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REFERENCE

DESCRIPTION TITLE SHEET LEGEND SITE PLAN PROFILE BORING LOGS

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS** GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY PITT

PROJECT DESCRIPTION REPLACE BRIDGE NO. 730087 OVER NORFOLK SOUTHERN RAILROAD

ON NC 33

SITE DESCRIPTION BRIDGE NO. 730087 ON (-L- Sta. 25 + 98.05, -Y- Sta. 15 + 79.73) OVER NORFOLK SOUTHERN RAILROAD

46015 Ë PROIEC

STATE N.C

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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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-6860. THE SUBSIFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CALITORIED 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 WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHIONO OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTIONS 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 CONDENSION OR FOR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTES:

- TES: 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 REDUESTED 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

GET SOLUTIONS GOODNIGHT, D.W.

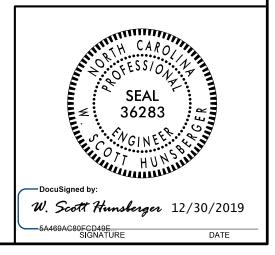
INVESTIGATED BY _____ GOODNIGHT, D.W.

DRAWN BY ______.

CHECKED BY _____HAMM, J.R.

SUBMITTED BY ______ FALCON ENG.

DATE AUGUST 2019



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT** SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

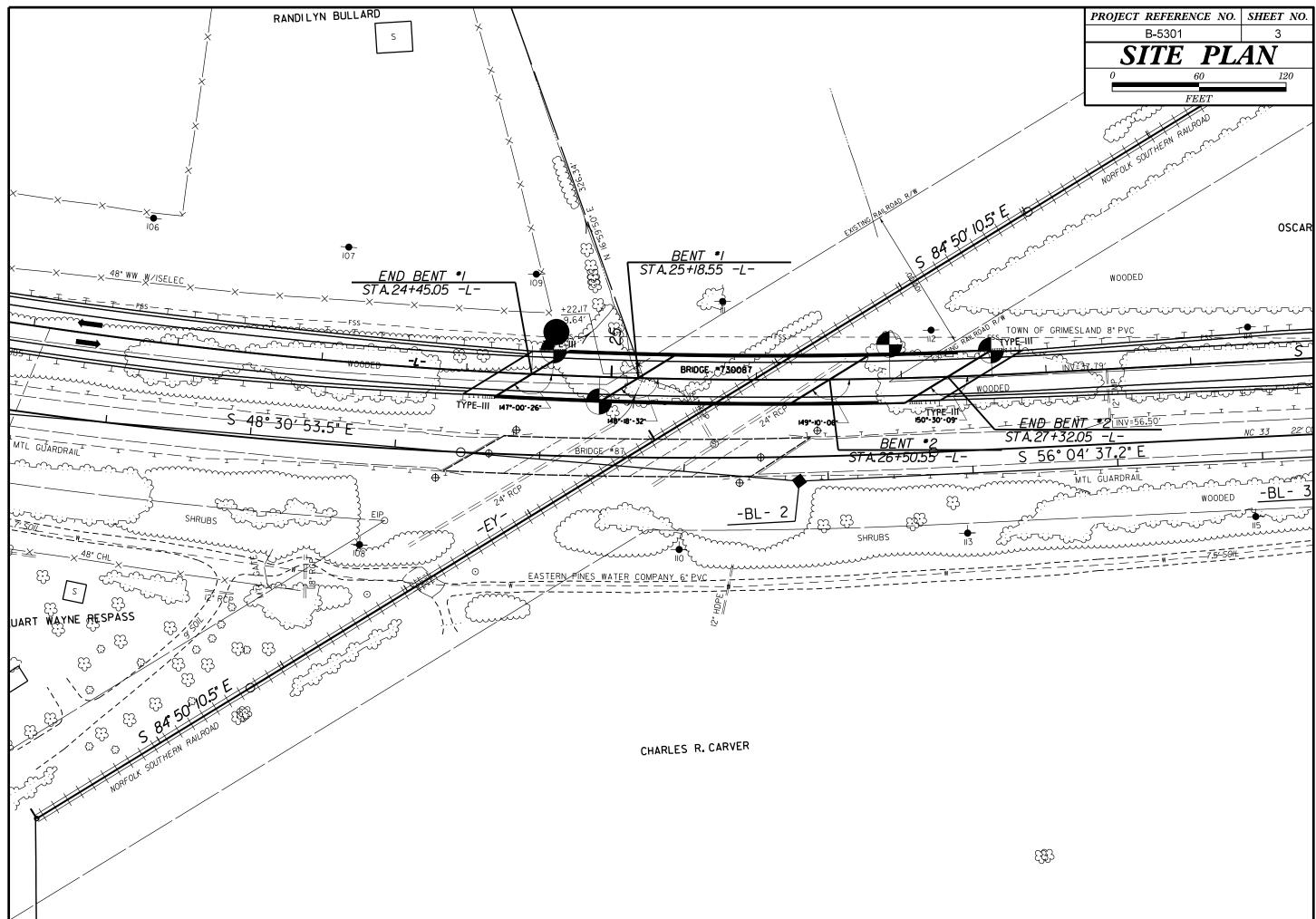
			SOIL (DESCF	RIPTIC	JN				<u> </u>		GF	RADATION						ROCK	DESCRIPTION
			ATED, SEMI-CO	NSOLIDAT	TED, OR W	EATHERED				WELL GRADED - INDICAT		GOOD REPRESE	ENTATION OF PARTIC						IN MATERIAL THA	AT WOULD YIELD SPT REFUSAL IF TEST
BE PENE ACCORD	TRATED WITH ING TO THE	H A CONTINUC STANDARD PE	US FLIGHT PO NETRATION TE	WER AUG EST (AAS	JER AND SHTO T 2	YIELD LES 106, ASTM [S THAN 100 1586). SOIL	BLOWS PER CLASSIFICAT	FOOT TON	UNIFORMLY GRADED - IN GAP-GRADED - INDICATES						SPT REFUSA	AL IS PEN	ETRATION BY	A SPLIT SPOOM	N SAMPLER EQUAL TO OR LESS THAN 0.
			STEM. BASIC								<u> </u>		RITY OF GRAIN		on hone sizes.				MATERIAL, THE	TRANSITION BETWEEN SOIL AND ROCK
A	S MINERALO	GICAL COMPO	SITION, ANGULA	ARITY, ST	TRUCTURE	, PLASTICIT	Y, ETC. FOR	EXAMPLE,		THE ANGULARIT	YORR		SOIL GRAINS IS DE		BY THE TERMS:	ROCK MATER	RIALS ARE	TYPICALLY	DIVIDED AS FOL	LOWS:
			MOIST WITH IN END AND					IC,A-7-6		ANGULAR, SUBAN	NGULAR,	SUBROUNDED,				WEATHERED ROCK (WR)				PLAIN MATERIAL THAT WOULD YIELD SP1 R FOOT IF TESTED.
GENERAL CLASS.	,	GRANULAR MATE ≤ 35% PASSING			LT-CLAY M 35% PASS		ORGA	NIC MATERIALS					Z, FELDSPAR, MICA, T		FTC	CRYSTALLIN	E	J. J.	FINE TO COARS	SE GRAIN IGNEOUS AND METAMORPHIC RO SPT REFUSAL IF TESTED. ROCK TYPE IN
GROUP	A-1	A-3	A-2			A-6 A-7	A-1, A-2	A-4, A-5					N THEY ARE CONSID			ROCK (CR)			GNEISS, GABBRO	D. SCHIST, ETC.
CLASS.	A-1-a A-1-b		-2-5 A-2-6 A-2	_		A-7-5. A-7-6		A-6, A-7				COMP	RESSIBILITY			NON-CRYSTA ROCK (NCR)	LLINE		SEDIMENTARY F	SE GRAIN METAMORPHIC AND NON-COASTA ROCK THAT WOULD YEILD SPT REFUSAL
SYMBOL				3	7.4							OMPRESSIBLE	E	LL < 31 LL = 31	- 50	COASTAL PL	ΔΙΝ		ROCK TYPE INC	CLUDES PHYLLITE, SLATE, SANDSTONE, ET
% PASSING	000000000000000000000000000000000000000		<u></u>									PRESSIBLE		LL > 50	50	SEDIMENTAR	Y ROCK		SPT REFUSAL.	ROCK TYPE INCLUDES LIMESTONE, SANDS
•10	50 MX						GRANULAR	SILT- CLAY	MUCK,		P	PERCENTA	GE OF MATER	IAL		(CP)			SHELL BEDS, E	ATHERING
	30 MX 50 MX 15 MX 25 MX		5 MX 35 MX 35	MX 36 MM	N 36 MN 3	6 MN 36 MN	SOILS	SOILS	PEAT	ORGANIC MATERIAL		GRANULAR SOILS	SILT - CLAY SOILS	OTHE	R MATERIAL	FRESH				IOINTS MAY SHOW SLIGHT STAINING. ROCK
MATERIAL	I			+						TRACE OF ORGANIC MA		2 - 3%	3 - 5%	TRACE	1 - 10%	112011		IF CRYSTALL		
PASSING #40		10 117					SOILS W	ИТН		LITTLE ORGANIC MATT MODERATELY ORGANIC		3 - 5% 5 - 10%	5 - 12% 12 - 20%	LITTLE SOME	10 - 20% 20 - 35%	VERY SLIGHT				NED, SOME JOINTS MAY SHOW THIN CLAY C
LL PI	- 6 MX		11 MN 40 MX 41 0 MX 11 MN 11 I				LITTLE		HIGHLY	HIGHLY ORGANIC		> 10%	> 20%	HIGHLY	35% AND ABOVE	(V SLI.)		LS ON A BROM RYSTALLINE N		CE SHINE BRIGHTLY. ROCK RINGS UNDER H
GROUP INDEX	0	0 0	4 MX	_		6 MX NO MX	MODERA AMOUNTS		ORGANIC			GRO	UND WATER			SLIGHT				NED AND DISCOLORATION EXTENDS INTO RO
USUAL TYPES	STONE FRAGS.	5 M F 01					ORGAN		SOILS	∇	WATE	R LEVEL IN	BORE HOLE IMMEDIA	TELY AFTER	RDRILLING	(SLI.)	1 INCH.	OPEN JOINTS	MAY CONTAIN CL	AY. IN GRANITOID ROCKS SOME OCCASIONA
OF MAJOR	GRAVEL, AND		ty or clayey Vel and sand		ILTY OILS	CLAYEY SOILS	MATTE	-R					VEL AFTER 24							CRYSTALLINE ROCKS RING UNDER HAMMER
MATERIALS	SAND			—						 ∑P₩_			GATURATED ZONE, OR			MODERATE (MOD.)				DISCOLORATION AND WEATHERING EFFECT RE DULL AND DISCOLORED, SOME SHOW CLA
GEN. RATING AS SUBGRADE		EXCELLENT TO	300D		FAIR TO	POOR	FAIR TO POOR	POOR U	NSUITABLE				SHIURHIED ZUNE, UR	WHICK DEP	ALING STRATA		DULL S	OUND UNDER H		ND SHOWS SIGNIFICANT LOSS OF STRENGTH
		PLOF A-7-5 SU	GROUP IS ≤ LL	- 30 : PI	OF A-7-6	SUBGROUP 15	>11 - 30				SPRIM	NG OR SEEP						RESH ROCK.		
			NSISTENC							l	i	MISCELLA	NEOUS SYMBO	LS		MODERATELY SEVERE				D OR STAINED. IN GRANITOID ROCKS, ALL F OW KAOLINIZATION. ROCK SHOWS SEVERE L
			TNESS OR		NGE OF S		RANGE	OF UNCONF	INED				25			(MOD. SEV.)	AND CA	N BE EXCAVAT	TED WITH A GEOL	OGIST'S PICK. ROCK GIVES "CLUNK" SOUND
PRIMARY	SOIL TYPE		STENCY	PENET	TRATION I (N-VAL	RESISTENCE		ESSIVE STR (TONS/FT ²)	ENGTH	L ROADWAY EMBA			DIP & DIP DIR DIP & DIP DIR OF ROCK STRU			CEVEDE			IELD SPT REFUSA	≟ D OR STAINED. ROCK FABRIC CLEAR AND E
		VERY	LOOSE	<u> </u>	< 4					1 4		-	SPT	~	SLOPE INDICATOR	SEVERE (SEV.)				IL. IN GRANITOID ROCKS ALL FELDSPARS 4
GENERA		LC	OSE		4 TO	1Ø				SOIL SYMBOL			OPT DMT TEST BOF		INSTALLATION				DME FRAGMENTS O IELD SPT N VALU	OF STRONG ROCK USUALLY REMAIN.
MATERIA	۹L		1 DENSE NSE		10 TO 30 TO			N/A		ARTIFICIAL FI			AUGER BORING	$\mathbf{\Delta}$	CONE PENETROMETER	VERY				<u>ES > 100 BPF</u> D OR STAINED. ROCK FABRIC ELEMENTS AF
(NON-CO	HESIVE)		DENSE		> 50					THAN ROADWAY	I EMBAI			\bigcirc	TEST	SEVERE				TO SOIL STATUS, WITH ONLY FRAGMENTS OF
			SOFT		< 2			< 0.25		INFERRED SOIL	L BOUN	IDARY -	- CORE BORING	•	SOUNDING ROD	(V SEV.)				E OF ROCK WEATHERED TO A DEGREE THAT REMAIN. <u>IF TESTED, WOULD YIELD SPT N V</u>
GENERA SILT-CL			DFT 4 STIFF		2 TO 4 TO			0.25 TO 0.5 0.5 TO 1.0		INFERRED ROC	K I INF	MW) MONITORING WE	u 📥	TEST BORING	COMPLETE				NOT DISCERNIBLE, OR DISCERNIBLE ONLY
MATERIA	AL.	S	IFF		8 TO	15		1 TO 2					-	Y	WITH CORE	COMPETE	SCATTE	RED CONCENTR		MAY BE PRESENT AS DIKES OR STRINGERS
(COHESI	VE)		STIFF		15 TO > 30			2 TO 4 > 4		ALLUVIAL SOIL	L BOUN	IDARY Z	PIEZOMETER INSTALLATION	\bigcirc	- SPT N-VALUE		ALSO A	N EXAMPLE.		
			EXTURE							<u> </u>	R		DATION SYMB			-			ROCK	HARDNESS
							270			IXXI UNDERCUT			EXCAVATION -		ASSIFIED EXCAVATION -	VERY HARD				SHARP PICK. BREAKING OF HAND SPECIMEN
U.S. STD. SI OPENING (M			4 10 4.76 2.00			0 200 25 0.07						NSUITABLE W		ACCEF	TABLE, BUT NOT TO BE	HARD			S OF THE GEOLOG	SISTS FICK. K ONLY WITH DIFFICULTY. HARD HAMMER B
DOI 11 DE	n			COAR	RSE	FINE				SHALLOW UNDERCUT	N II		EXCAVATION - EGRADABLE ROCK		IN THE TOP 3 FEET OF NKMENT OR BACKFILL	THIND		ACH HAND SPE		. ONET WITH BITTEGETT, HEND HEMEN B
BOULDE (BLDR.)		BBLE (GRAVEL	SAN		SAND (F SE			CLAY							MODERATELY				K. GOUGES OR GROOVES TO 0.25 INCHES DE
				(CSE.									REVIATIONS MEDIUM	VCT	- VANE SHEAR TEST	HARD		TED BY HARD ERATE BLOWS.		LOGIST'S PICK. HAND SPECIMENS CAN BE D
GRAIN MM SIZE IN.		75 3	2.0		0.	25	0.05	0.005		AR - AUGER REFUSAL BT - BORING TERMINATED	٥		- MICACEOUS		- WEATHERED	MEDIUM				CHES DEEP BY FIRM PRESSURE OF KNIFE C
			STURE -	COPP			TEDMC			CL CLAY			MODERATELY		UNIT WEIGHT	HARD	CAN BE	EXCAVATED I	IN SMALL CHIPS	TO PEICES 1 INCH MAXIMUM SIZE BY HARD
SOTI	MOISTURE		FIELD M		-					CPT - CONE PENETRATION CSE COARSE	1 IEST		NON PLASTIC ORGANIC	/ _d -	DRY UNIT WEIGHT	0057		OF A GEOLOGI		DY WHEE OD DIGK, CAN DE EXCAVATED IN
	ERBERG LI		DESCR		G	JIDE FOR	FIELD MOIST	TURE DESCR	IPTION	DMT - DILATOMETER TES		PMT -	PRESSUREMETER TE	-	MPLE ABBREVIATIONS	SOFT				BY KNIFE OR PICK. CAN BE EXCAVATED IN SIZE BY MODERATE BLOWS OF A PICK POIN
			- SATUR	ATED -		SUALLY L	QUID: VERY N	FT. USUALI	Y	DPT - DYNAMIC PENETRAT e - VOID RATIO	TION TE		SAPROLITIC SAND, SANDY	S - 1	BULK SPLIT SPOON		PIECES	CAN BE BROK	EN BY FINGER PR	ESSURE.
			(SAT				THE GROU			F - FINE			SILT, SILTY		SHELBY TUBE	VERY SOFT				EXCAVATED READILY WITH POINT OF PICK. EN BY FINGER PRESSURE. CAN BE SCRATCH
PLASTIC		LIMIT								- FOSS FOSSILIFEROUS			SLIGHTLY TRICONE REFUSAL		ROCK	3011	FINGERN		.35 CHN BE BROKI	IN BITTINGER TRESSORE, CAN BE SCHETCH
RANGE <			- WET -	(W)			REQUIRES DF			FRAC FRACTURED, FRAC FRAGS FRAGMENTS	IURES		IDISTURE CONTENT		RECOMPACTED TRIAXIAL		FRACT	URE SPA	CING	BEDDING
(PI) PL	PLASTI	C LIMIT						0.12		HI HIGHLY		V - VE			RATIO	TERM			SPACING	TERM
			- MOIST	- (M)	ç		R NEAR OPT		URF	EQI	UIPME	ENT USED) ON SUBJECT	PROJE	СТ	VERY WI WIDE	DE		THAN 10 FEET TO 10 FEET	VERY THICKLY BEDDED THICKLY BEDDED 1
OM SL		M MOISTURE AGE LIMIT	10101		5	5210, 41 0		11011 11010	UNE	DRILL UNITS:	ADVA	NCING TOOLS:		HAMMER	_		ELY CLOS		TO 3 FEET	THINLY BEDDED 0.1
52	T 3/11/11				R		DDITIONAL W	ATER TO		X CME-45C	$ \square$	CLAY BITS		X AU	TOMATIC MANUAL	CLOSE	065		6 TO 1 FOOT	VERY THINLY BEDDED 0.0
	1		- DRY -	(D)			IMUM MOIST			CME-55		6" CONTINUOU	S FLIGHT AUGER	CORE SI	ZE:	VERY CL	USE	LESS	THAN 0.16 FEET	THICKLY LAMINATED 0.00 THINLY LAMINATED <
	1		PI	ASTIC								8"HOLLOW AU	JGERS	в_					INC	DURATION
					INDEX (P)	0	nev	STRENGTH		CME-550	ΙĒ	HARD FACED	FINGER BITS			FOR SEDIME	NTARY RC	CKS, INDURA	TION IS THE HAP	RDENING OF MATERIAL BY CEMENTING, HE
NON	PLASTIC		<u>FLHS</u>	0-5		<u> </u>		ERY LOW			IΠ	TUNGCARBID	DE INSERTS	N		FRIA	BLE			ITH FINGER FREES NUMEROUS GRAINS;
	GHTLY PLAS			6-15 16-25				SLIGHT MEDIUM		VANE SHEAR TEST		_	W/ ADVANCER	HAND TO						OW BY HAMMER DISINTEGRATES SAMPLE.
	HLY PLAST		:	16-25 26 OR M				HIGH		PORTABLE HOIST			% STEEL TEETH		ST HOLE DIGGER	MODE	RATELY I	NDURATED		N BE SEPARATED FROM SAMPLE WITH ST SILY WHEN HIT WITH HAMMER.
				COLOF	R										ND AUGER					E DIFFICULT TO SEPARATE WITH STEEL
										1 🗆 📖 👘		TRICONE	TUNGCARB.		UNDING ROD	INDU	RATED			TO BREAK WITH HAMMER.
			OR OR COLOR						RAY).			CORE BIT		<u> </u> va	NE SHEAR TEST					MER BLOWS REQUIRED TO BREAK SAMPLE
MC	JUIFIERS SU	JUH AS LIGH	, DARK, STRE	AKED, ET	L.ARE I	JSED TO D	ESCRIBE APP	·LARANCE.				MUD ROTARY				EXTR	EMELY IN	JURATED		EAKS ACROSS GRAINS.

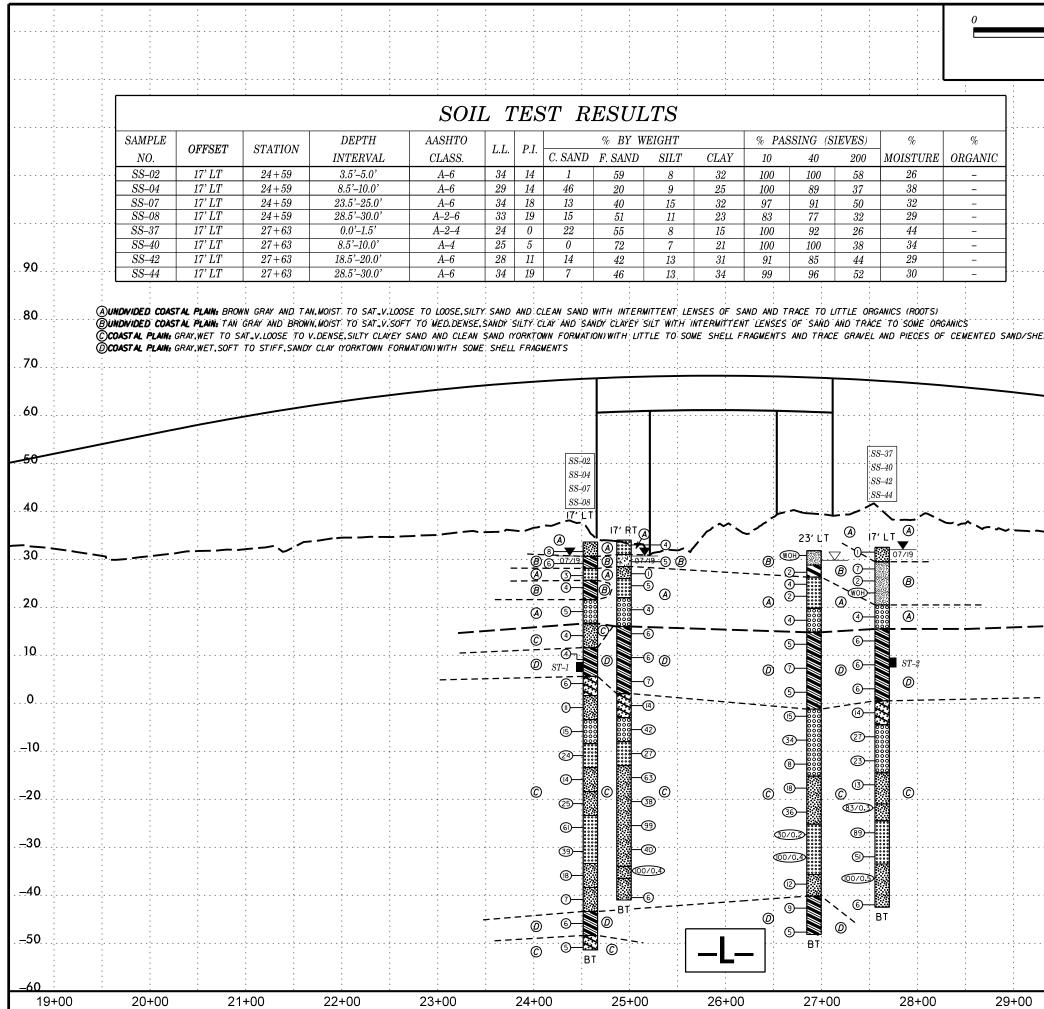
PROJECT REFERENCE NO. B-5301



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TERMS AND DEFINITIONS D AN INFERRED ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. ED. AN INFERRED SPT REFUSAL. 1 FOOT PER 60 IS OFTEN 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. N VALUES > ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND СК ТНАТ SURFACE. CLUDES GRANITE. 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. AL PLAIN IF TESTED. MAY NOT YIELD STONE, CEMENTED 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. RINGS UNDER DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DATINGS IF OPEN. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. AMMER BLOWS IF FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE СК ИР ТО SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FELDSPAR FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. BLOWS. $\underline{\mathsf{FLOAT}}$ - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. . IN ROCK HAS AS COMPARED 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. FELDSPARS DULL OSS OF STRENGTH WHEN STRUCK. 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 VIDENT BUT ITS LATERAL EXTENT. ARE KAOLINIZED 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. E DISCERNIBLE STRONG ROCK PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE ONLY MINOR OF AN INTERVENING IMPERVIOUS STRATUM. ALUES < 100 BPF RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. IN SMALL AND 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 SAPROLITE IS RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. REQUIRES <u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO LOWS REQUIRED THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. $\underline{\text{SLICKENSIDE}}$ - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. EEP CAN BE TACHED 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 B PICK POINT WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL BLOWS OF THE 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. FRAGMENTS IT. SMALL, THIN STRATA ROCK QUALITY DESIGNATION (SRQD) - 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. PIECES 1 INCH ED READILY BY TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: THICKNESS BL-2, -YI- Sta 26+29.37, 69.95 ft RT N: 667080.41 E: 2534162.11 4 FEET 1.5 - 4 FEET ELEVATION: 62.36 FEET 16 - 1.5 EEET NOTES: 3 - 0.16 FEE 98 - Ø.Ø3 FEET FIAD - FILLED IMMEDIATELY AFTER DRILLING 0.008 FEET AT. PRESSURE. ETC. EEL PROBE: PROBE:





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		0. EB1			-	TATION 2			OFFSET				IMENT -L-	0 HR.	`'1 				LAOL						OFFSET						0 HR.	5.2
		LEV. 3						ft	NORTHIN				ING 2,534,080	24 HR.							TAL DE								EASTING 2,5		24 HR.	2.9
									NORTHIN	,																		00 14				
	DRILL RIG/HAMMER EFF./DATE GE						DRILL METHO					HAMMER TYPE Autom		RILL RIG/H									DRILL METHOD				-		MMER TYPE Auto	matic		
		- 1				TART DAT				SAMP			ACE WATER DEP	TH N/A											COMP. D			9 71 T	SURFACE WA	TER DEPTH	N/A	
ELEV (ft)	ELEV (ft)	CEPTH (ft)	· ·	.OW CC t 0.5ft		0 :		PER FOO 50	75 100		·/	O I G ELEV. (ft)		K DESCRIPTION	PTH (ft)	LEV (ft) DRIV ELEV (ft)	V (ft)		0.5ft		0	25 	2WS PER 50		5 100				SOII	AND ROCK E	ESCRIPTION	
35		_													0.0	-45		2	2		•6		Match L	ine			w		GRAY, I	MED. STIFF, S	ANDY CLAY (A-6)	
	32.6	1.0	3	3	5						- 14	****		OASTAL PLAIN	0.0		Ŧ						.						48.4	(continu	ed)	82
30	30.1	3.5				•8 	· · · ·					30.6	SAND	(A-2-4) ED. STIFF, F. SANDY	3.0	-50 -49.9	9 83.5	-	_	-		• •		• • •					DARK G	RAY, LOOSE, (A-2-6	CLAYEY F. SAND	
		Ŧ	3	3	3	• 6				SS-2	26%	28.1	TAN AND GRAY, M SILTY C	ED. STIFF, F. SANDY LAY (A-6)	5.5		<u> </u>	3	2	3	●5					1	W	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	51.4 Roring) TH STANDARD	85.
	27.6	<u>+ 6.0</u> +	1	2	1	. / ●3					Sat.	0000 0000 0000 0000	LIGHT GRAY, V. LO	LAY (A-6) DOSE, F. SAND (A-3)			Ŧ												- PENĚ	TRATION TES	T REFUSAL at	
25	25.1	8.5	WO	H 1	3		+ • • • •	<u> </u>		SS-4	38%	<u>~~~</u>	LIGHT GRAY, SOF	T TO MED. STIFF, F.	0.0		Ŧ												_	vation -51.4 ft II	N: CP (A-2-6)	
		Ŧ							 	00-4	Sat.		INTERMITTENT I	LAY (A-6) WITH			Ŧ												Other Sau ST-1 (2	nples: 25.0 - 27.0)		
20	20.1	+ + 13.5							 			21.6	GRAY, LOOSE, F. T	O CSE. SAND (A-1-b)	12.0		‡												- `	,		
20	20.1	- 13.5	3	2	3	•5		<u> </u>	· · · · · · ·		Sat.	000 000					+												-			
		‡							. .			000 <u>16.</u> 6			17.0		‡												-			
15	15.1	18.5	2	2			· · · ·	· · ·		-			GRAY, LOOSE, SI	AL PLAIN LTY CLAYEY SAND			1												-			
		ŧ	2	2	2	•4					Sat.	-	(A-2-5) WITH SOME	SHELL FRAGMENTS			÷												-			
		ł										11.6	CRAV SOFT TO A	MED. STIFF, SANDY	22.0		ł												-			
10	10.1	23.5	2	2	2		+			SS-7	32%						Ŧ												_			
		Ŧ				4					Ŵ		FRAG	MENTS			Ŧ												-			
5	5.1	28.5							· · · · · · ·			5.6			28.0		Ŧ												-			
		- 20.5	4	2	4	•6		<u> </u>		SS-8	29%		GRAY, LOOSE, CL WITH SOME SH	AYEY SAND (A-2-6) ELL FRAGMENTS			‡												-			
		‡							 			1.6			32.0		‡												-			
0	0.1	33.5		-									GRAY, MED. DENSE	E, SILTY SAND (A-2-4) ELL FRAGMENTS			+															
		Ŧ	4	6	5	•11					Sat.	-	WITH SOME SH	LLE FRAGMENTS			Ŧ												-			
		Ŧ										-3.4		DENSE, SILTY SAND	37.0		Ŧ												-			
-5	-4.9		7	7	8		+ • • • •		 - 	-	Sat.	888	(A-1-b) WITH T	RACE GRAVEL			+												-			
		‡				• 15			· · · · · ·		Sal.	000					‡												-			
10		±							 			<u> </u>	GRAY, MED. DEN	ISE. F. SAND (A-3)	42.0		+												-			
-10	-9.9	43.5	7	9	15		24	+		-	w	0 0 0 0 0 0 0 0 0 0 0 0		, , , ,			+												-			
		ł				[[ſ <u></u>					-13.4			47.0		±												-			
-15	-14.9	48.5				· · ·/·							GRAY, MED. DEN				ł												-			
		Ŧ	20	7	7	€14					W			TH SOME SHELL MENTS			Ŧ												-			
;		Ŧ												E, SILTY SAND (A-2-4)	52.0		Ŧ												-			
-20	-19.9	53.5	14	12	13	``	.	<u> </u>	• • • • • •	-	Sat		WITH LITTLE SH	E, SILTY SAND (A-2-4) ELL FRAGMENTS			+												-			
		‡		1.2			● ²⁵				Sat.						‡												-			
		±			1		```,		· · · · · ·			<u> </u>	GRAY, V. DENSE.	SAND WITH SOME	<u>57.0</u>		‡												-			
-25	24.9	58.5	18	24	37	1	+	• 61		-	w	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CEMENTED	SANDS (A-3)			+												-			
		Ŧ						1				0 0 0 0					ŧ												-			
-30	9.9	63.5					,	1				0 0 0 0 0 0 0 0 0 0 0 0					+												-			
]	Ŧ	10	19	20		\$ 39] [Sat.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					Ŧ												-			
		Ŧ					1					-33.4			67.0		Ŧ												-			
-35	-34.9	68.5	10	10	Q	· · · · · · · · · · · · · · · · · · ·	/	<u> </u>	· · · · ·				GRAY, MED. DENSE	E, SILTY SAND (A-2-4)			‡												-			
		‡			0	1 1 1	8		· · · · · ·		W	· · · · · -					‡												-			
		<u>†</u>				/							DARK GRAY LOOS	SE, CLAYEY SILTY F.	72.0		<u>†</u>												-			
-40	-39.9	$\frac{1}{1}$ 73.5	2	3	4		$+$ \cdot \cdot \cdot	<u> </u>	· · · · · ·	-	w		SAND	(A-2-5)			\pm												_			
		Ŧ				[****** ****			77 0		Ŧ												-			
	-44.9	T 79 F										<u> </u>	GRAY, MED. STIFF	, SANDY CLAY (A-6)			Ŧ												-			
- - 40	<u>-44.9</u>	<u>10.0</u>	-			• • • • • • • • • • • • • • • • • • • •			<u> </u>	<u> </u>	1					I		-	i								1		_			

							URE LUG			
WBS	46015	5.1.1			TI	B-5301 COUNT	Y PITT		GEOLOGIST GOODNIGH	T, D. J.
SITE	DESCR	RIPTIO	N REI	PLACE	BRIC	E NO. 87 OVER NORFOLK	SOUTHERN RAIL	ROAD ON N	C 33	GROUND WTR (ft)
BOR	ING NO	. B-1			S	ATION 24+94	OFFSET 17 ft R	-	ALIGNMENT -L-	0 HR. 3.5
	LAR EL		L O ft			TAL DEPTH 75.0 ft	NORTHING 667,		EASTING 2,534,084	24 HR. 3.3
				TE 01						
						ME-45C 81% 01/06/2016		METHOD Mu	d Rotary HA	MMER TYPE Automatic
DRIL	LER C	ontract	Drille	r	S	ART DATE 07/09/19	COMP DATE 07	/09/19	SURFACE WATER DEPTH	I N/A
ELEV	DRIVE ELEV	DEPTH	BLC	ow cou	JNT	BLOWS PER FOO	T SAMF		SOIL AND ROCK D	ESCRIPTION
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25 50	75 100 NO.	MOI G	ELEV. (ft)	DEPTH (ft)
35										
- 55	34.0	0.0							34.0	0.0
	-	-	1	2	2	• 4 · · · · · · · · · · · ·		M	UNDIVIDED COA TAN, LOOSE, F. SAND	
30	30.5 -	3.5		-					<u>31.0</u> ROOT	š <u>3.0</u>
		-	2	2	3	•5		M ∧ U	GRAY AND TAN, MED 28.5 CLAYEY SILT (A-5) WI	
	28.0	6.0	2	WOH	1			Sat	LIGHT GRAY, V. LOOS	E, SILTY F. SAND
25	25.5	8.5						0000	26.0 (A-2-4 TAN AND GRAY, LOO	
		-	1	2	3	•5		Sat.		
	-							0000	22.0	12.0
20	20.5 -	13.5						000	GRAY, LOOSE, SILT	Y SAND (A-1-b)
	_		3	2	2	4		Sat. 000		
	-							000		
15	15.5 -	18.5							16.0 COASTAL	18.0 PI AIN
		-	WOH	3	3	•6			GRAY, MED. STIFF, S	ANDY CLAY (A-6)
	-								WITH SOME SHELL (YORKTOWN FO	
10	10.5 -	23.5							, i i i i i i i i i i i i i i i i i i i	
		F	2	2	4	•6			•	
	-									
5	5.5 -	28.5	_	_						
5		-	3	3	4	•7		w 🖾	•	
	-	-							2.0	32.0
0	0.5 -	33.5							GRAY, MED. DENSE (A-2-6) WITH SOME SH	
0		-	3	6	8	•14	· · · · · ·	Sat.	(A-2-0) WITH SOME SH	IELL FRAGMENTS
	-	-							-3.0	37.0
-5	-4.5 -	38.5						000	GRAY, DENSE, SAND (A SHELL FRAG	
0		-	18	17	25	9 42		Sat. 000	SHELL FRAC	JWIEIN I S
	-	-				· · · · · ·/· · · · ·		000	-8.0	42.0
-10	-9.5 -	43.5	_					0000	GRAY, MED. DENSE, F TRACE CEMENTED	. SAND (A-3) WITH
		-	8	12	15	•27		Sat.		SAND/SHEELS
	-	-						0000	-13.0	47.0
-15	-14.5	48.5	_	-				_	GRAY, MED. DENSE TO F. SAND (A-2-4) WITH T	
10		-	3	3	60	.	· · · · · · · ·	W	SAND/SHELLS AND	LITTEL SHELL
	-	Ł					: : : : :		FRAGME	NTS
-20	-19.5	53.5					.			
20	-	F	16	18	20	•38 <u> </u>		Sat		
	-	F				` † • • • •	· · · · ·			
-25	-24.5	58.5				`	**			
	-	‡	40	59	40	<u> </u>	99	W		
	-	F								
-30	-29.5 -	63.5					.			
- 50		ţ ¯	16	18	22	•40		W		
	-	F					.			
-35	-34.5	68.5	102.5				_+	۱۸/	-34.0 GRAY, V. DENSE, SIL	68.0 TY SAND (A-2-4)
	-	ţ	100/0.4	4		<u> </u>	100/0.4	W	-36.5 WITH LENSES OF CE	EMENTED SAND 70.5
	-	Ł							DARK GRAY, LOOSE,	CLAYEY SILTY F.
-40	-39.5 -	73.5					.	-	SAND (A-	-2-5)
			3	2	4	↓		Sat.	-41.0	75.0
	-	╞							Boring Terminated W PENETRATION TES	
		Γ						1 [Elevation -41.0 ft I	

	BORE LOG						
	UNTY PITT GEOLOGIST GOODNIGHT, D.	. J.	WBS 46015.1.1	TIP B-5301 COUN	NTY PITT	GEOLOGIST GOODNIGH	IT, D. J.
SITE DESCRIPTION REPLACE BRIDGE NO. 87 OVER NORFOL		GROUND WTR (ft)		CE BRIDGE NO. 87 OVER NORFOL			GROUND WTR (ft)
BORING NO. B-2 STATION 26+92		0 HR. 2.0	BORING NO. B-2	STATION 26+92	OFFSET 23 ft LT	ALIGNMENT -L-	0 HR . 2.0
COLLAR ELEV. 31.8 ft TOTAL DEPTH 80.0 ft		24 HR. FIAD	COLLAR ELEV. 31.8 ft	TOTAL DEPTH 80.0 ft	NORTHING 667,119	EASTING 2,534,268	24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE GET4354 CME-45C 81% 01/06/2016		R TYPE Automatic	DRILL RIG/HAMMER EFF./DATE				AMMER TYPE Automatic
DRILLER Contract Driller START DATE 07/10/19 FLEV DRIVE DEPTH BLOW COUNT BLOWS PER FO	COMP. DATE 07/10/19 SURFACE WATER DEPTH N/A	<u> </u>	DRILLER Contract Driller	OUNT BLOWS PER FOO	COMP. DATE 07/10/19 OT SAMP. ▼ ↓	SURFACE WATER DEPT	H N/A
ELEV (ft) DRIVE ELEV (ft) DEPTH BLOW COUNT BLOWS PER FO 0 25 50	75 100 NO. MOI G SOIL AND ROCK DESCI	RIPTION	ELEV DRIVE ELEV (ft) (ft) (ft) 0.5ft 0.5ft		75 100 NO. MOI G	SOIL AND ROCK	DESCRIPTION DEPTH (ft)
35			-45	Match Line			
			-46.7 78.5 3 2			DARK GRAY, MED. SANDY CLAY (A	
<u>31.8 – 0.0</u> 30 – Woн woн woн ф ₀				●5		48.2 _ Boring Terminated V	
		GANICS <u>3.0</u>				PENETRATION TE Elevation -48.2 f	
	W GRAY AND TAN, SOFT, F. S 26.3 CLAY (A-7)					-	
		SE, F. SAND				-	
23.3 8.5 WOH 1 1 WOH 1 1 WOH 1 1	Sat. St					-	
20 -		12.0				-	
		(A-1-a)				-	
		17.0				-	
	COASTAL PLAI GRAY, MED. STIFF, SANDY					-	
	WITH SOME SHELL FRA	AGMENTS				-	
						-	
						-	
5 +						-	
						-	
						-	
						-	
		SHELLS AND				-	
	SOME SHELL FRAGM	MENTS				-	
	Sat. 000 000					-	
						-	
	Sat. 000					-	
		47.0				-	
	UNERSE DARK GRAY, MED. DENSE UNERSE SILTY SAND (A-2-4) WITH LI W OF CEMENTED SAND/SHEL	TTLE PIECES				-	
	SHELL FRAGMEN					-	
						-	
Ь – – – – – – – – – –						-	
	GRAY, V. DENSE, F. SAND	D (A-3) WITH				-	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	0000	-RAGMENIS				-	
						-	
-31.7 <u>63.5</u> 100/0.4	···· · _{100/0.4} ♦ W ००००					-	
	· · · · · · · · · · · · · · · · · · ·	67.5				-	
	DARK GRAY, MED. DENSI Sat. SILTY SAND (A-2-					-	
		72.0				-	
<u>-41.7</u> 73.5	SANDY CLAY (A-	72.0 TO STIFF,				_	
		·,				-	
<u>∠</u> <u>-45</u> <u> </u>							

	IY PITT	GEOLOGIST GOODNIGHT, D. J.	WBS 46015.1.1	TIP B-5301 COUN	TY PITT	GEOLOGIST GOODNIGHT, D. J.
SITE DESCRIPTION REPLACE BRIDGE NO. 87 OVER NORFOLK	SOUTHERN RAILROAD ON N	C 33 GROUND WTR (ft)	SITE DESCRIPTION REPLACE BR	RIDGE NO. 87 OVER NORFOLI	K SOUTHERN RAILROAD ON N	NC 33 GROUND WTR (ft)
BORING NO. EB2 STATION 27+63	OFFSET 17 ft LT	ALIGNMENT -L- 0 HR. 0.5	BORING NO. EB2	STATION 27+63	OFFSET 17 ft LT	ALIGNMENT -L- 0 HR. 0.5
COLLAR ELEV. 32.5 ft TOTAL DEPTH 75.0 ft	NORTHING 667,074	EASTING 2,534,322 24 HR. 0.5	COLLAR ELEV. 32.5 ft	TOTAL DEPTH 75.0 ft	NORTHING 667,074	EASTING 2,534,322 24 HR. 0.5
DRILL RIG/HAMMER EFF./DATE GET4354 CME-45C 81% 01/06/2016	DRILL METHOD MU	d Rotary HAMMER TYPE Automatic	DRILL RIG/HAMMER EFF./DATE GET435	354 CME-45C 81% 01/06/2016	DRILL METHOD M	Iud Rotary HAMMER TYPE Automatic
DRILLER Contract Driller START DATE 07/09/19	COMP. DATE 07/09/19	SURFACE WATER DEPTH N/A	DRILLER Contract Driller	START DATE 07/09/19	COMP DATE 07/09/19	SURFACE WATER DEPTH N/A
ELEV (ft) DRIVE ELEV (ft) DEPTH BLOW COUNT BLOWS PER FOO (ft) 0.5ft 0.5ft 0.5ft 0 25 50	T SAMP. L 75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION	ELEV DRIVE DEPTH BLOW COUNT (ft) (ft) 0.5ft 0.5ft 0.5ft		0T SAMP. ▼ L 75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION
35		-	-45	Match Line		Elevation -42.5 ft IN: CP (A-2-5)
32.5 0.0 WOH WOH 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SS-37 44%	32.5 0.0 UNDIVIDED COASTAL PLAIN TAN AND BROWN, V. LOOSE, SILTY F. -29.5 SAND (A-2-4) WITH A LITTLE (ROOTS)				<u>Other Samples:</u> ST-2 (23.0 - 25.0)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ORGANICS TAN AND GRAY, V. SOFT TO MED. STIFF, CLAYEY F. SANDY SILT (A-4)				
24.0 8.5 1 WOH WOH 0	. SS-40 34%	20.5 12.0				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Sat. 000- 000- 000-	20.5				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	SS-42 29%	15.5				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		-				<u>-</u>
5 4.0 28.5 3 2 4		-				
		0.5 GRAY, MED. DENSE, CLAYEY SAND (A-2-6) WITH SOME SHELL FRAGMENTS				
	· · · · · · · · · · · · · · · · · · ·	-4.5 GRAY, MED. DENSE, SAND (A-1-b) WITH				
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		SOME SHELL FRAGMENTS				-
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		-14.547.0				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Sat Sat	- DARK GRAY, MED. DENSE, CLAYEY SILTY SAND (A-2-5) WITH TRACE PIECES OF CEMENTED SAND				
<u>2</u> -21.0 53.5	100/0.8	-21.0 53.5 DARK GRAY, V. DENSE, SILTY SAND (A-2-4) WITH SOME SHELL FRAGMENTS -24.5 57.0				
-25 -26.0 58.5 -33 43 46 -30 -31.0 63.5 13 23 28 -35 -35 -36 -31.0 63.5 -30		-24.5 57.0 GRAY, V. DENSE, F. SAND (A-3)				
30 -31.0 63.5 13 23 28	· · · · · · · · · · · · · · · · · · ·	-				<u>-</u>
	. 100,40-5♥ W	<u>-33.5</u> GRAY, LOOSE TO V. DENSE CLAYEY SILTY F. SAND (A-2-5) WITH TRACE PIECES OF CEMENTED SAND				
		-				
	. Sat	-42.5 75.0 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at				