

REFERENCE: B-5652

PROJECT: 45607

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

STRUCTURE
SUBSURFACE INVESTIGATION

COUNTY ONSLOW
PROJECT DESCRIPTION BRIDGE NO. 33 ON US 17 NBL
OVER WOLF SWAMP AT -L RT- STA. 20 + 64
BRIDGE NO. 33 DETOUR ON -LDET- OVER WOLF
SWAMP AT -LDET- STA. 19 + 22

CONTENTS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4-5	PROFILES
6-9	BORE LOGS
10	SOIL TEST RESULTS
11	SITE PHOTOGRAPH(S)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5652	1	11

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

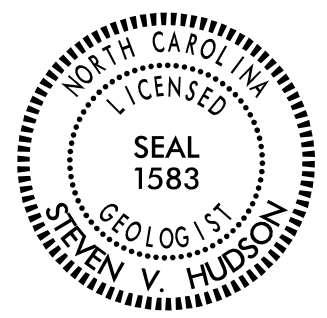
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

J. HOLLAND
K. SWAIN
J. EDMONDSON

INVESTIGATED BY J. HOLLAND
DRAWN BY S. V. HUDSON, LG
CHECKED BY J. LEE STONE, LG
SUBMITTED BY S. V. HUDSON, LG
DATE MAY 2019



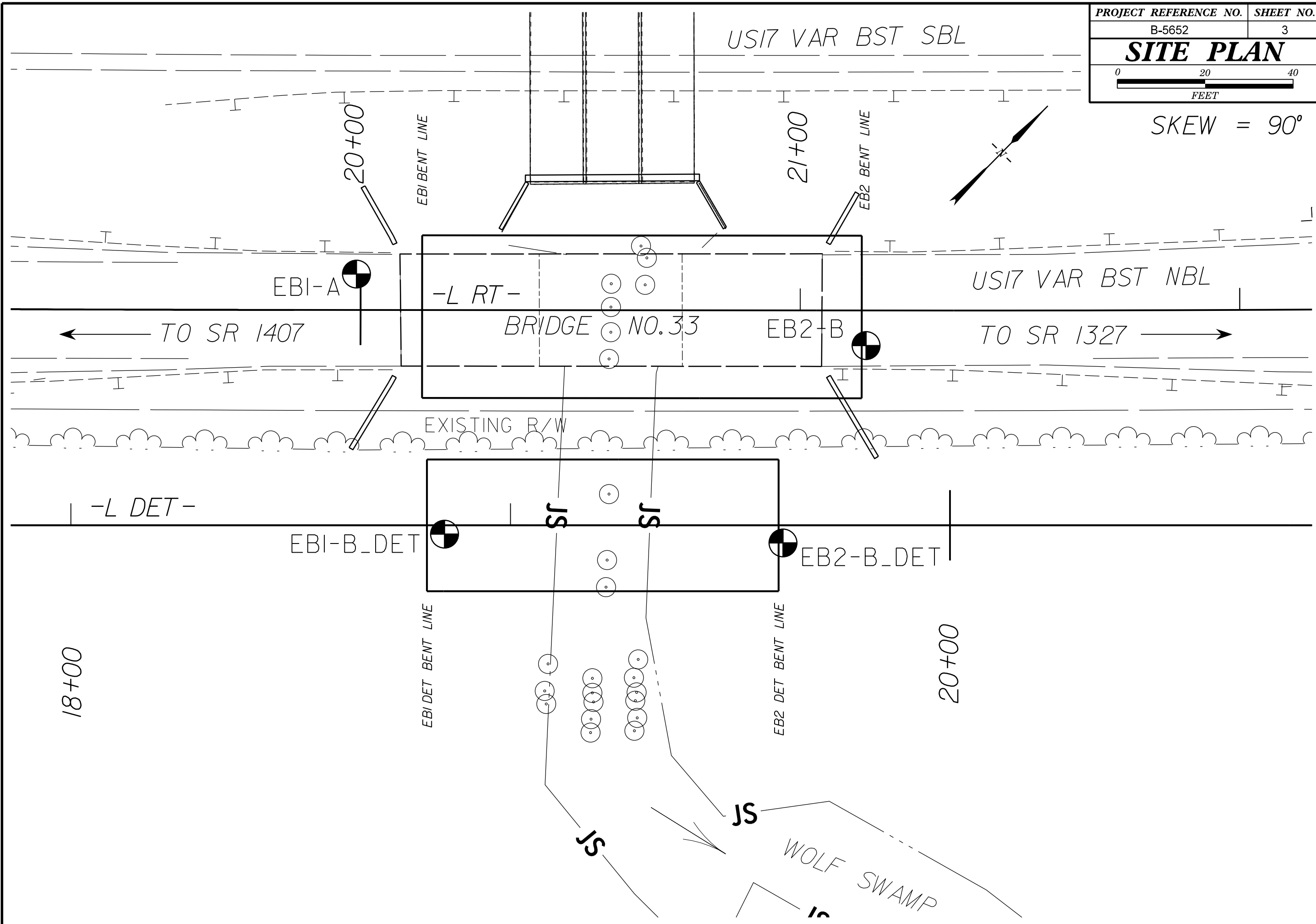
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Steve V Hudson 8/7/2019
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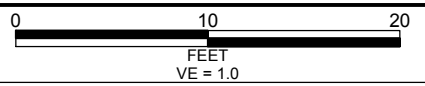
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UNLESS ALL SIGNATURES COMPLETED

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

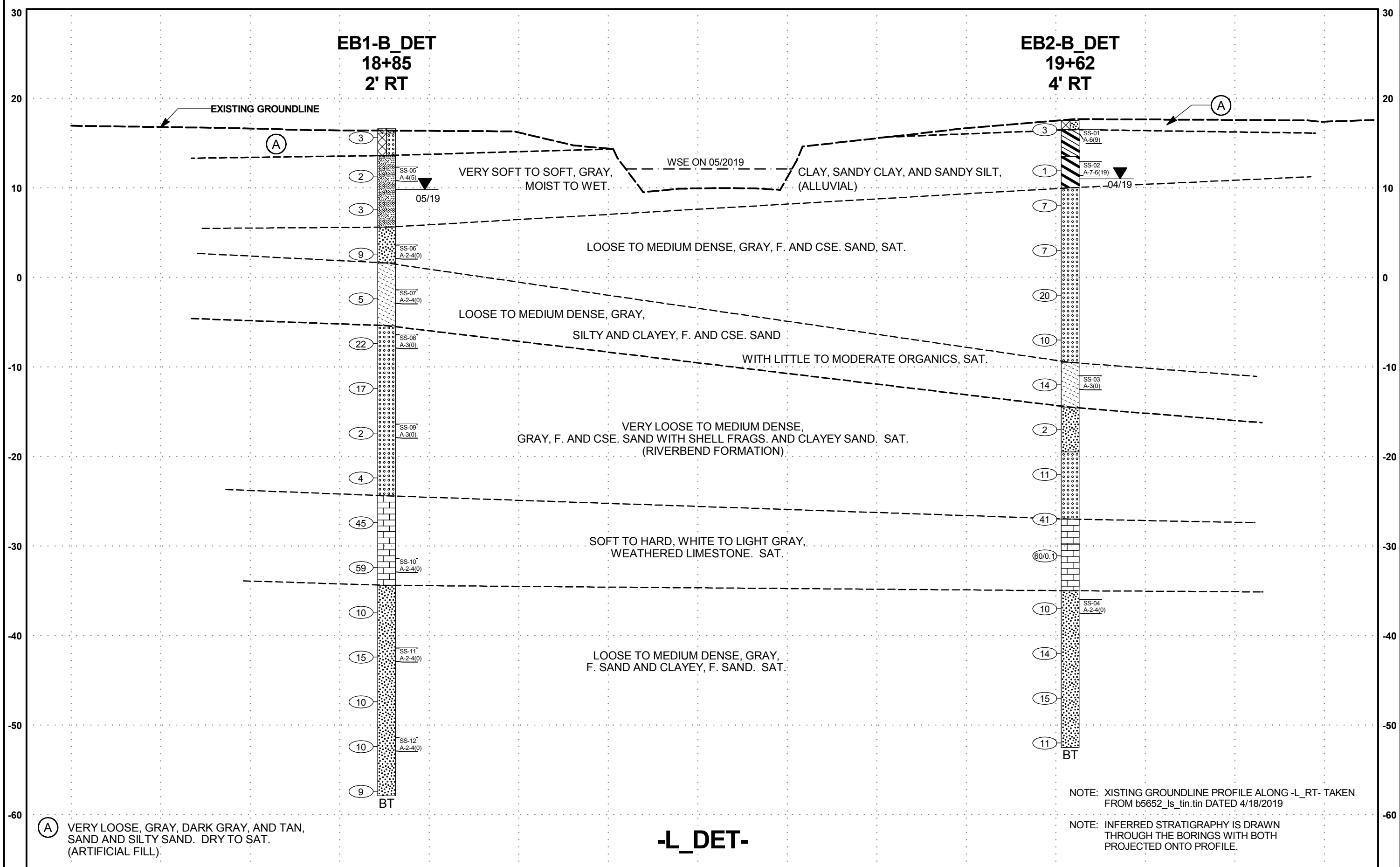
SOIL DESCRIPTION										GRADATION										ROCK DESCRIPTION										TERMS AND DEFINITIONS																																																																									
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO 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</p>										<p>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.</p>										<p>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:</p>										<p>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. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. 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 DISLOADED 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 (ROD) - 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 INTRUDED 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 (N 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.</p>																																																																									
SOIL LEGEND AND AASHTO CLASSIFICATION										ANGULARITY OF GRAINS										WEATHERED ROCK (WR)										NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.																																																																									
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<p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p>										<p>SLIGHTLY COMPRESSIBLE LL < 31 MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50</p>										<p>ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.</p>										<p>ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.</p>																																																																									
PERCENTAGE OF MATERIAL										GROUND WATER										MODERATE (MOD.)										SEVERE (SEV.)																																																																									
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	4.75	2.00	0.42	0.25	0.075	0.053																																																																																																	
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<p>DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.</p>										<p>FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.</p>										<p>FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.</p>										<p>GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.</p>																																																																									
BENCH MARK: LOCATIONS AND ELEVATIONS OBTAINED WITH A SURVEY GRADE RTK GPS										ELEVATION: FEET										EXTREMELY INDURATED										NOTES:																																																																									
																				<p>SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.</p>										<p>FIAD = FILLED IMMEDIATELY AFTER DRILLING U.C.P. = UNDIVIDED COASTAL PLAIN WSE = WATER SURFACE ELEVATION</p>																																																																									

SKEW = 90°





PROFILE THROUGH BORINGS PROJECTED ALONG -L_DET-



NOTE: XISTING GROUNDLINE PROFILE ALONG -L_RT- TAKEN FROM b5652_ls_tin.tin DATED 4/18/2019

NOTE: INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO PROFILE.

-L_DET-

19+00

19+50

GEOTECHNICAL BORING REPORT BORE LOG

WBS: 45607.1.1			TIP: B-5652			COUNTY: ONSLOW			GEOLOGIST: J. HOLLAND		
SITE DESCRIPTION: Bridge No. 33 on US 17 NBL over Wolf Swamp at -L_RT- Sta. 20+64						GROUND WTR (ft)					
BORING NO.: EB1-A		STATION: 19+99		OFFSET: 8 ft LT		ALIGNMENT: -L_RT-		0 HR. 19.7			
COLLAR ELEV.: 31.6 ft		TOTAL DEPTH: 75.2 ft		NORTHING: 385,360		EASTING: 2,491,057		24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE: CAT1314 CME-45B 94% 09/26/2018						DRILL METHOD: Mud Rotary			HAMMER TYPE: AUTOMATIC		
DRILLER: D.T. Chalmers, Jr.		START DATE: 05/06/19		COMP. DATE: 05/06/19		SURFACE WATER DEPTH: N/A					

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. # RESULT	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
35																
			WOH	WOH	3										GROUND SURFACE	0.0
30	30.0	1.6											M	ROADWAY EMBANKMENT	1.5	
														ORANGE AND GRAY MOTTLED F. SANDY CLAY		
25	25.8	5.8	2	2	1								M			
20	22.9	8.7	2	2	3								M			
15	17.9	13.7	2	1	1								W			
10	12.9	18.7	WOH	WOH	WOH								Sat.	ALLUVIAL	17.5	
														GRAY, CLAYEY, F. SAND		
5	7.9	23.7	1	3	4								Sat.			
0	2.9	28.7	WOH	1	2								Sat.	DARK GRAY, CLAY WITH WOOD FRAGS. AND LITTLE ORGANIC CONTENT	29.9	
														COASTAL PLAIN	32.5	
-5	-2.1	33.7	3	3	4								Sat.	GRAY, CLAYEY, F. SAND GRADING TO F. SAND WITH SHELL FRAGS. (RIVERBEND FORMATION)		
-10	-7.1	38.7	11	13	8								Sat.			
-15	-12.1	43.7	4	4	4								Sat.			
-20	-17.1	48.7	2	2	2								Sat.			
-25	-22.1	53.7	13	27	58								Sat.	WHITE, WEATHERED LIMESTONE	55.0	
-30	-27.1	58.7	7	14	12								Sat.	TAN AND GRAY, SANDSTONE	62.0	
-35	-32.1	63.7	70	13	9								Sat.	GRAY, F. SAND WITH TR. CLAY	64.2	
-40	-37.1	68.7	7	6	10								Sat.			
-45	-42.1	73.7	6	7	10								Sat.			

NC DOT BORE DOUBLE B5652 GEO BRDG CATLIN.GPI.NC DOT CATLIN.GDI 05/22/19

WBS: 45607.1.1			TIP: B-5652			COUNTY: ONSLOW			GEOLOGIST: J. HOLLAND		
SITE DESCRIPTION: Bridge No. 33 on US 17 NBL over Wolf Swamp at -L_RT- Sta. 20+64						GROUND WTR (ft)					
BORING NO.: EB1-A		STATION: 19+99		OFFSET: 8 ft LT		ALIGNMENT: -L_RT-		0 HR. 19.7			
COLLAR ELEV.: 31.6 ft		TOTAL DEPTH: 75.2 ft		NORTHING: 385,360		EASTING: 2,491,057		24 HR. FIAD			
DRILL RIG/HAMMER EFF./DATE: CAT1314 CME-45B 94% 09/26/2018						DRILL METHOD: Mud Rotary			HAMMER TYPE: AUTOMATIC		
DRILLER: D.T. Chalmers, Jr.		START DATE: 05/06/19		COMP. DATE: 05/06/19		SURFACE WATER DEPTH: N/A					

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. # RESULT	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
-45																

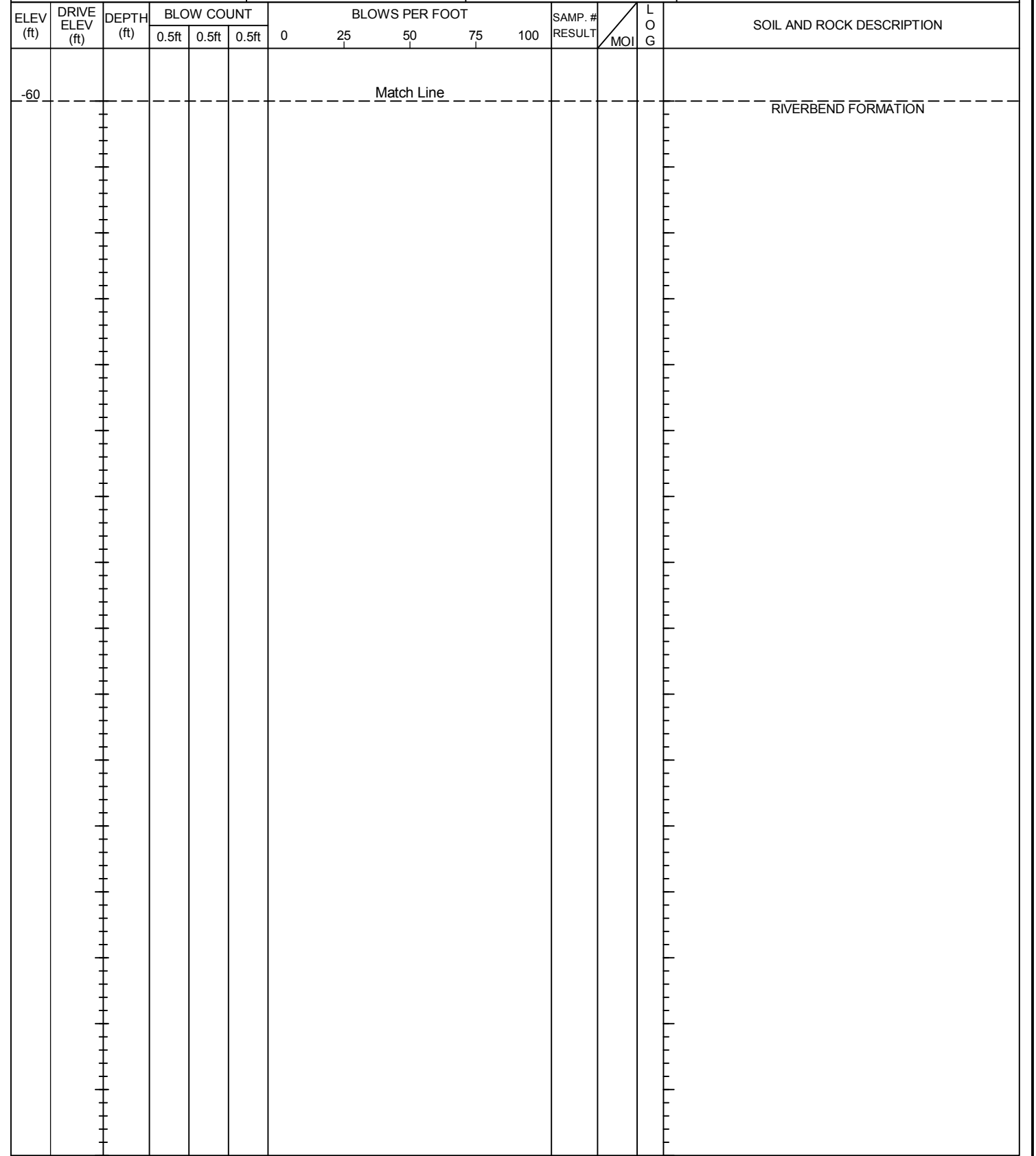
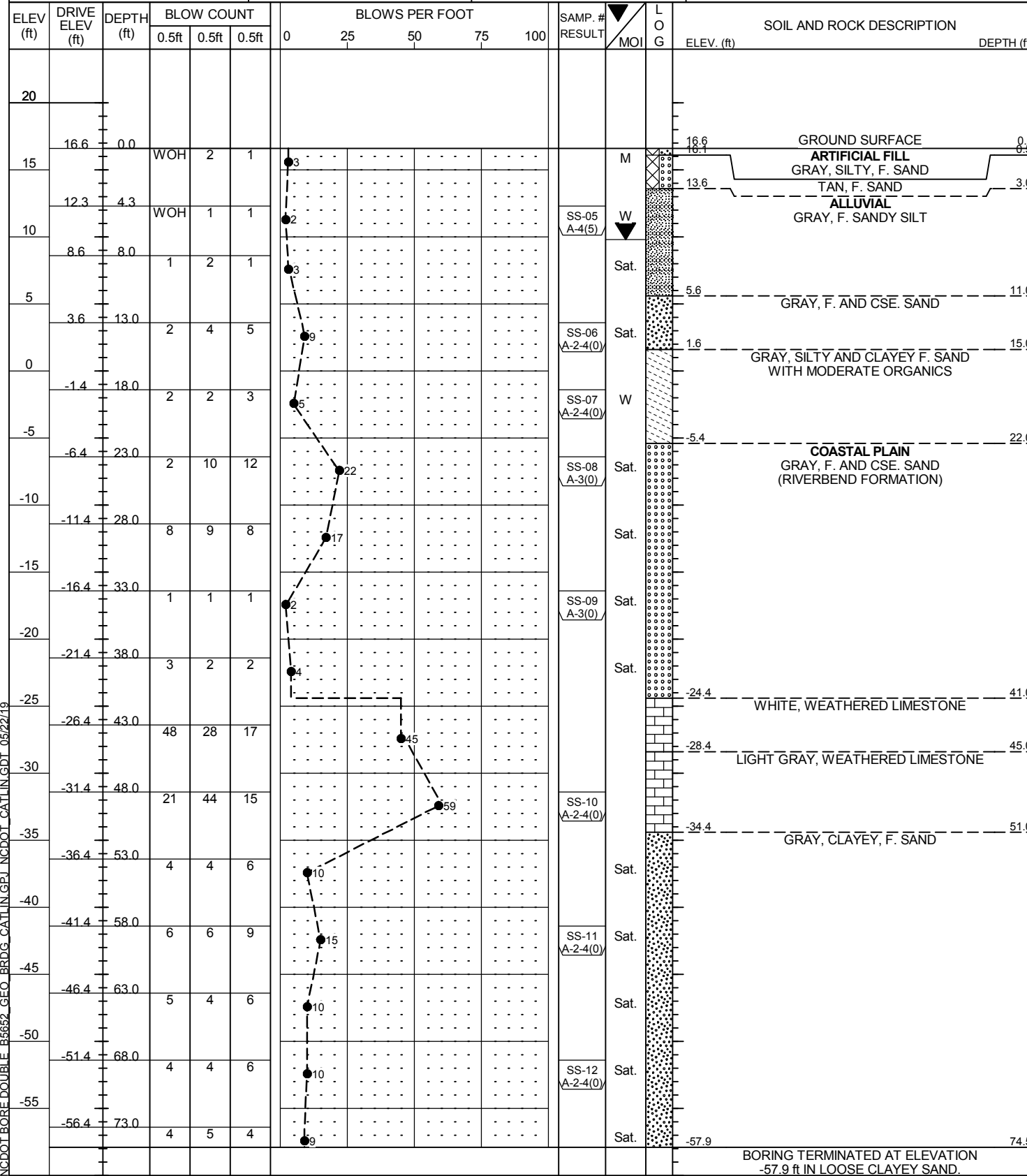
Match Line

-43.6 ft IN MEDIUM DENSE SAND. RIVERBEND FORMATION

GEOTECHNICAL BORING REPORT BORE LOG

WBS: 45607.1.1	TIP: B-5652	COUNTY: ONSLOW	GEOLOGIST: J. HOLLAND
SITE DESCRIPTION: Bridge No. 33 Detour on -L_DET- over Wolf Swamp at -LDET- Sta. 19+22			GROUND WTR (ft)
BORING NO.: EB1-B_DET	STATION: 18+85	OFFSET: 2 ft RT	ALIGNMENT: -L_DET-
COLLAR ELEV.: 16.6 ft	TOTAL DEPTH: 74.5 ft	NORTHING: 385,332	EASTING: 2,491,113
DRILL RIG/HAMMER EFF./DATE: CAT4425 CME-55 87% 01/16/2019		DRILL METHOD: Mud Rotary	HAMMER TYPE: AUTOMATIC
DRILLER: Jordan Edmondson	START DATE: 05/02/19	COMP. DATE: 05/02/19	SURFACE WATER DEPTH: N/A

WBS: 45607.1.1	TIP: B-5652	COUNTY: ONSLOW	GEOLOGIST: J. HOLLAND
SITE DESCRIPTION: Bridge No. 33 Detour on -L_DET- over Wolf Swamp at -LDET- Sta. 19+22			GROUND WTR (ft)
BORING NO.: EB1-B_DET	STATION: 18+85	OFFSET: 2 ft RT	ALIGNMENT: -L_DET-
COLLAR ELEV.: 16.6 ft	TOTAL DEPTH: 74.5 ft	NORTHING: 385,332	EASTING: 2,491,113
DRILL RIG/HAMMER EFF./DATE: CAT4425 CME-55 87% 01/16/2019		DRILL METHOD: Mud Rotary	HAMMER TYPE: AUTOMATIC
DRILLER: Jordan Edmondson	START DATE: 05/02/19	COMP. DATE: 05/02/19	SURFACE WATER DEPTH: N/A



NCDOT BORE DOUBLE B5652 GEO BRDG CATLIN.GPI NCDOT CATLIN.GDI 05/22/19

BORING TERMINATED AT ELEVATION -57.9 ft IN LOOSE CLAYEY SAND.

LABORATORY SUMMARY SHEET

AASHTO Standard Specifications

(As modified by NCDOT, Material and Tests Unit, 2000.)

TEST RESULTS

Proj. Sample Number	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10	SS-11	SS-12	SS-01	SS-02	SS-03	SS-04		
Lab Sample Number	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10	SS-11	SS-12	SS-01	SS-02	SS-03	SS-04		
Retained #4 Sieve %	0	0	7.2	0	0	3.7	0	0	0	0.2	3.9	0		
Passing #10 Sieve %	100	100	85.0	99.9	100	92.4	100	100	99.9	99.6	90.5	100		
Passing #40 Sieve %	100	86	96	89	98	98	100	100	98	98	89	100		
Passing #200 Sieve %	73	12	34	10	4	22	13	18	66	65	7	10		
MINUS NUMBER 10 FRACTION														
SOIL MORTAR - 100%														
Coarse Sand Ret.-#60 %	1.0	38.2	7.0	40.4	41.6	5.5	1.6	6.0	5.9	3.3	33.6	1.3		
Fine Sand Ret.-#270 %	29.6	52.3	67.7	52.3	54.3	74.2	86.6	78.0	32.5	37.1	61.3	89.4		
Silt 0.05 - 0.005mm %	59.4	4.5	14.0	2.3	0.1	9.2	4.7	4.9	32.8	26.6	3.9	4.3		
Clay <0.005mm %	10.1	5.0	11.2	5.0	4.0	11.1	7.0	11.1	28.8	33.0	1.2	5.0		
Liquid Limit (LL)	24	NP	NP	NP	NP	NP	NP	NP	33	49	NP	NP		
Plasticity Index (PI)	10	NP	NP	NP	NP	NP	NP	NP	17	34	NP	NP		
AASHTO Classification /Group Index	A-4(5)	A-2-4(0)	A-2-4(0)	A-3(0)	A-3(0)	A-2-4(0)	A-2-4(0)	A-2-4(0)	A-6(9)	A-7-6(19)	A-3(0)	A-2-4(0)		
Organic Content %	N/A	N/A	5.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Station	18+85	18+85	18+85	18+85	18+85	18+85	18+85	18+85	19+62	19+62	19+62	19+62		
Offset	2ft RT	2ft RT	2ft RT	2ft RT	2ft RT	2ft RT	2ft RT	2ft RT	4ft RT	4ft RT	4ft RT	4ft RT		
Alignment	-L_DET-	-L_DET-	-L_DET-	-L_DET-	-L_DET-	-L_DET-	-L_DET-	-L_DET-	-L_DET-	-L_DET-	-L_DET-	-L_DET-		
Boring Identification	EB1-B_DET	EB1-B_DET	EB1-B_DET	EB1-B_DET	EB1-B_DET	EB1-B_DET	EB1-B_DET	EB1-B_DET	EB2-B_DET	EB2-B_DET	EB2-B_DET	EB2-B_DET		
Depth (FT)	4.3	13.0	18.0	23.0	33.0	48.0	58.0	68.0	1.0	4.6	28.5	53.5		
to	5.8	14.5	19.5	24.5	34.5	49.5	59.5	69.5	1.5	6.1	30.0	55.0		
Field Moist. Content %														
Tested By	MDM	MDM	MDM	MDM	MDM	MDM	MDM	MDM	MDM	MDM	MDM	MDM		
Submitted By	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND	J. HOLLAND		
Date Submitted	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19	05/02/19		

NP = Non-Plastic

NEM = Not Enough Material for Analysis

N/A = Not Applicable / Not Analyzed

Michael D. Mason
Laboratory Manager

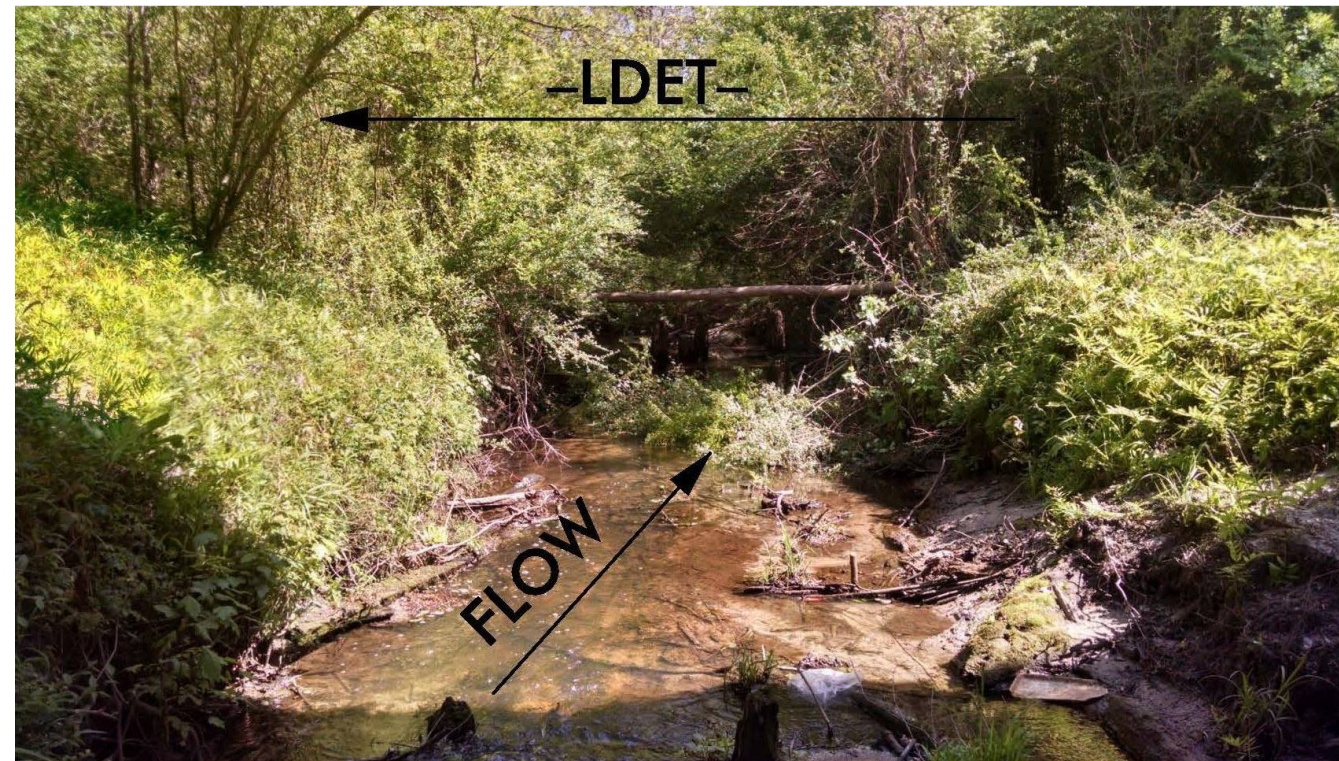
Report Date: 04/16/2019

Laboratory Report Page 1 of 1

SITE PHOTOGRAPHS



HIGHWAY 17 NORTH BOUND LANE
FACING EAST



PROPOSED DETOUR BRIDGE LOCATION
FACING EAST