J.		START DATE 10/04/17		COMP. DATE 10/04/17		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					
200															
195	195.5	0.0	5	9	5										195.5 GROUND SURFACE 0.0
190	191.0	4.5	2	4	6										193.0 COASTAL PLAIN BROWN, SILTY SAND (MIDDENDORF FORMATION) RED, GRAY AND TAN, SILTY CLAY 2.5
185	187.0	8.5	3	4	6										183.5 RED AND TAN, CLAYEY SAND 12.0
180	182.0	13.5	6	8	10										
175	177.0	18.5	4	5	5										
170	172.0	23.5	9	9	14										173.5 GRAY AND TAN, COARSE SAND AND SILTY SAND 22.0
165	167.0	28.5	7	8	17										168.5 27.0
160	162.0	33.5	4	6	9										161.0 COASTAL PLAIN BLACK, SILTY SAND (CAPE FEAR FORMATION) GRAY AND BLACK, CLAYEY SAND 34.5
155	157.0	38.5	3	5	9										158.5 37.0
150	152.0	43.5	3	6	14										
145	147.0	48.5	8	8	10										
140	142.0	53.5	10	18	22										
135	137.0	58.5	10	11	14										138.5 GRAY, SANDY CLAY 57.0
130	132.0	63.5	7	12	13										
125	127.0	68.5	11	16	22										
120	122.0	73.5	14	17	23										

NCDOT BORE DOUBLE I5878 GEO_BRDG0073_SPT_BORINGS.GPJ NC_DOT_GDT 10/14/19

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Blonshine, E.G.									
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 1003+24		OFFSET 53 ft RT		ALIGNMENT -LREV-									
COLLAR ELEV. 195.5 ft		TOTAL DEPTH 100.0 ft		NORTHING 563,914		EASTING 2,119,868									
DRILL RIG/HAMMER EFF./DATE SME9563 CME-550X 88% 8/10/2017			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic									
DRILLER White, T.J.		START DATE 10/04/17		COMP. DATE 10/04/17		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					
120															
115	117.0	78.5	10	11	12										118.5 GRAY, SANDY CLAY (continued) 77.0
110	112.0	83.5	10	12	16										103.5 GRAY AND GREEN, CLAYEY SAND 92.0
105	107.0	88.5	10	14	15										
100	102.0	93.5	15	17	23										
	97.0	98.5	28	46	45										95.5 Boring Terminated at Elevation 95.5 ft IN HARD SILTY CLAY (COASTAL PLAIN) ST-1 pushed 5' upstation Other Samples: ST-1 (6.0 - 8.0) 100.0

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Blonshine, E.G.	
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)
BORING NO. EB2-C		STATION 1003+37		OFFSET 23 ft LT		ALIGNMENT -LREV-	
COLLAR ELEV. 196.2 ft		TOTAL DEPTH 100.0 ft		NORTHING 563,977		EASTING 2,119,822	
DRILL RIG/HAMMER EFF./DATE SVE9563 CME-550X 88% 8/10/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER White, T.J.		START DATE 10/03/17		COMP. DATE 10/03/17		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						
200																
196.2	196.2	0.0	3	3	3									196.2	GROUND SURFACE	0.0
195	192.6	3.6	5	6	8									194.2	ROADWAY EMBANKMENT TAN, SILTY SAND	2.0
190	187.5	8.7	3	4	5									189.2	COASTAL PLAIN GRAY, TAN AND RED, SILTY CLAY AND SANDY CLAY (MIDDENDORF FORMATION)	7.0
185	182.5	13.7	5	12	12									184.2	TAN, CLAYEY SAND	12.0
180	177.5	18.7	4	4	7									179.2	TAN AND WHITE, SAND AND COARSE SAND	17.0
175	172.5	23.7	6	8	6									175.2		21.0
170	167.5	28.7	3	2	3									169.2	TAN AND PURPLE, SILTY CLAY	27.0
165	162.5	33.7	3	4	5									164.2	TAN, SILTY SAND	32.0
160	157.5	38.7	5	10	12									159.2	COASTAL PLAIN TAN AND GRAY, SANDY CLAY (CAPE FEAR FORMATION)	37.0
155	152.5	43.7	2	2	3									154.2		42.0
150	147.5	48.7	6	7	11									149.2	GRAY AND GREEN, CLAYEY SAND	47.0
145	142.5	53.7	8	10	10									134.2	GRAY AND BLACK, SANDY CLAY AND SILTY CLAY	62.0
140	137.5	58.7	10	11	13											
135	132.5	63.7	10	13	17											
130	127.5	68.7	13	23	27											
125	122.5	73.7	9	13	18											
120																

NCDOT BORE DOUBLE I5878_GEO_BRDG0073_SPT_BORINGS.GPJ NC_DOT_GDT 10/14/19

WBS 53078.1.1		TIP I-5878		COUNTY HARNETT		GEOLOGIST Blonshine, E.G.	
SITE DESCRIPTION BRIDGE NO. 73 ON -LREV- (I-95) OVER -Y15- (US 421)							GROUND WTR (ft)
BORING NO. EB2-C		STATION 1003+37		OFFSET 23 ft LT		ALIGNMENT -LREV-	
COLLAR ELEV. 196.2 ft		TOTAL DEPTH 100.0 ft		NORTHING 563,977		EASTING 2,119,822	
DRILL RIG/HAMMER EFF./DATE SVE9563 CME-550X 88% 8/10/2017			DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		
DRILLER White, T.J.		START DATE 10/03/17		COMP. DATE 10/03/17		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					
120															
115	117.5	78.7	12	14	17									119.2	77.0
110	112.5	83.7	12	14	17									114.2	82.0
105	107.5	88.7	9	10	11										
100	102.5	93.7	9	13	18										
	97.5	98.7	20	44	56/0.3									96.2	100.0

Boring Terminated at Elevation 96.2 ft IN VERY 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 #: 6235-16-013 Date Report: 12/1/2017

State Project No.: 53078.1.1 County: Harnett Date Tested: 11/1/17-11/30/17

Federal ID No.: N/A TIP No.: I-5878

Project Name: Bridge No. 73 on -LREV- (I-95) over -Y15- (US 421)

Client Name: Michael Baker International 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								
SS-238	1002+83	13' LT	-LREV-	17.7-19.2	A-3 (0)	100	56	15	6.4	85	10	1	4	22	0	NP	ND
SS-285	1003+01	82' LT	-LREV-	43.5-45.0	A-5 (10)	100	95	92	81.2	8	20	64	8	44	35	9	29.2
SS-302	1002+75	85' LT	-LREV-	23.6-25.1	A-1-a (0)	48	17	12	5.4	36	7	2	3	24	NP	NP	ND
SS-324	1003+31	80' LT	-LREV-	28.6-30.1	A-7-5 (75)	100	99	99	98.2	1	1	16	82	95	31	64	62.5
SS-427	1002+28	4' LT	-LREV-	23.7-25.2	A-1-a (0)	42	21	11	5.0	31	7	2	2	41	0	NP	ND
SS-447	1003+37	23' LT	-LREV-	18.7-20.2	A-3 (0)	100	54	12	5.6	88	7	1	4	20	0	NP	ND
ST-1	1003+19	53' RT	-LREV-	6.0-8.0	A-7-6 (41)	100	96	93	89.4	7	6	28	59	69	29	40	27.6

References / Comments / Deviations: ND=Not Detemined. 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

<u>Mal Krajan, ET</u>		<u>104-01-0703</u>	<u>Stewart Laney, P.E.</u>
Technician Name:	Signature	Certification #	Technical Responsibility:
			<u>Project Manager</u>
			Position

This report shall not be reproduced, except in full, without the written approval of S&ME, Inc.

SITE PHOTOGRAPH

Bridge No. 73 on -LREV- (I-95) over -Y15- (US 421)



Looking Southwest towards End Bent 1

SITE PHOTOGRAPH

Bridge No. 73 on -LREV- (I-95) over -Y15- (US 421)



Looking South towards End Bent 1