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4400BB

REFERENCE

DESCRIPTION TITLE SHEET LEGEND (SOIL) SITE PLAN CROSS SECTIONS BORE LOGS

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY HENDERSON

I-26 FROM US-64 (EXIT 49) PROJECT DESCRIPTION TO US-25 BUSINESS (EXIT 44)

REPLACE BRDG #0221 SITE DESCRIPTION OVER I-26 & ON SR-I528 (BROOKSIDE CAMP RD)

32 342 PROJEC

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-4400BB	1	10

CAUTION NOTICE

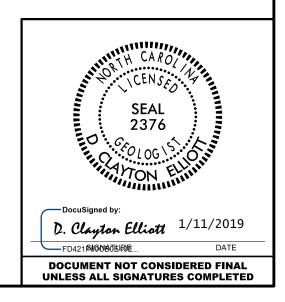
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNIKG AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA AVAILABLE MAY BE REVEWED OR INSPECTED IN RALEICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-6860. THE SUBSIFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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 UNPELACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. 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 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 OPHIONO OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONSTRUCTIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE REVIENT OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY REASON RESULTIONS FOR ACTUAL COMPENSATION.

- 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
	F&R	CONSULTANTS
	1	D. RACEY
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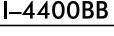


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT** SUBSURFACE INVESTIGATION

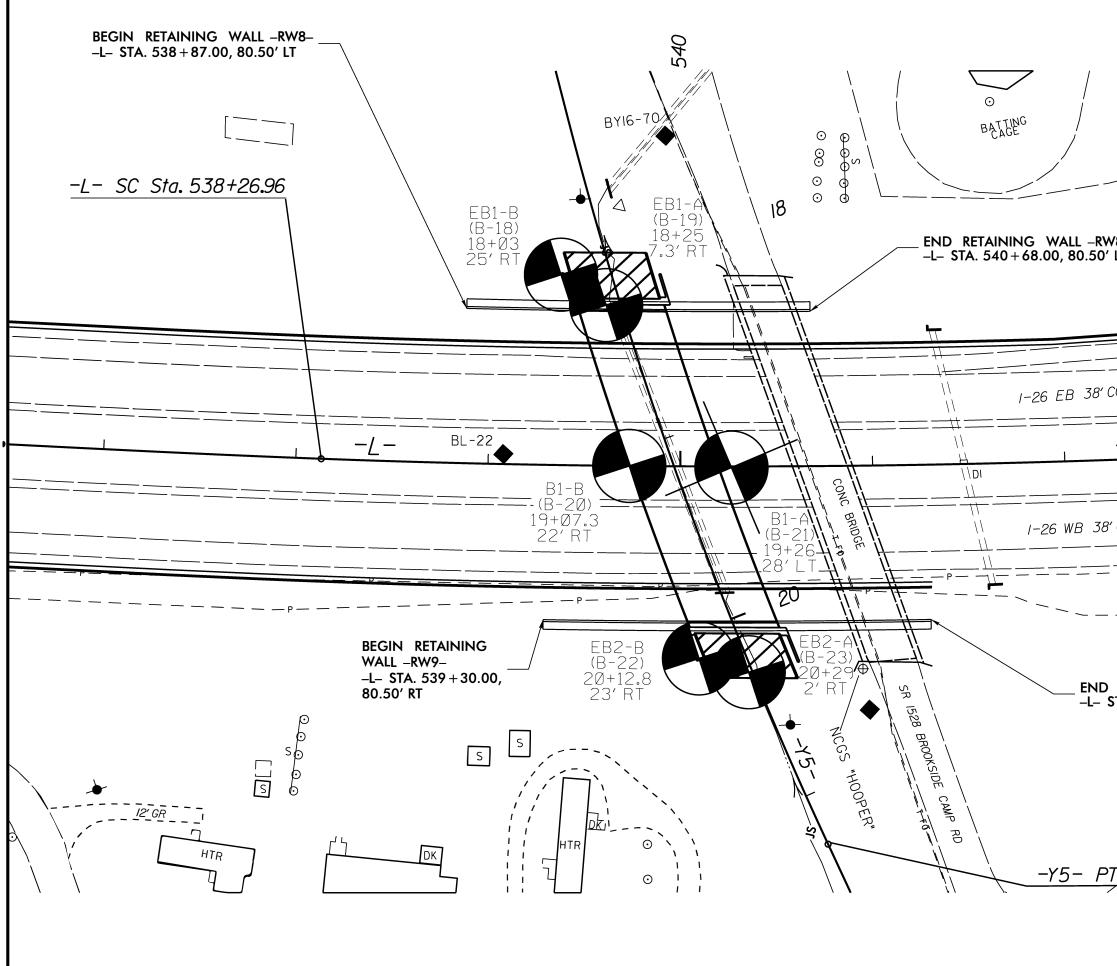
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

			SOIL	DESCRIP	TION						GRADATION							ROCK DES	SCRIPTION	
BE PENET ACCORDI IS B	TRATED WITH ING TO THE BASED ON TH	I A CONTINU STANDARD F IE AASHTO S	DUS FLIGHT P ENETRATION T YSTEM. BASIC	OWER AUGER EST (AASHTO DESCRIPTION	DR WEATHERED AND YIELD LES T 206, ASTM I S GENERALLY	S THAN 10 D1586), SOI INCLUDE T	0 BLOWS PE L CLASSIFIC HE FOLLOWIN	R FOOT CATION NG:	WELL GRADED - INDICA UNIFORMLY GRADED - IN GAP-GRADED - INDICATE	NDICATES THAT S	SOIL PARTICLES ARE A F UNIFORM PARTICLE S	LL APPRO	OXIMAT	ELY THE SAME SIZE.	ROCK LINE SPT REFUSA BLOWS IN N	INDICATES TH AL IS PENETR NON-COASTAL	HE LEVEL AT W RATION BY A SP	HICH NON-COA PLIT SPOON SA IAL, THE TRA	VOULD YIELD SPT REFUSAL STAL PLAIN MATERIAL WOUL MPLER EQUAL TO OR LESS NSITION BETWEEN SOIL AM	D YIELD SPT I THAN 0.1 FOOT
					TION, AND OTH			S SUCH			LARITY OF GRAD						YPICALLY DIVID		'S:	
					NE SAND LAYER						DED, OR ROUNDED.	JE STONH I	ED BI	THE TERMS:	WEATHERED	1			N MATERIAL THAT WOULD Y	IELD SPT N VA
CENEDAL		GRANULAR MAT			CLASSIF		N			MINERAL	OGICAL COMPOS	ITION			ROCK (WR)				OT IF TESTED.	
GENERAL CLASS.		$\leq 35\%$ Passing			AY MATERIALS PASSING ≢200)	0	rganic materi	ALS			JARTZ, FELDSPAR, MICA,				CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCL					
GROUP		A-3	A-2		5 A-6 A-7	A-1, A-2	A-4, A-5		ARE USED IN		WHEN THEY ARE CONSI	DERED O	F SIGN	IFICANCE.				SS, GABBRO, SC TO COARSE G	HIST,ETC. RAIN METAMORPHIC AND NO	N-COASTAL PLA
CLASS.	A-1-a A-1-b	A-2-4	A-2-5 A-2-6 A-		A-7-5 A-7-6	A-3	A-6, A-7		SI 101	LU	MPRESSIBILITY	LL <	(21		NON-CRYSTA ROCK (NCR)				<pre>K THAT WOULD YEILD SPT F DES PHYLLITE, SLATE, SANDS</pre>	
SYMBOL				\mathbf{S}					MODE	RATELY COMPRES	SSIBLE	LL =	= 31 - 5	50	COASTAL PL		COAS	STAL PLAIN SE	DIMENTS CEMENTED INTO R	OCK, BUT MAY N
% Passing •10						GRANULAR	SILT-	MUCK	HIGH		ENTAGE OF MATE		> 50		SEDIMENTAR (CP)			REFUSAL. RUC L BEDS, ETC.	K TYPE INCLUDES LIMESTO	NE, SANDSTONE,
■ 40	50 MX 30 MX 50 MX					SOILS	CLAY SOILS	MUCK, PEAT		GRANUL		NIHL						WEATH	HERING	
	15 MX 25 MX	10 MX 35 MX	35 MX 35 MX 35	5 MX 36 MN 36	MN 36 MN 36 MN		50125		ORGANIC MATERIAL TRACE OF ORGANIC M	SOILS	<u>s soils</u>		OTHER I	<u>MATERIAL</u> 1 - 10%	FRESH			GHT,FEW JOINT	IS MAY SHOW SLIGHT STAININ	NG. ROCK RINGS
MATERIAL PASSING #40									LITTLE ORGANIC MAT	TER 3-5	57. 5 - 12%	LIT	TLE	10 - 20%	VERY SLIGHT		CRYSTALLINE.	NINTS STAINED	SOME JOINTS MAY SHOW THI	א רו בע רחבדואה
LL PI	-				1N 40 MX 41 MN		s with Ile or		MODERATELY ORGANIC HIGHLY ORGANIC	5 - 10 > 10%		SON	ME GHLY	20 - 35% 35% AND ABOVE	(V SLI.)	CRYSTALS I	ON A BROKEN SP	PECIMEN FACE S	SHINE BRIGHTLY. ROCK RINGS	
GROUP INDEX	6 MX Ø	NP 10 MX	4 MX		4X 11 MN 11 MN 4X 16 MX NO MX		ierate Ints of	HIGHLY Organic			ROUND WATER				CL ICUT		TALLINE NATURE			
USUAL TYPES	STONE FRAGS.			0 11 12			GANIC	SOILS	∇		IN BORE HOLE IMMED		ETER C		SLIGHT (SLI.)				AND DISCOLORATION EXTENDS IN GRANITOID ROCKS SOME O	
OF MAJOR	GRAVEL, AND		TY OR CLAYEY AVEL AND SAND	SILTY SOILS	CLAYEY SOILS	MA	ITTER				R LEVEL AFTER 24			MILLING .					YSTALLINE ROCKS RING UNDE	
MATERIALS	SAND	00			00120		1		 ₽₩		ER, SATURATED ZONE, O		DEADI		MODERATE (MOD.)				SCOLORATION AND WEATHERING	
GEN. RATING AS SUBGRADE		EXCELLENT TO	G00D	FAI	TO POOR	FAIR TO POOR	POOR	UNSUITABLE				N WHICK	DEHNI	NO STRATA				R BLOWS AND S	HOWS SIGNIFICANT LOSS OF	STRENGTH AS CO
		PIOF A-7-5 SU	BGROUP IS ≤ L	L - 30 ; PIOF A	7-6 SUBGROUP IS	5 > LL - 30				SPRING OR SE	.EP				MODERATELY	WITH FRESH			R STAINED. IN GRANITOID ROO	
		C(NSISTEN	<u>CY OR D</u>	ENSENESS					MISCEI	LLANEOUS SYMB	OLS			SEVERE	AND DISCOL	LORED AND A MA	JORITY SHOW #	AOLINIZATION. ROCK SHOWS	SEVERE LOSS OF
PRIMARY S			TNESS OR		OF STANDARD ON RESISTENCE		IGE OF UNC			ANKMENT (RE)	25/025 DIP & DIP DI	RECTION			(MOD. SEV.)		E EXCAVATED WI WOULD YIELD S		ST'S PICK. ROCK GIVES 'CLUN	K'SOUND WHEN S
T NIPHAT S		CONS	ISTENCY		-VALUE)		(TONS/FT				→ OF ROCK STR				SEVERE	ALL ROCK I	EXCEPT QUARTZ	DISCOLORED OF	R STAINED. ROCK FABRIC CLE	AR AND EVIDENT
GENERAL	_LY		LOOSE		< 4				SOIL SYMBOL		OPT DMT TEST BO	RING	\bigcirc	SLOPE INDICATOR	(SEV.)				IN GRANITOID ROCKS ALL FEL TRONG ROCK USUALLY REMAIN	
GRANULA MATERIA			DOSE M DENSE		TO 10 TO 30		N/A			ILL (AF) OTHER				CONE PENETROMETER			WOULD YIELD S			
(NON-CO			ENSE DENSE		TO 50 > 50					Y EMBANKMENT		3	٩	TEST	VERY SEVERE				R STAINED. ROCK FABRIC ELE SOIL STATUS.WITH ONLY FRAC	
		-	Y SOFT	-	< 2		< 0.25		- INFERRED SO	L BOUNDARY	- CORE BORING		•	SOUNDING ROD	(V SEV.)	REMAINING.	SAPROLITE IS A	AN EXAMPLE OF	ROCK WEATHERED TO A DEG	REE THAT ONLY
GENERAL			OFT	2	TO 4		0.25 TO 0							TEST BORING					AIN. <u>IF TESTED, WOULD YIELD</u>	
SILT-CL MATERIA			M STIFF TIFF		TO 8 TO 15		0.5 TO 1 1 TO 2			K LINE		ELL -	$\mathbf{\Psi}$	WITH CORE	COMPLETE				T DISCERNIBLE, OR DISCERNIB BE PRESENT AS DIKES OR S	
COHESI	VE)		'STIFF		TO 30 > 30		2 TO 4 > 4		ALLUVIAL SO	L BOUNDARY	△ PIEZOMETER INSTALLATION	ı (\bigcirc	SPT N-VALUE		ALSO AN E				
			TEXTURE			I	· · ·			RECOM	MENDATION SYM	BOLS			 			ROCK H	ARDNESS	
U.S. STD. SIE	EVE SIZE		4 10		60 200	270					ED EXCAVATION -		ICLASSI	FIED EXCAVATION -	VERY HARD		SCRATCHED BY		RP PICK. BREAKING OF HAND	SPECIMENS REOL
OPENING (MM			4.76 2.0		0.25 0.07						WASTE	Lar‴ar AC	CEPTAE	BLE, BUT NOT TO BE THE TOP 3 FEET OF	HARD				LY WITH DIFFICULTY. HARD H	AMMER BLOWS F
BOULDER	R CO	BBLE	GRAVEL	COARSE	FIN		SILT	CLAY	SHALLOW UNDERCUT		ED EXCAVATION - E DEGRADABLE ROCK			ENT OR BACKFILL			I HAND SPECIMEN			
(BLDR.)		:0B.)	(GR.)	SAND (CSE. SD.)	SAN (F SI	u l	(SL.)	(CL.)		A	BBREVIATIONS				MODERATELY HARD				DUGES OR GROOVES TO 0.25 : ST'S PICK. HAND SPECIMENS (
GRAIN MM	305	75	2.0	0	0.25	0.05	0.005		AR - AUGER REFUSAL	ME	ED MEDIUM	Ņ	vst - v	VANE SHEAR TEST		BY MODERA		0 0202001		
SIZE IN.	12	3							BT - BORING TERMINATE		ICA MICACEOUS OD MODERATELY			WEATHERED NIT WEIGHT	MEDIUM HARD				DEEP BY FIRM PRESSURE OF PEICES 1 INCH MAXIMUM SIZE	
			<u>STURE -</u>	CORREL	TION OF	TERMS	5		CPT - CONE PENETRATIO	N TEST NF	P - NON PLASTIC			RY UNIT WEIGHT	HHND		A GEOLOGIST'S P		EICES I INCH MAXIMUM SIZE	BT HHND BLOWS
	MOISTURE ERBERG LI			MOISTURE RIPTION	GUIDE FOR	FIELD MO	ISTURE DES	CRIPTION	CSE COARSE DMT - DILATOMETER TES		RG ORGANIC MT - PRESSUREMETER '	FST	SAME	LE ABBREVIATIONS	SOFT				NIFE OR PICK. CAN BE EXCA	
									DPT - DYNAMIC PENETRA	TION TEST SA	AP SAPROLITIC	9	S - BUL	_K			n be broken by		BY MODERATE BLOWS OF A F	YILK PUINT, SMA
			- SATU (SA	RATED - T.)	USUALLY L FROM BELO				e - VOID RATIO F - FINE		D SAND, SANDY SILT, SILTY			PLIT SPOON HELBY TUBE	VERY				AVATED READILY WITH POINT	
		LIMIT							FOSS FOSSILIFEROUS	SL	_I SLIGHTLY	F	RS - R(ОСК	SOFT	FINGERNAIL		N BE BROKEN B	BY FINGER PRESSURE. CAN BE	SCRATCHED REA
BANGE <			- WET	- (W)	SEMISOLID; ATTAIN OPT				FRAC FRACTURED, FRAC FRAGS FRAGMENTS		CR - TRICONE REFUSAL - MOISTURE CONTENT	i (ECOMPACTED TRIAXIAL		FRACTUR	RE SPACING	3	BEC	DING
(PI) PL		C LIMIT							HI HIGHLY		- VERY			RATIO	TERM		<u>SPACI</u>	NG	TERM	THICK
ОМ	007104	M MOISTUR	- MOIST	T - (M)	SOLID; AT (R NEAR O	PTIMUM MO	ISTURE			SED ON SUBJEC				VERY WII WIDE	DE	MORE THAN 3 TO 10		VERY THICKLY BEDDED THICKLY BEDDED) 4 FE 1.5 - 4
									DRILL UNITS:	ADVANCING TO			MER TY	_	MODERAT CLOSE	ELY CLOSE	1 TO 3 0 0.16 TO 1		THINLY BEDDED VERY THINLY BEDDED	0.16 - 1.
			- DRY	- (D)	REQUIRES #			I.	X CME-45C		NUOUS FLIGHT AUGER		AUTUR	MATIC MANUAL	VERY CL	OSE	LESS THAN (THICKLY LAMINATED	0.03 - 0. 0.008 - 0
					ATTAIN OPT	IMUM MOI	STURE		CME-55				E SIZE:	_					THINLY LAMINATED	< 0.008
	PLASTICITY													NTARY POCK			RATION NING OF MATERIAL BY CEME			
NON	NON PLASTIC PLASTICITY INDEX (PI) DRY STRENGTH						CME-550		CED FINGER BITS		-N						FINGER FREES NUMEROUS G			
SLIC	NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT					VANE SHEAR TEST		ARBIDE INSERTS	HAN	D TOOL	S:	FRIA	BLE			BY HAMMER DISINTEGRATES				
	ERATELY P			16-25 26 OR MORE			MEDIUM HIGH				W/ ADVANCER		POST	HOLE DIGGER	MODE	RATELY INDU			SEPARATED FROM SAMPLE	WITH STEEL P
		-							PORTABLE HOIST			' _	HAND	AUGER			E		WHEN HIT WITH HAMMER.	
														DING ROD	INDUF	RATED			FFICULT TO SEPARATE WITH BREAK WITH HAMMER.	1 SIEEL PROBE
					DNS (TAN, RED				Y).					EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE:		< SAMPLE;				
MU	MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.						•		🗆 📖					EXTR	EMELY INDUR			S ACROSS GRAINS.		

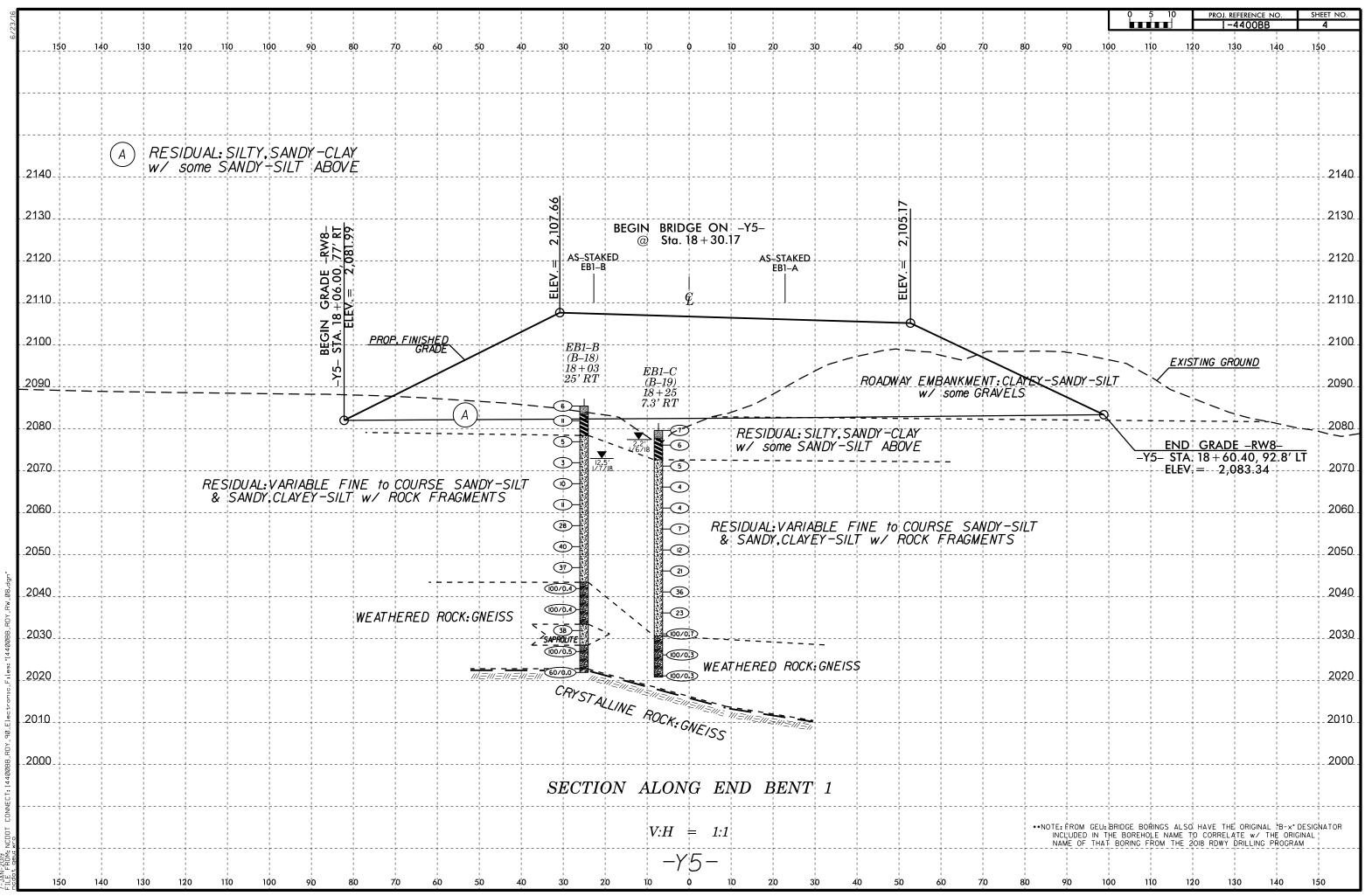
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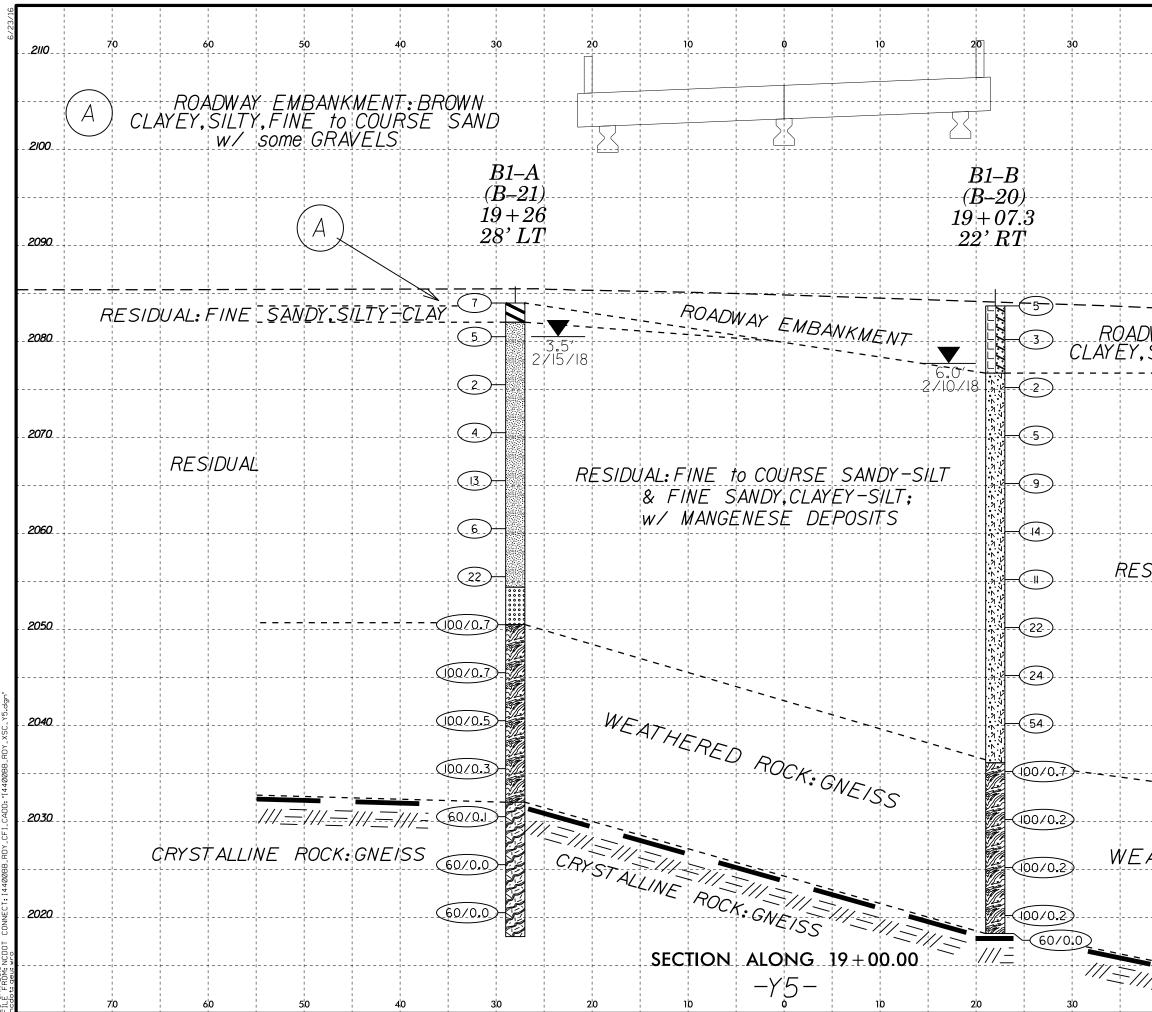


TERMS AND DEFINITIONS ED. AN INFERRED) SPT REFUSAL. 1 FOOT PER 60 IS OFTEN ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. ADUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. N VALUES > ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND CK THAT 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 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. $\underline{\text{DIKE}}$ - 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 . NATINGS IF OPEN. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. AMMER BLOWS IF FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE ІСК ИР ТО SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FELDSPAR BLOWS. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. $\underline{\mathsf{FLOAT}}$ - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. 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. ELDSPARS 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 PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE STRONG ROCK T ONLY MINOR VALUES < 100 BPF OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK OUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SECMENTS EQUAL TO OR CREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE IN SMALL AND SAPROLITE IS RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT S REQUIRES 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 LOWS REQUIRED THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. <u>SLICKENSIDE</u> - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. EEP CAN BE ETACHED 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 R PICK POINT WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL BLOWS OF THE TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. FRAGMENTS $\underline{STRATA CORE RECOVERY (SREC.)}$ - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. 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 GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. PIECES 1 INCH ED READILY BY TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: THICKNESS 4 FEET FEET ELEVATION: .5 - 4 FEET 6 - 1.5 FEET NOTES: 3 - Ø.16 FEET 08 - 0.03 FEET FIAD - FILLED IMMEDIATELY AFTER DRILLING 0.008 FEET AT, PRESSURE, ETC. ••NOTE: FROM GEU: BRIDGE BORINGS ALOS HAVE THE ORIGINAL "B-x" DESIGNATOR INCLUDED IN THE BOREHOLE NAME TO CORRELATE w/ THE ORIGINAL NAME OF THAT BORING FROM THE 2018 RDWY DRILLING PROGRAM TEEL PROBE:

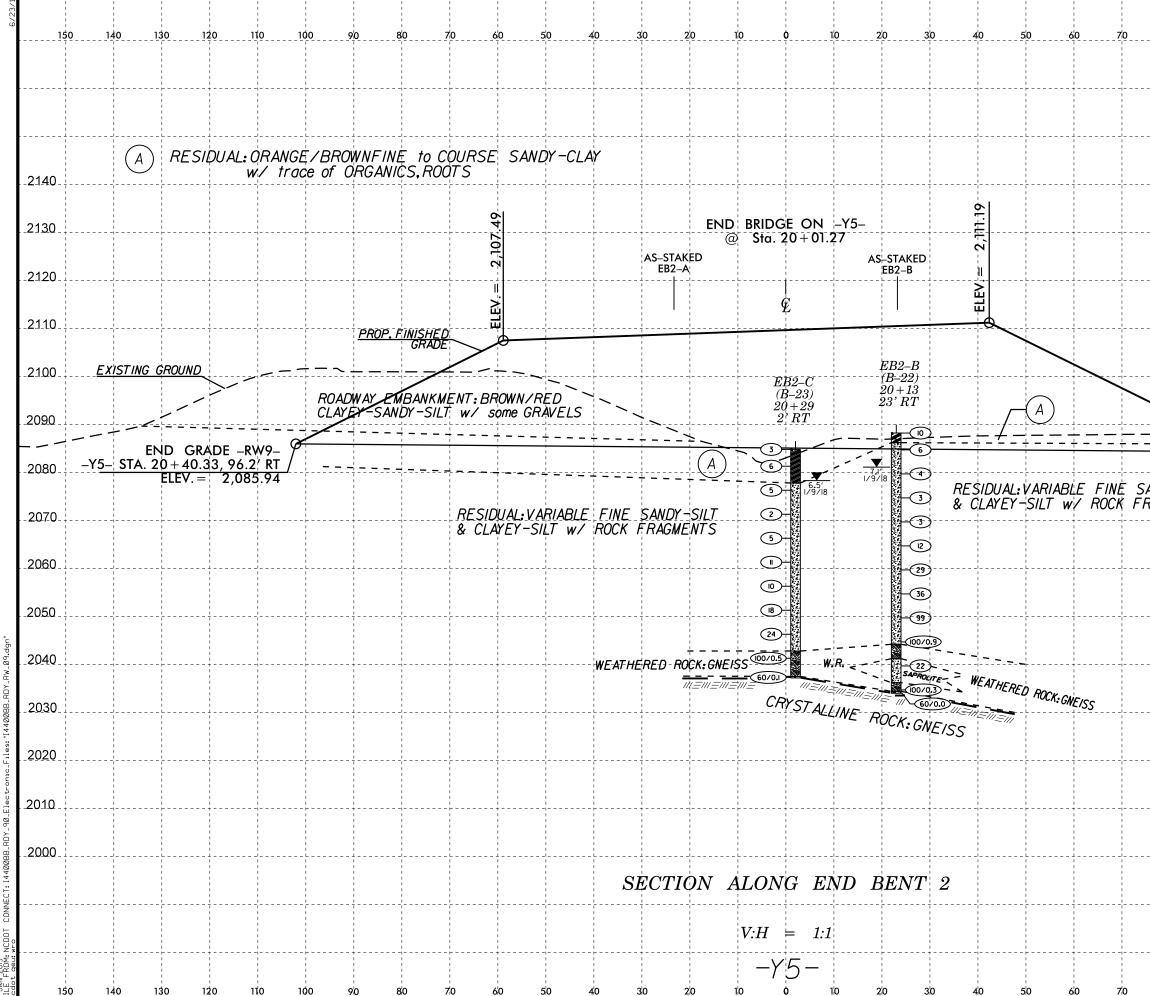


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	1						2040
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·					1		_ 2030
ATHEI	RED	ROC	CK:G	NE/S	55		
·····	·· <i></i>					L	
					I.		2020
·							_ 2020
	•	•NOTE: FROM	GEU: BRIDGE F	ORINGS ALSO	HAVE THE OF	RIGINAL "B-x"	DESIGNATOR
		INCLUDED NAME OF	IN THE BORE	HOLE NAME T	O CORRELATE	RIGINAL "B-×" (w/ THE ORIG	INAL
	 ! !						
<u> </u>	1 1 1			1	1 1 1		
40	5	0	6	0	7	0	2120



		0 5	5 10	PROJ. R I –	EFERENCE NO	D. S⊦	ieet no. 6
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				1 1 1 1			_ 2140 _
				1			
			 	 			_ 2130_
	E _RV 91.3 2,084						_ 2120 _
	5RAD						- - - - -
	BEGIN GRADE -RW9+ -Y5- STA. 19+65.69, 91.3' RT ELEV. = 2,084.26		 	 			_ 2110
	BEG STA.		, , , , , , , , , , , , , , , , , , , ,	' ' ' t			_ 2100 _
	<u>-75-</u>			EXIST	ING GRO	UND	_ 2090_
	5		/				
ANDY-SILT			 	 			- 2080 -
RAGMENTS							_ 2070 -
			, 1 1 1 1				2000
				 			_ 2060 _
			 	, , , , ,			_ 2050_
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L J			 	 			_2030
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			 	 			_ 2000 _
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*•NOTE:	FROM GEU	BRIDGE BO	DRINGS ALS	; O HAVE TH TO CORRFI	IE ORIGINAL ATE w/ TI	"B-x" DESI E ORIGINAI	GNATOR
NA	ME OF THA	T_BORING	FROM_THE	2018 RDWY		PROGRAM	
80 9	0 10	00 11	0 12	20 1:	30 14	0 15	50

													= L					
	34232					I P I-4						/ HE						GEOLOGIST M. Arnold
						-				usine							n SR	R1528 Brookside Camp Rd GROUND WTR (ft)
	ING NO				_	ΤΑΤΙΟ						OFFS						ALIGNMENT -Y5- 0 HR. 7.4
	LAR ELI					OTAL						NOR	THING					EASTING 964,118 24 HR. 2.2
DRILL	RIG/HA	MMER E	FF./DA	TE F8	R2175	CME-5	CME-55 88% 02/11/2017			DRILL METHOD H.S.				IETHO	D H.	S. Augers HAMMER TYPE Automatic		
DRIL	LER S	. Davis			S	TART	DATE	01	/05/1	8		COM	P. DA	TE	01/0	06/18		SURFACE WATER DEPTH N/A
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	OW COU 0.5ft	JNT 0.5ft	0	2	BL(25	OWS F	PER F 50		75	100		MP. O.	моі	L O G	SOIL AND ROCK DESCRIPTION
2080	2,079.6	0.0	2	2	5					· · ·		· ·				M		-2,079.6 GROUND SURFACE 0.0
2075	2,076.1	3.5	4	3	3		· · ·	· · ·	· · · ·	· · ·	· · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			M		2077.6Brown, Fine to Coarse Sandy SILT (A-4) with20 Trace Organics (Roots) and Clay/ Tan-Orange-Brown, Fine to Coarse Sandy CLAY (A-7)
2070	2,071.1	8.5 -	1	2	3	· · · · -∳5-	· · · ·		· · ·	 	· · ·	· · ·	· · ·			Sat.		<u>2,072.6</u> Orange-Brown-White, Fine to Coarse Sandy Clayey SILT (A-5) with Trace Mica and Rock Fragments
2065	2,066.1	13.5	2	1	3		· · · · · ·	· · ·	· · ·	· · ·	· · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · ·			Sat.		
2060	2,061.1	18.5	2	1	3		· · · · · · · · · · · · · · · · · · ·		· · · ·	 	· · · · · ·	· · · · · · · · · · · · · · · · · · ·	 					-
2060	2.056.1	23.5			5	•4	· · · · ·		· · · ·		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	 			W		-
055		-	2	2	5	• • • • •	· · ·		· · ·	· · ·	· · · · ·	· · · · · · · · · · · · · · · · · · ·	· · ·			W		-
2050	2,051.1	28.5	3	5	7		12	· · ·	· · ·	· · ·	· · ·	· · ·	· · ·			W		
2045	2,046.1	33.5	7	9	12		· \.		· · ·	· · ·	· · ·	· · ·	· · ·			М		White-Tan-Brown, Fine Sandy SILT (A-4) with Trace Mica and Rock Fragments
2040	2,041.1	38.5	10	12	24		· · ·) 36	· · ·	· · ·	· · ·	· · ·			М		-
2035	2,036.1	43.5	4	9	14		· · ·	23.		· · ·	· · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			М		· · ·
2030	2,031.1	48.5	12	48	52/0.2		· · · ·			* * : 	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·						- - 2,030.6 49.0 - WEATHERED ROCK
2025	2,026.1	53.5	100/0.3	3			· · · · · ·		· · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · ·		 DÓ/0.3					Tan-Brown (GNEISS)
	2,021.1	58.5	100/0.3				· · · · · ·	 	· · · ·	 	· · · · · · · · · · · · · · · · · · ·	 	 					- . 2,020.8
																		GNEISS (Weathered Rock)

WBS	34232	2.1.3			т	IP -	4400	BB		со		
	E DESCI		N I-2	6 from					S 25			
										Dusii	1033	
	LAR ELE L RIG/HAI											N
												-
DRIL	LER S	. Davis			S	TART	DAT	E 0	1/06/	18		C
	DRIVE ELEV	DEPTH	L	W CO					.ows		FOO	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0		25		50		75
2090		+										
	-	+										
0005	- 2,085.4	- 0.0										
2085	2,000.4		1	3	3		6	1:		1:		
	2.081.9	3.5				.				.	• •	
080	- 2,001.9	- 3.3	6	5	6	1 :	b 11 ·				· ·	:
000	-	ŧ					<u> </u>	1.		1.		
	2.076.9	8.5				·/	· · ·	·			· ·	:
2075		+	3	2	3		5	•		.	•••	•
	-	F				†				1:		
	2,071.9	13.5					· · ·					:
2070	-	Ł	2	1	2	• 3	• • •	-		-	•••	•
		F				Ń		-		-	• •	
	2,066.9	18.5		4		.`						:
065	-	L	2	4	6		● 10 ·	•	· · ·	•	•••	·
	-	+					¦ · ·				•••	
	2,061.9	23.5	4	4	7	:	į ::					
060		+	4	4	'		•11 ·		· · ·		•••	•
		Ł					$\frac{1}{1}$			1:	•••	:
	2,056.9_	- 28.5	9	12	16	- -		· .			• •	
)55	-	F						028	· · ·		· ·	
	-	ŧ						:\	<u>,</u>	1		:
	2,051.9	33.5	9	13	27	11:	· · ·		•40		 	•
2050	-	+					· · · ·				• •	-
	2.046.9	20 -				:		:	. 	:		-
2045	2,040.9-	- <u>38.5</u> -	47	22	15	1 :	· · · · · ·	:	●37.		· ·	:
-040	-	‡						+:				=
	2.041.9	43.5				:	· · ·		 		· ·	:
2040		-	100/0.4								•••	•
	-	F								1:		
	2,036.9	48.5	100/2			:	· · · · · ·	.	· · · · · ·	:		:
2035	-	t	100/0.4					•		•	•••	·
	-	ł				-		•				٠T
	2,031.9	53.5	12	21	17	:		:	· · ·			-+
2030		‡	42	21	17			<u> </u> .	•38	4-	· ·	:
	-	Ł				· ·	· · ·		· · ·			
	2,026.9	58.5	100/0.5			-					• •	
2025		ŧ	100,0.0				· · ·				•••	·
	-	ł.					· · ·	1	· · ·	1		:
	2,021.9	63.5	60/0.0					⊥.		⊥.	• •	
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GEOTECHNICAL BORING REPORT BORE LOG

HENDER	SON			GEOLOGIST M. Arnold									
(Exit 44): Y5	BRDG	0221 0	on SR	1528 Brook	side Camp Ro	1	GROUN	D WTR (ft)					
OFFSET 2	25 ft RT			ALIGNMEN	NT -Y5-		0 HR.	9.8					
NORTHING	609,6	17		EASTING	964,122		24 HR.	12.5					
	DRILL N	IETHO	D H.S	6. Augers		HAMME	ER TYPE	Automatic					
COMP. DAT	E 01/0	06/18		SURFACE	WATER DEP	TH N//	Ą						
	SAMP.	▼∕	L	1	SOIL AND ROO								
75 100	NO.	моі	O G	ELEV. (ft)	SOIL AND ROC	K DESC		DEPTH (ft)					
			-										
			F	0.005.4									
		М	- (X)	2,085.4		IDUAL		0.0					
			-	1.	own, Fine Sandy Organics (R	oots) and	d Clay	1					
		М		Ora	nge-Tan-Brown,	Silty Fine	e Sandy Cl	AY					
				2,078.4	· `			7.0					
		10/			ray-White and O rse Sandy Claye								
· · · ·		W			Mica and Ro	ock Fragi	ments						
			- V - V										
		Sat.											
				2,068.4				17.0					
			Ē		nge-Brown, Fine			SILT					
		W	Ľ	(, , ,	,		, on the second						
				2,063.4	nite-Orange-Brow	vn Fine S	Sandy Clay	<u> 22.0</u>					
		w	× × 1		(A-5) with Trace and Mangal	Mica, Ro	ock Fragm						
				2,058.4	anu mangai	nese Del	005115	27.0					
			Ē	Orai	nge-White-Gray, vith Trace Mica a	Fine Sa	ndy SILT (A-4) — — — — — — — — — — — — — — — — — — —					
		М	Ŀ	v			Fragment	5					
			Ŀ										
		w	Ŀ										
<u> </u>			Ŀ										
			Ŀ										
		М	F										
			Ē	2,043.4				<u> </u>					
. 100/0.4					WEATHE Gray-Brov								
. 100/0.4													
. 100/0.4													
			Æ	2,033.4				52.0					
		м	F		nge-Tan-Brown, <i>v</i> ith Trace Mica a								
		М	E F										
				2,028.4	WEATHE	RED RO	ск	<u> </u>					
· 100/0.5					Tan-Gray	y (GNEIS	SS)						
· · · ·]				2,022.8				60.6					
60/0.0				2,022.8	CRYSTAL			62.6 63.5					
			-	L	Boring Termina		Standard						
					Penetration Test 021.9 ft in GNEIS								
						lote:							
				1. 0	.0'-0.1' = SURFIG		GANIC SC	NLS					
			-										

WBS 34232.1.3	TIP I-4400BB COUNT	Y HENDERSON	GEOLOGIST M. Durway		WBS 34232.1.3
SITE DESCRIPTION I-26 from US				GROUND WTR (ft)	SITE DESCRIPTI
BORING NO. B1-A (B-21)	STATION 19+26	OFFSET 28 ft LT	ALIGNMENT -Y5-	0 HR. 4.9	BORING NO. B
COLLAR ELEV. 2,084.0 ft	TOTAL DEPTH 66.0 ft	NORTHING 609,750	EASTING 964,137	24 HR. 3.5	COLLAR ELEV.
DRILL RIG/HAMMER EFF./DATE F&R2		DRILL METHOD SPT		ERTYPE Automatic	DRILL RIG/HAMMER
DRILLER S. Davis	START DATE 02/14/18	COMP. DATE 02/14/18		/Δ	DRILLER S. Dav
					CORE SIZE N
	.5ft 0 25 50	75 100 NO. MOI G	SOIL AND ROCK DES	CRIPTION	
					(ft) ELEV DEF
2085					2028.1
2,084.0 0.0	4		2,084.0 GROUND SURF/ RESIDUAL	ACE 0.0	2,028.1 55.9
		· · · · · 🗕 🚬	2.082.0 Orange, Fine Sandy Silty		2025
2080 2,080.5 3.5 2 2	$3 \qquad \qquad$		Orange-Gray-Brown, Fine Sa with Trace Mic	andy SILT (A-4)	2,023.1 60.5
					2020
2075 2,075.5 8.5					2,018.0 66.0
	1	<u> </u>			
		E E			‡
2070 2,070.5 13.5 13.5 1 2	2 4	<u></u> м Е			‡
		· · · · ·			
2065 2,065.5 18.5 4 6	7	· · · · ·			
		E E			
			2,062.0 Orange-Brown, Fine Sandy	<u>, Clayey SILT</u> <u>22.0</u>	
2060 2,060.5 23.5	3		(A-5) with Trace I	Mica	
2055 2,055.5 28.5			0.054.4		
			2,054.4	vith Trace Rock 29.6	
			Fragments 2,050.5	33.5	
2050 2,050.5 33.5 45 55/0.2		100/0.7	WEATHERED RO	DCK	
			Gray-Brown (GNE		
2045 2,045.5 38.5 48 52/0.2					
		100/0.7			
2040 2,040.5 43.5					
2040 2,040.5 45.5 100/0.5		100/0.5			
					$ \pm$
2035 2,035.5 48.5		100/0.3			1/3/19
			0.000.0		
2030 2,030.5 53.5			CRYSTALLINE R		Y5.GPJ NC_DOT.GDT
			. Gray (GNEISS		
2,028.1 55.9 60/0.0		60/0.0	2,028.1	55.9	
2025					2. 2. 2. 2. 2.
2,023.1 60.9		- · · · · · · · · · · · · · · · · · · ·			
60/0.1					
			2,018.0 Boring Terminated at Elevati		NCDOT CORE DOUBLE 14400B_GEO_BH_RDWY
			GNEISS (Crystalline	ROCK)	
			Note: 1. 0.0'-0.2' = SURFICIAL OF	RGANIC SOILS	

									С	0			
WBS	34232	2.1.3			TIP	I-4400	OBB	С		_			
SITE	DESCR		N 1-2	6 from US	64 (E	Exit 49) to US 2	5 Busi	ness ((Ex			
BOR	ING NO	. B1-A	A (B-2	21)	STA	TION	19+26			0			
COL	LAR ELE	EV. 2,0	084.0	ft	TOTAL DEPTH 66.0 ft								
DRILI	_ RIG/HAI	MMER E	FF./DA	TE F&R2	2175 CME-55 88% 02/11/2017								
DRIL	LER S	. Davis			START DATE 02/14/18								
COR	E SIZE	N			TOTAL RUN 10.0 ft								
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	REC. (ft) %	ATA RQD (ft) %	L O G			
2028.1	2,028.1	55.9	5.0	N-60/0 0				(5.7)	(2.1)				
2025			5.0	N=60/0.0 1:00/1.0 0:57/1.0 0:49/1.0 0:54/1.0 1:15/1.0	(0.9) 18%	(0.0) 0%		(5.7) 56%	(2.1) 21%				
	2,023.1	60.9 61.0	5.0	1:15/1.0 N=60/0.1/	(4.8)	(2.1)				5			
2020	2,018.0	66.0		N=60/0.1/ 0:47/1.0 1:02/1.0 1:08/1.0 0:47/1.0 0:50/1.0	96%	42%							
		00.0		0.50/1.0									
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GEOTECHNICAL BORING REPORT ORE LOG

HENDERSON GEOLOGIST M. Durway GROUND WTR (ft) xit 44): Y5 BRDG 0221 on Brookside Camp Rd OFFSET 28 ft LT ALIGNMENT -Y5-0 HR. 4.9 **NORTHING** 609,750 **EASTING** 964,137 24 HR. 3.5 HAMMER TYPE Automatic DRILL METHOD SPT Core Boring COMP. DATE 02/14/18 SURFACE WATER DEPTH N/A

L O G		DESCRIPTION AND REMARKS	
G	ELEV. (ft)		DEPTH (ft)
>	2,028.1	Begin Coring @ 55.9 ft	55.9
	2,020.1		55.5
R	-		
2	-		
	-		
	-		
2	-		00.0
2	2,018.0		66.0
F	-		
	-		
F	-		
	-		
F	-		
	-	**NOTE: NO CORE PHOTOGRAPH AVAILABLE	
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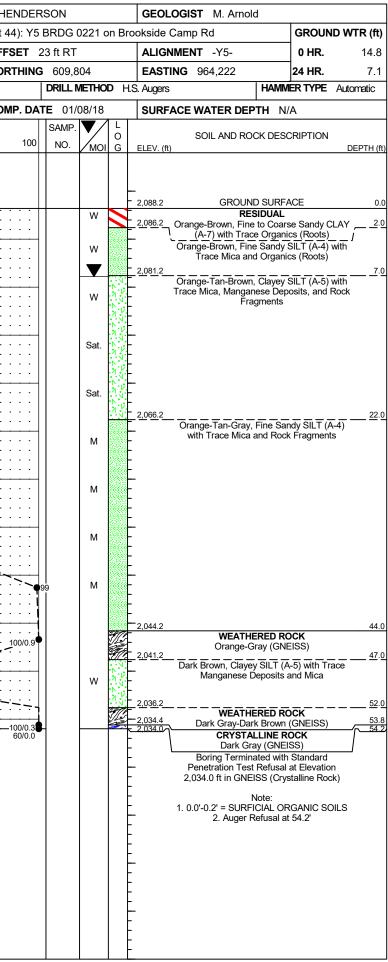
								B	<u>ORE L</u>	<u>.OG</u>							
WBS	34232	2.1.3			Т	IP I-4400BE	3	COUNT	Y HENDEF	RSON			GEOLOGI	ST S. Woo	ods		
SITE	DESCR	RIPTIO	N I-2	6 from	ו US 6₄	4 (Exit 49) to	0 US 25 Bi	usiness (Exit 44): Y5	BRDG)221 o	n Bro	okside Cam	ıp Rd		GROUN	ID WTR (ft
BOR	ING NO	. B1-	B (B-2	0)	S	TATION 19	9+07		OFFSET	22 ft RT			ALIGNME	NT -Y5-		0 HR.	10.7
COLI	LAR ELE	EV. 2,	083.7	ft	т	OTAL DEPT	H 65.4 ft		NORTHING	6 09,7	10		EASTING	694,172		24 HR.	6.0
DRILL	RIG/HA	MMER E	FF./DA	TE F	&R2175	5 CME-55 88%	02/11/2017	7		DRILL	/IETHO	DHS	S. Augers		HAMM	ER TYPE	Automatic
DRIL	LER S	. Davis	;		S	TART DATE	02/09/18	3	COMP. DA	TE 02/	09/18		SURFACE	WATER DE	EPTH N/	Ά	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	OW CO 0.5ft		0 2	BLOWS P 5 5	ER FOOT 0	75 100	SAMP. NO.	моі	L O G	ELEV. (ft)	SOIL AND R	OCK DES	CRIPTION	DEPTH (1
2085	2,083.7-	0.0	1	2	3	 					M		2,083.7		IND SURFA		0
2080	- _2,080.2_	3.5	1	1	2	$\begin{bmatrix} \mathbf{P}^5, \dots, \\ \mathbf$	· · · · ·						\	own, Clayey S (A-2-4) with T , Fine to Coar	ilty Fine to race Organ	Coarse SA	<u>) </u>
	-					$\begin{bmatrix} \bullet 3 & . & . \\ I & . & . \\ I & . & . \\ I & . & . \end{bmatrix}$	· · · · ·	· · · · ·	· · · · ·		₩		2,076.7		Silt		7
2075	2,075.2	8.5	2	1	1	• • • • • • • • • • • • • • • • • • •	· · · · ·	· · · · ·	· · · · ·		Sat.		- Brow	vn, Fine to Coa Frace Mica an	arse Sandy	SILT (A-4 se Deposit) with is
2070	- 2,070.2	13.5	2	2	3	$ \begin{bmatrix} 1 & \dots & \dots \\ 1$	· · · · ·	· · · · ·	· · · · ·		w		-				
2065	2.065.2	18.5				$\left \begin{array}{c} 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 $	· · · · ·	· · · · ·					2,066.7Ora	inge-Gray-Tar	n, Fine San	dy Clayey S	SILT 17
			3	3	6		· · · · ·	· · · · ·			W		- (/	A-5) with Trac	e Mica and Deposits	wanganes	se
2060	2,060.2	23.5	4	6	8		· · · · ·				w		-				
2055	2,055.2	28.5	6	5	6		· · · · · ·	· · · · ·			w						
2050	- 2,050.2	33.5	_			$\left \begin{array}{c} \cdot \cdot \overline{\lambda} \cdot \cdot \\ \cdot \cdot \cdot \overline{\lambda} \cdot \\ \cdot \cdot \cdot \overline{\lambda} \cdot \\ \cdot \cdot \cdot \overline{\lambda} \cdot \end{array}\right $	· · · · ·	· · · · ·	· · · · ·								
	-		7	10	12		2 	· · · · ·	· · · · · · · · · · · · · · · · · · ·		М	ー ー ー 					
2045	2,045.2	38.5	6	9	15		24	· · · · ·			М	<u> </u>	-				
2040	2,040.2	43.5	21	27	27		· · · · · ·	• • • • • • • • • •			М		_2,041.7Or 	ange-Tan, Fir	ne to Coars (A-4)	e Sandy Sl	<u>ILT — 4</u>
2035	- 2,035.2	48.5	45	- 50	50/0.0		· · · · ·		· · · · ·				2,036.1		HERED RO		4
	-		15	50	50/0.2		 	· · · · ·	100/0.7					Brown to Ora	inge-Brown	(GNEISS)	
2030	2,030.2	53.5	100/0.2	2			· · · ·		100/0.2				-				
2025	- 2,025.2	58.5	100/0.2	2			· · · · ·	· · · · ·	100/0.2				-				
2020	2,020.2	t i	100/0.2	2			· · · ·		100/0.2				-				
	2,018.3	65.4	60/0.0						60/0.0					Boring Term Penetration Te 018.3 ft on GN	est Refusal	at Elevatio	
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GEOTECHNICAL BORING REPORT BUDEIUC

								B	SORE L	OG					
WBS	34232	2.1.3			Т	' IP I-4400BE	3	COUNT	Y HENDER	SON			GEOLOGIST M. Arnold		
SITE	DESCR	RIPTIO	N I-2	6 from	US 6	64 (Exit 49) to	US 25 B	usiness ((Exit 44): Y5	BRDG)221 d	on Bro	ookside Camp Rd	GROUN	ID WTR (ft)
BOR	ING NO	. EB2	2-C (B	-23)	s	TATION 20	+29		OFFSET 2	ft RT			ALIGNMENT -Y5-	0 HR.	7.2
COLI	AR ELE	EV. 2,	084.8	ft	Т	OTAL DEPTH	1 47.6 ft		NORTHING	609,8	28		EASTING 964,210	24 HR.	6.5
DRILL	. RIG/HAI	VIMER E	FF./DA	TE F8	R217	5 CME-55 88%	02/11/2017	7	·	DRILL N	/IETHO	DH.	S. Augers	IAMMER TYPE	Automatic
DRIL	LER S	. Davis	;		s	TART DATE	01/08/18	8	COMP. DAT	E 01/	08/18		SURFACE WATER DEPTI	H N/A	
ELEV	DRIVE ELEV	DEPTH	BLC	ow co	UNT		BLOWS F			SAMP.		L	SOIL AND ROCK	DESCRIPTION	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	5 5	50	75 100	NO.	мо				
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	-	- 0.0	WOH	1	2	4 ³ · · · ·	· · · · · · · ·	· · · ·			W		Brown, Fine to Coars	e Sandy CLAY (A	A-6)
2080	2,081.3	3.5	3	2	4	$\left \begin{array}{c} \mathbf{I} \\ \mathbf{V} \\$	· · · · · · · ·	· · · ·			w		with Trace Org	anics (Roots)	
2000	-	-	-								Ť		-		
	- 2,076.3	8.5					· · · · · · · ·	 							
2075	-2,070.0	- 0.0	2	2	3	− ↓ · · · ·	••••		••••		w	1 V N	 Trace Mica and Manga to Little Rock 	nese Deposits, 1 Fragments	race
	-	-						 							
0070	2,071.3	13.5	WOH	1	1	$\left \begin{array}{ccc} 1 & \cdot & \cdot & \cdot \\ 1 & \cdot & \cdot & \cdot \\ 1 & \cdot & \cdot & \cdot \end{array} \right $	· · · ·	 			0				
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	- 2.066.3	40.5					· · · ·	 				1 V 1 V			
2065	_2,000.3	<u>18.5</u>	2	2	3				• • • • •		Sat.	1 V 1 V	_		
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	2,061.3	23.5	4	5	6	:\::						1 V 1 V			
2060	-	-	4	5							W	л . И М	-		
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	-	F										л. у И у			32.0
	2,051.3	33.5											Tan-Orange-Brown, F with Trace Mica, Clay,		Ā-4) — — — — — — — —
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	-	F										F			
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	-	F										-			42.0
	2.041.3	43.5										10	WEATHER		+2.0
2040	-	F	100/0.5				· · · ·		100/0.5				- Gray-Brown	(GNEISS)	
	2.037.3	47.5					· · · · ·						- - 2,037.5		47.3
		-	60/0.1						60/0.1				CRYSTALL Gray (G	NEISS)	47.6
	-	-											Boring Terminate Penetration Test R		
	-	F											2,037.2 ft in GNEISS	6 (Crystalline Roc	:k)
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WBS	34232	2.1.3			г	ΠP	P I-4400BB COUNTY	(HE
			N 1-26	3 from			(Exit 49) to US 25 Business (I	
	ING NO						ATION 20+13	OFFS
					-		TAL DEPTH 54.2 ft	NOR
							CME-55 88% 02/11/2017	
	LER S						ART DATE 01/08/18	сом
ELEV	DRIVE	DEPTH		w co		Т	BLOWS PER FOOT	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft			75
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2080	2,079.7-	- 8.5	1	2	2	-		· · ·
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2060	2,059.7-	- 28.5		-				· ·
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GEOTECHNICAL BORING REPORT BORE LOG



CONTENTS

<u>SHEET NO.</u>	DESCRIPTION
I	TITLE SHEET
2	LEGEND (SOIL & ROCK)
3	SITE PLAN
4-6	CROSS SECTIONS
7-11	BORE LOGS & CORE REPORT

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY HENDERSON

PROJECT DESCRIPTION REPLACE BRIDGE 440217 ON CLEAR CREEK RD. (SR 1503) OVER I-26

SITE DESCRIPTION _

32 42. Õ PROJEC

STATE N.C

STATE PROJECT REFERENCE NO. **I4400B**

1



TOTAL SHEETS

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 1919/TO7-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAIL

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 UN-FLACE)TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOL MOISTURE CONDITIONS, MOICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOL MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OF CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLATORS. 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 INTERRETATIONS MADE, OR OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HINSELF 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 ACULAL CONDITIONS ENCOUNTERED 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. 2.

PERSONNEL

S. WOODS

C.D. JOHNSON

M. DURWAY

S. DAVIS

D.O. CHEEK

C.J. COFFEY

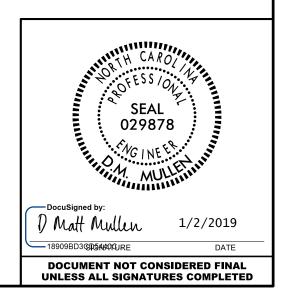
INVESTIGATED BY _____. MULLEN

DRAWN BY ______. MULLLEN

CHECKED BY JCK

SUBMITTED BY

DATE 1.2.2019



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

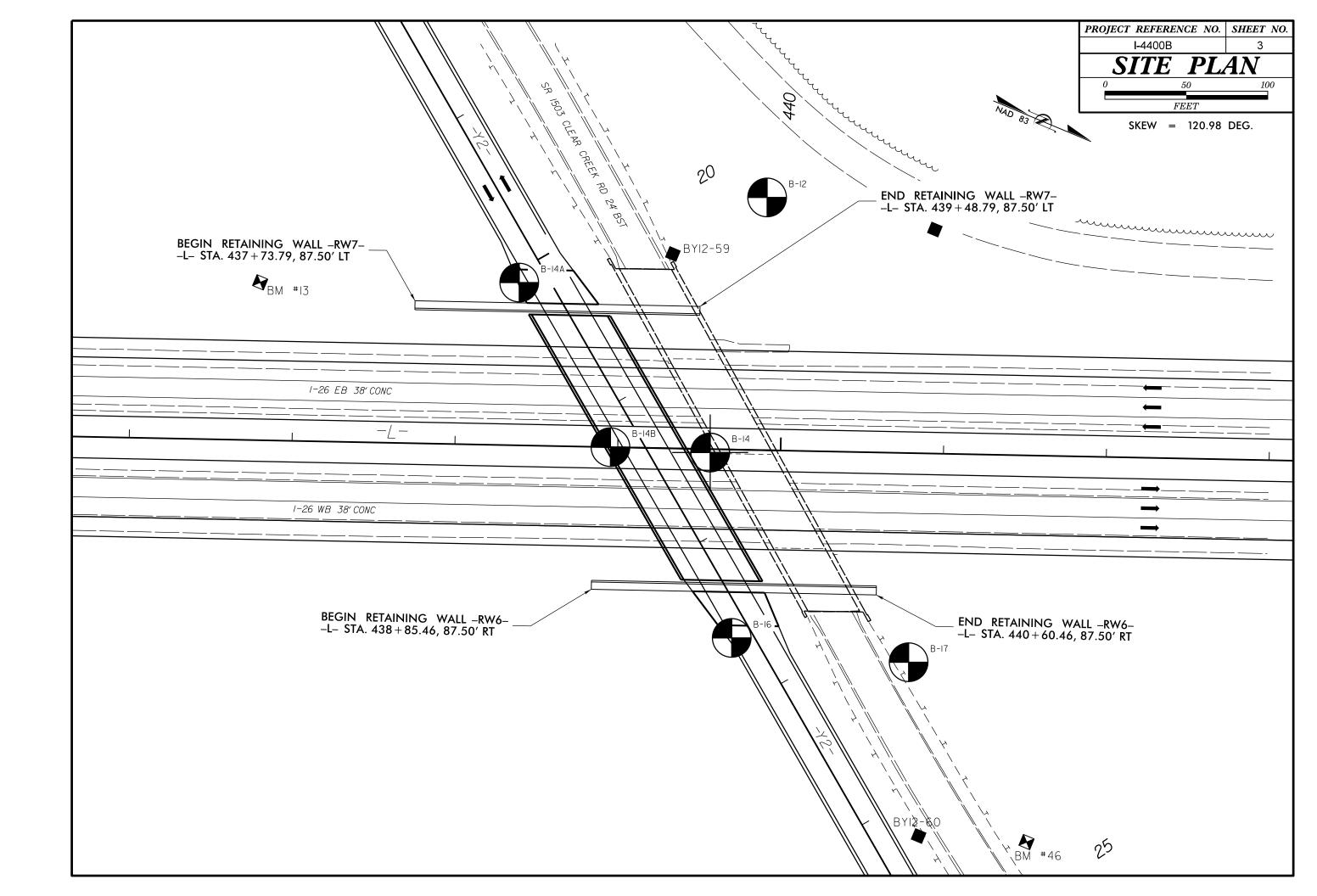
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

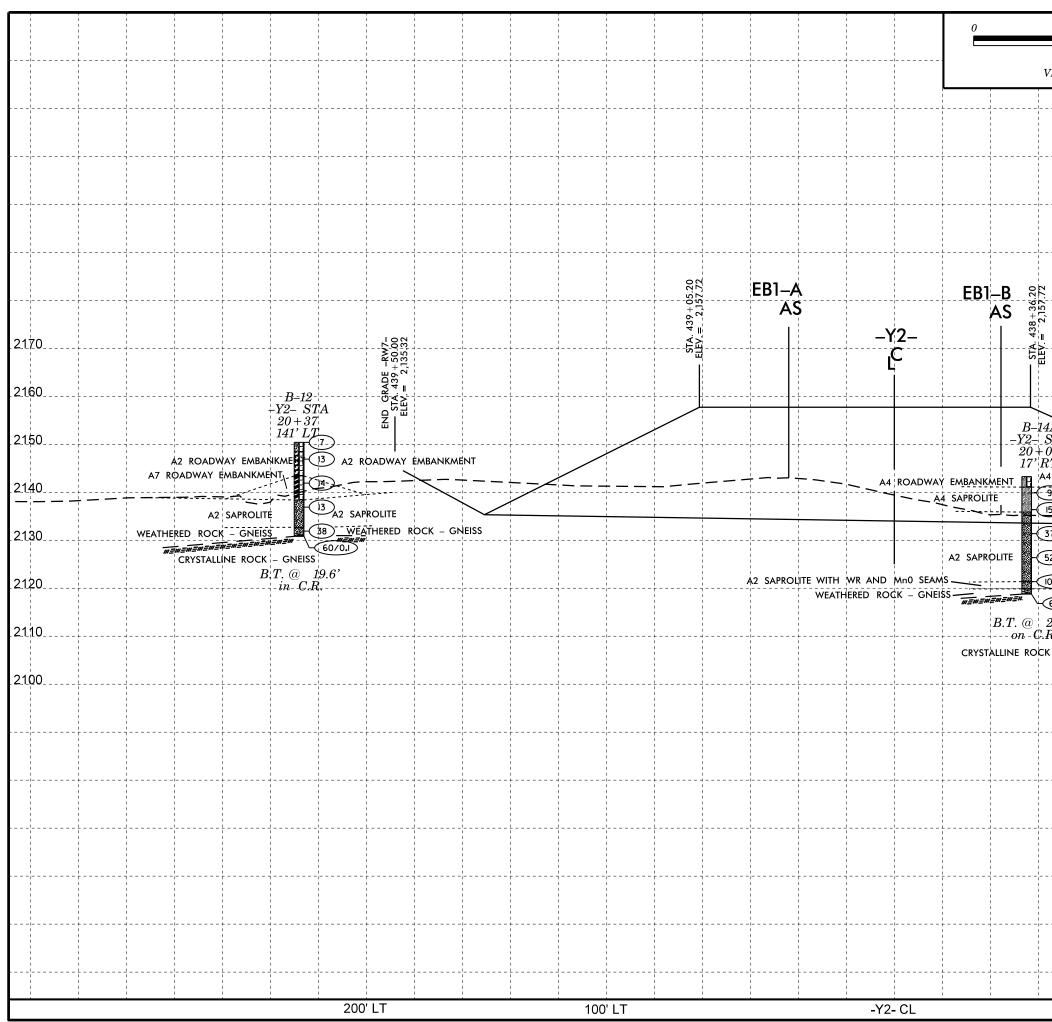
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206,ASTM DIS66). SOIL CLASSIFICATION	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.	HABD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. ADUIFER - A WATER BEARING FORMATION OR STRATA.
IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	BLOWS IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS:	ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	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.
SOIL LEGEND AND AASHTO CLASSIFICATION	ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 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 OPPOANIC MATERIALS		CRYSTALLINE	WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
ULASS. (\$ 30% PASSING \$200) (\$ 30% PASSING \$200)	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) GNEISS, GABBRO, SCHIST, ETC.	SUMPALE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
GROUP A-1 A-3 A-2 A-4 A-5 A-6 A-7 A-1, A-2 A-4, A-5 CLASS. A-1-a A-1-b A-2-5 A-2-6 A-2-7 A-7a A-6, A-7	COMPRESSIBILITY	NON-CRYSTALLINE FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
SYMBOL 000000000000000000000000000000000000	SLIGHTLY COMPRESSIBLE LL < 31	ROCK (NCR)	OF SLOPE.
2 PASSING	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 SILI- MUCK, SOLIS CLAY PEAT		(CP) SHELL BEDS, ETC. WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
*200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN S0 MN	GRANULAR SILT - CLAY ORGANIC MATERIAL SOILS OTHER MATERIAL 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.	ROCKS OR CUTS MASSIVE ROCK. <u>DIP</u> - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
MATERIAL PASSING *40 SOILS VITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	HORIZONTAL.
LL – – – 48 MX 41 MN LITTLE OR PI 6 MX NP 18 MX 10 MX 11 MN 11 MN 18 MX 10 MX 11 MN 11 MN MODEPATE HIGHLY	MODERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% 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.	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX NO MX AMOUNTS OF ORGANIC SOILS	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO (SLI.) I INCH. OPEN JOINTS MAY CONTAIN CLAY, IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAIOR GRAVELAND, FINE SILTY OR CLAYEY SILTY CLAYEY MATTER	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
Materials Sand Sand Gravel and Sand Suils Suils	STATIC WATER LEVEL AFTER <u>24</u> HOURS	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.
GEN.RATING EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABL		DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FICOD 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	WITH FRESH ROCK. 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	
PRIMARY SOIL TYPE COMPACTNESS OR COMPACTNESS OR COMPACTNESS OR COMPACTNESS OR COMPACTNESS OR COMPACTNESS OF COM	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. IF TESTED, WOULD YIELD SPT REFUSAL	<u>JOINT</u> - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. <u>LEDGE</u> - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
(TONS/FT ²)		SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT (SEV.) REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED	ITS LATERAL EXTENT.
GENERALLY VERY LOOSE < 4 GRANULAR LOOSE 4 TO 10 GRANULAR VERVE SEVER	SOIL SYMBOL	TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
MATERIAL MEDIUM DENSE 10 TU 30 N/A	ARTIFICIAL FILL (AF) OTHER COME BORING COME PENETROMETER	IF TESTED, WOULD YIELD SPT N VALUES > 100 BPF VERY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
(NON-COHESIVE) VERY DENSE > 50		SEVERE BUT MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE
VERY SOFT < 2 < 0.25 GENERALLY SOFT 2 TO 4 0.25 TO 0.5	INFERRED SOIL BOUNDARY	(V SEV.) REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE THAT ONLY MINOR VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIELD SPT N VALUES < 100 BPF</u>	OF AN INTERVENING IMPERVIOUS STRATUM. 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	TEST BORING WILL TEST BORING WILL TEST BORING WILL TEST BORING	COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
Interface OTH 1 OTO 1 OTO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD > 30 > 4		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.
TEXTURE OR GRAIN SIZE	RECOMMENDATION SYMBOLS	ROCK HARDNESS	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		VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.	NULK. <u>SILL</u> - 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 DOULL DED CODRLE CDARSE FINE STLT CLAX	UNDERCUT UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - UNSUITABLE WASTE UNCLASSIFIED EXCAVATION - EACHTABLE DECRADABLE ROCK UNDERCUT UNDER	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.) (GR.) (CSE. SD.) (F SD.) (SL.) (CL.)	ABBREVIATIONS	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT 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	BY MODERATE 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
SIL MOISTURE - CORRELATION OF TERMS	CL CLAY MOD MODERATELY γ - UNIT WEIGHT	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT, HARD CAN BE EXCAVATED IN SMALL CHIPS TO PEICES I INCH MAXIMUM SIZE BY HARD BLOWS OF THE	WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
SOIL MOISTURE SCALE FIELD MOISTURE CUIDE FOR FIELD MOISTURE DESCRIPTION	CPT - CONE PENETRATION TEST NP - NON PLASTIC $\gamma_{\rm d}$ - 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 GOIDE FOR FIELD HOISTORE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST <u>SAMPLE ABBREVIATIONS</u> DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.	TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY (SAT.) FROM BELOW THE GROUND WATER TABLE	e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON 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	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.
	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE - WET - (W) ATTAIN OPTIMUM MOISTURE	FRAGS FRAGMENTS W - MOISTURE CONTENT CBR - CALIFORNIA BEARING	FRACTURE SPACING BEDDING	BENCH MARK: BM-I3
	HIHIGHLY V-VERY RATIO EQUIPMENT USED ON SUBJECT PROJECT	TERM SPACING TERM THICKNESS VERY WIDE MORE THAN 10 FEET VERY THICKLY BEDDED 4 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 MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET	ELEVATION: 2131.63 FEET
SL SHRINKAGE LIMIT REDUIRES ADDITIONAL WATER TO	CME-45C CLAY BITS X AUTOMATIC MANUAL	CLOSE Ø.16 TO 1 FOOT VERY THINLY BEDDED Ø.03 - Ø.16 FEET	NOTES:
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	CME-55 6* CONTINUOUS FLIGHT AUGER	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	
PLASTICITY	□ □ B □ -H	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH	X CME-550 HARD FACED FINGER BITS X N XWL	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NON PLASTIC 0-5 VERY LOW SLIGHTLY PLASTIC 6-15 SLIGHT	TUNGCARBIDE INSERTS	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MODERATELY PLASTIC 16-25 MEDIUM HIGHLY PLASTIC 26 OR MORE HIGH	X CASING X W/ ADVANCER POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;	
		BREAKS EASILY WHEN HIT WITH HAMMER.	
		INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; 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

PROJECT REFERENCE NO.



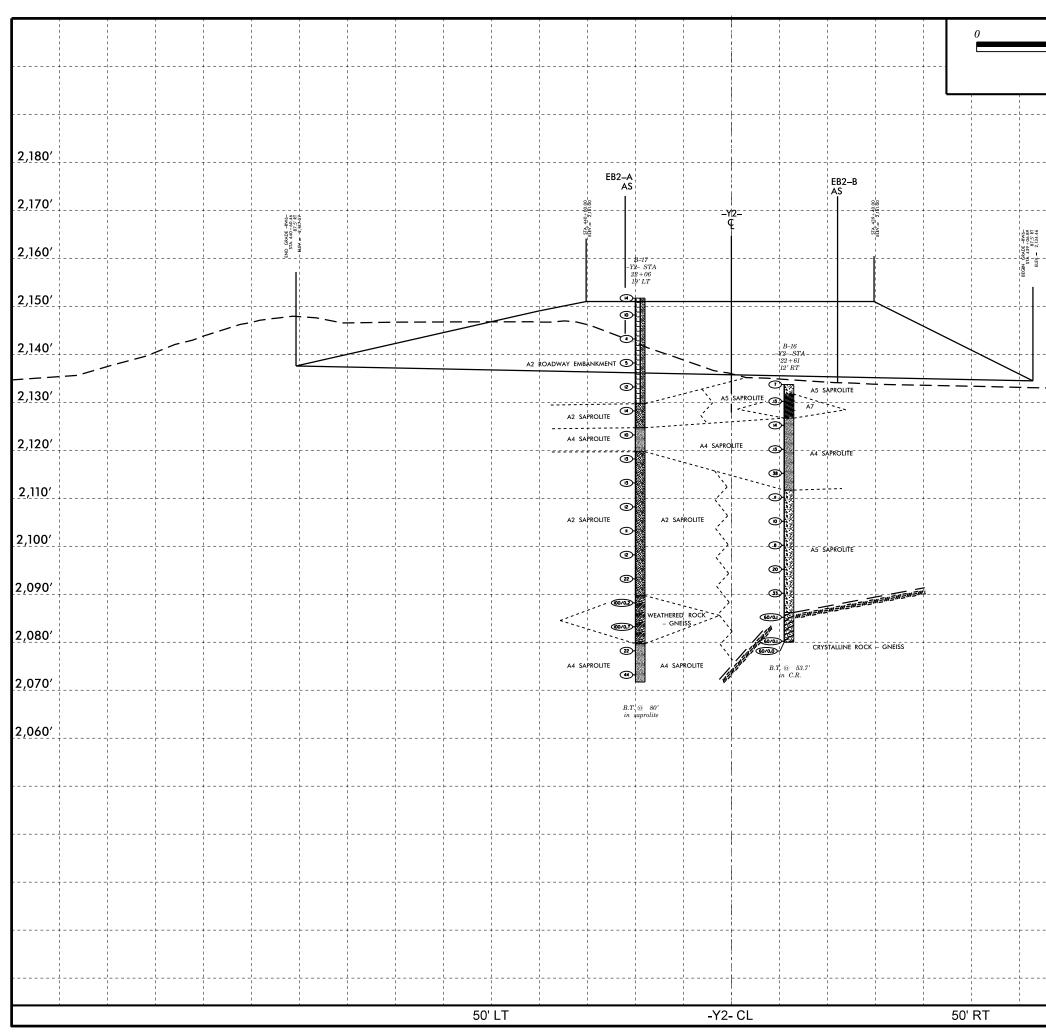
2





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		21	+55	 		B-14 -Y2- S	B STA			
	÷	33		1 1 1 1		21+2 18.5' I	R_{T}^{23}			
2130					<u>-</u>		+ · · · · · · ·			2130
							A4 ROAE	DWAY EMBANKMENT		
		A4 SAPROLITE	A4 SAPROLITE	1 1 1 1						
2120		100/.7		 		6				2120_
		(100/.7)		1 1 1 1						
			WEATHERED ROCK – GNEISS	A4	SAPROLITE WIT	9 TH	AA SAPRO	DLITE WITH WR AND Mn0 SEAMS		
0.4.4.0		100/.7), WR	AND Mn0 SEA	MS 35-				0.1.10
2110				/ 						
		A2 SAPROLITE (1007.7)	A2 SAPROLITE			61				
			A5 SAPROLITE			60/0.J <u>///</u>				
2100		A5 SAPROLITE								2100_
		(100/0.3)	A5 SAPROLITE	1 1 1		100/0.2				
WEAT	HERED ROCK -	GNEISS	WEATHERED F	ROCK – GNEISS			WEATHER	ED ROCK – GNEISS		
2090				 	 	00/0.3	 			2090_
						00/0.4				
	CRYSTALLINE			1 1 1						
2080	CRISTALLINE		CRYSTALLINE ROCK – GNE			B.T. @	43.5'			2080_
2000	+			4	+	in W.	. R .			
		B.T. @	<i>49.9'</i> <i>C.R.</i>	1 1 1 1		1 1 1 1				
		in	U. n .	1 1 1 1		1 1 1 1				
	<u>:</u> 50'	<u>:;</u> 'LT			- CI		1	50 RT		



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 		 		 			_ 2, 170′
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BORING NO. B-12 STATION 20+37 OFFSET 141 ft LT ALIGNMENT -Y2- 0 COLLAR ELEV. 2,150.4 ft TOTAL DEPTH 19.6 ft NORTHING 601,542 EASTING 969,718 24						OG		JR	В										
BORING NO. B-12 STATION 20+37 OFFSET 141 ft LT ALIGNMENT -Y2- 0 COLLAR ELEV. 2,150.4 ft TOTAL DEPTH 19.6 ft NORTHING 601,542 EASTING 969,718 24 DRILL RGMAMMER EFF./DATE F&R2175 CME-56 8% 02/11/2017 DRILL METHOD H.MMERT HAMMERT DRILLER S. Davis START DATE 12/12/17 COMP. DATE 12/12/17 SURFACE WATER DEPTH N/A Lev PMV 0, 58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0.58 0		ST S. Woods	GEOLOGIST	(SON	NDER	' HE	OUNT	С		400B	IP I-4	ТІ			.1.3	34232	WBS
COLLAR ELEV. 2,150.4 ft TOTAL DEPTH 19.6 ft NORTHING 601,542 EASTING 969,718 24 DRILL RIGHAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 DRILL METHOD H.S. Augers HAMMER T DRILLER S. Davis START DATE 12/12/17 COMP. DATE 12/12/17 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP N/A GROUND SURFACE 2155 0 1 2 2 4 SAMP N/A GROUND SURFACE 2160 2.150.4 0.0 1 2 2 4 SOIL AND ROCK DESCRIP 2.160.4 0.0 1 2 2 4 SOIL AND ROCK DESCRIP 2.160.4 0.0 1 2 2	ROUND WTR (ft)	0)	xit 44	ess (E	Busin	IS 25 E	49) to	(Exit	US 64	from	I I-26	IPTION	DESCR	SITE
DRILL RIGHAMMER EFFJDATE F&R2175 CME-55 88% 02/11/2017 DRILL METHOD H.S. Augers HAMMER 1 DRILLER S. Davis START DATE 12/12/17 COMP. DATE 12/12/17 SURFACE WATER DEPTH NA LEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP NO. NO. NO. SOIL AND ROCK DESCRIP 2155 SAMP NO. MOI C SOIL AND ROCK DESCRIP 2155 SAMP SOIL AND ROCK DESCRIP 2156 SOIL AND ROCK DESCRIP 2156 SOIL AND ROCK DESCRIP 2156	HR. Dry	IT -Y2-	ALIGNMENT			41 ft LT	SET 1	OFFS			37	N 20 [.]	ΤΑΤΙΟ	S			B-12	NG NO.	BOR
DRILL RIGHAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 DRILL METHOD H.S. Augers HAMMER 1 DRILLER S. Davis START DATE 12/12/17 COMP. DATE 12/12/17 SURFACE WATER DEPTH NA LEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP. NO. MOI C SOIL AND ROCK DESCRIP 2155 0 0.5ft 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO. MOI C SOIL AND ROCK DESCRIP 2155 0 1 2 0 - - - - SOIL AND ROCK DESCRIP 2150 2.150.4 0.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -	HR. Dry	969.718 2	EASTING 9		2	601.5	THING	NOR		ft	19.6	DEPTH	OTAL	Т	ft	150.4	V. 2.	AR ELE	COL
DRILLER S. Davis START DATE 12/12/17 COMP. DATE 12/12/17 SURFACE WATER DEPTH N/A LEV DRIVE (ft) DEPTH (ft) BLOW COUNT (ft) BLOW COUNT (ft) BLOWS PER FOOT 0 SAMP. NO. NO. SOIL AND ROCK DESCRIP NO. SOIL AND ROCK DESCRIP ELEV. (ft) 2155 0 25 50 75 100 NO. SOIL AND ROCK DESCRIP NO. SOIL AND ROCK DESCRIP NO. 2155 0 1 2 2 4	TYPE Automatic							-	I										
LLEV DRVE (ft) BLOW COUNT (ft) BLOW SPER FOOT 0.5ft SAMP. 25 SAMP. NO. SOIL AND ROCK DESCRIP ELEV. (ft) 2155 0.5ft			-					COM											
(10) (10) 0.5ft 0		WATER DEPTH N/A	SURFACE W				P. DA	CON	FOOT			DATE							
2150 2,150.4 0.0 1 2 2 4 ROADWAY EMBANKME 2,146.9 3.5 1 2 3	PTION DEPTH (f	SOIL AND ROCK DESCR		0	▼∕ c	1 1	100	75			BLOWS	25	0	-	-	L			(ft)
2.146.9 3.5 <	INT	ROADWAY EMBANKN			w			<u> </u>					• 4.	2	2	1	- - - - <u>0.0</u>	2,150.4	
140 2.141.9 8.5 Gray-Brown, Fine Sandy CLA 140 3 135 2.136.9 13.5 135 2.131.9 18.5 2.130.9 19.5 100/0.4 6 100/0.4 6 135 2.131.9 18.5 2.130.9 19.5 100/0.4 6 6 135 2.130.9 White-Gray (GNEISS) Boring Terminated with Star Penetration Test Refusal at El 2.130.8 ti n GNEISS (Crystalling Note: 1.0.0'-0.1' = SURFICIAL ORGAN	(Roots)	A-2-4) with Trace Organics	Brown,		W L		· · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · ·		· · · · ·	· · ·	↓ ↓ . •5·	3	2	1	- - 3.5 -	2,146.9	<u>145</u>
135 2,136.9 13.5 2 3 3 Image: Constraint of the second s	<u>AY (A-6)</u> <u> 7</u> .	Gray-Brown, Fine Sandy CL	<u>2,143.4</u> Gra	2, - 2, - 2, - 2, - 2, - 2, - 2, - 2, -	W L		· · · · · ·	 	· · · · · · · · ·		· · · · ·		. ↓3 ·	2	1	WOH	- - 8.5 -	 _2,141.9	140
2.131.9 18.5 2.130.9 19.5 100/0.4 100/0.4 60/0.1 60/0.1 2.130.8 CRYSTALLINE ROCK White-Gray (GNEISS) Boring Terminated with Star Penetration Test Refusal at El 2,130.8 ft in GNEISS (Crystallin Note: 1.0.0'-0.1' = SURFICIAL ORGAN	<u> </u>			<u></u> 2,	м		· · · · · ·	 	· · · · · · · · · · · · · · · · · · ·		· · · · ·			3	3	2	13.5	2,136.9	
60/0.1 60/0.1 60/0.1 60/0.1 60/0.1 60/0.1 60/0.1 60/0.1 CRYSTALINE ROCK White-Gray (GNEISS) Boring Terminated with Star Penetration Test Refusal at El 2,130.8 ft in GNEISS (Crystallin Note: 1. 0.0'-0.1' = SURFICIAL ORGAN				11	M		· · ·		· ·				· · · · · · · · · · · · · · · · · · ·		-	100/0 /	- 18.5	<u>-</u> 2,131.9	135
Note:	ndard ilevation	CRYSTALLINE ROC White-Gray (GNEIS Boring Terminated with St enetration Test Refusal at	2,130.8/ Bo Pen	- 2, - 2, 		-	00/0.4 60/0.1	<u> </u>	<u></u>		<u></u>		<u> </u>		•		<u>- 19.5</u> - - - -	<u>2,130.9</u> - - - - -	
	NIC SOILS	Note: 0'-0.1' = SURFICIAL ORG																	
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COUNTY HENDERSON

TIP I-4400B

WBS 34232.1.3

.GDT 12/11/18

GEOLOGIST M. Durway

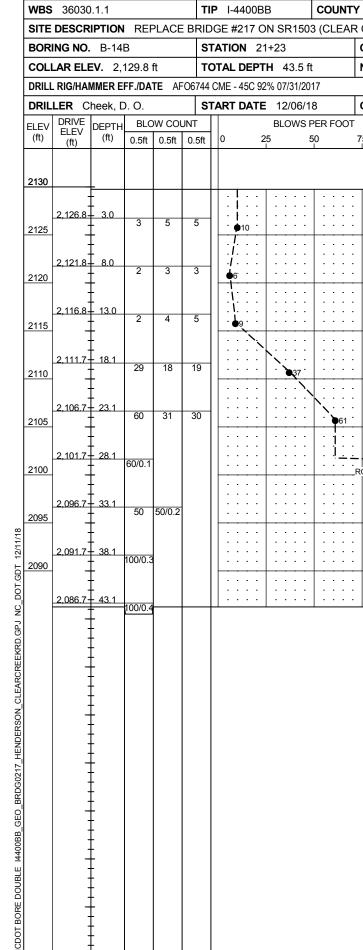
GROUND WTR (ft)

VVDJ	34232					11 P 1-4	1400D		0000	• • •	ENDER				GLOLO	GIST W. Durway			VVB3 34
SITE	DESCR	IPTION	I-26	6 from	US 6	64 (Exit	49) to	US 25 E	Business (Exit 4	4)							WTR (ft)	SITE DES
BOR	ING NO.	B-14			:	STATIC	DN 21	+55		OFF	SET :	33 ft LT			ALIGNN	MENT -Y2-	0 HR.	NM	BORING I
COLI	LAR ELI	EV. 2,7	130.9	ft	•	TOTAL	DEPT	H 49.9	ft	NO	RTHING	6 01,5	570		EASTIN	I G 969,876	24 HR.	21.5	COLLAR
DRILL	RIG/HA	MMER E	FF./DA	TE Fa	&R217	75 CME-	55 88%	02/11/20)17			DRILL I	METHO	D SF	PT Core Bori	ng HAN		Automatic	DRILL RIG/
DRIL	LER S	. Davis				START	DATE	02/14/	'18	co	MP. DA	TE 02/	/14/18		SURFA	CE WATER DEPTH	N/A		DRILLER
ELEV	DRIVE	DEPTH	BLC	ow co					PER FOO			SAMP.		1 L	1				CORE SIZ
(ft)	ELEV (ft)	(ft)	0.5ft	-	0.5f	t 0	2	5	50	75	100	NO.	мо	O G	ELEV. (ft)	SOIL AND ROCK DE	SCRIPTION	DEPTH (ft)	ELEV RU
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2130	2,130.9.	0.0	1	2	5	╧	7						М		2,130.0	ROADWAY EMBA	NKMENT	0.9	2085
	2,127.4	- 35								: :	· · · ·					Orange-Gray, Clayey Fir Orange-Gray, Silty Fine		"/————	2005
	<u>- 2, 127.4</u> -		2	5	5	7 :	10 _				· · ·		М	E	. I.	(A-2-4) RESIDUA		_i	
2125	-								**	:+-					2,123.9	Gray-Tan, Fine Sand	ly SILT (A-4)	7.0	2,08
	2,122.4	8.5	95	5/0.1							$\cdot \cdot \cdot$			4		WEATHERED Orange-Gray (C			
2120	-	-	95	5/0.1							100/0.6	'				5 5 5 5 7 (/		
	-	F																	
	2,117.4	T 13.5	100/0.4	1							100/0.4	•							
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110	-	+													2,108.9			22.0	
	2,107.4	23.5	54	46			 		 	:	· · · ·			Ľ		Gray-Orange, Silty Fine	to Coarse SAN	D I	
105	-		0.											-	_	(A-2-4) with Trace Ro	ck Fragments		
	-	-							1:::	: :				N L	_ <u>2,103.9</u>	Gray-Orange, Clayey Fine	Sandy SILT (A	-5) 27.0	
	2,102.4	28.5	6	5	7		•12	[[· ·			м	14		, , , , , ,	, ,	, I	
100	_	-													2,098.9			32.0	
	2,097.4	33.5	100/0							. .					· <u>· ·</u> ·	WEATHERED Gray-Orange (G			
095	-	F	100/0.2	1							100/0.2								
	-	-													2,093.9			<u> </u>	
	2,092.4	+ I	10	39	61/0	.1	· · ·									Gray-Orange, Fine Sandy	Clayey SILT (A	-5) <u>39.0</u> 39.9	
2090	-2,091.0	- 33.3	60/0.0	1			· · ·	· · · ·		· ·	100/0.6 60/0.0_	•			-	WEATHERED Gray-Orange (G	(NEISS)		
	-									: :					. –	CRYSTALLINE (GNEISS			0/18
085	-	+					· · ·		· · · · ·	• •						(,		12/2
000	-	+												5	_				GDT
	-						· · ·		· · · · ·	· ·					2,081.0			40.0	DO
							I					-				Boring Terminated at Elev		49.9 : in	р Х
	-	+														GNEISS (Crystall	INE ROCK)		GPJ
	-	ŧ														Note: 1. 0.0'-0.3' = SURFICIAL	ORGANIC SOII	LS	GEO_BH_RDWY_DRAFT.GPJ_NC_DOT.GDT_12/20/18
	-	+													_				
	-	<u> </u>																	KDV
	-	Ł													_				퓁
	-	Ł																	GEO
	-	F												F					
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	-	F																	NBLE
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	-	ŧ													_				NCDOT CORE DOUBLE 14400B
	-	ŧ																	DOT
	-	t																	NC

WBS	3423	2.1.3			TIP	I-440	OB	С	OUNT	Υŀ	IENDEI	RSON	GEOLO	GIST M. Du	irway		
SITE	DESCR		I I-26	from US	64 (E	xit 49)	to US 25	5 Busir	ness (I	Exit 4	14)					GROUN	ID WTR (ff
BOR	ing no	. B-14			STA	TION	21+55			OF	FSET	33 ft LT	ALIGN	MENT -Y2-		0 HR.	NM
COL	LAR EL	EV. 2,	130.9	ft	тот	AL DE	PTH 49	.9 ft		NC	RTHIN	G 601,570	EASTIN	IG 969,876		24 HR.	21.5
RILL	RIG/HA	MMER E	FF./DA	TE F&R2	175 CN	/IE-55 8	38% 02/11	/2017				DRILL METHOD	SPT Core Bori	ing	HAMN	IER TYPE	Automatic
DRIL	LER S	. Davis			STA	RT DA	TE 02/1	4/18		СС	MP. DA	TE 02/14/18	SURFA	CE WATER D	DEPTH N	/A	
COR	E SIZE	N			тот	AL RU	N 10.0 f	ť									
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STR REC. (ft) %	ATA RQD (ft) %	L O G	ELEV.	fft)	DESCRIPTI	ON AND REMA	RKS		DEPTH (
2091					70			/0	70	_			Begin C	oring @ 39.9	ft		
2091 2090 2085	2,091.0 2,086.0	Ŧ	5.0	1:27/1.0 1:22/1.0 2:23/1.0 2:45/1.0 3:00/1.0 3:12/1.0 3:43/1.0 3:15/1.0 1:29/1.0	82% (4.1) 82%	(3.2) 64% (3.2) 64%		(8.2) 82%	(6.4) 64%		2,091.0 		CRYS	TALLINE ROC	K		39
	2,081.0	49.9		1:29/1.0 1:53/1.0						22	2,081.0	Boring Terminate	at Elevation	n 2 081 0 ft in G	NEISS (Cry	stalline Ro	49 ck)
	-	ŧ									-	Doning Terminate		Note:		Stailine No	GK)
	-											1. (0.0'-0.3' = SU	RFICIAL ORGA	NIC SOILS		
	-																

GEOTECHNICAL BORING REPORT CODELOC

	34232						• I-4400B		TY HENDER				GEOLOGIST Johnson, C. D.	
	NG NO.			onom			(Exit 49) to US 25	business (OFFSET		-		ALIGNMENT -Y2-	
	AR ELE			ft			TAL DEPTH 24.5	ft	NORTHING					
							CME - 45C 92% 07/31/					нο	, , , , , , , , , , , , , , , , , , ,	
	LER C		-			-	ART DATE 11/16	-	COMP. DA			11.0		
	DRIVE	DEPTH		ow co			1	PER FOO		SAMP.		L	I	
(ft)	ELEV (ft)	(ft)	0.5ft	1	1	ft	0 25	50	75 100	NO.	/	O G	SOIL AND ROCK DESC ELEV. (ft)	
														· · · · ·
140		L												
	-	<u>+</u>										-	2,138.0 GROUND SURFA	
125	-	ŧ					:k:: :::		· · · · · ·				2,135.8 ROADWAY EMBANI RED/BRN SANDY	
135	2,134.6	- 3.4	2	5	4	_							SAPROLITE BRN CLAY-SILT-SAND W/ C	COARSE SAND
	-	ŧ						· · · · ·	· · · · · ·			_	LAYERS, MIC	
130	- 2,129.6-	- 8.4	_		_				· · · · · ·			<u>-</u>	2,130.6 SAPROLITE	
	-	ŧ	5	8	7			· · · · ·	· · · · · · ·			1	WHT/GRAY SILTY SAND W/ FRAGS. SEAMY WEATHE	ERED ROCK
125	-	ŧ.,										F	STARTING 15.1' TO) 23.4'
-	2,124.6	<u>+ 13.4</u>	3	10	27	-						F		
	-	Í										E		
120	2,119.8	18.2	37	25	27			6 52				F		
	-	ŧ					WR SE	AM [●] ?<	· · · · ·			E		
115	- 2.114.6-	- 23.4					· · · · · · · · · · · ·						2,114.6	23.4
-	-	+	36	64/0.2	<u>2</u> 60/0.	.0			· · · · 100	Ч		# <u>//</u>	2,113.5 WEATHERED RC GRAY/WHT/BLK WEATHE	
	-	ŧ										Ę	GNEISS Boring Terminated WITH	CRIPTION DEPTH (ft) ACE 0.0 KMENT SILT 2.2 COARSE SAND 7.4 (MICA AND RK ERED ROCK 23.4 CCK 24.5 RED BIOTITE STANDARD EFUSAL at N GNEISS
	-	ŧ										F	PENETRATION TEST R Elevation 2,113.5 ft ON	
	-	ŧ										F	(CRYSTALLINE R	
	-	ŧ										F		
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/ HENDERSON	GEOLOGIST Johnson, C. D.	
CREEK RD) OVER I-26		GROUND WTR (ft)
OFFSET 18 ft RT	ALIGNMENT -Y2-	0 HR. Dry
NORTHING 601,512	EASTING 969,897	24 HR. Dry
,	· · · · · · · · · · · · · · · · · · ·	ER TYPE Automatic
COMP. DATE 12/06/18		
SAMP.	SOIL AND ROCK DESC	
75 100 NO. MOI G	ELEV. (ft)	DEPTH (ft)
	2,129.8 GROUND SURFA	
	ROADWAY EMBANI RED-BROWN-GREY, SL M	/ICACEOUS,
· · · · · M	2,126.2 CLAYEY-SND-S RESIDUAL	LI <u>3.6</u>
	GREY-WHITE, MIC, CLAYI IN/OUT WR SEAMS, HARD	EY-SND-SLT, GRAVEL-SIZE
	RK FRAGS, W/MnO	SEAMS
M		
M		
	2,107.1	22.7
<u> </u>	IN/OUT WR SEA	MS
	2,101.7 WEATHERED RC	
	GREY, WEATHERED AUC	GEN GNEISS
· 100/0.2		
· 100/0.3		
100/0.4	2,086.3	43.5
100/0.4 -	Boring Terminated WITH PENETRATION TEST R	EFUSAL at
	Elevation 2,086.3 ft IN WEAT	HERED ROCK

											L			: <i>L</i> U	U						
WBS	34232	2.1.3			T	IP 1-4	400B		0	COUNT	ry H	HENDE	ER	SON			GEOLOG	BIST M. Arno	old		
SITE	DESCR		I I-26	6 from L	JS 64	(Exit 4	49) to	US 2	5 Bus	iness (Exit	44)								GROU	ND WTR (
BORI	NG NO.	. B-16			S	ΤΑΤΙΟ	N 22	+61			OF	FSET	1	2 ft RT			ALIGNM	ENT -Y2-		0 HR.	27
OLL	AR ELE	EV. 2,	133.7	ft	Т	OTAL	DEPTI	H 53	3.7 ft		NC	ORTHIN	١G	601,6	26		EASTING	9 69,976		24 HR.	25
RILL	RIG/HAI	MMER E	FF./DA	TE F&	R2175	CME-5	5 88%	02/11	/2017		1			DRILL N	IETHO	D H.:	S. Augers		HAM	MER TYPE	Automati
DRILL	ER S	. Davis			S	TART	DATE	01/0	08/18		cc	OMP. D	AT	E 01/0	08/18		SURFAC	E WATER DE		J/A	
LEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	1	OW COL		0	2	BLO\		R FOO		10		SAMP.	МОІ	L O G	ELEV. (ft)	SOIL AND R			I DEPTH
135	2,133.7-	- - 0.0	1	3	4		• •		•••		•				м	-	2,133.7	R	ND SURF	_	
30	- 2,130.2 <u>-</u> -	3.5	4	6	7		•13.	· · ·	· · ·	· · · ·	- · ·	· · · · ·			м		2, <u>131.7</u> R 	ed-Brown, Fine with Trace Mica Red-Browr	Sandy Cl a and Org n, Silty CL	ayey SILT ganics (Roo AY (A-6)	(A-5)
25	- 2,125.2 <u>-</u> -	8.5	6	7	7		Ⅰ Ⅰ ●14	· · · · ·	· · ·	· · · · · · ·		· · · · ·			М		2,126.7 V wi	Vhite-Tan-Brown th Trace Mica, N Rock	n, Fine Sa Manganes K Fragme	se Deposits	A-4) , and
20	- - 2,120.2	13.5	6	6	7		 €13.	· · ·	· · ·	· · · ·	· · ·	· · · · ·			м		—		0 -		
15	- - 2,115.2	18.5	17	10	19		· · · ·		· · · · · · · · · · · · · · · · · · ·	· · · · · · · ·		· · · · ·					.				
10	- - 2.110.2	23.5	17	19	19		· · · · ·		38. 	· · · · · · · ·	- . - . - .	· · · · ·			М		<u>2,111.7</u> Ta	an-Orange-Brow	n, Clayey	7 SILT (A-5	2
	-		4	6	5		11 	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		· · · · ·			₩	7 7 7 7 7 7 7 7 7 7 7	– Tra	ce Mica, Manga to Little f	anese De Rock Fraç	posits, and gments	Trace
05	2,105.2 - - -	28.5	4	4	6	 . • .	10 . 	· · · · · · · · · · · · · · · · · · ·		· · · ·	- . - . - .	· · · · ·			W						
00	2,100.2 - -	33.5	2	4	4	اً ٤٠	3	· · ·	 	· · · ·	- · ·	· · · · ·			W						
95	2,095.2	38.5	4	10	10		. • • • • • • • • • • • • • • • • • • •)	 	· · · ·	- - - -	· · · · ·			w						
90	- 2,090.2 <u>-</u> -	43.5	5	18	15		· · ·		· · ·	· · · ·	· · ·	· · · · ·			w						
85	- 2,085.2 <u>-</u> -	48.5	60/0.1				· · ·	. . 				<u> </u>	1					CRYST Orange-I	ALLINE I Brown (G		
80	- 2.080.2 2,080.0	5 <u>3.5</u> 53.7	60/0.1				· · · ·	· ·	•••	· · ·	• •	60/0. 60/0.	1				2,080.0 Bc	oring Terminated			0 ft in
			60/0.0										-				- 1. - 1.	GNEISS (0.0'-0.2' = SUR 2. Auger	Note: FICIAL O	RGANIC S	OILS
																	— - - - - -				
	-	+ + + +																			
	-																				

WBS 34232.1.3		ITY HENDERSON	GEOLOGIST S. Woods	WBS 34232.1.3	TIP I-4400B COUN	ITY HENDERSON	GEOLOGIST S. Woods
SITE DESCRIPTION I-26 from US			GROUND WTR (ft)	SITE DESCRIPTION 1-26 from U			GROUND WTR (ft)
BORING NO. B-17	STATION 22+06	OFFSET 19 ft LT	ALIGNMENT Y2- 0 HR. 50.7	BORING NO. B-17	STATION 22+06	OFFSET 19 ft LT	ALIGNMENT -Y2- 0 HR. 50.7
COLLAR ELEV. 2,151.7 ft	TOTAL DEPTH 80.0 ft	NORTHING 601,732	EASTING 969,948 24 HR. 47.1	COLLAR ELEV. 2,151.7 ft	TOTAL DEPTH 80.0 ft	NORTHING 601,732	EASTING 969,948 24 HR. 47.1
DRILL RIG/HAMMER EFF./DATE F&R2		DRILL METHOD H		DRILL RIG/HAMMER EFF./DATE F&F		DRILL METHOD	
DRILLER S. Davis	START DATE 01/29/18	COMP. DATE 01/29/18	SURFACE WATER DEPTH N/A	DRILLER S. Davis	START DATE 01/29/18	COMP. DATE 01/29/18	SURFACE WATER DEPTH N/A
	1		1				
(ft) ELEV (ft) (ft) 0.5ft 0.5ft 0.		75 100 100	SOIL AND ROCK DESCRIPTION ELEV. (ft) DEPTH (ft)	ELEV DRIVE ELEV (ft) (ft) (ft) (ft) 0.5ft 0.5ft		75 100 NO. MOI G	SOIL AND ROCK DESCRIPTION
2155				2075	Match Line		
				2 073 2 78 5			
2,151.7 0.0	8 .		2,151.7 GROUND SURFACE 0.0 ROADWAY EMBANKMENT		26 · · · · · · · · · · · · · · · · · · ·		2,071.7 80.0 Boring Terminated at Elevation 2,071.7 ft in
			Gray-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Gravel, Mica, and Asphalt				SILT (Residual)
2,148.2 3.5 4 5	5		-				-
2145							-
2,143.2 8.5 2 2	$\frac{1}{2} \begin{vmatrix} j & \cdots \\ j & \cdots \\ 1 $						-
2140	$\begin{array}{c c c c c c c c c c c c c c c c c c c $						-
2.138.2 13.5	1 1 1 1 1 1 1 1 1 1		-				– -
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	W L 🙀					F
2135			-				F F
2,133.2 18.5 3 6	$\frac{1}{6} \begin{vmatrix} \cdot \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \\ \cdot \cdot \cdot \end{vmatrix} \begin{vmatrix} \cdot \cdot \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \end{vmatrix} \begin{vmatrix} \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \end{vmatrix}$						-
2130							-
2.128.2 23.5		· · · · · ·					-
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	M	- (A-2-4) with Trace Mica				-
							-
2,123.2 28.5	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	· · · · · · M	Mica				-
2120							-
2,118.2 33.5			- Gray-Tan-Brown, Silty Fine to Coarse SAND (A-2-4) with Trace Mica, Manganese				E
	′ ●13		Deposits, and Rock Fragments				-
2115			_				-
	7	М					-
2110			-				-
2,108.2 43.5	$ \frac{1}{7} \begin{vmatrix} \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \cdot \end{vmatrix} \cdot \cdot \cdot \cdot \cdot$						F
2105	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$						-
2,103,2 48.5		· · · · · ·	-				-
	7	: : : : : w					
			-				
2,098.2 53.5 - 3 5	7						
2095			·				<u>-</u>
2,093.2 58.5	$ \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot$:::::::					
	$ \begin{vmatrix} 13 \\ \cdot \cdot \cdot \cdot \end{vmatrix} \begin{vmatrix} \cdot \cdot \cdot \cdot \end{vmatrix} \begin{vmatrix} \cdot \cdot \cdot \cdot \cdot \end{vmatrix} \begin{vmatrix} \cdot \cdot \cdot \cdot$	W	:				-
							-
명 <u>2,088.2 63.5</u> 명 <u>100/0.2</u>		100/0.27	Brown (GNEISS)				-
			-				-
2,083.2 68.5 8 86 14	/0.2	· · · · · · · · · · · · · · · · · · ·					-
		100/0.7					F
2.078.2 73.5							⊨ -
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$:::::: w	- Brown-Gray, Fine Sandy SILT (A-4) with Trace Mica and Manganese Deposits				
2075	``\``\``\``\``\``\```\```\						E

CONTENTS

DESCRIPTION

TITLE SHEET

CROSS SECTIONS BORE LOGS

LEGEND

SITE PLAN

<u>SHEET NO.</u>
I
2
3
4-5
6-9

4400BB

•

REFERENCE

STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY HENDERSON

PROJECT DESCRIPTION 1-26 FROM EXIT 44 (US 64) TO EXIT 49 (US 25)

SITE DESCRIPTION REPLACE BRIDGE #223 ON SR 1534

(NAPLES RD) OVER I-26

STATE	STATE PROJECT	T REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34232.1.1	I-4400BB	1	9

CAUTION NOTICE

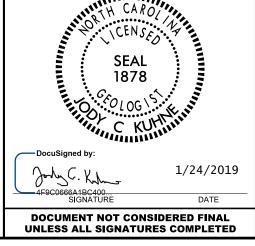
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNIKG AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1999 707-6805. 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 UNI-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 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 OF 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 OPHION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO 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 FROM 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.

	TENSONNEL
_D	O CHEEK
_ <u>_</u> C	J COFFEY
C	d Johnson
INVESTIGATED BY	JC KUHNE
DRAWN BY <u>CD J</u>	DHNSON
CHECKED BY	
SUBMITTED BY	
DATE	
	CAROL ENSEO
NIN RTH	CAROLINE
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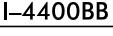


NORTH CAROLINA DEPARTMENT OF TRANSPORTATION **DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT** SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

			SOIL C	ESCRIPT	ION						G	RADATION						ROCK DE	SCRIPTION
BE PENET ACCORDI IS B CONSISTE	RATED WITH NG TO THE BASED ON TH NCY, COLOR,	H A CONTINUO STANDARD P HE AASHTO S TEXTURE, MO	ATED, SEMI-CON DUS FLIGHT POV ENETRATION TE YSTEM. BASIC (ISTURE, AASHTO	VER AUGER AN ST (AASHTO 1 DESCRIPTIONS CLASSIFICA1	ND YIELD LESS 206, ASTM DI GENERALLY IN ION, AND OTHE	THAN 100 586). SOIL CLUDE TH R PERTINE	0 BLOWS PE _ CLASSIFI E FOLLOWI INT FACTOR	ER FOOT CATION NG: RS SUCH	<u>WELL GRADED</u> - INDICAT <u>UNIFORMLY GRADED</u> - IN <u>GAP-GRADED</u> - INDICATE	NDICATE	ES THAT SOIL IXTURE OF UN	PARTICLES ARE AL	L APPROXIMA	ATELY THE SAME SIZE.	ROCK LINE IN SPT REFUSAL BLOWS IN NO REPRESENTED	NDICATES IS PENI ON-COAST BY A Z	S THE LEVE NETRATION B TAL PLAIN ZONE OF WE	L AT WHICH NON-COA BY A SPLIT SPOON SA MATERIAL, THE TRA ATHERED ROCK.	WOULD YIELD SPT REFUSAL IF TEST STAL PLAIN MATERIAL WOULD YIELD MMPLER EQUAL TO OR LESS THAN Ø. NSITION BETWEEN SOIL AND ROCK
AS V	S MINERALO VERY STIFF.G	GICAL COMPO RAY,SILTY CLA	SITION, ANGULAR , <i>MOIST WITH INT</i>	RITY, STRUCTU ERBEDDED FIN	RE, PLASTICITY E SAND LAYERS	,ETC. FOI <i>HIGHLY PLA</i>	R EXAMPLE. ISTIC.A-7-6	•				SOIL GRAINS IS D	ESIGNATED B	Y THE TERMS:	WEATHERED	HLS HRE		NON-COASTAL PLAT	N MATERIAL THAT WOULD YIELD SP
			end and	AASHTO	CLASSIFI	CATION	l		ANGULAR, SUBAN			ICAL COMPOS			ROCK (WR)			100 BLOWS PER FO	
GENERAL CLASS.		GRANULAR MATE ≤ 35% PASSING			MATERIALS	OR	GANIC MATER	IALS	MINERAL NAM			Z, FELDSPAR, MICA, 1		ETC.	CRYSTALLINE ROCK (CR)				RAIN IGNEOUS AND METAMORPHIC RC REFUSAL IF TESTED. ROCK TYPE IN
GROUP	A-1	A-3	A-2		A-6 A-7	A-1, A-2	A-4, A-5		ARE USED IN	1 DESCF		N THEY ARE CONSIL	JERED OF SIG	GNIFICANCE.			<u>20.20.</u>	GNEISS, GABBRO, SO	RAIN METAMORPHIC AND NON-COASTA
0	A-1-a A-1-b	A-2-4	A-2-5 A-2-6 A-2		A-7-5, A-7-6	A-3	A-6, A-7		SI TGI		CUMP OMPRESSIBLE	RESSIBILITY	LL < 31		NON-CRYSTAL ROCK (NCR)	LINE		SEDIMENTARY ROCK	<pre>< THAT WOULD YEILD SPT REFUSAL DES PHYLLITE, SLATE, SANDSTONE, ETH</pre>
SYMBOL									MODE	RATELY	Y COMPRESSIB	LE	LL = 31 - LL > 50	- 50	COASTAL PLA SEDIMENTARY				DIMENTS CEMENTED INTO ROCK, BUT K TYPE INCLUDES LIMESTONE, SANDS
	50 MX					GRANULAR	SILT- CLAY	MUCK,				GE OF MATER			(CP)			SHELL BEDS, ETC.	HERING
	30 MX 50 MX 15 MX 25 MX		35 MX 35 MX 35 M	1X 36 MN 36 MI	N 36 MN 36 MN	SOILS	SOILS	PEAT	ORGANIC MATERIAL		GRANULAR SOILS	SILT - CLAY SOILS	OTHE	R MATERIAL	FRESH		RESH CRYST		TS MAY SHOW SLIGHT STAINING. ROCK
MATERIAL PASSING *40 LL	-		41 MN 40 MX 41 M				S WITH LE OR		TRACE OF ORGANIC MU LITTLE ORGANIC MATT MODERATELY ORGANIC HIGHLY ORGANIC	ATTER TER	2 - 3% 3 - 5% 5 - 10% > 10%	3 - 5% 5 - 12% 12 - 20% > 20%	TRACE LITTLE SOME HIGHLY	1 - 10% 10 - 20% 20 - 35% 35% AND ABOVE	VERY SLIGHT (V SLI.)	HAMMER ROCK GE CRYSTAL	R IF CRYSTAL ENERALLY FF LS ON A BRO	LLINE. RESH, JOINTS STAINED, DKEN SPECIMEN FACE	SOME JOINTS MAY SHOW THIN CLAY C SHINE BRIGHTLY. ROCK RINGS UNDER H
PI GROUP INDEX	6 MX Ø	NP 10 MX	10 MX 11 MN 11 M 4 MX		C 16 MX NO MX		RATE ITS OF	HIGHLY ORGANIC				UND WATER			SLIGHT		RYSTALLINE		AND DISCOLORATION EXTENDS INTO RO
USUAL TYPES S	STONE FRAGS. GRAVEL, AND SAND	FINE SIL	TY OR CLAYEY	SILTY	CLAYEY	ORG	ANIC	SOILS				BORE HOLE IMMEDIA		DRILLING	(SLI.)	1 INCH. CRYSTAL	OPEN JOINTS	S MAY CONTAIN CLAY. AND DISCOLORED. CF	IN GRANITOID ROCKS SOME OCCASIONA STALLINE ROCKS RING UNDER HAMMER SCOLORATION AND WEATHERING EFFECT
GEN. RATING		5.005.0 5.07.70		5.15		Fair to						SATURATED ZONE, OF		RING STRATA	(MOD.)	GRANITO	DID ROCKS, M	OST FELDSPARS ARE D	OULL AND DISCOLORED, SOME SHOW CLA
AS SUBGRADE		EXCELLENT TO			TO POOR	POOR	POOR	UNSUITABLE	0-11 -	SPRJ	ING OR SEEP						OUND UNDER RESH ROCK.	HAMMER BLUWS AND S	SHOWS SIGNIFICANT LOSS OF STRENGTH
			BGROUP IS ≤ LL			> LL - 30					MISCELLA	ANEOUS SYMBI			MODERATELY SEVERE				R STAINED. IN GRANITOID ROCKS,ALL F KAOLINIZATION. ROCK SHOWS SEVERE L
	ARY SOIL TYPE COMPACTNESS OF PENETRATION RESISTENCE COMPRESSIVE S										35. //	205			(MOD. SEV.)	AND CAN	N BE EXCAVA	ATED WITH A GEOLOGIS	ST'S PICK. ROCK GIVES "CLUNK" SOUND
	VERY LODSE < 4 LODSE 4 TO 10 1005F								L ROADWAY EMB			DIP & DIP DIF DF ROCK STRU		SLOPE INDICATOR	SEVERE (SEV.)	ALL ROC REDUCED	CK EXCEPT (D IN STRENG	TH TO STRONG SOIL.	R STAINED. ROCK FABRIC CLEAR AND E IN GRANITOID ROCKS ALL FELDSPARS / TRONG ROCK USUALLY REMAIN.
GRANULA	AR	MEDIU	M DENSE	10	TO 30		N/A					- 131 (111)		INSTALLATION CONE PENETROMETER			100 BPF		
(NON-CO		VERY	ENSE DENSE (SOFT	>	TO 50 50		< 0.25	j	THAN ROADWA	AY EMBA		AUGER BORING	•	TEST SOUNDING ROD	VERY SEVERE (V SEV.)	BUT MAS REMAINI	ISS IS EFFEC	TIVELY REDUCED TO S TE IS AN EXAMPLE OF	
GENERAL SILT-CL MATERIA (COHESI)	AY NL	MEDIU	OFT M STIFF TIFF STIFF	4 8	TO 4 TO 8 TO 15 TO 30		0.25 TO 0.5 TO 1 1 TO 2 2 TO 4	1.0 ?						TEST BORING WITH CORE	COMPLETE	REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A D VESTIGES OF ORIGINAL ROCK FABRIC REMAIN. <u>IF TESTED, WOULD YIE</u> ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERN SCATTERED CONCENTRATIONS, OUARTZ MAY BE PRESENT AS DIKES OF ALSO AN EXAMPLE.			T DISCERNIBLE, OR DISCERNIBLE ONLY
CORESIN	¥E)		ARD		30		> 4	•	TTTTT ALLUVIAL SOI				<u> </u>	- SPT N-VALUE		ALSU AN	N EXAMPLE.	воск н	ARDNESS
			TEXTURE	OR GRAI	N SIZE							DATION SYME			VERY HARD	CANNOT	BE SCRATC		RP PICK. BREAKING OF HAND SPECIMEN
U.S. STD. SIE OPENING (MN			4 10 4.76 2.00	40 0.42	60 200 0.25 0.075	270 0.053					NCLASSIFIED E NSUITABLE WA		ACCEPT	SIFIED EXCAVATION - ABLE, BUT NOT TO BE	HARD			NS OF THE GEOLOGIST	'S PICK. WITH DIFFICULTY. HARD HAMMER B
BOULDEF		BBLE	GRAVEL	COARSE	FINE		SILT	CLAY	SHALLOW UNDERCUT		CLASSIFIED E	EXCAVATION - GRADABLE ROCK		N THE TOP 3 FEET OF MENT OR BACKFILL	HHO		ACH HAND SF		ICT WITH DIFFICULTT. HHND HHMMEN B
(BLDR.) GRAIN MM	()	(OB.) 75	(GR.) 2.0	SAND (CSE. SD.)	SAND (F SD. 0.25		(SL.) 0.005	(CL.)	AR - AUGER REFUSAL			REVIATIONS	VST	- VANE SHEAR TEST	MODERATELY HARD	EXCAVAT		D BLOW OF A GEOLOGI	DUGES OR GROOVES TO 0.25 INCHES DI ST'S PICK. HAND SPECIMENS CAN BE D
SIZE IN.		3							BT - BORING TERMINATED CL CLAY	D		- MICACEOUS MODERATELY		- WEATHERED UNIT WEIGHT	MEDIUM HARD				DEEP BY FIRM PRESSURE OF KNIFE OP PEICES 1 INCH MAXIMUM SIZE BY HARD
			STURE - I		TION OF	TERMS			CPT - CONE PENETRATION CSE COARSE	N TEST	NP -	NON PLASTIC		DRY UNIT WEIGHT		POINT O	OF A GEOLOG	IST'S PICK.	
	MOISTURE		FIELD MO DESCRI - SATURA	PTION	GUIDE FOR F				DMT - DILATOMETER TES DPT - DYNAMIC PENETRA		PMT - EST SAP	ORGANIC PRESSUREMETER T SAPROLITIC	S - B		SOFT	FROM CH	HIPS TO SEV		KNIFE OR PICK. CAN BE EXCAVATED IN BY MODERATE BLOWS OF A PICK POIN JURE.
		LIMIT	(SAT.		FROM BELOW	THE GRO	UND WATE	R TABLE	e - VOID RATIO F - FINE FOSS FOSSILIFEROUS		SL SLI	SAND, SANDY SILT, SILTY SLIGHTLY	ST - RS -		VERY SOFT		E IN THICKN		AVATED READILY WITH POINT OF PICK. BY FINGER PRESSURE. CAN BE SCRATCH
RANGE <			- WET -	(W)	SEMISOLID; R ATTAIN OPTI)	FRAC FRACTURED, FRAC FRAGS FRAGMENTS	IURES	w - M	TRICONE REFUSAL 10ISTURE CONTENT	CBR	RECOMPACTED TRIAXIAL - CALIFORNIA BEARING	F	RACT	URE SPA	ACING	BEDDING
(PI) PL L		C LIMIT							HI HIGHLY			ON SUBJEC		RATIO	TERM VERY WID	F	MUBI	SPACING THAN 10 FEET	TERM VERY THICKLY BEDDED
		OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MO SHRINKAGE LIMIT						DISTURE	DRILL UNITS:	ADVA	ANCING TOOLS: CLAY BITS		HAMMER	-	WIDE MODERATE CLOSE		3 5E 1	TO 10 FEET TO 3 FEET 16 TO 1 FOOT	THICKLY BEDDED 1 THINLY BEDDED 0. VERY THINLY BEDDED 0.0
			- DRY -	(D)	REQUIRES AD ATTAIN OPTI			D				IS FLIGHT AUGER	CORE SIZ		VERY CLO	SE	LESS	THAN 0.16 FEET	THICKLY LAMINATED 0.00 THINLY LAMINATED <
			PL4	STICITY					X CME-55	X	8 HOLLOW A	UGERS	П-в _	П-н					RATION
			PLAST	CITY INDEX	(PI)	D	RY STRENG		CME-550			FINGER BITS	□-N _		FOR SEDIMEN	TARY RO	JCKS, INDURF		ING OF MATERIAL BY CEMENTING, HE
SLIC	PLASTIC GHTLY PLAS ERATELY P			0-5 6-15 16-25			VERY LOW SLIGHT MEDIUM	I	VANE SHEAR TEST		TUNGCARBII	DE INSERTS	HAND TOO		FRIABI	.E		GENTLE BLOW	FINGER FREES NUMEROUS GRAINS: BY HAMMER DISINTEGRATES SAMPLE.
	ILY PLASTI						HIGH		PORTABLE HOIST		TRICONE	STEEL TEETH		ST HOLE DIGGER ND AUGER	MODER	ATELY IN	NDURATED	BREAKS EASIL	E SEPARATED FROM SAMPLE WITH ST (WHEN HIT WITH HAMMER.
L											TRICONE	"TUNGCARB.		JNDING ROD	INDUR	4TED			FFICULT TO SEPARATE WITH STEEL BREAK WITH HAMMER.
	DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRA MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.										CORE BIT			NE SHEAR TEST	EXTRE	MELY INC	DURATED		BLOWS REQUIRED TO BREAK SAMPLE S ACROSS GRAINS.

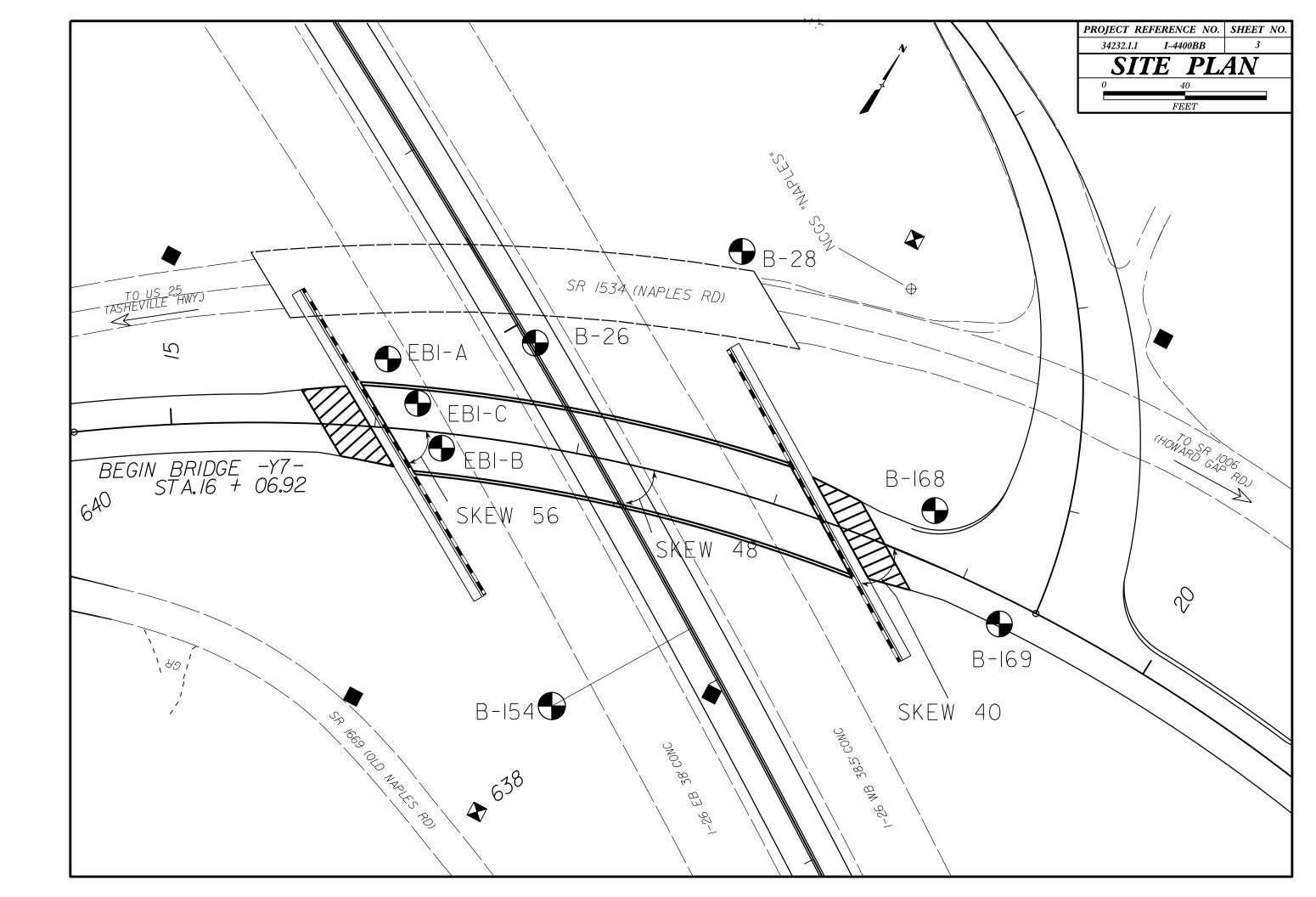
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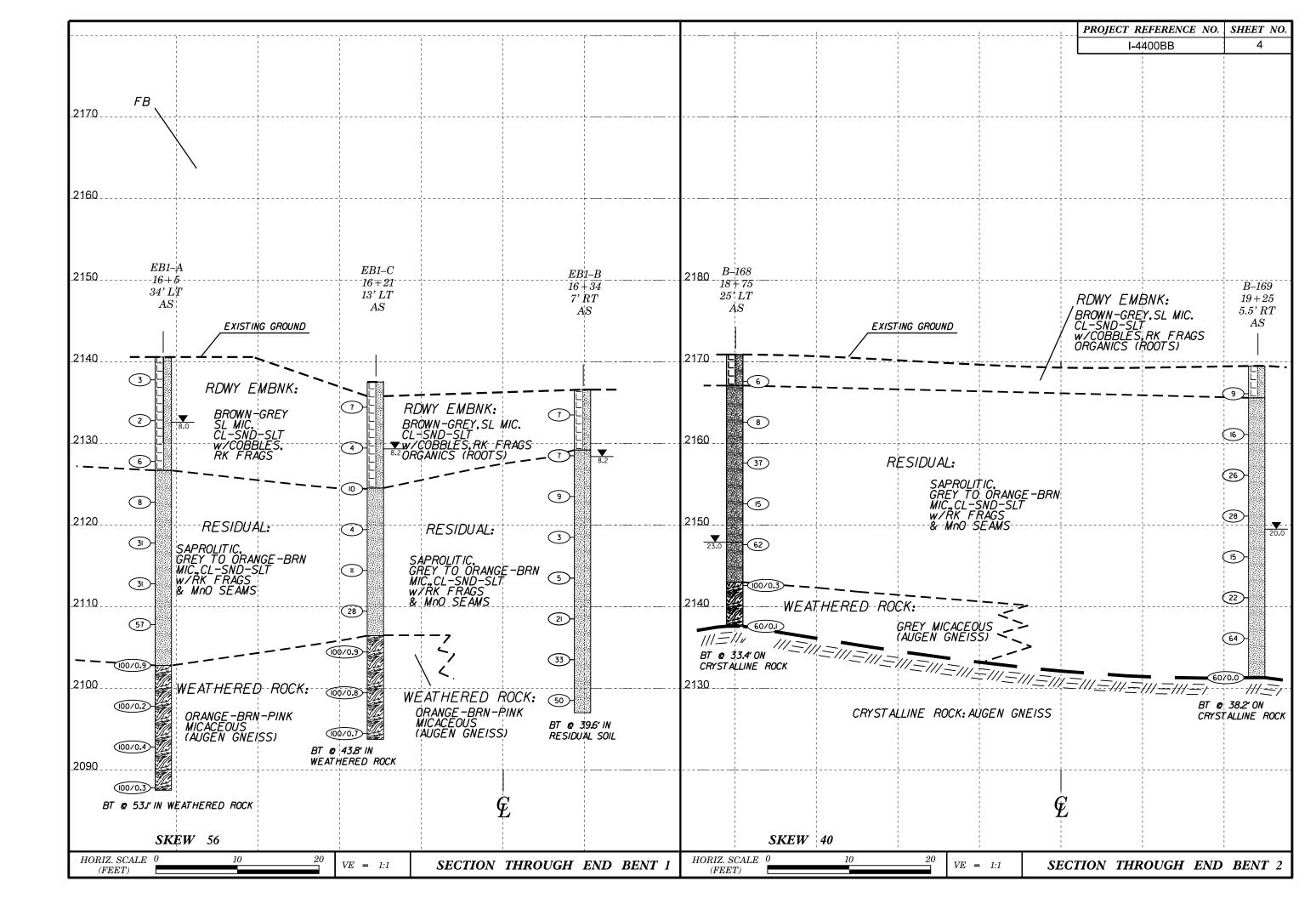


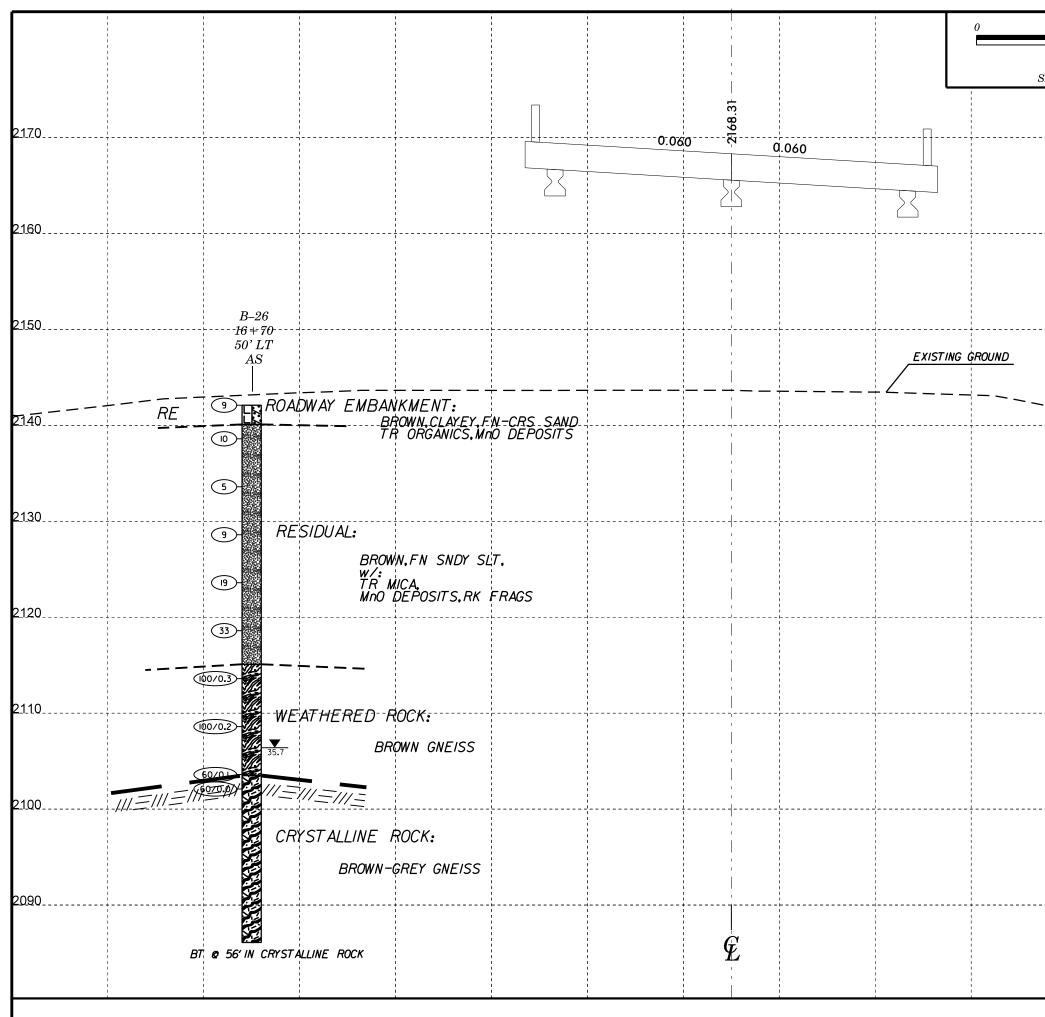
TERMS AND DEFINITIONS ED. AN INFERRED) SPT REFUSAL. 1 FOOT PER 60 IS OFTEN ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. ADUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC. N VALUES > ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND CK THAT 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 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. $\underline{\text{DIKE}}$ - 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 . NATINGS IF OPEN. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. AMMER BLOWS IF FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE ІСК ИР ТО SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FELDSPAR FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. BLOWS. $\underline{\mathsf{FLOAT}}$ - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL. 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. ELDSPARS DULL OSS OF STRENGTH WHEN STRUCK. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO VIDENT BUT ITS LATERAL EXTENT. ARE KAOLINIZED LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. RE DISCERNIBLE PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE STRONG ROCK T ONLY MINOR VALUES < 100 BPF OF AN INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK OUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SECMENTS EQUAL TO OR CREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE IN SMALL AND SAPROLITE IS RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT S REQUIRES 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 LOWS REQUIRED THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. $\underline{\text{SLICKENSIDE}}$ - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. EEP CAN BE ETACHED 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 R PICK POINT WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL BLOWS OF THE TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. $\underline{STRATA CORE RECOVERY (SREC.)}$ - 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 GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. PIECES 1 INCH ED READILY BY TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: ELEVATIONS TAKEN FROM ROADWAY PLANS THICKNESS 4 FEET FEET ELEVATION: .5 - 4 FEET 16 - 1.5 FEET NOTES: 3 - Ø.16 FEET 08 - 0.03 FEET 0.008 FEET AT, PRESSURE, ETC.

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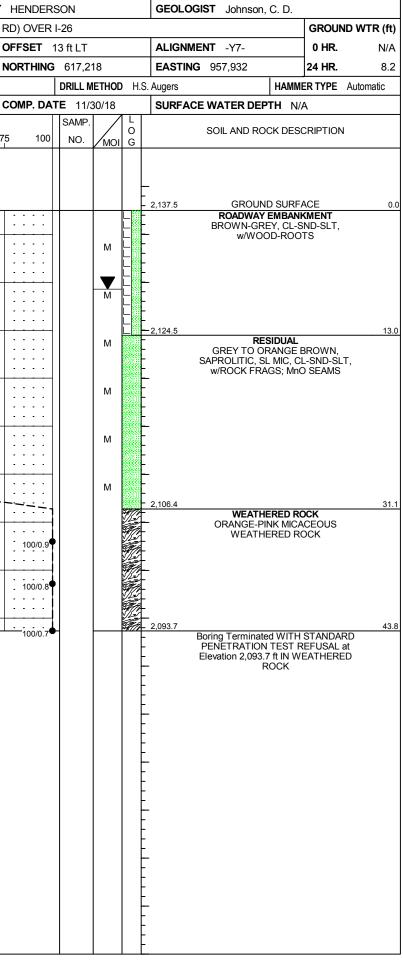






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WBS	34232	2.1.1			T	IP 14400BE	}	COU	NTY	HENDE	RSON			GEOLOG	IST Johnso	n, C. D.		
SITE	DESCR	IPTION	REP	PLACE	BRIDO	GE #0223 O	N SR153	4 (NAP	LES	rd) over	R I-26						GROUND	WTR (ft
BOR	ing no.	EB1-	В		S	TATION 16	6+34			OFFSET	7 ft RT			ALIGNME	NT -Y7-		0 HR.	16.2
COL	LAR ELE	EV. 2,	135.8	ft	Т	OTAL DEPT	H 39.6	ft		NORTHIN	G 617,2	204		EASTING	957,952		24 HR.	8.2
DRILL	RIG/HAM	IMER EF	F./DAT	E AFC	D6744 C	CME - 45C 92%	5 07/31/20 ²	17			DRILL	NETHO) Н.8	S. Augers		HAMM	ER TYPE Au	tomatic
DRIL	LER C	heek, D	D. O.		S	TART DATE	12/03/	/18		COMP. D	TE 12	/03/18		SURFACI	E WATER DI	EPTH N	'A	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	OW CO 0.5ft	1	0 2	BLOWS	6 PER F0 50		75 100 	SAMP NO.	MOI	L O G	ELEV. (ft)	SOIL AND F	OCK DES	CRIPTION	DEPTH (
2140	-	-																
2135						 					- 1			2,135.8	ROADWA	IND SURF	KMENT	(
	- 2.132.7-	- 3.1					· · · ·		· ·					- RI -		CLAYEY-S OUS, W/CO	AND-SILT, SL DBBLES	-
2130	-	ŧ	7	3	4	•7		: : :	::			M	L	-				
2130	-	+												- 2,128.4				
	2,127.7-	8.1	2	4	3		· · ·		· · · ·			M		-			IGE-BROWN	
2125	-	Ł												-	SAPROLIT	TTC, MICA	CEOUS,	,
	- 2.122.7-	- 13 1					· · ·		· ·	· · · ·				. U		nO SEAMS	ROCK FRAGS	,
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	2.112.7-								• •				F	-				
	-2,112.7-	<u>- 23.1</u>	WOH	2	3	↓ ↓ · · · ·			• •			м	F	-				
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	- 2,097.7-	- 38.1							· · · ·	· · · ·				-				
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WBS	34232.	1.1			TI	I P 14400	BB		COUNT	HENDE	RSON			GEOLOGIST S. Woods			WBS
SITE	DESCRI	PTION	I-26	from U	S 64 ((Exit 49) to) US 25	Busin	ess (Exit	44)					GROU	ND WTR (ft)	SITE
	NG NO.				_	TATION				OFFSET	50 ft I T			ALIGNMENT -Y7-	0 HR.		BOR
		-															
COL	AR ELE	v. 2,	142.1 f	t		OTAL DE	PIH 5	6.0 ft		NORTHIN	IG 617,2	2/1		EASTING 957,969	24 HR.	35.7	COL
DRILL	RIG/HAM	MER EF	F./DATE	E F&R	2175 (CME-55 88	% 02/11/2	2017			DRILL	METHO	D H.S	S. Augers HA	IMER TYPE	Automatic	DRILL
DRIL	LER S.	Davis			S	TART DA	TE 02/	/06/18		COMP. D	ATE 02	/09/18		SURFACE WATER DEPTH	N/A		DRIL
ELEV	DRIVE	DEPTH	BLO	W COL	JNT		BLC	WS P	ER FOOT	-	SAMP	. 🗸 /	1 L T				COR
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	5		75 10		17	O G	SOIL AND ROCK D	SCRIPTIO		
	(11)		0.010	0.010	0.011		1]	-	1	110.	/мо		ELEV. (ft)		DEPTH (ft)	ELEV (ft)
2145		_												_			2102.1
	- +	-											1 -	-			2100
	2,142.1	0.0	WOH	4	5	- ₁							┟╷╞	2,142.1 GROUND SU ROADWAY EMB		0.0	1.00
2140		-		7	5	· •9 ·		• •				M		2,140.1 Brown, Clayey Fine to	Coarse SA	ND2.0	
	2,138.6	- 3.5		_									F	(A-2-6) with Trace Orga Manganese D	nics (Roots) and 1	2095
	1	-	3	5	5	1 0	: : :					M		- RESIDU			2095
2135	+	-				• ¦• •	-	• •					-	- Brown, Fine Sandy SILT - Mica, Manganese Dep		Frace	
	2,133.6	- 8.5				1					11		F	- Mica, Manganese Dep - Fragmer	is and R	OCK	2000
	, <u>+</u>	-	2	2	3	6 5	: :	· · ·				W	Ŀ				2090
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2115	-	-											477	<u>2,115.1</u> WEATHERED	ROCK -	<u> </u>	
	2,113.6	- 28.5	100/0.3				: :	· · · ·		- 100/0.	3			Brown (GN			
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	2,108.6	33.5	100/0.2				· · · ·	· · · ·		- 100/0.	2			-			
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2105	1	-														<u> </u>	1/15/19
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	2,102.1	40.0	60/0.1							- 60/0.	T			2,102.1	,	40.0	DOT.GD
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TIP 14400BB **BS** 34232.1.1 TE DESCRIPTION I-26 from US 64 (Exit 49) to US 25 Business (DRING NO. B-26 **STATION** 16+70 **DLLAR ELEV.** 2,142.1 ft TOTAL DEPTH 56.0 ft ILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 02/11/2017 **START DATE** 02/06/18 RILLER S. Davis DRE SIZE N TOTAL RUN 16.0 ft STRAT REC. (ft) % / RUN ELEV (ft) DEPTH RUN (ft) (ft) DRILL RATE (Min/ft) RUN SAMP. NO. REC. RQD (ft) (ft) % %

GEOTECHNICAL BORING REPORT CORE LOG

С	OUNT	ΥH	IENDER	SON			GEOLOGI	ST	S. Woods	5		
nes	s (Exit	44)									GROU	ND WTR (ft)
		OF	FSET	50 ft L	T		ALIGNME	NT	-Y7-		0 HR.	NM
		NO	RTHING	617	7,271		EASTING	95	7,969		24 HR.	35.7
				DRIL	L METHOD	H.S.	Augers			HAMM	ER TYPE	Automatic
8		со	MP. DA		02/09/18		SURFACE	WA	TER DEP			
							I					
TR		L										
t) 6	ATA RQD (ft) %	O G	ELEV. ((ft)		D	ESCRIPTION	I AN	D REMARK	(S		DEPTH (ft
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	34232					TIP 4							RSON				GEOLO	GIST .	Johnson	, C. D.	1			S 3423					P 14400B			
				PLAC					R1534	4 (NAF	_		VER I-2								-	ND WTR (ft)					PLAC		DGE #0223		534 (NAP	_
BORING NO. B-168					STATION 18+75				OF	OFFSET 25 ft LT			ALIGNN	ALIGNMENT -Y7- 0 HR. Dry			BORING NO. B-169						STATION 19+25			OFF						
OLL	AR ELE	V. 2,	170.9	ft	-		DEP	тн 33	3.4 ft		NC	RTHIN	IG 617	,289			EASTIN	G 958	,181		24 HR.	23.0		llar el					OTAL DEP			NOR
RILL	RIG/HAN	IMER E	FF./DA	TE A	FO674	4 CME	- 45C 9	92% 07/3	31/201	7			DRILL	MET	HOD) H.	.S. Augers			HAMN	ER TYPE	Automatic					ATE A	-	CME - 45C 9			
DRILL	ER C	neek, [D. O.		;	STAR	T DAT	E 12/	04/18	}	co	MP. D	ATE 1	2/04/ [.]	18		SURFAC	E WAT	ER DEP	TH N	/A		DR	LLER	_	D. O.		S	TART DAT	E 12/05/	18	CON
	DRIVE ELEV	DEPTH	BLC	ow co	UNT			BLO	WS PE	ER FOC	TC		SAM	P. 🔻		L O		SOIL			CRIPTION		ELE	V DRIVE		' <u> </u>	ow cc				PER FOO	
:)	(ft)	(ft)	0.5ft	0.5ft	0.5f	t 0		25	50)	75	100	NO.	. /n		G	ELEV. (ft)	OOIL		ONDEO		DEPTH (ft)	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75
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	2,167.6-	3.3				_ !									Ľ	-	- 2,167.1		SND-SLT	, W/OR0	SANIC PIE	CES 3.8			ŧ							
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GEOTECHNICAL BORING REPORT BORE LOG

Ľ	Y HE	NDEF	25	SON			GEO	LOGI	ST	Johnson	, C. D.		
٢	ES RD) OV	Έ	R I-26				GROUN	D WTR (ft)				
	OFFS	ET (6	ft RT			ALIG	NMEN	T	-Y7-		0 HR.	Dry
				617,2	55			TING				24 HR.	20.0
						ЭН	I.S. Auger						Automatic
	COM	אם פ	_	E 12/0		- 11			W٨	TER DEP			
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