CONTENTS

5-6

SE	IEET	NO.
	1	
	2	
	3	
	Δ	

 $\mathbf{\nabla}$

-256IC/

R

REFERENCE

DESCRIPTION TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN PROFILES BORE LOGS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY COLUMBUS

PROJECT DESCRIPTION NEW INTERCHANGE AT THE INTERSECTION OF NC 87 AND NC 11

SITE DESCRIPTION BRIDGE NO. 374 ON NC 11 (-Y-) OVER WEYMAN CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2561CA	1	6

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 SOLT TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 707-680. 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 UN-PLACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS. MOICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOL MOISTURE CONDITIONS MAY YARY 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 WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHION 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 OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDENSATIONS FOR ANY THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR CUARANTEED 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

S. PAPKE

MID-ATLANTIC DRILLING

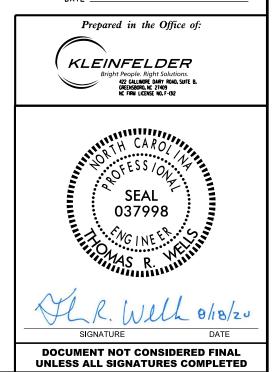
INVESTIGATED BY S. PAPKE

DRAWN BY C. DRISCOLL

CHECKED BY <u>T. WELLS</u>

SUBMITTED BY _KLEINFELDER, INC.

DATE AUGUST 2020



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

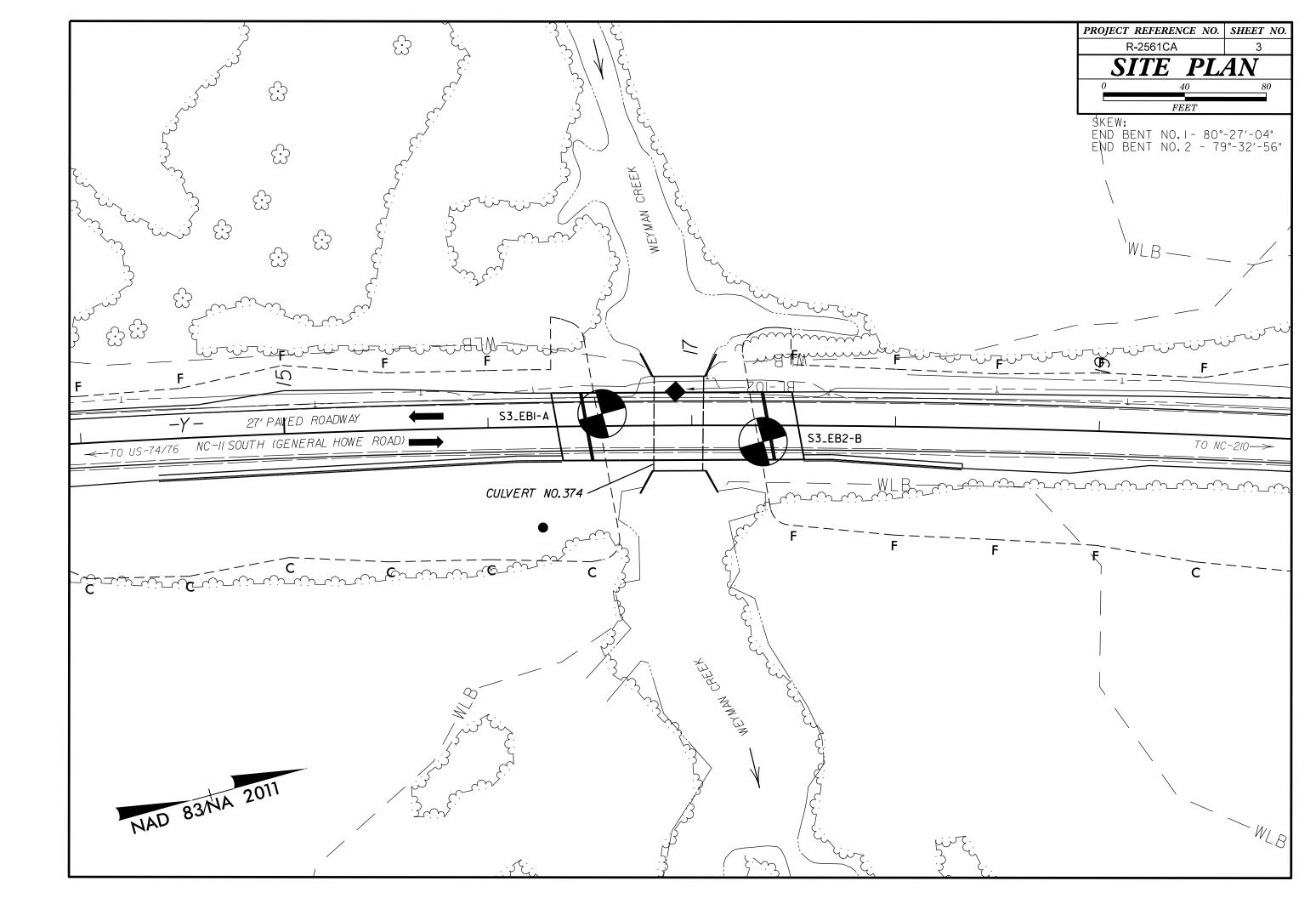
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

			SOIL [DESCRIP	TION				T		GRA	DATION			ROCK DESCRIPTION							
BE PENETH ACCORDIN IS BA CONSISTEN	RATED WITH NG TO THE ASED ON TH NCY,COLOR,	A CONTINUOL STANDARD PEN E AASHTO SY TEXTURE, MOIS	TED.SEMI-CON US FLIGHT POV NETRATION TE STEM.BASIC (STURE.AASHTO	ISOLIDATED, WER AUGER ST (AASHTO DESCRIPTION) CLASSIFIC	OR WEATHER AND YIELD I T 206, ASTI IS GENERALL ATION, AND (LESS THAN 1 M D1586), SO Y INCLUDE T DTHER PERTIN	00 BLOWS P DIL CLASSIFI THE FOLLOWI NENT FACTOR	ER FOOT CATION NG: RS SUCH	WELL GRADED - INDICAT UNIFORMLY GRADED - IN GAP-GRADED - INDICATES	DICATES	GOOD REPRESENT S THAT SOIL PA XTURE OF UNIFO	ATION OF PARTIC	_ APPROXIMA ES OF TWO	TELY THE SAME SIZE.	ROCK LINE INE SPT REFUSAL BLOWS IN NON REPRESENTED	DICATES IS PENI N-COAST BY A Z	S THE LEVEL NETRATION B TAL PLAIN ZONE OF WE	NN MATERIAL THAT L AT WHICH NON-CC BY A SPLIT SPOON MATERIAL, THE TF ATHERED ROCK.	WOULD YIELD SPT REFUSAL IF TEST NASTAL PLAIN MATERIAL WOULD YIELD SAMPLER EQUAL TO OR LESS THAN Ø. NANSITION BETWEEN SOIL AND ROCK			
AS V	S MINERALOO ERY STIFF.GI	GICAL COMPOS RAY, SILTY CLAY, I	ITION, ANGULAR WOIST WITH INT	AITY, STRUC' ERBEDDED F	URE, PLAST	CITY,ETC. F YERS,HIGHLY P	OR EXAMPLE	•				OIL GRAINS IS DE	SIGNATED B	Y THE TERMS:	WEATHERED	_S ARE		DIVIDED AS FOLL	JWS: AIN MATERIAL THAT WOULD YIELD SP1			
	S	DIL LEGE	ND AND	AASHTO	CLASS	FICATIO	N		- <u>ANGULAR, SUBAN</u>		SUBROUNDED, OR	AL COMPOSI			ROCK (WR)				FOOT IF TESTED.			
GENERAL CLASS.		Granular Mater ≤ 35% Passing •			AY MATERIALS PASSING =200		ORGANIC MATER	IALS	MINERAL NAM		FELDSPAR, MICA, T		CRYSTALLINE				GRAIN IGNEOUS AND METAMORPHIC RC T REFUSAL IF TESTED. ROCK TYPE IN					
GROUP		A-3	A-2	_	5 A-6 A	-7 A-1, A-2	A-4, A-5		ARE USED IN	DESCR		THEY ARE CONSIDE	ERED OF SIG	NIFICANCE.	ROCK (CR)		<u>20.20.</u>	GNEISS, GABBRO, SCHIST, ETC.				
	A-1-a A-1-b	A-2-4 A-	2-5 A-2-6 A-2		A-1 A-1	7-5. A-3 7-6	A-6, A-7		SI TCL		COMPRE DMPRESSIBLE	ESSIBILITY	LL < 31		NON-CRYSTALL ROCK (NCR)	INE		SEDIMENTARY RO	CK THAT WOULD YEILD SPT REFUSAL JDES PHYLLITE, SLATE, SANDSTONE, ET(
00	000000000000000000000000000000000000000			*					MODEF	RATELY	COMPRESSIBLE		LL = 31 - LL > 50	50	COASTAL PLAIN			COASTAL PLAIN	SEDIMENTS CEMENTED INTO ROCK, BUT			
% PASSING 10 5	ю мх					GRANULAR	SILT-	MUCK,				E OF MATER			(CP)			SHELL BEDS, ETC	•			
*40 3i *200 15	Ø MX 50 MX 5 MX 25 MX	51 MN 10/MX 35/MX 35	MX 35 MX 35 M	4X 36 MN 36	MN 36 MN 36	SOILS	SOILS	PEAT	ORGANIC MATERIAL		GRANULAR SOILS	SILT - CLAY SOILS	OTHER	MATERIAL	FRESH I				HERING			
MATERIAL PASSING #40 LL PI	_ 6 MX	- 40 MX 41	MN 40 MX 41 M MX 11 MN 11 M	1N 40 MX 41	MN 40 MX 41	MN LIT	LS WITH ITLE OR IDERATE	HIGHLY	TRACE OF ORGANIC MA LITTLE ORGANIC MATT MODERATELY ORGANIC HIGHLY ORGANIC	ATTER TER	2 - 3% 3 - 5% 5 - 10% > 10%	3 - 5% 5 - 12% 12 - 20% > 20%	TRACE LITTLE SOME HIGHLY	1 - 10% 10 - 20% 20 - 35% 35% AND ABOVE	VERY SLIGHT F (V SLI.)	HAMMER ROCK GE CRYSTAL	R IF CRYSTAL	LLINE. RESH, JOINTS STAINE DKEN SPECIMEN FACE	D, SOME JOINTS MAY SHOW THIN CLAY C SHINE BRIGHTLY, ROCK RINGS UNDER H			
	Ø TONE FRAGS. GRAVEL, AND		4 MX Y OR CLAYEY	SILTY	MX 16 MX NO CLAYEY	MX AMO OF M	iunts of Rganic Iatter	organic Soils		WATE		ND WATER	TELY AFTER	DRILLING	(SLI.)	1 INCH.	OPEN JOINTS	S MAY CONTAIN CLAY	D AND DISCOLORATION EXTENDS INTO RC . IN GRANITOID ROCKS SOME OCCASIONA CRYSTALLINE ROCKS RING UNDER HAMMER			
MATERIALS	SAND	SAND GRAV	el and sand	SOILS	SOILS							LAFTER <u>24</u> H							ISCOLORATION AND WEATHERING EFFECT DULL AND DISCOLORED, SOME SHOW CLA			
GEN. RATING AS SUBGRADE	I	EXCELLENT TO G	DOC	FAI	r to poor	FAIR TO POOR	POOR	UNSUITABLE				URATED ZONE, OR	WATER BEAF	RING STRATA	(DULL SC	OUND UNDER		SHOWS SIGNIFICANT LOSS OF STRENGTH			
	F		GROUP IS ≤ LL						- O-M-	SPRIN	NG OR SEEP						RESH ROCK. CK EXCEPT C	DUARTZ DISCOLORED	OR STAINED. IN GRANITOID ROCKS.ALL F			
L		100	NSISTENC					0.000		<u> </u>	MISCELLAN	EOUS SYMBO	LS						KAOLINIZATION. ROCK SHOWS SEVERE L IST'S PICK. ROCK GIVES 'CLUNK' SOUND			
	PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY PENETRATION RESISTENCE (N-VALUE) VERY LODSE < 4						STRENGTH	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOLUCION CONTRACTOR SLOPE INDICATOR							IF TESTED, WOULD YIELD SPT REFUSAL ERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ,) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL							
GRANULA	GENERALLY LOOSE 4 TO 10 GRANULAR MEDIUM DENSE 10 TO 30 N/A						SOIL SYMBOL		OPT DMT TEST BOR					SOME FRAGMENTS OF <u>VIELD SPT N VALUES</u>	STRONG ROCK USUALLY REMAIN. > 100 BPF							
MATERIAL (NON-COH		VERY	NSE DENSE	30	> 50 > 50 < 2		< 0.25	j	ARTIFICIAL FI	Y EMBAN		AUGER BORING	<u>ک</u>	CONE PENETROMETER TEST SOUNDING ROD	SEVERE E	BUT MAS REMAINI	SS IS EFFEC	TIVELY REDUCED TO	OR STAINED. ROCK FABRIC ELEMENTS AF SOIL STATUS, WITH ONLY FRAGMENTS OI DF ROCK WEATHERED TO A DEGREE THAT			
GENERAL SILT-CLA MATERIAL (COHESIV	AY L	SO MEDIUM STI VERY	STIFF	4 8	2 TO 4 TO 8 TO 15 TO 30		0.25 TO 0.5 TO 1 TO 2 2 TO 4	1.0 ?)	MONITORING WE PIEZOMETER	ш 🔶	TEST BORING WITH CORE	COMPLETE	ROCK RE SCATTEF	EDUCED TO S	SOIL. ROCK FABRIC N	MAIN. <u>IF TESTED, WOULD YIELD SPT N V</u> OT DISCERNIBLE, OR DISCERNIBLE ONLY AY BE PRESENT AS DIKES OR STRINGERS			
CONEST		НА	RD		> 30		> 4	•	ALLUVIAL SOI			INSTALLATION	0	- SPT N-VALUE	'	1L50 Hr	N EXAMPLE.	RUCK I	HARDNESS			
		Т	EXTURE	<u>OR GRA</u>	<u>IN SIZE</u>							ATION SYMB			VERY HARD	CANNOT	BE SCRATCH		ARP PICK. BREAKING OF HAND SPECIMEN			
U.S. STD. SIE OPENING (MM			4 10 4.76 2.00	40 0.42		200 270 .075 0.053					CLASSIFIED EXC SUITABLE WASTE		ACCEPT، 🗠	SIFIED EXCAVATION - ABLE, BUT NOT TO BE				NS OF THE GEOLOGIS	T'S PICK. DNLY WITH DIFFICULTY. HARD HAMMER B			
BOULDER			RAVEL	COARSE	F	INE	SILT	CLAY	SHALLOW UNDERCUT		CLASSIFIED EXC CEPTABLE DEGRA			I THE TOP 3 FEET OF MENT OR BACKFILL			ACH HAND SF		JNLI WIIN DIFFICULII. NHAD AHMMEA B			
(BLDR.) GRAIN MM	(C		(GR.) 2.0	SAND (CSE. SD.)		SAND SD.) 0.05	(SL.)	(CL.)	AR - AUGER REFUSAL		MED ME		VST -	VANE SHEAR TEST	HARD E	EXCAVAT		D BLOW OF A GEOLO	GOUGES OR GROOVES TO 0.25 INCHES DE DIST'S PICK. HAND SPECIMENS CAN BE D			
SIZE IN.		3					_		BT - BORING TERMINATED CL CLAY)		1ICACEOUS ODERATELY		WEATHERED JNIT WEIGHT					S DEEP BY FIRM PRESSURE OF KNIFE O PEICES 1 INCH MAXIMUM SIZE BY HARD			
CO11 1	MOISTURE S		FIELD M		<u>ATION O</u>	F TERMS	S		CPT - CONE PENETRATION CSE COARSE	N TEST	NP - NON ORG OF	N PLASTIC	Ϋ́α- ι	DRY UNIT WEIGHT			OF A GEOLOG					
	ERBERG LIN		- SATURA	PTION		OR FIELD MO			DMT - DILATOMETER TES DPT - DYNAMIC PENETRAT e - VOID RATIO		PMT - PF	RESSUREMETER TE APROLITIC	S - B	M <u>PLE ABBREVIATIONS</u> ULK SPLIT SPOON		FROM CH PIECES	CAN BE BRO	VERAL INCHES IN SIZ DKEN BY FINGER PRES				
LL PLASTIC		LIMIT	(SAT.		FROM BE	ID; REQUIRES	ROUND WATE	R TABLE	F - FINE - FOSS FOSSILIFEROUS FRAC FRACTURED, FRAC	TURES	SL SIL SLI SL	T, SILTY	ST - RS -	SHELBY TUBE	SOFT 0	OR MORE FINGERN	RE IN THICKN NAIL.	ess can be broken	CAVATED READILY WITH POINT OF PICK. BY FINGER PRESSURE. CAN BE SCRATCH			
RANGE <	DI ACTIO		- WET -	(W)		OPTIMUM MO		,	FRAGS FRAGMENTS HI HIGHLY			STURE CONTENT		CALIFORNIA BEARING RATIO		RACT	URE SPA		BEDDING			
OM _	PLASTIC OPTIMUM SHRINKA	M MOISTURE	- MOIST	- (M)	SOLID; A	T OR NEAR (OPTIMUM MO)ISTURE				ON SUBJECT	PROJEC	T.	TERM VERY WIDE WIDE MODERATEL	Y CLOS	3	<u>SPACING</u> THAN 10 FEET TO 10 FEET TO 3 FEET	TERM VERY THICKLY BEDDED THICKLY BEDDED 1 THINLY BEDDED 0.			
56 -			- DRY -	(D)		S ADDITIONA OPTIMUM MO		D	X CME-45C		CLAY BITS 6" CONTINUOUS F	FLIGHT AUGER	CORE SIZ		CLOSE VERY CLOSE	Ξ		16 TO 1 FOOT THAN 0.16 FEET	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00 THINLY LAMINATED <			
			PL/	ASTICIT	<u>r</u>						8 HOLLOW AUGE		□-в _	П-н					RATION			
SLIG	PLASTIC		PLAST	<u>ICITY INDE)</u> Ø-5 6-15	<u>((PI)</u>)	DRY STRENO VERY LOW SLIGHT		CME-550		HARD FACED FIN	INSERTS			FOR SEDIMENT		JCKS, INDURA	RUBBING WITH	ENING OF MATERIAL BY CEMENTING.HE H FINGER FREES NUMEROUS GRAINS: H BY HAMMER DISINTEGRATES SAMPLE.			
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH COLOR							PORTABLE HOIST		CASING W	•STEEL TEETH		T HOLE DIGGER D AUGER	MODERA	TELY I	NDURATED	BREAKS EASI	BE SEPARATED FROM SAMPLE WITH ST Y WHEN HIT WITH HAMMER.					
											TRICONE 2-1	<u>%6</u> ' TUNGCARB.		NDING ROD	INDURAT	ED			DIFFICULT TO SEPARATE WITH STEEL) BREAK WITH HAMMER.			
	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.										CORE BIT			E SHEAR TEST	EXTREM	ELY INf	IDURATED		R BLOWS REQUIRED TO BREAK SAMPLE KS ACROSS GRAINS.			

PROJECT REFERENCE NO.

R-2561CA

	TERMS AND DEFINITIONS
ED. AN INFERRED) SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60 IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.
13 OFTEN	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.
T N VALUES >	A NUTABLE 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
ОСК ТНАТ	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND
CLUDES GRANITE,	SURFACE.
AL PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED. C.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
STONE, CEMENTED	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
RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK.
	<u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
COATINGS IF OPEN, HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
HIMMEN BLUWS IF	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
ОСК ИР ТО	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
AL FELDSPAR R BLOWS.	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
S. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
AY. ROCK HAS	PARENT MATERIAL.
H AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
OSS OF STRENGTH	FIELD.
WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
EVIDENT BUT	<u>LEDGE</u> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO 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
RE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
F STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
T ONLY MINOR VALUES < 100 BPF	OF AN INTERVENING IMPERVIOUS STRATUM.
IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
S. SAPROLITE IS	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.
IS REQUIRES	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO
	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
EEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
DETACHED	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF
OR PICK POINT.	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL
BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
I FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
NT. SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
. PIECES 1 INCH HED READILY BY	LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EOUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
LES NEMBLET DI	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
	BENCH MARK: BL-102 AT STA. 16+91.69 -Y- 17'LT (227,196 FT.N.,
THICKNESS	2,217,392 FT.E)
4 FEET 1.5 - 4 FEET	ELEVATION: 22.94 FEET
16 - 1.5 FEET	NOTES:
03 - 0.16 FEET 08 - 0.03 FEET	
0.008 FEET	
EAT, PRESSURE, ETC.	
TEEL PROBE;	
PROBE;	
I NUDE:	
E;	
	DATE: 8-15-14



					0	60 120	PROJECT REFERENCE NO.	SHEET
							R-2561CA	4
						FEET	PROFILE ON BRIDGE NO.3	374 ON NC
						VE = 3	PROFILE ON BRIDGE NO.3 (-Y-) OVER WEYMAN	CREEK
0				·	·	, , , , , , , , , , , , , , , , , , ,		
0	····		· · · · · · · · · · · · · · · · · · ·	·	·	· · · · · · · · · · · · · · · · · · ·		4
		S3_EBI-A 16+56	S3_EB2-B I7+35 8' RT					
		6' L¦T	8' RT					
0					·			2
			·					
			ϕ					
)		6 - 8	~~@					
		····				· +		
			6					
0		@						-2
		©			·			
		©- Q	(r) - N					
10								_4
		© <u>®</u>						
			©- S					
		H 38-						
60		BT		 	,			-6
			I BT					
			CAVED			A ROADWAY EMBANKMENT: WET. MEDIUM DENSE TO D BROWN, CLAYEY FINE TO CO FINE TO COARSE SAND AN	ENSE.ORANGE AND DARSE SAND TO SILTY	
						FINE TO COARSE SAND AN	ND PAVEMENT	
0			· · · · · · · · · · · · · · · · · · ·			B ALLUVIAL: WET.SOFT.BLUISH GRAY.FI	NE SANDY CLAY	
						MOIST TO WET, LOOSE TO N	IEDIUM DENSE,TAN,DARK GRAY. E TO COARSE SAND	
						(D) COAST AL PLAIN:		
					- 	- MOIST, MEDIUM STIFF TO VI CLAY TO COARSE TO FINE	ERY STIFF.DARK GRAY.SILTY SANDY CLAY (PEEDEE FORMATION)	
						E COASTAL PLAIN:	COARSE SAND (PEEDEE FORMATION)	
00		, , , , , , , , , , , , , , , , , , ,	, , , , , , , , , , , , , , , , , , ,	·	·			-1
	NOTES:					MOIST,VERY STIFF,DARK GR	AY, SILTY CLAY (REEDEE FORMATION)	
	GROUNDLINE TAKEN FROM ROADWAY FILES RECEIVED					G CUASI AL PLAN: MOIST. MEDIUM DENSE, DARK	GRAY,CLAYEY FINE TO COARSE	
	ON SEPTEMBER 10, 2019					SAND (PEEDEE FORMATION)		
	INFERRED STRATIGRAPHY IS DRAWN THROUGH THE					MOIST VERY STIFF TO HARD	D.DARK GRAY.SILTY CLAY (PEEDEE FOR	
20	BORINGS WITH BOTH PROJECTED ONTO THE PROFILE			·	·		· · · · · · · · · · · · · · · · · · ·	-1
	13+60 14+20 14+80 15+40	16+00 16+60	17+20 17+80	18+40	19+00	19+60 20+20	20+80 21+4	0

GEOTECHNICAL BORING REPORT BORE LOG

SITE DESCRIPTION Example - 5 and NC #7 (L-1) wer Workm Check OR COUNT WILL OR COUNT WILL OR COUNT WILL OR COUNT WILL OF COUNT W														1										
DEGREMA SIZE/LA STATION 14-PB OPFSET 6-11 ALLMENT // A DUR. No. DUR. No. DUR. No. DERUMERT/DAT VIDAUEUR // A VIDAUEUR // A No. AATON 14-PB ODAUEUR // A STATION 14-PB ODAUEUR // A <	WBS	34466	6.4.1			т	IP R-2561CA	C	OUNTY	COLUMB	US			GEOLOGIST S. Papke		WBS				TIF	• R-2561CA	COUNTY	(
DOLANELY 261 TOTAL DEPT: 70-11 WOTTING 22193 DALAY 22193 DALAY 22193 DALAY 22193 DALAY 22193 DALAY 2219 DALAY	SITE	DESCR	IPTION	Bridg	ge No.	374 o	n NC 87 (-L-) ove	er Weym	an Cree	ж					GROUND WTR (ft)	SITE	SITE DESCRIPTION Bridge No. 374			374 on	NC 87 (-L-) over Wey	/man Cree	эk	
DCULARELY 264 TOTAL DEPTH 764 MORPHIG 27195 24 MIC 27195	BOR	ING NO.	S3 E	B1-A		s	TATION 16+56	;		OFFSET	6 ft LT			ALIGNMENT -Y-	0 HR. N/A	BOR	BORING NO. S3_EB1-A				ST	ATION 16+56		OF
DBL REPARAMENT FOR USE (CC-40-50-02-CC) DBL REPARAMENT (CC-40-50-02-CC) DBL RE						_						59		EASTING 2 217 393	24 HR 62									<u> </u>
DRLEB IS JART DATE O/UNID DUPACE MATER DEFINITION DUPACE MATER DEFINITION PRACE MATER DEFINITION 61 000													n Mu											
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $. MIDC			0	CC
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $							11				-		1 L T	SURFACE WATER DEPTH N/A	4	-								
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	ELEV (ft)		DEPTH (ft)	BLC								17	Ō				ELEV	DEPTH (ft)	BLO					
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	(,	(ft)	(,	0.511	0.511	0.51		50		15 100	NO.		G	ELEV. (ft)	DEPTH (ft)	()	(ft)	(,	0.511	0.511	0.511			15
$\begin{array}{c c c c c c c c c c c c c c c c c c c $																								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	25		Ļ											_		-55		770					h Line	- -
10 11<			ŧ											22.6 GROUND SURFA	ACE 0.0			<u> </u>	6	10	14		••••	·
20 14 16 14 16 15 14 62 1 2 2 16 14 62 1 2 2 16 112 5 7 7 11 16 122 4 9 14 12 14 12 12 16 122 4 9 14 12 12 12 12 17 16 122 14 12 14 12 12 12 18 164 12 14 12 12 12 12 12 19 166 122 14 14 14 14 12 12 12 12 10 166 122 14				10	14	12						w		21.4 ROADWAY EMBANK	KMENT 1.2			ł						
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	20	20.4	<u>T 2.2</u>											- ABC Stone (0.5 - 0.7	7 Foot)		-	Ŧ						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			ŧ										L	Orange and Brown, Silty Fi	ine to Coarse			ŧ						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	45		‡											16.4	<u>6.2</u>			ŧ						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	15	14.4 -	8.2	1	2	2									dy CLAY		-	ŧ						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $.	ł	'	2	2	•											+						
94 132 5 6 7 101	10		Ŧ											<u>11.4</u>	AND <u>11.2</u>			ŧ						
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	10	9.4 -	13.2	5	6	7											-	ŧ						
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			t		Ŭ										16.0			t						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	5		ł				1 1 1						Ń	COASTAL PLA	IN			ł						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		4.4 -	<u>† 18.2</u> †	4	6	9						М		Dark Gray, Silty C (Peedee Formation)	LAY on)		-	Ŧ						
0 0.0 232 4 7 9 5 6.6 282 5 7 9 10 10.0 232 5 6 9 10 10.0 232 5 6 9 10 10.0 232 5 6 9 10 10.0 232 5 7 9 11 11.0 11.0 11.0 11.0 11.0 20 20.3 42.8 800.1 11.0 11.0 11.0 12 20.3 42.8 800.1 11.0 11.0 11.0 11.0 20 20.3 42.8 800.1 11.0<			‡						· · · · ·				N		,			‡						
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	0		±										N	<u> </u>				t						
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		-0.6 -	<u>+ 23.2</u> †	4	7	9						м	N					Ŧ						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			ŧ															Ŧ						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	-5	56-	+ 28.2										\mathbf{N}	-			-	ŧ						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		-5.0	1 20.2	5	7	9						м	N					t						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		-	ł															ł						
15 5 6 9 10	-10	-10.6	+ 33.2											-			-	Ŧ						
-15 -			‡	5	6	9			· · · ·			м	N					‡						
-15.6 38.2 3 5 7 -20 -0.3 42.9 600.1 -11 -11 -11 -22 -25.3 47.9 5 7 10 -11 -1			t												<u>36.2</u>			ł						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	-15	-15.6 -	38.2		_]							- Dark Gray, Coarse to Fine (Peedee Formation	on)		-	ł						
-20 -20.3 -42.9			Ŧ	3	5	7	● 12					M						Ŧ						
-20.3 42.9 600.1			‡															ţ						
-25 -25.3 47.9 -	-20	-20.3 -	42.9	60/0.1	-			==+		60/0.1				20.3 Silty Coarse to Fine	42.9 SAND		-	ŧ						
-25 -25.3 47.9			ł				· · · - + -		<u> </u>					- <u>-22.4</u> (Peedee Formatie	on) <u>45.0</u>			ł						
253 = 473 7 10 17 10 17 10 30 -30.3 52.9 11 11 11 11 11 -30 -35.3 57.9 11 11 11 11 11 11 -35 -35.3 57.9 14 11	-25		Ŧ										N	Dark Gray, Silty C (Peedee Formati	LAY on)			Ŧ						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	20	-25.3 -	+ 47.9 +	5	7	10				· · · ·		м			·		-	ŧ						
-30.3 52.9		.	‡				· · · T .'' ·		· · · ·				N					t						
300 0 0 2 5 8 11 -35 3 57.9 - - -35 3 57.9 - - -36 3 57.9 - - -40 -40.3 62.9 - -40 - - - -40 - - - -40 - - - -40 - - - -40 - - - -40 - - - -40 - - - -40 - - - -40 - - - -40 - - - -40.3 62.9 - - -45.3 67.9 - - - -45.3 67.9 - - - - -50 -50.3 72.9 - - - - -50 -50.3 72.9 15 20 18 - - -50.	-30	20.2	±				<u>···</u>			· · · ·			N					£						
-35 -35.3 57.9		-30.3 -	- 52.9	5	8	11	· · · ● 19					м	N	•			.	Ŧ						
-35 -35.3 57.9			‡				:::		· · · · ·				N					‡						
-40 -40.3 62.9	-35	-35 3 -	± 57.9				···i ·			· · · ·			N	_			-	‡						
-40 -40.3 62.9	-35		1	7	9	14	· · · · • 23 [.]					м	N					t						
-40 -40.3 62.9 -41.3		.	Ŧ				:::;/ :	•••							<u>60.9</u>			Ŧ						
-45 -45.3 67.9 6 8 12	-40	-40.3 -	+ 62.9		_		_ <i>/</i> - -			· · · ·			///	 Dark Gray, Clayey Fine to C Peedee Formation 	oarse SAND		-	‡						
-45 -45.3 67.9			‡	5	5	8	13		· · · ·			M	$\langle \rangle$	· ·				t						
-45.3 -67.9	-45	.	t												<u>IAY 65.9</u>			t						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		-45.3 -	67.9			40	__			+			N	- (Peedee Formati	on)		-	ļ.						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			‡	°	ŏ	12		· · ·	· · · · ·			M	N					‡						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$.	‡				: : : N											t						
	-50	-50.3 -	+ 72.9	15	20	18	<u>\</u>	<u>. </u>		+ +			N	_			-	ŧ						
			Ŧ		20	10	.	P ³⁸				^{IVI}	N					Ŧ						
	-55		‡										N					‡						
	-55		L	I	L		1			1		1						L			I			

SHEET 5

JNTY COLUMBUS	GEOLOGIST S. Papke								
Creek		GROUND WTR (ft)							
OFFSET 6 ft LT	ALIGNMENT -Y-	0 HR. N/A							
NORTHING 227,159	EASTING 2,217,393	24 HR. 6.2							
DRILL METHOD Mud	Rotary HAMMER TYPE Automatic								
COMP. DATE 07/10/19	SURFACE WATER DEPTH N/A								
75 100 NO. MOI G	SOIL AND ROCK DESC	RIPTION							
e									
		- — — — — — — — — — — 79.4							
	Boring Terminated at Eleva COASTAL PLAIN (PEEDEE SILTY CLAY	tion -56.8 ft in							
	SILTY CLAY	ronwarion).							
F									
4									
F									
‡									
F									

GEOTECHNICAL BORING REPORT BORE LOG

					<u> </u>																								
	34466		-			IP R-256					BUS			GEOL	OGIST S. Papke	1			WBS 34466.4.1 SITE DESCRIPTION Bridge No. 37					P R-256			JNTY		
				ge No.		on NC 87 (-l	,	Veyma								-	WTR (ft)		BORING NO. S3 EB2-B							Veyman (Creek		
	NG NO.					STATION [·]				OFFSET				_	MENT -Y-	0 HR.	N/A							TATION			C		
COL	LAR EL	EV. 23	8.1 ft		Т	OTAL DEP	PTH 89.	4 ft		NORTHING	1				NG 2,217,428	24 HR.	Caved	COL	AR ELE	V. 23	3.1 ft		ТС)TAL DE	PTH 89.4	4 ft	N		
DRILL	. RIG/HAN	/MER EF	F./DAT	E MID	5464 C	CME-45C 90%	6 02/21/20	19			DRILL	METHOD	D Mu	ud Rotary	HAMN	IER TYPE	utomatic	DRILL	RIG/HAM	MER EF	F./DATE	e Mic	5464 CN	/E-45C 90	0% 02/21/201	9	c		
DRIL	LER B				S	TART DAT	FE 07/1	1/19		COMP. DA				SURF	ACE WATER DEPTH N	/A		DRIL	DRILLER B. Fowler					START DATE 07/11/19					
ELEV	DRIVE ELEV	DEPTH	BLC			4			FOOT		SAMP	1 1	L O		SOIL AND ROCK DES	CRIPTION		ELEV	DRIVE ELEV	DEPTH	' 	w co				S PER F			
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50		75 100	NO.	Иоі	G	ELEV. (ft)			DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75		
1																													
25		Ļ												_				-55			- <u>-</u>	- 17-	-16			atch Line	<u>,</u>		
	22.3	0.8											1	23.1	GROUND SURF ROADWAY EMBAN		0.0		-	-					· · · · · ·	· · · ·	· · · ·		
20	20.8	2.3	11	12	11]	6 23	: :	· · · · · ·			w	Γ.		Asphalt (0.0 - 0.6	Foot)	2.3	-60	-59.8	-					1		::		
		‡	7	10	13		23					W		- <u>\</u>	Clayey Fine to Coars Brown, Silty Fine to Co		_′	-00	-59.0	- 02.9	6	8	13		• <u>2</u> 1 · · ·				
1		‡					· · · ·		· · · · · ·				L	17.1	-		6.0		4	-					1		::		
15	15.1	8.0				· / · ·								-	ALLUVIAL Dark Gray, Bluish Gray, and	d Tan, Silty F	ine	-65	-64.8	87.9		9	10		<u> · · ·</u>				
		ŧ	2	2	2	4 4 · · ·				 		W		-	to Coarse SAI	ND					6	9	10	<u> </u>	• 19 · · ·				
		Ŧ												_					-	-									
10	10.1	13.0	2	3	4						-	w		_					-	-									
		Ŧ												-					-	-									
5	5.1	† 18.0												-					-	-									
	<u> </u>	+ 10.0 +	6	5	9	· · • 14	, <u> </u>					w		-						-									
		‡				::¦:	· · · ·		· · · · · ·								<u>21.0</u>			-									
0	0.1	23.0												-	Dark Gray, Silty	CLAY			_	-									
		ŧ	5	6	9	• 15	5		· · ·			M		-	(Peedee Forma	tion)				-									
		ŧ					.		· · ·				\square	-					-	-									
-5	-4.9	28.0	5	6	9							М	\boldsymbol{N}	_					-	-									
		Ŧ												-					-	-									
-10	-9.9	+ 							· · · ·					-					-	-									
	-9.9_	- <u>33.0</u>	5	6	9	· · •	5					м		-						-									
		‡					· · · ·		· · · · · ·	· · · · ·				-					4	-									
-15	-14.9	38.0	4		4									-					4	-									
		t	4	3	4		. .		· · ·			M		-						-									
		ŧ							· · ·					- 19.4			42.5		-	-									
-20	-19.9	43.0	60/0.1							60/0.1	•			-20.9	Silty Coarse to Fine SA Formation)				_	-									
		Ŧ													Dark Gray, Silty	CLAY	/		-	-									
-25	-24 9	48.0												-	(Peedee Forma	tion)			-	-									
			5	7	10] · · ∳1	17				11	м		-						-									
		‡					• • • •		· · · · · ·					-					4	-									
-30	-29.9	53.0	5	6	9	$ \cdot \cdot \cdot$	· · · · ·							-					4	-									
		‡			3		5 • • •		· · · · · ·	· · · · ·		I M		-						-									
0.5		‡				: : : ` i	<u>, </u>	: :	· · ·					-					-	_									
-35	-34.9	58.0	6	9	15	1	. • 24					м		-					_	-									
-35		t					·/ · · ·	· -						-37.9			<u>61.0</u>		-	-									
-40	-39.9	 				· · · /	<u> </u>						///	-	Dark Gray, Clayey (Peedee Forma)	sAND tion)				_									
		Ŧ	5	7	11		18 • • •					м	///	-	,	,				-									
-45		Ŧ					.		· · · ·					-42.9	Dark Gray, Silty		<u>66</u> .0			-									
	-44.9	68.0	6	7	10							NA		-	(Peedee Forma	tion)				-									
		‡					17		· · · · · ·	· · · · ·				-						-									
-50	40.0	72.9				-	· · · ·		· · · ·					-					4	-									
-50	-49.8	+ '2.9	8	8	12	1 1	20					м		-						-									
		‡					·\\		· · ·					-						-									
-55	-54.8	77.9					· [`\ · ·	- -												_				L					
						• •	.			·		•										•							

SHEET 6

COLUMBU	IS			GEOLOGIST S. Papke			
k						GROUM	D WTR (ft)
OFFSET 8	ft RT			ALIGNMENT -Y-		0 HR.	N/A
NORTHING	227,23	31		EASTING 2,217,428		24 HR.	Caved
	DRILL M) Muc	1			Automatic
COMP. DAT				SURFACE WATER DEPT			
	SAMP.		L				
75 100	NO.	моі	O G	SOIL AND ROCI	K DESC	RIPTION	
		М	V	Dark Gray, (Peedee Forma	Silty CL	AY	
			N			, and a second	
		м	N	-			
		IVI	N				
			N				
		М	\mathbf{N}	66.3			89.4
				Boring Terminated a COASTAL PLAIN (PE SILTY	t Elevat	ion -66.3 Format	ft in ION):
				SILTY	CLAY		,
			Ŀ				
			Ŀ				
				-			
			F				
			F				
			ļF	-			
				-			
				-			
			Ŀ				
			Ŀ	_			
			Ŀ				
			╞				
			F	-			
			F				
			ļĒ				
			F	-			
				-			
				-			
				-			
				-			
			F				
			F				
				-			