

REFERENCE: W-5600

PROJECT: 50056

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY JOHNSTON
 PROJECT DESCRIPTION US 70 FROM EAST OF US 70
BUSINESS TO WEST OF NEUSE RIVER
 SITE DESCRIPTION RETAINING WALL 1 ON -WL1- FROM
10+00.00 TO 22+58.72 AND RETAINING WALL 2 ON
-WL2- FROM 10+00.00 TO 24+04.64

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5600	1	20

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

M. ARNOLD

S. WOODS

M. DURWAY

S. DAVIS

D. AIELLO

T. SHARPE

A. STURCHIO

INVESTIGATED BY F&R, Inc.

DRAWN BY T.T. WALKER

CHECKED BY C. WANG

SUBMITTED BY P. ALTON, P.E.

DATE JULY 2018

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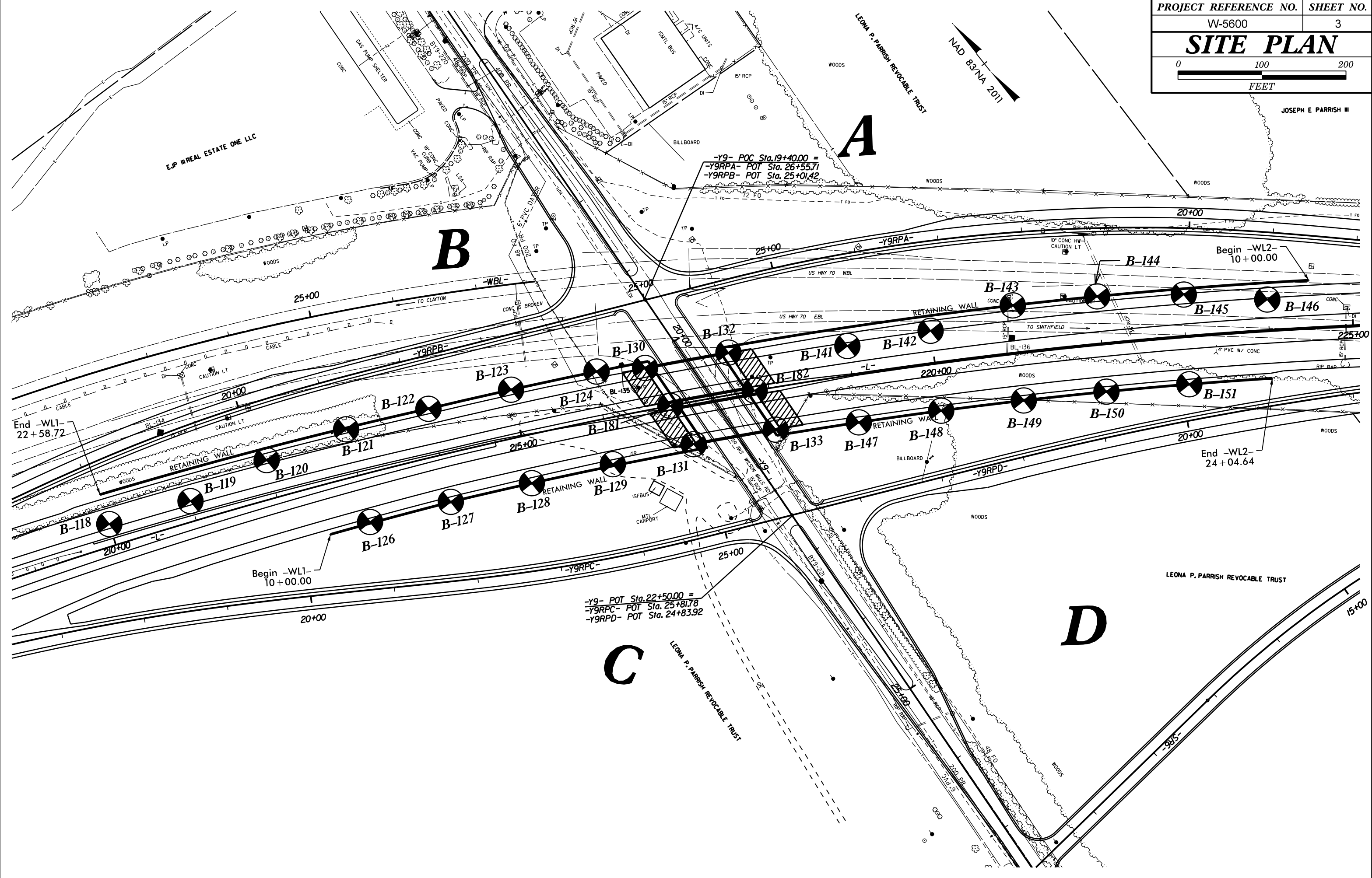
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT
SUBSURFACE INVESTIGATION
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. Includes sub-sections like SOIL LEGEND AND AASHTO CLASSIFICATION, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, and COLOR.

JOSEPH E PARRISH III



EJP III REAL ESTATE ONE LLC

LEONA P. PARRISH REVOCABLE TRUST

B

A

C

D

-Y9- POT Sta. 22+50.00 =
-Y9RPC- POT Sta. 25+81.78
-Y9RPD- POT Sta. 24+83.92

-Y9- POC Sta. 19+40.00 =
-Y9RPA- POT Sta. 26+55.71
-Y9RPB- POT Sta. 25+01.42

End -WL1-
22+58.72

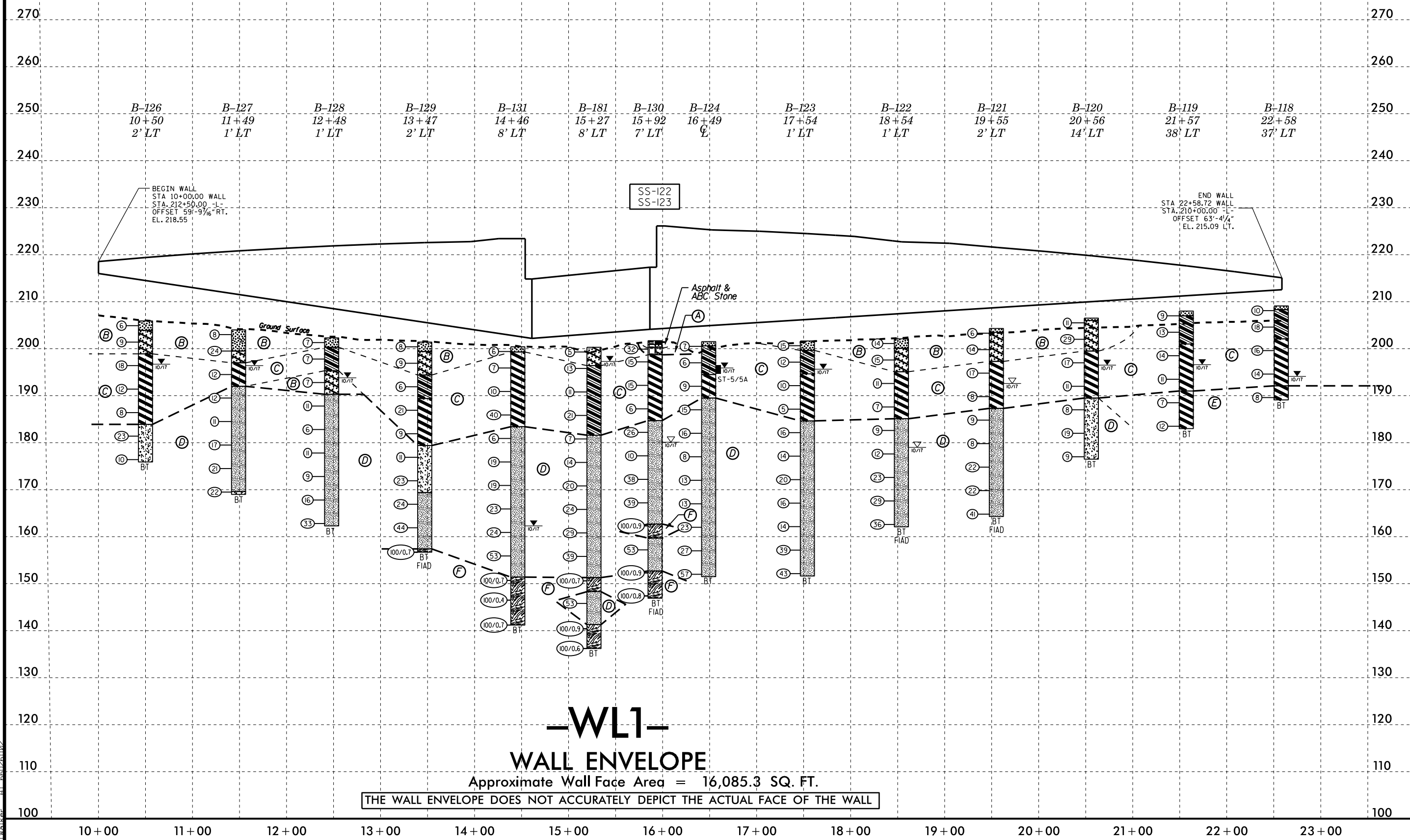
Begin -WL1-
10+00.00

Begin -WL2-
10+00.00

End -WL2-
24+04.64

LEONA P. PARRISH REVOCABLE TRUST

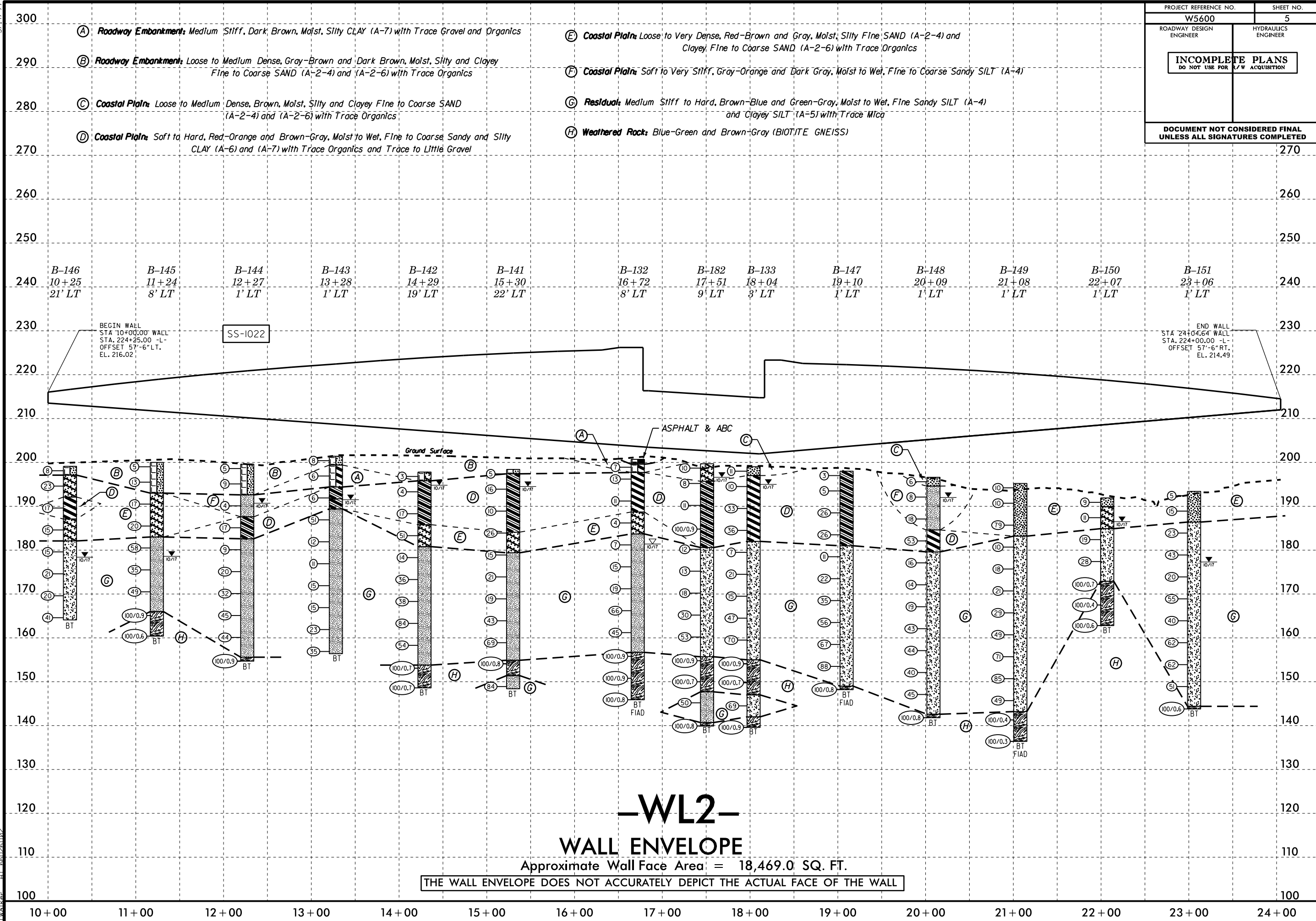
- (A) **Roadway Embankment:** Dense, Orange-Brown, Moist, Clayey Fine to Coarse SAND (A-2-6) Trace Gravel and Organics
- (B) **Coastal Plain:** Loose to Medium Dense, Orange and Gray-Brown, Moist to Wet, Silty and Clayey Fine to Coarse SAND (A-2-4) and (A-2-6) with Trace Organics and Gravel
- (C) **Coastal Plain:** Medium Stiff to Hard, Red-Orange and Brown-Gray, Moist to Saturated, Fine to Coarse Sandy and Silty CLAY (A-6) and (A-7) with Trace Organics
- (D) **Residual:** Medium Stiff to Hard, Orange-Brown-Gray, Moist to Wet, Fine to Coarse Sandy SILT (A-4) and Clayey SILT (A-5) with Trace Mica and Gravel
- (E) **Residual:** Medium Stiff to Stiff, Tan-Orange, Wet, Fine Sandy Silty CLAY (A-7)
- (F) **Weathered Rock:** Blue-Green and Brown-Gray (BIOTITE GNEISS)



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PROJECT REFERENCE NO.	SHEET NO.
W5600	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-WL2-

WALL ENVELOPE

Approximate Wall Face Area = 18,469.0 SQ. FT.

THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL

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GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Arnold										
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)									
BORING NO. B-126		STATION 10+50		OFFSET 2 ft LT		ALIGNMENT -WL1-										
COLLAR ELEV. 205.9 ft		TOTAL DEPTH 30.0 ft		NORTHING 663,395		EASTING 2,194,260										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER D. Aiello		START DATE 10/09/17		COMP. DATE 10/09/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
210																
205	205.9	0.0	1	4	2								M	205.9	0.0	GROUND SURFACE
200	202.4	3.5	3	4	5								W	203.9	2.0	COASTAL PLAIN Brown, Silty Fine SAND (A-2-4) with Trace Organics (Roots)
195	197.4	8.5	5	8	10								W	198.9	7.0	Orange-Brown, Clayey Fine to Coarse SAND (A-2-6)
190	192.4	13.5	3	6	6								W			Orange-Gray-Brown, Fine to Coarse Sandy Silty CLAY (A-7)
185	187.4	18.5	3	3	5								W			
180	182.4	23.5	5	9	14								W	183.9	22.0	RESIDUAL Tan-Orange-Gray, Clayey SILT (A-5) with Trace Gravel and Mica
	177.4	28.5	2	4	6								W	175.9	30.0	Boring Terminated at Elevation 175.9 ft in SILT (Residual)

Notes:
1. Surficial Organics Soil=0.0'-0.1'

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods										
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)									
BORING NO. B-127		STATION 11+49		OFFSET 1 ft LT		ALIGNMENT -WL1-										
COLLAR ELEV. 204.0 ft		TOTAL DEPTH 35.0 ft		NORTHING 663,354		EASTING 2,194,350										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 10/09/17		COMP. DATE 10/09/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
205																
	204.0	0.0	1	4	4								M	204.0	0.0	GROUND SURFACE
200	200.5	3.5	6	13	11								M	199.5	4.5	COASTAL PLAIN Gray-Tan, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots)
195	195.5	8.5	3	5	7								W	197.0	7.0	Red-Gray, Clayey Fine to Coarse SAND (A-2-6)
190	190.5	13.5	3	5	7								M	192.0	12.0	Brown-Red, Silty CLAY (A-7)
185	185.5	18.5	3	5	6								M			RESIDUAL Tan-Orange, Fine Sandy SILT (A-4)
180	180.5	23.5	5	8	9								M			
175	175.5	28.5	7	10	11								M			
170	170.5	33.5	9	10	12								M	169.6	34.4	Gray-Blue, Fine Sandy Clayey SILT (A-5) with Trace Mica
														169.0	35.0	Boring Terminated at Elevation 169.0 ft in SILT (Residual)

Notes:
1. Surficial Organics Soil=0.0'-0.1'

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY_WALL.GPJ NC_DOT.GDT 7/24/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods											
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)										
BORING NO. B-128		STATION 12+48		OFFSET 1 ft LT		ALIGNMENT -WL1-											
COLLAR ELEV. 202.3 ft		TOTAL DEPTH 40.0 ft		NORTHING 663,311		EASTING 2,194,440											
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER S. Davis		START DATE 10/09/17		COMP. DATE 10/09/17		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							
205														202.3	0.0	GROUND SURFACE	
	202.3	0.0	2	3	4	7						M		200.3	2.9	COASTAL PLAIN Dark Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) Red-Gray, Fine to Coarse Sandy CLAY (A-6)	
200	198.8	3.5	2	3	4	7						W		195.3	7.0	Gray-Red, Clayey Fine to Coarse SAND (A-2-6)	
195	193.8	8.5	3	2	5	7						W		190.3	12.0	RESIDUAL Tan-Gray-Blue, Fine Sandy SILT (A-4) with Trace Mica	
190	188.8	13.5	4	5	6	7						W					
185	183.8	18.5	2	2	4	7						W					
180	178.8	23.5	9	5	6	7						W					
175	173.8	28.5	3	4	5	7						W					
170	168.8	33.5	5	5	11	7						W					
165	163.8	38.5	7	11	22	7						W					
														162.3	40.0	Boring Terminated at Elevation 162.3 ft in SILT (Residual)	
Notes: 1. Surficial Organics Soil=0.0'-0.2'																	

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods											
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)										
BORING NO. B-129		STATION 13+47		OFFSET 2 ft LT		ALIGNMENT -WL1-											
COLLAR ELEV. 201.4 ft		TOTAL DEPTH 44.7 ft		NORTHING 663,269		EASTING 2,194,529											
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER S. Davis		START DATE 10/09/17		COMP. DATE 10/09/17		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							
205														201.4	0.0	GROUND SURFACE	
	201.4	0.0	5	5	3	8						SS-900	12%	199.4	2.0	COASTAL PLAIN Dark Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Organics Tan-Gray, Clayey Fine to Coarse SAND (A-2-6)	
200	197.9	3.5	3	5	4	8						M		194.4	7.0	Gray-Red, Fine to Coarse Sandy CLAY (A-6)	
195	192.9	8.5	3	3	3	8						M		189.4	12.0	Tan-Gray, Fine to Coarse Sandy Silty CLAY (A-7-5)	
190	187.9	13.5	5	8	13	8						SS-903	22%				
185	182.9	18.5	2	3	6	8						M		179.4	22.0	RESIDUAL Gray-Blue, Fine to Coarse Sandy Clayey SILT (A-5) with Trace Mica	
180	177.9	23.5	3	4	7	8						M		169.4	32.0	Gray-Blue, Fine to Coarse Sandy SILT (A-4) with Trace Mica	
175	172.9	28.5	7	10	13	8						M					
170	167.9	33.5	5	10	14	8						M					
165	162.9	38.5	11	16	28	8						M					
160	157.9	43.5	25	51	49/0.2	8						M		157.4	44.0	WEATHERED ROCK Blue (BIOTITE GNEISS)	
														156.7	44.7	Boring Terminated at Elevation 156.7 ft in Weathered Rock (BIOTITE GNEISS)	

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY_WALL.GPJ_NC_DOT.GDT 7/24/18

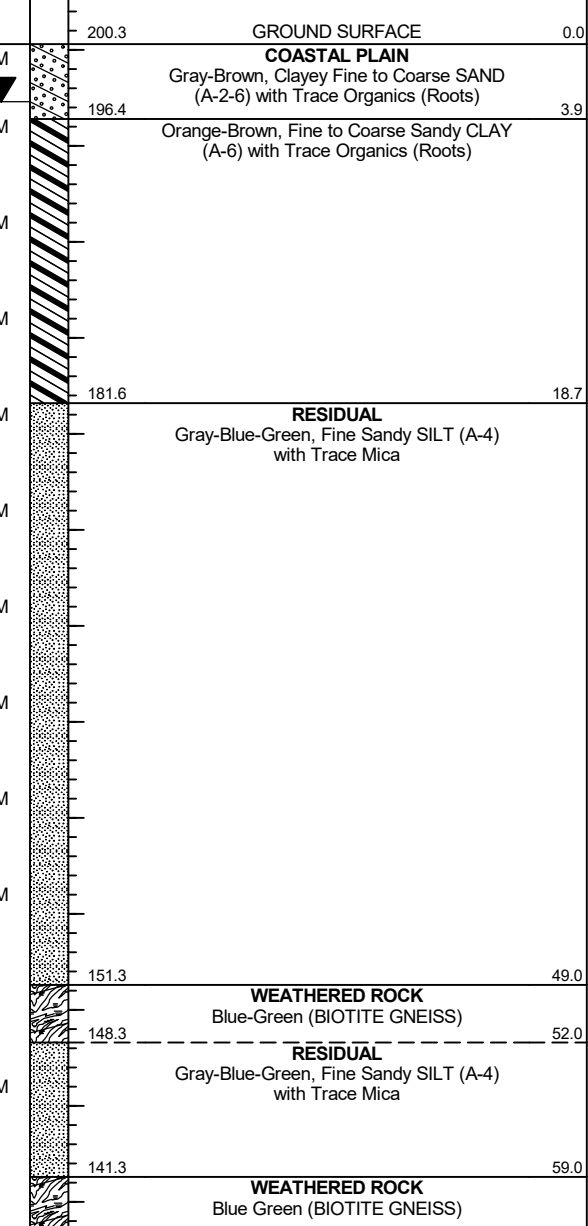
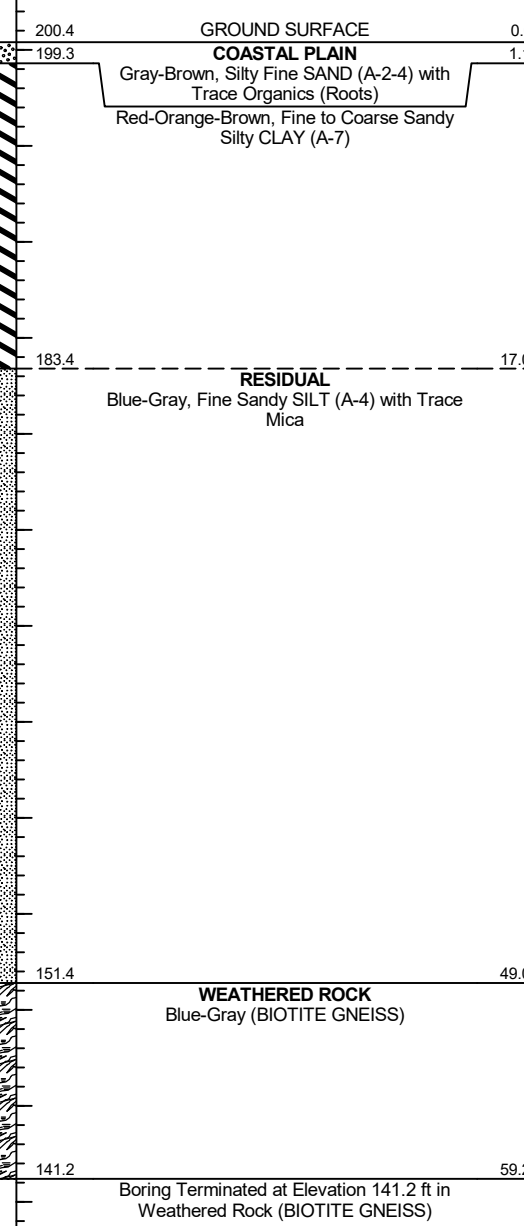
GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Arnold									
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)								
BORING NO. B-131(EB1-B)		STATION 14+46		OFFSET 8 ft LT		ALIGNMENT -WL1-									
COLLAR ELEV. 200.4 ft		TOTAL DEPTH 59.2 ft		NORTHING 663,228		EASTING 2,194,619									
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER D. Aiello		START DATE 10/10/17		COMP. DATE 10/10/17		SURFACE WATER DEPTH N/A									
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					
205															
200	200.4	0.0													
195	196.9	3.5	1	3	3										
190	191.9	8.5	4	4	3										
185	186.9	13.5	1	5	5										
180	181.9	18.5	10	17	23										
175	176.9	23.5	2	3	3										
170	171.9	28.5	4	7	12										
165	166.9	33.5	4	10	13										
160	161.9	38.5	4	9	10										
155	156.9	43.5	5	11	13										
150	151.9	48.5	11	22	31										
145	146.9	53.5	17	47	53/0.2										
	141.9	58.5	50	50/0.2											

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Durway									
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)								
BORING NO. B-181(EB1-C)		STATION 15+27		OFFSET 8 ft LT		ALIGNMENT -WL1-									
COLLAR ELEV. 200.3 ft		TOTAL DEPTH 64.1 ft		NORTHING 663,281		EASTING 2,194,626									
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic									
DRILLER S. Davis		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 MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
205															
200	200.3	0.0													
195	196.8	3.5	1	2	3										
190	191.8	8.5	4	6	7										
185	186.8	13.5	3	5	6										
180	181.8	18.5	7	11	10										
175	176.8	23.5	3	2	5										
170	171.8	28.5	4	6	8										
165	166.8	33.5	4	9	11										
160	161.8	38.5	5	9	15										
155	156.8	43.5	7	11	18										
150	151.8	48.5	8	20	19										
145	146.8	53.5	44	56	44/0.2										
140	141.8	58.5	14	33	20										
	136.8	63.5	20	44	56/0.4										
			73	27/0.1											

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY_WALL_GPJ_NC_DOT.GDT 7/24/18



Boring Terminated at Elevation 141.2 ft in Weathered Rock (BIOTITE GNEISS)

Notes:
1. Surficial Organics Soil=0.0'-0.1'

Boring Terminated at Elevation 136.2 ft in Weathered Rock (BIOTITE GNEISS)

Notes:
1. Surficial Organics Soil=0.0'-0.1'

GEOTECHNICAL BORING REPORT
BORE LOG

WBS 50056.1.1			TIP W-5600			COUNTY JOHNSTON			GEOLOGIST M. Durway						
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72									GROUND WTR (ft)						
BORING NO. B-130(EB1-A)			STATION 15+92			OFFSET 7 ft LT			ALIGNMENT -WL1-						
COLLAR ELEV. 201.7 ft			TOTAL DEPTH 54.8 ft			NORTHING 663,335			EASTING 2,194,631						
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic						
DRILLER D. Aiello			START DATE 10/24/17			COMP. DATE 10/24/17			SURFACE WATER DEPTH N/A						
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				DEPTH (ft)	
205															
200	200.9	0.8	4	16	16								201.7 GROUND SURFACE 0.0		
	198.2	3.5	5	7	8								200.9 ASPHALT 0.8		
	193.2	8.5	4	7	8								200.2 ABC STONE 1.5		
	188.2	13.5	3	3	3								198.7 ROADWAY EMBANKMENT 3.0		
	183.2	18.5	9	13	13								Orange-Brown, Clayey Fine to Coarse SAND (A-2-6) with Trace Gravel and Organics		
	178.2	23.5	2	5	5								COASTAL PLAIN		
	173.2	28.5	7	14	24								Orange-Brown, Fine Sandy Silty CLAY (A-7) with Trace Organics (Roots)		
	168.2	33.5	5	15	24								RESIDUAL		
	163.2	38.5	17	40	60/0.4								Orange-Brown-Gray, Fine Sandy SILT (A-4) with Trace Mica		
	158.2	43.5	12	22	31								184.7 WEATHERED ROCK 17.0		
	153.2	48.5	11	47	53/0.4								Orange-Brown-Gray, Fine Sandy SILT (A-4) with Trace Mica		
	148.2	53.5	19	65	35/0.3								162.7 WEATHERED ROCK 39.0		
													Gray-Tan (BIOTITE GNEISS)		
													159.7 RESIDUAL 42.0		
													Blue-Green, Fine Sandy SILT (A-4)		
													152.7 WEATHERED ROCK 49.0		
													Gray-Blue-Green (BIOTITE GNEISS)		
													146.9 Boring Terminated at Elevation 146.9 ft in Weathered Rock (BIOTITE GNEISS)		

WBS 50056.1.1			TIP W-5600			COUNTY JOHNSTON			GEOLOGIST S. Woods					
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72									GROUND WTR (ft)					
BORING NO. B-124			STATION 16+49			OFFSET CL			ALIGNMENT -WL1-					
COLLAR ELEV. 201.5 ft			TOTAL DEPTH 50.0 ft			NORTHING 663,367			EASTING 2,194,583					
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017						DRILL METHOD H.S. Augers			HAMMER TYPE Automatic					
DRILLER S. Davis			START DATE 10/12/17			COMP. DATE 10/12/17			SURFACE WATER DEPTH N/A					
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				DEPTH (ft)
205														
200	201.5	0.0	2	4	3								201.5 GROUND SURFACE 0.0	
	198.0	3.5	2	3	3								200.6 COASTAL PLAIN 0.9	
	193.0	8.5	3	4	5								Dark Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots)	
	188.0	13.5	4	6	9								Tan, Fine to Coarse Sandy CLAY (A-6)	
	183.0	18.5	5	7	9								16% Gray-Brown, Fine To Coarse Sandy Silty CLAY (A-7) 6.8	
	178.0	23.5	3	4	4								RESIDUAL	
	173.0	28.5	3	6	7								Brown-Gray and Blue-Gray, Fine Sandy SILT (A-4) 12.0	
	168.0	33.5	4	5	8								RESIDUAL	
	163.0	38.5	7	9	14								Brown-Gray and Blue-Gray, Fine Sandy SILT (A-4)	
	158.0	43.5	9	10	17								189.5 WEATHERED ROCK 17.0	
	153.0	48.5	11	20	37								Blue-Green, Fine Sandy SILT (A-4)	
													151.5 Boring Terminated at Elevation 151.5 ft in SILT (Residual) 50.0	

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY_WALL_GPJ_NC_DOT.GDT 7/24/18

Notes:
1. Surficial Organics Soil=0.0'-0.1'
Other Samples:
ST-5 (5.0 - 7.0)

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods	
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)
BORING NO. B-123		STATION 17+54		OFFSET 1 ft LT		ALIGNMENT -WL1-	
COLLAR ELEV. 201.5 ft		TOTAL DEPTH 50.0 ft		NORTHING 663,414		EASTING 2,194,490	
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic	
DRILLER S. Davis		START DATE 10/10/17		COMP. DATE 10/10/17		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					
205															
201.5	201.5	0.0	4	9	6									201.5	GROUND SURFACE
200														199.5	COASTAL PLAIN Tan-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) Gray-Tan-Brown, Fine to Coarse Sandy CLAY (A-6)
198.0		3.5	6	6	6									194.5	Red-Gray, Silty CLAY (A-7)
195														193.6	
193.0		8.5	2	4	6									188.6	
190														184.5	RESIDUAL Yellow-Brown and Blue Gray, Fine to Coarse Sandy SILT (A-4) with Trace Mica
188.0		13.5	2	2	3									183.6	
185														178.6	
183.0		18.5	5	7	9									173.6	
180														168.6	
178.0		23.5	5	6	8									163.6	
175														158.0	
173.0		28.5	6	8	12									153.0	
170															
168.0		33.5	6	8	8										
165															
163.0		38.5	5	6	8										
160															
158.0		43.5	9	14	25										
155															
153.0		48.5	15	19	24										

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods	
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)
BORING NO. B-122		STATION 18+54		OFFSET 1 ft LT		ALIGNMENT -WL1-	
COLLAR ELEV. 202.1 ft		TOTAL DEPTH 40.0 ft		NORTHING 663,457		EASTING 2,194,398	
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic	
DRILLER S. Davis		START DATE 10/11/17		COMP. DATE 10/11/17		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					
205															
202.1	202.1	0.0	3	8	6									202.1	GROUND SURFACE
200														200.1	COASTAL PLAIN Tan, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) Gray, Clayey Fine to Coarse SAND (A-2-6)
198.6		3.5	12	8	7									195.1	Red-Gray, Silty CLAY (A-7)
195														193.6	
193.6		8.5	3	5	6									188.6	
190														185.1	RESIDUAL Yellow-Tan, Fine Sandy SILT (A-4) with Trace Mica
188.6		13.5	2	3	4									183.6	
185														178.6	
183.6		18.5	3	4	5									173.6	
180														168.6	
178.6		23.5	2	6	6									163.6	
175															
173.6		28.5	6	10	13										
170															
168.6		33.5	9	13	16										
165															
163.6		38.5	9	16	20										
Boring Terminated at Elevation 162.1 ft in SILT (Residual)															
Notes: 1. Surficial Organics Soil=0.0'-0.1'															

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY -WALL_GFJ_NC_DOT.GDT 7/24/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods										
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)									
BORING NO. B-121		STATION 19+55		OFFSET 2 ft LT		ALIGNMENT -WL1-										
COLLAR ELEV. 204.3 ft		TOTAL DEPTH 40.0 ft		NORTHING 663,499		EASTING 2,194,307										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 10/11/17		COMP. DATE 10/11/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
205	204.3	0.0												204.3	0.0	GROUND SURFACE
			1	3	3									203.5	0.8	COASTAL PLAIN Dark Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots)
200	200.8	3.5	5	7	7									197.3	7.0	Dark Brown and Tan, Clayey Fine to Coarse SAND (A-2-6) with Trace Organics (Roots) and Trace Gravel
			6	7	10											Red-Brown, Silty CLAY (A-7)
195	195.8	8.5														
190	190.8	13.5	4	3	5											
185	185.8	18.5	2	4	5									187.3	17.0	RESIDUAL Tan-Blue, Fine Sandy SILT (A-4)
180	180.8	23.5	2	3	5											
175	175.8	28.5	5	9	13											
170	170.8	33.5	6	10	12											
165	165.8	38.5	11	17	24									164.3	40.0	Boring Terminated at Elevation 164.3 ft in SILT (Residual)
															Notes: 1. Surficial Organics Soil=0.0'-0.1'	

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods										
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)									
BORING NO. B-120		STATION 20+56		OFFSET 14 ft LT		ALIGNMENT -WL1-										
COLLAR ELEV. 206.5 ft		TOTAL DEPTH 30.0 ft		NORTHING 663,530		EASTING 2,194,210										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 10/11/17		COMP. DATE 10/11/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
210																
205	206.5	0.0	1	4	7									206.5	0.0	GROUND SURFACE
			6	12	17									206.0	0.5	COASTAL PLAIN Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots)
200	203.0	3.5												199.5	7.0	Orange-Brown, Clayey Fine to Coarse SAND (A-2-6)
			6	7	10											Red-Gray-Orange, Fine to Coarse Sandy Silty CLAY (A-7)
195	198.0	8.5														
190	193.0	13.5	3	5	6											
185	188.0	18.5	2	5	3									189.5	17.0	RESIDUAL Tan-Orange, Fine to Coarse Sandy Clayey SILT (A-5) with Trace Gravel
180	183.0	23.5	5	8	11											
	178.0	28.5	3	4	5											
															Boring Terminated at Elevation 176.5 ft in SILT (Residual)	
															Notes: 1. Surficial Organics Soil=0.0'-0.1'	

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY_WALL.GPJ_NC_DOT.GDT 7/24/18

GEOTECHNICAL BORING REPORT BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods										
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)									
BORING NO. B-119	STATION 21+57	OFFSET 38 ft LT	ALIGNMENT -WL1-	0 HR.		15.3										
COLLAR ELEV. 208.0 ft	TOTAL DEPTH 25.0 ft	NORTHING 663,548	EASTING 2,194,108	24 HR.		11.4										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017			DRILL METHOD H.S. Augers	HAMMER TYPE Automatic												
DRILLER S. Davis		START DATE 10/11/17	COMP. DATE 10/11/17	SURFACE WATER DEPTH N/A												
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
210																
	208.0	0.0	4	5	4							M		208.0	GROUND SURFACE	0.0
												M		207.0	COASTAL PLAIN Dark Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics Brown, Fine to Coarse Sandy CLAY (A-6)	1.0
205	204.5	3.5	2	4	9							M		201.0	Red-Gray, Fine Sandy Silty CLAY (A-7)	7.0
200	199.5	8.5	4	6	8							M		191.0	RESIDUAL Tan-Orange, Fine Sandy Silty CLAY (A-7)	17.0
195	194.5	13.5	3	5	6							W				
190	189.5	18.5	3	2	5							W				
185	184.5	23.5	4	5	7							W				

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods										
SITE DESCRIPTION Retaining Wall 1 on -WL1- from 10+00.00 to 22+58.72							GROUND WTR (ft)									
BORING NO. B-118	STATION 22+58	OFFSET 37 ft LT	ALIGNMENT -WL1-	0 HR.		NM										
COLLAR ELEV. 209.1 ft	TOTAL DEPTH 20.0 ft	NORTHING 663,587	EASTING 2,194,016	24 HR.		15.0										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017			DRILL METHOD H.S. Augers	HAMMER TYPE Automatic												
DRILLER S. Davis		START DATE 10/11/17	COMP. DATE 10/11/17	SURFACE WATER DEPTH N/A												
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
210																
	209.1	0.0	4	5	5									209.1	GROUND SURFACE	0.0
														208.3	COASTAL PLAIN Dark Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) Red-Brown, Fine to Coarse Sandy CLAY (A-6)	0.8
205	205.6	3.5	4	7	11									202.1	Red-Gray, Fine Sandy Silty CLAY (A-7)	7.0
200	200.6	8.5	5	7	9									192.1	RESIDUAL Tan-Orange, Fine Sandy Silty CLAY (A-7)	17.0
195	195.6	13.5	4	6	8											
190	190.6	18.5	3	4	4											

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY -WALL.GPJ NC_DOT.GDT 7/24/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods										
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)									
BORING NO. B-146		STATION 10+25		OFFSET 21 ft LT		ALIGNMENT -WL2-										
COLLAR ELEV. 199.1 ft		TOTAL DEPTH 35.0 ft		NORTHING 662,937		EASTING 2,195,261										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 10/18/17		COMP. DATE 10/18/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
200	199.1	0.0	1	3	5									199.1	0.0	GROUND SURFACE
												M		197.1	2.9	ROADWAY EMBANKMENT Dark Brown, Silty Fine SAND (A-2-4) with Trace Organics (Roots)
195	195.6	3.5	5	10	13							M		192.1	7.0	COASTAL PLAIN Red-Brown, Clayey Fine to Coarse SAND (A-2-6)
												M		187.1	12.0	Red-Gray, Silty CLAY (A-7)
190	190.6	8.5	6	7	10							M		182.1	17.0	Brown, Clayey Fine to Coarse SAND (A-2-6)
185	185.6	13.5	7	8	7							M		182.1	17.0	RESIDUAL Brown-Gray, Clayey SILT (A-5)
180	180.6	18.5	5	7	8							M				
175	175.6	23.5	7	9	12							M				
170	170.6	28.5	7	8	12							M				
165	165.6	33.5	11	17	24							M		164.1	35.0	Boring Terminated at Elevation 164.1 ft in SILT (Residual)
																Notes: 1. Surficial Organics Soil=0.0'-0.1'

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods										
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)									
BORING NO. B-145		STATION 11+24		OFFSET 8 ft LT		ALIGNMENT -WL2-										
COLLAR ELEV. 200.0 ft		TOTAL DEPTH 39.6 ft		NORTHING 663,004		EASTING 2,195,187										
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 10/18/17		COMP. DATE 10/18/17		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
200	200.0	0.0	1	2	3									200.0	0.0	GROUND SURFACE
												M		197.1	2.9	ROADWAY EMBANKMENT Dark Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots)
195	196.5	3.5	6	8	5							M		193.0	7.0	COASTAL PLAIN Gray, Clayey Fine to Coarse SAND (A-2-6)
												M		187.1	12.0	
190	191.5	8.5	10	10	7							M		183.0	17.0	RESIDUAL Dark Brown, Fine Sandy SILT (A-4)
185	186.5	13.5	8	10	10							M				
180	181.5	18.5	6	17	41							M				
175	176.5	23.5	13	17	18							M				
170	171.5	28.5	16	19	30							M				
165	166.5	33.5	18	34	66/0.4							M		166.0	34.0	WEATHERED ROCK Dark Gray (BIOTITE GNEISS)
														160.4	39.6	Boring Terminated at Elevation 160.4 ft in Weathered Rock (BIOTITE GNEISS)
																Notes: 1. Surficial Organics Soil=0.0'-0.1'

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY_WALL_GPJ_NC_DOT.GDT 7/24/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods	
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)
BORING NO. B-144		STATION 12+27		OFFSET 1 ft LT		ALIGNMENT -WL2-	
COLLAR ELEV. 199.6 ft		TOTAL DEPTH 44.9 ft		NORTHING 663,066		EASTING 2,195,105	
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER S. Davis		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			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
200	199.6	0.0	1	1	4							M		199.6	0.0	GROUND SURFACE
195	196.1	3.5	5	3	6							M		192.6	7.0	ROADWAY EMBANKMENT Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots)
190	191.1	8.5	1	2	2							M		187.6	12.0	COASTAL PLAIN Dark Gray, Fine Sandy SILT (A-4) with Trace Organics (Roots and Wood Fragments)
185	186.1	13.5	4	7	10							M		182.6	17.0	Brown, Fine to Coarse Sandy CLAY (A-6)
180	181.1	18.5	3	4	5							M				RESIDUAL Blue-Light Gray, Fine Sandy SILT (A-4)
175	176.1	23.5	6	8	12							M				
170	171.1	28.5	10	13	19							M				
165	166.1	33.5	13	21	24							M				
160	161.1	38.5	16	18	26							M				
155	156.1	43.5	21	32	68/0.4							M		155.6	44.0	WEATHERED ROCK (BIOTITE GNEISS)
														154.7	44.9	Boring Terminated at Elevation 154.7 ft in Weathered Rock (BIOTITE GNEISS)

Notes:
1. Surficial Organics Soil=0.0'-0.1'

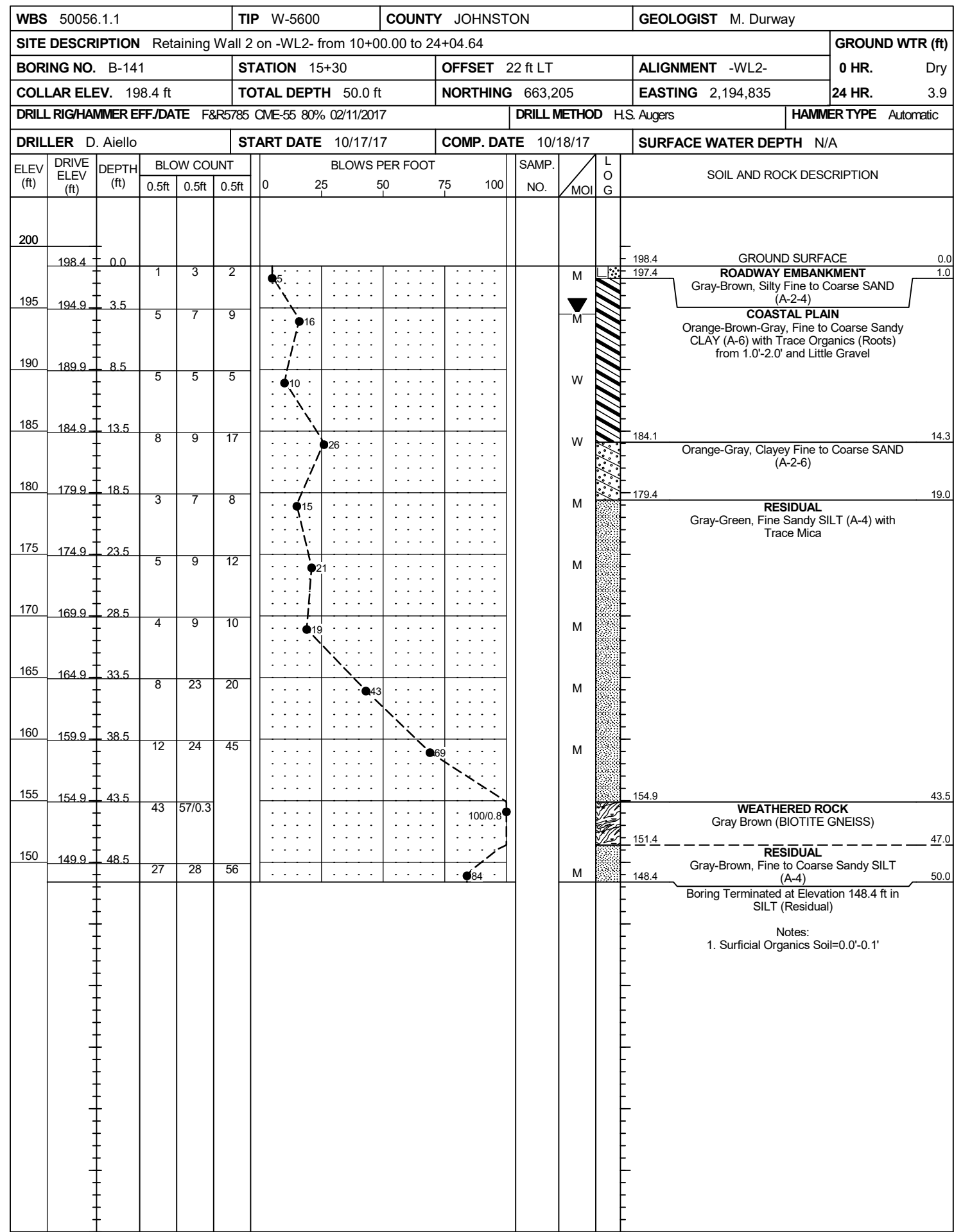
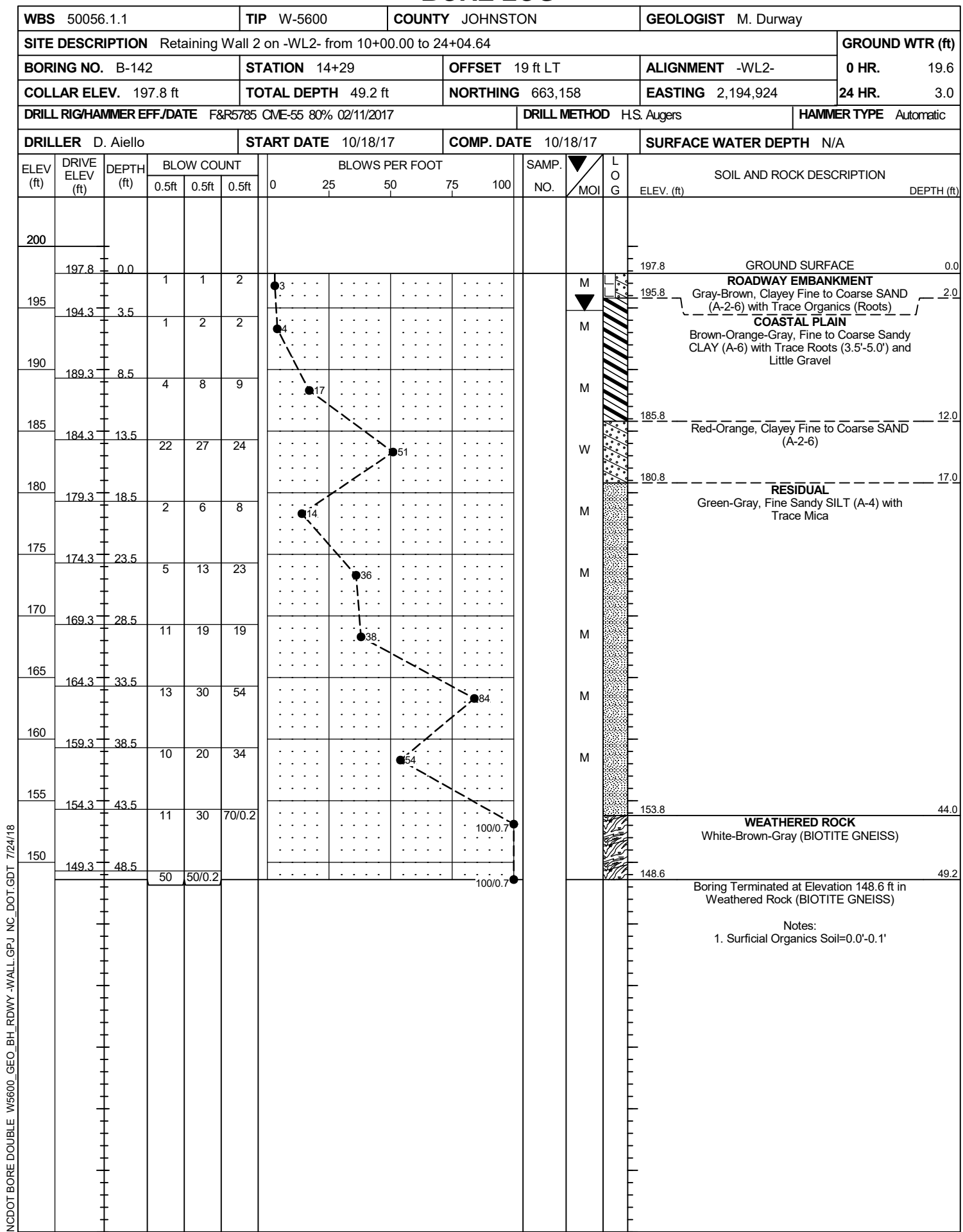
WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST S. Woods	
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)
BORING NO. B-143		STATION 13+28		OFFSET 1 ft LT		ALIGNMENT -WL2-	
COLLAR ELEV. 201.4 ft		TOTAL DEPTH 45.0 ft		NORTHING 663,121		EASTING 2,195,019	
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic	
DRILLER S. Davis		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			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100			ELEV. (ft)	DEPTH (ft)		
205														201.4	0.0	GROUND SURFACE
200	201.4	0.0	1	3	5							M		199.4	2.0	ROADWAY EMBANKMENT Dark Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots)
195	197.9	3.5	3	2	4							M		194.4	7.0	Dark Brown, Fine to Coarse Sandy Silty CLAY (A-7) with Trace Gravel and Organics (Roots)
190	192.9	8.5	2	2	4							M		189.4	12.0	COASTAL PLAIN Dark Gray-Brown, Fine to Coarse Sandy CLAY (A-6) with Trace Organics (Roots)
185	187.9	13.5	15	24	27							M				RESIDUAL Orange-Gray-Blue, Fine Sandy SILT (A-4)
180	182.9	18.5	4	5	7							M				
175	177.9	23.5	4	4	7							M				
170	172.9	28.5	4	6	9							M				
165	167.9	33.5	3	6	9							M				
160	162.9	38.5	6	9	14							M				
	157.9	43.5	7	13	22							M				
														156.4	45.0	Boring Terminated at Elevation 156.4 ft in SILT (Residual)

Notes:
1. Surficial Organics Soil=0.0'-0.1'

GEOTECHNICAL BORING REPORT

BORE LOG



NCDOT BORE DOUBLE W5600_GEO_BH_RDWY_WALL_GPJ_NC_DOT.GDT 7/24/18

GEOTECHNICAL BORING REPORT

BORE LOG

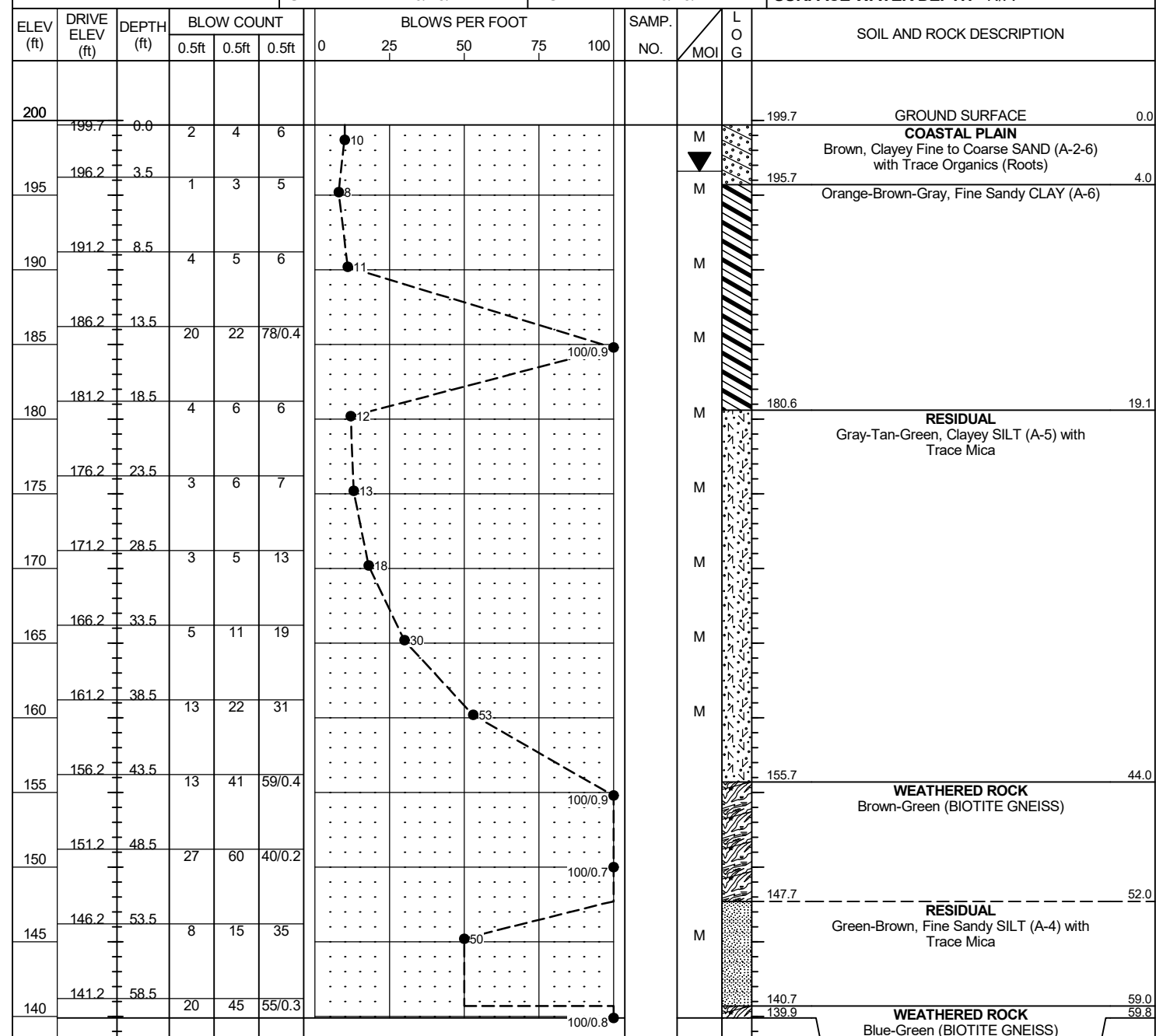
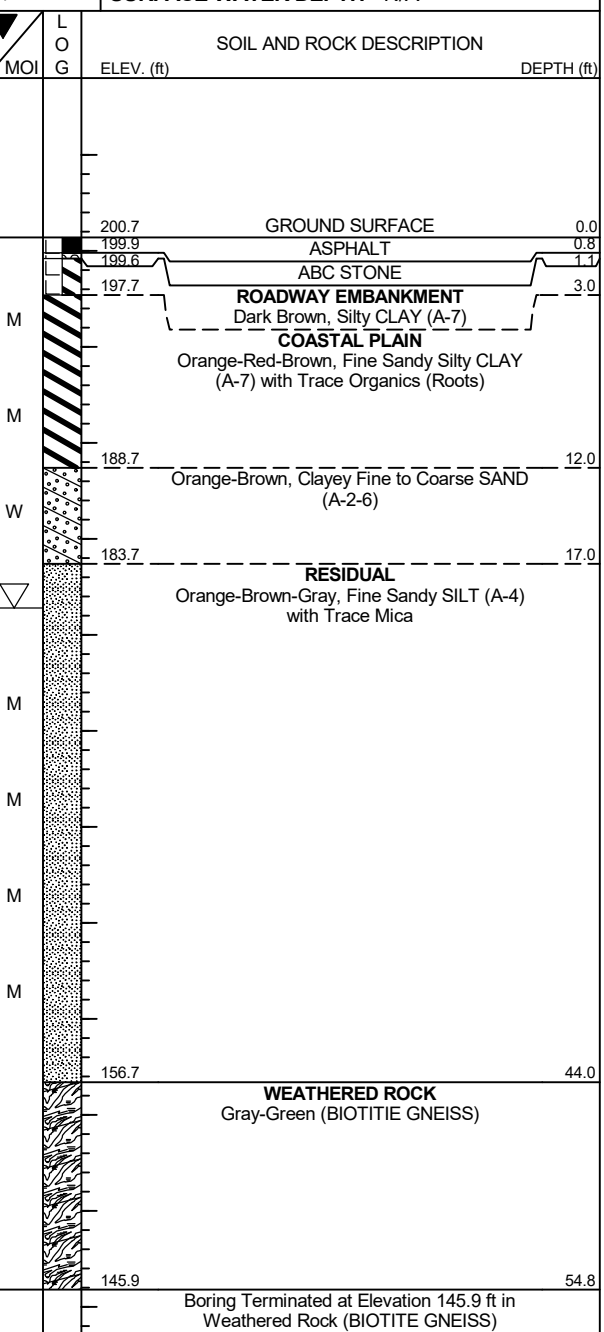
WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Durway	
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)
BORING NO. B-132(EB2-A)		STATION 16+72		OFFSET 8 ft LT		ALIGNMENT -WL2-	
COLLAR ELEV. 200.7 ft		TOTAL DEPTH 54.8 ft		NORTHING 663,287		EASTING 2,194,720	
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic	
DRILLER D. Aiello		START DATE 10/24/17		COMP. DATE 10/24/17		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					
205															
200	199.9	0.8	1	3	4										
195	197.2	3.5	4	6	7										
190	192.2	8.5	3	5	6										
185	187.2	13.5	1	2	2										
180	182.2	18.5	2	2	5										
175	177.2	23.5	2	7	8										
170	172.2	28.5	3	8	11										
165	167.2	33.5	13	22	44										
160	162.2	38.5	9	22	23										
155	157.2	43.5	32	50	50/0.4										
150	152.2	48.5	14	27	73/0.4										
	147.2	53.5	16	42	58/0.3										

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Durway	
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)
BORING NO. B-182(EB2-C)		STATION 17+51		OFFSET 9 ft LT		ALIGNMENT -WL2-	
COLLAR ELEV. 199.7 ft		TOTAL DEPTH 59.8 ft		NORTHING 663,232		EASTING 2,194,716	
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic	
DRILLER D. Aiello		START DATE 10/25/17		COMP. DATE 10/25/17		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	199.7	0.0	2	4	6										
195	196.2	3.5	1	3	5										
190	191.2	8.5	4	5	6										
185	186.2	13.5	20	22	78/0.4										
180	181.2	18.5	4	6	6										
175	176.2	23.5	3	6	7										
170	171.2	28.5	3	5	13										
165	166.2	33.5	5	11	19										
160	161.2	38.5	13	22	31										
155	156.2	43.5	13	41	59/0.4										
150	151.2	48.5	27	60	40/0.2										
145	146.2	53.5	8	15	35										
140	141.2	58.5	20	45	55/0.3										

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY_WALL_GPJ_NC_DOT.GDT 7/24/18



Notes:
1. Surficial Organics Soil=0.0'-0.1'

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Arnold	
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)
BORING NO. B-133 (EB2-B)		STATION 18+04		OFFSET 3 ft LT		ALIGNMENT -WL2-	
COLLAR ELEV. 199.0 ft		TOTAL DEPTH 59.4 ft		NORTHING 663,181		EASTING 2,194,706	
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic	
DRILLER D. Aiello		START DATE 10/11/17		COMP. DATE 10/11/17		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	199.0	0.0	3	7	4									199.0	GROUND SURFACE	0.0
195	195.5	3.5	4	4	6									197.0	COASTAL PLAIN Brown, Silty Fine SAND (A-2-4) with Trace Organics (Roots) Gray-Orange-Brown, Fine to Coarse Sandy Silty CLAY (A-7)	2.9
190	190.5	8.5	4	23	10											
185	185.5	13.5	10	20	16											
180	180.5	18.5	3	3	4									182.0	RESIDUAL Blue-Gray, Clayey SILT (A-5) with Trace Mica	17.0
175	175.5	23.5	5	10	11											
170	170.5	28.5	4	5	10											
165	165.5	33.5	11	19	28											
160	160.5	38.5	14	27	43											
155	155.5	43.5	22	40	60/0.4									155.0	WEATHERED ROCK Gray-Green-Brown (BIOTITE GNEISS)	44.0
150	150.5	48.5	52	48/0.2												
145	145.5	53.5	22	26	43									147.0	RESIDUAL Gray-Green, Clayey SILT (A-5) with Trace Mica	52.0
140	140.5	58.5	36	64/0.4										142.0	WEATHERED ROCK Blue-Gray (BIOTITE GNEISS)	57.0
														139.6	WEATHERED ROCK Blue-Gray (BIOTITE GNEISS)	59.4
															Boring Terminated at Elevation 139.6 ft in Weathered Rock (BIOTITE GNEISS)	
															Notes: 1. Surficial Organics Soil=0.0'-0.1'	

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Arnold	
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)
BORING NO. B-147		STATION 19+10		OFFSET 1 ft LT		ALIGNMENT -WL2-	
COLLAR ELEV. 198.0 ft		TOTAL DEPTH 49.8 ft		NORTHING 663,126		EASTING 2,194,789	
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic	
DRILLER D. Aiello		START DATE 10/11/17		COMP. DATE 10/11/17		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	198.0	0.0	1	1	2									198.0	GROUND SURFACE	0.0
195	194.5	3.5	2	2	3										COASTAL PLAIN Dark Gray-Black-Brown, Fine to Coarse Sandy CLAY (A-6) with Trace Organics (Roots) from 0.0'-1.5' and Trace Gravel	
190	189.5	8.5	7	10	16											
185	184.5	13.5	12	14	12											
180	179.5	18.5	4	4	7									181.0	RESIDUAL Blue-Gray, Clayey SILT (A-5) with Trace Mica	17.0
175	174.5	23.5	6	10	12											
170	169.5	28.5	7	13	22											
165	164.5	33.5	14	23	33											
160	159.5	38.5	18	33	34											
155	154.5	43.5	15	34	54											
150	149.5	48.5	29	47	53/0.3											
														149.0	WEATHERED ROCK Green-Brown (BIOTITE GNEISS)	49.0
														148.2	Boring Terminated at Elevation 148.2 ft in Weathered Rock (BIOTITE GNEISS)	
															Notes: 1. Surficial Organics Soil=0.0'-0.1'	

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BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Arnold										
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)									
BORING NO. B-148		STATION 20+09		OFFSET 1 ft LT		ALIGNMENT -WL2-										
COLLAR ELEV. 196.9 ft		TOTAL DEPTH 54.8 ft		NORTHING 663,076		EASTING 2,194,875										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER D. Aiello		START DATE 10/12/17		COMP. DATE 10/12/17		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
200																
196.9	196.9	0.0	2	2	4										196.9	0.0
195	193.4	3.5	4	4	4										194.9	2.0
190	188.4	8.5	6	7	11											
185	183.4	13.5	8	14	39										184.9	12.0
180	178.4	18.5	4	8	8										179.9	17.0
175	173.4	23.5	5	6	8											
170	168.4	28.5	6	8	11											
165	163.4	33.5	12	18	25											
160	158.4	38.5	10	18	26											
155	153.4	43.5	13	20	20											
150	148.4	48.5	16	17	28											
145	143.4	53.5	20	30	70/0.3										142.9	54.0
															142.1	54.8

Notes:
1. Surficial Organics Soil=0.0'-0.1'

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Arnold										
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)									
BORING NO. B-149		STATION 21+08		OFFSET 1 ft LT		ALIGNMENT -WL2-										
COLLAR ELEV. 195.2 ft		TOTAL DEPTH 58.8 ft		NORTHING 663,024		EASTING 2,194,959										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER D. Aiello		START DATE 10/12/17		COMP. DATE 10/12/17		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
200																
195	195.2	0.0	2	4	6										195.2	0.0
190	191.7	3.5	3	4	6											
185	186.7	8.5	13	35	44											
180	181.7	13.5	3	4	6											
175	176.7	18.5	4	7	11											
170	171.7	23.5	5	9	12											
165	166.7	28.5	7	11	18											
160	161.7	33.5	11	21	28											
155	156.7	38.5	22	19	52											
150	151.7	43.5	19	25	60											
145	146.7	48.5	21	23	26											
140	141.7	53.5	100/0.4													
	136.7	58.5	100/0.3													

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY -WALL.GPJ NC_DOT.GDT 7/24/18

GEOTECHNICAL BORING REPORT

BORE LOG

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Arnold										
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)									
BORING NO. B-150		STATION 22+07		OFFSET 1 ft LT		ALIGNMENT -WL2-										
COLLAR ELEV. 191.9 ft		TOTAL DEPTH 29.1 ft		NORTHING 662,971		EASTING 2,195,043										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER D. Aiello		START DATE 10/16/17		COMP. DATE 10/17/17		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						
195																
	191.9	0.0	3	3	6									191.9	0.0	GROUND SURFACE
190	188.4	3.5	7	5	6								M	189.9	2.0	COASTAL PLAIN Dark Gray-Brown, Silty Fine SAND (A-2-4) with Trace Organics (Roots) Gray-Orange, Clayey Fine to Coarse SAND (A-2-6)
185	183.4	8.5	8	10	9								M	184.9	7.0	RESIDUAL Brown to Blue-Gray, Clayey SILT (A-5) with Trace Mica
180	178.4	13.5	9	13	15								M			
175	173.4	18.5	19	50	50/0.2								M	172.9	19.0	WEATHERED ROCK Gray (BIOTITE GNEISS)
170	168.4	23.5	22	100/0.4									M			
165	163.4	28.5	68	32/0.1									M	162.8	29.1	Boring Terminated at Elevation 162.8 ft in Weathered Rock (BIOTITE GNEISS)
Notes: 1. Surficial Organics Soil=0.0'-0.1'																

WBS 50056.1.1		TIP W-5600		COUNTY JOHNSTON		GEOLOGIST M. Durway										
SITE DESCRIPTION Retaining Wall 2 on -WL2- from 10+00.00 to 24+04.64							GROUND WTR (ft)									
BORING NO. B-151		STATION 23+06		OFFSET 1 ft LT		ALIGNMENT -WL2-										
COLLAR ELEV. 193.4 ft		TOTAL DEPTH 49.6 ft		NORTHING 662,916		EASTING 2,195,125										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 80% 02/11/2017			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic										
DRILLER S. Davis		START DATE 10/17/17		COMP. DATE 10/17/17		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						
195																
	193.4	0.0	1	1	4								M	193.4	0.0	GROUND SURFACE
190	189.9	3.5	6	9	6								M			COASTAL PLAIN Gray-Brown, Silty Fine SAND (A-2-4) with Trace Organics (Roots)
185	184.9	8.5	6	11	12								M	186.4	7.0	RESIDUAL Brown-Blue-Gray, Clayey SILT (A-5) with Trace Mica
180	179.9	13.5	8	18	25								M			
175	174.9	18.5	7	9	11								M			
170	169.9	23.5	12	23	32								M			
165	164.9	28.5	7	17	23								M			
160	159.9	33.5	10	25	37								M			
155	154.9	38.5	12	22	40								M			
150	149.9	43.5	11	17	34								M			
145	144.9	48.5	28	72	28/0.1								M	144.4	49.0	WEATHERED ROCK Gray (BIOTITE GNEISS)
Boring Terminated at Elevation 143.8 ft in Weathered Rock (BIOTITE GNEISS)																

NCDOT BORE DOUBLE W5600_GEO_BH_RDWY -WALL.GPJ NC_DOT.GDT 7/24/18

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

T.I.P. ID NO.: W-5600
DESCRIPTION: US-70 Improvement from US 70 Business to the Neuse River Bridge

REPORT ON SAMPLES OF: SOIL FOR QUALITY

F&R PROJECT #: 66U-0197
DATE SAMPLED: 9/17 to 10/17
SAMPLED FROM: Various
SUBMITTED BY: Cheng Wang

COUNTY: Johnston
RECEIVED: 10/17 to 12/17
REPORTED: 10/17 to 12/17
BY: D. Jenks
Cert No. 101-02-0603

TEST RESULTS

PROJ. SAMPLE NO.	SS-1022	SS-79	SS-900	SS-941	SS-122	SS-123	ST-5	ST-5A
BORING NO.	B-144	B-148	B-129	B-118	B-130	B-130	B-124	B-124
Retained #4 Sieve %	0.0	NT	NT	NT	0.0	0.0	0.1	0.0
Passing #10 Sieve %	100.0	NT	NT	NT	99.9	100.0	8.8	100.0
Passing #40 Sieve %	86.9	NT	NT	NT	94.1	99.7	31.6	94.2
Passing #200 Sieve %	56.5	NT	NT	NT	57.3	68.6	59.5	67.2

SOIL MORTAR - 100%								
Coarse Sand Ret - #60 %	21.0	NT	NT	NT	11.8	3.1	16.9	12.0
Fine Sand Ret - #270 %	30.3	NT	NT	NT	44.4	40.1	29.2	28.1
Silt 0.053 - 0.010 mm %	33.9	NT	NT	NT	29.0	44.5	27.8	20.6
Clay < 0.010 mm %	14.8	NT	NT	NT	14.8	12.3	26.2	39.3
L.L.	19	NT	NT	NT	27	34	31	44
P.L.	NP	NT	NT	NT	NP	NP	12	18
P.I.	NP	NT	NT	NT	NP	NP	19	16
AASHTO Classification	A-4(0)	NT	NT	NT	A-4	A-4	A-6(8)	A-7-6(15)
Station	12+27	20+09	13+47	22+58	15+92	15+92	16+49	16+49
Offset	1'Lt	1'Lt	2'Lt	37'Lt	7'Lt	7'Lt	CL	CL
Depth (ft)	8.5	0.1	0.0	0.0	18.5	23.5	5.0	6.8
to	10.0	1.5	1.5	1.5	20.0	25.0	6.8	7.0
Alignment	-L-	-L-	-L-	-L-	-L-	-L-	-L-	-L-
Moisture Content (%)	18.4	11.3	12.3	7.2	27.1	19.7	15.6	15.6
Organic Content (%)	2.6	2.7	2.0	1.6	NT	NT	NT	NT

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

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