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$\overline{\mathbf{V}}$ **SHEET** 2579A じ REFERENCE

-
DESCRIPTION
TITLE SHEET
LEGEND (SOIL & ROCK)
SITE PLAN
PROFILE
SPT LOG(S)
CPT LOG(S)
DILATOMETER LOG(S)
SOIL TEST RESULTS

CONTENTS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY FORSYTH

PROJECT DESCRIPTION WINSTON-SALEM NORTHERN **BELTWAY EASTERN SECTION (FUTURE I-74)** FROM US 311 TO I-40 SITE DESCRIPTION BOX CULVERT @ -Y2- STA. 78+69 ON I-74/US 311 OVER SOUTH FORK MUDDY CREEK

34839 PROJEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–2579AA	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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1999 1707-6800. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL SOL 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 DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLL 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 VIBSURFACE 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 OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTION STO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISY 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 FOM THE ACTUAL CONDENSATION.

- 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. 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

S&ME, Inc.

INVESTIGATED BY S&ME, Inc.
DRAWN BY
CHECKED BY S.S. LANEY
SUBMITTED BY <u>S.S. LANEY</u>
DATE <u>MARCH 2019</u>
3201 SPRING FOREST ROAD
RALEIGH, NC 27616 (919) 872-2660
TH CARO
CENSA
SEAL 2296
44 DOD WEIghted by:
auth want
919459487BA3471 4/19/2019
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

			SOIL C	DESCRI	PTION	i						GF	RADATION		ROCK DESCRIPTION							
BE PENETH ACCORDIN IS BA CONSISTEN	RATED WITH NG TO THE ASED ON TH NCY,COLOR,	UNCONSOLIDA A CONTINUOU STANDARD PEN E AASHTO SYS TEXTURE, MOIS	IS FLIGHT PON NETRATION TE STEM. BASIC (STURE, AASHTO	WER AUGER ST (AASHI DESCRIPTI D CLASSIF	R AND YI TO T 206 IONS GENE ICATION,	IELD LESS 5. ASTM D15 ERALLY INC AND OTHER	THAN 100 860. SOIL CLUDE THE PERTINEN	BLOWS PE CLASSIFIC FOLLOWIN	R FOOT CATION NG: S SUCH	WELL GRADED - INDICAT UNIFORMLY GRADED - IN GAP-GRADED - INDICATES	DICATE	S THAT SOIL	PARTICLES ARE AL	LL APPROXIM IZES OF TWO	ATELY THE SAME SIZE.	ROCK LINE IN SPT REFUSAL BLOWS IN NO REPRESENTED	NDICATE IS PEI N-COAS BY A	ES THE LEVE INETRATION E STAL PLAIN ZONE OF WE	AIN MATERIAL T EL AT WHICH NO BY A SPLIT SPO	HAT WOULD IN-COASTAL DON SAMPLER E TRANSITI	YIELD SPT REFUSAL IF TEST PLAIN MATERIAL WOULD YIELD R EQUAL TO OR LESS THAN 0. ION BETWEEN SOIL AND ROCK	
AS V	ERY STIFF.G	GICAL COMPOSI RAY.SILTY CLAY.	ION, ANGULAN	ERBEDDED	FINE SA	ND LAYERS,	HIGHLY PLAS	EXAMPLE, TIC, A-7-6					SOIL GRAINS IS D	JESIGNATED E	BY THE TERMS:	WEATHERED	HLS HN	Strate	a		TERIAL THAT WOULD YIELD SP	
		DIL LEGE		AASHT	O CLA	<u> ASSIFIC</u>	ATION			ANGULAR, SUBAN			ICAL COMPOS			ROCK (WR)			100 BLOWS P			
GENERAL CLASS.		Granular mater ≤ 35% passing ■			-Clay Mate 5% Passing		ORGA	anic materi	ALS	MINERAL NAM			Z, FELDSPAR, MICA, 1		ETC.	CRYSTALLINE ROCK (CR)			🖞 WOULD YIELD) SPT REFUS	IGNEOUS AND METAMORPHIC RC SAL IF TESTED. ROCK TYPE IN	
GROUP	A-1	A-3	A-2	_	A-5 A-6		A-1, A-2	A-4, A-5		ARE USED IN	DESCR		N THEY ARE CONSIL	JERED OF SI	GNIFICANCE.			<u> 22.22</u>	GNEISS, GABB	BRO, SCHIST,	ETC. METAMORPHIC AND NON-COAST4	
	A-1-a A-1-b	A-2-4 A-	2-5 A-2-6 A-2-	-7 		A-7-5 A-7-6	A-3	A-6, A-7		SLIG+	HTLY C	UMP OMPRESSIBLE	RESSIBILITY	LL < 31		NON-CRYSTAL ROCK (NCR)	_INE				T WOULD YEILD SPT REFUSAL HYLLITE, SLATE, SANDSTONE, ET	
00				<u> </u>	<u>A.7.</u> A					MODEF	RATELY	COMPRESSIB	ILE	LL = 31 LL > 50	- 50	COASTAL PLA SEDIMENTARY					NTS CEMENTED INTO ROCK.BUT PE INCLUDES LIMESTONE.SANDS	
	Ø MX					r I	GRANULAR	SILT- CLAY	MUCK,				GE OF MATER			(CP)			SHELL BEDS,			
*40 3i *200 15	Ø MX 50 MX 5 MX 25 MX	51 MN 10 MX 35 MX 35	MX 35 MX 35	MX 36 MN :	36 MN 36	MN 36 MN	SOILS	SOILS	PEAT	ORGANIC MATERIAL		GRANULAR SOILS	SILT - CLAY SOILS	OTHE	R MATERIAL	FRESH		ERESH CRYST			Y SHOW SLIGHT STAINING, ROCK	
MATERIAL PASSING #40 LL PI	_ 6 MX		MN 40 MX 41 M MX 11 MN 11 M				SOILS LITTLE MODER	OR	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		HAMME ROCK (CRYST	R IF CRYSTAL GENERALLY FI	LLINE. RESH, JOINTS STA OKEN SPECIMEN F	AINED, SOME	JOINTS MAY SHOW THIN CLAY C BRIGHTLY. ROCK RINGS UNDER H	
	INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF TYPES STONE FRAGS. TYPES STONE FRAGS. INDE CRAVEL AND FINE SILTY OR CLAYEY SILTY CLAYEY MATTER								ORGANIC SOILS			ER LEVEL IN	UND WATER		DRILLING	SLIGHT (SLI.)	1 INCH.	. OPEN JOINT	'S MAY CONTAIN	CLAY. IN GR	DISCOLORATION EXTENDS INTO RO RANITOID ROCKS SOME OCCASIONA LINE ROCKS RING UNDER HAMMER	
MATERIALS GEN. RATING AS SUBGRADE	TERIALS SAND SANU GRAVEL AND SANU SUILS SUILS SUILS									▼	TIC WATER LE CHED WATER, S ING OR SEEP		MODERATE (MOD.)	GRANIT	TOID ROCKS,M	10ST FELDSPARS	ARE DULL A	RATION AND WEATHERING EFFECT AND DISCOLORED, SOME SHOW CLA SIGNIFICANT LOSS OF STRENGTH				
	PIOF A-7-5 SUBGROUP IS ≤ LL - 30 ;PIOF A-7-6 SUBGROUP IS > LL - 30 CONSISTENCY OR DENSENESS													<u></u>		MODERATELY	ALL RO	OCK EXCEPT			INED. IN GRANITOID ROCKS, ALL F	
						RANGE			<u> </u>		MISCELLA	ANEOUS SYMBI	ULS		SEVERE (MOD. SEV.)	AND CA	AN BE EXCAV	OLOGIST'S P	NIZATION. ROCK SHOWS SEVERE L ICK. ROCK GIVES "CLUNK" SOUND			
	PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE) RANGE OF UNCONFINE COMPRESSIVE STRENGT (TONS/FT ²) GENERALLY VERY LODSE < 4 (1005) < 4 (1005)									L ROADWAY EMBA L WITH SOIL DE SOIL SYMBOL	RECTION UCTURES DRING	SLOPE INDICATOR INSTALLATION	SEVERE (SEV.)	ALL RO	OCK EXCEPT	GTH TO STRONG S	RED OR STAI SOIL. IN GR4	INED. ROCK FABRIC CLEAR AND E ANITOID ROCKS ALL FELDSPARS (ROCK USUALLY REMAIN.				
GRANULA MATERIAL	GRANULAR LUUSE 4 TO 10 MATERIAL MEDIUM DENSE 10 TO 30 N/A										ILL (AF		VIST PMT TEST BO	. 🔊	CONE PENETROMETER		IF TES	STED, WOULD	YIELD SPT N VAL	LUES > 100 I	BPF	
(NON-COH		DEN VERY VERY SO	DENSE SOF T		30 TO 5 > 50 < 2 2 TO 4			< 0.25 0.25 TO 0				لے		•	TEST Sounding Rod	VERY SEVERE (V SEV.)	BUT MI REMAIN	NING. SAPROL	CTIVELY REDUCED	D TO SOIL S PLE OF ROCK	INED. ROCK FABRIC ELEMENTS AF STATUS, WITH ONLY FRAGMENTS O K WEATHERED TO A DEGREE THAT F TESTED, WOULD YIELD SPT N	
SILT-CLA MATERIAL (COHESIV	ΑY L	MEDIUM STI VERY HA	STIFF FF STIFF		4 TO 8 8 TO 15 15 TO 3 > 30	3 5		0.5 TO 1 1 TO 2 2 TO 4 > 4	.0	INFERRED ROC			→ MONITORING W → PIEZOMETER INSTALLATION	$\overset{\Psi}{\frown}$	_ TEST BORING WITH CORE — SPT N-VALUE	COMPLETE	SCATTE				CERNIBLE, OR DISCERNIBLE ONLY PRESENT AS DIKES OR STRINGERS	
			EXTURE	OR GR		IZE		, 4		<u> </u>	BOLS	ROCK HARDNESS VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIM										
U.S. STD. SIE	VE SIZE		4 10	40	60	200	270					ICLASSIFIED E			SIFIED EXCAVATION -	VERY HARD			HED BY KNIFE OF			
OPENING (MM BOULDER	COE	BLE G	4.76 2.00 RAVEL	0.42 COARSI SAND	E	5 0.075 FINE SAND		ILT	CLAY			ISUITABLE WAS ICLASSIFIED E ICEPTABLE DEI		USED I	ABLE,BUT NOT TO BE N THE TOP 3 FEET OF KMENT OR BACKFILL	HARD	TO DET	TACH HAND S	PECIMEN.		TH DIFFICULTY. HARD HAMMER B	
(BLDR.)	305	75	(GR.) 2.0	(CSE. SE		(F SD.)	0.05	6.005	(CL.)	AR - AUGER REFUSAL		MED	REVIATIONS MEDIUM		- VANE SHEAR TEST	HARD	EXCAVA BY MOI	ATED BY HAR	D BLOW OF A GE /S.	EOLOGIST'S P	OR GROOVES TO 0.25 INCHES DI PICK. HAND SPECIMENS CAN BE D	
SIZE IN.	12	3								BT - BORING TERMINATED CL CLAY		MOD	- MICACEOUS MODERATELY	γ-	- WEATHERED UNIT WEIGHT	MEDIUM HARD	CAN BE	E EXCAVATED	IN SMALL CHIPS		P BY FIRM PRESSURE OF KNIFE C 1 INCH MAXIMUM SIZE BY HARD	
	MOISTURE S		FIELD MO DESCRI	OISTURE		DE FOR FI		TURE DES	CRIPTION	CPT - CONE PENETRATION CSE COARSE DMT - DILATOMETER TES DPT - DYNAMIC PENETRAT	т	ORG PMT -	NON PLASTIC ORGANIC PRESSUREMETER T SAPROLITIC	rest <u>S</u> é		SOFT	CAN BE	CHIPS TO SE	GOUGED READILY	N SIZE BY M	OR PICK. CAN BE EXCAVATED IN IODERATE BLOWS OF A PICK POIN	
LL		LIMIT .	- SATURA (SAT.)			JALLY LIQU OM BELOW				e - VOID RATIO F - FINE FOSS FOSSILIFEROUS		SD 9 SL 9	SAND, SANDY SILT, SILTY SLIGHTLY	ST -	SULK SPLIT SPOON SHELBY TUBE ROCK	VERY SOFT	can be or mor	E CARVED WI DRE IN THICKN		E EXCAVATE	D READILY WITH POINT OF PICK. IGER PRESSURE. CAN BE SCRATCH	
PLASTIC RANGE < ^(PI) PL			- WET -	(W)		MISOLID: RE TAIN OPTIM				FRAC FRACTURED, FRAC FRAGS FRAGMENTS HI HIGHLY	TURES	TCR -	TRICONE REFUSAL MOISTURE CONTENT		RECOMPACTED TRIAXIAL - CALIFORNIA BEARING RATIO		FINGER	RNAIL. TURE SPI		—	BEDDING	
OM _	PLASTIC OPTIMUM SHRINKA	MOISTURE	- MOIST	- (M)	SOL	.ID; AT OR	NEAR OPT	гімим мо	ISTURE	EQU DRILL UNITS:	ADVA	ENT USED	ON SUBJEC	HAMMER	CT	TERM VERY WIDE WIDE MODERATE		3 DSE 1	SPACING E THAN 10 FEET 3 TO 10 FEET 1 TO 3 FEET		TERM VERY THICKLY BEDDED THICKLY BEDDED 1 THINLY BEDDED 0.	
			- DRY -	(D)		DUIRES ADD TAIN OPTIM)	CME-45C			JS FLIGHT AUGER	CORE SI		CLOSE VERY CLOS	έE		.16 TO 1 FOOT THAN 0.16 FEE	т	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00 THINLY LAMINATED (
	PLASTICITY										8" HOLLOW AU		□-в _		500 0500//			•••				
SLIG	PLASTICITY INDEX (PI) DRY STRENGTH NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT MODERATELY PLASTIC 16-25 MEDIUM							CME-550		TUNGCARBIC	FINGER BITS DE INSERTS] W/ ADVANCER	HAND TO		FOR SEDIMEN		ULKS, INDURA	RUBBING	WITH FINGE	OF MATERIAL BY CEMENTING,HE ER FREES NUMEROUS GRAINS; AMMER DISINTEGRATES SAMPLE.			
	ERATELY PL		2	16-25 26 OR MOR	RE			MEDIUM HIGH		PORTABLE HOIST			STEEL TEETH		ST HOLE DIGGER ND AUGER	MODER	ATELY	INDURATED			ARATED FROM SAMPLE WITH ST N HIT WITH HAMMER.	
				COLOR						X CPT/DMT RIG			• TUNGCARB.	50	JNDING ROD	INDURA	+TED				ILT TO SEPARATE WITH STEEL < 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.										X D-50		CORE BIT			NE SHEAR TEST	EXTRE	MELY I	NDURATED			NS REQUIRED TO BREAK SAMPLE ROSS GRAINS.	

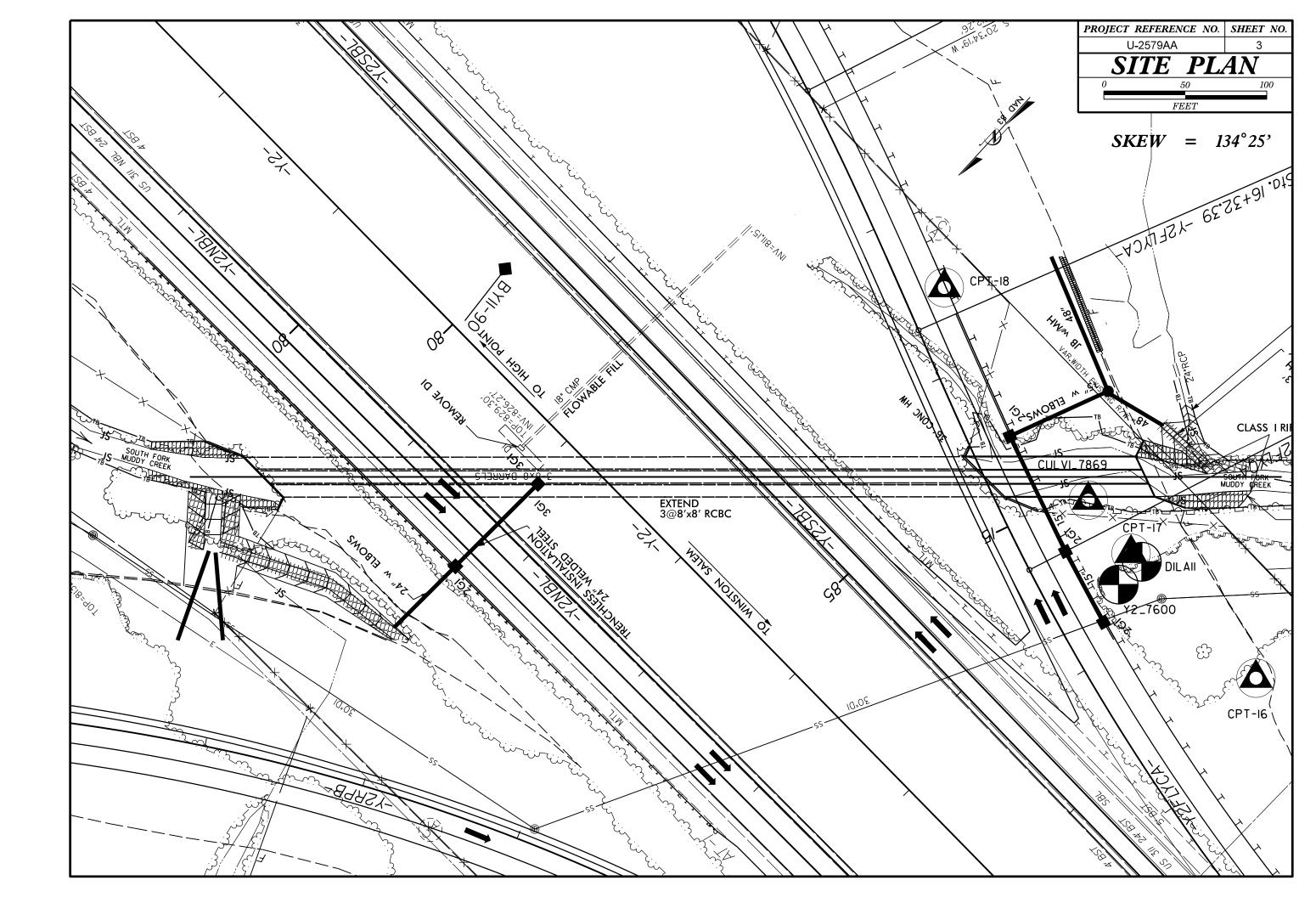
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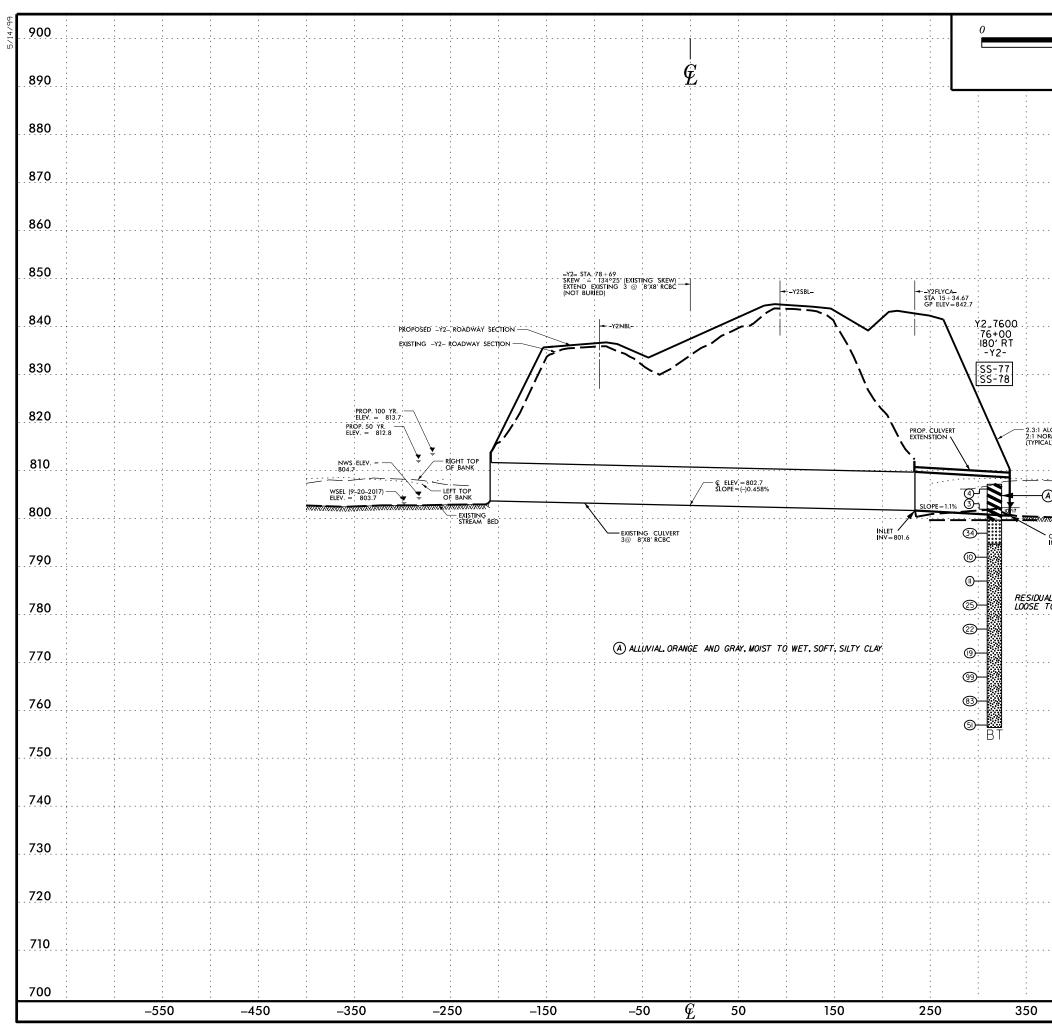
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2

	TERMS AND DEFINITIONS
ED. AN INFERRED	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
) SPT REFUSAL. 1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS 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
T N VALUES >	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
DCK THAT NCLUDES GRANITE,	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.
AL PLAIN IF TESTED.	
с.	OF SLOPE.
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.
RINGS UNDER	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
	$\underline{\text{DIP}}$ - 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 LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
DCK UP TO AL FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
S. IN AY. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
H 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
FELDSPARS DULL OSS OF STRENGTH	FIELD.
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 ITS LATERAL EXTENT.
EVIDENT BUT ARE KAOLINIZED	LIS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	<u>LENS</u> - A BUDT OF SULL OF RUCK THAT THINS OUT IN ONE OF 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.
OF 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. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
S. SAPROLITE IS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE 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
IS REQUIRES	ROCK.
BLOWS REQUIRED	<u>SILL</u> - AN INTRUSIVE BODY OF IONEOUS 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.
eep can be Detached	$\underline{\text{SLICKENSIDE}}$ - 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
DR PICK POINT. BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REDUIRED 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.
I FRAGMENTS NT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
. PIECES 1 INCH HED READILY BY	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASUBE 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.
LES REMOTET DI	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
	BENCH MARK: ELEVATIONS TAKEN FROM TIN FILE "U2579AA_IS_TIN. tin",
THICKNESS	DATED 02/15/2017
4 FEET L5 - 4 FEET	ELEVATION: N/A FEET
16 - 1.5 FEET	NOTES:
03 - 0.16 FEET 08 - 0.03 FEET	
0.008 FEET	
EAT, PRESSURE, ETC.	
TEEL PROBE;	
PROBE:	
E;	
	DATE: 8-15-14

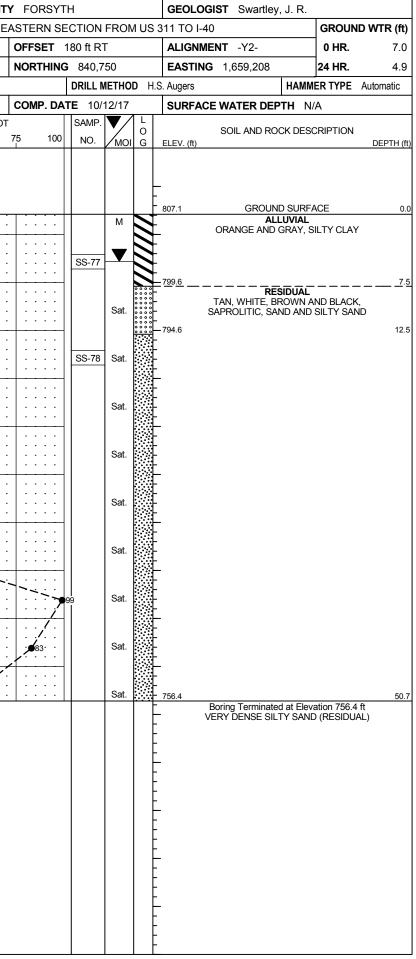


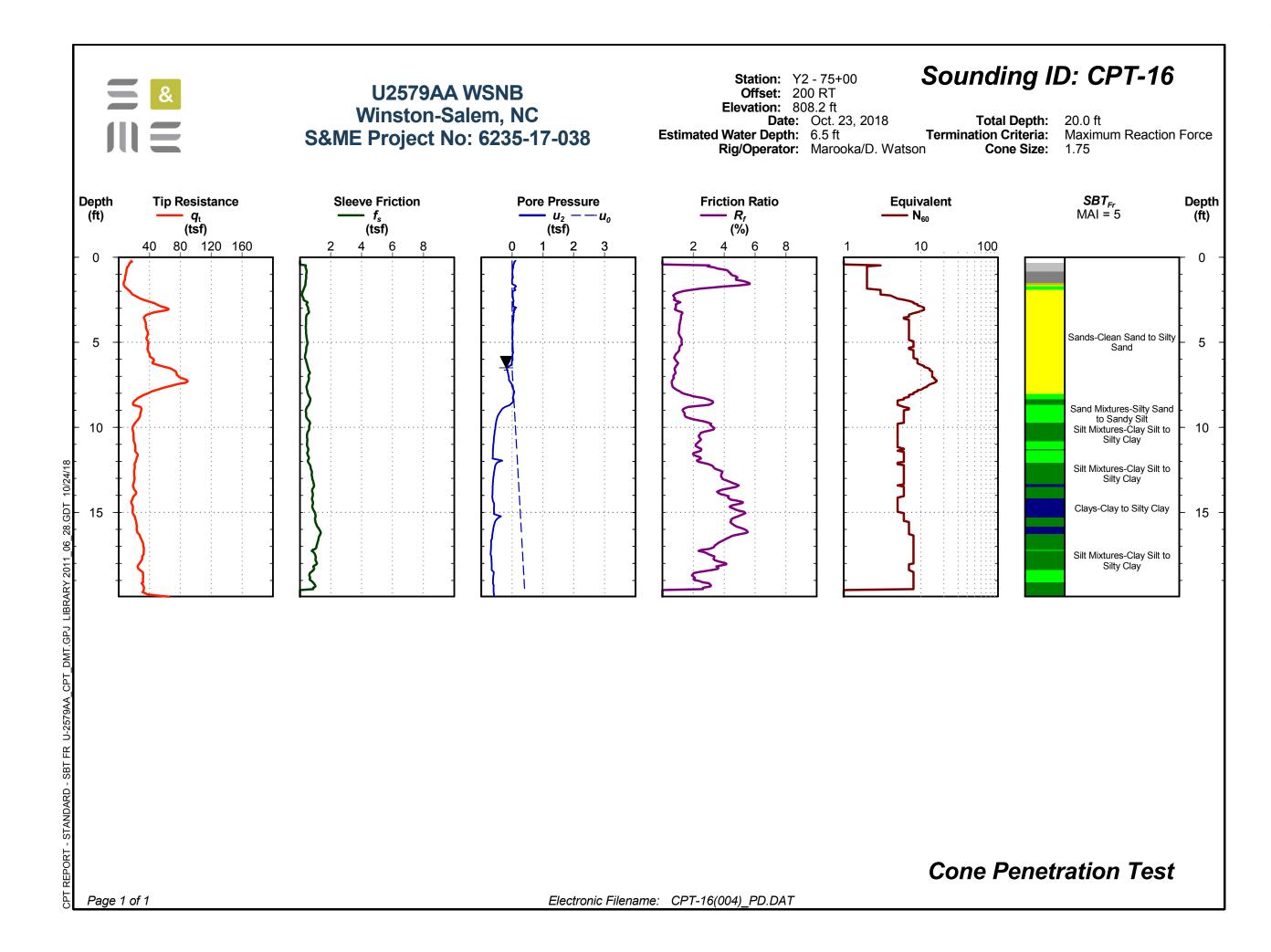


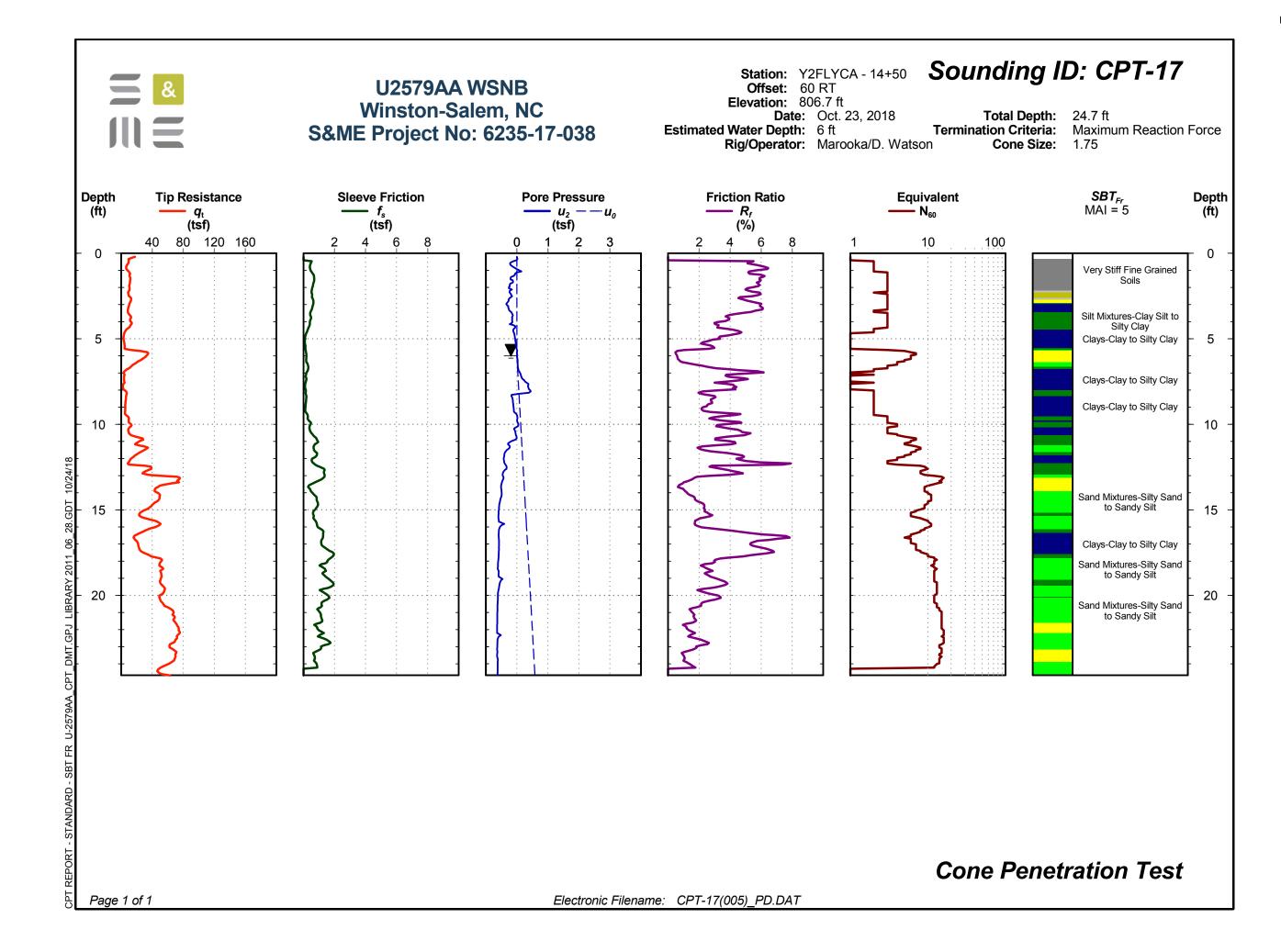
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FEET		U-2579AA	4
VE = 5		PROFILE PROJE	CTED ALONG C.L. ULVERT
			880
			870
			860
			850
			830
			820
LONG SKEW RMAL			
ιL)		T TOP	810
	OF E	r top ANK OP	
A)		NK	800
OUTLET INV=800.5	· ` EXIS	ING AM BED	
			790
NL, TAN, WHITE, BRON TO VERY DENSE, SA	WN AND BLACK, SATU APROLITIC, SAND AND	IRATED. SILTY SAND	780
			770
· · · · · · · · · · · · · · · · · · ·			760
			750
			7.10
			740
			700
			730
			720
	CENTERLINE TA	G GROUND SURFACE PROFILE KEN FROM ELECTRONIC TIN	
	STRATIGRAPHY	N.tin' DATED 2/15/17. INFERRED IS DRAWN THROUGH THE BOI 'ED ONTO THE PROFILE.	
			700
45	0	550 650	

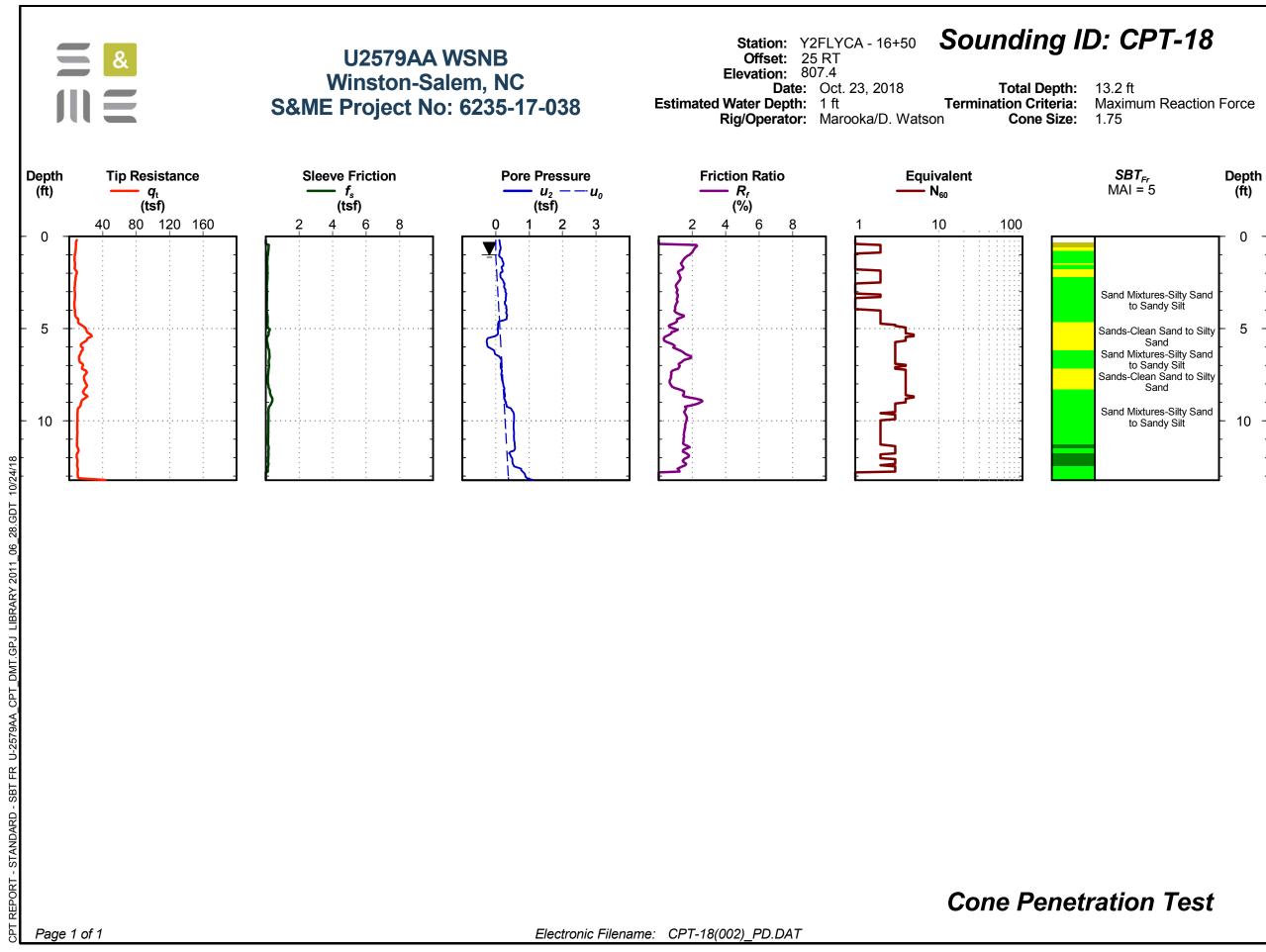
GEOTECHNICAL BORING REPORT BORE LOG

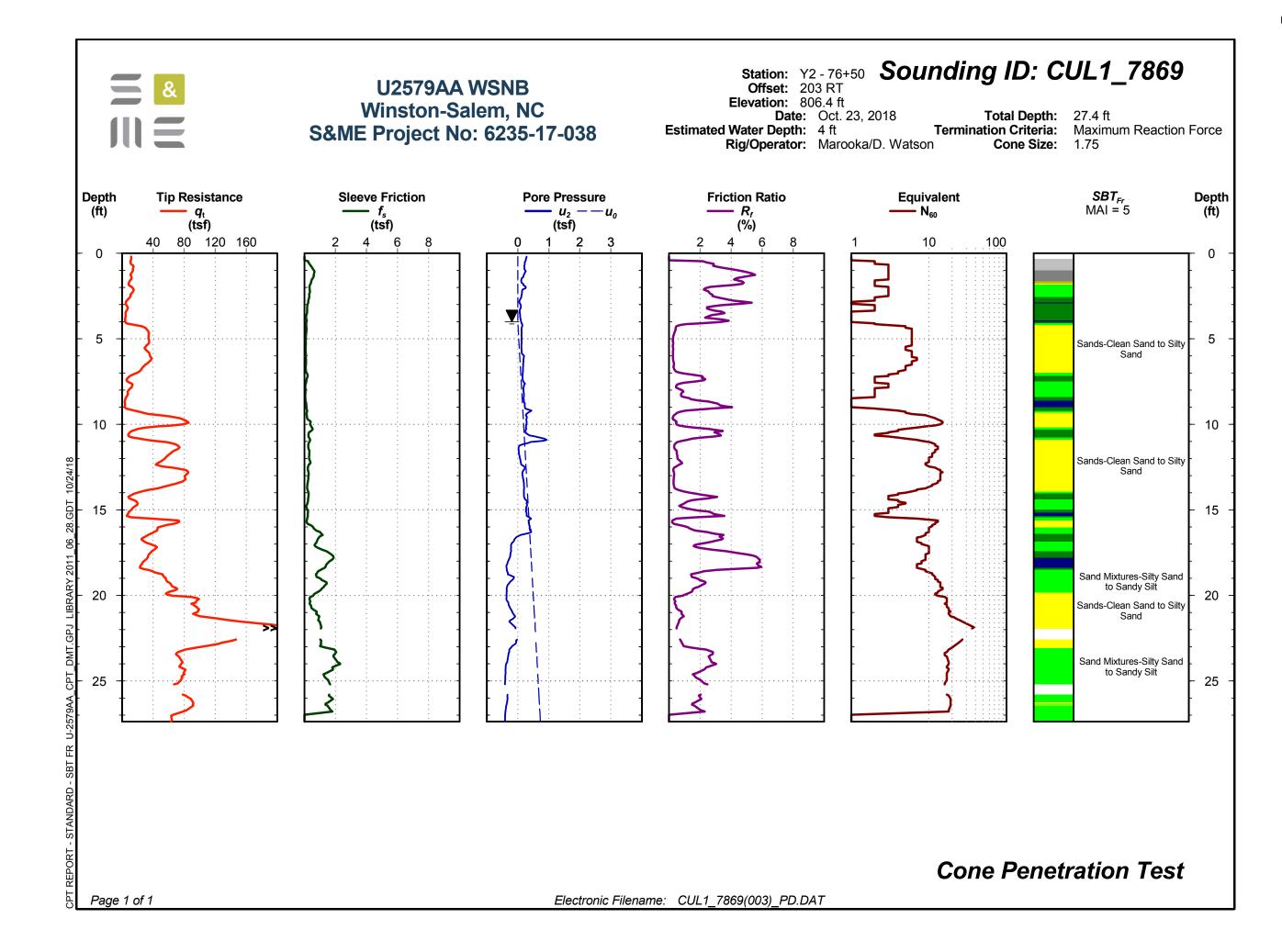
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SITE	DESCR		WIN	ISTO	N-SALI	EM	NORT	HERN	BEL	TWA	ΥE
30R	ing no.	. Y2_7	600		S	ΤΑΤ	ION 7	76+00			
OLI	AR ELE	EV. 80	7.1 ft		т	OTA	L DEP	TH 5	0.7 ft		
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LEV	DRIVE	DEPTH	BLC	W CO	JNT			BLC) WS F	PER FC	тос
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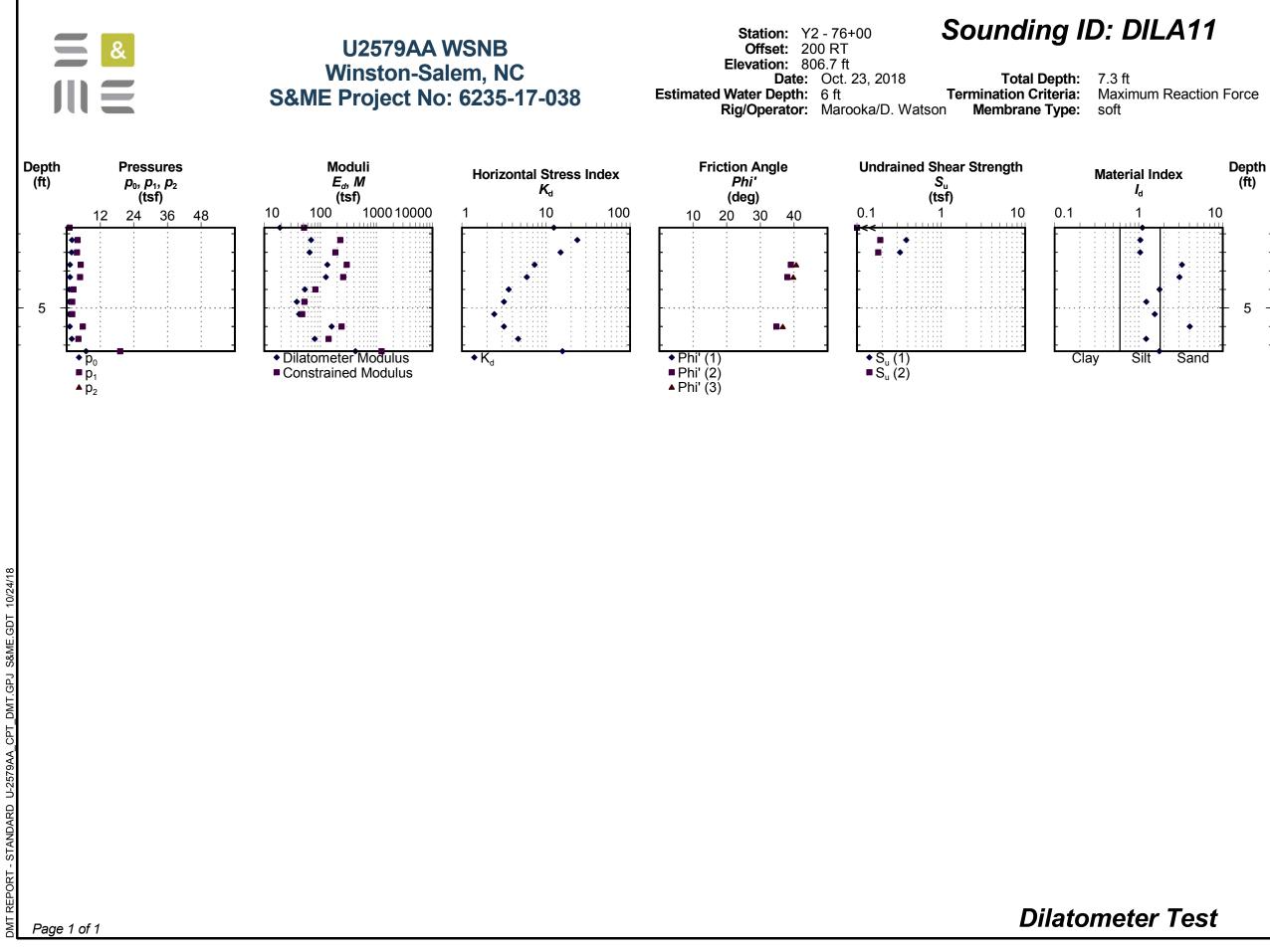












SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

	+ - H -					leigh, 3	3201 Spr	ing Fore	est Road	, Raleigh	n, North	Carolina	27616		Data	Derecto	-	11/1/20	17
S&ME Proj State Proje				6235-17-03 34839.1.7	8				County		Forsyth					Report: Tested:		11/1/20 /31-11/	
Federal ID				N/A					TIP No.		U-2579				Date	Testeu.	10,	/51-11/	1/1/
Project Na				Box Culvert	@ -Y2-	Sta 78	+69 on I	-74/US					k						
Client Nam				NCDOT GEL		510.70	. 05 0111	. , 1,00	011 010	Client A									
				Sample	AAS	HTO		Tot	al % Pas		Fraction	า (%)							
Sample No.	Station	Offset	Alignment	Depth (ft)	Classifi	cation	10	40	Sieve # 60	200	270	Coarse Sand	Fine Sand	Silt	Clay	LL	PL	PI	Moist %
SS-77	76+00	180 RT	-Y2-	4.2-5.7	A-7-5	(17)	100	97	95	90	88	5	7	44	44	47	32	15	40.3
SS-78	76+00	180 RT	-Y2-	14.2-15.7	A-2-4		100	77	58	25	20	42	38	17	3	30	0	NP	28.3
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References /	/ Comments	. / Deviatio	ns:	ND=Not Det	emined	NP=N	Ion-Plast	ic											
				lodified by the						AASHTC) T89: De	termining	the Liqui	id Limit c	of Soils				
AASHTO T9	0: Determin	ing the Pla	stic Limit & Pl	asticity Index oil Aggregate	of Soils	for Hia	hway Cor	nstruction	n Purnose	AASHT		aboratory				e Content	of Soils		
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			<u>rajan, ET</u> :ian Name:				104-01-0703 Stewart S. La Signature Certification # Technical Resp.								-	Project Manager Position			
		rechnic	lian Name:	This re	not ho r	Signature Certification # Technical Responsibility to be reproduced, except in full, without the written approval of S&ME, Inc.							sponsibili	nity. Position					



CONTENTS $\overline{}$ SHEET NO. 579A 2 3 5 6-10 N 11-12 13 じ REFERENCE 0 34839 • PROJEC

DESCRIPTION

DILATOMETER LOG(S)

SOIL TEST RESULTS

TITLE SHEET LEGEND (SOIL & ROCK)

SITE PLAN

CPT LOG(S)

PROFILE SPT LOG(S)

Ι	STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
[N.C.	U–2579AA	1	13

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 1999 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 (IN-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLL MOISTIGE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO LIMATIC 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 OFINION 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 SATISY 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 CONDENSATION OF FOR AN THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS**

GEOTECHNICAL ENGINEERING UNIT

STRUCTURE

SUBSURFACE INVESTIGATION

PROJECT DESCRIPTION WINSTON-SALEM NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74)

SITE DESCRIPTION BOX CULVERT @ -L- STA. 36+27.3 ON FUTURE I-74 OVER SOUTH FORK MUDDY CREEK

COUNTY FORSYTH

FROM US 311 TO I-40

- NOTES: I. 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

S&ME, Inc.

INVESTICATED BY <u>S&ME, Inc.</u>
DRAWN BY <u>J.R. SWARTLEY</u>
CHECKED BY <u>S.S. LANEY</u>
SUBMITTED BY <u>S.S. LANEY</u>
DATE
3201 SPRING FOREST ROAD RALEIGH, NC 27616 (919) 872-2660
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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

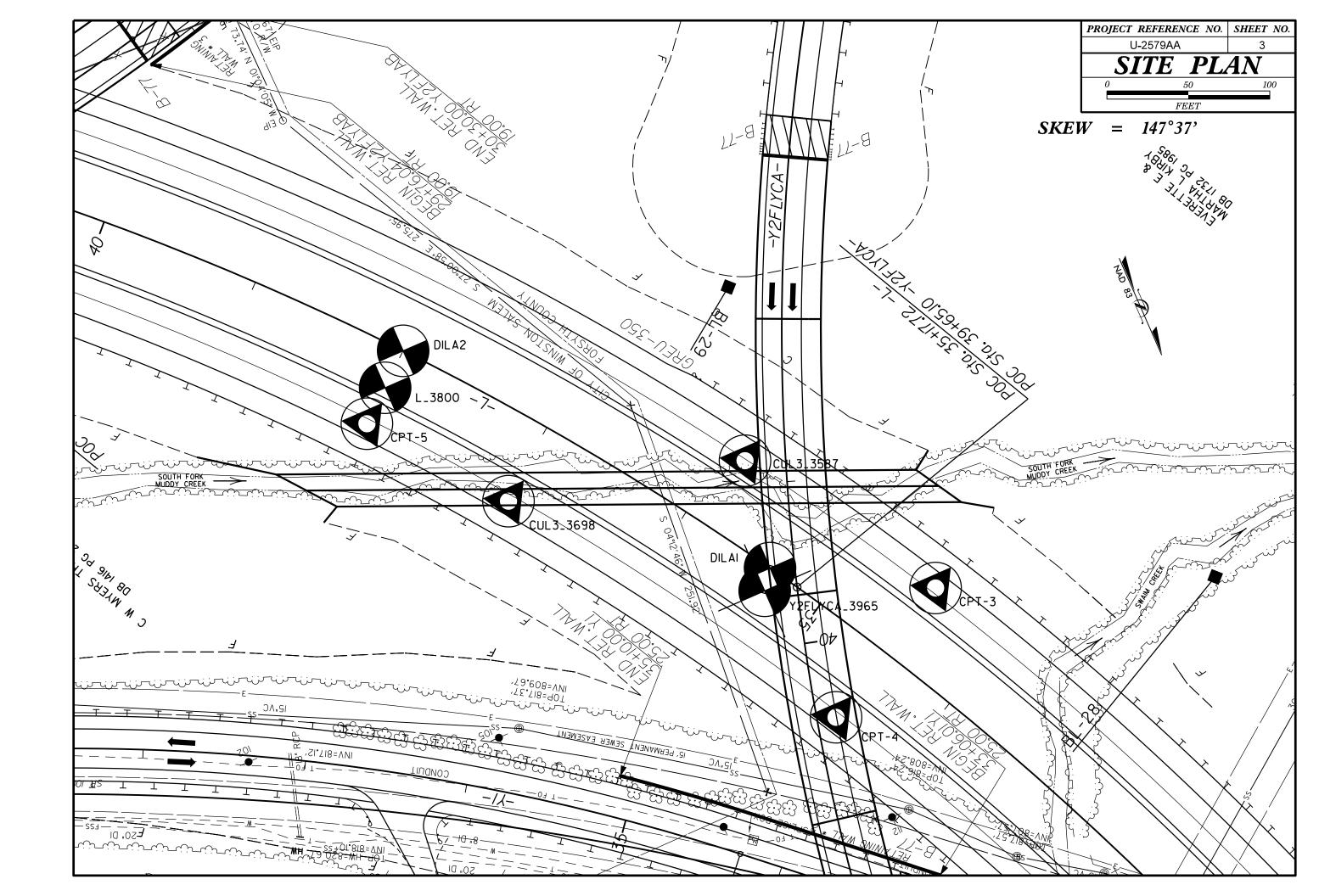
			SOIL	DESCR	RIPTION	1					GRADATION		ROCK DESCRIPTION							
BE PENETR ACCORDIN IS BA CONSISTEN	RATED WITH IG TO THE SED ON TH ICY, COLOR,	I A CONTINUC STANDARD PE IE AASHTO S TEXTURE, MO	US FLIGHT PO NETRATION TO STEM. BASIC	OWER AUG EST (AASH DESCRIPT FO CLASSI	GER AND Y HTO T 200 TIONS GEN IFICATION,	IELD LESS 6, ASTM DIS NERALLY IN AND OTHER	ARTH MATERIALS TH THAN 100 BLOWS PE 586), SOIL CLASSIFI CLUDE THE FOLLOWI PERTINENT FACTOR	ER FOOT CATION NG: RS SUCH	UNIFORMLY GRADED - IN	DICATE	OOD REPRESENTATION OF PART S THAT SOIL PARTICLES ARE XTURE OF UNIFORM PARTICLE ANGULARITY OF GRA	ALL APPROXI SIZES OF TW	MATELY THE SAME SIZE.	ROCK LINE SPT REFUSA BLOWS IN N REPRESENTE	INDICATE	S THE LEVE NETRATION E STAL PLAIN ZONE OF WE	L AT WHICH NON-C BY A SPLIT SPOON MATERIAL, THE T ATHERED ROCK.	WOULD YIELD SPT REFUSAL IF TEST DASTAL PLAIN MATERIAL WOULD YIELD SAMPLER EQUAL TO OR LESS THAN Ø. RANSITION BETWEEN SOIL AND ROCK		
							,ETC. FOR EXAMPLE, HIGHLY PLASTIC.A-7-6	•			OUNDNESS OF SOIL GRAINS IS	DESIGNATED	BY THE TERMS:		RIALS AR	E TYPICALLY	DIVIDED AS FOLL			
	SC	DIL LEG	END AND	AASH	TO CL	ASSIFIC	ATION		- <u>ANGULAR</u> , <u>SUBAN</u>		SUBROUNDED, OR ROUNDED.			ROCK (WR)			100 BLOWS PER	AIN MATERIAL THAT WOULD YIELD SP FOOT IF TESTED.		
GENERAL CLASS.		Granular mate ≤ 35% passing			T-CLAY MAT 35% PASSING		ORGANIC MATERI	IALS			NERALOGICAL COMPO		N. FTC.	CRYSTALLIN	E	PP		GRAIN IGNEOUS AND METAMORPHIC RC T REFUSAL IF TESTED. ROCK TYPE IN		
GROUP		A-3	A-2		A-5 A-		A-1, A-2 A-4, A-5				RIPTIONS WHEN THEY ARE CONS			ROCK (CR)		<u> Z. Z.</u>	GNEISS, GABBRO,			
CLASS. A-	-1-a A-1-b	A-2-4	-2-5 A-2-6 A-	2-7		A-7-5, A-7-6	A-3 A-6, A-7				COMPRESSIBILITY			NON-CRYSTA ROCK (NCR)	LLINE		SEDIMENTARY RC	CK THAT WOULD YEILD SPT REFUSAL		
SYMBOL 000				X	177				MODEF	RATELY	DMPRESSIBLE COMPRESSIBLE	LL < 3 LL = 3	1 - 50	COASTAL PL	AIN		COASTAL PLAIN	UDES PHYLLITE, SLATE, SANDSTONE, ET SEDIMENTS CEMENTED INTO ROCK, BUT		
% PASSING #10 50							GRANULAR SILT-	MUCK,	HIGHL		PRESSIBLE		0	SEDIMENTAR (CP)	IY ROCK		SPT REFUSAL. R	OCK TYPE INCLUDES LIMESTONE, SANDS C.		
*40 30	MX 50 MX		-				SOILS SOILS	PEAT		<u>_</u>	GRANULAR SILT - CLAY			╡────				THERING		
MATERIAL PASSING #40 LL	_	- 40 MX	5 MX 35 MX 35	MN 40 MX	41 MN 40	MX 41 MN	SOILS WITH LITTLE OR		ORGANIC MATERIAL TRACE OF ORGANIC MA LITTLE ORGANIC MAT MODERATELY ORGANIC HIGHLY ORGANIC	TER	SOILS SOILS 2 - 3% 3 - 5% 3 - 5% 5 - 12% 5 - 10% 12 - 20% > 10% > 20%	<u>OTH</u> TRACE LITTL SOME HIGHL	E 10 - 20% 20 - 35%	FRESH VERY SLIGHT (V SLI.)	HAMME ROCK (R IF CRYSTAL GENERALLY FR	_LINE. RESH, JOINTS STAINE	INTS MAY SHOW SLIGHT STAINING. ROCK D.SOME JOINTS MAY SHOW THIN CLAY C E SHINE BRIGHTLY. ROCK RINGS UNDER H		
PI GROUP INDEX	6 MX Ø	NP 10 MX 1 0 0	0 MX 11 MN 11 4 MX		10 MX 11 1		MODERATE AMOUNTS OF	HIGHLY ORGANIC			GROUND WATER		1 33% HILD HOOVE	CI ICUT		CRYSTALLINE				
USUAL TYPES ST OF MAJOR G	ONE FRAGS. RAVEL, AND	FINE SIL	TY OR CLAYEY	SIL		CLAYEY SOILS	ORGANIC MATTER	SOILS			R LEVEL IN BORE HOLE IMMED		SLIGHT (SLI.)	1 INCH. CRYST	OPEN JOINT	S MAY CONTAIN CLA L AND DISCOLORED.	D AND DISCOLORATION EXTENDS INTO RC Y. IN GRANITOID ROCKS SOME OCCASIONA CRYSTALLINE ROCKS RING UNDER HAMMER			
MATERIALS GEN, RATING AS SUBGRADE	SANU	EXCELLENT TO	 300D		FAIR TO PO	JOR	FAIR TO POOR	UNSUITABLE	 ∑Pw	PERC	HED WATER, SATURATED ZONE,		EARING STRATA	MODERATE (MOD.)	GRANIT DULL S	OID ROCKS,M SOUND UNDER	IOST FELDSPARS ARE	DISCOLORATION AND WEATHERING EFFECT: DULL AND DISCOLORED, SOME SHOW CLA SHOWS SIGNIFICANT LOSS OF STRENGTH		
	P	PLOF A-7-5 SUE	GROUP IS ≤ LL	- 30 ; PI (OF A-7-6 SI	JBGROUP IS >	• LL - 30	1		SPRI	NG OR SEEP			MODERATELY		RESH ROCK.	QUARTZ DISCOLORED	OR STAINED. IN GRANITOID ROCKS, ALL		
		C0	NSISTEN				1				MISCELLANEOUS SYME	30LS		SEVERE (MOD. SEV.)	AND D	SCOLORED AN	ND A MAJORITY SHOW	V KAOLINIZATION. ROCK SHOWS SEVERE L GIST'S PICK. ROCK GIVES "CLUNK" SOUND		
PRIMARY SC	DIL TYPE		TNESS OR STENCY	RAN PENET	NGE OF STA TRATION RE (N-VALUE	ESISTENCE	RANGE OF UNC COMPRESSIVE S (TONS/FT	TRENGTH	L ROADWAY EMBA L WITH SOIL DE					SEVERE	<u>IF TES</u> ALL RO	S <i>TED, WOULD :</i> DCK EXCEPT (Y <u>IELD SPT REFUSAL</u> DUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND			
GRANULAF	GENERALLY VERY LOOSE < 4 GRANULAR LOOSE 4 TO 10 MATERIAL MEDIUM DENSE 10 TO 30								SOIL SYMBOL				SLOPE INDICATOR INSTALLATION CONE PENETROMETER	(SEV.)	TO SO	ME EXTENT. S		. IN GRANITOID ROCKS ALL FELDSPARS (STRONG ROCK USUALLY REMAIN. 5 > 100 BPF		
(NON-COH	MATERIAL (NON-COHESIVE) MELLION DENSE DENSE VERY DENSE 30 TO 50 >50 N/H VERY SOFT < 2									Y EMBA		C	SOUNDING ROD	VERY SEVERE (V SEV.)	BUT M REMAIN	ASS IS EFFEC	CTIVELY REDUCED TO TE IS AN EXAMPLE	OR STAINED. ROCK FABRIC ELEMENTS AF) SOIL STATUS, WITH ONLY FRAGMENTS O OF ROCK WEATHERED TO A DEGREE THAT MAIN. <u>IF TESTED, WOULD YIELD SPT N</u>		
GENERALL SILT-CLA MATERIAL (COHESIVE	ιΥ -	MEDIU S	DFT M STIFF TIFF STIFF		2 TO 4 4 TO 8 8 TO 19 15 TO 3	8 5	0.25 TO 0.5 TO 1 1 TO 2 2 TO 4	.0	INFERRED ROC			4	COMPLETE	ROCK F	REDUCED TO S	SOIL. ROCK FABRIC	NOT DISCERNIBLE, OR DISCERNIBLE ONLY NOT DISCERNIBLE OR DISCERNIBLE ONLY NAY BE PRESENT AS DIKES OR STRINGERS			
		н	ARD		> 30		> 4				INSTALLATIO					ROCK	HARDNESS			
			TEXTURE								ECOMMENDATION SYM			VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECI						
U.S. STD. SIEV OPENING (MM)			4 10 4.76 2.00				270 0.053				CLASSIFIED EXCAVATION - SUITABLE WASTE	ACCE العشَّية	ASSIFIED EXCAVATION - PTABLE,BUT NOT TO BE IN THE TOP 3 FEET OF	HARD			WS OF THE GEOLOGIS	ST'S PICK. ONLY WITH DIFFICULTY. HARD HAMMER B		
BOULDER (BLDR.)		BLE (GRAVEL	COAR SAN	٩D	FINE SAND	SILT (SL.)	CLAY (CL.)	SHALLOW UNDERCUT		CLASSIFIED EXCAVATION - CEPTABLE DEGRADABLE ROCK		NKMENT OR BACKFILL	MODERATELY	to de Can Bi	TACH HAND SI E SCRATCHED	PECIMEN. BY KNIFE OR PICK.	GOUGES OR GROOVES TO 0.25 INCHES DE		
GRAIN MM SIZE IN.	3Ø5 12	 75 3	2.0	(CSE. S	0.25	(F SD.) 5	0.05 0.005	i	AR - AUGER REFUSAL BT - BORING TERMINATED	 1	ABBREVIATIONS MED MEDIUM MICA MICACEOUS		- VANE SHEAR TEST A WEATHERED	MEDIUM	BY MO	DERATE BLOW	s.	GIST'S PICK. HAND SPECIMENS CAN BE D		
512L 114.		_	STURE -						CL CLAY		MOD MODERATELY	γ	- UNIT WEIGHT	HARD	CAN BE	E EXCAVATED	IN SMALL CHIPS TO	PEICES 1 INCH MAXIMUM SIZE BY HARD		
	IOISTURE S	SCALE	FIELD M	MOISTURE	:		IELD MOISTURE DES	SCRIPTION	CPT - CONE PENETRATION CSE COARSE DMT - DILATOMETER TES	т	NP - NON PLASTIC ORG ORGANIC PMT - PRESSUREMETER		- DRY UNIT WEIGHT SAMPLE ABBREVIATIONS	SOFT	CAN BE		GOUGED READILY BY	/ KNIFE OR PICK. CAN BE EXCAVATED IN ZE BY MODERATE BLOWS OF A PICK POIN		
			- SATUF (SAT				UID:VERY WET.USU		DPT - DYNAMIC PENETRAT e - VOID RATIO F - FINE	ION TE	SD SAND, SANDY SL SILT, SILTY	SS	· BULK - SPLIT SPOON - SHELBY TUBE	VERY SOFT	CAN BE	E CARVED WIT		SSURE. XCAVATED READILY WITH POINT OF PICK. N BY FINGER PRESSURE. CAN BE SCRATCH		
PLASTIC RANGE <		LIMII	- WET -	- 00	SEI	MISOLID; RI	EQUIRES DRYING TO		FOSS FOSSILIFEROUS FRAC FRACTURED, FRAC	TURES	SLI SLIGHTLY TCR - TRICONE REFUSA	L RT	- ROCK - RECOMPACTED TRIAXIAL		FINGEF	NAIL.				
		C LIMIT		(#/	ATI	TAIN OPTIN	1UM MOISTURE		FRAGS FRAGMENTS HI HIGHLY		W - MOISTURE CONTENT V - VERY	CBF	R - CALIFORNIA BEARING RATIO	TERM		TURE SP	SPACING	TERM		
ОМ _	OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTUR							ISTURE	EQU DRILL UNITS:		NT USED ON SUBJE		ECT R TYPE:	VERY WID WIDE MODERAT	DE	3	THAN 10 FEET TO 10 FEET TO 3 FEET	VERY THICKLY BEDDED THICKLY BEDDED 1 THINLY BEDDED 0.		
SL _	SL SHRINKAGE LIMIT)	CME-45C		CLAY BITS 6.CONTINUOUS FLIGHT AUGER			CLOSE VERY CLI		ø.	16 TO 1 FOOT THAN 0.16 FEET	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00			
L	PLASTICITY							CME-55	8" HOLLOW AUGERS	CORE S				INDI						
	PLASTICITY INDEX (PI) DRY STRENGTH						тн	CME-550	□ -N	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENT										
NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT							VANE SHEAR TEST		TUNGCARBIDE INSERTS			- FRIAE	BLE			H FINGER FREES NUMEROUS GRAINS; W BY HAMMER DISINTEGRATES SAMPLE.				
	RATELY PL _Y PLASTIC			16-25 26 OR M	IORE		MEDIUM HIGH		PORTABLE HOIST		TRICONE STEEL TEET	" □⊦	POST HOLE DIGGER HAND AUGER	MODE	RATELY	INDURATED	BREAKS EASI	BE SEPARATED FROM SAMPLE WITH ST LY WHEN HIT WITH HAMMER.		
<u> </u>				COLOR					X CPT/DMT RIG		TRICONE TUNGCARB.	- I 凵 `	SOUNDING ROD	INDUF	RATED			DIFFICULT TO SEPARATE WITH STEEL O 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.									X <u>D-50</u>		CORE BIT	_ [] \	ANE SHEAR TEST	EXTR	EMELY I	NDURATED		ER BLOWS REQUIRED TO BREAK SAMPLE AKS ACROSS GRAINS.		

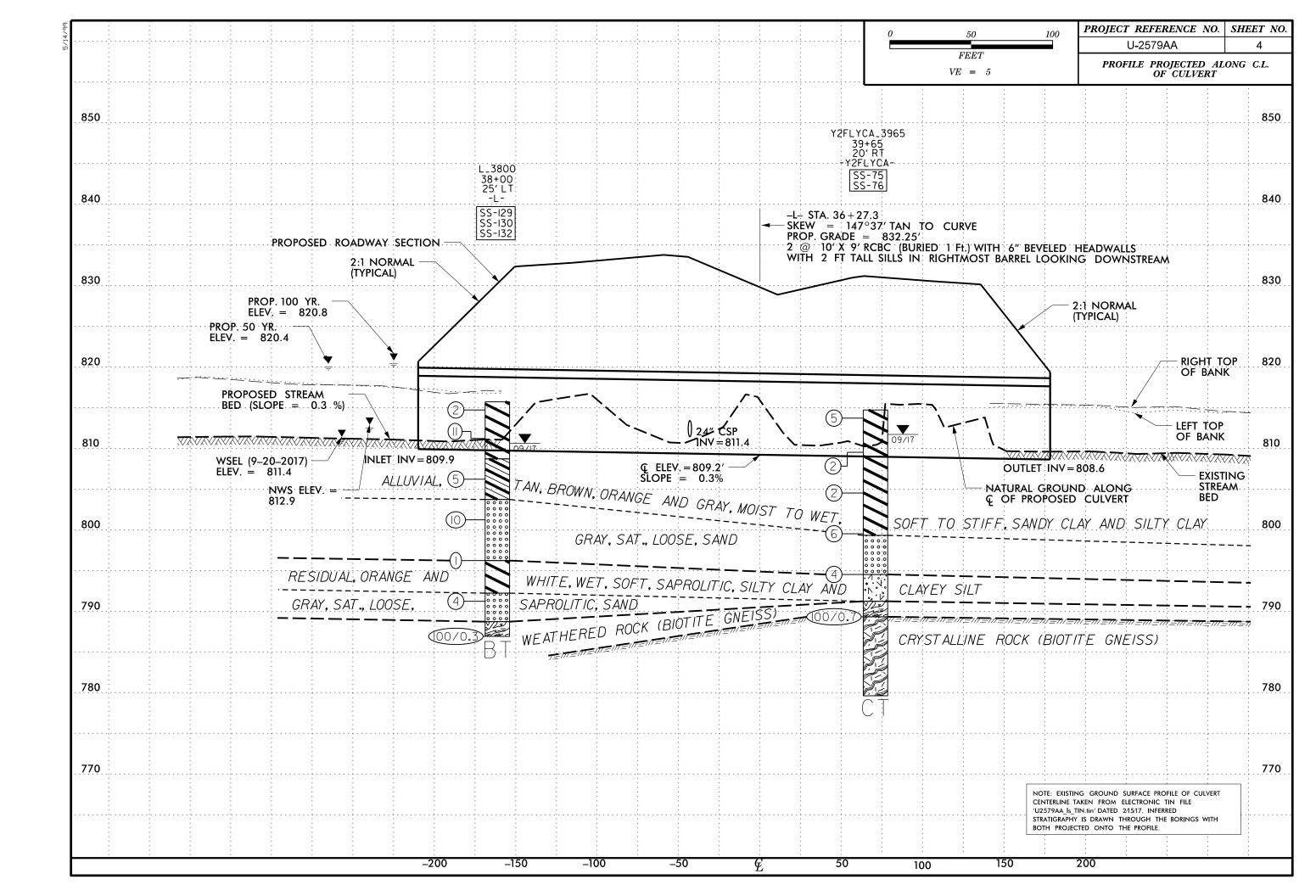
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U-2579AA

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TERMS AND DEFINITIONS D. AN INFERRED ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. I SPT REFUSAL. FOOT PER 60 S 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 WHICH IT 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. AL PLAIN IF TESTED. 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 BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. TONE, CEMENTED DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT BOCKS OR CUTS MASSIVE BOCK. RINGS UNDER <u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. OATINGS IF OPEN. <u>DIP DIRECTION (DIP AZIMUTH)</u> - 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. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. S. IN Y. 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 ITS LATERAL EXTENT. VIDENT BUT 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. RE DISCERNIBLE <u>PERCHED WATER</u> - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. ONLY MINOR 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 S. SAPROLITE IS RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT BUCK S 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. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT EEP CAN BE ETACHED 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 R PICK POINT. 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 (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR CREATER 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: ELEVATIONS TAKEN FROM TIN FILE "U2579AA_IS_TIN.tin", THICKNESS DATED 02/15/2017 4 FEET .5 - 4 FEET ELEVATION: N/A FEET 16 - 1.5 FEET NOTES: 03 - 0.16 FEET 08 - 0.03 FEET 0.008 FEET AT. PRESSURE, ETC TEEL PROBE; PROBE: DATE: 8-15-14



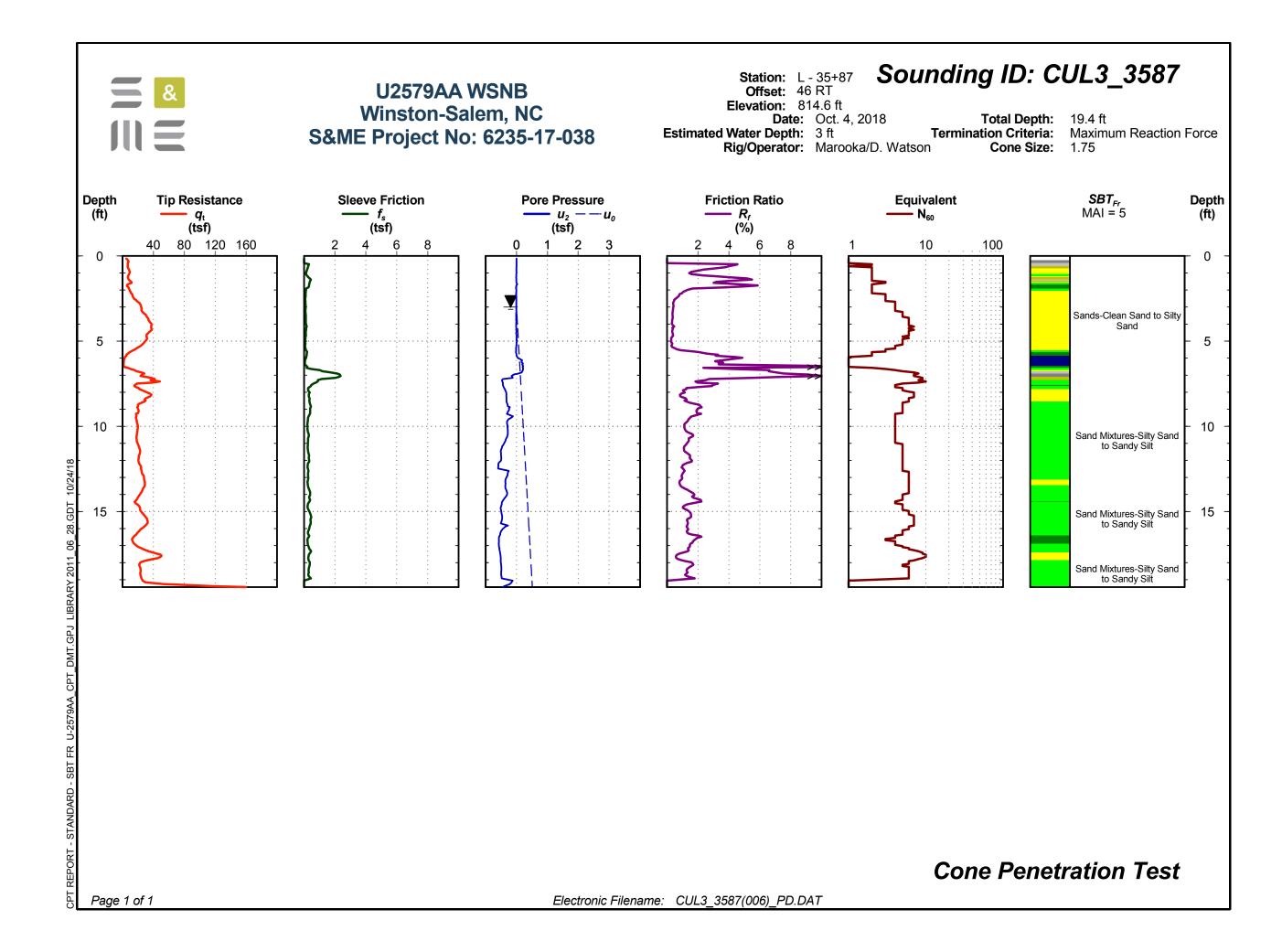


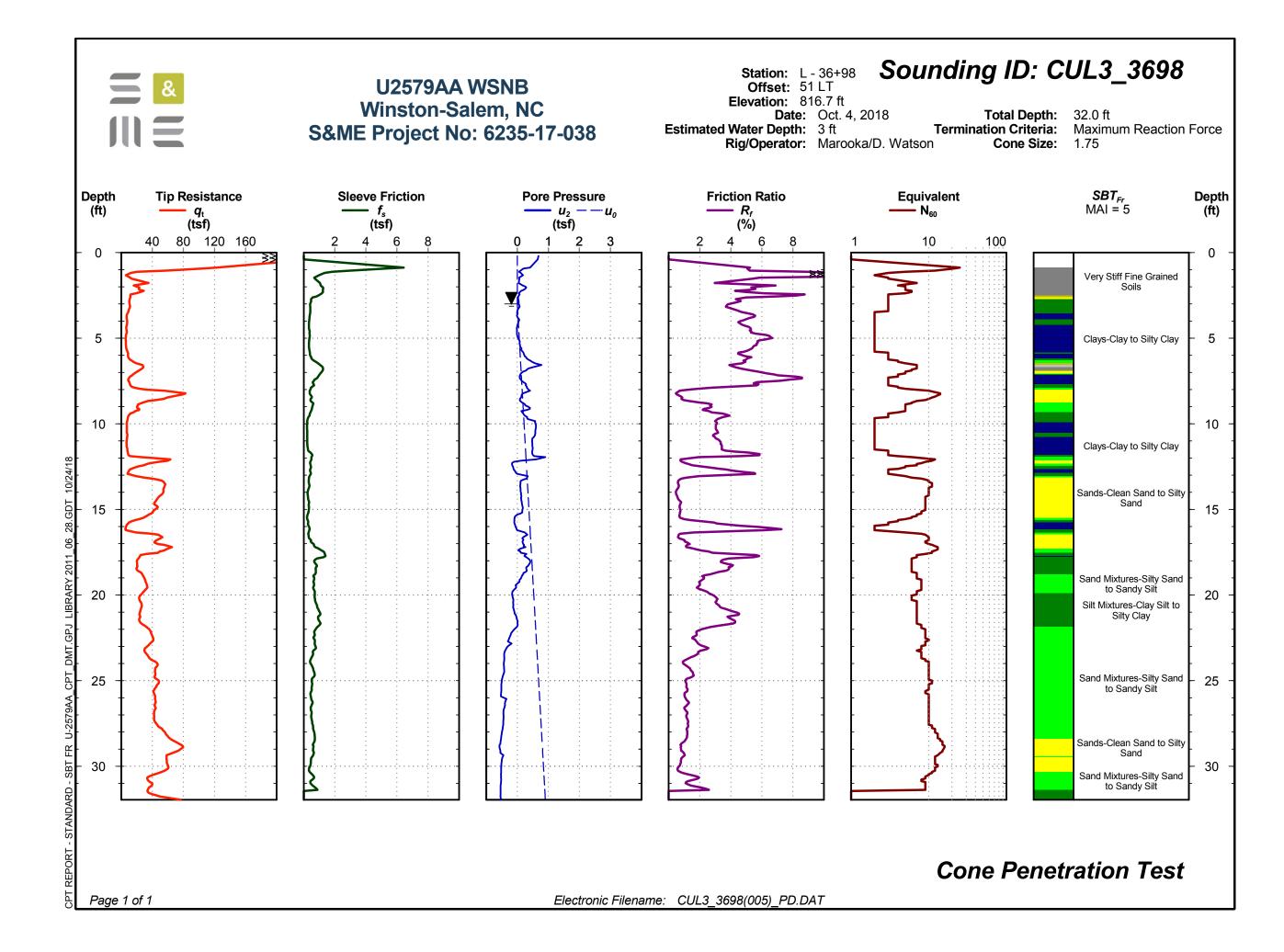
GEOTECHNICAL BORING REPORT BORE LOG

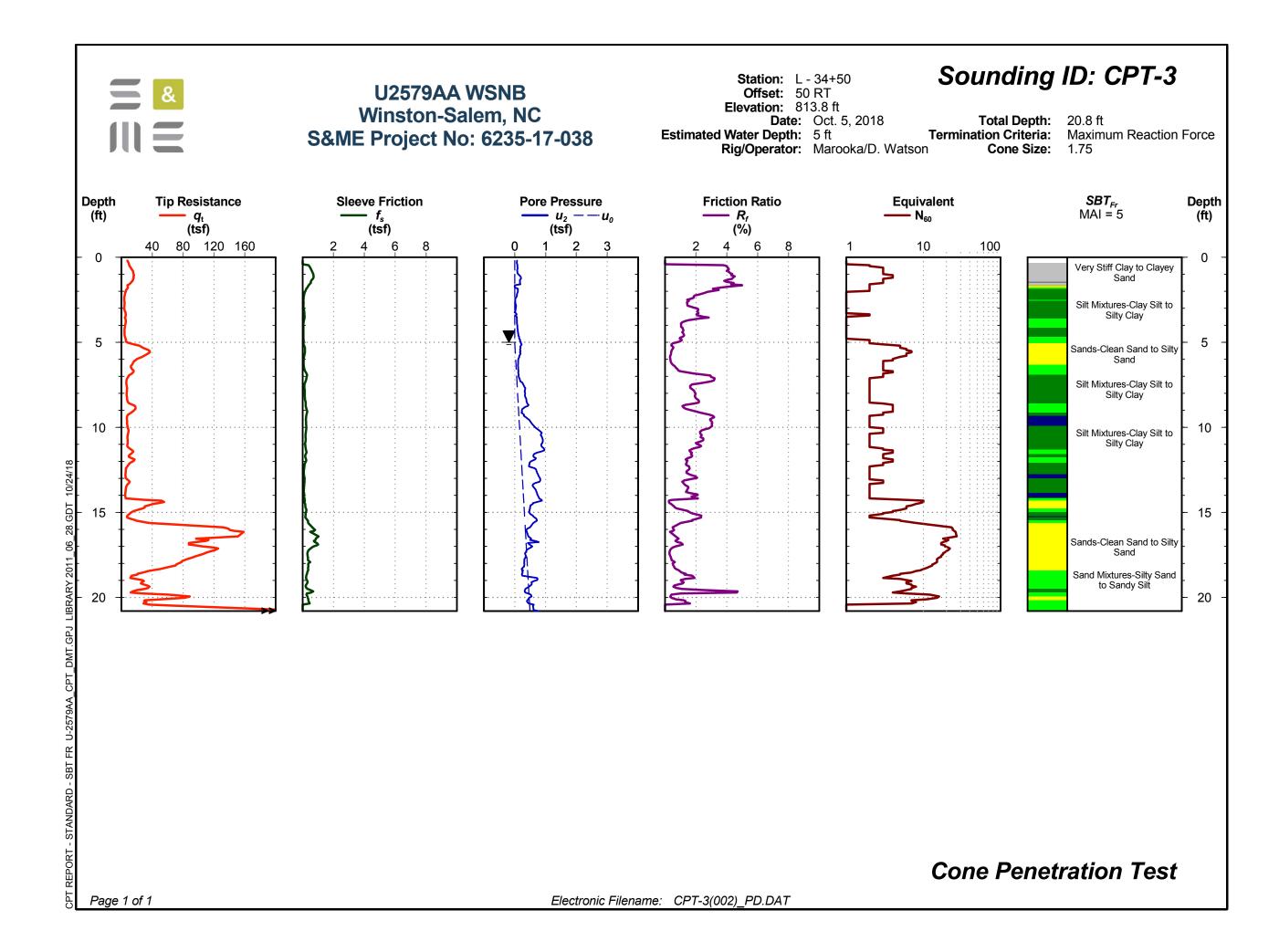
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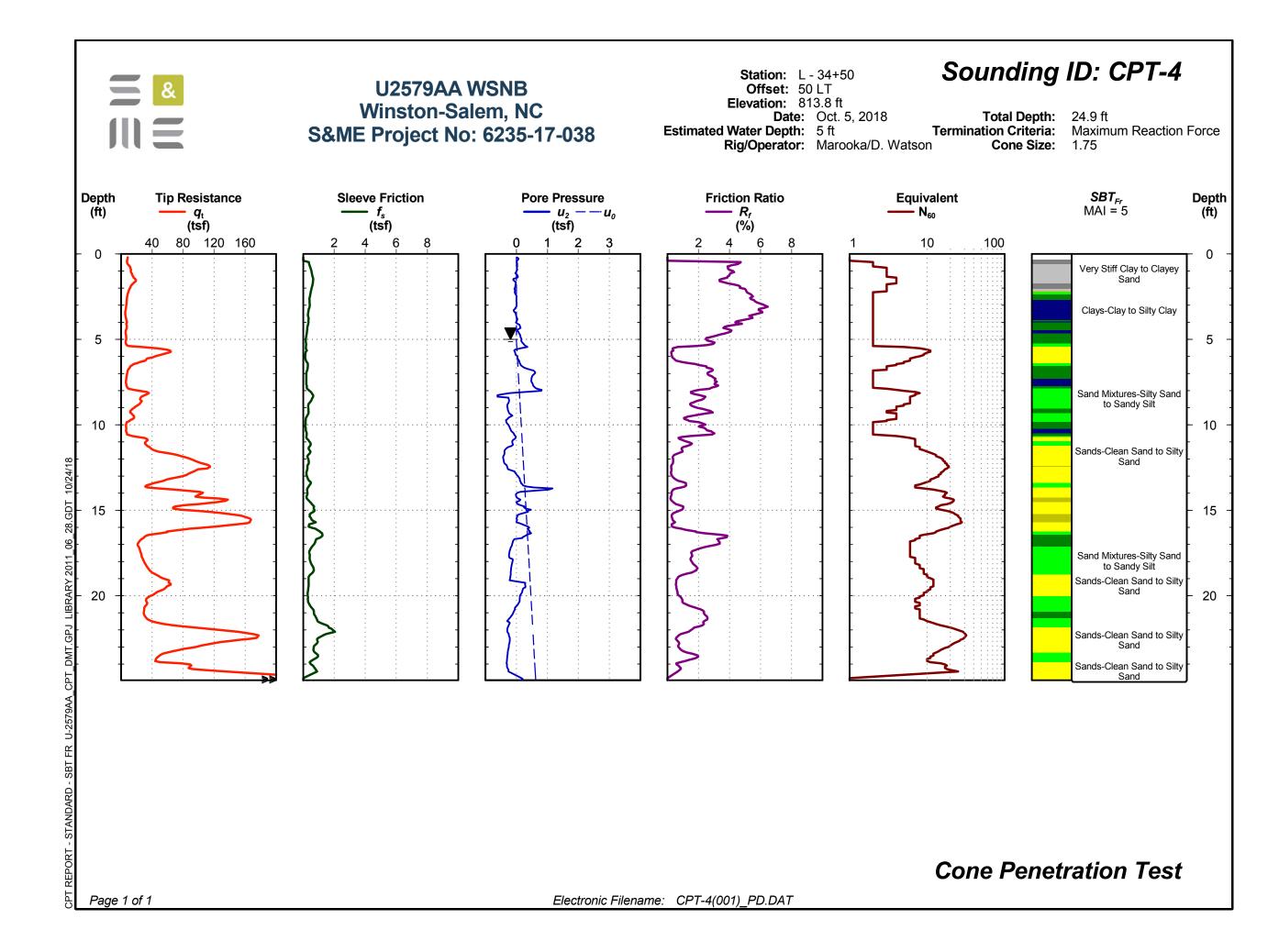
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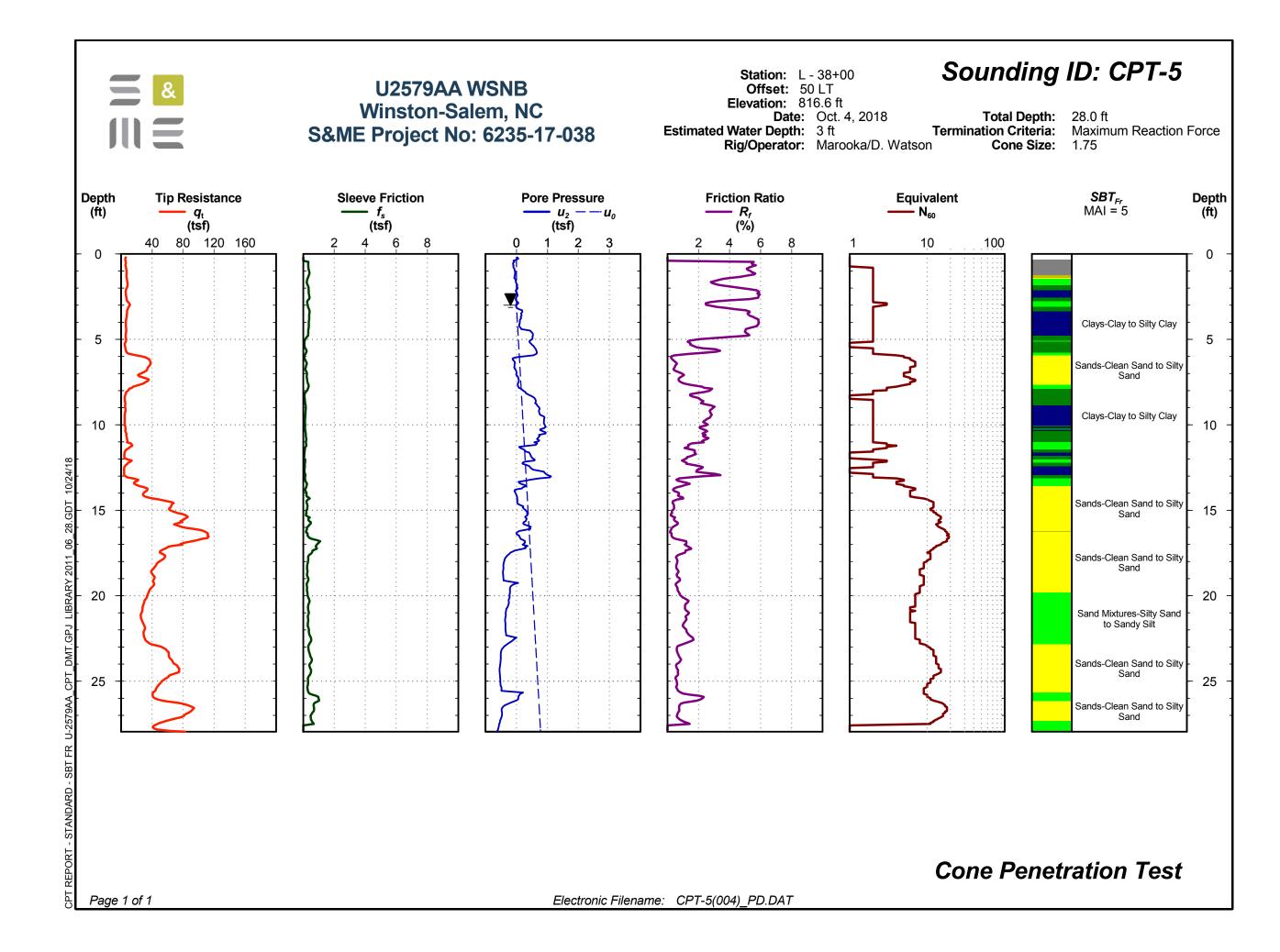
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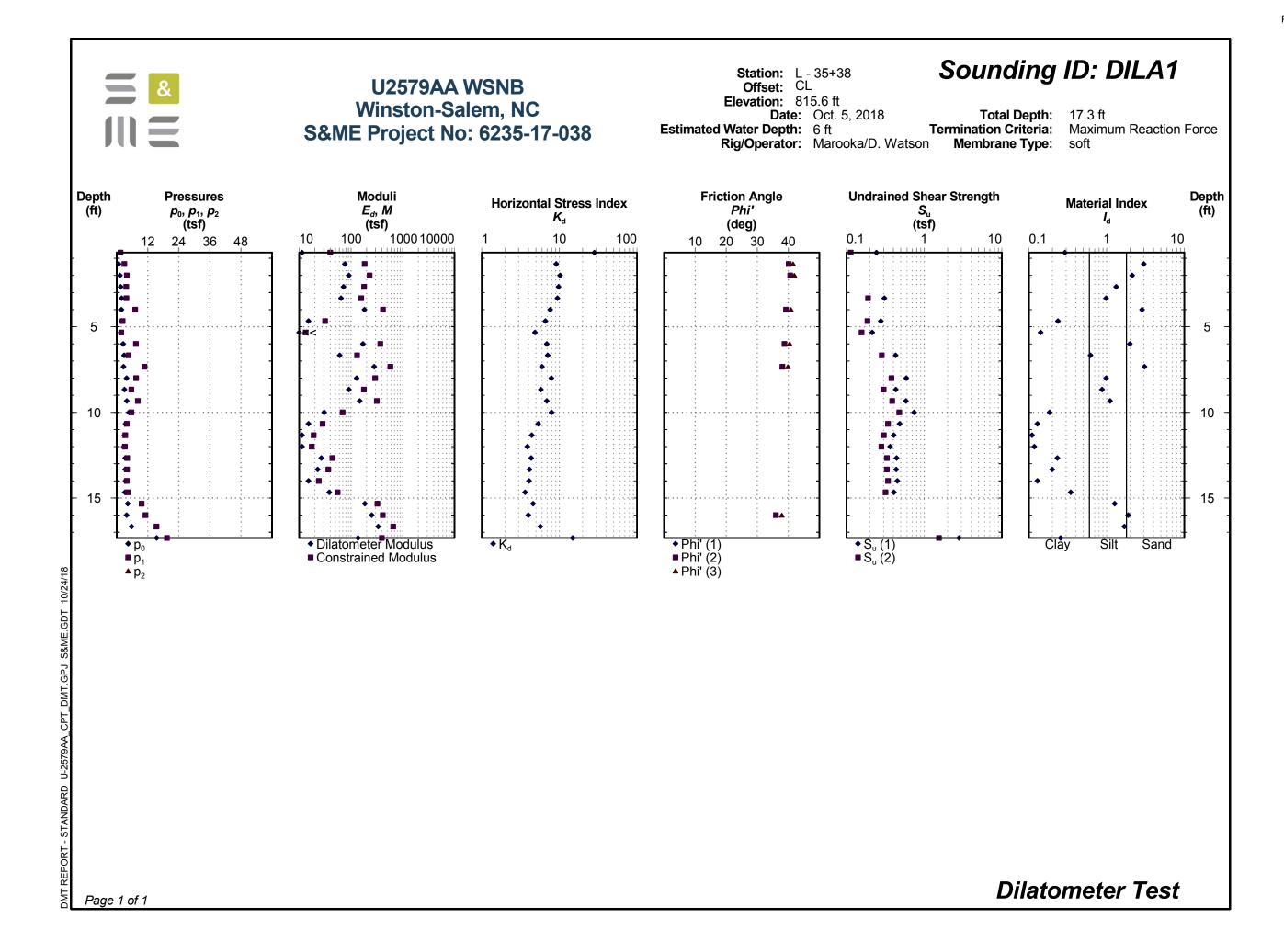


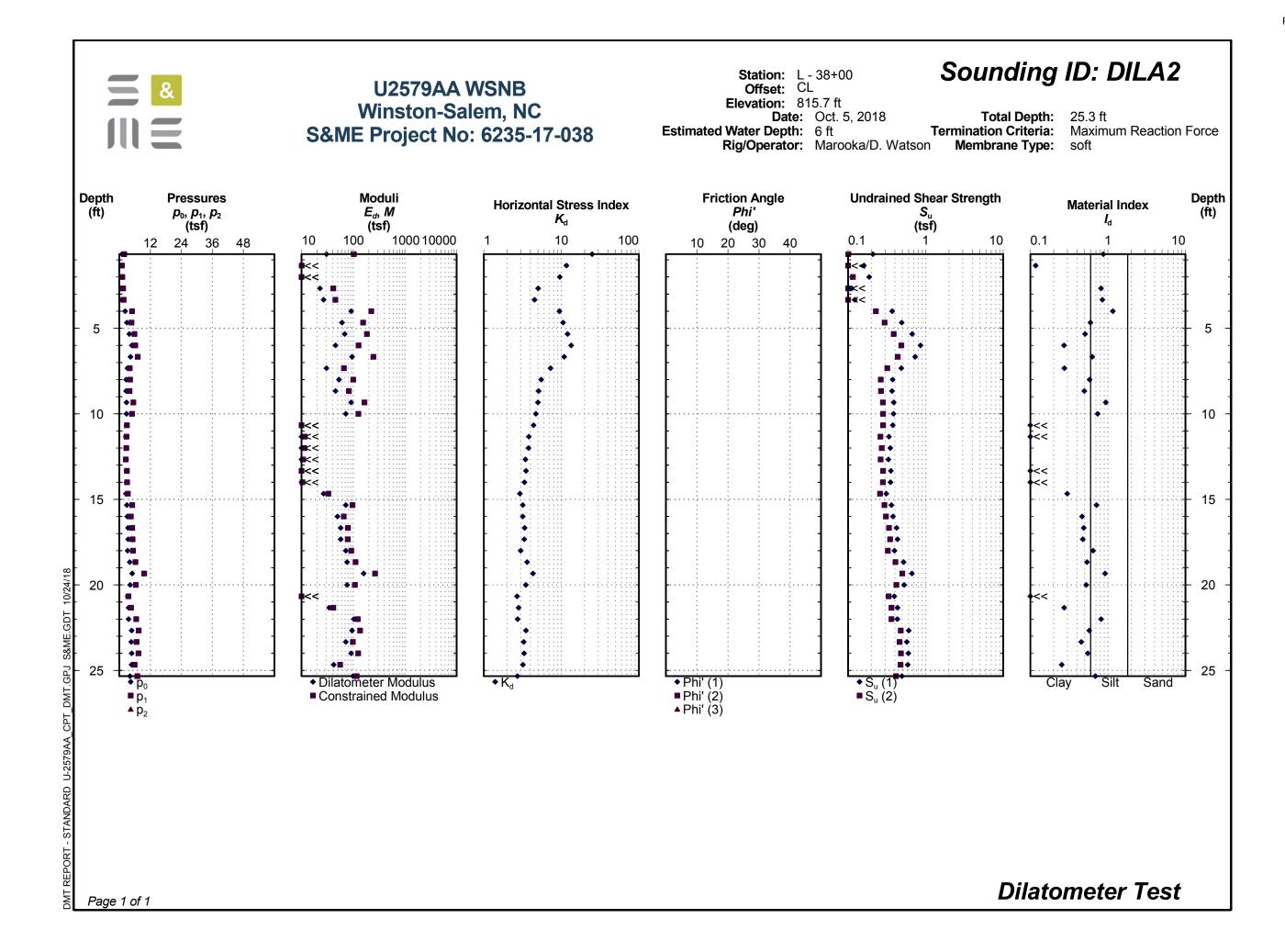












SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

				S&MI	E, Inc. Ral	eigh, 3	3201 Spr	ing Fore	st Road	, Raleigh	, North	Carolina	27616							
S&ME Proj	ect #:			6235-17-03	8										Date	Report:	11/1/2017			
State Proje				34839.1.7			County: Forsyth								Date	Tested:	10,	1/17		
Federal ID	No.:			N/A			TIP No.: U-2579AA													
Project Na				Box Culvert		a. 36+.	27.3 on	Future I-	74 over			,								
Client Nam	ne:			NCDOT GEL	-			Client Address: Raleigh, NC											-	
				Sample	AASH			Tota	al % Pas	sing			l Mortar	Fractio	n (%)					
Sample				Depth	Classific	ation			Sieve #			Coarse	Fine			LL	PL	PI	Mois	
No.	Station	Offset	Alignment	(ft)			10	40	60	200	270	Sand	Sand	Silt	Clay				%	
SS-75	39+65	20 RT	-Y2FLYCA-	0.0-1.5	A-7-5		100	99	99	94	89	1	10	43	46	58	36	22	32.8	
SS-76	39+65	20 RT	-Y2FLYCA-	9.2-10.7	A-7-6	• •	100	98	96	82	74	4	22	34	40	48	27	21		
SS-129	38+00	25 LT	-L-	0.0-1.5	A-7-5		100	99	99	87	78	1	21	42	36	61	44	17	46.9	
SS-130	38+00	25 LT	-L-	8.5-10.0	A-7-5		100	92	84	66	62	16	23	26	35	40	23	17		
SS-132	38+00	25 LT	-L-	19.5-20.0	A-7-5	(2)	99	78	63	38	31	36	33	22	9	58	44	14		
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			cian Name:				Signatur	e	C	ertificatior	n #		echnical Re			-	Pos	Position		
				This re	port shall r	not be re	eproduced	l, except ir	full, with	out the wr	itten appr	oval of S&	ME, Inc.							



CONTE $\overline{\mathcal{N}}$ SHEET N 579A 2 3 - 5 6-10 N - 11 12 REFERENCE 34839 PROJEC

ENTS	
<u>vo.</u>	DESCRIPTION
	TITLE SHEET
	LEGEND (SOIL & ROCK)
	SITE PLAN
	PROFILE
	SPT LOG(S)
	CPT LOG(S)
	DILATOMETER LOG(S)
	SOIL TEST RESULTS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY FORSYTH

PROJECT DESCRIPTION WINSTON-SALEM NORTHERN **BELTWAY EASTERN SECTION (FUTURE I-74)** FROM US 311 TO I-40

SITE DESCRIPTION BOX CULVERT @ -L- STA. 32+77.5 ON FUTURE I-74 OVER SWAIM CREEK

	STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
ŀ	N.C.	U–2579AA	1	12

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 707-680. THE SUBSIFICACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL SOL 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 DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLL 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 VIBSURFACE 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 OPNION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTION STO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISY 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 FOM THE ACTUAL CONDENSATION.

- 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. 2. BY HAVING REDUCETED 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&ME, Inc.

INVESTIGATED BY S&ME, Inc.
DRAWN BY
CHECKED BY
SUBMITTED BYS.S. LANEY
DATE
3201 SPRING FOREST ROAD RALEIGH, NC 27616 (919) 872-2660
SEAL 2296 COLOG SWAR HILL SWAR SWAR HILL SWAR
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

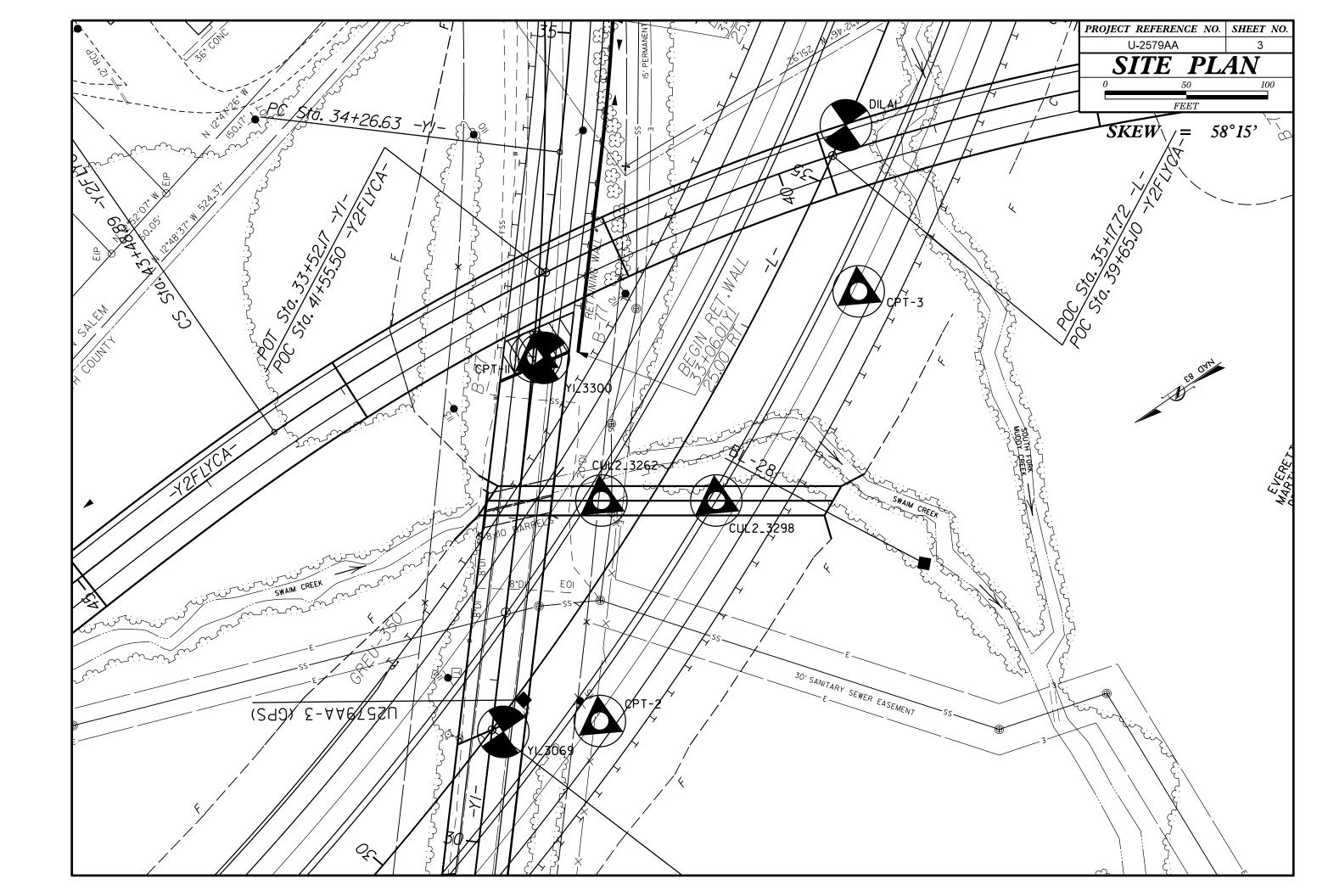
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BE PENETI ACCORDIN IS BA CONSISTE	RATED WITH NG TO THE ASED ON TH NCY, COLOR,	UNCONSOLIDAT A CONTINUOUS STANDARD PENE HE AASHTO SYS TEXTURE, MOISI	FLIGHT POU TRATION TE TEM. BASIC I URE, AASHTC	WER AUGE ST (AASH DESCRIPT D CLASSI	ER AND Y HTO T 20 TIONS GEN IFICATION	YIELD LESS 06, ASTM D NERALLY IN 1, AND OTHE	5 THAN 100 1586). SOII NCLUDE TH R PERTINE	0 BLOWS PE _ CLASSIFI E FOLLOWI ENT FACTOR	ER FOOT CATION NG: RS SUCH	WELL GRADED - INDICAT UNIFORMLY GRADED - IN GAP-GRADED - INDICATES	DICATE	ES THAT SOIL	PARTICLES ARE AL	LL APPROXIN	MATELY THE SAME SIZE.	ROCK LINE I SPT REFUSAL BLOWS IN N REPRESENTED	NDICATE L IS PE ON-COAS D BY A	ES THE LEVE ENETRATION E STAL PLAIN ZONE OF WE	L AT WHICH NON-O BY A SPLIT SPOON	T WOULD YIELD SPT REFUSAL IF TEST COASTAL PLAIN MATERIAL WOULD YIELD SAMPLER EQUAL TO OR LESS THAN 0. TRANSITION BETWEEN SOIL AND ROCK				
AS V	ERY STIFF.G	GICAL COMPOSIT GRAY, SILTY CLAY, MO	IUN, ANGULA NST WITH INT	ERBEDDE	D FINE S	AND LAYERS	, EIC. FU <i>HIGHLY PL</i>	R EXAMPLE, ISTIC, A-7-6	,	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.							HL3 HN	SE TIFICHEL	LOWS: LAIN MATERIAL THAT WOULD YIELD SP1					
	S	OIL LEGEN	ID AND	AASH	TO CL	ASSIFI	CATION	1		ANGULAR, SUBAN	GICAL COMPOS		WEATHERED ROCK (WR)				FOOT IF TESTED.							
GENERAL CLASS.		GRANULAR MATERIA ≤ 35% PASSING ■2			T-CLAY MA 35% PASSIN		OR	GANIC MATERI	IALS		Z, FELDSPAR, MICA, 1	TALC, KAOLIN	CRYSTALLINE ROCK (CR)				E GRAIN IGNEOUS AND METAMORPHIC RC PT REFUSAL IF TESTED. ROCK TYPE IN							
GROUP CLASS.	A-1 A-1-a A-1-b	A-3	A-2 -5 A-2-6 A-2-	_	A-5 A	A-6 A-7 A-7-5 A-7-6	A-1, A-2 A-3	A-4, A-5 A-6, A-7		HRE USED IN	EN THEY ARE CONSID		NON-CRYSTAL	LINE		FINE TO COARS	E GRAIN METAMORPHIC AND NON-COASTA							
	00000000000000000000000000000000000000	H-2-4 H-2	-5 H-2-6 H-2			A-7-6		H 0, H /		SLIGH		LL < 31	ROCK (NCR)			ROCK TYPE INC	OCK THAT WOULD YEILD SPT REFUSAL LUDES PHYLLITE, SLATE, SANDSTONE, ET(
% PASSING	000000000000000000000000000000000000000			*				SILT-			Y COM	COMPRESSIE		LL = 31 LL > 50		COASTAL PLA SEDIMENTARY (CP)				SEDIMENTS CEMENTED INTO ROCK,BUT ROCK TYPE INCLUDES LIMESTONE,SANDS				
	0 MX 0 MX 50 MX	51 MN				GRANULAR SOILS	CLAY	MUCK, PEAT		P		AGE OF MATER			-				THERING					
*200 1	*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN									ORGANIC MATERIAL		GRANULAR SOILS	SILT - CLAY		ER MATERIAL	FRESH				DINTS MAY SHOW SLIGHT STAINING. ROCK				
MATERIAL PASSING 40 LL PI	_ 6 MX		1N 40 MX 41 M 1X 11 MN 11 M				LITT	S WITH LE OR	HIGHLY	TRACE OF ORGANIC MA LITTLE ORGANIC MATT MODERATELY ORGANIC HIGHLY ORGANIC		2 - 3% 3 - 5% 5 - 10% > 10%	3 - 5% 5 - 12% 12 - 20% > 20%	TRACE LITTLE SOME HIGHLY	10 - 20% 20 - 35%	VERY SLIGHT (V SLI.)	ROCK (CRYST		RESH, JOINTS STAIN OKEN SPECIMEN FAC	IED, SOME JOINTS MAY SHOW THIN CLAY C CE SHINE BRIGHTLY. ROCK RINGS UNDER H				
	Ø TONE FRAGS. GRAVEL, AND		4 MX	SIL		MX NO MX	amout Orc	ERATE NTS OF ANIC ITER	organic Soils			ER LEVEL IN	BORE HOLE IMMEDIA		R DRILLING	SLIGHT (SLI.)	ROCK (1 INCH.	GENERALLY F . OPEN JOINT	RESH, JOINTS STAIN S MAY CONTAIN CLA	ED AND DISCOLORATION EXTENDS INTO RO AY. IN GRANITOID ROCKS SOME OCCASIONA CRYSTALLINE ROCKS RING UNDER HAMMEF				
MATERIALS GEN. RATING AS SUBGRADE	OF PROJUGE MATERIALS CHAVEL AND SAND CRAVEL AND SAND SOILS SOILS GEN. RATING EVELUENT TO CODO EALE TO PODP FAIR TO PODP INSULTABLE										PERC	CHED WATER,	EVEL AFTER <u>24</u> SATURATED ZONE, OF		ARING STRATA	MODERATE (MOD.)	GRANIT DULL S	TOID ROCKS, M SOUND UNDER	10ST FELDSPARS AR	DISCOLORATION AND WEATHERING EFFECT TO DULL AND DISCOLORED, SOME SHOW CLA DISHOWS SIGNIFICANT LOSS OF STRENGTH				
	I	PI OF A-7-5 SUBGR	OUP IS ≤ LL	- 30 ; PI (JF A-7-6 9	SUBGROUP IS	> LL - 30				SPRI	ING OR SEEP				MODERATELY		FRESH ROCK.	QUARTZ DISCOLORED) OR STAINED. IN GRANITOID ROCKS, ALL F				
		CON	SISTENC								!	MISCELL	ANEOUS SYMBI	<u>JLS</u>		SEVERE (MOD. SEV.)	AND D	ISCOLORED AN	ND A MAJORITY SHO	W KAOLINIZATION. ROCK SHOWS SEVERE L DGIST'S PICK. ROCK GIVES "CLUNK" SOUND				
PRIMARY S	OIL TYPE	COMPACTN CONSIST	ENCY		(N-VALU	ESISTENCE JE)	COMP	GE OF UNC RESSIVE S (TONS/FT	TRENGTH	L ROADWAY EMBA				RECTION	SEVERE (SEV.)	<u>IF TES</u> ALL RO	<u>STED, WOULD</u> ROCK EXCEPT	<u>YIELD SPT REFUSAL</u> QUARTZ DISCOLORED) O OR STAINED. ROCK FABRIC CLEAR AND E L. IN GRANITOID ROCKS ALL FELDSPARS (
GRANULA	CENERALLY VERY LOOSE < 4 GRANULAR LOOSE 4 TO 10 MEDIUM DENSE 10 TO 30 N/A									SOIL SYMBOL	DET DAT TEST BO			TO SO	ME EXTENT. S		F STRONG ROCK USUALLY REMAIN.							
(NON-COF	MATERIAL (NON-COHESIVE) DENSE VERY DENSE 30 TO 50 50 TO 50 VERY DENSE > 50											AUGER BORING	•	VERY SEVERE (V SEV.)	BUT M REMAIN	MASS IS EFFEN NING. SAPROL	CTIVELY REDUCED T ITE IS AN EXAMPLE	O OR STAINED. ROCK FABRIC ELEMENTS AF O SOIL STATUS, WITH ONLY FRAGMENTS OI OF ROCK WEATHERED TO A DEGREE THAT REMAIN. IF TESTED, WOULD YIELD SPT N V						
GENERAL SILT-CLA MATERIA (COHESIV	ΑY L	SOF MEDIUM STIF VERY S	STIFF F		2 TO 4 TO 8 TO 1 15 TO 1	8 15		0.25 TO 1 0.5 TO 1 1 TO 2 2 TO 4	.0			MONITORING W △ PIEZOMETER	ELL 🕂	COMPLETE	ROCK F	REDUCED TO	SOIL. ROCK FABRIC	NOT DISCERNIBLE, OR DISCERNIBLE ONLY MAY BE PRESENT AS DIKES OR STRINGERS						
		HAR		<u></u>	> 30			> 4				INSTALLATION					ROCK	HARDNESS						
			XTURE										NDATION SYME		SSIFIED EXCAVATION -	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPEC SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.								
U.S. STD. SIE OPENING (MM			4 10 .76 2.00	40 0.42 COARS	2 0.2	25 0.075	270 0.053				UN:	ISUITABLE WA	ASTE É EXCAVATION -	ACCEP الح ^{يري} ة USED	TABLE, BUT NOT TO BE IN THE TOP 3 FEET OF IKMENT OR BACKFILL	HARD	ONLY WITH DIFFICULTY. HARD HAMMER B							
BOULDER (BLDR.)			AVEL GR.)	SANI (CSE. 9	ID	FINE SAND (F SD.		SILT (SL.)	CLAY (CL.)			BREVIATIONS		TO DETACH HAND SPECIMEN. MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 I HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS C										
GRAIN MM		75 3	2.0		0.2	5	0.05	0.005	i	AR - AUGER REFUSAL BT - BORING TERMINATED			- MEDIUM - MICACEOUS		- VANE SHEAR TEST WEATHERED	NEOTUN	BY MO	DERATE BLOW	is.					
SIZE IN.	12 S	SOIL MOIS	URE -	CORRE		JN OF	TERMS			CL CLAY CPT - CONE PENETRATION		MOD.	- MODERATELY NON PLASTIC	γ-	UNIT WEIGHT	MEDIUM HARD	CAN B		IN SMALL CHIPS T	HES DEEP BY FIRM PRESSURE OF KNIFE C O PEICES 1 INCH MAXIMUM SIZE BY HARD				
	MOISTURE ERBERG LIM		FIELD MO DESCRI	IPTION				STURE DES		CSE COARSE DMT - DILATOMETER TES DPT - DYNAMIC PENETRAI	PMT ·	- ORGANIC - PRESSUREMETER T - SAPROLITIC	EST <u>S</u>	SOFT	FROM	CHIPS TO SE		BY KNIFE OR PICK. CAN BE EXCAVATED IN IZE BY MODERATE BLOWS OF A PICK POIN ESSURE.						
LL		LIMIT _	- SATURA (SAT.					WET.USU		e - VOID RATIO F - FINE FOSS FOSSILIFEROUS		SL	SAND, SANDY SILT, SILTY SLIGHTLY	ST	- SPLIT SPOON - SHELBY TUBE - ROCK	VERY SOFT		ORE IN THICKN		EXCAVATED READILY WITH POINT OF PICK. IN BY FINGER PRESSURE. CAN BE SCRATCH				
PLASTIC RANGE < (PI)			- WET -	(W)		MISOLID; F		DRYING TO STURE		FRAC FRACTURED, FRAC FRAGS FRAGMENTS	TURES	w - M	- TRICONE REFUSAL MOISTURE CONTENT	RT CBR	- RECOMPACTED TRIAXIAL - CALIFORNIA BEARING			TURE SP		BEDDING				
									ISTURE	HI HIGHLY	JIPM	v - v ENT USEI	D ON SUBJEC	T_PROJE	RATIO	VERY WID WIDE	ε		SPACING E THAN 10 FEET 3 TO 10 FEET	TERM VERY THICKLY BEDDED THICKLY BEDDED 1				
OM OPTINUM_MOISTURE SL SHRINKAGE LIMIT - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE)	DRILL UNITS:	ANCING TOOLS		HAMMER	MODERATE CLOSE VERY CLO		DSE Ø.	1 TO 3 FEET .16 TO 1 FOOT THAN 0.16 FEET	THINLY BEDDED 0.1 VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00								
							CME-55 G' CONTINUOUS FLIGHT AUGER										THINLY LAMINATED <							
PLASTICITY										СМЕ-550		8" HOLLOW A	NUGERS	∐-в.	Ц-н					URATION				
	PLASTICITY INDEX (PI) DRY STRENGTH NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT									VANE SHEAR TEST		TUNGCARBI	DE INSERTS	HAND TI		FOR SEDIMENTARY ROCKS, IND FRIABLE			RATION IS THE HARDENING OF MATERIAL BY CEMEN RUBBING WITH FINGER FREES NUMEROUS OR GENTLE BLOW BY HAMMER DISINTEGRATES					
	MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH									PORTABLE HOIST			W/ ADVANCER		DST HOLE DIGGER AND AUGER	MODEF	≀ATEL Y	INDURATED		BE SEPARATED FROM SAMPLE WITH ST BILY WHEN HIT WITH HAMMER.				
			(COLOR	<u> </u>					X CPT/DMT RIG			' TUNGCARB.	sr	DUNDING ROD	INDUR	ATED			DIFFICULT TO SEPARATE WITH STEEL TO 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			ANE SHEAR TEST	EXTRE	MELY I	INDURATED	SHARP HAMM	MER BLOWS REQUIRED TO BREAK SAMPLE EAKS ACROSS GRAINS.				

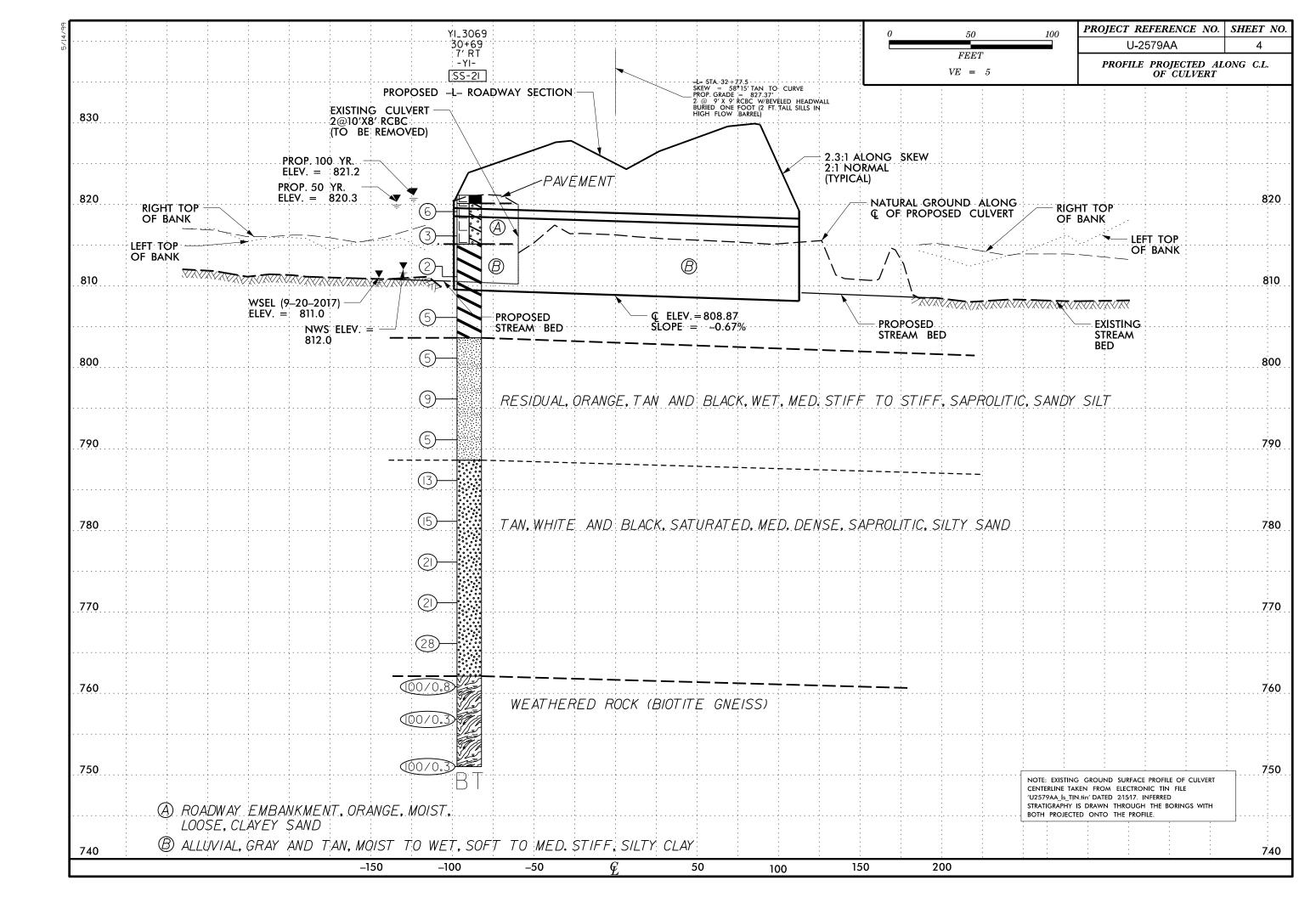
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PROJECT REFERENCE NO.

U-2579AA

	TERMS AND DEFINITIONS
ED. AN INFERRED D SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
1 FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS 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 NOTABLE FROMMENTION OF CLAFT IN THEIR COMPOSITION, SOLE AS SHALE, SLATE, ELL. <u>ARTESIAN</u> - 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
OCK THAT NCLUDES GRANITE,	SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
AL PLAIN IF TESTED. C.	<u>CULLANEOUS (CHCL)</u> SUILS THAT CONTAIN HETRECIADE HADDAYS OF CHCLOW CHABUNATE. <u>COLLUVIUM</u> - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
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.
COATINGS IF OPEN, HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
DCK UP TO AL FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
R BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
IS. IN AY. ROCK HAS H AS COMPARED	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.
FELDSPARS DULL LOSS OF STRENGTH	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
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
EVIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OF PROJECTION OF ROLK 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 USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
RE DISCERNIBLE DF STRONG ROCK	USUALLY INDICATES POUR AERATION AND LACK OF GUOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
T ONLY MINOR VALUES < 100 BPF	TERCHED WHIEN 'WHIEN 'WHITEN HIND HOUVE HE NORMHL DROUND WHIEN LEVEL OF THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.)SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
IN SMALL AND	ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
S. SAPROLITE IS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
NS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
BLOWS REQUIRED	<u>SILL</u> - AN INTRUSIVE BODY OF IONEOUS 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.
DEEP CAN BE DETACHED	$\underline{\text{SLICKENSIDE}}$ - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
OR PICK POINT. BLOWS OF THE	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.
N FRAGMENTS NT. SMALL,THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
. PIECES 1 INCH	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEDMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
HED READILY BY	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
THICKNESS	BENCH MARK: ELEVATIONS TAKEN FROM TIN FILE "U2579AA_IS_TIN.tin",
THICKNESS 4 FEET	DATED 02/15/2017 ELEVATION: N/A FEET
1.5 - 4 FEET .16 - 1.5 FEET	
03 - 0.16 FEET	NOTES:
08 - 0.03 FEET < 0.008 FEET	
EAT, PRESSURE, ETC.	
• TEEL PROBE;	
PROBE:	
E;	
	DATE: 8-15-14

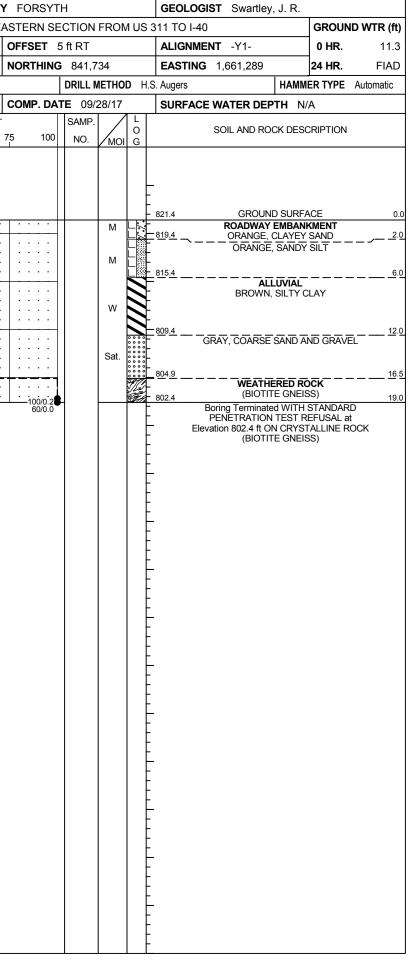


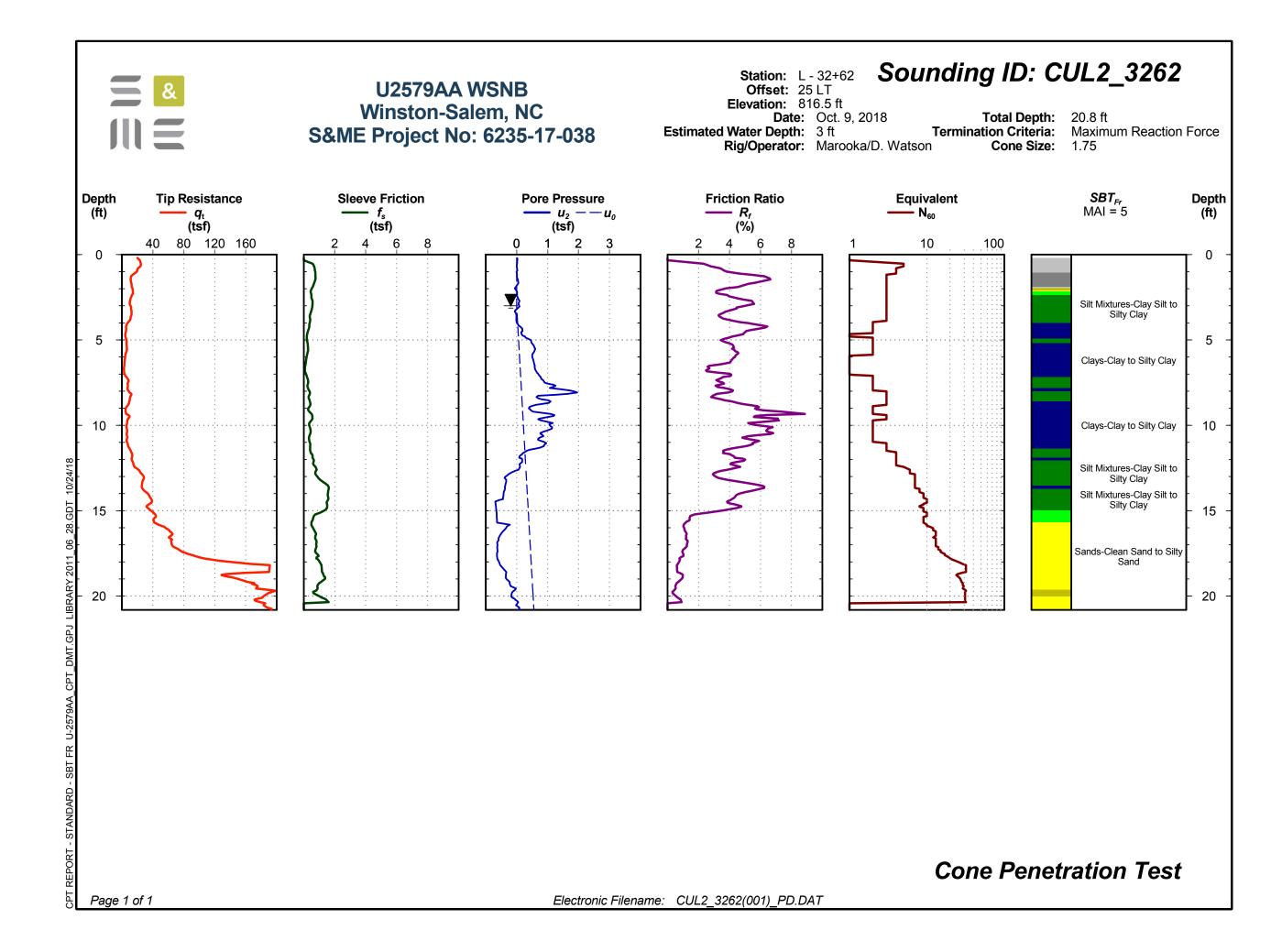


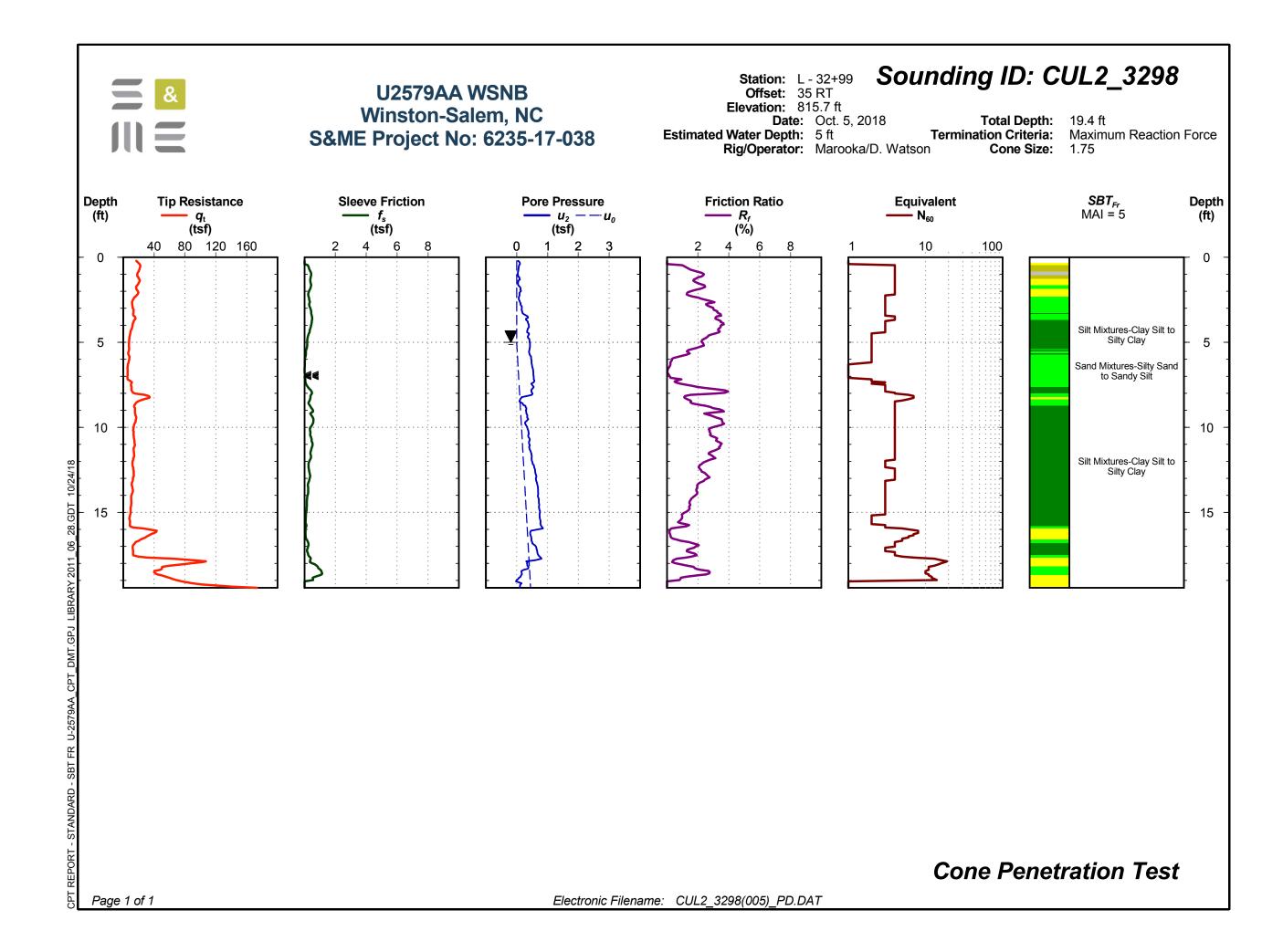
GEOTECHNICAL BORING REPORT BORE LOG

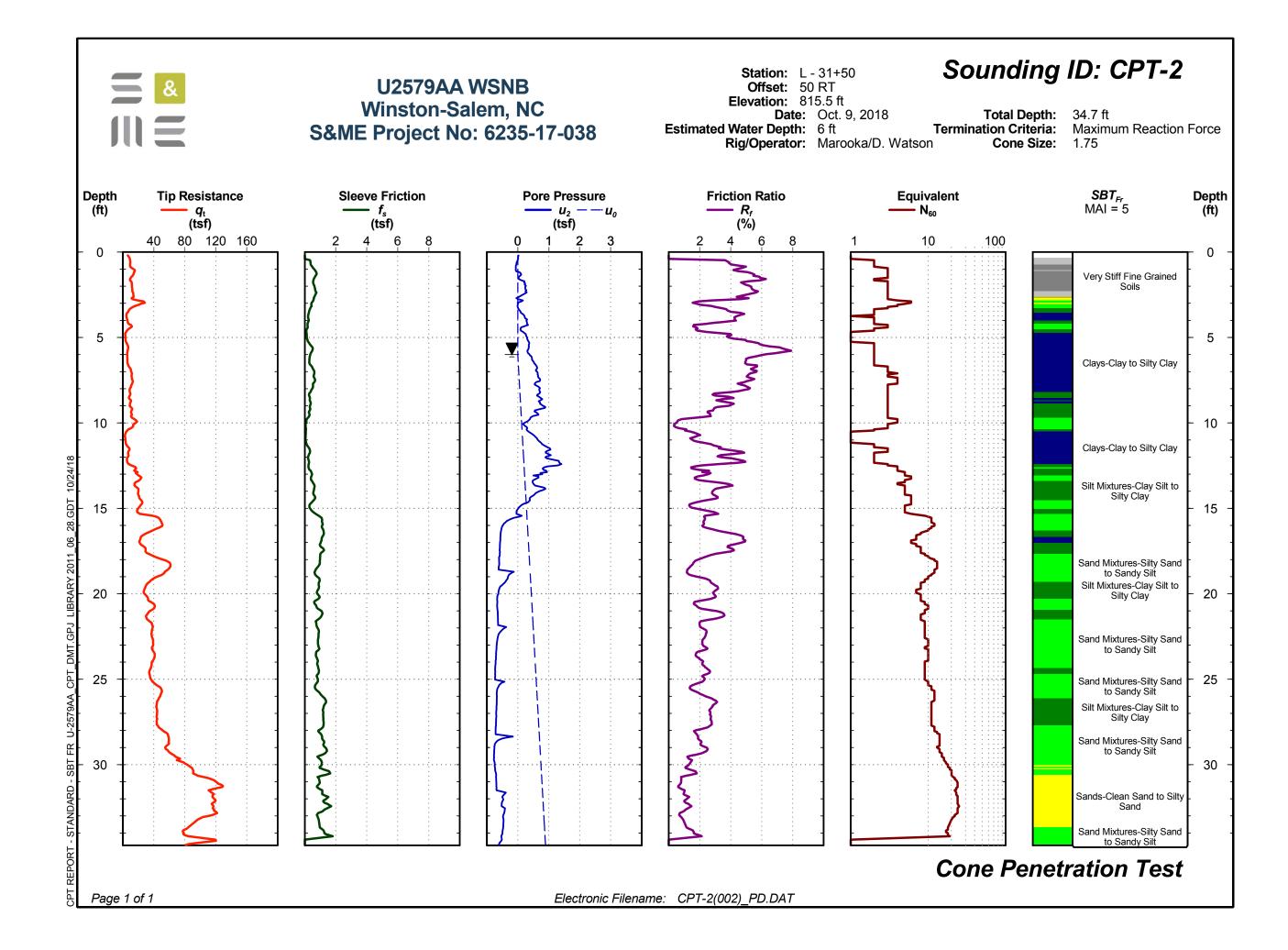
				TIP U-2579AA COUNTY FORSYTH G											CEOLOCIST Sweetley L.D.																	
WBS 34839.1.7												Y FORSYTH					GEOLOGIST Swartley, J. R.					34839					TIP U-2579AA COUNTY					
SITE DESCRIPTION WINSTON-																			-	ID WTR (ft)					ISTO		SALEM NORTHERN BELTWAY E					
BOR	ING NO.	. Y1_3	3069		5	STATI	ON 3	30+69	9		C	OFFSET 7 ft RT				ALIG	ALIGNMENT -Y1- 0 HR. 7.0 Caved				BOR	ING NO.	Y1_3	3300		S	STATION 33+00					
COL	LAR ELI	EV. 82	21.1 ft		ר	TOTAL DEPTH 70.1 ft						NORTHING 841,885				EAST	ASTING 1,661,115 24 HR. FIAD				COLLAR ELEV. 821.4 ft TOTAL DEPTH 19.0 ft									N		
DRILI	RIG/HA	MMER E	FF./DA	TE S	ME432	4323 CME-550X 73% 11/16/2017						DRILL METHOD H.S.				H.S. Augers	Augers HAMMER TYPE Automatic				DRILL RIG/HAMMER EFF./DATE SME4323 CME-550X 73% 11/16/2017											
DRIL	LER B	lizzard,	Bran	don	5	START DATE 10/03/17						COMP. DATE 10/03/17				SURF	SURFACE WATER DEPTH N/A				DRIL	E 09/28/1	7	C								
ELEV	DRIVE ELEV	DEPTH	BLC	ow co	UNT			BL	OWS F	PER FC	ют		SAM	P. 🔻		Γ.	SOIL AND	D ROCK DES			ELEV	DRIVE ELEV	DEPTH	BLC	W CO	UNT		BLOWS	PER FOO	T		
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0		25	5	50	75	5 10	0 NO	. /м				D NOON DEON		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25 5	50	75		
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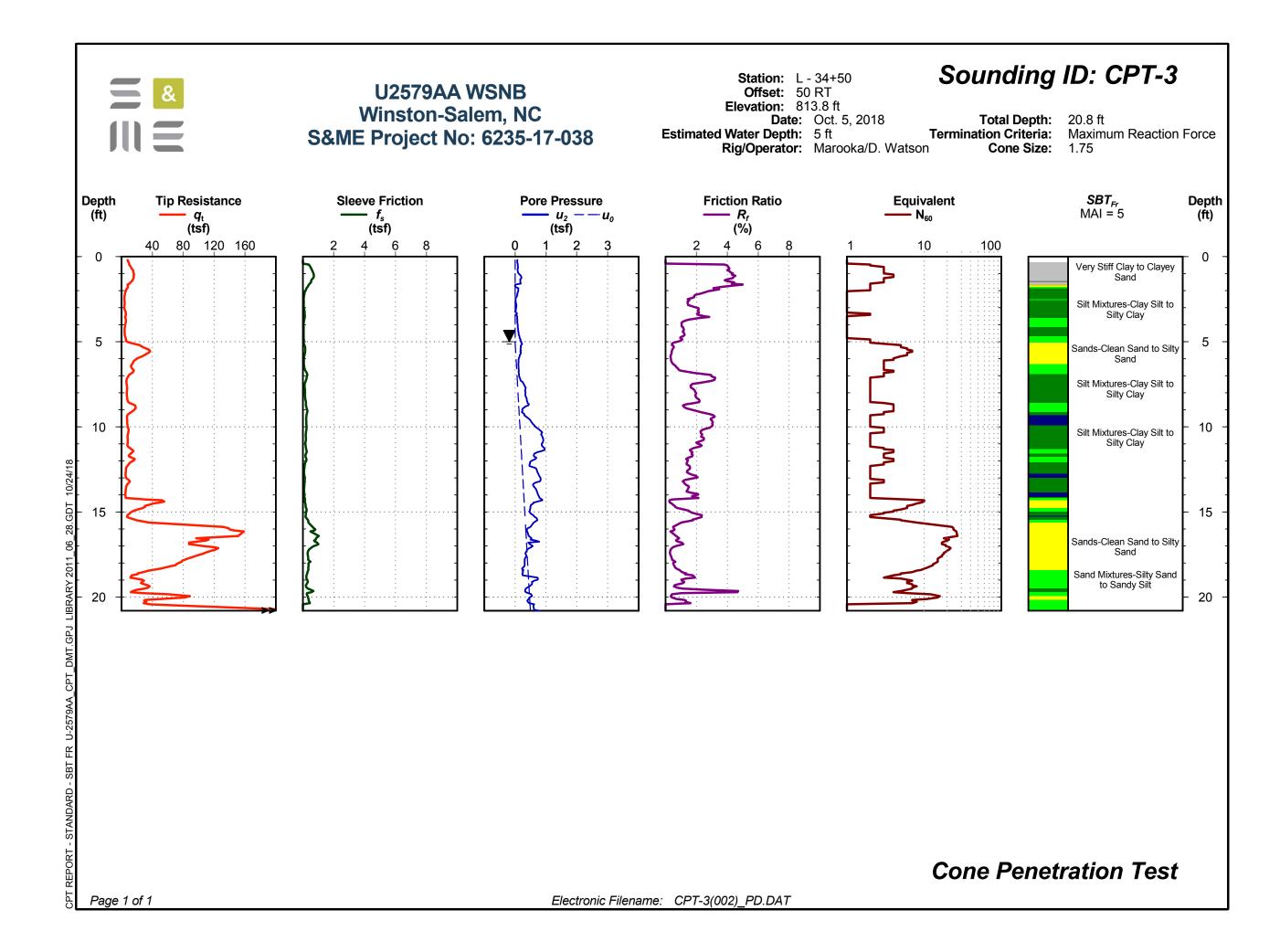
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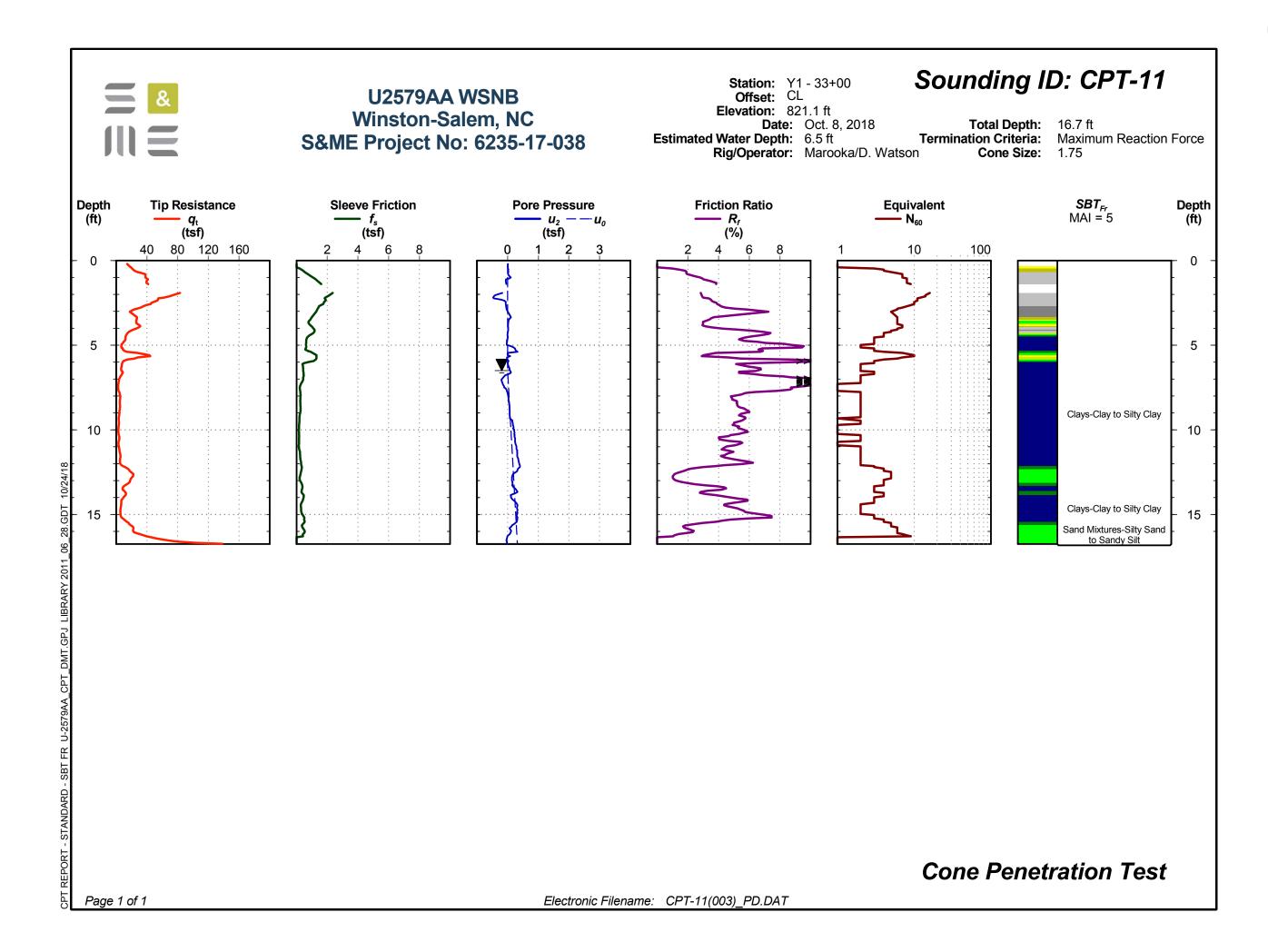


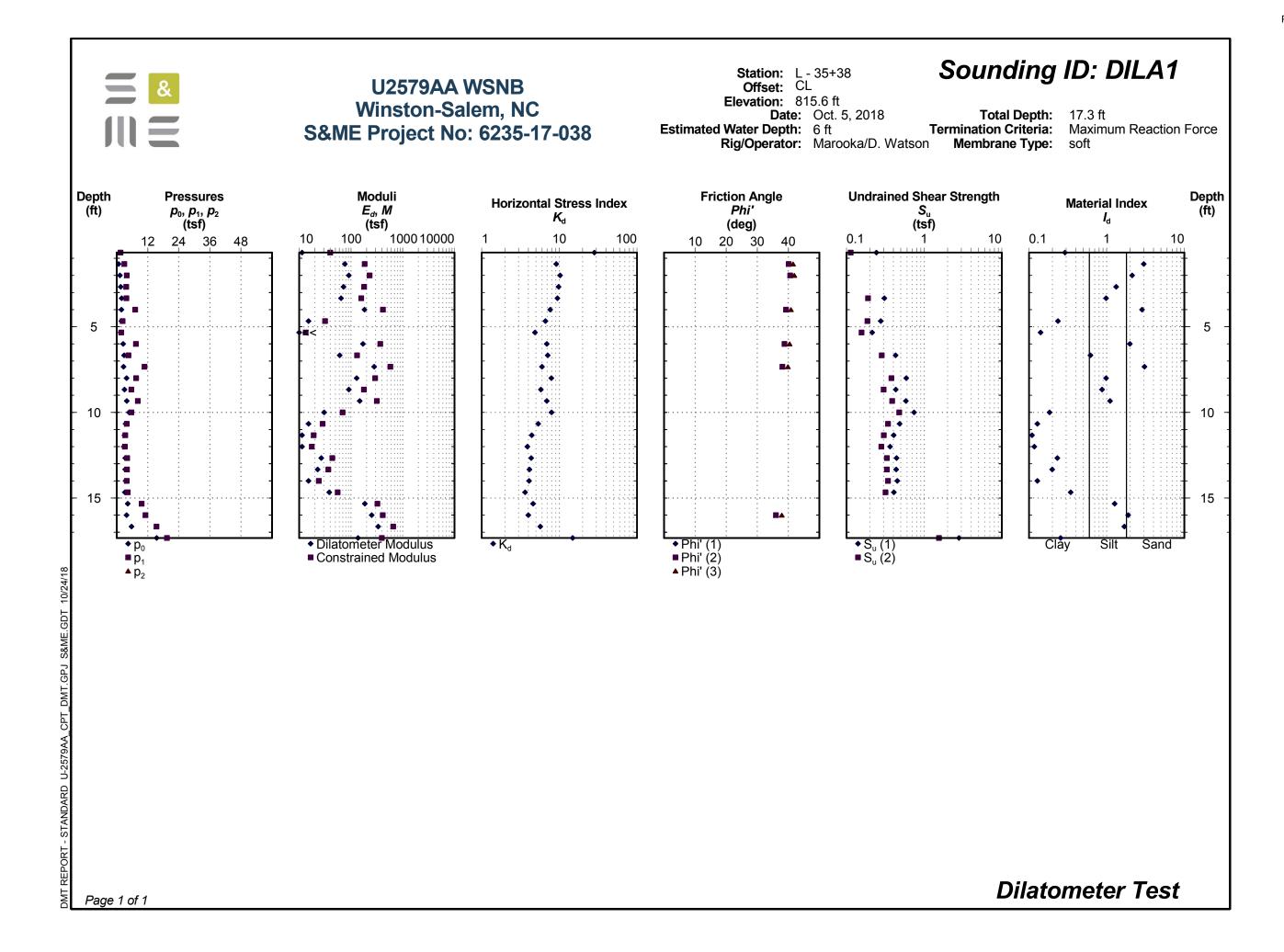












SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

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CONTENTS SHEET NO. **DESCRIPTION** TITLE SHEET LEGEND (SOIL & ROCK) SITE PLAN PROFILES BORE LOGS SITE PHOTOGRAPHS

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4-5

6-10

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY FORSYTH

PROJECT DESCRIPTION BRIDGE NO. 395 & 396 ON **US 311 (FUTURE I-74) OVER SR 2699**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–2579AA	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 SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (99) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GENERAL SOL 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 BORCHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-FLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEOREE OF RELIABILITY INHERENT IN THE STANDARD TEST WETHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLI 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 VIDUAL THE ONDER 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 DES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHIONO OF THE DEPARTMENT ADD FOR MATERIAL ON THE STRUCTION STORE ENCOUNTERED. THE DEPARTMENT AS TO CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATION SA HE DECKN INFORMATION ON THE INTERPRETATIONS AS HE DECKN NERVESTIGATION RESULTIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SALL HAVE NO CLAIM FOR ADDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONS TO BE INCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES: I. 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

S. PAPKE

C. DRISCOLL

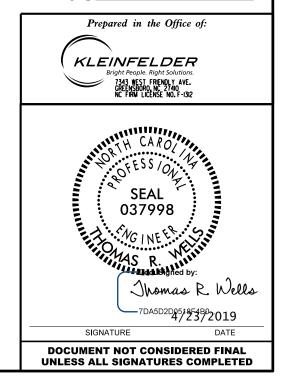
TRIGON EXPLORATION

INVESTIGATED BY <u>S. PAPKE</u>

DRAWN BY <u>C.</u> DRISCOLL

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

DATE _______ 2019



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

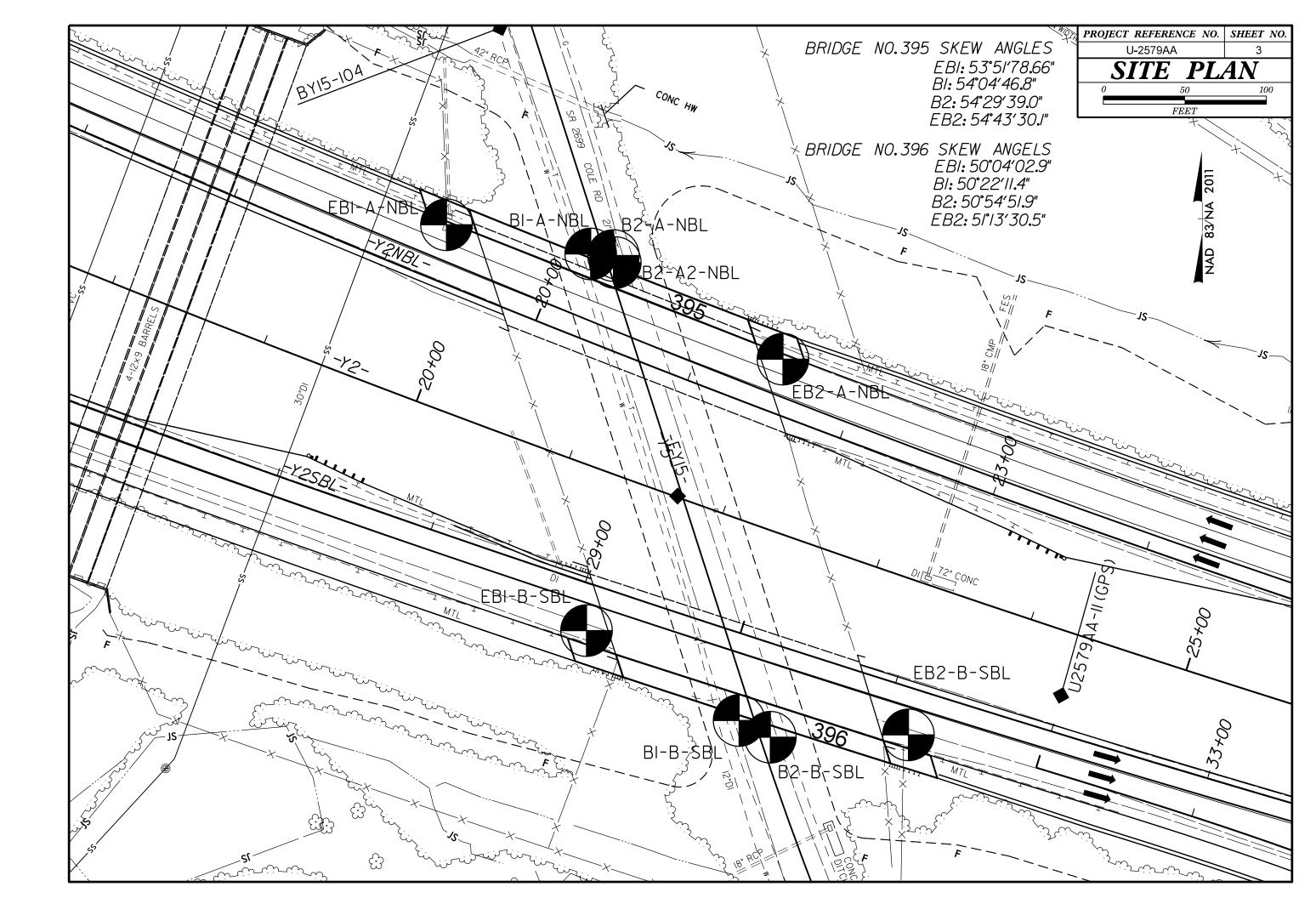
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

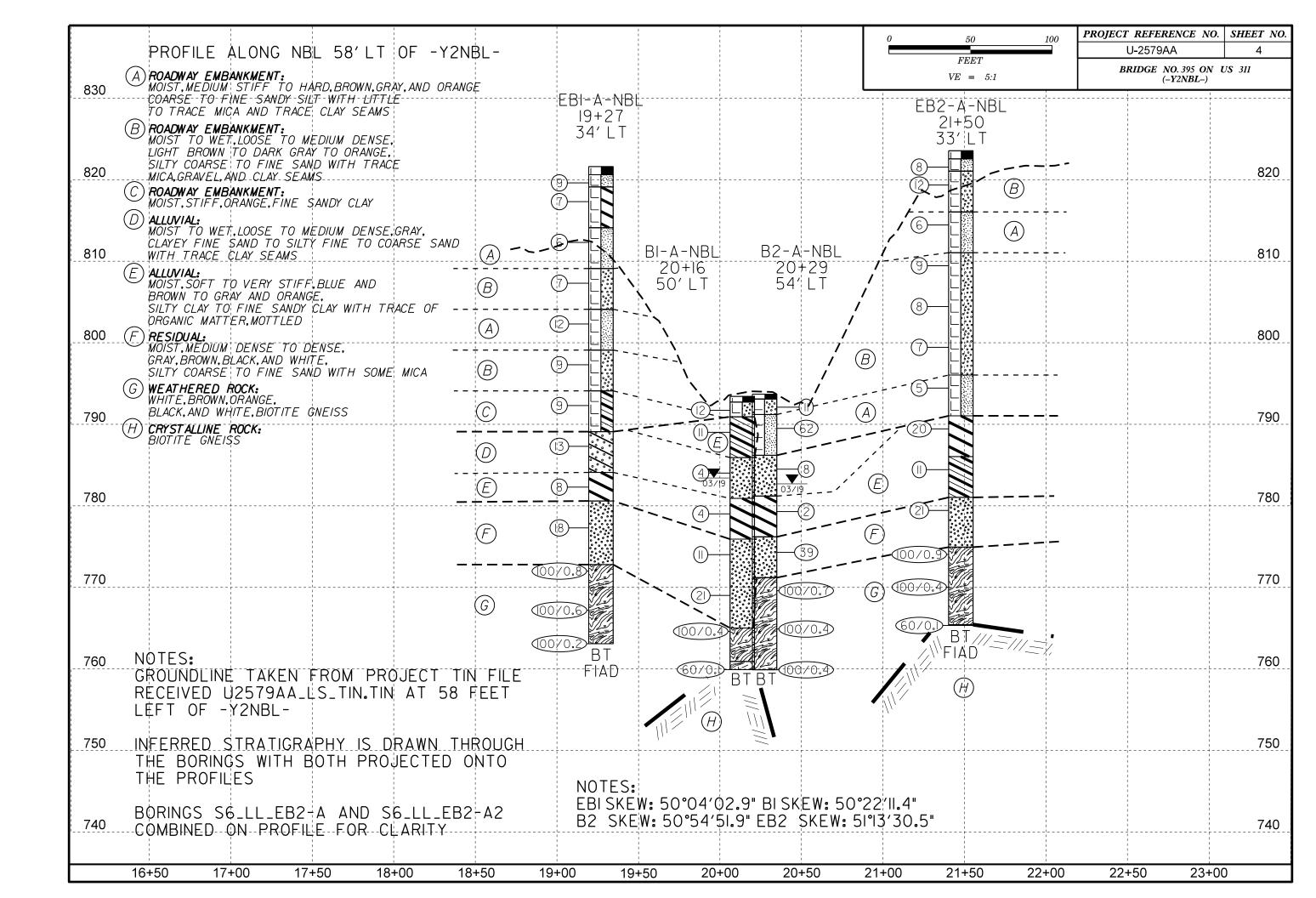
SOIL DESCRIPTION SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN		ROCK DESCRIPTION	TERMS AND DEFINITIONS
BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE.	ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
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:	GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	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	AQUIFER - A WATER BEARING FORMATION OR STRATA.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE,	ANGULARITY OF GRAINS	REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	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
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAVERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED. MINERALOGICAL COMPOSITION	ROCK (WR) 100 BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS CLASS, (≤ 35%, PASSING *200) (> 35%, PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC.	CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE,	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CENSS. C 230/ FNSING -200/ GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5	ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	HOLK (CH) GNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SWBOL	SLIGHTLY COMPRESSIBLE LL < 31	RULK (NCR) ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	OF SLOPE.
00000000000000000000000000000000000000	MODERATELY COMPRESSIBLE LL = 31 - 50 HIGHLY COMPRESSIBLE LL > 50	SEDIMENTARY ROCK SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, 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.
10 50 MX GRANULAR SIL1- MUCK,	PERCENTAGE OF MATERIAL		DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*40 30 MX 50 MX 51 MN *200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS SOILS OTHER MATERIAL		ROCKS OR CUTS MASSIVE ROCK.
	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE 1 - 10%	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
PASSING #40 SOULS WITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20% MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE
LL – – – 46 MX 41 MN 46 MX 41 MN 46 MX 41 MN 46 MX 41 MN LITTLE OR HIGHLY	HIGHLY ORGANIC > 10% > 20% HIGHLY 35% AND ABOVE	(V SLI.) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.	LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CROUP INDEX 0 0 0 4 MY 0 MY 12 MY 16 MY NO MY AMUINTS OF	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USUAL TYPES STONE EPAGE ORGANIC SUILS	✓ WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR CRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS	STATIC WATER LEVEL AFTER <u>24</u> HOURS	CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND ON DO ON THE OWNER AND SHIELD	VERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN (MOD.) GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
AS SUBGRADE EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABL	E	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	- SPRING OR SEEP	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL	FORMATION (FM,) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	FIELD.
PRIMARY SOIL TYPE COMPACTNESS OR PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) 25/025 DIP & DIP DIRECTION	(MOD. SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. <u>IF TESTED, WOULD YIELD SPT REFUSAL</u>	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
CONSISTENCY (N-VALUE) (TONS/FT ²)	WITH SOIL DESCRIPTION OF ROCK STRUCTURES	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT	<u>LEDGE</u> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
GENERALLY VERY LOOSE < 4	SOIL SYMBOL	(SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GRANULAR LUUSE 4 10 10 GRANULAR MEDIUM DENSE 10 20 N/A	1 m	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS
MATERIAL DENSE 30 TO 50	ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT AUGER BORING CONE PENETROMETER TEST	VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
VERY DENSE > 50	INFERRED SOIL BOUNDARY	SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK (V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
VERY SOFT < 2 < 0.25 GENERALLY SOFT 2 TO 4 0.25 TO 0.5	\downarrow	VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1.0 MATERIAL STIFF 8 TO 15 1 TO 2	TIST BORING WITH CORE	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
MATERIAL STIFF 8 TO 15 1 TO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4		SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
HARD > 30 > 4		ROCK HARDNESS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES	ROCK.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	UNDERCUT UNCLASSIFIED EXCAVATION - UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION TO BE	SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	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
COARSE FINE	SHALLOW UNCLASSIFIED EXCAVATION - USED IN THE TOP 3 FEET OF	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
BUULDER COBBLE GRAVEL SAND SAND SLLI CLAY		MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT
(USE. SU.) (F SU.)		HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.	OR SLIP PLANE.
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12 3	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT.	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
SOIL MOISTURE - CORRELATION OF TERMS	CL CLAY MOD MODERATELY γ - UNIT WEIGHT	HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD 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.
	CPT - CONE PENETRATION TEST NP - NON PLASTIC γ_{d} - DRY UNIT WEIGHT CSE COARSE ORG ORGANIC	POINT OF A GEOLOGIST'S PICK. SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY
(ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST <u>SAMPLE ABBREVIATIONS</u>	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON	PIECES CAN BE BROKEN BY FINGER PRESSURE.	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
(SAT.) FROM BELOW THE GROUND WATER TABLE	F - FINE SL SILT, SILTY ST - SHELBY TUBE	VERY CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC SEMISOLID, REQUIRES ORYING TO	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAXIAL	FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
(DI) - WEI - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING HI HIGHLY V - VERY RATIO	FRACTURE SPACING BEDDING	BENCH MARK: SEE NOTES
^{V^T/} PL + PLASTIC LIMIT	EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 FEET	ELEVATION: N/A FEET
OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	WIDE 3 TO 10 FEET THICKLY BEDDED 1.5 - 4 FEET	ELEVATION: N/A FEET
SL SHRINKAGE LIMIT		MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FOOT VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE		VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	FIAD - FILLED IMMEDIATELY AFTER DRILLING
	X CME-55 CME-55 CME-55 CME-55 CME-55	INDURATION	BY15-104 AT STA.19+10.95 -Y2NBL- 158'LT (841,930 FT.N.,1,653,751FT.E.) ELEVATION: 789.85 FEET
PLASTICITY		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
PLASTICITY INDEX (PI) DRY_STRENGTH NON PLASTIC 0-5 VERY LOW		RUBBING WITH FINGER FREES NUMEROUS GRAINS;	U2579AA-IIAT STA. 23+80.13 -Y2NBL- IO2'RT (841,521FT.N., 1,654,095 FT.E.) ELEVATION: 826.75 FEET
SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST	GENILE BLUW BY HAMMER DISINIEGRAIES SAMPLE.	GRATE AT STA. 30+88.29 -Y2SBL- 97'RT (841,439 FT.N., 1,653,953 FT.E.) ELEVATION: 801.95 FEET
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH		MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	ELEVATION: OULSO FEET
COLOR		CRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE.	
		INDURATED DIFFICULT TO 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.	VANE SHEAR TEST	EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE:	
		SAMPLE BREAKS ACROSS GRAINS.	DATE: 8-15-14

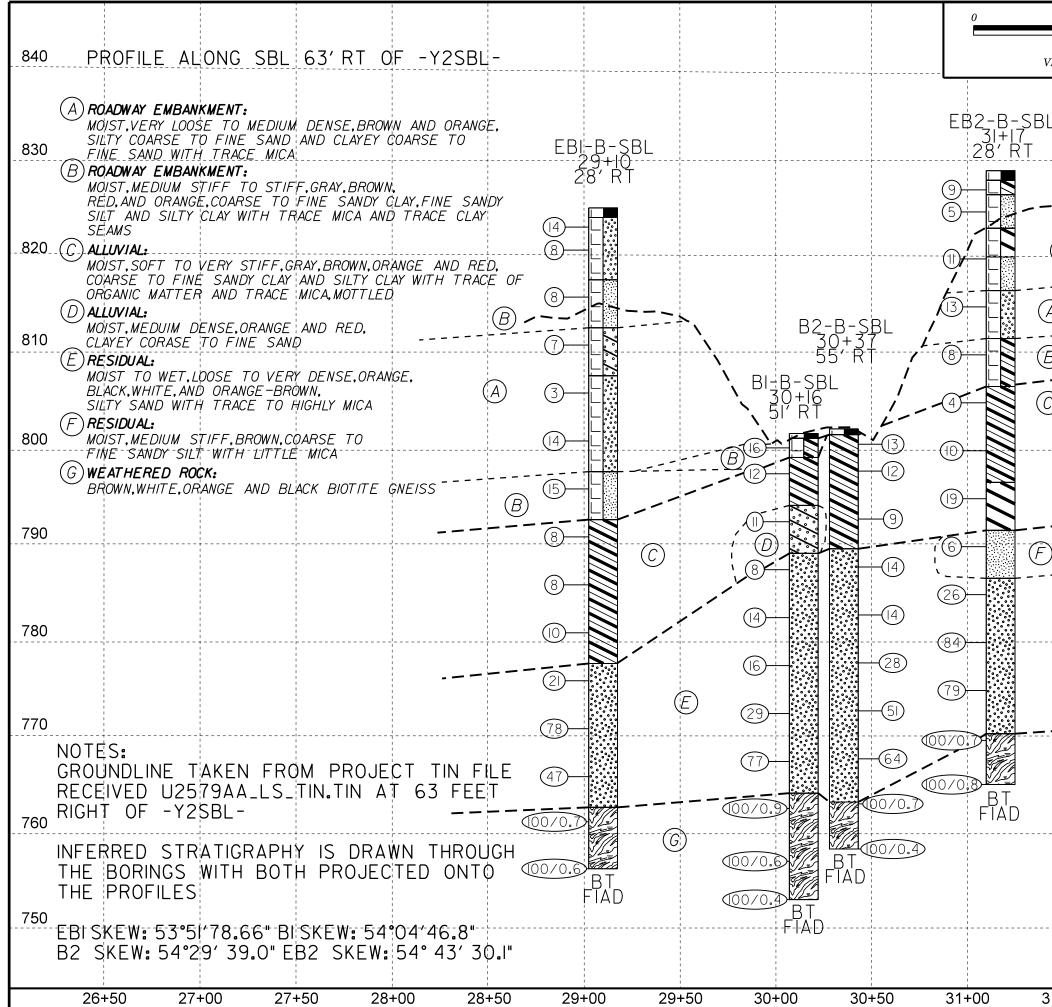
SHEET NO.

project reference no.

2

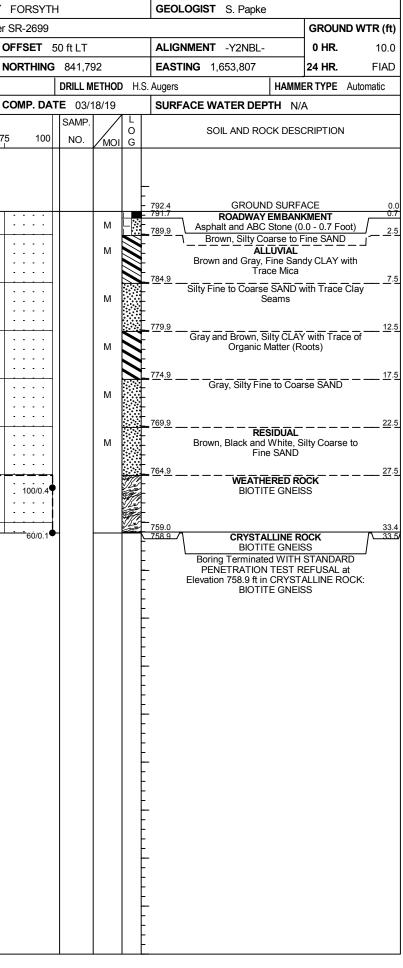






	~~	100	PROIECT	REFEI	RENCE NO	SHEET NO.
	50	100		U-2579,		5
	EET = 5:1		B.	RIDGE	NO.396 ON (-Y2SBL-)	US 311
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3L				• 		
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(E	<u>.</u>	 -				820
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31-	+50 32	+00	32-	+50	33+(00
	J					

	34839					P U-2579		COUNT	Y FORS	/TH			GEOL	OGIST S. Papke	1		3 34839					P U-2579A		COUNT	
				je No.		396 on US		re I-74) ov							GROUND WTR (ft)				-	e No.		396 on US-		e I-74) ov	1
	NG NO.					TATION 1				34 ft LT			_	NMENT -Y2NBL-	0 HR. N/A		Ring No.					TATION 20			OF
	AR ELE					DTAL DEP		t	NORTHI	NG 841,8				ING 1,653,719	24 HR. FIAD	-	LAR ELI					DTAL DEPT		·	NC
				E TRI		ME-55 87%		-					Id Rotary		ER TYPE Automatic					E TRIC		ME-55 87% 0			
										DATE 03		111	SURF	ACE WATER DEPTH N/	Ά	┥┝───		1							
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)		W CO	0.5ft	0		PER FOO ⁻ 50	i 75 1(17	0 I G		SOIL AND ROCK DES		ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	·——	W COU 0.5ft		0 2		PER FOO ⁻ 50	75
	(11)		0.010	0.010	0.010		1	1	<u> </u>		/мо		ELEV. (f	t)	DEPTH (f)	(11)		0.010	0.011	0.011		<u> </u>	<u> </u>	
825		-														795		-							
320	819.5	1.0					+						- 820.5 - 819.5	GROUND SURF	KMENT1.0		791.7	ł	8	5	7	· · · · · · · · · · · · · · · · · · ·	· · · · ·		
	- 817.2	33	7	4	5	1 9 1				-	M		818.0	Asphalt and ABC Stone (0) Brown, Fine Sandy SILT w				- 3.4	4	5	6	· • 11			: ·
815		-	3	3	4	•7 · · ·				-	М		-	Orange and Brown, Silty C Mica	LAY with Little	785		ŧ				· /· · · ·			: :
	-	F											813.0		7.5		784.0	8.4	2	2	2	1			
	812.2	8.3	4	3	3						м			Brown, Coarse to Fine Sa Little Mica	ndy SILT with]		F				I • • •			. .
310	-												-			780	779.0	L 13.4						+	
	807.2	13.3	_										808.0	Light Brown, Silty Coarse	to Fine SAND				1	2	2	• 4 · · ·			
305	_	E	5	4	3	•7					M		-			775		E							
	-	E											803.0		17.9	i	774.0	[18.4 [6	7	4				
	802.2	18.3	2	5	7	• • • 12					м		-	Coarse to Fine Sandy SILT and Trace Clay S	with Little Mica eams			Ł							. .
800	-	F											-			770	769.0	23.4	_			····	<u> </u>	<u> </u>	.
	797.2	23.3			_	:1::							798.0	Dark Gray, Silty Coarse to F	ine SAND with			ł	7	10	11	· · · •	1 21 · · · · ·		:
795	-	L	4	4	5	. (9				-	M		-	Trace Mica		765		Ł				· · · · · ·			Ŀ
		-											793.0		27.9	5	764.0	28.4	100/0.4			· · · · ·	· · · · ·	· · · · · · · · · · · · · · · · · · ·	
	792.2	28.3	5	4	5 9					м		-	Orange, Sandy C	CLAY			ŧ							
<u>'90</u>	-	ŧ.					<u> </u>						-			760	759.0	33.4				· · · · ·	<u> </u>	+ • • • •	<u> </u>
	787.2	33.3	4	6	7	: · <u>j</u> : :				-			788.0	ALLUVIAL	32.		· ·	ŧ	60/0.1						
'85	-	Ļ	-	0		· .•13.				-	M	///	-	Gray, Clayey Fine	SAND		· ·	ŧ							
	-									.		//	783.0		37.	<u>i</u>		ŧ							
	782.2		3	4	4					-	м		-	Blue and Brown, Silty CL	LAY, MOTTIED			ł							
80	-	+				· · · ·							779 <u>.5</u>	RESIDUAL	<u> </u>	4	-	÷							
	777.2	43.3	6	8	10	· · \ ·				-			-	Gray, Silty Fine to Coa	rse SAND			ł							
775	-	÷		Ű		· · · • • • • • • • • • • • • • • • • •	8			-	W		-				-	ŧ							
	- 772.2	48.3								.			-					ŧ							
770			14	40	60/0.3	: : : ! :		╞╌╌╴	100/0	 8 .		The second second	<u> 771.7 </u>	WEATHERED R				ŧ							
	-	F								•			-	Black and White BIOTI	TE GNEISS		-	ŧ							
	767.2	53.3	16	80	20/0.1								-					ŧ							
765	-	F							100/0	.6			-				-	ŧ							
	- 762.2	58.3								11			- 762.0		58.9			ŧ							
	-		100/0.2						100/0	.2			-	Boring Terminated at Eleva WEATHERED ROCK: BIO	ation 762.0 ft in	1		ŧ							
	-	F											-				-	F							
	-	E											-				.	Ē							
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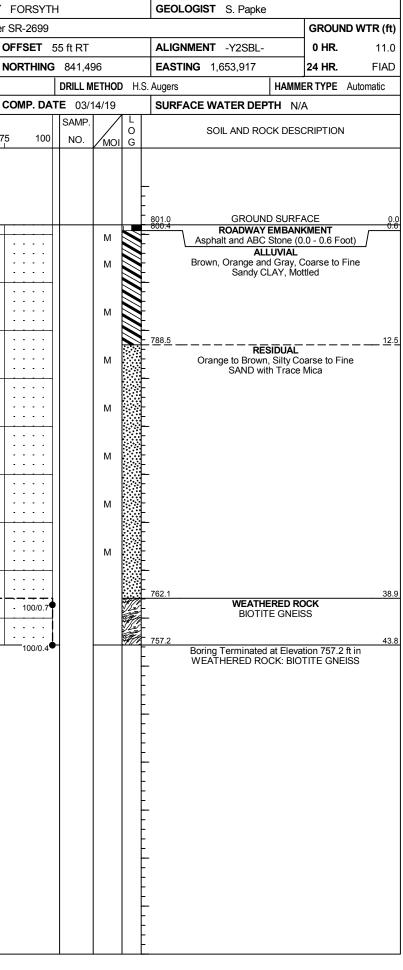
WBS	3483	9.1.7			TI	P U-25	79AA	COL		FORSYTI				GE	EOLOGIST (3. Papke	1		WBS	34839	.1.7			TI	P U-2579	9AA	COUNT	Y
SITE	DESCR	RIPTION	Bridg	je No.	395 & 3	396 on L	JS-311 (F	uture I-74	I) over	SR-2699							GROUND	WTR (ft)	SITE	DESCRI	PTION	Bridg	ge No.			6-311 (Futu	ire I-74) ov	er
		. B2-A-				TATION				OFFSET				_	IGNMENT -		0 HR.	Caved		ING NO.					TATION 2			0
		EV. 79					PTH 13		1	NORTHING					STING 1,65		24 HR.	FIAD		LAR ELE						TH 33.81	ft	N
			-	E TRIC			% 03/19/20	-			DRILL N				•		ER TYPE Au	Itomatic					E TRI			03/19/2018		
	DRIVE	R. Toothi					TE 03/1			COMP. DA	-			SU	IRFACE WAT	ER DEPTH N//	A			LER R.						E 03/18/		0
ELEV (ft)	ELEV	DEPTH (ft)	'	W COU	0.5ft	0	8LO\ 25	NS PER F 50	001 7	5 100	SAMP. NO.	· /	0			AND ROCK DES	CRIPTION		ELEV (ft)	ELEV	DEPTH (ft)		0.5ft		0	BLOWS 25	PER FOO	ו 7
	(ft)		0.51	0.511	0.51					0 100	110.		I G	ELE	V. (ft)			DEPTH (ft)		(ft)	. ,	0.51	0.51	0.51	0			<u> </u>
795		ł												F					795		_							
	792.1													792.7 792.1	7 1	GROUND SURF		0.0							1			_
790		Ŧ	13	5	6	- ● 11						w		790.2	2 Asphalt	and ABC Stone (0).0 - 0.6 Foot)	2.5	790		-							
	789.5	+ <u>3.2</u> +	4	5	57				6 2			м				n, Silty Fine to Coa nd Gray, Coarse to		;]			-							
		ŧ								· · · · · · · ·				-		SILT with Trace N	Mica			1	-				i	· · · · · ·		•
785	784.5	+ 8.2					· · · · ·							785.2	<u>2</u>			7.5	785		-							
		‡	15	5	3	• • • • • • • • • • • • • • • • • • •	· · · · ·		· · · ·	· · · ·		w		•	Silty, Fi	ne to Coarse SAN	D with Trace				-					· · · · · ·		
700		‡				:[::	: : :		· · ·	· · · · ·				780.2	2	Rubber Debris	5	12.5	700		-					.		
780	·	<u>+</u>						••••••	• •		_		Ň	779.3	Gray, Si	Ity CLAY with Trac	ce of Organic	12.5	780	779.3	13.4	1	1	1			<u> </u>	-
		ŧ												Ł	Boring Te	Matter (Roots erminated at Eleva					-	'	'		•2 · · ·	.		
		ł												E	Ĕ A	LLUVIAL: SILTY	SAND		775		-							•
		Ŧ												F	Boring t	NOTE: erminated due to	loss of water			774.3	- 18.4	13	21	18				
		Ŧ												F	during	drilling. Boring wa	as offset and]	-					· · · · • • • • •		-
		Ŧ												F	re	drilled as S6_LL_	BZ-AZ.		770	769.3	23.4							-
		ŧ												F						-	-	60	40/0.2			· · · · · ·		-
		‡												F					765	1	-							
	· ·	‡												-					705	764.3	28.4	100/0.4						
		‡												È.							-					· · · · · ·		
	.	‡												È.					760	759.3	-							
		ŧ												Ł						/59.3	- 33.4	100/0.4	-			.		
		ł												Ł							-							
		ł												F							-							
		Ŧ												F							-							
		Ŧ												F						1	-							
/19		Ŧ												F							-							
4/2		‡												F						1	-							
GDT	.	‡												F							-							
DOT		t												Ł							-							
o z		ł												E							-							
GPJ	.	Ŧ												F						-	-							
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9 		‡												F						1	-							
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		ł												F						-	-							
В Г		Ŧ												F							-							
AA9		ŧ												F						1	-							
U25.	.	‡									1			F						4	-							
BLE		‡									1			þ							-							
INOC		t									1			F]	_							
REL	.	Ŧ									1			F						4	-							
NCDOT BORE DOUBLE U2579AA_GE0_BRDG_SITE6_GINT.GPJ NC_DOT.GDT 4/2/19		‡												F						1	-							
CDO		‡									1			þ						1	-							
ž		1									1			L					L				L					—

/ FORSYTH		GEOLOGIST S. Papke	
er SR-2699			GROUND WTR (ft)
OFFSET 51 ft LT		ALIGNMENT -Y2NBL-	0 HR. 11.0
NORTHING 841,78	37	EASTING 1,653,822	24 HR. FIAD
,		, , ,	
			ER TYPE Automatic
	18/19	SURFACE WATER DEPTH N/	Α
75 100 NO.	L O MOI G	SOIL AND ROCK DESC	
· · · · · · · · · · · · · · · · · · ·		792.7 GROUND SURF/ 792.1 ROADWAY EMBANI 790.2 Asphalt and ABC Stone (0)	KMENT 0.6 1.0 - 0.6 Foot) 2.5 arse SAND 2.5 o Fine Sandy 7.5 D with Trace 12.5 b with Trace 12.5 ce of Organic 12.5 o Coarse SAND 22.5
100/0.4		758.9 Boring Terminated at Eleva WEATHERED ROCK: BIO NOTE: Auger Probe From 0.0 - 13 Boring S6_LL_B2-A for SF	TITE GNEISS 3.4' bas (See

																						_		-	
	34839					IP U-2579			Y FORSYT	Ή			GEO	LOGIST S. Papke			34839					P U-2579		COUNT	
				ge No.				ıre I-74) o\	ver SR-2699						GROUND WTR (ft)					e No.		396 on US-	,	re I-74) o\	-
	NG NO.					TATION 2			OFFSET				ALIG	SNMENT -Y2NBL-	0 HR. N/A		ing no.					ATION 2			OF
COLL	AR ELI	EV . 82	22.5 ft		Т	OTAL DEP	TH 58.2	ft	NORTHING					TING 1,653,925	24 HR. FIAD	COL	LAR ELI	EV . 82	24.0 ft		Т	DTAL DEP	FH 68.9 f	t	NC
DRILL	RIG/HAN	AMER EF	F./DATI	E TRI	0055 (CME-55 87%	03/19/2018						lud Rotary	HAMM	ERTYPE Automatic	DRILL	. RIG/HAN	IMER EF	F./DATE	TRI	0055 CI	ME-55 87% ()3/19/2018		
DRILI	L ER R	. Tooth				TART DAT			COMP. DA				SUR	FACE WATER DEPTH N//	A	DRIL	LER R	. Toothi							CC
ELEV	DRIVE ELEV	DEPTH	·	W CO				PER FOO		SAMP.				SOIL AND ROCK DES	CRIPTION	ELEV	DRIVE ELEV	DEPTH	·	w co				PER FOO	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	Имо	I G	ELEV.	(ft)	DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 I
825		Ļ											L			825		Ļ							
	•	ŧ											- 822.5	GROUND SURF	ACE 0.0		823.0	1.0	8	0		<u> </u>			
	821.5	1.0	5	4	4				· · · · ·		м		- 821.5	Concrete (0.0 - 1.0		000	820.6 ·	- 3.4	°	6	8	••••14			: :
820	819.3	3.2	4	6	6	_ ₹							820.0	Orange, Fine Sandy SILT w		820		1	4	4	4		· · · ·	+ • • •	+
		ŧ	7								M			Gray, Silty Coarse to Fine SA	AND with Trace			ŧ							· .
815		ŧ.,											<u>815.0</u>	Mica and Grav	7.5	815	815.7	8.3	4	4	4				· ·
	814.4	<u> </u>	3	3	3						м			Orange, Coarse to Fine Sa Little Mica	Indy SILT with			Ŧ				· ¶ ⁸ · · ·			•
		ł				$ $ \cdot \cdot \cdot \cdot							F				810.7 ·	- 13.3				.			· ·
810	809.4	13.1			_								<u>810.0</u>	Orange to Gray, Silty Coarse	to Fine SAND 12.5	810	- 010.7	F 13.3	3	3	4	•7			
		Ŧ	4	4	5	9					M		F	with Trace Mica, Gravel an	d Clay Seams			Ŧ							
805	-	Ŧ											F			805	805.7	18.3	3	1					: :
	804.4	<u>† 18.1</u> †	3	4	4						м		}					Ŧ	3	1	2	Q ³			
	•	ŧ							· · · · · ·				ļ					‡							: :
800	799.4	+ 23 1							· · · · · ·				Ļ			800	800.7 -	- 23.3	4	5	9				· ·
Γ	•	‡	2	3	4	; ∎7 : :			· · · · · ·		м		<u> </u>					ŧ					· · · · ·		: ;
705		‡											- -		07.5	705	795.7 ·	- 28.3				::¦:			: :
795	794.4	28.1	2	2	3								7 <u>95.0</u>	Orange, Fine Sandy SILT v	vith Little Mica 27.5	795	-	ŧ	6	6	9	15		<u> </u>	
		ŧ	-	-	Ŭ	$\left \right \stackrel{\P^{5}}{{}{}{}{}{}{}{$					M		-					t							: :
790	700.47	±											790.0		32.5	790	790.7	33.3	3	3	5	· / · ·			· ·
-	789.4	1 33.1 I	4	8	12		20				м			ALLUVIAL Light Blue, Silty C	LAY			Ł				.¶ ⁸			•
		Ŧ											Ŧ	0 , ,			785.7	- 38.3							
785	784.4	38.1			_		+ • • • •						785.0	Gray and Orange, Fine S	andy CLAY 37.5	785		- 30.3	3	3	5	• •	+ • • • •	+ • • •	
		Ŧ	4	4		11					M							Ŧ							
780	-	Ŧ											780.0		42.5	780	780.7	43.3	3	4	6				: :
	779.4	<u>T 43.1</u> T	14	11	10		21				м		F	Brown and Black, Silty Co] .	Ŧ		-					
		Ŧ											F	SAND with Some	Mica			Ŧ							: :
775	774.4	48.1											773.9		48.6	775	775.7	+ 48.3 -	13	13	8	`	21		
	•	ŧ	33	62	38/0.4	• • • •			100/0.9	•		۳Ľ		WEATHERED RO	DCK			ŧ							
770	•	ŧ												Brown, Black, and White Blo	JITE GINEISS	770	770.7	53.3	45		40				
	769.4	+ <u>53.1</u>	100/0.4						· · _{100/0.4}	•						110	-	ŧ	15	30	48				↗
		‡																ŧ							: ;
765	764.4	+											- 764.4 - 764.3		58.1 OCK (_58.2)	765	765.7	- <u>58.3</u>	21	23	24	· · · ·		47	· ·
Ī		ļ	60/0.1			1			60/0.1	┛			- 764.3	CRYSTALLINE R BIOTITE GNEIS				ŧ				· · · · ·	· · · · · · ·		
	-	ŧ											Ę	Boring Terminated WITH	STANDARD	700	760.7 -	- 63.3					::::i	Ч÷÷÷	
	-	ŧ											F	PENETRATION TEST R Elevation 764.3 ft in CRYST	ALLINE ROCK:	760	-	ŧ	27	73/0.2			· · · ·	<u> </u>	-
		ŧ											Ł	BIOTITE GNES	SS			t							
	-	ŧ											F				755.7	68.3	70	30/0.1					•
		ŧ											F					ŧ			1				
		ŧ											E				.	ŧ							
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FORSYTH				GEOLOGIST S. Papke			
er SR-2699						GROUN	ID WTR (ft)
OFFSET 28	3 ft RT			ALIGNMENT -Y2SBL-		0 HR.	N/A
NORTHING	841,56 ⁻	1		EASTING 1,653,804		24 HR.	FIAD
	DRILL ME	THOD	Mud	Rotary H	AMME	R TYPE	Automatic
COMP. DAT	E 03/13	3/19		SURFACE WATER DEPTH	N/A		
	SAMP.		L		DE00		
75 100	NO.		O G	SOIL AND ROCK	DESC	RIPTION	
				824.0 GROUND S 823.0 ROADWAY EM			0.0
		М	-	Concrete and ABC Sto Orange and Brown, S	one (0	.0 - 1.0 F	oot)
		м	- -	SAND with T	race N	/lica	lile
		L	-				
				0range to Brown, Co	arse to	Fine Sa	ndy
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				ge No				-	e I-74) ov	er SR-2699						GROUND WTR (ft)				-	ge No.		396 on US-	-	re I-74) ov	/er S
	ING NO.					STATION	30+1	6		OFFSET	51 ft RT			ALI	GNMENT -Y2SBL-	0 HR. N/A		ING NO.				ST	ATION 30)+37		OF
COL	LAR EL	EV. 80	00.5 ft			TOTAL DE	EPTH	48.6 ft		NORTHIN	G 841,5	06		EA	STING 1,653,898	24 HR. FIAD	COL	LAR EL	EV. 80	01.0 ft		тс	DTAL DEPT	H 43.8 ft	t	NO
DRILL	. RIG/HAN	IMER EF	F./DAT	ETR	10055	CME-55 87	% 03/19	9/2018			DRILL N	IETHO	DN	lud Rotar	y HAMM	ER TYPE Automatic	DRILI	RIG/HAN	MMER E	FF./DATE	E TRI	0055 CN	ME-55 87% ()3/19/2018		
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SITE	DESCR	IPTION	Brid	ge No.	395 &	396 on US-3	811 (Futu	ire I-74) ov	er SR-2699						GROUN	ID WTR (ft)
BOR	NG NO.	EB2-I	B-SBL	-	S	TATION 31	+17		OFFSET	28 ft RT		ALIGN	IMENT -Y2SBL	-	0 HR.	N/A
COLI	AR ELI	EV. 82	27.9 ft		Т	OTAL DEPT	H 64.01	ft	NORTHING	3 841,4	97	EAST	NG 1,654,001		24 HR.	FIAD
DRILL	RIG/HAN	IMER EF	F./DAT	E TRI	0055 C	ME-55 87% 0	3/19/2018		•	DRILL	IETHOD	Mud Rotary		HAMME	R TYPE	Automatic
DRIL	LER R	. Toothi	man		S	TART DATE	03/13/	19	COMP. DA	TE 03/	14/19	SURF	ACE WATER DE	PTH N/A		
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WBS NO.: 34839.1.7 - TIP NO.: U-2579AA BRIDGE NO. 395 & 396 ON US 311 (FUTURE I-74) OVER SR 2699 SITE PHOTOGRAPHS



View Looking Southeast along -Y2NBL- from End Bent No. 1



View Looking Southeast along -Y2SBL- from End Bent No. 1



View Looking South along -Y5-



View Looking North along -Y5-

CONTENTS

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579A

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REFERENCE

<u>SHEET NO.</u>	DESCRIPTION
I	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4	PROFILE(S)
5-8	CROSS SECTIONS
9-12	BORE LOGS
13	SITE PHOTOGRAPHS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY FORSYTH

PROJECT DESCRIPTION WINSTON-SALEM NORTHERN **BELTWAY EASTERN SECTION (FUTURE I-74)**

FROM US 311 TO I-40

SITE DESCRIPTION BRIDGE NO. 730 ON -Y2FLYCA- OVER US 311

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–2579AA	1	13

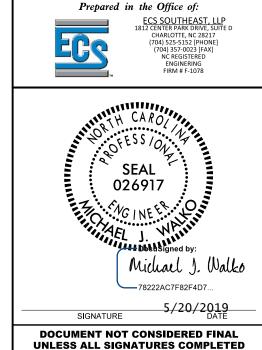
CAUTION NOTICE

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 (99) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAIL

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOREAL 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-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOLL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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J. GARRICK
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DRAWN BY K. DE MONTBRUN, P.E.
CHECKED BY M. WALKO, P.E.
SUBMITTED BY ECS_SOUTHEAST, LLP
DATE
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ECS SOUTHEAST, LLP 1812 CENTER PARK DRIVE, SUITE D



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

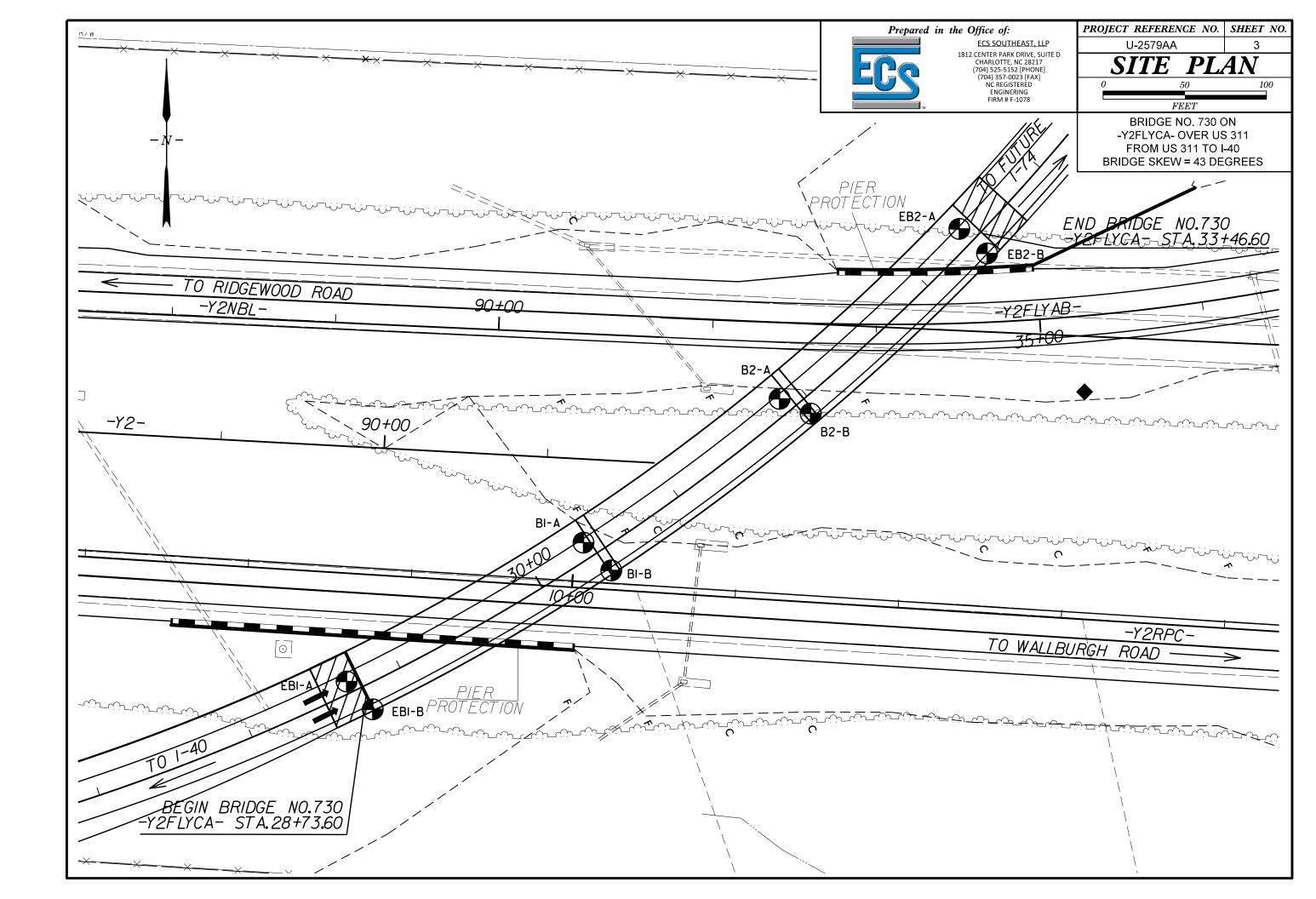
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

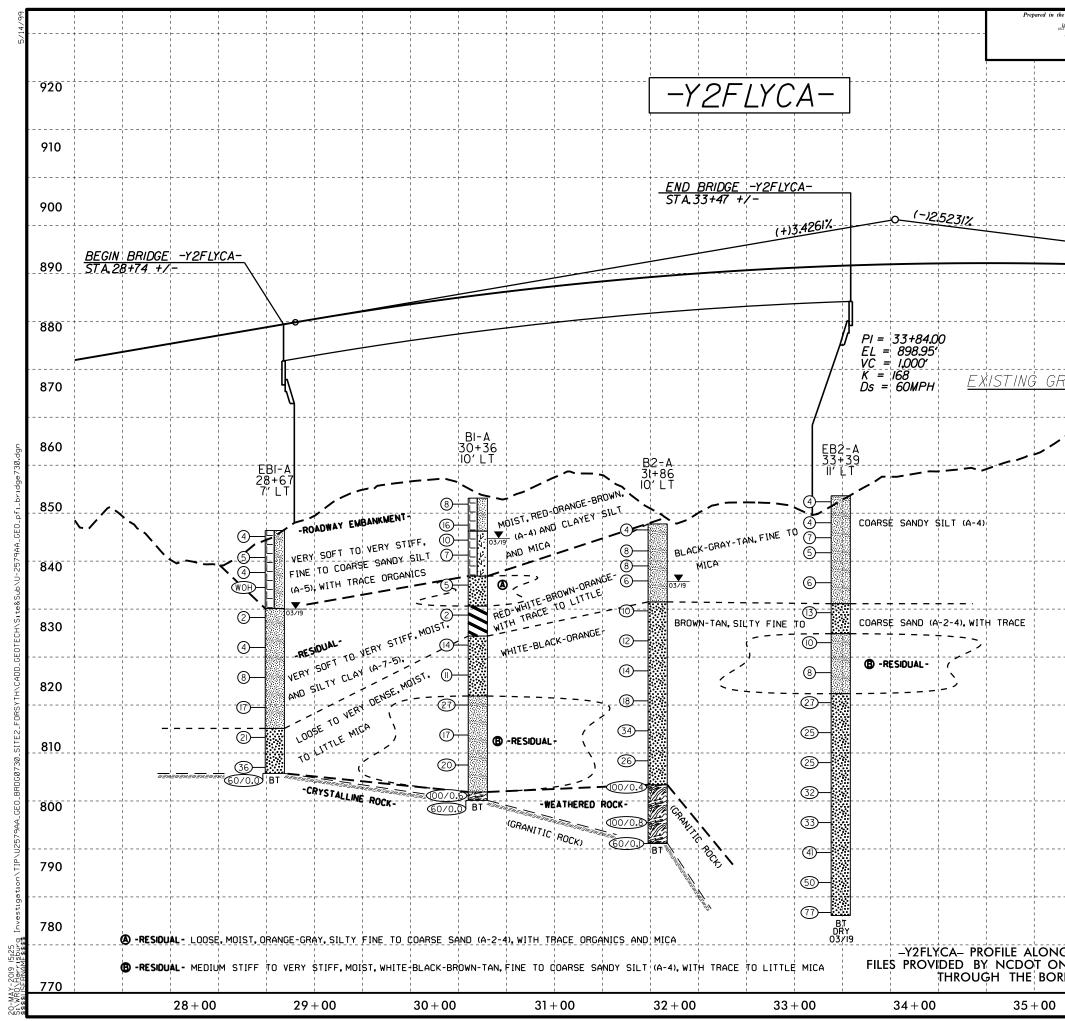
		CDADATION			BOCK BECC	DIDTION						
				HARD ROCK TO NON-	ROCK DESC	RIPIIUN	TERMS AND DEFINITIONS					
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS TH BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS P		ES A GOOD REPRESENTATION OF PARTICL DICATES THAT SOIL PARTICLES ARE ALL		ROCK LINE INDICATE	S THE LEVEL AT WHICH NON-COAST	AL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.					
ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFI		S A MIXTURE OF UNIFORM PARTICLE SIZ		SPT REFUSAL IS PE	ETRATION BY A SPLIT SPOON SAMP	LER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 ITION BETWEEN SOIL AND ROCK IS OFTEN	AQUIFER - A WATER BEARING FORMATION OR STRATA.					
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOW CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTOR		ANGULARITY OF GRAIN		REPRESENTED BY A	ONE OF WEATHERED ROCK.	THIN DEFREEN SOLE MND RUCK IS UFIEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.					
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE		OR ROUNDNESS OF SOIL GRAINS IS DE		ROCK MATERIALS AR	TYPICALLY DIVIDED AS FOLLOWS:		ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING					
VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6		SULAR, SUBROUNDED, OR ROUNDED.		WEATHERED		MATERIAL THAT WOULD YIELD SPT N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.					
SOIL LEGEND AND AASHTO CLASSIFICATION		MINERALOGICAL COMPOSI	TION	ROCK (WR)	100 BLOWS PER FOOT		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					
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS CLASS. (\leq 35% PASSING *200) (> 35% PASSING *200) (> 35% PASSING *200) (> 35% PASSING *200)	MINERAL NAM	ES SUCH AS QUARTZ, FELDSPAR, MICA, TA		CRYSTALLINE	WOULD YIELD SPT RE	IN IGNEOUS AND METAMORPHIC ROCK THAT FUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE.	SURFACE.					
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5		DESCRIPTIONS WHEN THEY ARE CONSIDE		ROCK (CR)	GNEISS, GABBRO, SCHI	ST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.					
CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6 A-7		COMPRESSIBILITY		NON-CRYSTALLINE		IN METAMORPHIC AND NON-COASTAL PLAIN HAT WOULD YEILD SPT REFUSAL IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM					
SYMBOL SYMBOL		TLY COMPRESSIBLE	LL < 31	ROCK (NCR)		PHYLLITE, SLATE, SANDSTONE, ETC.	OF SLOPE.					
		ATELY COMPRESSIBLE Y COMPRESSIBLE	LL = 31 - 50 LL > 50	COASTAL PLAIN SEDIMENTARY ROCK		MENTS CEMENTED INTO ROCK,BUT MAY NOT YIELD TYPE INCLUDES LIMESTONE,SANDSTONE,CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED					
2 PASSING SILT- *10 50 MX GRANULAR SILT-	ск,	PERCENTAGE OF MATER		(CP)	SHELL BEDS, ETC.		BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.					
#40 30 MX 50 MX 51 MN SOILS SOILS SOILS	AT	GRANULAR SILT - CLAY			WEATHE	RING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.					
-200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN	ORGANIC MATERIAL TRACE OF ORGANIC MA	SOILS SOILS	OTHER MATERIAL TRACE 1 - 10%		RESH, CRYSTALS BRIGHT, FEW JOINTS IF CRYSTALLINE.	MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE					
MATERIAL PASSING #40	LITTLE ORGANIC MATT		LITTLE 10 - 20%			NE TOTALE MAY CHON THIN CLAY COATINGS IS OPEN	HORIZONTAL.					
11 - 40 MY 41 MN 40 MY 41 MN 40 MY 41 MN 40 MY 41 MN 501LS WITH	MODERATELY ORGANIC	5 - 10% 12 - 20%	SOME 20 - 35%			ME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. NE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE					
PI 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 11 MN 11 MN 11 MN 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN	HLY HIGHLY ORGANIC	> 10% > 20%	HIGHLY 35% AND ABOVE		RYSTALLINE NATURE.		LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.					
GROUP INDEX Ø Ø Ø 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF	ANIC ILS	GROUND WATER				D DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.					
USUAL TYPES STORE FRAGS. FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	∇	WATER LEVEL IN BORE HOLE IMMEDIAT	TELY AFTER DRILLING			GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.					
OF MAJOR GRAVEL, AND SAND GRAVEL AND SAND SOILS SOILS	▼	STATIC WATER LEVEL AFTER 24 H	IOURS			TALLINE ROCKS RING UNDER HAMMER BLOWS. LORATION AND WEATHERING EFFECTS. IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELT SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM					
		PERCHED WATER, SATURATED ZONE, OR				L AND DISCOLORED, SOME SHOW CLAY. ROCK HAS	PARENT MATERIAL.					
GEN.RATING EXCELLENT TO GOOD FAIR TO POOR POOR POOR	TABLE					WS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.					
PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ;PI OF A-7-6 SUBGROUP IS > LL - 30		SPRING OR SEEP			RESH ROCK.		FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE					
		MISCELLANEOUS SYMBO	IS			TAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL DINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	FIELD.					
				(MOD.SEV.) AND C	N BE EXCAVATED WITH A GEOLOGIST'S	S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.					
PRIMARY SOIL TYPE CONSISTENCE COMPRESSIVE S	TH ROADWAY EMBA	NKMENT (RE) 25/025 DIP & DIP DIRE	CTION		<u>TED, WOULD YIELD SPT REFUSAL</u>		LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO					
(IN-VHLUE) (IUNS/F	WITH SOIL DES					TAINED. ROCK FABRIC CLEAR AND EVIDENT BUT GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	ITS LATERAL EXTENT.					
GENERALLY VERY LOOSE < 4 LOOSE 4 TO 10	SOIL SYMBOL		ING SLOPE INDICATOR INSTALLATION		E EXTENT. SOME FRAGMENTS OF STRO		LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.					
GRANULAR MEDIUM DENSE 10 TO 30 N/A			<u> </u>	<u>IF TES</u>	TED, WOULD YIELD SPT N VALUES > 10	10 BPF	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS					
(NON-COHESIVE) DENSE 30 10 50	THAN ROADWAY		CONE PENETROMETER TEST			TAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.					
VERY DENSE > 50						_ STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK OCK WEATHERED TO A DEGREE THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.					
VERY SOFT < 2 < 0.25 GENERALLY SOFT 2 TO 4 0.25 TO	- INFERRED SOIL	BOUNDARY - CORE BORING	 SOUNDING ROD 			. IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.					
SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO	INFERRED ROC	K LINE MW MONITORING WEL	LL - TEST BORING WITH CORE			DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF					
MATERIAL STIFF 8 TO 15 1 TO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4		BOUNDARY A PIEZOMETER			RED CONCENTRATIONS. QUARTZ MAY B N EXAMPLE.	E PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE					
HARD > 30 > 4	TTTTT ALLUVIAL SOIL	BOUNDARY ZA INSTALLATION	- SPT N-VALUE	ALSU			RUN AND EXPRESSED AS A PERCENTAGE.					
TEXTURE OR GRAIN SIZE		RECOMMENDATION SYMBO	DLS		ROCK HAF		SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.					
U.S. STD. SIEVE SIZE 4 10 40 60 200 270		✓ UNCLASSIFIED EXCAVATION - T	「オ UNCLASSIFIED EXCAVATION -		BE SCRATCHED BY KNIFE OR SHARP HARD BLOWS OF THE GEOLOGIST'S	PICK. BREAKING OF HAND SPECIMENS REQUIRES	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND					
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053		🛛 UNSUITABLE WASTE 🔤	ACCEPTABLE, BUT NOT TO BE			WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO					
COARSE FINE OU T	Y SHALLOW	UNCLASSIFIED EXCAVATION - ACCEPTABLE DEGRADABLE ROCK	USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL		ACH HAND SPECIMEN.	WITH BITTEGETT, HERD HERBER BEOWS REGORED	THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.					
BOULDER COBBLE GRAVEL SAND SAND SILT (BLDR.) (COB.) (GR.) (GC.) (SL.)	Y UNDERCUT			MODERATELY CAN B	SCRATCHED BY KNIFE OR PICK. GOUD	ES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT					
(CSE, SU.) (F SU.)		ABBREVIATIONS				S PICK. HAND SPECIMENS CAN BE DETACHED	OR SLIP PLANE.					
GRAIN MM 305 75 2.0 0.25 0.05 0.005 SIZE IN. 12 3	AR - AUGER REFUSAL BT - BORING TERMINATED	MED MEDIUM MICA MICACEOUS	VST - VANE SHEAR TEST WEA WEATHERED		ERATE BLOWS.		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					
	CL CLAY	MOD MODERATELY	γ - UNIT WEIGHT			EEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL					
SOIL MOISTURE - CORRELATION OF TERMS	CPT - CONE PENETRATION	TEST NP - NON PLASTIC	$\gamma_{ m d}$ - dry unit weight		F A GEOLOGIST'S PICK.		TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.					
SOIL MOISTURE SCALE FIELD MOISTURE (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DE	ION CSE COARSE DMT - DILATOMETER TEST	ORG ORGANIC PMT - PRESSUREMETER TES	ST SAMPLE ABBREVIATIONS			FE OR PICK. CAN BE EXCAVATED IN FRAGMENTS	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.					
	DPT - DYNAMIC PENETRAT		S - BULK		HIPS TO SEVERAL INCHES IN SIZE BY CAN BE BROKEN BY FINGER PRESSUR	MODERATE BLOWS OF A PICK POINT. SMALL, THIN E.	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL					
- SATURATED - USUALLY LIQUID; VERY WET, USU	e - VOID RATIO	SD SAND, SANDY	SS - SPLIT SPOON			 NTED READILY WITH POINT OF PICK. PIECES 1 INCH	LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY					
(SAT.) FROM BELOW THE GROUND WATE	LE F - FINE FOSS FOSSILIFEROUS	SL SILT, SILTY SLI SLIGHTLY	ST - SHELBY TUBE RS - ROCK	SOFT OR MO	E IN THICKNESS CAN BE BROKEN BY	FINGER PRESSURE. CAN BE SCRATCHED READILY BY	THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.					
PLASTIC SEMISOLID, REQUIRES DRYING TO	FRAC FRACTURED, FRACT	TURES TCR - TRICONE REFUSAL	RT - RECOMPACTED TRIAXIAL	FINGEF			TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.					
RANGE S - WEI - (W)	FRAGS FRAGMENTS	W - MOISTURE CONTENT	CBR - CALIFORNIA BEARING		URE SPACING	BEDDING	BENCH MARK: N/A					
	HI HIGHLY		RATIO	VERY WIDE	MORE THAN 10 FEET	TERM THICKNESS VERY THICKLY BEDDED 4 FEET						
OM _ OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MO		JIPMENT USED ON SUBJECT		WIDE	3 TO 10 FEET	THICKLY BEDDED 1.5 - 4 FEET	ELEVATION: N/A FEET					
SL _ SHRINKAGE LIMIT	DRILL UNITS:	ADVANCING TOOLS:	HAMMER TYPE:	MODERATELY CLO		THINLY BEDDED 0.16 - 1.5 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET	NOTES:					
- DRY - (D) REQUIRES ADDITIONAL WATER T	CME-45C	CLAY BITS	X AUTOMATIC MANUAL	CLOSE VERY CLOSE	0.16 TO 1 FOOT LESS THAN 0.16 FEET	VERY THINLY BEDDED 0.03 - 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET	EXISTING GROUND SURFACE INFORMATION PROVIDED BY NODOT ON					
- URY - (U) ATTAIN OPTIMUM MOISTURE	CME-55	6" CONTINUOUS FLIGHT AUGER	CORE SIZE:			THINLY LAMINATED < 0.008 FEET	APRIL 22, 2019.					
PLASTICITY		X 8' HOLLOW AUGERS	-вн		INDURA	TION						
PLASTICITY INDEX (PI) DRY STRENG	CME-550	HARD FACED FINGER BITS	□ - N	FOR SEDIMENTARY R	CKS, INDURATION IS THE HARDENING	G OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	SURVEYED BORING LOCATIONS PROVIDED BY VAUGHN & MELTON ON					
NON PLASTIC 0-5 VERY LOW		TUNGCARBIDE INSERTS		FRIABLE		NGER FREES NUMEROUS GRAINS;	APRIL 3, 2019.					
SLIGHTLY PLASTIC 6-15 SLIGHT	VANE SHEAR TEST	CASING W/ ADVANCER	HAND TOOLS:	. MADEL	GENTLE BLOW BY	HAMMER DISINTEGRATES SAMPLE.						
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH			POST HOLE DIGGER	MODERATELY		EPARATED FROM SAMPLE WITH STEEL PROBE;						
COLOR	PORTABLE HOIST	TRICONE STEEL TEETH	HAND AUGER		BREAKS EASILY W	HEN HIT WITH HAMMER.						
LULUK	X DIEDRICH D-120	TRICONE TUNGCARB.	SOUNDING ROD	INDURATED		ICULT TO SEPARATE WITH STEEL PROBE; EAK WITH HAMMER.						
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLU		CORE BIT	VANE SHEAR TEST									
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANC				EXTREMELY I	DURATED SHARP HAMMER BI SAMPLE BREAKS (LOWS REQUIRED TO BREAK SAMPLE: ACROSS GRAINS.	DATE: 8-15-14					
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PROJECT REFERENCE NO.



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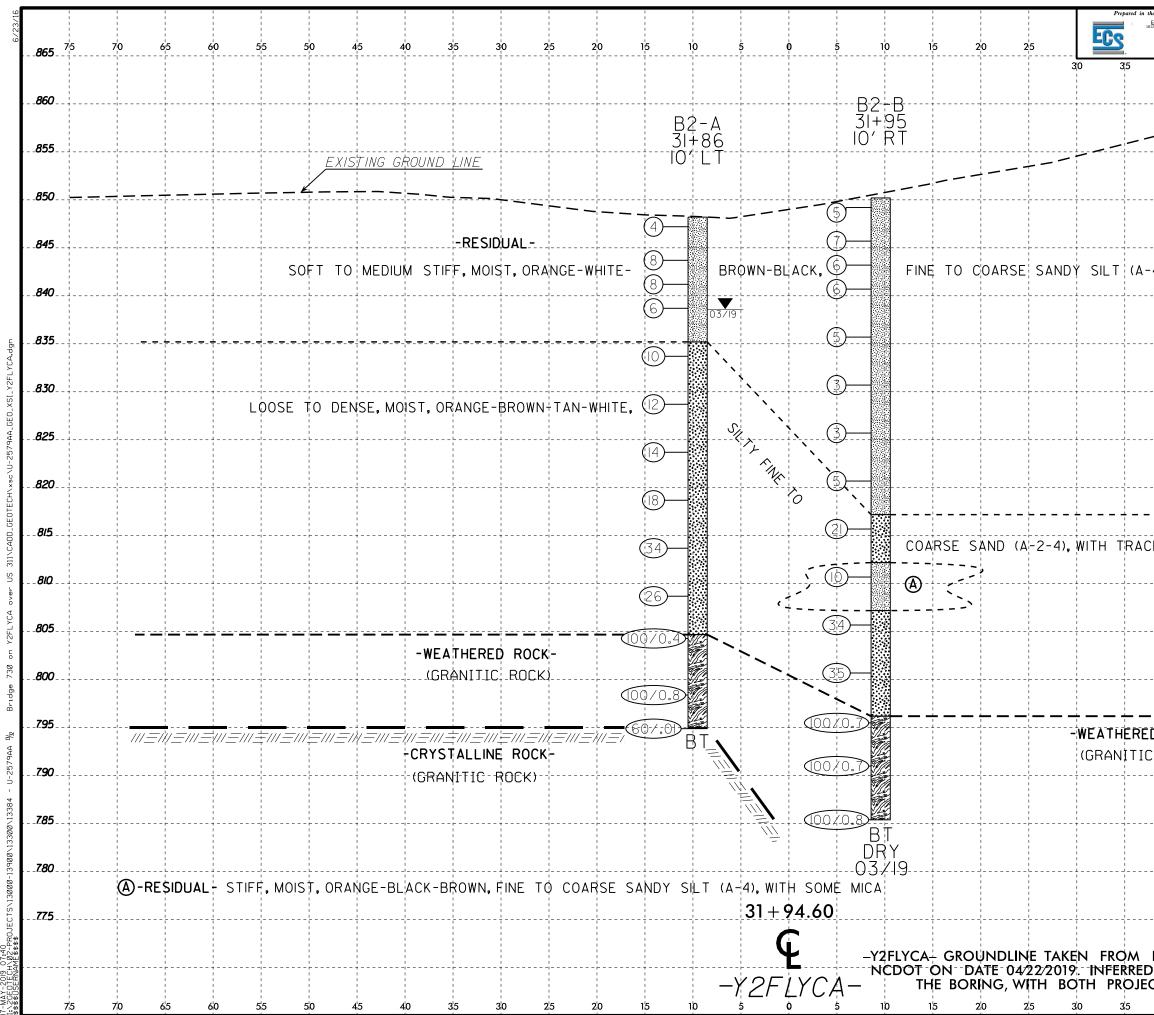


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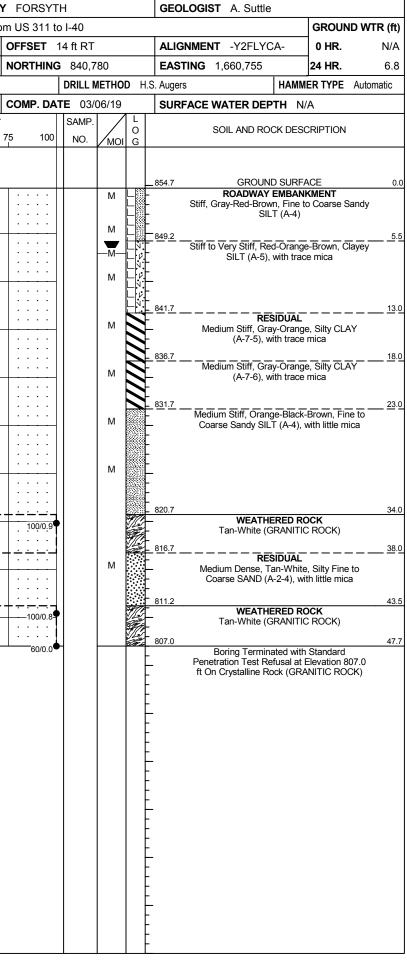
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	SOFT TO MEDIUM STIFF, MOIST, ORANGE-BLACK-BROWN, FINE TO	4	COARSE SA	INDY	SILT	(A-4), WITH TR	ACE TO LIT	TLĘ MICA			
5		\bigcirc		9			<u>+</u>	·			
		5									
9					03/19		лю́	· · · · · · · · · · · · · · · · · · ·			
		6		- A),					_		
5			SAND (A	-3-	-						
	LOOSE TO MEDIUM DENSE, MOIST, TAN-BROWN, SILTY FINE TO COARSE		SAIN								
2	LOUSE TO MEDIUM DENSE, MOIST, TAN-BROWN, SILTT FINE TO COARSE			6							1
5	SOFT TO STIFF, MOIST, ORANGE-TAN-WHITE-BROWN-BLACK, FINE TO)	COARSE SA		SI	<u>T (A-4), WITH</u>	RACE TO LI				1
J		(8)									
o)		8							
U		$\overline{2}$					+				+
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5								·			
				00/0.3				·			
2	- MEDIUM DENSE-TO-VERY DENSE, MOIST, TAN-BROWN-WHITE, SILTY-FINE-			/		WEATHERED	i i	·			
	TO COARSE SAND (A-2-4), WITH TRACE TO LITTLE MICA					(GRANITIC	ROCK)				
5							+	·++		·	· +
		32			ר <u>יי</u> קעניים קד/// <u>+</u> ///	<u></u>		_//////,			
0				·····		CRYSTALL		· L L L L L L		·	·
						(GRANITIC	ROCK)				
5				·····		, , , , , , , , , , , , , , , , , , ,		·		·	·
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9		+		·			, , , , , , , , , , , , , , , , , , ,	· +	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	·+
		50									
5			· · · · · · · · · · · · · · · · · · ·	·			, , , , , , , , , , , , , , , , , , ,	·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
9		BT DR	Y33+4	6.60				·		· · · · ·	
		03/		4							1
5			Y	Y2F		ROUNDLINE TA			DESIGN FILES PROVII APHY IS DRAWN THR	DED BY	
			-Y2FL				IY. INFERKED		THE CROSS SECTION.	JUGH	+

									SURE	LUG																
	E DESCRIPTION Bridge No. 730 on -Y2FLYCA- over US						TY FORS				GEO	LOGIST A. Suttle			-	3 483					P U-2579A		COUNT			
SITE	DESCR	RIPTION	N Brid	dge N	o. 730	on -Y2FL	YCA- ove	US 311 f								GROUND WTR (ft)	SITE	DESCR	RIPTIO	N Brid	lge No	o. 730 d	on -Y2FLYC	A- over U	S 311 fr	<u>m</u> ر
BOR	ING NO.	. EB1	-A		S	TATION	28+67		OFFSE	7 ft LT			ALI	SNMENT -Y2FLY	CA-	0 HR. N/A	BOR	RING NO	. EB1	-В		S	TATION 28	;+74		0
COL	LAR ELI	EV. 84	47.1 ft		Т	OTAL DE	PTH 40.	5 ft	NORTH	ING 840,	712		EAS	TING 1,660,593		24 HR. 13.1	COL	LAR EL	EV. 8	45.0 ft		т	OTAL DEPT	H 42.4 ft		N
DRILI	RIG/HA	MMER E	FF./DA	TE N	1&W029	Diedrich D-	120 89% 09	/07/2018		DRILL	METHO	DD H	H.S. Auge	rs	HAMME	R TYPE Automatic	DRIL	L RIG/HA	MMER	EFF./DA	TE M	&W029	Diedrich D-120) 89% 09/07/	/2018	
DRIL	LER G	6. Akins	6		s	TART DA	TE 03/05	6/19	COMP.	DATE 03	/05/19)	SUF	FACE WATER DE	PTH N/A	4	DRIL	LER	G. Akin	s		S	TART DATE	03/05/19	9	c
ELEV	DRIVE ELEV	DEPTH	·	ow co				S PER FOO		SAMP	. 🔨			SOIL AND RO	OCK DESC	RIPTION	ELEV	DRIVE ELEV	DEFIN	' 	ow co	-		BLOWS P		
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 1	00 NO.	/мс	DI G				DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	5 5	i0	75
850		Ļ											L				845	845.0	0.0	WOH	2	3			1	— —
	847.1	+ + 0.0											847.1	GROUN	ND SURFA	CE 0.0			İ		2	5				
845	- 047.1	+ 0.0	1	2	2	4					м		F	ROADWAY Very Soft to Medi	EMBANK	MENT	840	842.0	<u> </u>	1	2	1				•
0+0		- 3.5											- -	Fine to Coarse Sar	ndy SILT (A	-4), with trace		839.0	6.0	1	1	2				. †
1	- 841.1	+ + _{6.0}	3	3	2	∮ 5∵ ∶	· · · · ·			.	м		-	organi		d		836.5	+ 8.5							
840		Ŧ	3	2	2] ∳₄					м		F				835		ŧ	1	2	3	↓ ↓ 5 	· · · ·		
	838.6 -	+ 8.5 +	WOH	WOF	і мон		· · · · ·			.	м		-						ŧ							
835		ŧ					· · · · · · · ·	· · · · ·					F				830	831.5	+ 13.5 +	1	2	3				
	833.6 -	- 13.5											834.1		SIDUAL	<u>13.0</u>		1 -	ŧ							.†
l	-	ŧ	WOH	1		• 2	· · · · · · · ·			.	M		÷		ft to Very S	stiff, nge Fine to		826.5	+ + 18.5							•
830	-	Ŧ				+		· · · · ·					F	Coarse Sandy SIL	T (A-4), wit mica	h trace to little	825		Ŧ	1	3	2	<u>_</u> 5 <u></u>			+
l	828.6 -	+ 18.5 +	WOH	1	3	•4 · · ·				.	м		F		mica				Ŧ							
825	-	Ŧ											F				820	821.5	<u>+ 23.5</u> T	6	15	18		•33		
	823.6 -	23.5	2	5	3	<u> </u>							F] -	Ŧ					<u> </u>		
	-	Ŧ		5	3	●8 .	· · · · ·	· · · · ·		.	M		F					816.5	28.5			7				
820	-	Ŧ											F				815		Ŧ	3	6	(⁽	13 <u>1</u> 13			+
	818.6 -	+ 28.5 	3	8	9		17			.	м		F						Ŧ							
815	-	Ŧ											F				810	811.5	+ <u>33.5</u> -	4	6	10	16			•
	813.6 -	33.5	4	11	10				· · · ·				814.1	Medium Dense to I	Dense, Wh	ite-Black, Silty 33.0] -	Ŧ						· · ·	
		Ŧ	-							.	M			Fine to Coarse S	AND (A-2-4 mica	4), with trace		806.5	38.5	100/0.2					<u> </u>	
810	808.6 -	39.5					· · · ·										805		Ŧ	100/0.2						+
	806.6	ŧ	9	19	17						м		- - 806.6			40.5		802.6	42.4	60/0.0						
l		40.5	60/0.0)					60/	0.0●				Boring Termin Penetration Test R	nated with	Standard			Ŧ	00/0.0						
	-	ŧ											F	ft On Crystalline F					ŧ							
		Ì											E					-	Ŧ							
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Н			GEOLOGIS	ST A. Suttle								
o I-40						GROUN	D WTR (ft)					
5 ft RT			ALIGNMEN	NT -Y2FLYC	A-	0 HR.	N/A					
840,6	95		EASTING	1,660,609		24 HR.	12.9					
DRILL N	IETHO	D H.S	S. Augers		HAMME	R TYPE	Automatic					
FE 03/0	05/19		SURFACE	WATER DEP	TH N//	٩						
SAMP.		L	•									
NO.	моі	G										
			845.0			CE	0.0					
	м	-		Soft to M	edium St							
	м		Red- Co	Tan-Brown-Blac arse Sandy SILT	k-Orange (A-4), w	e-Gray, Fir ith little mi	ne to ica					
	м	- - -										
	м	-										
		ŀ										
	IVI	Ē										
	м	-										
		-	822.0				23.0					
	м			nse, White-Gray SAND (A-2-4)	, Silty Fi , with tra	ne to Coar ce mica	se					
			817.0									
	м	-	Stif	f, White-Orange Sandy SILT (A-4	-Gray, Fi 4), with s	ne to Coa ome mica	rse					
	М		8 <u>12.0</u> Medi	um Dense, Whit Coarse SAND (A	e-Black-(A-2-4), w	Gray, Silty ith little mi	<u>33</u> .0 Fine ca					
			806.5				38.5					
			802.6				42.4					
			Pene	etration Test Ref	^f usal at E	levation 8	02.6					
	DRILL M	b) 1-40 5 ft RT 840,695 DRILL METHOL SAMP. NO. M	D I-40 5 ft RT 840,695 DRILL METHOD H.S TE 03/05/19 SAMP. L 0 NO. MOI G M M M M M M M M M M M M M	DI-40 ALIGNMEN 5 ft RT ALIGNMEN 840,695 EASTING DRILL METHOD H.S. Augers TE 03/05/19 SURFACE SAMP. 0 0 NO. MOI 6 M - Red- M - Red- M - Co M - Red- M - Co M - Red- M - Co M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M -	DI-40 5 ft RT ALIGNMENT -Y2FLYC 840,695 EASTING 1,660,609 DRILL METHOD H.S. Augers SURFACE WATER DEP SAMP. 0 SOIL AND ROC NO. MOI G SOIL AND ROC NO. MOI G SOIL AND ROC M 0 RES Soft to M Red-Tan-Brown-Blac M 0 Coarse Sandy SILT M 0 SAND (A-2-4) M 0 SAND (A-2-4) M 0 Sandy SILT (A-4 M 0 Sandy SILT (A-4 817.0 Stiff, White-Orange M 0 Sandy SILT (A-4 806.5 WEATHE 802.6 Boring Termina Penetration Test Ref White-Gray (G	DI-40 5 ft RT ALIGNMENT -Y2FLYCA- 840,695 EASTING 1,660,609 DRILL METHOD H.S. Augers HAMME E 03/05/19 SURFACE WATER DEPTH N// SAMP. L 0 SOIL AND ROCK DESC NO. MOI G SOIL AND ROCK DESC M - RESIDUAL M - RESIDUAL M - RESIDUAL M - Reside M - Coarse Sandy SILT (A-4), w M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - M - - -	01-40 GROUN 5 ft RT ALIGNMENT -Y2FLYCA- 0 HR. 840,695 EASTING 1,660,609 24 HR. DRILL METHOD H.S. Augers HAMMER TYPE SAMP. L 0 SURFACE WATER DEPTH N/A SAMP. L 0 SOIL AND ROCK DESCRIPTION SOIL AND ROCK DESCRIPTION NO. MOI G SOIL AND ROCK DESCRIPTION Soft to Medium Stiff, Red-Tan-Brown-Black-Orange-Gray, Fir Coarse Sandy SILT (A-4), with little mi M E SAND (A-2-4), with trace mica M E Stiff, White-Orange-Gray, Fine to Coar M E Stiff, White-Orange-Gray, Silty Fine to Coar M E Stiff, White-Orange-Gray, Silty to Coarse SAND (A-2-4), with ittle mi M E Stiff, White-Orange-Gray, Silty to Coarse SAND (A-2-4), with ittle mi					

	3S 34839.1.7 TIP U-2579AA CO TE DESCRIPTION Bridge No. 730 on -Y2FLYCA- over US 31							FORS					GEOLOGIST A. Suttle	1	-	3 4839					P U-2579		COUNT				
				ge No					US 31													lge No		on -Y2FLY		JS 311 fro	2m
BOR	ING NO	. B1-A			_	TATION						10 ft LT				ALIGNMENT -Y2FLYCA-	0 HR. N/A	BOF	RING NO.	. B1-E	3		S	ATION 3	0+41		O
COLL	LAR EL	EV. 85	2.5 ft		T(OTAL D	EPTH	H 50.4	ft		NORTHI	IG 840,				EASTING 1,660,738	24 HR. 6.7	COL	LAR ELE	EV. 85	54.7 ft		Т	DTAL DEP	TH 47.7 f	t	N
DRILL	RIG/HA	MMER E	FF./DA	TE Ma		Diedrich [DRILL	METH	OD I		•	MER TYPE Automatic	DRIL	L RIG/HAI	MMER E	FF./DA	TE M	&W029	Diedrich D-12	20 89% 09/07	7/2018	
DRIL	LER G	. Akins			S	TART D	ATE	03/06	/19		COMP. D	ATE 03/	/06/19	9		SURFACE WATER DEPTH	I/A	DRII	LER G	. Akins	3		ST		E 03/06/1	9	C
ELEV	DRIVE ELEV	DEPTH		w co					S PER F			SAMP.	. 🗸			SOIL AND ROCK DES	SCRIPTION	ELEV	DRIVE	DEPTH	' 	w co	-			PER FOOT	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	5	50	7	75 10 I	0 NO.	Имс			LEV. (ft)	DEPTH (f	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75
855		Ļ													L			855	854.7								
	852.5	+ 0.0									_				 8	52.5 GROUND SURF		D	-	‡	2	4		. • ¹ 1 .			•
850		<u></u>	1	2	6		•••	· · ·	· · · ·	· · ·			М		8-	ROADWAY EMBAN Medium Stiff to Very Stiff, F		850	851.2	3.5	4	6	6		· · · ·		
000	849.0	3.5				`\									÷	to Coarse Sandy SILT (A-4)		000	848.7 -	- 6.0							. –
	846.5	+ + 6.0	4	6	10		16	· · ·	· · · · · ·	· · ·	· · · ·		M		8	47.0	5.	5	-	ł	6	7	10	1 : : •	,		
845		‡	3	5	5	<u> </u>	; •						M-		νL	Medium Stiff to Stiff, Red-I Clayey SILT (A-5), with trac	Brown-Orange, ce organics and	845	846.2	8.5	3	6	8				·
	844.0	8.5	2	3	4			· · ·	· · ·				М	LŸ		mica				ŧ				:: : ::			:
		ŧ							. .										841.2	13.5							:
840	839.0	L L 13.5												Ļ	1. 1. 1. 8	39.5 RESIDUAL	<u>13</u> .	840	-	Ł	1	4	4	—• 8	+		\pm
		+	1	2	3	6 5-							м			Loose, Orange-Gray, Silty	Fine to Coarse		-	Ŧ							•
835		Ŧ														SAND (A-2-4), with trace or	•	835	836.2	18.5	WOH	1	5				
	834.0	18.5	WOH	WOH	2	1							М		F	34.5Very Soft, Gray-Orange, Sil	ty CLAY (A-7-5), <u>18</u> .] -	Ŧ				· · · ·			
		Ŧ						· · · · · ·	.							with trace mic	ca		831.2	23.5							•
830	829.0	T 23.5					•••			· · ·	· · · ·					<u> 29.5</u>	<u>23</u> .	830		Ŧ	1	2	5				
	029.0	+ 20.0	3	5	9	1 ¥	14		.				м			Medium Dense, White-Blac Fine to Coarse SAND (A-2-	ck-Orange, Silty -4), with trace to			ŧ							
825		‡				::;		· · · · · ·	· · · · · ·							little mica		825	826.2	28.5	1	2	5				•
020	824.0	28.5	3	5	6													020	-	ŧ							
		‡	5	5			1 ·	· · · · · ·		· · ·			M						821.2	+ 33.5							
820	-	‡					·`\`		· · ·	· · ·		_			Ļ			820			5	20	80/0.4		· · · · · · · ·	+	<u>;</u>
	819.0	33.5	7	12	15			 27	.	· · ·			м						-	ŧ					· · · ·		
815		‡					::/	· · ·	· · · · · ·	· · ·								815	816.2	38.5	6	9	10	: : : i	+ = = = = = = = = = = = = = = = = = = =	+	:+-
010	814.0	38.5					. /								÷=8	14.5	<u>38</u> .	015	-	ŧ	ľ			• • • • •	9		. –
		ŧ	5	6	11		●17	· · ·	· · · · · ·	· · ·			M		۳ <u>+</u>	Coarse Sandy SILT (A-4),			-	1					· · · · ·		
810		t					<u>i</u>								۶Ł			810	811.2	43.5	35	65/0.3		· · · · ·	·		; + ·
	809.0	43.5	5	9	11	: : :	. I	· · ·	.				м		8- -				-	ţ					· · · ·		
		t					Ĭ	· · ·							8- -				807.0	47.7	60/0.0		$\left \right $	1	1		
805	804.0	48.5					;;+		<u> </u>		<u> </u>				∛⊢.	03.5	49.			ŧ							
	802.1	50.4	4		66/0.1						100/0			T	24	02.1 WEATHERED R	OCK 50		-	ŧ							
	_	1	60/0.0								60/0.	-			F	Boring Terminated wit	h Standard		-	Ł							
		Ŧ													Ē	Penetration Test Refusal at ft On Crystalline Rock (GR			-	ŧ							
		Ŧ													F		,		-	Ŧ							
	-	Ŧ													F				-	Ŧ							
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39.1.7 CRIPTION O. B2-A ILEV. 84 IAMMER E G. Akins E DEPTH (ft) 2 0.0 - - - - - - - - - - - - -	BLC 0.5ft	TE M8 W COU 0.5ft	. 730 c S1 TC W029 S1 JNT	TATION DTAL DE	YCA- 31+8 PTH -120 89	- over U 36 53.3 f 9% 09/07	JS 311 t 7/2018	1 from C)FFSET IORTHI	1 to I-4 10 f NG 8	t LT 340,88			ALIG	NMEN	ST A. Su NT -Y2FL 1,660,85	YCA-	GROUND W 0 HR. 24 HR.	TR (ft) N/A 9.6	SITE BORI	NG NO.	B2-E	3	lge No	b. 730	IP U-25 on -Y2FL TATION OTAL DE	YCA- 31+9	5		from
O. B2-A LEV. 84 AMMER E G. Akins C. Akins DEPTH (ft) 2 0.0 	BLC 0.5ft	TE M8 W COU 0.5ft	ST TC 20029 ST JNT	TATION DTAL DE Diedrich D	31+8 PTH -120 89	36 53.3 f 9% 09/07 03/06/1	t 7/2018 19	C N)FFSET IORTHI	່ 10 f NG 8	t LT 340,88			_				0 HR.	N/A	BOR	NG NO.	B2-E	3	ge No	S	TATION	31+9	5		0
LEV. 84	BLC 0.5ft	W COL 0.5ft	TC 20029 ST JNT	DTAL DE Diedrich D	EPTH -120 89 TE	53.3 f 9% 09/07 03/06/1	7/2018 I 9	N	IORTHI	NG 8	340,88			_				-											+	_
IAMMER E G. Akins E DEPTH (ft) 2 0.0 7 3.5 2 6.0	BLC 0.5ft WOH	W COL 0.5ft	W029 S T	Diedrich D	-120 89 \TE	9% 09/07 03/06/1	7/2018 I 9			DF			, a	EAS	TING	1,660,85	8	24 HR.	9.6	COLI		EV . 85	50.2 ft		Т (OTAL DE	PTH	64.8 ft	ł	
G. Akins E DEPTH (ft) 2 0.0 - - - - - - - - - - - - -	BLC 0.5ft WOH	W COL 0.5ft	S T JNT		TE (03/06/1	19	C	OMP I		RILL M	IETHO	<u>' חו</u>							COLLAR ELEV. 850.2 ft										N
E DEPTH (ft) 2 0.0 7 3.5 2 6.0	BLC 0.5ft WOH	0.5ft	JNT		E			C	OMP I		DRILL METHOD H.S						HAMM	IER TYPE Auto	matic	DRILL	RIG/HAI	MMER E	FF./DA	TE M	&W029	Diedrich D	-120 89	0% 09/07	//2018	
2 0.0 7 3.5 2 6.0	0.5ft WOH	0.5ft		0		BLOWS				DATE	COMP. DATE 03/06/19			SUR	FACE	WATER D	DEPTH N	/A		DRIL	L ER G	i. Akins	;		S	TART DA	TE ()3/07/1	9	C
(ft) 2 0.0 7 3.5 2 6.0	WOH		0.5ft	0	25		PER FO	тос		S	AMP.	▼/	L				ROCK DES			ELEV	DRIVE ELEV	DEPTH	BLC	w co	UNT		В	LOWS	PER FOC	тс
7 <u>3.5</u> - 2 <u>6.0</u>					Ĭ		50	75	5 10	1 00	NO.	Лиоі	I G	ELEV. (1					EPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	Ę	50	75
7 <u>3.5</u> - 2 <u>6.0</u>																														
7 <u>3.5</u> - 2 <u>6.0</u>																				855										
2 6.0				-										848.2			UND SURF	ACE	0.0		-	ł								
2 6.0		1	3	4 4 · ·								М		E	Soft	to Medium	RESIDUAL Stiff, Orange	e-White-Brown,			-	E								
Ţ	2	3	5	\downarrow			+ • •		· · · ·					F	Fine	e to Coarse	Sandy SILT mica	(A-4), with little		850	850.2	0.0	WOH	1	4	1				
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FORSYTH		GEOLOGIST A. Suttle											
m US 311 to I-40			GROUND WTR (ft)										
OFFSET 10 ft F	RT	ALIGNMENT -Y2FLYCA-	0 HR. N/A										
NORTHING 840),876	EASTING 1,660,877	24 HR. Dry										
DRIL	L METHOD H.S	S. Augers HA	MMER TYPE Automatic										
COMP. DATE 0	3/07/19	SURFACE WATER DEPTH	N/A										
SAM	P. L												
75 100 NO	MOI G	SOIL AND ROCK D	ESCRIPTION										
75 100 NO	MOI G	850.2 GROUND SU RESIDU/ Soft to Medium Stiff, Ora Fine to Coarse Sandy SIL to little mi	RFACE 0.0 AL inge-Black-Brown, .T (A-4), with trace										
	м	817.2 Medium Dense, White- Coarse SAND (A-2-4),	with trace mica										
	м –	812.2	th some mica										
	M	B07.2 Dense, Tan-White, Silt SAND (A-2-4), wit	y Fine to Coarse h little mica										
	M	- 796.2 WEATHERED	54.0 ROCK										
100/0.7 100/0.7 		Tan-White-Gray (GR	ANITIC ROCK)										
100/0.8		Boring Terminated at Ele Weathered Rock (GR											

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							Y FORSY				GEOLO	GIST A. Suttle	1		34839					P U-2579	COUNT				
SITE DESCRIPTION Bridge No. 730 on -Y2FLYCA- over US 311 fr											GROUND WTR (ft)						ge No		on -Y2FLY	JS 311 fr	_				
BORING NO. EB2-A STATION 33+39					OFFSET				ALIGN	ALIGNMENT -Y2FLYCA- 0 HR. N/A			ING NO.					TATION		OF NC					
COL	COLLAR ELEV. 852.9 ft TOTAL DEPTH 70.0 ft					NORTHIN				EASTING 1,660,968 24 HR. Dry				LAR ELE					TOTAL DEPTH 47.5 ft						
DRILL	DRILL RIG/HAMMER EFF./DATE M&W029 Diedrich D-120 89% 09/07/2018					DRILL I	METHO	D H	.S. Augers	S. Augers HAMMER TYPE Automatic				MMER E	FF./DA1	E Ma	&W029	/029 Diedrich D-120 89% 09/07/2018							
DRIL	DRILLER G. Akins START DATE 03/08/19				19	COMP. DA			A . 1	SURFACE WATER DEPTH N/A			DRILLER G. Akins						START DATE 03/08/19						
ELEV	DRIVE ELEV	DEPTH		w cou				PER FOO		SAMP.				SOIL AND ROCK DES	CRIPTION	ELEV	DRIVE ELEV	DEPTH	<u> </u>	W CO				PER FOO	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.			ELEV. (ft)		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 I
855		Ļ											_			855		Ļ							
	852.9	0.0	1	1	2	<u> </u>						30000	852.9	GROUND SURF	ACE 0.0		-	ŧ.							
850	-	ŧ			3	• 4 · · · ·			· · · · · ·		M		-	RESIDUAL Soft to Medium Stiff, Orange	e-Black-Brown,	850	- 850.5 -	- 0.0							
000	849.4	3.5	1	2	2			1			м		F -	Fine to Coarse Sandy SILT (to little mica	(A-4), with trace	000			1	1	2	4 3			-
	846.9	6.0				4			· · · · · ·				_				847.0	3.5				\: : :			
845	- 844.4	- 85	1	3	4	•7 • •					M		-			845	- 844.5	60	2	3	6	· • • 9 · ·			· ·
		- 0.5	2	3	3	6					м		-				-	F	3	4	5	: ∳ 9∶:			: :
	-	ŧ				1:::							-				842.0	8.5	2	3	5				
840	839.4	13.5	1	2	4			+	<u> </u>							840	-	F					· · · · ·	<u> </u>	+
	-	ł	'	2	4	•					M		-				837.0	13.5							•
835	-	1				· \ · ·							834.9		18.0	835	-	Ł	1	1	2	• 3 · · ·			•
	834.4	<u>F 18.5</u> T	4	6	7						м			Medium Dense, Tan-Browr Coarse SAND (A-2-4), wi	n. Siltv Fine to		-	F							
	-	Ŧ				1 17 1							-				832.0	18.5	1	2	4				
830	829.4	23.5				<u> </u>				-			8 <u>29.9</u>	Medium Stiff to Stiff, Tan-Wh	hite-Brown Fine	830		F						+ • • •	
	-	Ŧ	2	4	6						M			to Coarse Sandy SILT (A-4)			827.0	23.5							
825	-	Ŧ				: <u>î</u> : :							-			825		- 20.0	1	3	4				
	824.4	<u>+</u> 28.5 +	2	3	5	· .					м		-				-	F							. .
	-	ŧ							· · · · · ·				-				822.0	28.5	2	3	5				. .
820	- 819.4	- 33.5						· · ·	· · · · ·				819.9	Medium Dense to Ver	33.0	820		+	2	5		·••8 · ·		· · ·	· ·
	-	ļ.	5	9	18		27		· · · · · ·		м		-	Tan-Brown-White, Silty Fi	ine to Coarse		817.0	-				. .			•
815	-	ţ							· · · · · ·				-	SAND (A-2-4), with trace	to little mica	815	817.0 -	33.5	1	2	5	$\left \begin{array}{c} \cdot \\ \bullet \\ \bullet \\ \end{array} \right $			•
015	814.4	38.5	6	11	14		1 · · · ·				м		-			015	-	ŧ							-
	-	ŧ					• 25		· · · · · ·				-				812.0	38.5	100/0.2			. . _			· ·
810	- 809.4	- 43 5							 				-			810		ŧ.	100/0.3						· _ ·
		+	8	10	15		4 25				м		-				-	-							- -
005	-	‡						· · · ·	· · · · · ·				-			005	807.0	43.5	11	81	19/0.1			· · · ·	
805	804.4	48.5	6	12	20	· · · ·	+ <u>`</u>	+		1	м		-			805	_	ŧ					· · · · ·		-
5	-	ţ					.●32 						-				803.0	47.5	60/0.0				_		
800	- 799.4	F2 F											-					ŧ							
	799.4 -	- 55.5	8	16	17			· · ·			м		-					ŧ							
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795	794.4	58.5	10	15	26		$+ \cdot \cdot$	+		-							-	F							
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785	-	Ŧ											-				-	F							
100	- 784.4	68.5		~-				` `		-			-				-	F							
		ŧ	26	37	40				77	Ц	M		782.9	Boring Terminated at Eleva	70.0 70.0 782 9 ft In		-	F							
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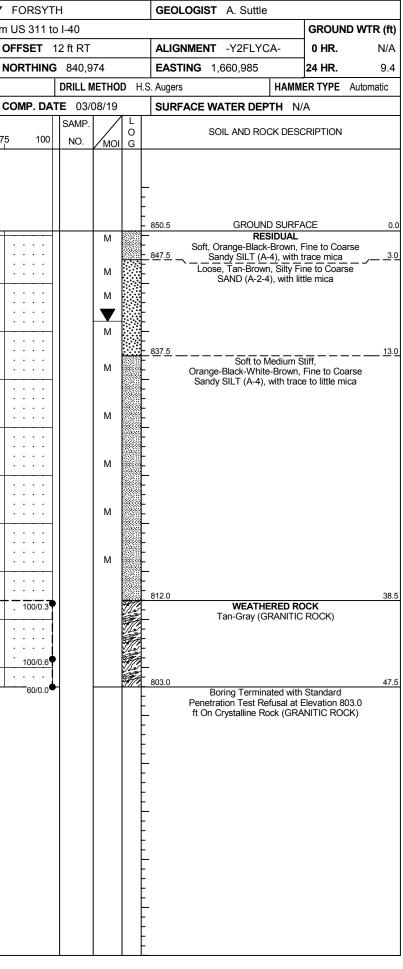




PHOTO 1: VIEW AT END BENT 1 LOOKING UPSTATION ALONG -Y2FLYCA- TOWARD EB-2

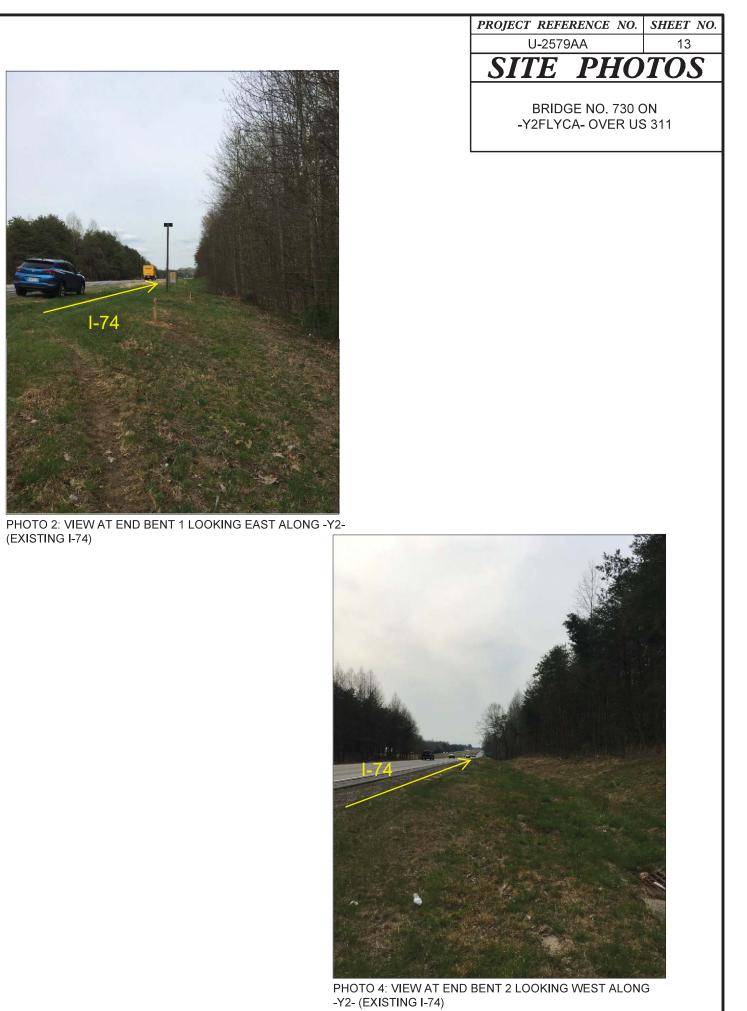




PHOTO 3: VIEW AT END BENT 2 LOOKING DOWNSTATION ALONG -Y2FLYCA- TOWARD EB-1