

REFERENCE: R-5797

PROJECT: 44997

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

**STRUCTURE**  
**SUBSURFACE INVESTIGATION**

COUNTY COLUMBUS

PROJECT DESCRIPTION US 74 AT SR 1506 (OLD BOARDMAN ROAD/MACEDONIA CHURCH ROAD)

SITE DESCRIPTION BRIDGE ON SR 1506 (OLD BOARDMAN ROAD/MACEDONIA CHURCH ROAD) OVER US 74 BETWEEN SR 1574 AND SR 1505

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5797	1	8

**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 (ON-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.

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- 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**

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DATE MAY 2019

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SIGNATURE

DATE

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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

SOIL DESCRIPTION
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (ASHSTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE ASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, ASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION
Table with columns for GENERAL CLASS., GRANULAR MATERIALS (<= 35% PASSING #200), SILT-CLAY MATERIALS (> 35% PASSING #200), ORGANIC MATERIALS, GROUP CLASS., SYMBOL, % PASSING #10, #40, #200, MATERIAL PASSING #40 (LL, PI), GROUP INDEX, USUAL TYPES OF MAJOR MATERIALS, GEN. RATING AS SUBGRADE.

CONSISTENCY OR DENSENESS
Table with columns for PRIMARY SOIL TYPE, COMPACTNESS OR CONSISTENCY, RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE), RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2).

TEXTURE OR GRAIN SIZE
Table with columns for U.S. STD. SIEVE SIZE OPENING (MM), BOULDER (BLDR.), COBBLE (COB.), GRAVEL (GR.), COARSE SAND (CSE. SD.), FINE SAND (F. SD.), SILT (SL.), CLAY (CL.).

SOIL MOISTURE - CORRELATION OF TERMS
Table with columns for SOIL MOISTURE SCALE (ATTERBERG LIMITS), FIELD MOISTURE DESCRIPTION, GUIDE FOR FIELD MOISTURE DESCRIPTION.

PLASTICITY
Table with columns for PLASTICITY INDEX (PI), DRY STRENGTH, NON PLASTIC, SLIGHTLY PLASTIC, MODERATELY PLASTIC, HIGHLY PLASTIC.

COLOR
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-BROWN). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION
WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS
MINERALOGICAL COMPOSITION
COMPRESSIBILITY
PERCENTAGE OF MATERIAL
GROUND WATER

MISCELLANEOUS SYMBOLS
ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
SOIL SYMBOL
ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
INFERRED SOIL BOUNDARY
INFERRED ROCK LINE
ALLUVIAL SOIL BOUNDARY

RECOMMENDATION SYMBOLS
UNDERCUT
SHALLOW UNDERCUT
UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE
UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK

ABBREVIATIONS
AR - AUGER REFUSAL
BT - BORING TERMINATED
CL - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HL. - HIGHLY

EQUIPMENT USED ON SUBJECT PROJECT
DRILL UNITS:
CME-45C
CME-55
CME-550
VANE SHEAR TEST
PORTABLE HOIST

ADVANCING TOOLS:
CLAY BITS
6" CONTINUOUS FLIGHT AUGER
8" HOLLOW AUGERS
HARD FACED FINGER BITS
TUNG.-CARBIDE INSERTS
CASING w/ ADVANCER
TRICONE STEEL TEETH
TRICONE TUNG.-CARB.
CORE BIT

ROCK DESCRIPTION
HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)
CRYSTALLINE ROCK (CR)
NON-CRYSTALLINE ROCK (NCR)
COASTAL PLAIN SEDIMENTARY ROCK (CP)

WEATHERING
FRESH
VERY SLIGHT (V SLI.)
SLIGHT (SLI.)
MODERATE (MOD.)
MODERATELY SEVERE (MOD. SEV.)
SEVERE (SEV.)
VERY SEVERE (V SEV.)
COMPLETE

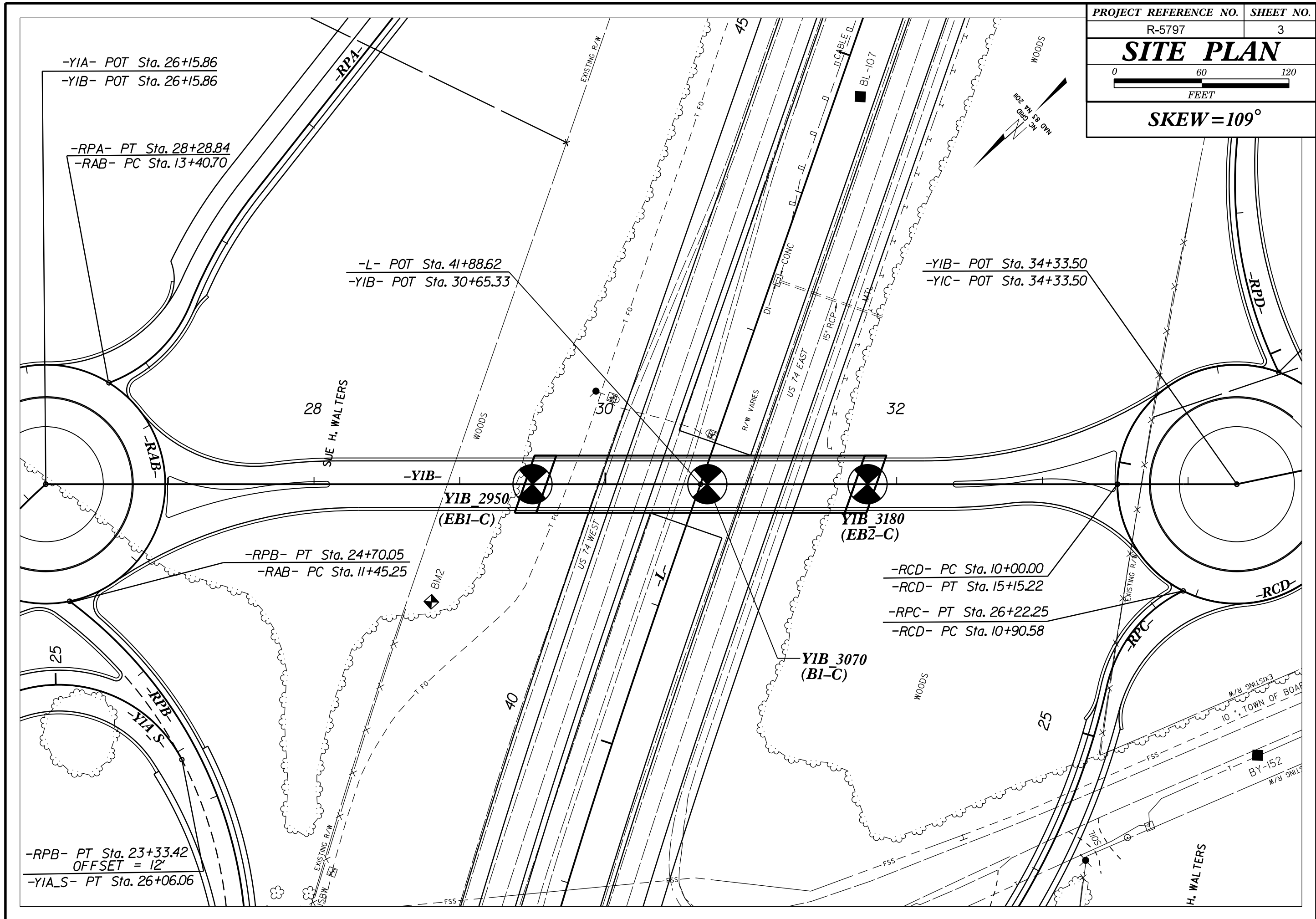
ROCK HARDNESS
VERY HARD
HARD
MODERATELY HARD
MEDIUM HARD
SOFT
VERY SOFT

FRACTURE SPACING
BEDDING
INDURATION

TERMS AND DEFINITIONS
ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
AQUIFER - A WATER BEARING FORMATION OR STRATA.
ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRODUCED ROCKS.
SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: N/A
ELEVATION: N/A FEET
NOTES:
BRIDGE BORING ELEVATIONS OBTAINED USING A SURVEY
GRADE GPS UNIT.
FIAD= FILLED IMMEDIATELY AFTER DRILLING
NM= NOT MEASURED
DATE: 8-15-14



-YIA- POT Sta. 26+15.86  
 -YIB- POT Sta. 26+15.86

-RPA- PT Sta. 28+28.84  
 -RAB- PC Sta. 13+40.70

-L- POT Sta. 41+88.62  
 -YIB- POT Sta. 30+65.33

-YIB- POT Sta. 34+33.50  
 -YIC- POT Sta. 34+33.50

-RPB- PT Sta. 24+70.05  
 -RAB- PC Sta. 11+45.25

-RCD- PC Sta. 10+00.00  
 -RCD- PT Sta. 15+15.22  
 -RPC- PT Sta. 26+22.25  
 -RCD- PC Sta. 10+90.58

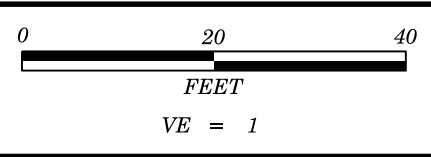
-RPB- PT Sta. 23+33.42  
 OFFSET = 12'  
 -YIA\_S- PT Sta. 26+06.06

YIB 2950  
 (EB1-C)

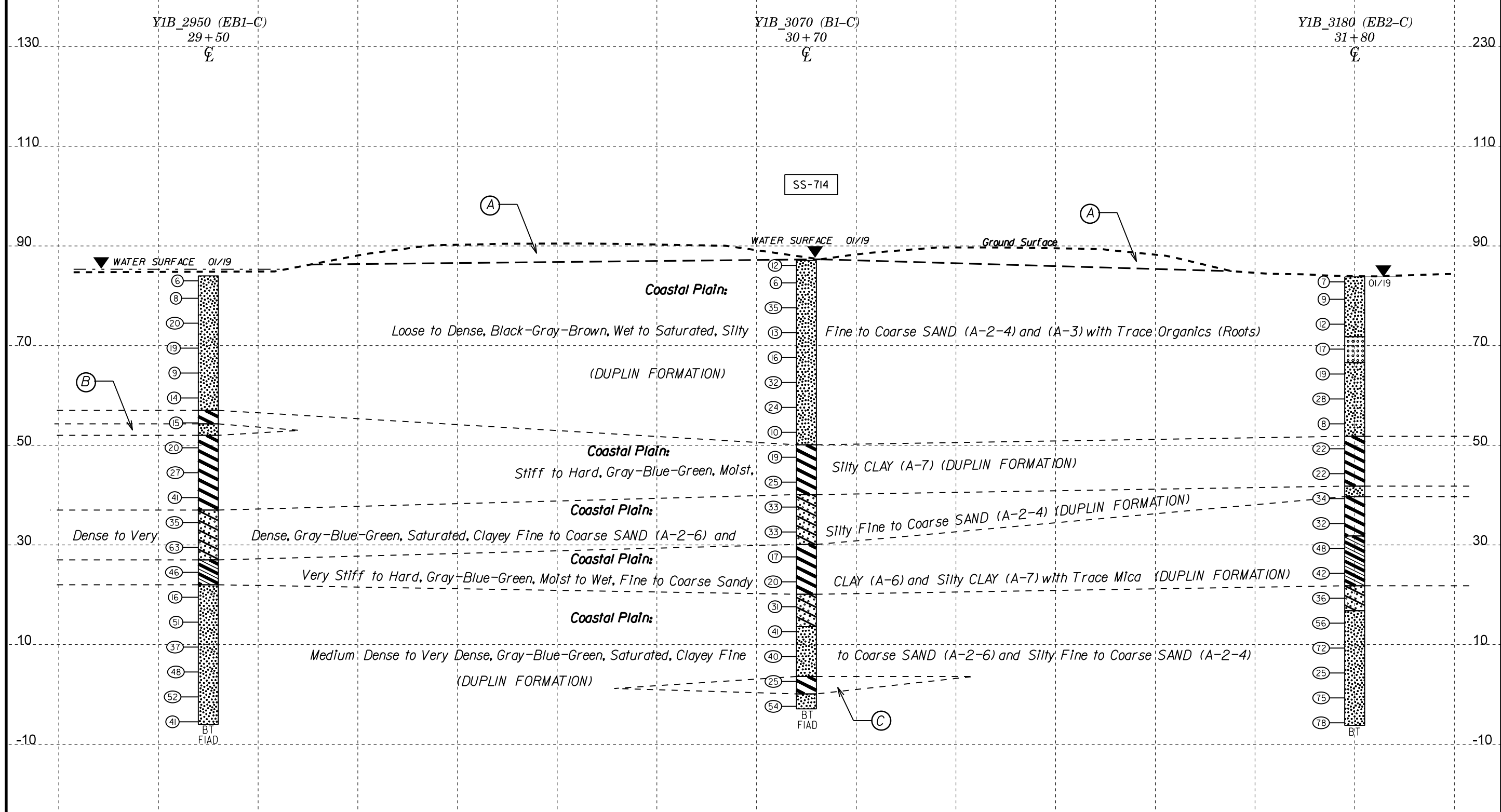
YIB 3180  
 (EB2-C)

YIB 3070  
 (BI-C)

BY-152



<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
R-5797	4
<b>PROFILE BORING PROJECT ALONG CENTERLINE -YIB-</b>	



- (A) **Roadway Embankment:** Loose, Moist, Black and Tan, Silty Fine to Coarse SAND (A-2-4)
- (B) **Coastal Plain:** Medium Dense, Gray, Saturated, Silty Fine to Coarse SAND (A-2-4) (DUPLIN FORMATION)
- (C) **Coastal Plain:** Very Stiff, Brown-Gray, Moist, Silty CLAY (A-7) (DUPLIN FORMATION)

GROUNDLINE TAKEN FROM .TIN FILE PROVIDED BY NCDOT DATED 07/3/2018.  
 INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH  
 PROJECTED ONTO THE PROFILE

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST W. Pesl										
SITE DESCRIPTION US 74 at SR 1506 (Old Boardman Rd./Macedonia Church Rd.)							GROUND WTR (ft)									
BORING NO. Y1B_2950 (EB1-C)		STATION 29+50		OFFSET CL		ALIGNMENT -Y1B-										
COLLAR ELEV. 84.0 ft		TOTAL DEPTH 90.0 ft		NORTHING 249,454		EASTING 2,015,232										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 76% 02/05/2018			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 01/31/19		COMP. DATE 01/31/19		SURFACE WATER DEPTH 0.6ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
85	84.0	0.0	WOH	2	4										WATER SURFACE (01/31/19) GROUND SURFACE	84.0
80	80.5	3.5		5	4										COASTAL PLAIN Black-Gray Silty Fine SAND (A-2-4) with Trace Organics (Roots) (DUPLIN FORMATION)	
75	75.5	8.5		4	7											
70	70.5	13.5		10	10											
65	65.5	18.5		5	4											
60	60.5	23.5		7	7											
55	55.5	28.5	WOH	3	12											
50	50.5	33.5		4	8											
45	45.5	38.5		9	12											
40	40.5	43.5		5	13											
35	35.5	48.5		9	17											
30	30.5	53.5		21	29											
25	25.5	58.5		11	18											
20	20.5	63.5		9	8											
15	15.5	68.5		10	20											
10	10.5	73.5		14	17											
5	5.5	78.5														

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST W. Pesl										
SITE DESCRIPTION US 74 at SR 1506 (Old Boardman Rd./Macedonia Church Rd.)							GROUND WTR (ft)									
BORING NO. Y1B_2950 (EB1-C)		STATION 29+50		OFFSET CL		ALIGNMENT -Y1B-										
COLLAR ELEV. 84.0 ft		TOTAL DEPTH 90.0 ft		NORTHING 249,454		EASTING 2,015,232										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 76% 02/05/2018			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 01/31/19		COMP. DATE 01/31/19		SURFACE WATER DEPTH 0.6ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
5				8	21										Match Line	
0	0.5	83.5		17	22											Gray Clayey Silty Fine to Coarse SAND (A-2-4) (continued)
-5	-4.5	88.5		15	19											
																Boring Terminated at Elevation -6.0 ft in SAND (COASTAL PLAIN) (DUPLIN FORMATION)
																Note: Surficial Organic Soil=0.0'-0.2'

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_BRDG.GPJ NC\_DOT.GDT 5/8/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway								
SITE DESCRIPTION US 74 at SR 1506 (Old Boardman Rd./Macedonia Church Rd.)							GROUND WTR (ft)							
BORING NO. Y1B_3070 (B1-C)		STATION 30+70		OFFSET CL		ALIGNMENT -Y1B-								
COLLAR ELEV. 87.1 ft		TOTAL DEPTH 90.0 ft		NORTHING 249,365		EASTING 2,015,152								
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic								
DRILLER D. Tignor		START DATE 12/19/18		COMP. DATE 12/19/18		SURFACE WATER DEPTH 0.1ft								
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				
90														
	87.1	0.0	1	4	8									87.1 WATER SURFACE (12/19/18) 0.0
85	83.6	3.5	3	2	4								W	COASTAL PLAIN Black-Dark Brown, Silty Fine to Coarse SAND (A-2-4) (DUPLIN FORMATION)
80	78.6	8.5	11	16	19								W	
75	73.6	13.5	4	6	7								Sat.	
70	68.6	18.5	3	8	8								Sat.	
65	63.6	23.5	10	16	16								Sat.	
60	58.6	28.5	4	12	12								Sat.	
55	53.6	33.5	4	5	5								Sat.	
50	48.6	38.5	7	9	10								Sat.	
45	43.6	43.5	8	12	13								Sat.	
40	38.6	48.5	10	17	16								M	50.1 Blue-Green, Silty CLAY (A-7-5) 37.0
35	33.6	53.5	9	13	20								W	40.1 Blue-Green, Clayey Fine to Coarse SAND (A-2-6) 47.0
30	28.6	58.5	5	8	9								W	30.1 Blue-Green, Silty CLAY (A-7-5) 57.0
25	23.6	63.5	6	10	10								W	
20	18.6	68.5	8	12	19								Sat.	20.1 Blue-Green, Clayey Fine to Coarse SAND (A-2-6) 67.0
15	13.6	73.5	12	19	22								Sat.	13.6 Blue-Green, Clayey Silty Fine to Coarse SAND (A-2-4) 73.5
10														

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_BRDG.GPJ NC\_DOT.GDT 5/8/19

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway								
SITE DESCRIPTION US 74 at SR 1506 (Old Boardman Rd./Macedonia Church Rd.)							GROUND WTR (ft)							
BORING NO. Y1B_3070 (B1-C)		STATION 30+70		OFFSET CL		ALIGNMENT -Y1B-								
COLLAR ELEV. 87.1 ft		TOTAL DEPTH 90.0 ft		NORTHING 249,365		EASTING 2,015,152								
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic								
DRILLER D. Tignor		START DATE 12/19/18		COMP. DATE 12/19/18		SURFACE WATER DEPTH 0.1ft								
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				
10														
	8.6	78.5	13	17	23									Match Line
5	3.6	83.5	6	10	15								Sat.	Blue-Green, Clayey Silty Fine to Coarse SAND (A-2-4) (continued)
0	-1.4	88.5	23	29	25								M	3.6 Brown-Gray, Silty CLAY (A-7) 83.5
													W	0.1 Blue-Green, Clayey Silty Fine to Coarse SAND (A-2-4) 87.0
														-2.9 Boring Terminated at Elevation -2.9 ft in SAND (COASTAL PLAIN) (DUPLIN FORMATION) 90.0
														Note: Surficial Organic Soil=0.0'-0.2'

# GEOTECHNICAL BORING REPORT BORE LOG

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST W. Pesl										
SITE DESCRIPTION US 74 at SR 1506 (Old Boardman Rd./Macedonia Church Rd.)							GROUND WTR (ft)									
BORING NO. Y1B_3180 (EB2-C)		STATION 31+80		OFFSET CL		ALIGNMENT -Y1B-										
COLLAR ELEV. 83.8 ft		TOTAL DEPTH 90.0 ft		NORTHING 249,283		EASTING 2,015,078										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 76% 02/05/2018			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 01/30/19		COMP. DATE 01/30/19		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
85	83.8	0.0													83.8	0.0
			WOH 2 5											GROUND SURFACE		
														COASTAL PLAIN		
														Black-Brown, Silty Fine SAND (A-2-4) with Trace Organics (Roots) (DUPLIN FORMATION)		
80	80.3	3.5	2	3	6											
75	75.3	8.5	4	6	6											
70	70.3	13.5	8	8	9											
65	65.3	18.5	5	10	9											
60	60.3	23.5	8	12	16											
55	55.3	28.5	3	4	4											
50	50.3	33.5	8	10	12											
45	45.3	38.5	7	8	14											
40	40.3	43.5	8	16	18											
35	35.3	48.5	9	14	18											
30	30.3	53.5	18	22	26											
25	25.3	58.5	12	20	22											
20	20.3	63.5	9	15	21											
15	15.3	68.5	22	28	28											
10	10.3	73.5	23	33	39											
5	5.3	78.5														

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST W. Pesl										
SITE DESCRIPTION US 74 at SR 1506 (Old Boardman Rd./Macedonia Church Rd.)							GROUND WTR (ft)									
BORING NO. Y1B_3180 (EB2-C)		STATION 31+80		OFFSET CL		ALIGNMENT -Y1B-										
COLLAR ELEV. 83.8 ft		TOTAL DEPTH 90.0 ft		NORTHING 249,283		EASTING 2,015,078										
DRILL RIG/HAMMER EFF./DATE F&R5785 CME-55 76% 02/05/2018			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 01/30/19		COMP. DATE 01/30/19		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
5																
														Match Line		
														Gray, Clayey Silty Fine to Coarse SAND (A-2-4) (continued)		
0	0.3	83.5	22	35	40											
														Boring Terminated at Elevation -6.2 ft in SAND (COASTAL PLAIN) (DUPLIN FORMATION)		
														Note: Surficial Organic Soil=0.0'-0.3'		
-5	-4.7	88.5	28	38	40											
														Boring Terminated at Elevation -6.2 ft in SAND (COASTAL PLAIN) (DUPLIN FORMATION)		
														Note: Surficial Organic Soil=0.0'-0.3'		

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_BRDG.GPJ NC\_DOT.GDT 5/8/19

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

T.I.P. ID NO.: R-5797  
DESCRIPTION: US 74 and SR 1506 (Old Boardman Road/Macedonia Church Road)

REPORT ON SAMPLES OF: SOIL FOR QUALITY

F&R PROJECT #: 66V-0246  
DATE SAMPLED: 8/18 to 1/19  
SAMPLED FROM: Various  
SUBMITTED BY: Cheng Wang

COUNTY: Columbus  
RECEIVED: 8/18 to 1/19  
REPORTED: 8/18 to 1/19  
BY: D. Council

**TEST RESULTS**

PROJ. SAMPLE NO.	SS-714														
BORING NO.	Y1B_3070														
	(B1-C)														
Retained #4 Sieve %	0.0														
Passing #10 Sieve %	100.0														
Passing #40 Sieve %	94.8														
Passing #200 Sieve %	61.6														

SOIL MORTAR - 100%															
Coarse Sand Ret - #60 %	11.5														
Fine Sand Ret - #270 %	41.7														
Silt 0.053 - 0.010 mm %	35.1														
Clay < 0.010 mm %	11.7														
L.L.	46														
P.L.	33														
P.I.	13														
AASHTO Classification	A-7-5 (7)														
Station	30+70														
Offset	CL														
Depth (ft)	43.5														
to	45.0														
Alignment	-Y1B-														
Moisture Content (%)	20.7														
Organic Content (%)	NT														

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

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



REFERENCE: R-5797

PROJECT: 44997

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

STRUCTURE  
SUBSURFACE INVESTIGATION

COUNTY COLUMBUS  
PROJECT DESCRIPTION US 74 AT SR 1506 (OLD BOARDMAN ROAD/MACEDONIA CHURCH ROAD)  
SITE DESCRIPTION RETAINING WALL 1 ON -WALL 1- FROM 10+00.00 TO 12+46.31 AND RETAINING WALL 2 ON -WALL 2- FROM 17+00 TO 20+00

CONTENTS

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5797	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 (ON-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. DURWAY

W. PESL

D. TIGNOR

T. BEARD

INVESTIGATED BY F&R, Inc.

DRAWN BY T.T. WALKER

CHECKED BY P. ALTON, P.E.

SUBMITTED BY C. WANG, P.E.

DATE SEPTEMBER 2019

SINCE **Prepared in the Office of:**  

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 Engineering Stability Since 1881  
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 www.fandr.com



SIGNATURE

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

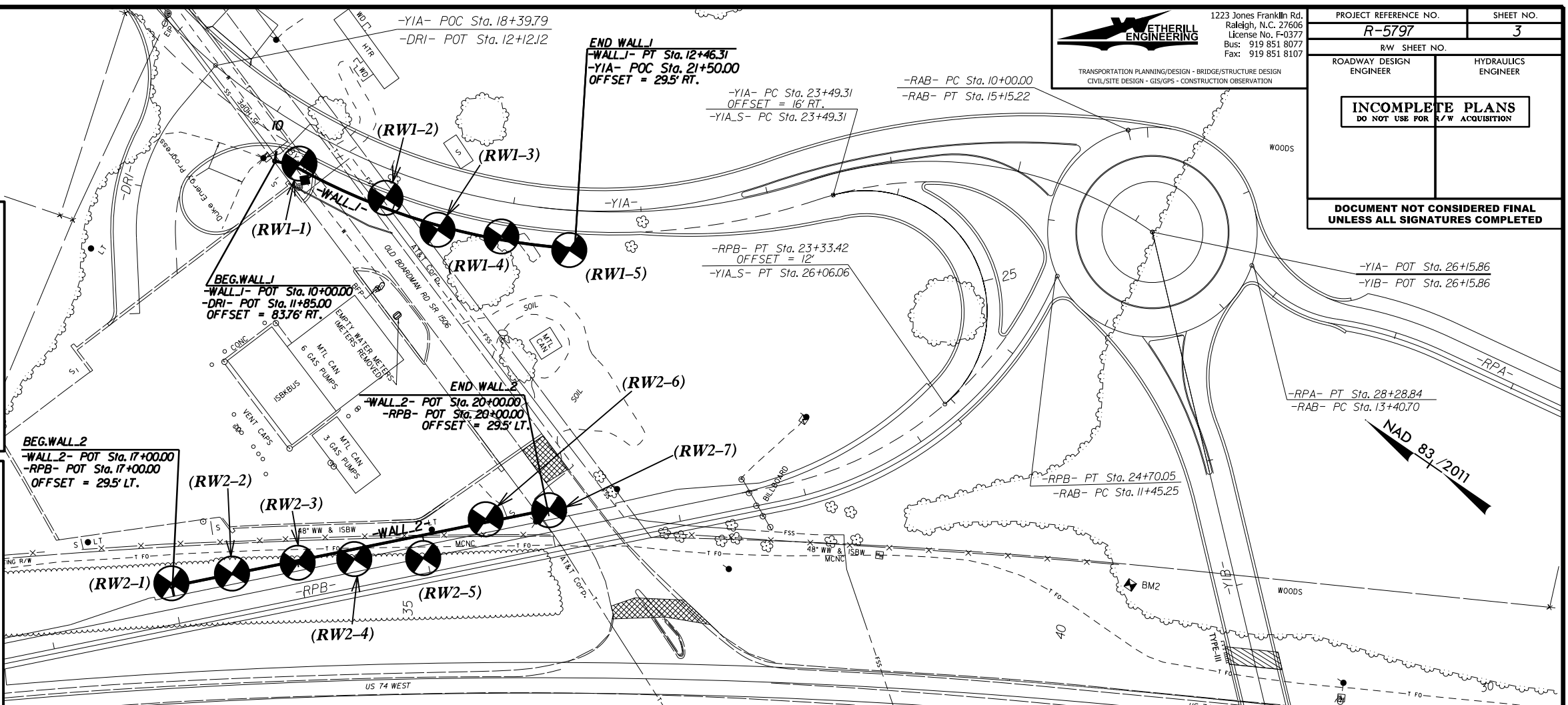
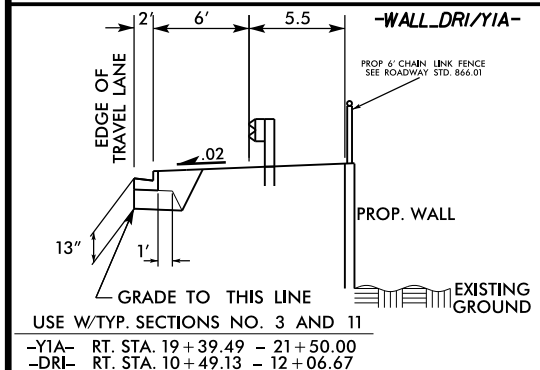
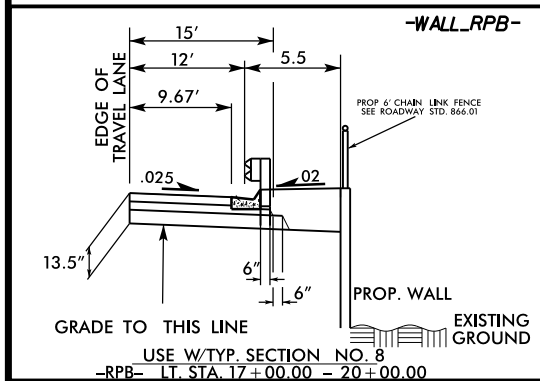
Table with 4 main columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, and TERMS AND DEFINITIONS. Includes sub-sections like SOIL LEGEND AND AASHTO CLASSIFICATION, CONSISTENCY OR DENSENESS, TEXTURE OR GRAIN SIZE, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, and COLOR.

8/17/99

**ETHERILL ENGINEERING**  
 1223 Jones Franklin Rd.  
 Raleigh, N.C. 27606  
 License No. F-0377  
 Bus: 919 851 8077  
 Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN  
 CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

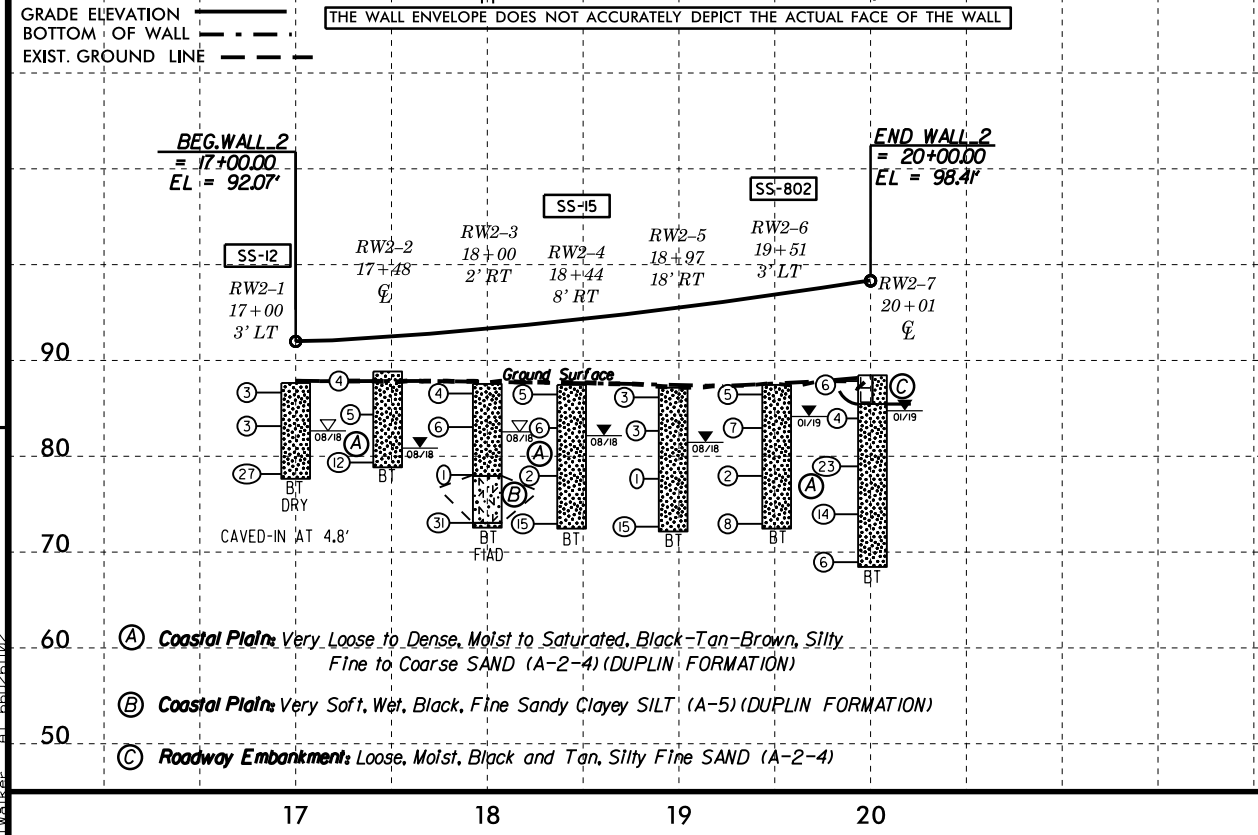
PROJECT REFERENCE NO. <b>R-5797</b>	SHEET NO. <b>3</b>
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	



## WALL 2

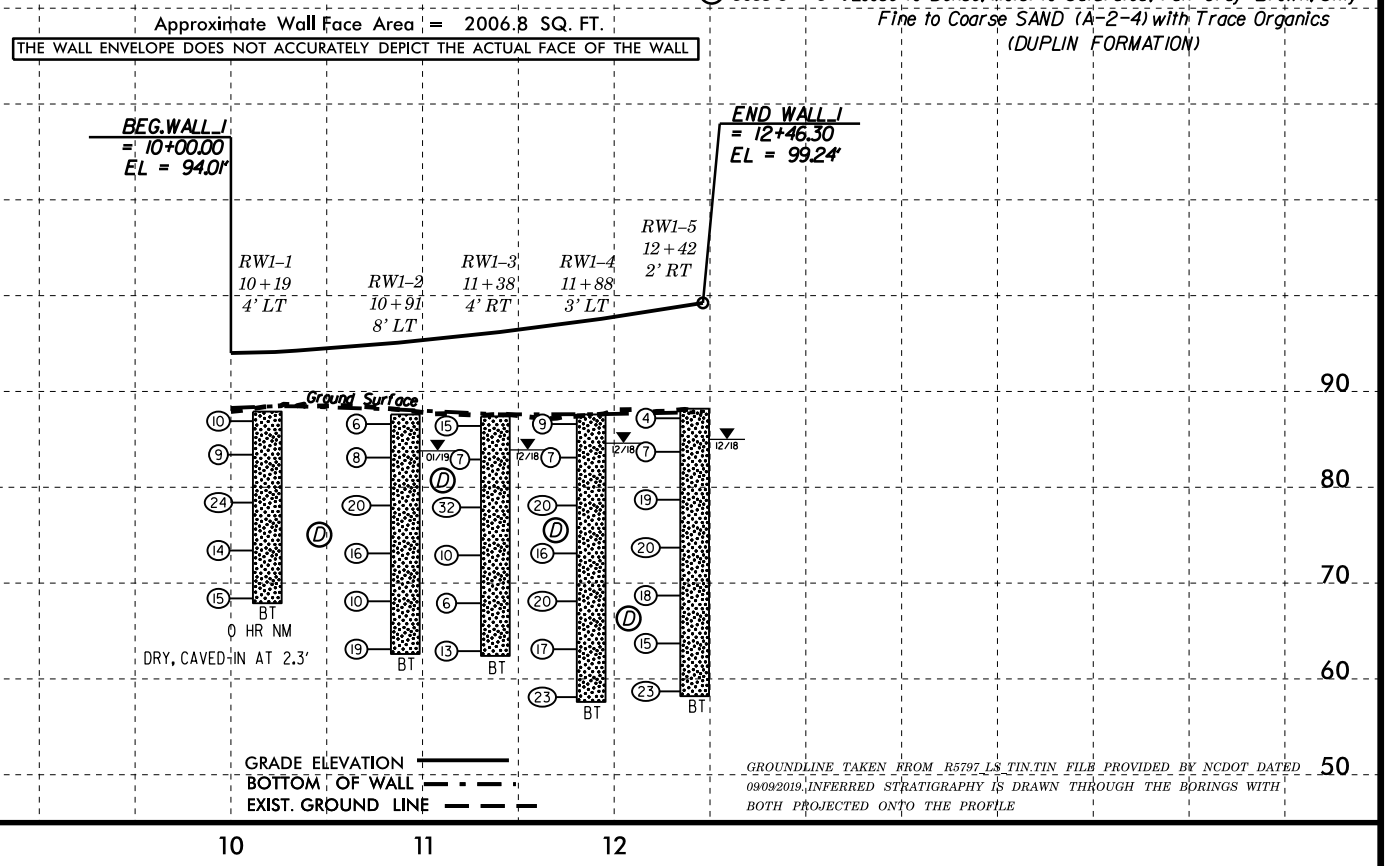
VE=5

Approximate Wall Face Area = 2071.3 SQ. FT.  
 THE WALL ENVELOPE DOES NOT ACCURATELY DEPICT THE ACTUAL FACE OF THE WALL



## WALL 1

Coastal Plains: Loose to Dense, Moist to Saturated, Tan-Gray-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (DUPLIN FORMATION)



REVISIONS  
 27-SEP-2019 13:20  
 F:\Projects\66166\66166-0246 (WEI-R-5797) Columbus Co Task 2\VR-5797\_GEO\_ROWY\CADD\_GED\TECH\Sub\Retaing Walls\VR-5797\_Rdg\_PSH\_WALL.dgn  
 27-SEP-2019 13:20  
 F:\Projects\66166\66166-0246 (WEI-R-5797) Columbus Co Task 2\VR-5797\_GEO\_ROWY\CADD\_GED\TECH\Sub\Retaing Walls\VR-5797\_Rdg\_PSH\_WALL.dgn

GROUNDLINE TAKEN FROM R5797 LS TINTIN FILE PROVIDED BY NCDOT DATED 09/09/2019, INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE

GEOTECHNICAL BORING REPORT  
BORE LOG

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway								
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00						GROUND WTR (ft)								
BORING NO. RW1-1		STATION 10+19		OFFSET 4 ft LT		ALIGNMENT -WALL1-								
COLLAR ELEV. 87.9 ft		TOTAL DEPTH 20.0 ft		NORTHING 250,281		EASTING 2,015,122								
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic								
DRILLER D. Tignor		START DATE 01/03/18		COMP. DATE 01/03/19		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
90	87.9	0.0	2	4	6									87.9 GROUND SURFACE
85	84.4	3.5	4	4	5	10								COASTAL PLAIN Gray-Tan, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) (DUPLIN FORMATION)
80	79.4	8.5	6	10	14									
75	74.4	13.5	5	7	7									
70	69.4	18.5	5	7	8									
														67.9 Boring Terminated at Elevation 67.9 ft in SAND (COASTAL PLAIN) Note: 24 Hr. =Dry, Caved-in at 2.3'

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway								
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00						GROUND WTR (ft)								
BORING NO. RW1-2		STATION 10+91		OFFSET 8 ft LT		ALIGNMENT -WALL1-								
COLLAR ELEV. 87.6 ft		TOTAL DEPTH 25.0 ft		NORTHING 250,211		EASTING 2,015,138								
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic								
DRILLER D. Tignor		START DATE 01/03/19		COMP. DATE 01/03/19		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
90	87.6	0.0	2	3	3									87.6 GROUND SURFACE
85	84.1	3.5	3	4	4	8								COASTAL PLAIN Tan-Brown, Silty Fine to Coarse SAND (A-2-4) (DUPLIN FORMATION)
80	79.1	8.5	6	8	12									
75	74.1	13.5	5	9	7									
70	69.1	18.5	1	3	7									
65	64.1	23.5	7	9	10									62.6 Boring Terminated at Elevation 62.6 ft in SAND (COASTAL PLAIN) Note: Surficial Organic Soil=0.0'-0.1'

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_WALL\_GPJ\_NC\_DOT\_GDT\_9/25/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway												
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00							GROUND WTR (ft)											
BORING NO. RW1-3		STATION 11+38		OFFSET 4 ft RT		ALIGNMENT -WALL1-												
COLLAR ELEV. 87.4 ft		TOTAL DEPTH 25.0 ft		NORTHING 250,163		EASTING 2,015,141												
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83%/02/05/2018			DRILL METHOD Mud Rotary			HAMMER TYPE Automatic												
DRILLER D. Tignor		START DATE 12/18/18		COMP. DATE 12/18/18		SURFACE WATER DEPTH N/A												
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION					
			0.5ft	0.5ft	0.5ft	0	25	50	75	100		MOI		ELEV. (ft) DEPTH (ft)				
	87.4	0.0	4	8	7								87.4 GROUND SURFACE 0.0					
90																		
	83.9	3.5	2	3	4						M		Orange-Brown-Black, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) (DUPLIN FORMATION)					
85											W							
	78.9	8.5	7	14	18						Sat.							
80																		
	73.9	13.5	4	5	5						Sat.							
75																		
	68.9	18.5	3	4	2						Sat.							
70																		
	63.9	23.5	4	6	7						Sat.							
65													62.4 Boring Terminated at Elevation 62.4 ft in SAND (COASTAL PLAIN) 25.0					
													Note: Surficial Organic Soil=0.0'-0.2'					

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway												
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00							GROUND WTR (ft)											
BORING NO. RW1-4		STATION 11+88		OFFSET 3 ft LT		ALIGNMENT -WALL1-												
COLLAR ELEV. 87.6 ft		TOTAL DEPTH 30.0 ft		NORTHING 250,119		EASTING 2,015,165												
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83%/02/05/2018			DRILL METHOD H.S. Augers			HAMMER TYPE Automatic												
DRILLER D. Tignor		START DATE 12/18/18		COMP. DATE 12/18/18		SURFACE WATER DEPTH N/A												
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION					
			0.5ft	0.5ft	0.5ft	0	25	50	75	100		MOI		ELEV. (ft) DEPTH (ft)				
	87.6	0.0	3	5	4								87.6 GROUND SURFACE 0.0					
90																		
	84.1	3.5	3	3	4						M		Orange-Brown-Black, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) (DUPLIN FORMATION)					
85											W							
	79.1	8.5	3	9	11						Sat.							
80																		
	74.1	13.5	6	7	9						Sat.							
75																		
	69.1	18.5	6	9	11						Sat.							
70																		
	64.1	23.5	4	8	9						Sat.							
65																		
	59.1	28.5	7	12	11						Sat.							
60													57.6 Boring Terminated at Elevation 57.6 ft in SAND (COASTAL PLAIN) 30.0					
													Note: Surficial Organic Soil=0.0'-0.2'					

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_WALL\_GPJ\_NC\_DOT.GDT 9/25/19

# GEOTECHNICAL BORING REPORT BORE LOG

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway									
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00							GROUND WTR (ft)								
BORING NO. RW1-5		STATION 12+42		OFFSET 2 ft RT		ALIGNMENT -WALL1-									
COLLAR ELEV. 88.2 ft		TOTAL DEPTH 30.0 ft		NORTHING 250,070		EASTING 2,015,186									
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018		DRILL METHOD Mud Rotary		HAMMER TYPE Automatic		0 HR. NM									
DRILLER D. Tignor		START DATE 12/18/18		COMP. DATE 12/18/18		24 HR. 3.2									
DRILLER D. Tignor		START DATE 12/18/18		COMP. DATE 12/18/18		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	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
90															
	88.2	0.0	1	2	2	4								88.2	0.0
85	84.7	3.5	3	3	4	7							M		
													▼		
80	79.7	8.5	4	8	11	19							Sat.		
75	74.7	13.5	7	9	11	20							Sat.		
70	69.7	18.5	5	9	9	18							Sat.		
65	64.7	23.5	5	7	8	15							Sat.		
60	59.7	28.5	8	11	12	23							Sat.		
														58.2	30.0
Boring Terminated at Elevation 58.2 ft in SAND (COASTAL PLAIN) Note: Surficial Organic Soil=0.0'-0.2'															

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_WALL.GPJ\_NC\_DOT.GDT 9/25/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway											
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00							GROUND WTR (ft)										
BORING NO. RW2-1		STATION 17+00		OFFSET 3 ft LT		ALIGNMENT -WALL2-											
COLLAR ELEV. 87.7 ft		TOTAL DEPTH 10.0 ft		NORTHING 250,178		EASTING 2,014,795											
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER D. Tignor		START DATE 08/07/18		COMP. DATE 08/07/18		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	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
90	87.7	0.0													87.7	GROUND SURFACE	0.0
85	84.2	3.5	1	1	2	•	•	•	•	•	•	M			Black and Tan, Silty Fine to Coarse SAND (A-2-4) (DUPLIN FORMATION)		
			1	2	1	•	•	•	•	•	•	SS-12	▽				
80	79.2	8.5	10	14	13	•	•	•	•	•	•	W	20%			77.7	Boring Terminated at Elevation 77.7 ft in SAND (COASTAL PLAIN)
Notes: 1. Surficial Organic Soil=0.0'-0.1' 2. 24 Hr. =Dry, Caved-in at 4.8'																	

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway											
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00							GROUND WTR (ft)										
BORING NO. RW2-2		STATION 17+48		OFFSET CL		ALIGNMENT -WALL2-											
COLLAR ELEV. 87.6 ft		TOTAL DEPTH 10.0 ft		NORTHING 250,143		EASTING 2,014,828											
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic											
DRILLER D. Tignor		START DATE 08/07/18		COMP. DATE 08/07/18		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	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
90	87.6	0.0													87.6	GROUND SURFACE	0.0
85	84.1	3.5	WOH	2	2	•	•	•	•	•	•	M			Black and Tan, Silty Fine to Coarse SAND (A-2-4) (DUPLIN FORMATION)		
			2	2	3	•	•	•	•	•	•	M					
80	79.1	8.5	1	7	5	•	•	•	•	•	•	W	▽			77.6	Boring Terminated at Elevation 77.6 ft in SAND (COASTAL PLAIN)
Note: Surficial Organic Soil=0.0'-0.1'																	

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_WALL\_GPJ\_NC\_DOT.GDT 9/25/19

# GEOTECHNICAL BORING REPORT

## BORE LOG

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway										
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00							GROUND WTR (ft)									
BORING NO. RW2-3		STATION 18+00		OFFSET 2 ft RT		ALIGNMENT -WALL2-										
COLLAR ELEV. 87.6 ft		TOTAL DEPTH 15.0 ft		NORTHING 250,106		EASTING 2,014,864										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 08/07/18		COMP. DATE 08/07/18		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
90																
	87.6	0.0													87.6	GROUND SURFACE
85			1	2	2								M			<b>COASTAL PLAIN</b> Black and Tan, Silty Fine to Coarse SAND (A-2-4) (DUPLIN FORMATION)
	84.1	3.5											M			
80			2	3	3											
	79.1	8.5														
75			1	0	1								W		78.0	Black, Fine Sandy Clayey SILT (A-5) (DUPLIN FORMATION)
	74.1	13.5														
			12	18	13								W		73.1	Gray, Silty Fine to Coarse SAND (A-2-4) (DUPLIN FORMATION)
															72.6	Boring Terminated at Elevation 72.6 ft in SAND (COASTAL PLAIN)
																Note: Surficial Organic Soil=0.0'-0.1'

WBS 44997.1.1		TIP R-5797		COUNTY COLUMBUS		GEOLOGIST M. Durway										
SITE DESCRIPTION Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00							GROUND WTR (ft)									
BORING NO. RW2-4		STATION 18+44		OFFSET 8 ft RT		ALIGNMENT -WALL2-										
COLLAR ELEV. 87.5 ft		TOTAL DEPTH 15.0 ft		NORTHING 250,071		EASTING 2,014,892										
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 83% 02/05/2018				DRILL METHOD H.S. Augers		HAMMER TYPE Automatic										
DRILLER D. Tignor		START DATE 08/07/18		COMP. DATE 08/07/18		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		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
90																
	87.5	0.0													87.5	GROUND SURFACE
85			1	2	3								M			<b>COASTAL PLAIN</b> Black and Gray, Silty Fine to Coarse SAND (A-2-4) with Trace Organics (Roots) (DUPLIN FORMATION)
	84.0	3.5											M			
80			3	3	3											
	79.0	8.5														
75			2	1	1								SS-15	63%		
	74.0	13.5														
			4	6	9								W		72.5	Boring Terminated at Elevation 72.5 ft in SAND (COASTAL PLAIN)
																Note: Surficial Organic Soil=0.0'-0.1'

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_WALL\_GPJ\_NC\_DOT.GDT 9/27/19





# GEOTECHNICAL BORING REPORT BORE LOG

<b>WBS</b> 44997.1.1			<b>TIP</b> R-5797			<b>COUNTY</b> COLUMBUS			<b>GEOLOGIST</b> M. Durway							
<b>SITE DESCRIPTION</b> Ret. Wall 1 on -Wall_1- from 10+00.00 to 12+46.31 and Ret. Wall 2 on -Wall_2- from 17+00.00 to 20+00.00									<b>GROUND WTR (ft)</b>							
<b>BORING NO.</b> RW2-7			<b>STATION</b> 20+01			<b>OFFSET</b> CL			<b>ALIGNMENT</b> -WALL2-							
<b>COLLAR ELEV.</b> 88.5 ft			<b>TOTAL DEPTH</b> 20.0 ft			<b>NORTHING</b> 249,967			<b>EASTING</b> 2,015,009							
<b>DRILL RIG/HAMMER EFF./DATE</b> F&R3495 CME-55 83% 02/05/2018			<b>DRILL METHOD</b> H.S. Augers			<b>HAMMER TYPE</b> Automatic			<b>0 HR.</b> NM							
<b>DRILLER</b> D. Tignor			<b>START DATE</b> 01/02/19			<b>COMP. DATE</b> 01/02/19			<b>24 HR.</b> 3.7							
<b>DRILLER</b> D. Tignor			<b>START DATE</b> 01/02/19			<b>COMP. DATE</b> 01/02/19			<b>SURFACE WATER DEPTH</b> N/A							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
90																
	88.5	0.0	1	3	3	6									88.5	GROUND SURFACE
85	85.0	3.5	2	2	2	4									85.5	ROADWAY EMBANKMENT Black and Tan, Silty Fine SAND (A-2-4)
80	80.0	8.5	4	11	12	23										COASTAL PLAIN Tan-Brown and Black, Silty Fine to Coarse SAND (A-2-4) (DUPLIN FORMATION)
75	75.0	13.5	6	7	7	14										Sat.
70	70.0	18.5	2	3	3	6										Sat.
															68.5	Boring Terminated at Elevation 68.5 ft in SAND (COASTAL PLAIN)

NCDOT BORE DOUBLE R-5797\_GEO\_BH\_WALL.GPJ NC\_DOT.GDT 9/25/19

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

T.I.P. ID NO.: R-5797  
DESCRIPTION: Retaining Wall 1 on -Wall\_1- from 10+00.00 to 12+46.31 and Retaining Wall 2 on -Wall\_2- from 17+00.00 to 20+00.00

REPORT ON SAMPLES OF: SOIL FOR QUALITY

F&R PROJECT #: 66V-0246  
DATE SAMPLED: 8/18 to 1/19  
SAMPLED FROM: Various  
SUBMITTED BY: Cheng Wang

COUNTY: Columbus  
RECEIVED: 8/18 to 1/19  
REPORTED: 8/18 to 1/19  
BY: D. Council

**TEST RESULTS**

PROJ. SAMPLE NO.	SS-12	SS-15	SS-802											
BORING NO.	RW2_1	RW2_4	RW2_6											
Retained #4 Sieve %	NT	0.0	0.0											
Passing #10 Sieve %	NT	99.9	99.3											
Passing #40 Sieve %	NT	67.2	75.5											
Passing #200 Sieve %	2.7	14.5	34.9											

SOIL MORTAR - 100%														
Coarse Sand Ret - #60 %	NT	67.2	47.0											
Fine Sand Ret - #270 %	NT	19.1	20.0											
Silt 0.053 - 0.010 mm %	NT	4.2	17.8											
Clay < 0.010 mm %	NT	9.5	15.2											
L.L.	NT	NP	NP											
P.L.	NT	NP	NP											
P.I.	NT	NP	NP											
AASHTO Classification	A-2-4	A-2-4	A-2-4											
Station	17+00	18+44	19+51											
Offset	3' Lt	8' Lt	3' Lt											
Depth (ft)	3.5	8.5	8.5											
to	5.0	10.0	10.0											
Alignment	-WALL2-	-WALL2-	-WALL2-											
Moisture Content (%)	20.1	63.2	123.5											
Organic Content (%)	1.5	NT	NT											

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

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