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OJECI: 34518.1.3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REF	ERENCE	NO. <u>34518.</u>	1.3			— F.A	. PROJ. <i>STI</i>	P-0221(40)
COUNTY _	Ashe							
PROJECT	DESCRIP1	TIONUS	221 F	ROM	SR	1003 (1	IDLEWILD	ROAD)
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CAUTION NOTICE

N.C.

STATE STATE PROJECT REPERENCE NO.

34518.1.3

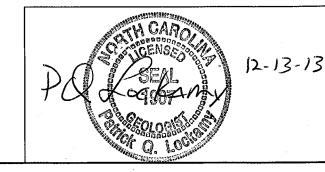
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FELD BORING LOGS, ROCK CORES, AND SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 977-0650. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSUBFACE DATA AND MAY NOT NECESSARLY REFLECT THE ACTUAL SUBSUBFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN STILL (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY 10 THE DEGREE OF RELIBBLITY INHERENT IN THE STANDARD ITST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOSITURE CONDITIONS INDICATED IN THE SUBSUBFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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

_		ORGAN KUHNE
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INVESTIGATED BY	Y PQ	LOCKAMY
CHECKED BY		
SUBMITTED BY_		
DATE		3-2013

PERSONNEL R. DELOST



SHEET NO. 2 / 20 PROJECT REFERENCE NO. 34518.1.3

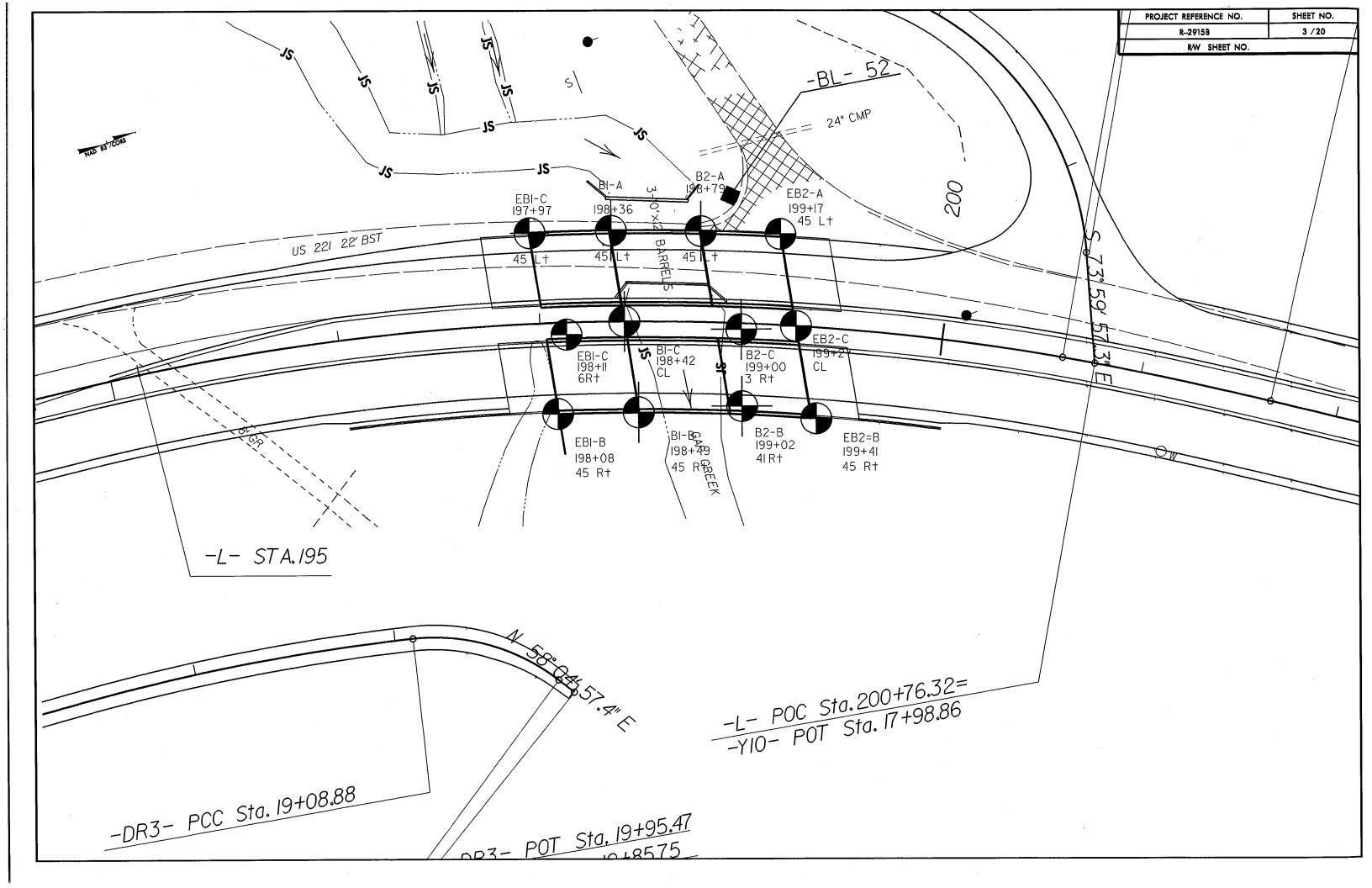
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

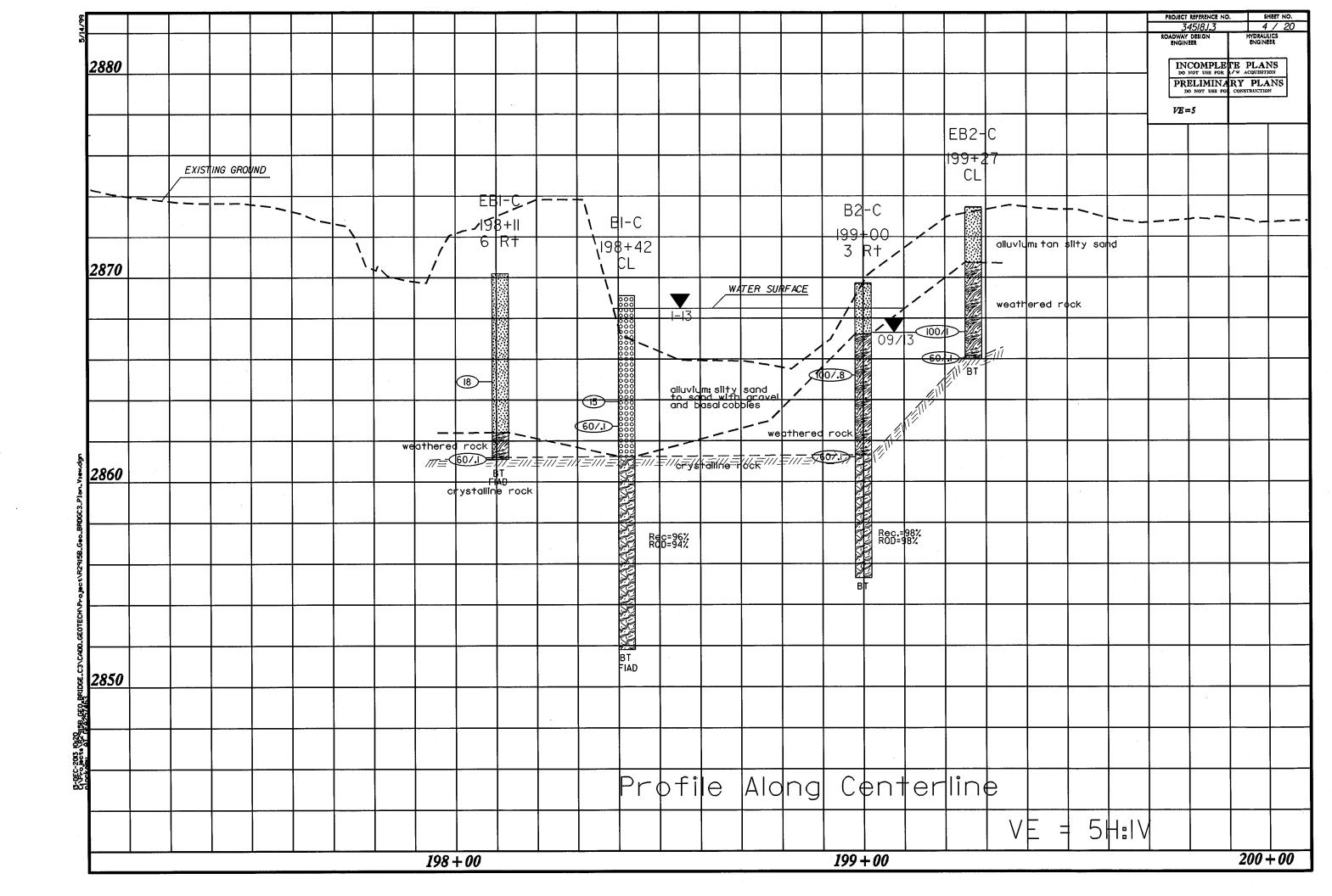
DIVISION OF HIGHWAYS

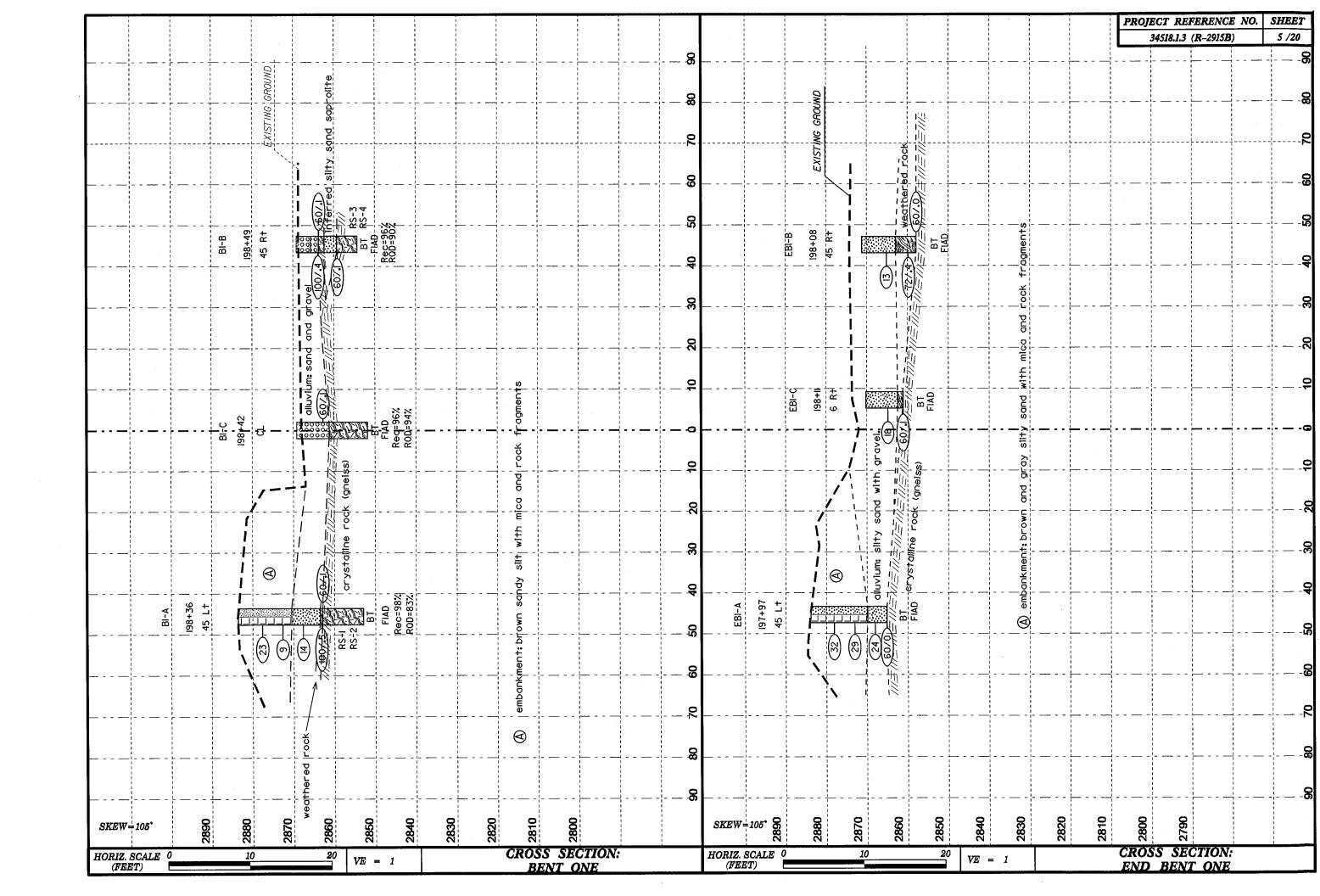
GEOTECHNICAL ENGINEERING UNIT

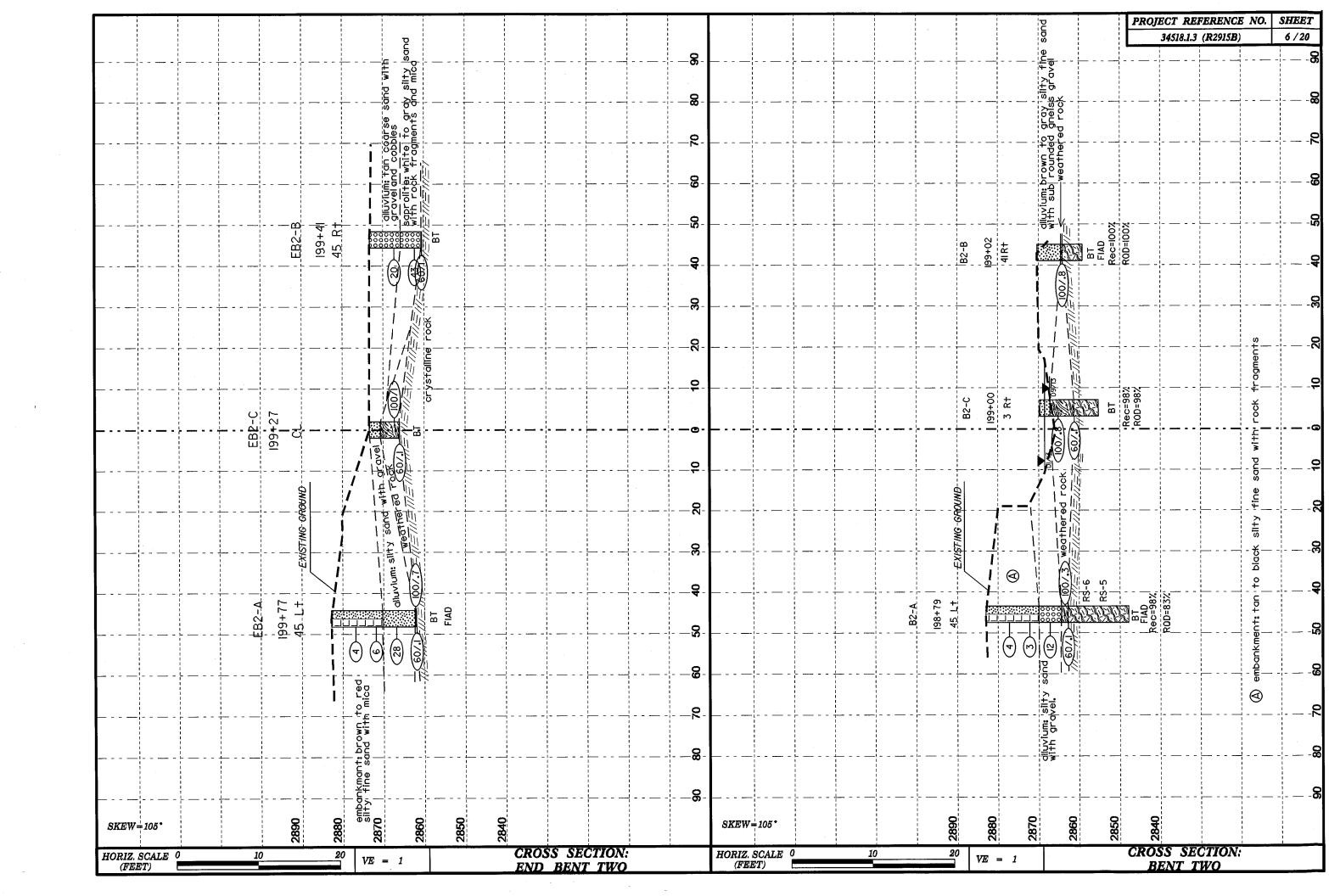
SUBSURFACE INVESTIGATION

				SOIL AND RO	CK LEGEND, TERM	is, symbols	, AND ABBREV	'IATIONS		
	SOIL DESCRIPTION			GRADATION				DESCRIPTION		TERMS AND DEFINITIONS
	CONSOLIDATED, SEMI-CONSOLIDATED, OR V		<u>WELL GRADED</u> - INDICATES A GO <u>UNIFORM</u> - INDICATES THAT SOI	OOD REPRESENTATION OF PARTICLE SIZES F L PARTICLES ARE ALL APPROXIMATELY THE	ROM FINE TO COARSE. E SAME SIZE.(ALSO	ROCK LINE INDICA	TES THE LEVEL AT WHICH NON	hat if tested, would yield spt re N-Coastal Plain Material would y	IELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SDILS THAT HAVE BEEN TRANSPORTED BY WATER.
100 BLOWS PER FOOT ACCORDING TO	CONTINUDUS FLIGHT POWER AUGER, AND Y D STANDARD PENETRATION TEST (AASHTO	1 T206, ASTM D-1586). SOIL	PODRLY GRADED)	TURE OF UNIFORM PARTICLES OF TWO OR I				ON SAMPLER EQUAL TO OR LESS THAI TION BETWEEN SOIL AND ROCK IS OF		ADUJFER - A WATER BEARING FORMATION OR STRATA.
CLASSIFICATION IS BASED ON THE A	AASHTO SYSTEM. BASIC DESCRIPTIONS GE FURE, AASHTO CLASSIFICATION, AND OTHER	ENERALLY SHALL INCLUDE: R PERTINENT FACTORS SUCH		ANGULARITY OF GRAINS		OF WEATHERED RO				ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARBILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS.
AS MINERALOGICAL COMPOSITION, AND	GULARITY, STRUCTURE, PLASTICITY, ETC. E	XAMPLE:	THE ANGULARITY OR ROUNDNESS SUBANGULAR, SUBROUNDED, OR F	OF SOIL GRAINS IS DESIGNATED BY THE	TERMS: ANGULAR,	WEATHERED	NI/AI/A	PLAIN MATERIAL THAT WOULD YIELD	SPT N VALUES > 100	DR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
	TY CLAY, MOIST WITH INTERBEDOED FINE SAND LINERS, N			MINERALOGICAL COMPOSITIO	או	ROCK (WR)	BLOWS PER FO		3F1 N VALUES / 100	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL
GENERAL GRANULAR MAT	END AND AASHTO CLASSI ERIALS SILT-CLAY MATERIAL	10		Z, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE U		CRYSTALLINE ROCK (CR)		RSE GRAIN IGNEOUS AND METAMORPHIO SPT REFUSAL IF TESTED, ROCK TYPE		AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
CLASS. (≤ 35% PASSING			WHENEVER THEY ARE CONSIDERE				GNEISS, GABBR	RO, SCHIST, ETC.		CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
GROUP A-1 A-3	A-2 A-4 A-5 A-6			COMPRESSIBILITY		NON-CRYSTALLINE ROCK (NCR)	SEDIMENTARY	RSE GRAIN METAMORPHIC AND NON-COA ROCK THAT WOULD YEILD SPT REFUS		COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
000000000000000000000000000000000000000		A-7-5 A-7-8 A-3 A-6, A-7	SLIGHTLY COMPRESSIE MODERATELY COMPRES		LESS THAN 31 EQUAL TO 31-50	COASTAL PLAIN SEDIMENTARY ROCK	CDASTAL PLAT	/LLITE, SLATE, SANDSTONE, ETC. IN SEDIMENTS CEMENTED INTO ROCK, E		CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL
SYMBOL 000000000000000000000000000000000000			HIGHLY COMPRESSIBLE		GREATER THAN 50	SEDIMENTARY ROCK	SPT REFUSAL.	. ROCK TYPE INCLUDES LIMESTONE, SA ETC.	INDSTONE, CEMENTED	LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
% PASSING # 10 Fa MX		GRANULAR SILT- MUCK,		PERCENTAGE OF MATERIA BRANULAR SILT - CLAY				EATHERING		DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
* 40 38 MX 50 MX 51 MN		SOILS SOILS PEAT	URGANIC MATERIAL	SOILS SOILS	OTHER MATERIAL			JOINTS MAY SHOW SLIGHT STAINING.	ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
	X 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 3		LITTLE ORGANIC MATTER		ACE 1 - 10% TLE 10 - 20%		R IF CRYSTALLINE.			HORIZONTAL.
	X 41 MN 48 MX 41 MN 48 MX 41 MN 48 MX 4 C 18 MX 11 MN 11 MN 18 MX 18 MX 11 MN 1	11 MN	MODERATELY ORGANIC HIGHLY ORGANIC	5 - 10% 12 - 20% SON	ME 20 - 35% HHLY 35% AND ABOVE			AINED, SOME JOINTS MAY SHOW THIN ' FACE SHINE BRIGHTLY. ROCK RINGS U		<u>DIP DIRECTION (DIP AZIMUTH) -</u> THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
GROUP INDEX @ @	0 4 MX 8 MX 12 MX 16 MX M	No MX MODERATE ORGANIC		GROUND WATER	WILL CON AND HOOFE	1	CRYSTALLINE NATURE.			FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
USUAL TYPES STONE FRAGS.	LTY OR CLAYEY SILTY CLAY	AMOUNTS OF SOILS	✓ WATER LEV	EL IN BORE HOLE IMMEDIATELY AFTER (DRILLING			AINED AND DISCOLORATION EXTENDS I CLAY. IN GRANITOID ROCKS SOME OCC		SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
	AVEL AND SAND SOILS SOIL	127	_	TER LEVEL AFTER 24 HOURS		1		ED. CRYSTALLINE ROCKS RING UNDER		FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
GEN. RATING		FAIR TO		ATER, SATURATED ZONE, OR WATER BEARI	NC CTDATA			DW DISCOLORATION AND WEATHERING E ARE DULL AND DISCOLORED, SOME SHI		FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
AS A EXCELLENT TO	GDOD FAIR TO POOF	R POOR POOR UNSUITABLE	, 210125 "				SOUND UNDER HAMMER BLOWS (FRESH ROCK.	AND SHOWS SIGNIFICANT LOSS OF ST	RENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
PI OF A-7-5 SUBGROUP	IS ≤ LL - 30 ; PI OF A-7-6 SL	UBGROUP IS > LL - 30	O-MI► SPRING OR			1		RED OR STAINED. IN GRANITOID ROCKS	, ALL FELDSPARS DULL	THE STREAM.
CC	ONSISTENCY OR DENSENE			MISCELLANEOUS SYMBOLS				SHOW KAOLINIZATION. ROCK SHOWS SE DLOGIST'S PICK. ROCK GIVES 'CLUNK'!		FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
	ACTNESS OR RANGE OF STANDAR PENETRATION RESISTER	NCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMI		NG TEST BORING W/ CORE		STED, WOULD YIELD SPT REFUS		SCORD WILLY STROOM	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
	(N-VALUE) (LODSE <4	(TONS/FT ²)	1 ₩	AUGER BORING	SPT N-VALUE			RED OR STAINED.ROCK FABRIC CLEAR GRANITOID ROCKS ALL FELDSPARS ARE		LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
GRANIFAR LO	DOSE 4 TO 10		60IL SYMBOL	HOOEN BOITING	STT N-VALUE	EXTEN	IT. SOME FRAGMENTS OF STROM	NG ROCK USUALLY REMAIN.	. KHOLIMIZED TO SUME	ITS LATERAL EXTENT.
MATERIAL MEDI	IUM DENSE 10 TO 30 ENSE 30 TO 50	N/A	ARTIFICIAL FILL (A		REF — SPT REFUSAL		<u>STED. YIELDS SPT N VALUES ></u>		WTO ADE DIOCEDUTO: 5 DUY	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
(NON-COHESIVE) VERY	DENSE >50		INFERRED SOIL BOL	HW .				RED OR STAINED. ROCK FABRIC ELEME O TO SOIL STATUS, WITH ONLY FRAGME		SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
1	Y SOFT <2 OFT 2 TO 4	<0.25		DIFTOURTED		REMAI	NING, SAPROLITE IS AN EXAMPL SES OF THE ORIGINAL ROCK FO	'LE OF ROCK WEATHERED TO A DEGRE ABRIC REMAIN. <u>IF TESTED, YIELDS S</u>	E SUCH THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
SILT-CLAY MEDI	IUM STIFF 4 TO 8	0.25 TO 0.50 0.5 TO 1.0	INFERRED ROCK LIF	INSTALLATION				IC NOT DISCERNIBLE, OR DISCERNIBLE		RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
	TIFF 8 TO 15 Y STIFF 15 TO 30	1 TO 2 2 TO 4	← ← ← ← ← ← ← ← ← ← ← ← ←	JNDARY SLOPE INDICATO	OR .	SCATT	ERED CONCENTRATIONS. QUARTZ	Z MAY BE PRESENT AS DIKES OR STR		ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
	ARD >30	>4	25/026 DIP & DIP DIRECTI	ON OF	4575D 7507	ALSU	AN EXAMPLE.	CK HARDNESS		ROCK SEGMENTS EDUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
	TEXTURE OR GRAIN SIZE		ROCK STRUCTURES	CONE PENETROM	IE IEK IESI	UEDU LIADO CANAL		OR SHARP PICK, BREAKING OF HAND S	DECIMENS DECIMENS	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE
U.S. STD. SIEVE SIZE		200 270		 SDUNDING ROD 			RAL HARD BLOWS OF THE GEOL		FECTMENS REBUIRES	PARENT ROCK.
OPENING (MM)	····	0.075 0.053		ABBREVIATIONS				PICK ONLY WITH DIFFICULTY. HARD HA	MMER BLOWS REQUIRED	<u>SILL</u> - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL
BOULDER COBBLE	GRAVEL SAND	FINE SILT CLAY	AR - AUGER REFUSAL	MED MEDIUM	VST - VANE SHEAR TEST		ETACH HAND SPECIMEN. BE SCRATCHED BY VALEE OR P	PICK. GOUGES OR GROOVES TO 0.25 IN	ICHES DEED CAN BE	TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
(BLDR.) (COB.)	(GR.) (CSE. SD.)	(F SD.) (SL.) (CL.)	BT - BORING TERMINATED CL CLAY	MICA MICACEOUS MOD MODERATELY	WEA WEATHERED	HARD EXCA	VATED BY HARD BLOW OF A GI	EOLOGIST'S PICK. HAND SPECIMENS C		SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
GRAIN MM 305 75 SIZE IN. 12 3	2.0 0.25	0.05 0.005	CPT - CONE PENETRATION TO CSE COARSE		$\gamma_{ m d}$ - DRY UNIT WEIGHT		ODERATE BLOWS. BE GROOVED OR GOUGEO 0.05	INCHES DEEP BY FIRM PRESSURE OF	KNIFE OR PICK POINT.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (BPT) - NUMBER OF BLOWS (N OR BPF) OF
	STURE - CORRELATION O	OF TERMS	DMT - DILATOMETER TEST	PMT - PRESSUREMETER TEST	SAMPLE ABBREVIATIONS	HARD CAN	BE EXCAVATED IN SMALL CHIP	PS TO PEICES 1 INCH MAXIMUM SIZE E		A 140 LB. HAMMER FALLING 30 INCHES REDUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS PENETRATION EQUAL TO OR LESS
SOIL MOISTURE SCALE	FIELD MOISTURE GUIDE	FOR FIELD MOISTURE DESCRIPTION	DPT - DYNAMIC PENETRATION VOID RATIO	N TEST SAP SAPROLITIC SD SAND, SANDY	S - BULK SS - SPLIT SPOON		T OF A GEOLOGIST'S PICK. RE GROVED OR GOUGED READIL	LY BY KNIFE DR PICK. CAN BE EXCAV	ATED IN FRAGMENTS	THAN 0.1 FOOT PER 60 BLOWS.
(ATTERBERG LIMITS)	DESCRIPTION	The Total one Descrip (10N	F - FINE	SL SILT, SILTY	ST - SHELBY TUBE	FROM	I CHIPS TO SEVERAL INCHES I	IN SIZE BY MODERATE BLOWS OF A P		STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
		LY LIQUID; VERY WET, USUALLY BELOW THE GROUND WATER TABLE	FOSS FOSSILIFEROUS FRAC FRACTURED, FRACTUR	SLI SLIGHTLY ES TCR - TRICONE REFUSAL	RS - ROCK RT - RECOMPACTED TRIAXIAL		ES CAN BE BROKEN BY FINGER BE CARVED WITH KNIFF CAN B	R PRESSURE. BE EXCAVATED READILY WITH POINT O	NE PICK, PIECES 1 INCH	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY
LL_ LIQUID LIMIT	(SHI.) PROP	DECOM THE GROUND WATER TABLE	FRAGS FRAGMENTS	# - MOISTURE CONTENT	CBR - CALIFORNIA BEARING	SOFT OR M	ORE IN THICKNESS CAN BE BRI	OKEN BY FINGER PRESSURE, CAN BE		TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO DR GREATER THAN 4 INCHES DIVIDED BY THE
PLASTIC RANGE <		SOLID; REQUIRES DRYING TO	HI HIGHLY	v - very PMENT USED ON SUBJECT F	PRAILO		RNAIL. URE SPACING	BEDDI	NC:	TOPSDIL (TS.) - SURFACE SDILS USUALLY CONTAINING ORGANIC MATTER.
(PI) PI PLASTIC LIMIT	ATTAI	IN OPTIMUM MOISTURE	EGOI		HAMMER TYPE:	IERM	SPACING	TERM	THICKNESS	BENCH MARK: -BL- 2
	MOTOT AN COLU	ID: AT OR NEAR OPTIMUM MOISTURE	DRILL UNITS:	ADVANCING TOOLS	X AUTOMATIC MANUAL	VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED	> 4 FEET 1.5 - 4 FEET	-L- Sta, 198+92.5 62.9 Lt
OM OPTIMUM MOISTURE SL SHRINKAGE LIMIT	E 110301 410	DIAT OF HEAR OFTINON MOISTORE	MOBILE B	_ CLAY BITS	A HOTOMATICTANTONE	WIDE MODERATELY CLO	3 TO 10 FEET DSE 1 TO 3 FEET	THICKLY BEDDED THINLY BEDDED	0.16 - 1.5 FEET	ELEVATION: 2881.92 FT.
J. J. SIMMANDE LINE	REQUIT	IRES ADDITIONAL WATER TO		6 CONTINUOUS FLIGHT AUGER	CORE SIZE:	CLOSE	Ø.16 TO 1 FEET	VERY THINLY BEDDED THICKLY LAMINATED	0.03 - 0.16 FEET 0.008 - 0.03 FEET	NOTES:
	- DRY - (D) ATTAI	N OPTIMUM MOISTURE	BK-5I	8' HOLLOW AUGERS	B	VERY CLOSE	LESS THAN 0.16 FEET	THINLY LAMINATED	< 0.008 FEET	_
	PLASTICITY		X CME-45C	HARD FACED FINGER BITS	X-N		· · · · · · · · · · · · · · · · · · ·	IDURATION		
	PLASTICITY INDEX (PI)	DRY STRENGTH		TUNG,-CARBIDE INSERTS		FOR SEDIMENTARY RO		ENING OF THE MATERIAL BY CEMENTI		
NONPLASTIC LOW PLASTICITY	0-5 6-15	VERY LOW SLIGHT	CME-550	CASING X W/ ADVANCER	H_ <u>-</u>	FRIABLE		NG WITH FINGER FREES NUMEROUS GR LE BLOW BY HAMMER DISINTEGRATES :		
MED. PLASTICITY	16-25	MEDIUM	PORTABLE HOIST	TRICONESTEEL TEETH	HAND TOOLS: POST HOLE DIGGER	MODEDATE	LY INDURATED GRAINS	S CAN BE SEPARATED FROM SAMPLE		
HIGH PLASTICITY	26 OR MORE	HIGH	=	TRICONE TUNGCARB.	HAND AUGER	HODERATE	BREAK	S EASILY WHEN HIT WITH HAMMER.	·	
	COLOR		- LJ	CORE BIT	SOUNDING ROD	INDURATED		IS ARE DIFFICULT TO SEPARATE WITH	STEEL PROBE;	
	LOR OR COLOR COMBINATIONS (TAN, F DARK, STREAKED, ETC. ARE USED TO D				VANE SHEAR TEST	PUTAPIA.		CULT TO BREAK WITH HAMMER. P HAMMER BLOWS REQUIRED TO BREAK	SAMPLE:	
MODIFIERS SOUN AS LIGHT, L	DHAR, STREMKED, ETC. ARE USED TO L	DESCRIPE HEFERNANCE.				EXIMEMEL		LE BREAKS ACROSS GRAINS.		











WBS	34518	.1.3			TI	IP R	2915B		COUNT	Y ASI	HE				GEOLOGIST R. DeLost		
SITE	DESCR	PTION	l Rep	olace A	Ashe C	County	y Culve	rt C3 witi	n dual bri	dges or	ı US 2	221 ove	r Gap	Creek		GROUN	D WTR (ft
30RI	NG NO.	EB1-	-A		S	TATIO	ON 19	7+97		OFFS	ET 4	5 ft LT			ALIGNMENT I	0 HR.	FIAD
COLI	AR ELE	V. 2,	883.9	ft	To	OTAL	. DEPTH	1 18.81	it	NORT	THING	931,5	541		EASTING 1,261,520	24 HR.	N/A
RILL	RIG/HAN	MER E	FF/DA	TE F				6% 08/15/		!				D NW	<u> </u>	MER TYPE	
	LER M							10/01/1		сом	P. DA1	r E 10/			SURFACE WATER DEPTH		710107710110
LEV	DRIVE	DEPTH		ow co		П			PER FOOT	L		SAMP.		11	<u> </u>		
(ft)	ELEV (ft)	(ft)		0.5ft		0	25		50	75	100	NO.	MOI	G	SOIL AND ROCK DES	SCRIPTION	DEPTH (f
885					:												
	-		-			H		- 1				ļ			2,883.9 GROUND SURF embankment: brown and gr		0. with
		-] :	:::				::				mica and rock frag		******
880	2,879.1	- - 4.8						- ····	1	+			-				
	1		9	16	16			32			::						
375	7	-						j::::		::	::						
	2,874.1	9.8	9	12	17	-		1.:		1							
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370	2,869.1	- - 14.8				<u> </u> -	j		ļ · · · ·	<u> </u>					2,869.9 alluvium: no recovery - inf	arrad ailtr ac	14.
		-	4	8	16	:		24	: : : :		::			*	with gravel.	ened silly sa	ırıa
	2.865.2	- 18.7					:::{		: : : :	: :					2,865.2		18.
		- 15.7	60/0								- 60/0 -	1			Boring Terminated wit Penetration Test Refusa		
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SHEET 7/20

	34518 DESCR		l Rep	olace /			R291 ity Cu		t C3 w				ASH es on		221 ove	r Gap	Cree	GEOLOGIST R. DeLost GROUND WTR (
	NG NO.		·				ION								l5 ft RT			ALIGNMENT I 0 HR. FIA
OLL	AR ELI	EV . 2,	871.2	ft	T	OTA	L DE	PTH	13.5	5 ft		N	ORT	HING	931,5	24		EASTING 1,261,609 24 HR. N
RILL	RIG/HAI	MMER E	FF./DA	TE F							11						D N	W Casing w/ SPT HAMMER TYPE Automatic
	LER M								10/02			С	OMP	. DA	ΓE 10/			SURFACE WATER DEPTH N/A
LEV (ft)	ELEV	DEPTH (ft)	·	ow co	UNT	\prod		···	BLOW	S PEI	R FOC)T			SAMP.	V	L	SOIL AND ROCK DESCRIPTION
(11)	(ft)	(10)	0.5ft	0.5ft	0.5ft	0		25		50		75		100	NO.	MOI	G	ELEV. (ft) DEPTH
875																		
	-	Ī																 - -
870	-	ļ				#	· 1·	. 		•		• 1					8000	2,871.2 GROUND SURFACE alluvium: gray silty sand with mica, roots, and
	-	ŧ						-				7						gravel
	2,866.2	5.0		<u> </u>				:				\cdot						-
365	_	F	0	5	8		13	-		-		-						- -
	_	F								_		-	·				4	2,862.9 weathered rock
860	2,861.2	10.0	13	28	72/.4	 												· ·
	2,857.9 .	13.3						\Box				$: \mid$		00/.9				
Ī			60/0			Τ΄			<u> </u>	<u></u>		. . l	<u> '</u>	60/0	1			Boring Terminated with Standard Penetration Test Refusal at Elevation
	-	Ŀ																2,857.7 ft on crystalline rock
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/BS	34518					G RE P R291			COUNT	Y ASHE	······································			GEOLOGIST R. DeLost		
ITE	DESCR	IPTION	Rep	lace /	Ashe C	ounty Cu	ulvert	C3 with	dual bri	dges on US	S 221 ove	er Gap	Cree	k	GROUN	ID WTR (ft
ORI	NG NO.	EB1	·C		S	TATION	1984	⊦11		OFFSET	6 ft RT			ALIGNMENT	O HR.	N/A
OLI	AR ELE	V. 2,	870.2	ft	T	OTAL DE	PTH	9.1 ft		NORTHIN	IG 931,	539		EASTING 1,261,573	24 HR.	N/A
RILL	RIG/HAI	MER E	FF/DA	TE F	&H0404	CME-45C	87.6%	6 08/15/2	011		DRILL	METHO	D N	W Casing w/ SPT HAMI	MER TYPE	Automatic
RIL	LER M	. Morg	an		S	TART DA	TE (09/25/13	3	COMP. D	ATE 09	/25/13		SURFACE WATER DEPTH	I/A	
ΕV	DRIVE ELEV	DEPTH		w co	,			BLOWS P			SAMP	17	O L	SOIL AND ROCK DES	SCRIPTION	
ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50 1) 	75 10	NO.	/MO	I G	ELEV. (ft)		DEPTH (
					ľ											
375		_														
	-										1 .					
370	-				<u> </u>			·				1	2.5.5	2,870.2 GROUND SURI	ACE	0 and
	-						:			: : : : :				alluvium: no recovery - ini with grave	erred silly s	ariu
	2.865.9	4.3				: : :	:			: : : : :				-		
365	_	_	4	8	10		18				-			_ -		
						:::	<u>-</u>	-:-:-		:+÷÷::			477	- 2,862.4 - 2,861.2 weathered ro	ck	<u>7</u>
	2.861.2	9.0	60/.1		 					60/.	1 😂		V//-/	C_2,861.1/\ crystalline ro	ck	/_9
	-	_												Boring Terminated wi Penetration Test Refusa	ıl at Elevatic	on
	-													2,861.1 ft on crysta	lline rock	
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WBS	34518	.1.3			TI	IP R	2915B	COU	NTY ASH	łΕ .				GEOLOGIST R. DeLost	
SITE	DESCR	IPTION	l Rep	lace A	She C	Count	y Culve	ert C3 with dual b	ridges on	US 2	221 ove	r Gap	Creel	(GROUND WTR (fi
BORI	NG NO.	B1-A			S	TATIO	DN 19	98+36	OFFS	ET 4	45 ft LT			ALIGNMENT	0 HRCaved at 1.
COLL	AR ELE	V. 2,	883.5	ft	T	OTAL	DEPT	H 30.6 ft	NORT	HING	931,5	79		EASTING 1,261,533	24 HR. N/
DRILL	RIG/HAN	MER E	FF./DA	TE F8	L kH0404	CME	45C 87	.6% 08/15/2011	I		DRILL I	METHO	D NV	V Casing W/SPT & Core HAMN	IER TYPE Automatic
DRIL	LER M	. Morg	an		S	TART	DATE	10/01/13	COMF	. DA	TE 10/	01/13		SURFACE WATER DEPTH N	/A
ELEV	550.65	DEPTH	т	W COL		П		BLOWS PER FO	от		SAMP.	V /	L	<u> </u>	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	5 50	75	100	NO.	MOI	O G	SOIL AND ROCK DES	CRIPTION DEPTH
2885															
	-					Ц.					ļ	ļ	R88	2,883.5 GROUND SURF	
	-					:							F	embankment: brown sandy s rock fragment	ts
2880	_					<u>-</u> -							LWF	-	
	2,878.6- -	- 4.9 -	6	6	17	:	ا ز .	23							
2875	-	-				[]:	:: <i>/</i> :								
	 2,873.6-	- - 9.9		,			·/· ·							-	
	-	-	8	4	5	:	9			: :					
2870	-	-				<u> :</u>	1			• •				2,870.5 alluvium: no recovery - infe	erred silty sand
	2,868.6-	- 14.9 -	2	4	10	:	14							with gravel	
2865	-	-				:	· ۴' -								
2605	2,863.6 2,862.9	- - 19.9				 .	<u>. į </u>			· · ·				2,863.5	20
	2,862.9	20.6	100/.5 60/.1			:				00/.5 60/.1)			2,862.9 weathered roc crystalline rock - cored from	
2860		_							• • • •	• •				- Crystalline rock - cored nor	11 20.0 10 30.0.
						:	: : :			::					
							: : :			: :					
2855	• -					H								-	
		<u></u>				₩:					-	ļ		2,852.9 Boring Terminated at Elevat	30 ion 2.852.9 ft in
	-	-				ŀ							[crystalline roc	k
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SHEET 9/20

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WBS	34518	1.3			TIP	R291	5B	С	OUNT	Y A	ASHE		GEOLOGIS	T R. DeLost		
SITE	DESCRI	PTION	Rep	lace Ash	e Cou	nty Cu	lvert C3	with d	ual bri	dges	on US 22	21 over Gap Creek			GROUND WT	R (ft)
BORI	NG NO.	B1-A			STAT	ΓΙΟΝ	198+36			OF	FSET 45	5 ft LT	ALIGNMEN	TI	0 HRCaved a	t 1.0
COLL	AR ELE	V. 2,8	383.5	ft	TOT	AL DE	PTH 30	.6 ft		NO	RTHING	931,579	EASTING	1,261,533	24 HR.	N/A
DRILL	RIG/HAN	IMER EI	F/DA	re f&HO	404 CN	1E-45C	87.6% 08	/15/201	1]	DRILL METHOD NW	Casing W/SPT	& Core HA	MER TYPE Autom	atic
DRILI	LER M.	Morga	เท		STAF	RT DA	TE 10/0	1/13		co	MP. DAT	E 10/01/13	SURFACE \	WATER DEPTH	N/A	
CORE	SIZE	NQ-2					V 10.0 f									
ELEV	RUN ELEV	DEPTH		DRILL RATE	REC.	JN RQD	SAMP.	REC.	ROD	0 -		DI	ESCRIPTION A	AND REMARKS		
(ft)	(ft)	(ft)	(ft)	(Min/ft)	(ft) %	(ft) %	NO.	(ft) %	(ft) %	G	ELEV. (ft)				DEF	PTH (ft)
862.94	2,862.9	20.6	5.0	2·44/1 0	(4.9)	(3.4)	· · · · · · · · · · · · · · · · · · ·				_ 2,862.9	on/etallina ro/	Begin Corin	g @ 20.6 ft y weathered and har	d anales	20.6
2860	1		0.0	2:44/1.0 N=60/.1 2:44/1.0 2:33/1.0 3:14/1.0	(4.9) 98%	(3.4) 68%					2,002.5	to	otal REC=98%	total RQD=83%.	a griolos.	20.0
	2,857.9	25.6		2:33/1.0 3:14/1.0 3:34/1.0							F	11 breaks on micaceo	us foliation at 4	15 degrees with 9 of ins on breaks with n	those breaks from	l
	1		5.0	4:02/1.0 /	(4.9) 98%	(4.7) 94%					-	20 (0 23.4 feet.	very siigni stat	ins on breaks with hi	weathering.	
2855	4	.		3:41/1.0 3:56/1.0 4:33/1.0 4:46/1.0 4:52/1.0	0070	0170					<u>_</u>					-
-	2,852.9	30.6		4:52/1.0							2,852.9	Boring Termin	ated at Flevation	on 2,852.9 ft in cryst	alline rock	30.6
İ	Ŧ										-	Bonning Formum	atou at Elovati	or. 2,002.0 it iii orjor		
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WBS	34518	.1.3 .			T	IP F	R2915E	3	С	OUNTY	/ AS	HE				GEOLOGIST R. DeLost		
SITE	DESCR	IPTION	Rep	lace As	she C	Count	y Culv	ert C3 v	with d	ual brid	ges o	n US 2	221 ove	r Gap	Creel	(GROUND W	VTR (f
BORI	NG NO.	B1-B			S	TATI	ON 1	98+49			OFFS	SET 4	15 ft RT			ALIGNMENT	0 HR.	FIA
COLL	AR ELE	V. 2,	869.1	ft	T	OTAI	L DEPT	TH 14.	.9 ft		NOR	THING	931,5	61		EASTING 1,261,623	24 HR.	N/
	RIG/HAI														D N\	.l	HAMMER TYPE Aut	tomatic
	ER M							10/0			COM	IP. DA	ΓE 10/			SURFACE WATER DEPT		
LEV	55075	DEPTH	,	W COU		П				R FOOT			SAMP.	1	1 4	-L		
(ft)	ELEV (ft)	(ft)	0.5ft		0.5ft	0	2	25	50		75	100	NO.	MOI	O G	SOIL AND ROC	C DESCRIPTION	DEPTH
	(117					\parallel							1	14.01	Ĭ	LLL V. (11)		<u> </u>
2070																•		
2870						Ц.				 				ļ	000		SURFACE nd and gravel	
	-	_				:		: : :		 	: :				000		id and graver	
865	_	_													DOOL	2,865.6 Basal alluvium - c	cobbles and sand.	
	2,864.2 2,863.7	<u>4.9</u> 5.4	100/.4			•			-			100/.4				2,863.7		·
	-	-	60/.1			-		: : :			: :	60/.1				Rec= 31%	RQD=31%)
860	2,859.2 	9.9				-	· · ·	ļ	-		 	-1				2,859.2 inferred silty	6.8-9.9 no recovery - sand saprolite	
		-	60/.1			:		: : :			::	60/.1	RS-3			crystalline rock R	ec=96% RQD=90%	
.055	-	-				:	• • •	:::			::		RS-4					
855		-				止		 			<u> </u>		<u> 10-4</u>	<u> </u>		72,854.2 Boring Terminated at	Floretian 2.954.24 in	1
	-														l b	crystall	ne rock	
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SHEET 10/20

AADS	34518	3.1.3			TIP	R291	5B	C	OUNT	ΥA	SHE			GEOLOGIST R. DeLos	st -		
			l Rep	lace Ash	<u></u>							221 over Gap Cro	eek	<u> </u>		GROUNI	D WTR (ft)
	RING NO.	···					198+49					45 ft RT		ALIGNMENT		0 HR.	FIAD
COL	LAR ELI	EV. 2,	869.1	ft	тот	AL DE	PTH 14.	9 ft		NO	RTHING	931,561		EASTING 1,261,623		24 HR.	N/A
DRIL	L RIG/HAI	MMER E	FF/DA	TE F&H0	404 CN	/IE-45C	87.6% 08	/15/201	1			DRILL METHOD	NW	/ Casing W/SPT & Core	HAMM	ER TYPE	Automatic
DRIL	LER M	. Morga	an		STA	RT DA	TE 10/0	3/13		co	MP. DA	TE 10/03/13		SURFACE WATER DEP	TH N	/A	
COR	RE SIZE	NQ-2					N 5.0 ft										
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STF REC. (tt) %	ATA RQD (ft) %	L O G	ELEV. (f	ft)	D	DESCRIPTION AND REMARKS	3		DEPTH (ft)
2859.2		. 												Begin Coring @ 9.9 ft			
2855	2,859.2	-	5.0	5:58/1.0 N=60/.1 5:58/1.0 5:42/1.0 5:18/1.0 3:17/1.0 4:34/1.0	96%	(45.0) 900%	RS-3				2,859.2	hard and fresh	crys exce	stalline rock Rec=96% RQD ept for 13.8-14.0 which is mod	=90% . weathe	red and soft	
	2,854.2	14.9		3:17/1.0 \4:34/1.0	ļ	<u></u>	·/				2,854.2 -	Boring Te	ermir	nated at Elevation 2,854.2 ft in	crystalli	ne rock	14.9



WBS	34518	3.1.3			т	IP R	2915B		co	UNTY	/ AS	HE				GEOLOGIST R. De	Lost		
SITE	DESCR	IPTION	l Rer	olace A	\she (County	Culve	ert C3 w	ith dua	ıl brid	ges o	n US	221 ove	r Gap	Cree	` <u>'</u>		GROUND	VTR (f
	NG NO.						N 19				OFFS			<u>-</u>		ALIGNMENT !		0 HR.	FIA
	AR ELI			ft				H 17.0	3 ft				3 931,	570		EASTING 1,264,57	 1	24 HR.	N/A
	RIG/HAI									1					D N	V Casing W/SPT & Core		MER TYPE AU	
	LER M							09/30		Т	COM	P DA	TE 09/			SURFACE WATER I			
				W CO		T			S PER I				SAMP.		11	- 			
ELEV (ft)	DRIVE ELEV (ft)	(ft)	0.5ft			-	2		50		75	100	1 [O G	SOIL AND ELEV. (ft)	ROCK DES	CRIPTION	DEPTH (
						11		<u></u>	1			-		1,000	"	LLLV. (II)			DEI IIII
2870																•			
2070		.				 					,		 	ļ	000		UND SURF		
	•	Ļ				:	: :		: :	 	: :				000	Alluvium: sand	cobbles.	•	
2865	2,864.9	4.2	l			<u>ll:</u>	. .								800	Begin coring at	6.3 - Quartz to 6.8.	cobble from 6.3	3
	2,862.8-	ļ.	5	8	7	1[-	• 15		. .						000				
	- Z,002.0	- 0.5	60/.1	1			: !- :-			: -	· -:-:	-60/.1			000	2,862.3 2,861.2	no recovery		
860	_	<u> </u>							<u>: : </u>	· · ·	<u> </u>	• •				crysta	line rock (g	neiss)	
		Ł				:					: :					Hec=	96% RQĎ=	:94%	
	-	-				:			. .		: :			ļ					
855	_	F				11:				· · ·	<u> </u>	· ·				•			
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SHEET 11/20

WBS	34518	3.1.3			TIP	R291	5B	С	OUNT	Υ	ASHE			GEOLOGI	ST R. DeLo	st		
SITE	DESCR	RIPTION	Rep	lace Ash	e Cou	nty Cu	lvert C3	with d	ual bri	dges	on US 22	l over Gap Cr	reek				GROUN	ID WTR (ft)
BOR	ING NO	. B1-C	;		STA	TION	198+42			OF	FSET CL			ALIGNME	NT I		0 HR.	FIAD
COL	LAR ELI	EV. 2,	869.1	ft	TOT	AL DE	PTH 17	.3 ft		NO	RTHING	931,570		EASTING	1,264,571		24 HR.	N/A
DRILL	RIG/HA	MMER E	FF/DA	TE F&H0	404 CN	/E-45C	87.6% 08	/15/201	1	٠	D	RILL METHOD	NW (Casing W/SP	T & Core	HAMM	ER TYPE	Automatic
DRIL	LER M	1. Morga	an		STAI	RT DA	TE 09/3	0/13		CO	MP. DATE	09/30/13		SURFACE	WATER DEF	TH N	/A	
COR	E SIZE	NQ-2					N 9.4 ft						1					
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STF REC. (ft) %	RQD (ft) %	L O G	ELEV. (ft)		DE	SCRIPTION	I AND REMARK	(S		DEPTH (ft)
2861.22	2,861.2	7.9		0.00/4.0	(4.4)	77.45								Begin Cor	ing @ 7.9 ft			
2860	2,856.8	F	4.4	3:28/1.0 3:16/1.0 3:19/1.0 3:25/1.0 0:42/0.4		(4.4) 100%					2,861.2 	total Rec=96%	total	crystailine RQD≔94% í	e rock (gneiss) hard and fresh v	vith few r	natural brea	7.9 ks
2855	2,851.8	17.3	5.0	3:25/1.0 0:42/0.4 2:38/1.0 3:10/1.0 3:09/1.0 3:56/1.0 3:09/1.0	(4.6) 92%	(4.6) 92%												17.3
	•			0.007.770								Boring Te	ermina	ited at Eleva	tion 2,851.8 ft ir	n crystalli	ne rock	
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WBS	34518	3.1.3			Т	IP.	R2915B C	OUNT	/ ASHE				GEOLOGIST R. DeLost			
SITE	DESCR	IPTION	N Rep	olace A	Ashe C	Cour	inty Culvert C3 with du	ual brid	ges on US	221 ove	r Gap	Cree	k	GRO	OUND W	TR (f
BOR	ING NO.	B2-A	1		s	TAT	TION 198+79		OFFSET	45 ft LT	-		ALIGNMENT 1	ОН	R.	FIAD
COL	LAR ELE	EV . 2,	883.0	ft	Т	OT/	AL DEPTH 35.1 ft		NORTHING	3 931,6	321		EASTING 1,261,549	24 H	R.	N/A
DRILL	RIG/HA!	MMER E	FF/DA	TE F	&H0404	+ CM	ME-45C 87.6% 08/15/201	1	······································	DRILL I	METHO	D N	W Casing W/SPT & Core	HAMMER TY	PE Auto	matic
	LER M						RT DATE 10/02/13		COMP. DA				SURFACE WATER DEPT			
ELEV	55075	DEPTH		W CO		П	BLOWS PER	FOOT		SAMP.		1-1				
(ft)	ELEV (ft)	(ft)	`	0.5ft		16	25 50		75 100	ł I	MOI	O	SOIL AND ROCK	DESCRIPTI		EPTH (
			1			$\dagger \dagger$.d		7.,,					
2885										÷			•			
	-	ļ											 7 2,883.0 GROUND S	SUBFACE		c
	· -	-	†			#:			T				embankment: tan to bla	ack silty fine	sand with	
2880	-	-				₋¦		• • •					rock frag	gments		
	2,878.3	4.7	2	2	2	┨╿╏ ┨		· · · ·			İ		• •			
0075	-	-	-	-	_	•	••4 . ! .	· · · ·					•			
2875													- :			
	.2,873.3	9.7	1	1	2	ا	j . 3 .		: : : :				<u>.</u> -			
2870	-	_				11	χ .					님	2,870.0			13
		14.7				\prod						000	alluvium: no recovery with g		ty sand	
	•		3	6	6							0000	- wing	aivei		
2865		<u> </u>											- 2,864.5			18
	2,863.9 2,862.9	- 19.1 - 20.1	100/.3	1		1		:	. 100/.3	\$			2,862.9 weather			20
2000	7		60/.1						60/.1		ŀ		Crystalline ro Rec=91%	ck (gneiss) RQD=66%		
2860		-				1			 	RS-6			-			
	-								: : : :				• •			
2855	-									RS-5			•			
	1	-											- -			
	1												•			
2850	-	-											• -			
	-			<u></u>				· · ·	<u> </u>				2,847.9			35.
	1	<u>.</u> .											. Boring Terminated at E crystallir		17.9 ft in	
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SHEET 12/20

WBS	34518	.1.3			TIP	R291	5B		OUNT	Y A	SHE GEOLOGIST	R. DeLost		
·····			Rep	lace Ash	<u> </u>						on US 221 over Gap Creek		GROUN	ID WTR (ft)
	NG NO.			·	·····		198+79				SET 45 ft LT ALIGNMENT	i	0 HR.	FIAD
COLI	AR ELE	V. 2,	383.0	ft			PTH 35.	.1 ft			RTHING 931,621 EASTING 1,		24 HR.	N/A
DRILL	RIG/HAN	MER E	FF/DA	TE F&H0	404 CN	1E-45C	87.6% 08	/15/201	1		DRILL METHOD NW Casing W/SPT &	Core HAM!	AER TYPE	Automatic
DRIL	LER M	. Morga	an		STAI	RT DA	TE 10/0	2/13		СО	IP. DATE 10/02/13 SURFACE WA	ATER DEPTH N	I/A	
CORI	E SIZE	NQ-2			TOTA	AL RU	N 15.0 f							
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	STF REC. (ft) %	ATA RQD (ft) %	L O G	DESCRIPTION AND	D REMARKS		DEPTH (fi
862.87											Begin Coring (@ 20.1 ft		
2860	2,862.9	-	5.0	2:58/1.0 N=60/.1 2:58/1.0 3:21/1.0 3:41/1.0 4:42/1.0 4:36/1.0	(4.7) 94%	(2.7) 54%	RS-6				2,862.9 crystalline rock (gneiss) 20.1-27.7 var which is soft to hard. many breaks 27.7-35.1 hard and fresh, no bre	s on foliation at 35-4	10 degrees.	esh 20.
2855	2,857.9	<u>25.1</u> - -	5.0	4:42/1.0 4.36/1.0 2:46/1.0 3:35/1.0 2:41/1.0 4:54/1.0 4:44/1.0	(4.8) 96%	(3.4) 68%	RS-5							
2850	2,852.9	30.1	5.0	4:54/1.0 4:44/1.0 3:46/1.0 3:50/1.0 3:59/1.0	(4.1) 82%	(3.8) 76%						•		
	2,847.9 -	35.1		3:59/1.0 3:58/1.0 4:44/1.0							2,847.9 Boring Terminated at Elevation	2,847.9 ft in crystal	ine rock	35.



WBS	34518	1.1.3			TI	P R2	2915B		COUNT	Y A	SHE				GEOL	OGIST R. DeLo	st		
SITE	DESCR	IPTION	Rep	lace A	she C	county	Culve	ert C3 wit	h dual bri	dges	on US 2	221 ove	r Gap	Creek	(GROUN	D WTR (ft
BOR	NG NO.	B2-B			S	TATIO	N 19	9+02		OF	SET 4	11 ft RT			ALIGN	MENT I		0 HR.	FIAE
COLI	AR ELE	EV. 2,	370.3	ft	T	OTAL	DEPT	H 11.1	ft	NOI	RTHING	931,6	37		EAST	ING 1,261,637	2	24 HR.	N/A
RILL	RIG/HAI	MMER E	FF/DA	TE F8	kH0404	CME-	45C 87	.6% 08/15	/2011			DRILL N	METHO	D NV	V Casing \	W/SPT & Core	HAMME	R TYPE	Automatic
RIL	LER M	l. Morga	an		S	TART	DATE	09/24/	13	CO	MP. DAT	FE 09/	24/10		SURF	ACE WATER DE	PTH N/A		
LEV	DRIVE ELEV	DEPTH	BLC	w cou	UNT				PER FOO	Γ	T	SAMP.	lacksquare	LO		SOIL AND RO	OCK DESC	RIPTION	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	5	50	75 	100	NO.	MOI		ELEV. (ft				DEPTH (
875		-												-					
	-	F	Ì											F					
870	-	<u> </u>											<u> </u>		2,870.3	GROUN	ID SURFAC	DE	0
<u> </u>	-	-								- -				F	-	alluvium: brown to sub round	gray silty fi ed gneiss g	ne sand v ravel	vith
	-	<u> </u>							: : :					F					
365	2,865.0 2,864.2	5.3 6.1	4	96/.3					 				1	222	-2,864.5 2.864.20				5 6
	-		60	60/0	1				: : :	: :	100/.8				2,804.27	crystallin	hered rock e rock (gne	iss)	/ \
360	-	†							: : :	$ \cdot $						Rec=100	% RQD=10	00%	
		<u> </u>	ļ									-			2,859.2	Boring Terminated	at Elevation	n 2,859.2	11 ft in
		ļ.												l E		cryst	alline rock		
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SHEET 13/20

WBS	3451	8.1.3			TIP	R291	5 B		COUNT	ΥA	SHE		GEOLOGIST R. DeLost	T	
SITE	DESC	RIPTION	Rep	lace Ash	e Cou	nty Cu	lvert C3	with c	lual bri	dges	on US 221 over G	ap Creek			D WTR (fi
3OR	ING NO	. B2-B	} 		STAT	TION	199+02			OF	SET 41 ft RT		ALIGNMENT	0 HR.	FIAI
COL	LAR EL	EV . 2,	870.3	ft	TOT	AL DE	PTH 11	.1 ft		NO	THING 931,637	,	EASTING 1,261,637	24 HR.	N/A
RIL	L RIG/HA	MMER E	FF./DA	TE F&HO	404 CN	1E-45C	87.6% 08	/15/20	11		DRILL MET	THOD NW	Casing W/SPT & Core HAMN	ER TYPE	Automatic
RIL	LER N	1. Morg	an		STAF	RT DA	TE 09/2	4/13		СО	IP. DATE 09/24	/10	SURFACE WATER DEPTH N	/A	
OH	E SIZE	NQ-2			TOTA	AL RUI	N 5.0 ft								
EV t)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC.	JN RQD (ft) %	SAMP. NO.	ST REC (ft) %	RATA RQD (ft) %	L O G	ELEV. (ft)	D	ESCRIPTION AND REMARKS		DEPTH
4.2	2,864.2	6.1 7	5.0	N=60/0 3:37/1.0 4:57/1.0 4:54/1.0 4:52/1.0 4:47/1.0	(5.0) 100%						2,864.2 hard	fresh gneiss	Begin Coring @ 6.1 ft s - no natural breaks. foliation at 30-3 Rec=100% RQD=100%	5 degrees.	
<u> 30</u>	2,859.2	11.1		4:52/1.0 4:47/1.0							2,859.2				
		7									Вс	oring Termin	nated at Elevation 2,859.2 ft in crystalli	ne rock	
		**													
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WBS	34518	3.1.3			TI	P	R2915B	}	COUNT	Y AS	SHE				GEOLOGIST R. DeLost		
SITE	DESCR	IPTION	l Rep	lace A	Ashe C	oun	ty Culve	ert C3 wit	h dual bri	dges c	on US 2	221 ove	r Gap	Creek		GROU	ND WTR (fi
BORI	NG NO.	B2-0	>		S	TAT	ION 19	99+00		OFF	SET 3	3 ft RT			ALIGNMENT	0 HR.	FIAD
COLI	AR ELE	EV . 2,	869.7	ft	T	OTA	L DEPT	H 14.4	ft	NOF	THING	931,6	523		EASTING 1,261,601	24 HR.	2.4
RILL	RIG/HAI	MMER E	FF/DA	TE F8	kH0404	CMI	E-45C 87	7.6% 08/15	/2011	· · · · · ·		DRILL I	METHO	D NV	/ Casing W/SPT & Core HA	MMER TYPE	Automatic
RIL	LER M	. Morg	an		S	TAR	T DATE	09/23/	13	CON	IP. DA	FE 09/	23/13		SURFACE WATER DEPTH	N/A	
LEV		DEPTH	, 	w co	UNT	П		BLOWS	PER FOOT			SAMP.	V /	11	SOIL AND ROCK D	ECCRIPTION	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	2	25	50	75	100	NO.	МО	O G	ELEV. (ft)	ESCAIF HON	DEPTH
															,		
370		L													.2,869.7 GROUND SL	RFACE	(
	:					1							*		alluvium: no r	ecovery	
	2,866.0	3.7		<u> </u>		'								7	2,867.2 weathered	rock	2
365	-	-	34	66/.3							-100/.8				•		
	-	F				$\ \cdot\ $											
360	2,861.3	8.4	60/.1	}		$\ \cdot \ $					🕈	1			2,861.3 crystalline	rock	
	-	F								. :					Rec.=98% R	QD=98%	
	-	F				:											. د
	<u>-</u>								1			-			2,855.3 Boring Terminated at Ele		3 ft in
	-	F												E	crystalline	rock	
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SHEET 14/20

WBS	34518	.1.3		E Mare Bus		R291	5B		OUNT	Y A	SHE	··· ··· · · · · · · · · · · · · · · ·		GEOLOGIST R. DeLo	st		
 			Rep	lace Ash	ļ							over Gap Cr				GROUN	D WTR (ft)
	ING NO.						199+00				FSET 3 ft			ALIGNMENT		0 HR.	FIAD
COLI	AR ELE	V. 2,8	369.71	t	TOTA	AL DE	PTH 14	.4 ft		NO	RTHING 9	31,623		EASTING 1,261,601		24 HR.	2.4
DRILL	. RIG/HAN	MER E	FF/DA	re F&H04					1	L		ILL METHOD	NW (Casing W/SPT & Core	HAMM	ER TYPE	Automatic
DRIL	LER M.	Morga	an		STAF	RT DA	TE 09/2	3/13		СО	MP. DATE	09/23/13		SURFACE WATER DE	TH N	Ά	
COR	E SIZE	NQ-2			TOTA	AL RUI	N 6.0 ft					·	.				
ELEV	RUN ELEV	DEPTH	RUN	DRILL RATE	REC.	IN ROD (#) %	SAMP.	STF REC.	ATA RQD (ft) %	L O			DE	SCRIPTION AND REMARK	'S		
(ft)	(ft)	(ft)	(ft)	(Min/ft)	(ft) %	(ft) %	NO.	(ft) %	(ft) %	Ğ	ELEV. (ft)			SOUTH TION AND TIEMAN			DEPTH (ft)
2861.31	2 881 2	- 97	10							-				Begin Coring @ 8.4 ft crystalline rock (gneiss)			8.4
2860	2,861.3	_ <u>9:4</u> _ /	1.0 5.0	N=60/.1 5:18/1.0	(1.0) \ 95% /	(1.0) \ 95% /					2,861.3			Rec.=98% RQD=98% and fresh - no natural bre	-1		0.4
	1			3:33/1.0 4:47/1.0	(4.9) 98%	(4.9) 98%					- -		na	rd and fresh - no natural bre	aks		
	2,855.3	14.4		5:18/1.0 N=60/.1 5:18/1.0 3:33/1.0 4:47/1.0 5:12/1.0 4:09/1.0 4:05/1.0							2,855.3	Boring T	ormino	ated at Elevation 2,855.3 ft i	o covetallia	ne rock	14.4
	1	•		(1100) 110							-	boning re	CHILITIC	ated at Lievation 2,000.0 it i	i osystami	io rook	
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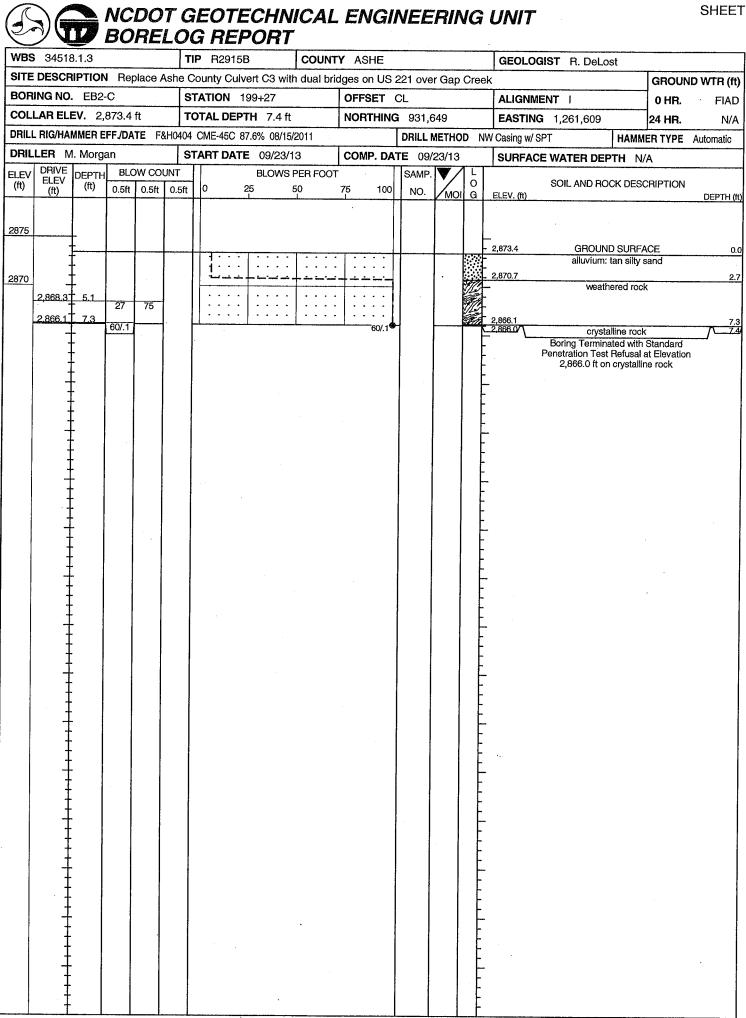


WBS	34518	3.1.3				ΊP	R2915B		COUNT	Y ASHE					GEOLOGIST R. DeLost		
SITE	DESCR	IPTION	l Rep	lace /	\she (Cou	ınty Culve	rt C3 with	dual brid	dges on U	S 22	1 ove	r Gap	Cree	k	GROUN	ID WTR (f
BOR	NG NO.	EB2	·A		s	TA	TION 19	9+17		OFFSET	45	ft LT			ALIGNMENT I	0 HR.	FIA
COLI	AR ELI	EV. 2,	882.6	ft	Т	ОТ	AL DEPTH	H 20.9 ft		NORTHI	NG	931,6	58		EASTING 1,261,564	24 HR.	N/
DRILL	. RIG/HAI	MMER E	FF./DA	TE F	kH0404	4 CN	ME-45C 87.	6% 08/15/2	2011		D	RILL	METHO	D N	W Casing w/ SPT	HAMMER TYPE	Automatic
DRIL	LER M	I. Morga	an		s	TAI	RT DATE	10/01/1	3	COMP. E	ATE	10/	01/13		SURFACE WATER DEPTI	H N/A	
ELEV	DRIVE ELEV	DEPTH	BLC	W CO	UNT	\prod		BLOWS F			1 1	SAMP.	V/	L	SOIL AND ROCK	DESCRIPTION	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	110) 25	5 5	50 L	75 10	00	NO.	MOI	Ğ	ELEV. (ft)		DEPTH
2885		ļ			İ	П									-		
	-					Ш	*								- 2,882.6 GROUND S		. (
2880	-	‡					<u> </u>								embankmant: brown t with r		ind
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SHEET 15/20

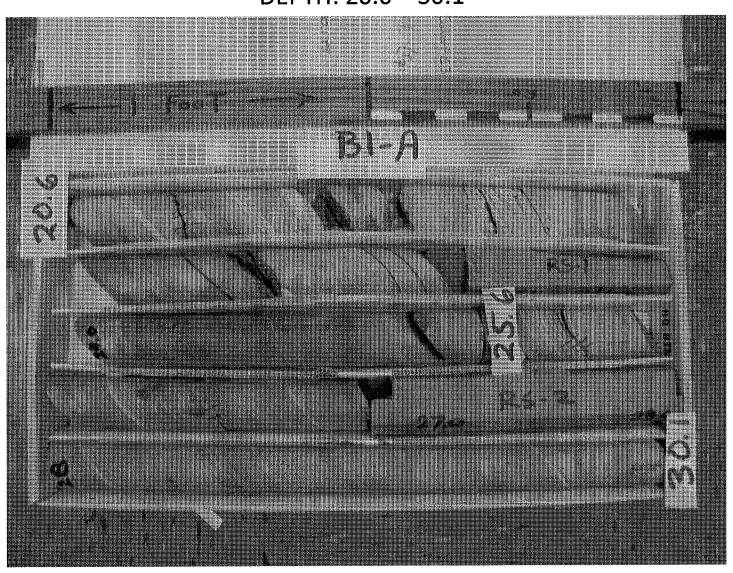
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DRIL	LER M.	. Morga	an		S	TART D	ATE	09/24/1	3	co	MP. DA	TE 09	/24/10)	SURFACE WATER DEPTH N/	4
ELEV (ft)		DEPTH (ft)		W COL	JNT 0.5ft	0			PER FOO	T 75	100	SAMF			SOIL AND ROCK DESC	
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BORING B1-A

BOX 1 OF 2

DEPTH: 20.6 – 30.1

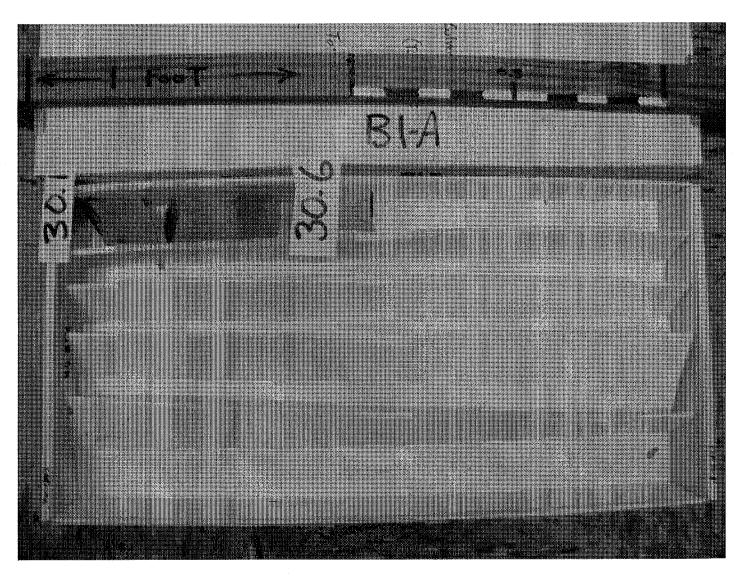


R-2915 B 34518.1.3

BORING B1-A

BOX 2 OF 2

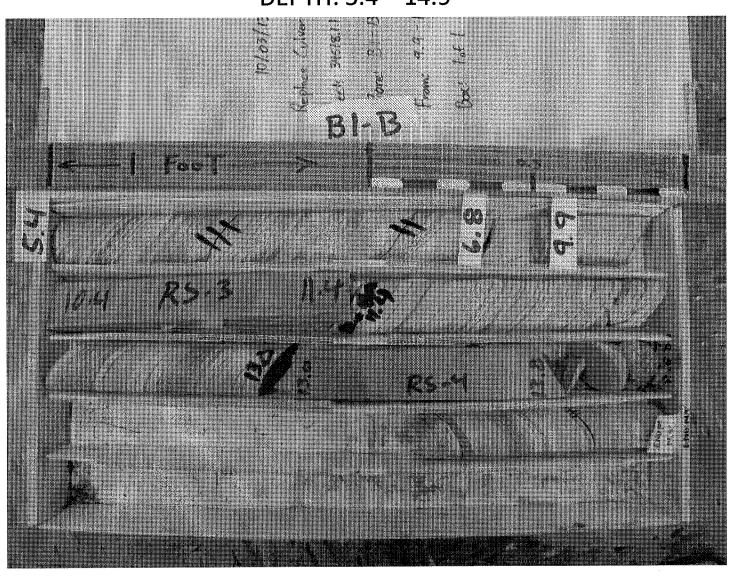
DEPPTH: 30.1 - 30.6



BORING B1-B

BOX 1 OF 1

DEPTH: 5.4 – 14.9

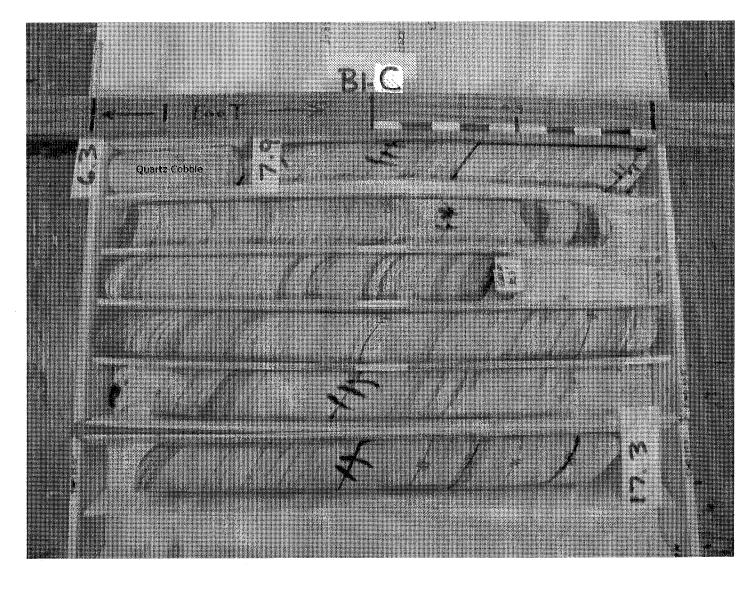


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BORING B1-C

BOX 1 OF 1

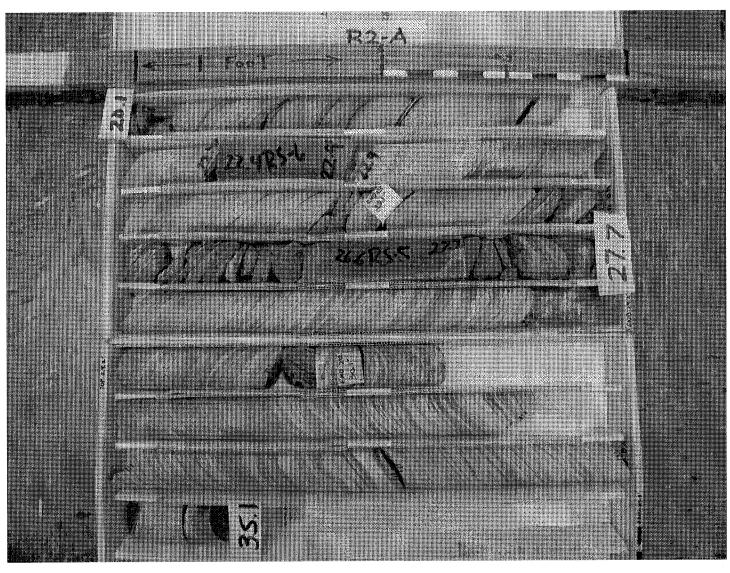
DEPPTH: 6.3 – 17.3



BORING B2-A

BOXS 1 AND 2

DEPTH: 20.1 – 35.1

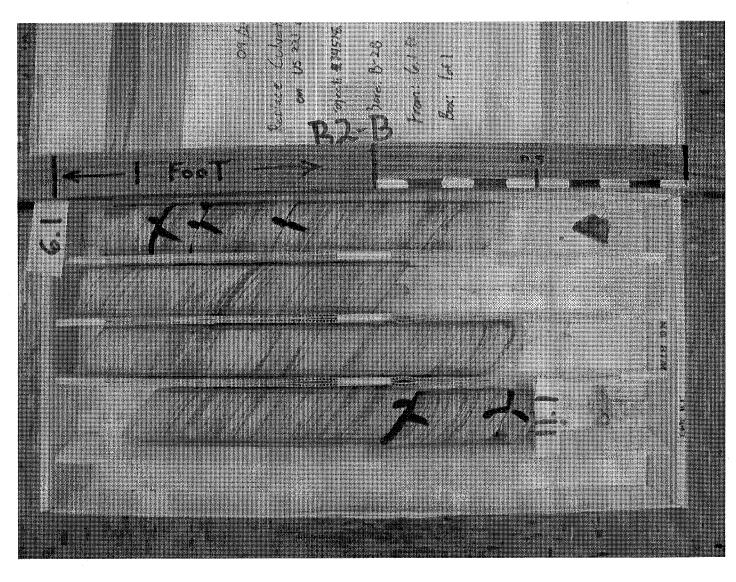


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BORING B2-B

BOX 1 OF 1

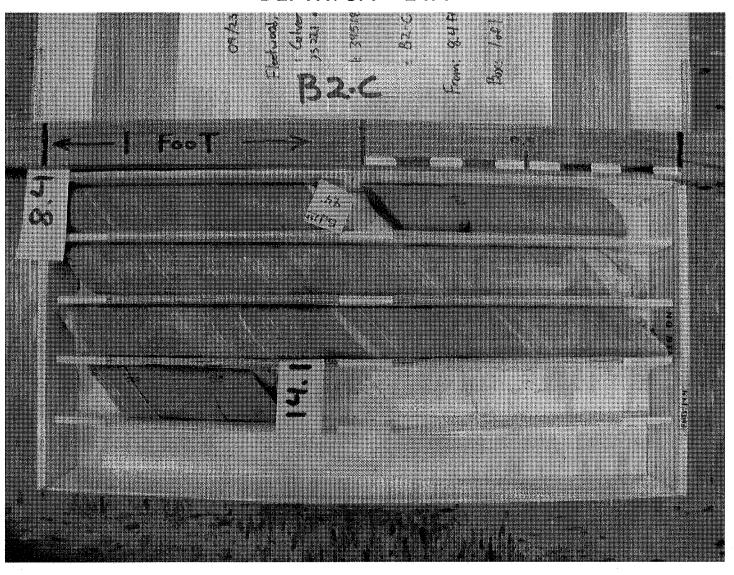
DEPPTH: 6.1 – 11.1



BORING B2-C

BOX 1 OF 1

DEPTH: 8.4 – 14.4



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4, 5

7 - 13 14 - 20 DESCRIPTION

CROSS SECTIONS

CORE PHOTOGRAPHS

BORE LOG & CORE REPORTS

LEGEND

PROFILE

SITE PLAN

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. RE COUNTY		NO	R-29I5B	34518.1.3	F.A. PROJ	
PROJECT		TION .	BRIDGE N	0.4 ON US	22I OVER THE	SOUTH
			FORK OF	THE NEW	RIVER (OVERFL	OW)
SITE DES	CRIPTION	NB	BRIDGE, S	TA. 234+00)	

STATE	STATE PROJECT	REPERENCE NO.	SHEET	TOT A
N.C.	R-2915B	34518.1.3	1	20

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESION, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FELD BORNING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, CEOTECHNICAL ENDIMERRING UNIT AT 1993 250-4008. RUTHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORNING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

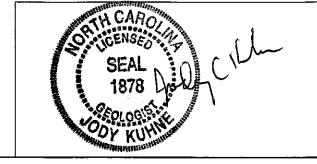
CENERAL SOR AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARLY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORNES OR BETWEEN SAMPLED STRATA WITHIN THE BORROUGE. THE LABORATORY SAMPLE DATA AND THE WISTU UN-PLACET ISST DATA CAN BE RELED ON ONLY TO THE DEGREE OF RELABILITY WHIERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOU, MOSTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION, THESE WATER LEVELS OR SOU, MOSTURE CONDITIONS TO CLUMATIC CONDITIONS INCLUDING THE ACCORDING TO CLUMATIC CONDITIONS MY ANY CONSIDERABLY WITH THE ACCORDING TO CLUMATIC 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 ORLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DEFERENT, FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND OCCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT, THE DEPARTMENT DOES NOT MARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION AMORE, NOR THE INTERPRETATIONS MADE, OR OPENION OF THE COPPARTMENT AS TO THE TYPE OF MATERIALS AND COMDITIONS TO BE EXCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE ENVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY MINISTED AS TO CONTINUE TO BE ENCOUNTED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAM FOR ADDITIONAL COMPENSATION OF FOR AN EXTENSION OF TIME FOR ANY BEASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SITE DIFFERING FROM

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CHOMITTED BY	JC KUHNE

DATE 5/23/2013

PERSONNEL
DC ELLIOTT
CJ COFFEY
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

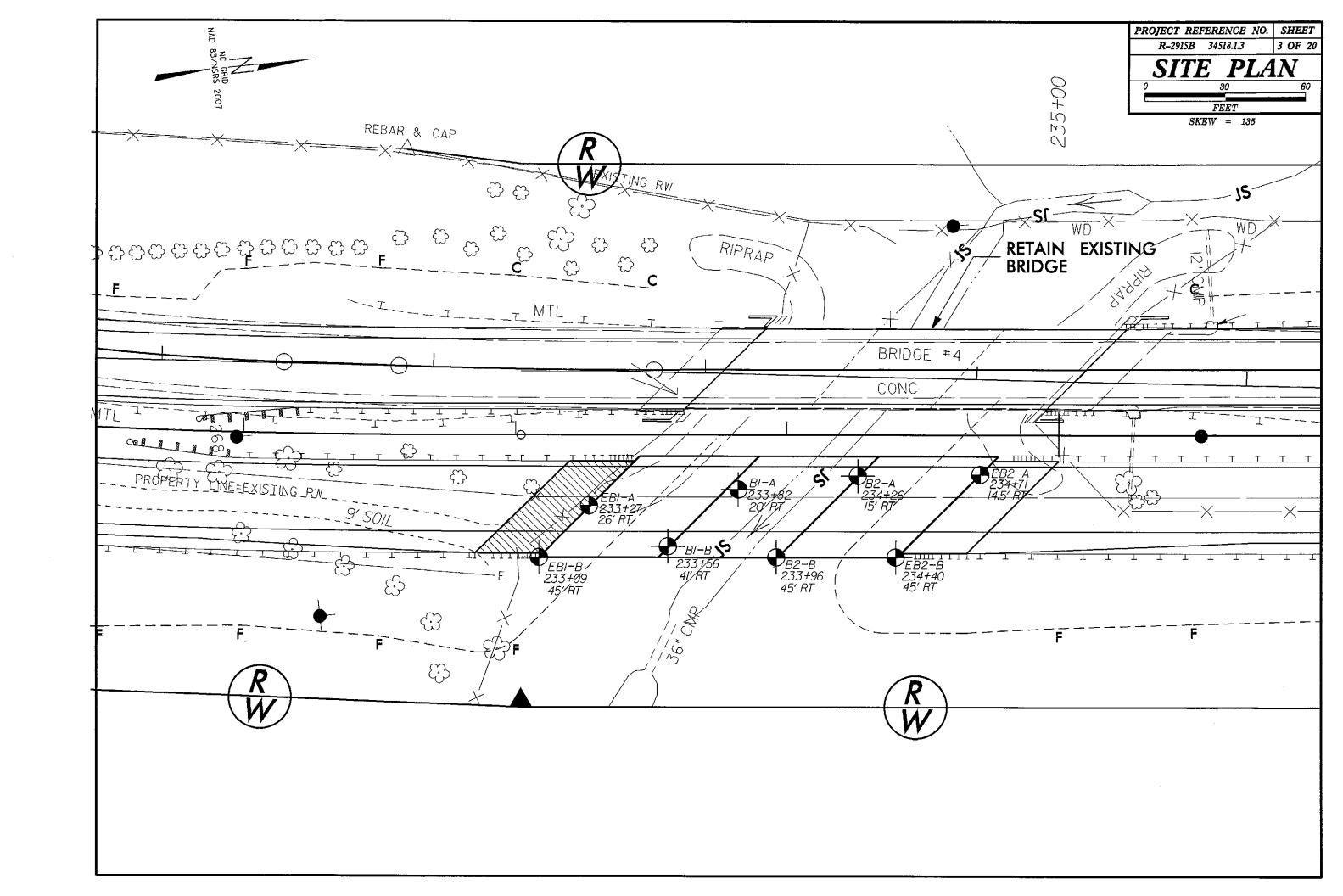
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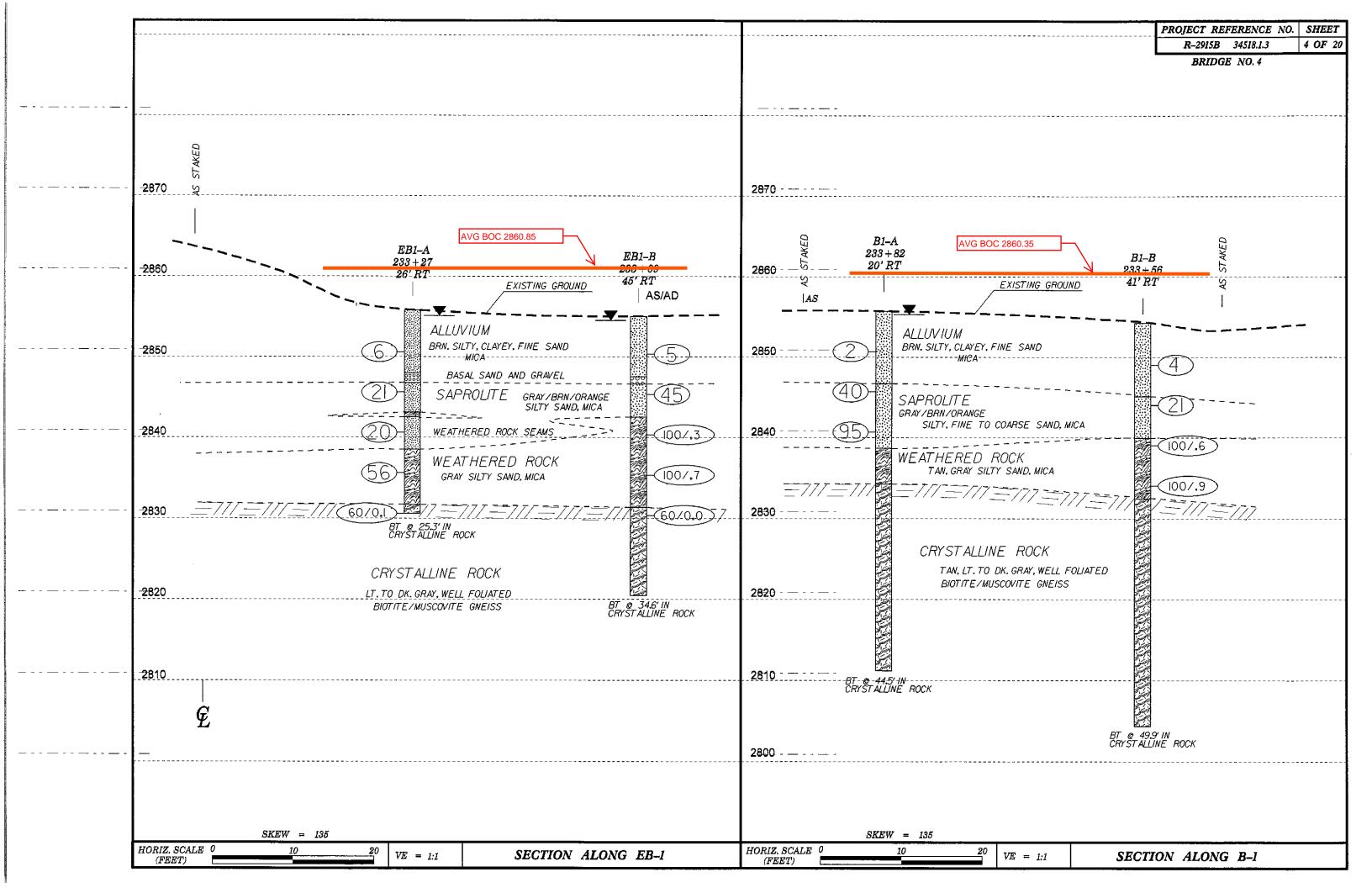
SUBSURFACE INVESTIGATION

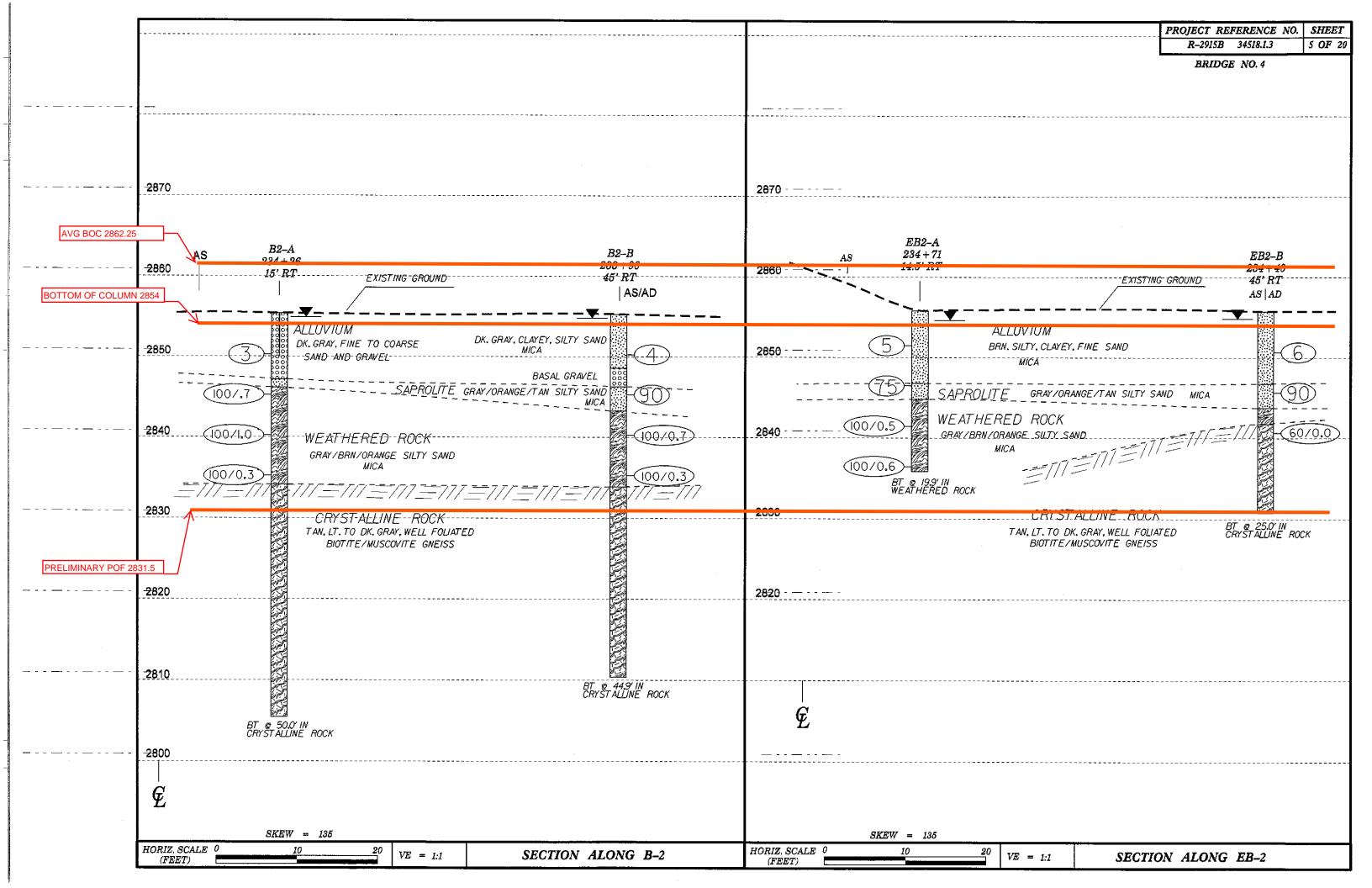
		SOIL AND ROC	K LEGEND, TERM	S, SYMBOLS, AN	D ABBREVIAT	IONS	
Ţ	SOIL DESCRIPTION	GRADATION		<u> </u>	ROCK DESC	CRIPTION	TERMS AND DEFINITIONS
	SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS	<u>WELL GRADED</u> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FRO <u>UNIFORM</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE S	DM FINE TO COARSE. SAME SIZE (ALSO	HARD ROCK IS NON-COASTAL BOCK LINE INDICATES THE	AL PLAIN MATERIAL THAT IF T	ESTED, WOULD YIELD SPT REFUSAL AN INFERRED L PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUYIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
	THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 1888 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO 1206, ASTM D-1586), SOIL	PODRLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MOR		SPT REFUSAL IS PENETRAT:	TION BY A SPLIT SPOON SAMPL	ER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.	ADUIFER - A WATER BEARING FORMATION OR STRATA.
	CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	HE SIZES.	OF WEATHERED ROCK.		WEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE	AREMACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
	AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TE	ERMS: ANGULAR,	50000	ICALLY DIVIDED AS FOLLOWS:		ARBILLACEDUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS,
	YERV STAFF, BRAN, SETT CLAY, MOIST WITH INTERCEDDED FINE SAND LAVERS, MIGHT PLASTIC, 4-7-6	SUBANGULAR, SUBROUNDED, OR ROUNDED.		WEATHERED ROCK (WR)	NON-COASTAL PLAIN M BLOWS PER FOOT IF T	ATERIAL THAT WOULD YIELD SPT N VALUES > 100	OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - BROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEYEL
F	SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION		CRYSTALLINE		N IGNEOUS AND METAMORPHIC ROCK THAT	AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE
	GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS CLASS. (≤ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USE WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE,	ED IN DESCRIPTIONS	ROCK (CR)	WOULD YIELD SPT REF GNEISS, GABBRO, SCHIS	USAL IF TESTED, ROCK TYPE INCLUDES GRANITE,	GROUND SURFACE. CALCAREDUS (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	COMPRESSIBILITY		NON-CRYSTALLINE	FINE TO COARSE GRAIN	METAMORPHIC AND NON-COASTAL PLAIN	COLLUYIUM - ROCK FRAGMENTS NIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM
L	CLASS. A-1-a A-1-b A-2-4 A-2-5 A-2-6 A-2-7 A-7-5 A-3 A-6, A-7	SLIGHTLY COMPRESSIBLE LIQUID LIMIT LE	ESS THAN 31	ROCK (NCR)	SEDIMENTARY ROCK TH	AT WOULD YEILD SPT REFUSAL IF TESTED, ROCK TYPE ATE, SANDSTONE, ETC.	OF SLOPE.
	SYMBOL 000000000000000000000000000000000000	MDDERATELY COMPRESSIBLE LIDUID LIMIT EC HIGHLY COMPRESSIBLE LIDUID LIMIT GE	Dual to 31–50 Reater than 50	COASTAL PLAIN SEDIMENTARY ROCK		ENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD YPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL
- -	PASSING SILT-	PERCENTAGE OF MATERIAL		(CP)	SHELL BEOS, ETC.		TENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT
	7 10 58 MX GRANULAR CLAY PUCK,	ORGANIC MATERIAL GRANULAR SILT - CLAY SOILS SOILS D	ither material		WEATHE		ROCKS OR CUTS MASSIVE ROCK.
L	₹ 200 15 MX 25 MX 18 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN	TRACE OF ORGANIC MATTER 2 - 3% 3 - 5% TRACE		FRESH ROCK FRESH, CR HAMMER IF CRY		MAY SHOW SLIGHT STAINING ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
	IOUTO LIMIT 48 MX 41 MN 48 HX 41 MN 48 MX 41 MN 48 MX 41 MN SOILS WITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTL MODERATELY DRGANIC 5 - 10% 12 - 20% SOME		1		ME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN.	DIP DIRECTION (OIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF
-	BSIJE INLEX 5 MX NP 18 MX 18 MX 11 MN 11 MN 18 MX 18 MX 11 MN 11 MN LITTLE DR HIGHLY	HIGHLY ORGANIC >10% >20% HIGHL		(V SL), CRYSTALS ON A OF A CRYSTALL		NE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF	THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
- ⊢	ROUP INDEX 0 6 0 4 HX 8 HX 12 HX 16 HX No HX MODERATE AMOUNTS OF SOILS	GROUND WATER		SLIGHT ROCK GENERALL	LY FRESH, JOINTS STAINED AND	D DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
	E MAINS CRAYEL AND FINE SILTY OR CLAYEY SILTY CLAYEY ORGANIC	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRI	ILLING			GRANITOID ROCKS SOME OCCASIONAL FELDSPAR FALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
	INTERDALS SAND SHITE STATE STATE STATES	STATIC WATER LEVEL AFTER 24 HOURS				LORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THE)R ORIGINAL POSITION AND DISLOGED FROM
- 1	EN.RATING AS A EXCELLENT TO GOOD FAIR TO POOR POOR UNSUITABLE	igstyle igytyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igytyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igytyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igstyle igytyle	STRATA			L AND DISCOLORED, SOME SHOW CLAY, ROCK HAS WS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	PARENT MATERIAL.
- }-	PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	O-Mi- SPRING OR SEEP		WITH FRESH RO	DCK.		FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
ŀ	CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS				TAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL LINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN
	COMPACTNISS OF RANGE OF STANDARD RANGE OF UNCONFINED		SAMPLE	(MOD. SEV.) AND CAN BE EX	XCAVATED WITH A GEOLOGIST'S	PICK, ROCK GIVES 'CLUNK' SDUND WHEN STRUCK.	THE FIELD.
	PRIMARY SOIL TYPE CONSISTENCY PENETRATION RESISTENCE COMPRESSIVE STRENGTH (TONS/FTP)	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SPT CPT DPT INT TEST BORING		1	<u>ULD YIELD SPT REFUSAL</u>	TAINED ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
	GENERALLY VERY LOOSE (4	\$01L SYMBOL AUGER BORING	S - BULK SAMPLE	(SEV.) IN STRENGTH TO	TO STRONG SOIL. IN GRANITOID	ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME	LEGGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
	MATERIAL MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL (AF) OTHER	SS - SPLIT SPOON SAMPLE		FRAGMENTS OF STRONG ROCK FLOS SPT N VALUES > 100 BPF		LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
- 1	(NON-COHESIVE) DENSE 30 TO 50 VERY DENSE >50	THAN ROADWAY EMBANKMENT - CORE BORING	ST - SHELBY TUBE			TAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT	MOTILEO (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTILING IN
ŀ	VERY SOFT (2 (0,25	INFERRED SOIL BOUNDARY MONITORING WELL	SAMPLE			STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK OCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR	SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN
	GENERALLY SOFT 2 TO 4 9.25 TO 9.59	INFERRED ROCK LINE A PIEZOMETER	RS - ROCK SAMPLE	VESTIGES OF TH	HE ORIGINAL ROCK FABRIC RE	MAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i>	INTERVENING IMPERVIOUS STRATUM.
	MATERIAL STIFF 8 TO 15 1 TO 2	TTTT ALLUVIAL SDIL BOUNDARY	RT - RECOMPACTED TRIAXIAL SAMPLE			ISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND PRESENT AS DIKES OR STRINGERS, SAPROLITE IS	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF RDCK.
	(COHESIVE) VERY STIFF 15 TD 38 2 TO 4 HARD >30 >4	SLOPE INDICATOR 25/825 DIP & DIP DIRECTION OF INSTALLATION	CBR - CALIFORNIA BEARING	ALSO AN EXAMPI		THESEN NO BIRES ON STRINGENS SHITIGETE TO	R <u>OCK QUALITY DESIGNATION (ROD)</u> - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND
ŀ	TEXTURE OR GRAIN SIZE	RDCK STRUCTURES	RATID SAMPLE		ROCK HAP	RDNESS	EXPRESSED AS A PERCENTAGE.
Γ	J.S. STD. SIEVE SIZE 4 10 40 50 200 270	• SOUNDING ROD © SPT N-VALUE ■ SOUNDING ROD © SPT REFUSAL				PICK. BREAKING OF HAND SPECIMENS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
- 17	PENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053			1	D BLOWS OF THE GEOLOGIST'S TOHED BY KNIES OR PICK ONLY	WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL
ſ	BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	ABBREVIATIONS AR - AUGER REFUSAL HI HIGHLY	w - MOISTURE CONTENT	TO DETACH HAI		WITH DIFFICULTY HAND CHAPTER DEDWS REDUITED	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.)	BT - BORING TERMINATED MED MEDIUM	V - VERY			GES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT DR
	GRAIN MM 305 75 2.0 0.25 0.05 0.005	CL CLAY MICA MICACEOUS CPT - CONE PENETRATION TEST MOD MODERATELY	VST - VANE SHEAR TEST WEA WEATHERED	BY MODERATE		'S PICK, HAND SPECIMENS CAN BE DETACHED	SLIP PLANE.
Ļ	SIZE IN. 12 3	CSE COARSE NP - NON PLASTIC	7 - UNIT WEIGHT			DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT, CES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH
- }-	SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE FIELD MOISTURE CONTROL OF TERMS	DMT - DILATOMETER TEST ORG ORGANIC DPT - DYNAMIC PENETRATION TEST PMT - PRESSUREMETER TEST	$\gamma_{ m d}$ - DRY UNIT WEIGHT		GEOLOGIST'S PICK.	ILES I MICH MAXIMUM SIZE BY HARD BLOWS OF THE	A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0J FOOT PER 60 BLOWS.
- 1	(ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	e - VOID RATIO SAP SAPROLITIC F - FINE SD SAND, SANDY				IFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS Y MODERATE BLOWS OF A PICK POINT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH
Г	- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	FOSS FOSSILIFEROUS SL SILT, SILTY			BE BROKEN BY FINGER PRESSUR		OF STRATUM AND EXPRESSED AS A PERCENTAGE.
	LL LIDUID LIMIT (SAT.) FROM BELOW THE GROUND WATER TABLE	FRAC FRACTURED, FRACTURES SLI SLIGHTLY FRAGS FRAGMENTS TOR - TRICONE REFUSAL				ATED READILY WITH POINT OF PICK, PIECES 1 INCH FINGER PRESSURE, CAN BE SCRATCHED READILY BY	<u>Strata rock quality designation (srod) -</u> 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
	LASTIC SEMISOLIDA PEDUTOS DEVINO TO			FINGERNAIL.	HIGHNESS CHI DE BROKEN DI	PROCE PRESSURE, CAN BE SCHAFFEED REHOLET BY	TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
	RANGE - WET - (W) SEMISULILI, RELUCIRES DATING TO (PI) PLASTIC LIMIT	EQUIPMENT USED ON SUBJECT PR	ROJECT	FRACTURE SE	PACING	BEDDING	TOPSDIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
		DRILL UNITS: ADVANCING TOOLS:	HAMMER TYPE:	IERM VERY WIDE MO	SPACING IORE THAN 10 FEET	TERM IHICKNESS VERY THICKLY BEDDED > 4 FEET	BENCH MARK: BL POINT 56
	OM DYTIMUM MOISTURE - MOIST - (M) SOLID: AT OR NEAR OPTIMUM MOISTURE SL SHRINKAGE LIMIT	MOBILE B- CLAY BITS	AUTOMATIC MANUAL	WIDE 3	TO 10 FEET	THICKLY BEDDED 1.5 - 4 FEET THINLY BEDDED 9.16 - 1.5 FEET	ELEVATION: 2870,83 FT.
	REDURES ADDITIONAL WATER TO	6' CONTINUOUS FLIGHT AUGER	CORE SIZE:		TO 3 FEET LIG TO 1 FEET	VERY THINLY BEDDED 0.03 - 0.16 FEET	
	- DRY - (D) ATTAIN OPTIMUM MOISTURE	□ a., v. □	в		ESS THAN 0.16 FEET	THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	NOTES:
t	PLASTICITY		XI-NXWL		INDURAT		
	PLASTICITY INDEX (PI) DRY STRENGTH	TUNGCARBIDE INSERTS		FOR SEDIMENTARY ROCKS, INDUS		THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
	NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT	CME-550 X CASING X W/ ADVANCER	H	FRIABLE		FINGER FREES NUMEROUS GRAINS; BY HAMMER DISINTEGRATES SAMPLE.	
	MED. PLASTICITY 16-25 MEDIUM	PORTABLE HOIST TRICONE 'STEEL TEETH	HAND TOOLS: POST HOLE DIGGER	MODERATE A TOTAL		SEPARATED FROM SAMPLE WITH STEEL PROBE:	
Ļ	HIGH PLASTICITY 26 OR MORE HIGH	TRICONE * TUNGCARB.	HAND AUGER	MODERATELY INDURA		WHEN HIT WITH HAMMER.	
ŀ	COLOR		SOUNDING ROD	INDURATED		FFICULT TO SEPARATE WITH STEEL PROBE:	
	DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	CORE BIT	VANE SHEAR TEST			BREAK WITH HAMMER,	
l	PRODUCTION COURT OF LIGHT, OWNER, STREMED, ETC. ARE USED ID DESCRIBE APPEARANCE.			EXTREMELY INDURAT		BLOWS REQUIRED TO BREAK SAMPLE; S ACROSS GRAINS.	

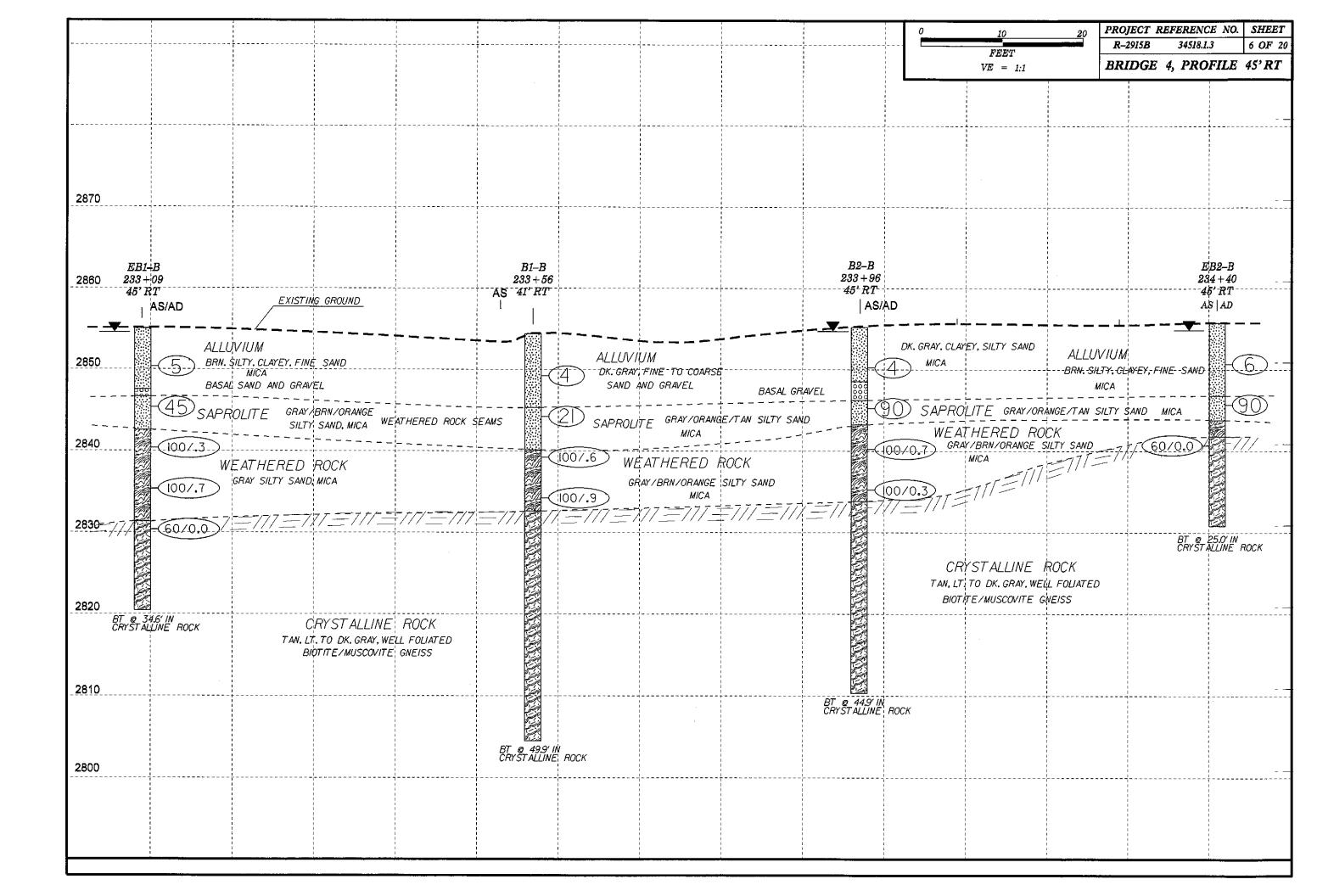
PROJECT REFERENCE NO. R-2915B 34518.1.3

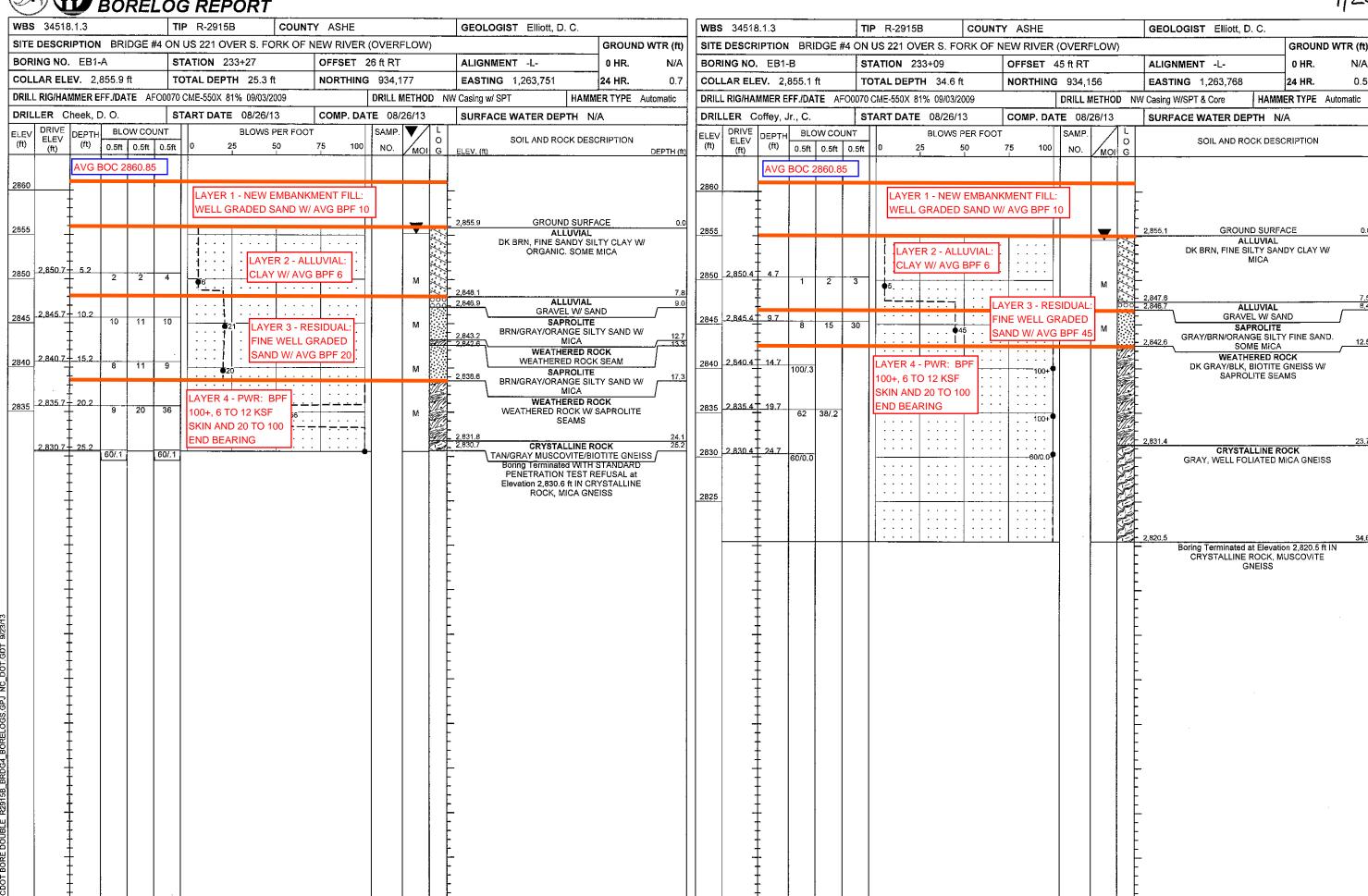
SHEET NO. 2 OF 20

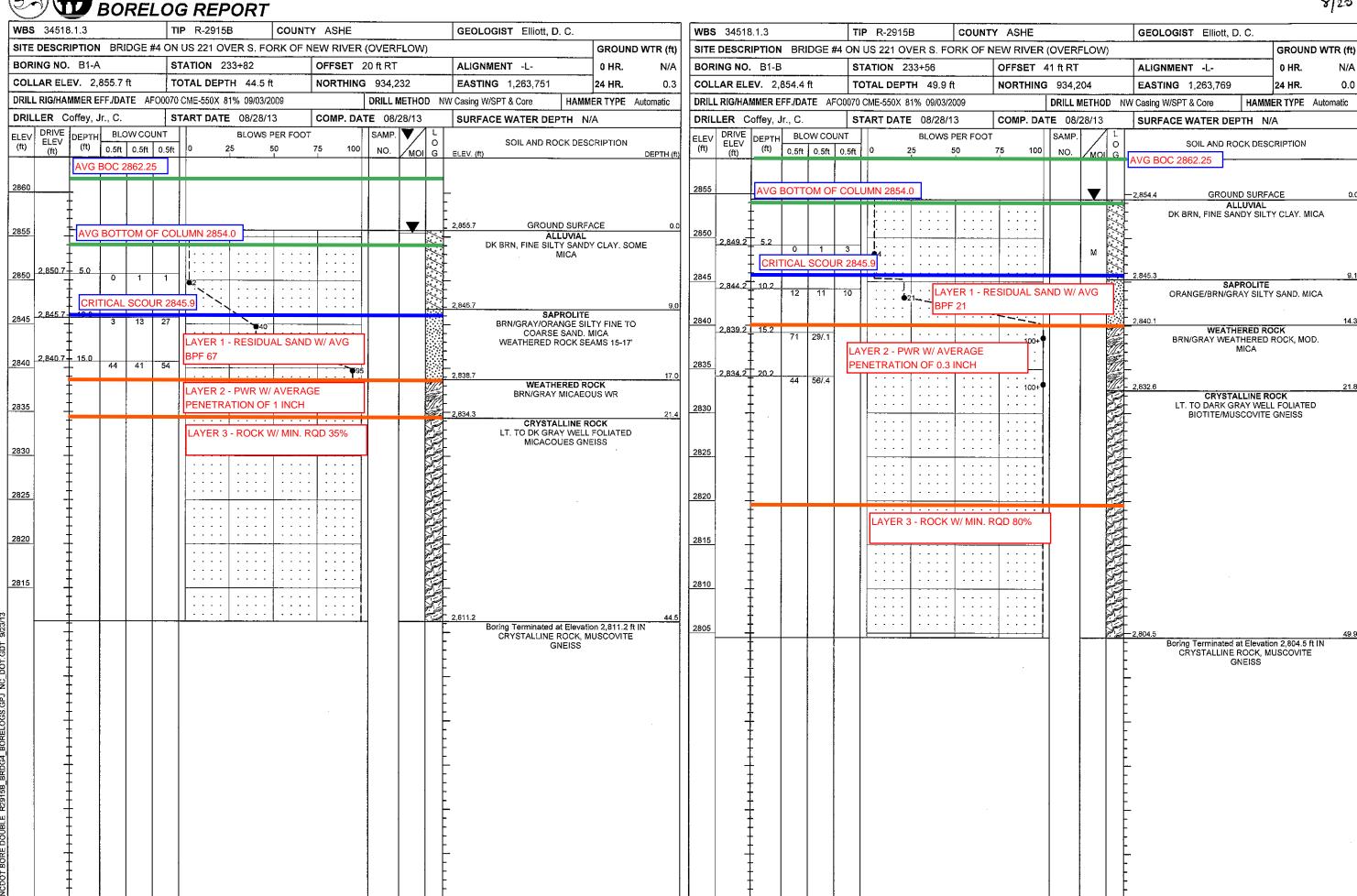


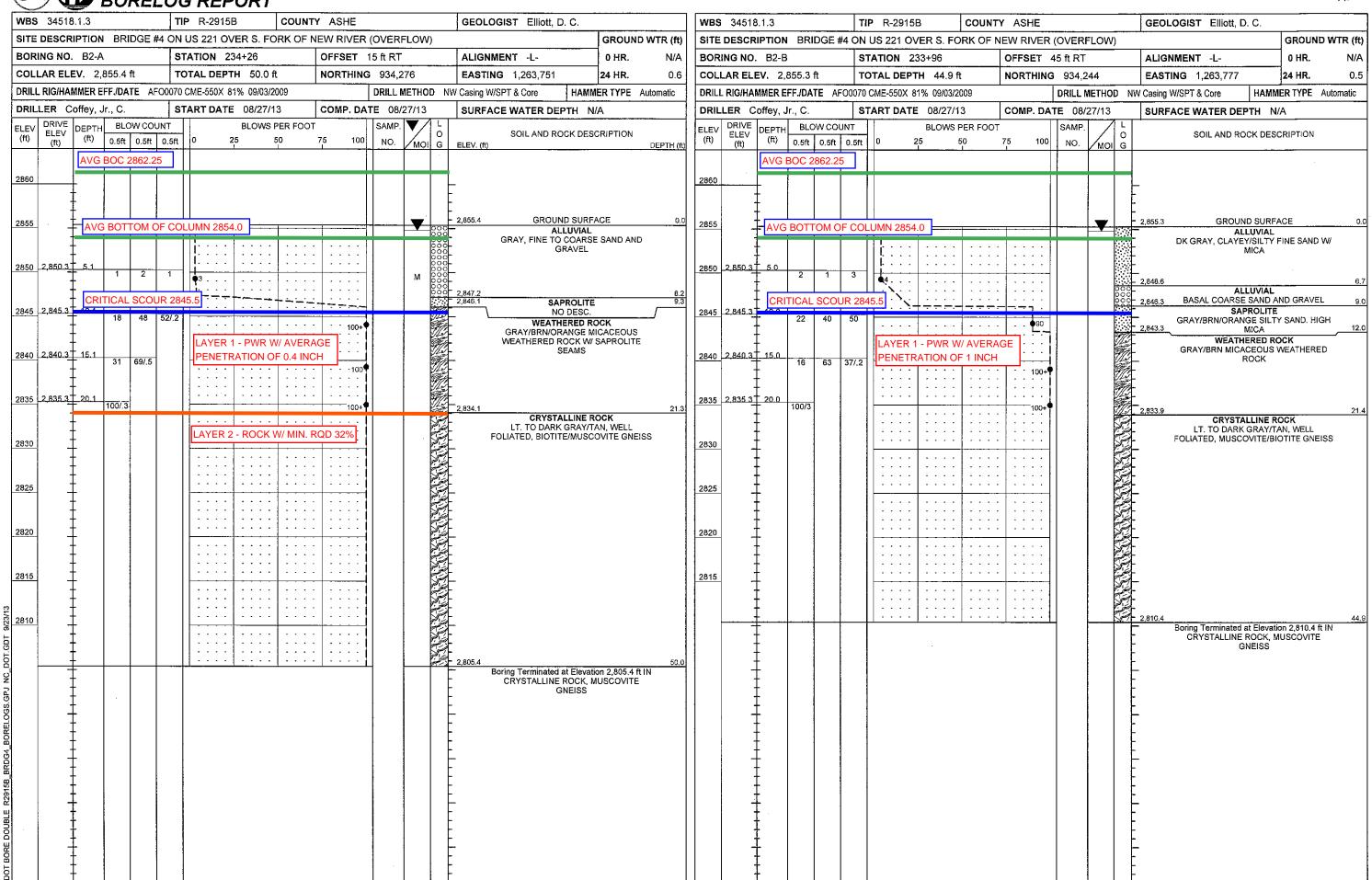












BORELOG REPORT																							19/1	2-3			
WBS 34518.1.3 TIP R-2915B COUNTY ASHE GEOLOGIST Elliott, D. C.								C.		WBS 34518.1.3					TIP F	R-2915B	COUN	COUNTY ASHE				GEOLOGIST Elliott, D. C.					
SITE DI	ESCRIP	TION BI	RIDGE	#4 ON	US 221 OVER S. FORK OF	NEW RIVER	(OVERF	LOW)		, , , , , , , , , , , , , , , , , , ,	GROUI	ND WTR (ft	SIT	E DESC	RIPTIO	N BRID	DGE #4	ON US	221 OVEF	R S. FORK OF	NEW RIVER	(OVER	FLOW	<i>(</i>)		GROUND WTR	(ft
BORING	G NO.	EB2-A		S ⁻	TATION 234+71	OFFSET	15 ft RT		A	ALIGNMENT -L-	0 HR.	N/A	ВО	RING N	O. EB2	-B		STATI	ON 234+	-40	OFFSET	45 ft RT			ALIGNMENT -L-	0 HR. N	N/A
COLLA	R ELEV	. 2,855.	B ft	TO	TAL DEPTH 19.9 ft	NORTHING				EASTING 1,263,755	24 HR.	1.2	СО	LLAR E	LEV. 2	855.8 f	t	TOTAL	L DEPTH	25.0 ft	NORTHING	G 934,	287		EASTING 1,263,782	24 HR. 1	1.0
				FO0070	CME-550X 81% 09/03/2009		DRILL M	ETHOD	NW C	asing w/ SPT	HAMMER TYPE	Automatic	DRI	LL RIG/H	AMMER I	FF./DAT	E AFO	0070 CME	-550X 81%	09/03/2009		DRILL	METHO	D NW	Casing W/SPT & Core	HAMMER TYPE Automatic	ιic
		ey, Jr., C			TART DATE 08/26/13	COMP. DATE 08/26/13 SURFACE WATER DEPTH N								DRILLER Coffey, J				START DATE 08/2		08/27/13	COMP. DA	TE 08/	27/13		SURFACE WATER DE	PTH N/A	
ELEV E	(ft)	EPTH BI (ft) 0.51	LOW CO		BLOWS PER FO 0 25 50	75 100	SAMP. NO.	MOI	O EL	SOIL AND ROCK .EV. (ft)	C DESCRIPTION	DEPTH (f	(ft)	V DRIVI ELEV (ft)	(44)	' 	O.5ft 0		25 	SLOWS PER FOO	OT 75 100	SAMP.	MOI	O	SOIL AND R	OCK DESCRIPTION	_
2860	A	VG BOC	2860.3	6	LAYER 1 - NEW EMBAN WELL GRADED SAND V				<u> </u>				2860	0	AVG	BOC 28	360.36	1 1 1		NEW EMBANI DED SAND W	KMENT FILL:			-			
1	851.5	4.3	2	2	LAYER 2 - A			V 24 24 24 24 24 24 24 24 24 24 24 24 24		955.8 GROUND S ALLU DK. BRN., SILTY, CLA MICA. BASAL G LAYER 3 - RESIDU	VIAL AYEY FINE SAN ЭRAVELS 6-11′	0. D W/	2855		7- 5.1			1 1		LAYER 2 - Al			V		DK. GRAY, CLA	ND SURFACE LLUVIAL YEY SILTY FINE SAND. AVELS 7.8-9', MICA	_0
2850 2845	846.5			46	CLAY W/ AV			M		WELL GRADE FINI AVG BPF 75	E SAND	9.	2850	2.845	7 + 10.1	3	Ì	3 1 1	1 6	CLAY W/ AV	G BPF 6		M	WEI	'ER 3 - RESIDUAL: LL GRADE FINE SAND G BPF 90	NPROLITE	9.
2045	+							F 7.6	<u> </u>	B44.8 TAN/ORANGE/GRA COARSE SA		ro <u>11.</u>	2845	5	+	21	31 5	59			90		M		DK BRN/GRAY S	SILTY FINE SAND, MICA ED ROCK SEAMS	12.
2,	841.5	i4.3			LAYER 4 - PWR: B	I			*	WEATHER BRN/GRAY SILTY S	SAND: SAPROLI	TE			_‡				··IAYE	R 4 - PWR: E					2,841.8 WEATHERED	HERED ROCK MICACEOUS GNEISS	14.
2840	836.5	100/	26/.1		SKIN AND 20 TO 12 END BEARING	100+ T			2.8	SEAMS 335.9 Boring Terminated at E WEATHERED R	TO 14'.	19.	2840		7 = 15.1 	60/0.0			100+, SKIN END I	6 TO 12 KSF AND 20 TO 1 BEARING	00 : : : :				CRYST. LT. TO DK. GR	ALLINE ROCK (AY, WELL FOLIATED, E/BIOTITE GNEISS	25.
NCDOT BORE DOUBLE R2915B_BRDG4_BORELOGS.GPJ NC_DOT.GDT 9/23/13															 - 										CRYSTALLINE	at Elevation 2,830.8 ft IN EROCK, MUSCOVITE GNEISS	

	I	C	ORE	Ξ <i>Β</i>	<u>OR</u>	INC	GR.	EP(<u>OR</u>	T																																11/2
WBS 3					TIP				cou						GEC	LOGIS	T Elliott	, D. C.				WB	S 34	4518.1.:	3			TIP	R-291	5B		COU	NTY .	ASHE				GEOLOG	IST Ellion	tt, D. C.		
SITE DE	SCRIP	ION [BRIDGE	E #4 C	N US	221 (OVER	S. FO	RK O	F NE	WRI	(VER (O	VERFLC	DW)					GR	OUND	WTR (ft)	SITI	E DES	SCRIPT	ION E	BRIDG	3E #4	ON US	221	OVER	S. FO	RK OF	NEV	/ RIVEF	R (OVE	RFLOW)	•				GROU	ND WTR (
BORING	NO.	31-A			STAT	ION	233+8	82		(OFFS	SET 20	ft RT		ALIC	GNMEN	T -L-		0 H	HR.	N/A	ВО	RING	NO. E	1-B			STAT	TION	233+5	6		OF	FSET	41 ft R	T		ALIGNME	ENT -L-		0 HR.	N
COLLAR	R ELEV.	2,855	.7 ft		TOTA	L DE	PTH	44.5 ft	t		NORT	HING	934,232		EAS	TING	1,263,75	1	24 H	HR.	0.3	COI	LLAR	ELEV.	2,854	1.4 ft		TOTA	AL DE	PTH 4	9.9 ft		NO	DRTHIN	G 934	,204		EASTING	1,263,76	39	24 HR.	0
DRILL RK	G/HAMM	ER EFF.	DATE									D	RILL MET	HOD N	IW Casin	g W/SPT	& Core	HA	MMER T	YPE A	utomatic	DRIL	LL RIG	/HAMME	R EFF./	DATE	AFO0	070 CM	E-550X	81% 0	9/03/20	09			DRILL	. METHOD	NW (Casing W/S	PT & Core	HAN	MER TYPE	Automatio
DRILLER	R Coff	еу, Јг.,	C.		STAR	T DA	TE 0	8/28/1	3	(COME	P. DATE	08/28/	13	SUR	FACE V	VATER [EPTH	N/A			DRI	LLER	Coffe	y, Jr.,	C.		STAF	RT DA	TE 08	/28/13	3	CC	MP. DA	ATE 0	8/28/13]:	SURFAC	E WATER	DEPTH	N/A	
CORE S		(WL			TOTA	L RU	N 23.															COL	RE SI	ZE NX	WL			TOTA	AL RU	1 28.												
ELEV R (ft) (UN LEV (ft)	PTH RI	JN DF ft) (M	RILL ATE lin/ft)	REC. (ft) %	RQD (ft) %	SAMI NO.	P. RE . (ft	STRATA C. Ri t) (QD (ft) %	L O G E	ELEV. (ft)	1222	7.2.2.0.	DESCR	IPTION A	ND REMA	ARKS			DEPTH (fi	ELE\ (ft)			PTH RU	2 E	DR≀LL RATE Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP NO.	S REC (ft) %	TRATA C. RQ) (ft	L O G				DE	SCRIPTIO	N AND REM	ARKS		
2834.33	24 2 + 2	11							_						Begi	n Corin	@ 21.4	ft				2832.5	58														ı		ring @ 21.			
	34.3 - 2		0:4	1/1.0	90%	(1.1) 35%				8	²	2,834.3			CI	RYSTALI	INE ROC	K			21.4			32.6 2	1.8 3.	.1 0:	:31/1.1 :25/1.0	(2.1) 68% (0.5) 10%	(0.4) 13%		Ì			1	3			CRYSTA	ALLINE ROO	CK		2
2830	31.2 2	4.5	.0 0:4	9/1.1	(4.7)	(2.7)	1			\$												2030	2,82	29.5 24	1.9 5.	.0 D:	:27/1.0 :11/1.0	(0.5)	(0.0)					+								
	Ŧ		0:3	9/1.0 4/1.0	94%	54%				K. 78:														‡	"	0:	:17/1.0	10%	0% SAP	!				+								
2,8	26.2 2	9.5	0:4	2/1.0 9/1.0						Ŋ.												2825	2.82	24.5 29	9.9	0:	10/1.0		AND					_								
2825	#	5	.0 0:3	2/1.0 0/1.0	(4.8) 96%	(3.0) 60%																		‡	5.	.0 0:	27/1.0	(2.0) 40%	ROCK					1								
	‡		0:5	2/1.0 0/1.0	55.75	5070																		İ	İ		:26/1.0 :40/1.0		(0.4) 8%					1								
2820	21.2 3		0:3 .0 0:4	9/1.0	(4.0)	(2.4)				S												2820	2,81	19.5 34	1.9	0:	51/1.0	(4.8)	(0.0)					-								
2020	‡	*	0:4	2/1.0 8/1.0	98%	48%																		1] ^{3.}	1:	:03/1.0	95%	78%					F								
28	+ 16.2 + 3	9.5	0:4	1/1.0 4/1.0																		2815	3 2 01	14.5 39	, ,	1:	:58/1.0 :04/1.0							F								
2815	1	5	.0 0:5	7/1.0 7/1.0 4/1.0	(5.0)	(4.2)				Š													2,51	14.5 3	5.	.0 1:	:12/1.0	(5.0) 100%	(4.4)					=								
	‡	ļ	1:1	2/1.0	100%	84%				Š														Ŧ		1:	:20/1.0	100%	88%					-								
2,8	11.2 4	4.5		9/1.0				_			2	2,811.2									44.5	2810	2,80	09.5 44	1.9	1:	:15/1.0 :09/1.0							-								
	\pm] .					ĺ			F		Boring	Terminat			811.2 ft IN FE GNEIS		ALLINE R	ROCK,				Ŧ	5.	.0 0: 1:	:58/1.0 :10/1.0	(4.6) 92%	(4.0) 80%					‡								
	$\frac{1}{1}$										F											2805		‡	1	1:	:13/1.0 :01/1.0						کے العم معمد	-								
	Ŧ							i			F											2000	2,80	04.5 49	9.9	0:	52/1.0						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u>2,804.5</u>		orina Termi	inated a	at Elevation	2,804.5 ft IN	V CRYSTA	LLINE ROC	<u> </u>
	Ŧ	-									F													‡										_	_	-			VITE GNEIS			•
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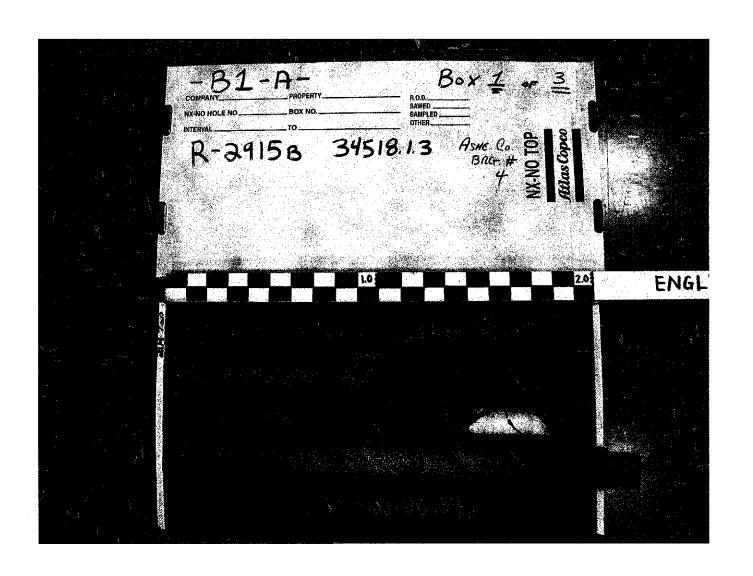
CORE I	BORING REPORT	•								12/20
WBS 34518.1.3		TY ASHE	GEOLOGIST Elliott, E	D. C.		WBS 34518.1.3	TIP R-2915B COUNT	TY ASHE	GEOLOGIST Elliott, D. C.	
SITE DESCRIPTION BRIDGE #	4 ON US 221 OVER S. FORK OF	NEW RIVER (OVERFLOW)		GROUND WT	₹ (ft)	SITE DESCRIPTION BRIDGE #4	ON US 221 OVER S. FORK OF	NEW RIVER (OVERFLOW)		GROUND WTR (ft)
BORING NO. B2-A	STATION 234+26	OFFSET 15 ft RT	ALIGNMENT -L-	0 HR.	N/A	BORING NO. B2-B	STATION 233+96	OFFSET 45 ft RT	ALIGNMENT -L-	0 HR. N/A
COLLAR ELEV. 2,855.4 ft	TOTAL DEPTH 50.0 ft	NORTHING 934,276	EASTING 1,263,751	24 HR.	0.6	COLLAR ELEV. 2,855.3 ft	TOTAL DEPTH 44.9 ft	NORTHING 934,244	EASTING 1,263,777	24 HR. 0.5
DRILL RIG/HAMMER EFF/DATE AFC	O0070 CME-550X 81% 09/03/2009	DRILL METHOD 1	NW Casing W/SPT & Core	HAMMER TYPE Autom	atic	DRILL RIG/HAMMER EFF./DATE AFOO	0070 CME-550X 81% 09/03/2009	DRILL METHOD	NW Casing W/SPT & Core HA	MMER TYPE Automatic
DRILLER Coffey, Jr., C.	START DATE 08/27/13	COMP. DATE 08/27/13	SURFACE WATER DE	PTH N/A		DRILLER Coffey, Jr., C.	START DATE 08/27/13	COMP. DATE 08/27/13	SURFACE WATER DEPTH	N/A
CORE SIZE NXWL	TOTAL RUN 28.7 ft					CORE SIZE NXWL	TOTAL RUN 23.5 ft			
ELEV RUN DEPTH RUN RATE (ft) (ft) (ft) (ft) (ft)	REC. ROD SAWP. REC. ROD	C ELEV.(ft)	DESCRIPTION AND REMARK		тн (ft)	ELEV (ft) DEPTH RUN CHIP (RATE (Min/ft)	RUN SAMP. REC. RQD (ft) (ft) NO. (ft) (ft) %	L 0 G	DESCRIPTION AND REMARKS	
2834.08	7 (25) (49)	0.004	Begin Coring @ 21.3 ft			2833.9			Begin Coring @ 21.4 ft	
2,834.1 21.3 3.7 0:21/0. 0:31/1.1 0:30/	7 (3.5) (1.8) 95% 49% 95% 49% 95% 49% 90 90% 26% 90% 26% 90% 38% 90% 92% 46% 90% 92% 46% 90% 92% 46% 90% 92% 964% 964% 90% 92% 964% 964% 964% 964% 964% 964% 964% 964	2,805.4 Boring Termina	CRYSTALLINE ROCK ted at Elevation 2,805.4 ft IN CF MUSCOVITE GNEISS	RYSTALLINE RÖCK,	21.3	2830 2,833.9 21.4 3.5 0:21/0.5 0:55/1.0 0:49/1.0 0:49/1.0 0:48/1.0 0:48/1.0 0:39/1.0 0:48/1.0 0:39/1.0 0:48/1.0 0:39/1.0 0:46/1.0 0:56/1.0 0:46/1.0 0:59/1.0 0:59/1.0 0:59/1.0 0:59/1.0 0:59/1.0 0:59/1.0 0:59/1.0 0:59/1.0 0:59/1.0 0:58/1.0	(3.5) (1.1) 100% 31% (4.3) (1.9) 86% 38% (4.2) (2.4) 84% 48% (4.9) 98% 70% (5.0) (4.3) 100% 86%	2,833.9 2,810.4 Boring Termina	ated at Elevation 2,810.4 ft IN CRYST/MUSCOVITE GNEISS	44.9 ALLINE ROCK,

	34518					R-291			OUNT			GEOLOGIST Elliott, D. C.	
				DGE #4	1			FORK	OF	IEW	VER (OVERFLOW)		GROUND WTR (ft)
	RING NO.				+		233+09			OF	ET 45 ft RT	ALIGNMENT -L-	0 HR. N/A
	LAR ELE						PTH 34			NO	HING 934,156	EASTING 1,263,768	24 HR . 0.5
	L RIG/HAN			TE AFOC							· · · · · · · · · · · · · · · · · · ·		IMER TYPE Automatic
	LLER Co				-		TE 08/2			CO	P. DATE 08/26/13	SURFACE WATER DEPTH	N/A
	RE SIZE		I	וומח	1		N 8.1 ft	I STR	ΔΤΔ	<u> </u>			====
LEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	UN RQD (ft)	SAMP. NO.	STR REC. (ft) %	RQD (ff) %	L O G	LEV. (ft)	DESCRIPTION AND REMARKS	DEPTH (ff
28.5	2,828.6	- 26.5	3.1	0:40/1.0	(2.4)	(1.0)				-		Begin Coring @ 26.5 ft CRYSTALLINE ROCK (continued)	15.00
825	2,825.5		5.0	0:49/1.0 1:03/1.1 1:17/1.0 1:04/1.0	77% (4.6) 92%	32% SEAM						OKTOTALLINE KOOK (continued)	
	2,820.5	34.6		1:09/1.0 0:53/1.0 0:45/1.0		(2.1) 42%					,820.5		34.6
		•										ated at Elevation 2,820.5 ft IN CRYSTÄÏ MUSCOVITE GNEISS	LINE ROCK,
	‡	-											
	-	-											•
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																13/20
WBS	34518	3.1.3			TIP	R-29	15B	С	OUNT	Y A	SHE		GEOLOGIST Elliott, D	. C.		
SITE	DESCR	IPTION	I BR	IDGE #4	ON US	5 221	OVER S.	FOR	(OF 1	IEW	RIVER (OVERFLOW)		<u> </u>		GROUN	D WTR (ft)
	NG NO.				1		234+40				SET 45 ft RT		ALIGNMENT -L-		0 HR.	N/A
OLL	AR ELE	EV. 2,	855.8	ft	TOT	AL DE	PTH 25	.0 ft		NO	RTHING 934,287		EASTING 1,263,782		24 HR.	1.0
RILL	RIG/HA	MMER E	FF./DA	TE AFO	070 CN	1E-550>	(81% 09/	03/2009	1	1	DRILL METHOD	NW	Casing W/SPT & Core	HAMM	ER TYPE	Automatic
RIL	ER C	offey, L	Jr., C.		STA	RT DA	TE 08/2	27/13		СО	MP. DATE 08/27/13		SURFACE WATER DEF	TH N/	'A	
ORE	SIZE	NXWL			тот	AL RU	N 8.9 ft									
LEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	UN RQD (ft) %	SAMP. NO.	STF REC. (ft) %	RATA RQD (ft) %	LOG		D	ESCRIPTION AND REMARK	s		
339.7	2,839.7_	16.1	3.9	0:20/0.9 0:17/1.0	(1.0) 26%	(0.0) 0%			-			С	Begin Coring @ 16.1 ft RYSTALLINE ROCK (continu	ued)		
835	2,835.8	20.0	5.0	0;31/1,0 0:21/1.0 0:23/1.0	(3.6)	PROLI SEAMS (1.1)					- - -					
	2,830.8	25.0		0:29/1.0 0:41/1.0 0:32/1.0 0:46/1.0		22% W. ROCK					2,830.8					25.0
	_	-				ŞEAMS						inated	at Elevation 2,830.8 ft IN CR MUSCOVITE GNEISS	YSTALL	INE ROCK	
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BORING B1-A BOX 1 OF 3

DEPTH: 21.4'-30.0'



R-2915B, 34518.1.3

BORING B1-A BOX 2 OF 3

DEPTH: 30.0' - 39.5'



BORING B1-A BOX 3 OF 3

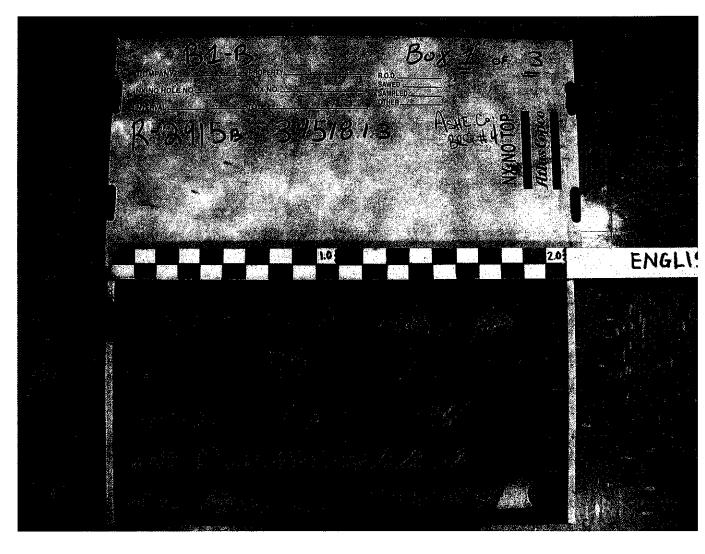
DEPTH: 39.5' – 44.5'



R-2915B, 34518.1.3

BORING B1-B BOX 1 OF 3

DEPTH: 21.8' - 38.9'



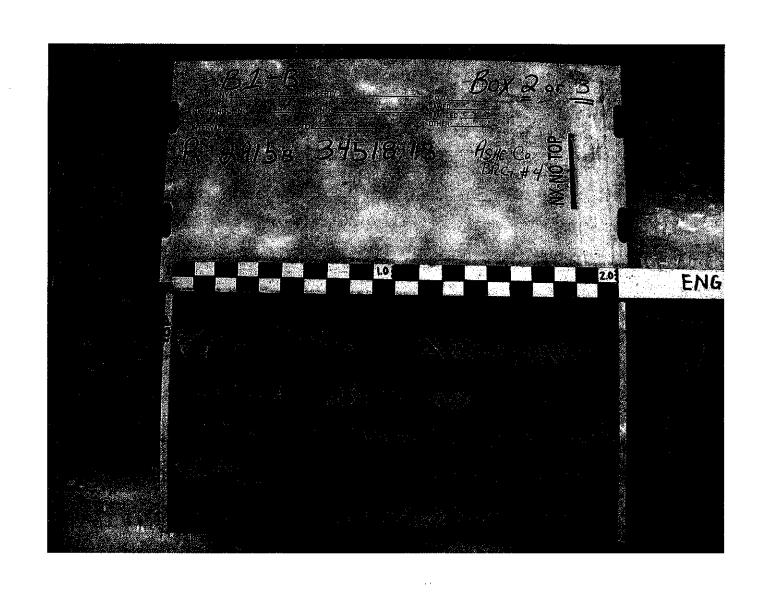
BORING B1-B BOX 2 OF 3

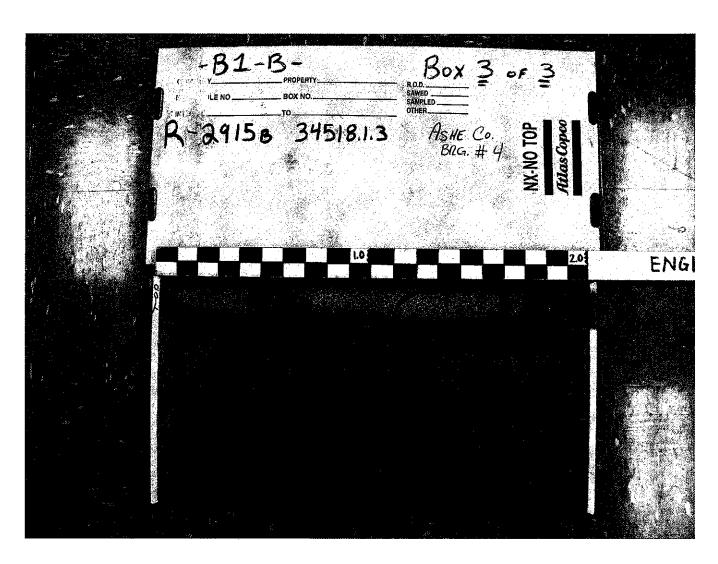
DEPTH: 38.9' – 47.9'

34518.1.3

BORING B1-B BOX 3 OF 3

DEPTH: 47.9' – 49.9'





BORING B2-A BOX 1 OF 3

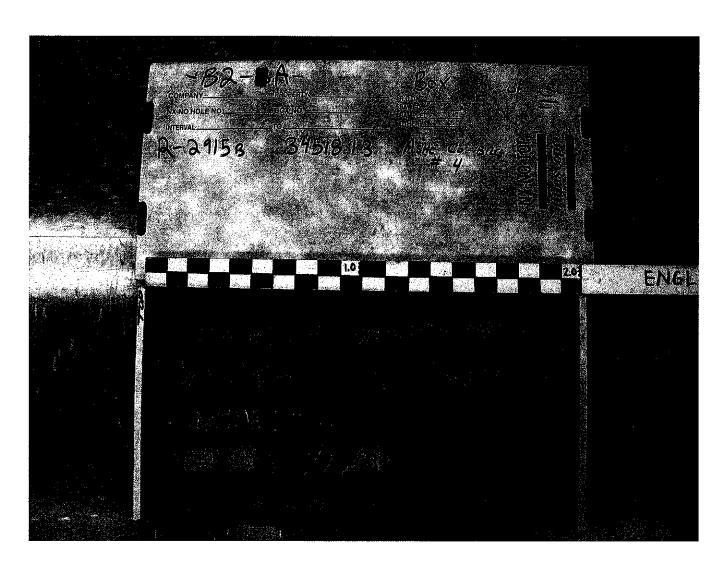
DEPTH: 21.3' - 31.6'



R-2915B, 34518.1.3

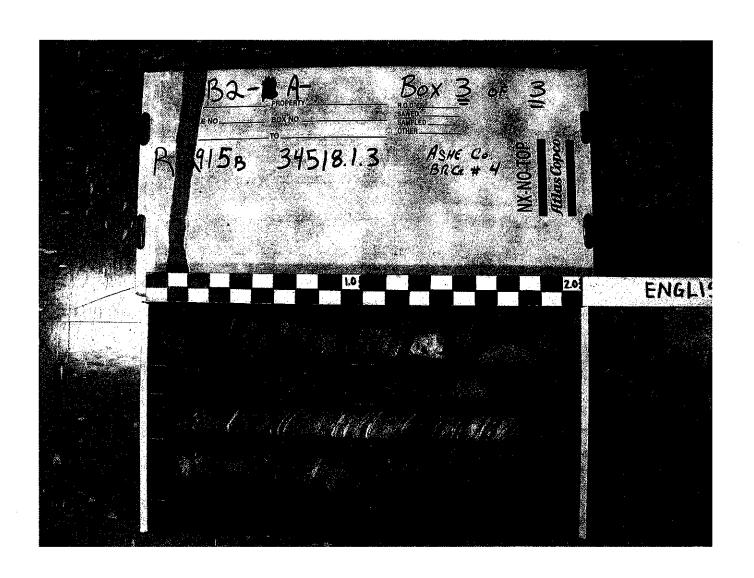
BORING B2-A BOX 2 OF 3

DEPTH: 31.6' - 42.0'



BORING B2-A BOX 3 OF 3

DEPTH: 42.0' - 50.0'



R-2915B, 34518.1.3

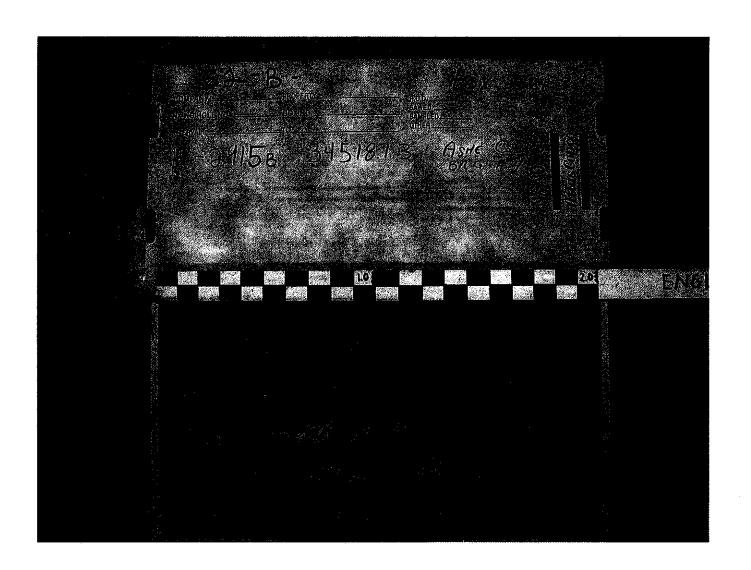
BORING B2-B BOX 1 OF 3

DEPTH: 21.4'-31.7'



BORING B2-B BOX 2 OF 3

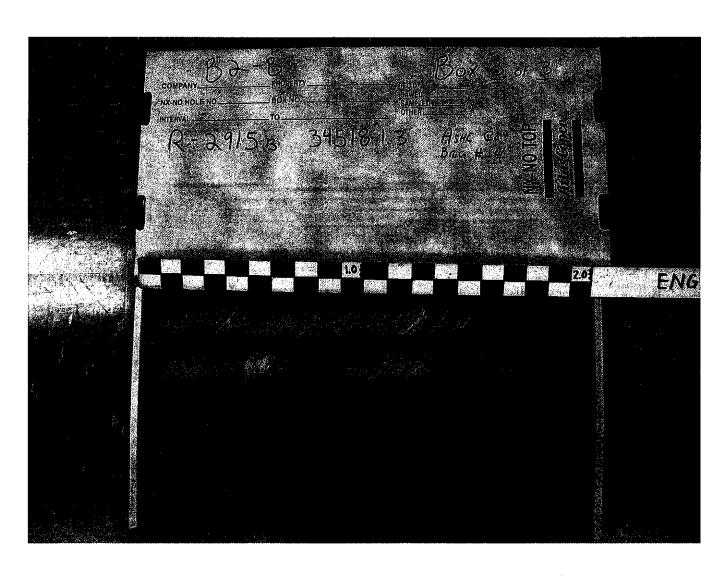
DEPTH: 31.7' – 41.9'



R-2915B, 34518.1.3

BORING B2-B BOX 3 OF 3

DEPTH: 41.9' - 44.9'



BORING EB1-B BOX 1 OF 1

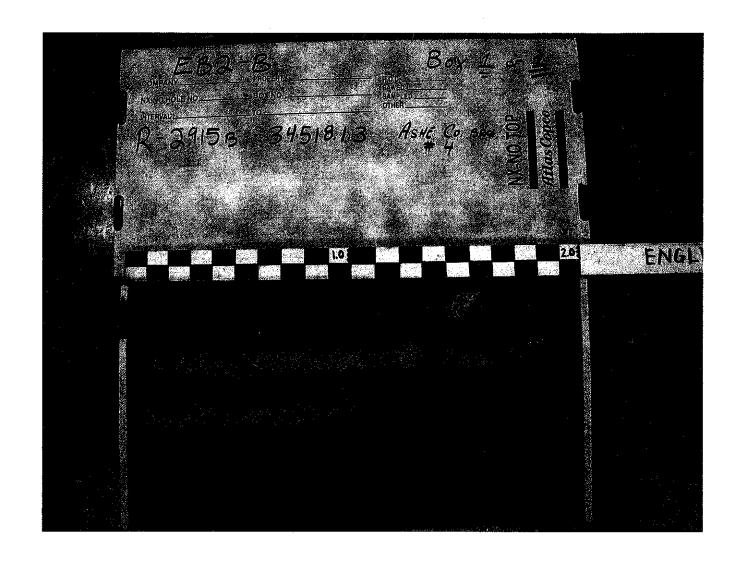
DEPTH: 26.5' - 34.6'



R-2915B, 34518.1.3

BORING EB2-B BOX 1 OF 1

DEPTH: 16.1' - 25.0'



J: R-2915B BR. 10

OJECT: 34518.1.3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

CONTENTS

	G112 U
SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-8	CROSS SECTIONS AND PROFIL
9-18	BORE LOG & CORE REPORTS
19-27	CORE PHOTOGRAPHS

STRUCTURE SUBSURFACE INVESTIGATION

	F.A. PROJ. STP - 0221 (4
COUNTY <u>ASHE</u> PROJECT DESCRIPTION <u>BRIDGE #1</u> <u>NEW RIVER</u>	10 ON US221 OVER SOUTH FORK
SITE DESCRIPTION <u>NB + SB BR</u>	IDGE, STA. 242 + 67

N.C. R-2915B 34518.1.3 1	SHEETS	SHEET NO.	STATE PROJECT REFERENCE NO.	STATE
	27	1	R-2915B 34518.1.3	N.C.

CAUTION NOTICE

THE SUBSURFACE PROBMATOR AND THE SUBSURFACE INVESTMENTS OF WHICH IS GLOSED WERE MADE FOR THE PURPOSE OF STUDY, PLANING, AND DESIGN, AND NOT TOX CONSTRUCTION OF PAY PURPOSES. THE MARRIES FELD GOWERD LOSS, ARCHOORES, AND SOUL TEST DATA WAYLARE MAY BE PROMISED OF MISPECTED IN RELIGIOUS OF CONTEXTING THE INT. OBSERVED OF TRANSPORTATION, SECTEMBRAY, INDICEMBRAY UNIT AT 1990 SECTIONAL INTERPORT OF THE CONTRACT, NOW THE FIELD EDRING LOOS, ROCK CORES, OR SOUL TEST DATA USE PART OF THE CONTRACT.

GENERAL SOC AND ROCK STRATA DESCRIPTIONS AND MODICATED ROUSEAGES OF BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAI NOT INCOSSARLY REPLECT THE ACTUAL SUBSURFACE CONDITIONS ESTAGED BORROSS OF BETWEEN SAMPLED STRATA AND THE REPORT OF SAMPLED STRATA OF THE OPERADOR OF THE CASOMATORY SAMPLE DATA MAI THE STRATAGED FEST WETHOU. THE OPERADOR STRATAGED AT THE CASOMATOR AT THE CASOMATOR AT THE STRATAGED FEST WETHOU. THE OPERADOR ATTENDED OF SOME MOSTURE CONDITIONS ARE AS RECORDED AT THE TAIL OF THE NUESTIGATION, THESE RATER LEVELS OR SOME MOSTURE CONDITIONS AND TAIR CONSIDERABLY WITH TWO AUGUSTURES CONDITIONS AND TAIR CONSIDERABLY WITH TWO AUGUSTURES CONDITIONS MAY TAIR CONSIDERABLY WITH TWO AUGUSTURES CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER INTERCLIPATION FACTORS.

THE BIDDER OF CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE DUBSURFACE PLATS ARE PRELIMINARY ONLY AND IN MAIN CASES THE FRIAL DESIGN DETAILS ASE DIFFERENT, FOR PRODUIG AND CONSTRUCTION PURPOSESS, REFER TO THE CONSTRUCTION FAIRS AND CONTRICT FOR PROJECT, THE DEPARTMENT OF SUPPRISHED THE STREET OF SUPPRISHED AS ADMINISTED AS SUPPRISHED THE OVERTICAL PROJECT OF ACCURACY OF THE INVESTIGATION MODE, NOR THE INTERPOSED MADE, OF WHICH OF THE PROPERTY OF ACCURACY OF THE OFFICE OF THE PROJECT OF THE PRODUID AND THE STREET OF THE PROJECT, THE CONTRACTOR SHALL HAVE NO CLAMATOR ACCURTANCE CONFIDENCE OF THE PROJECT, THE FOR ANY ELSAND ASSULT AND THE STREET AS TO CONTRACT ON THE PROPERTY OF THE PROJECT, THE FOR ANY ELSAND ASSULT OF THE FOR ANY ELSAND ASSULT OF THE FOR ANY ELSAND ASSULT OF THE PROPERTY ON THE PROPERTY OF THE STREET OF THE PROPERTY OF THE PROPERTY OF THE STREET OF THE PROPERTY.

PERSONNEL **B. SMITH G.I.T.**

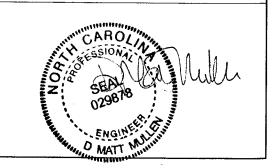
B. WORLEY P.G.

J. BARE

INVESTIGATED BY **DMM**CHECKED BY **JCK**

SUBMITTED BY DMM

DATE 12/11/2013



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

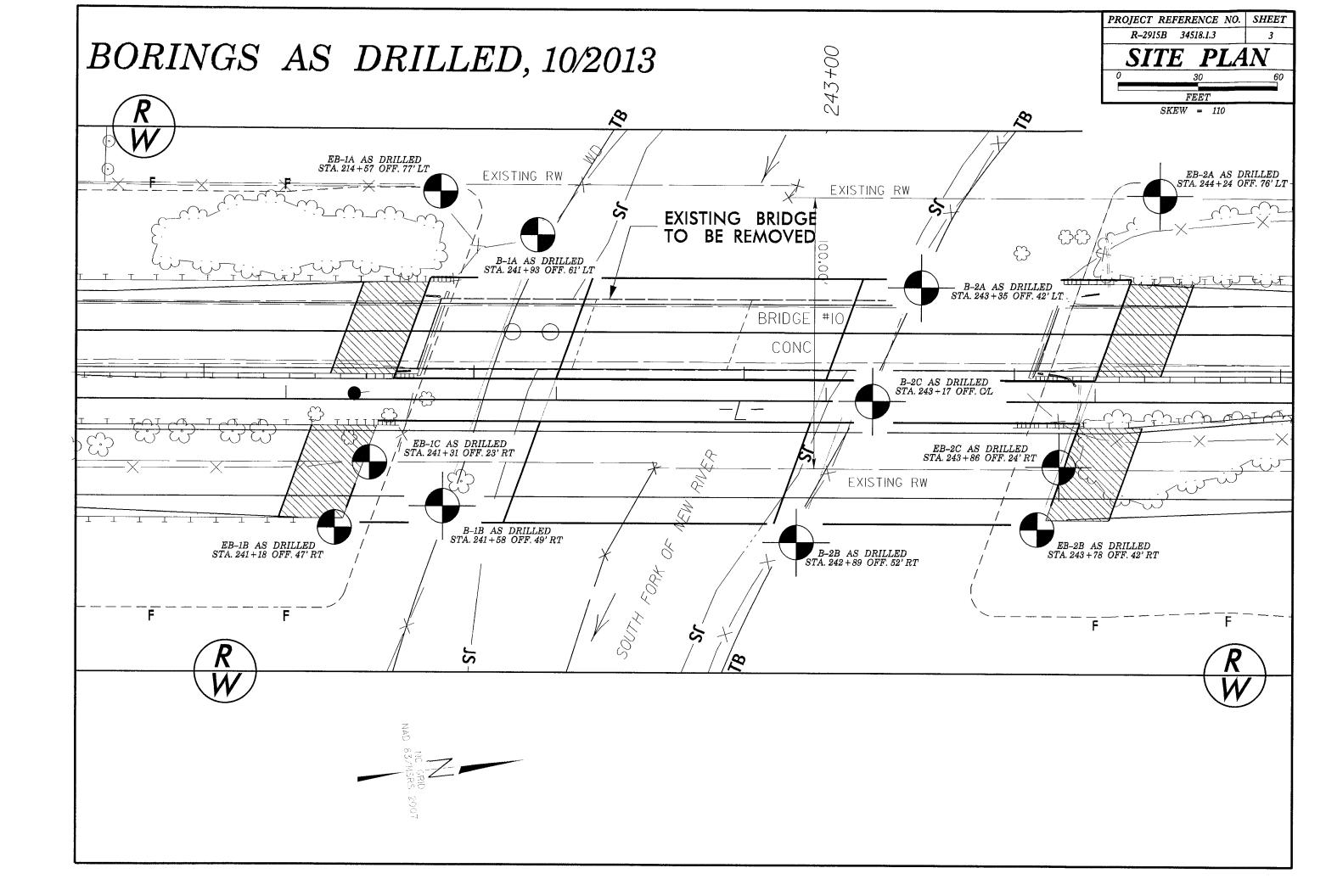
DIVISION OF HIGHWAYS

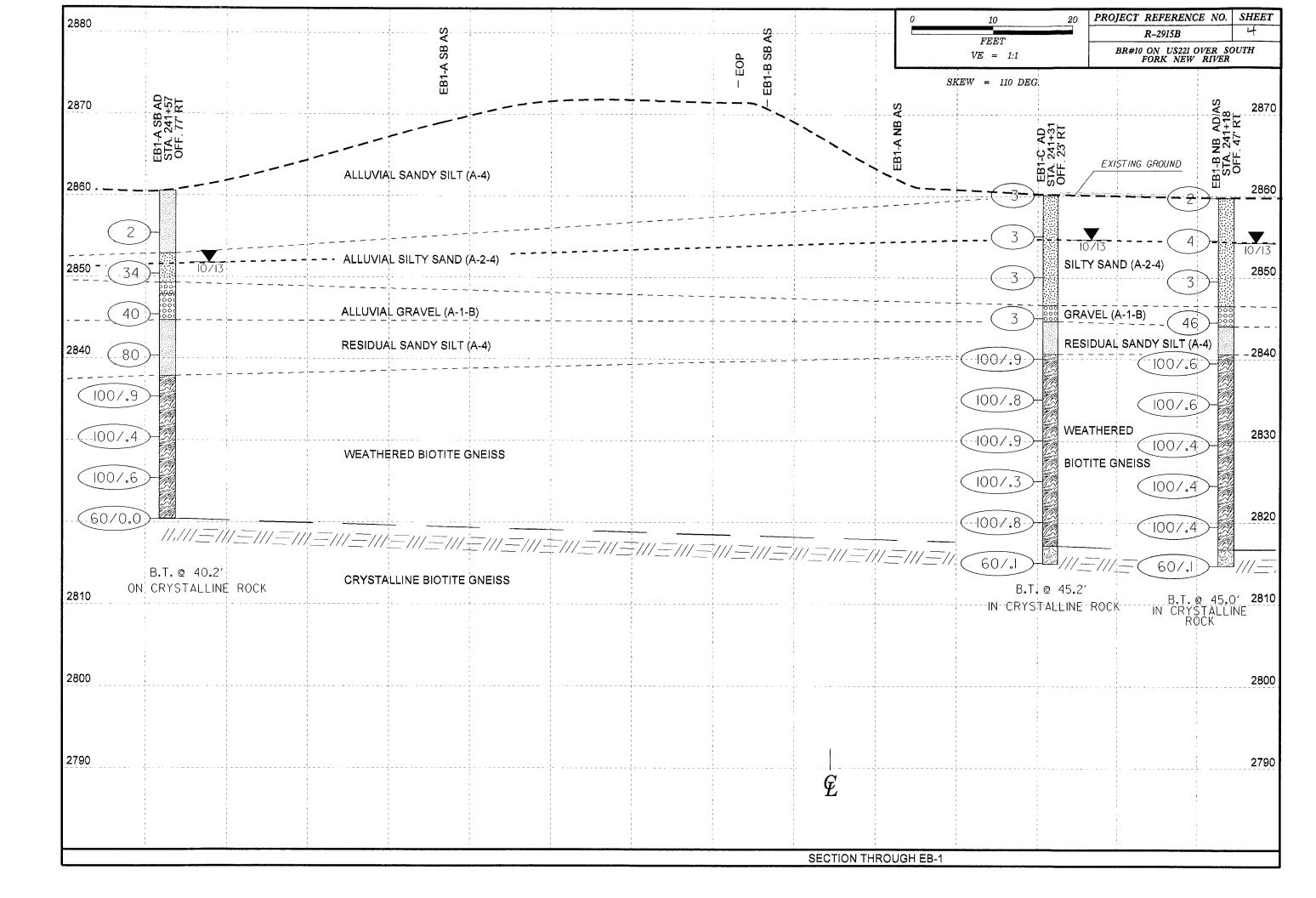
GEOTECHNICAL ENGINEERING UNIT

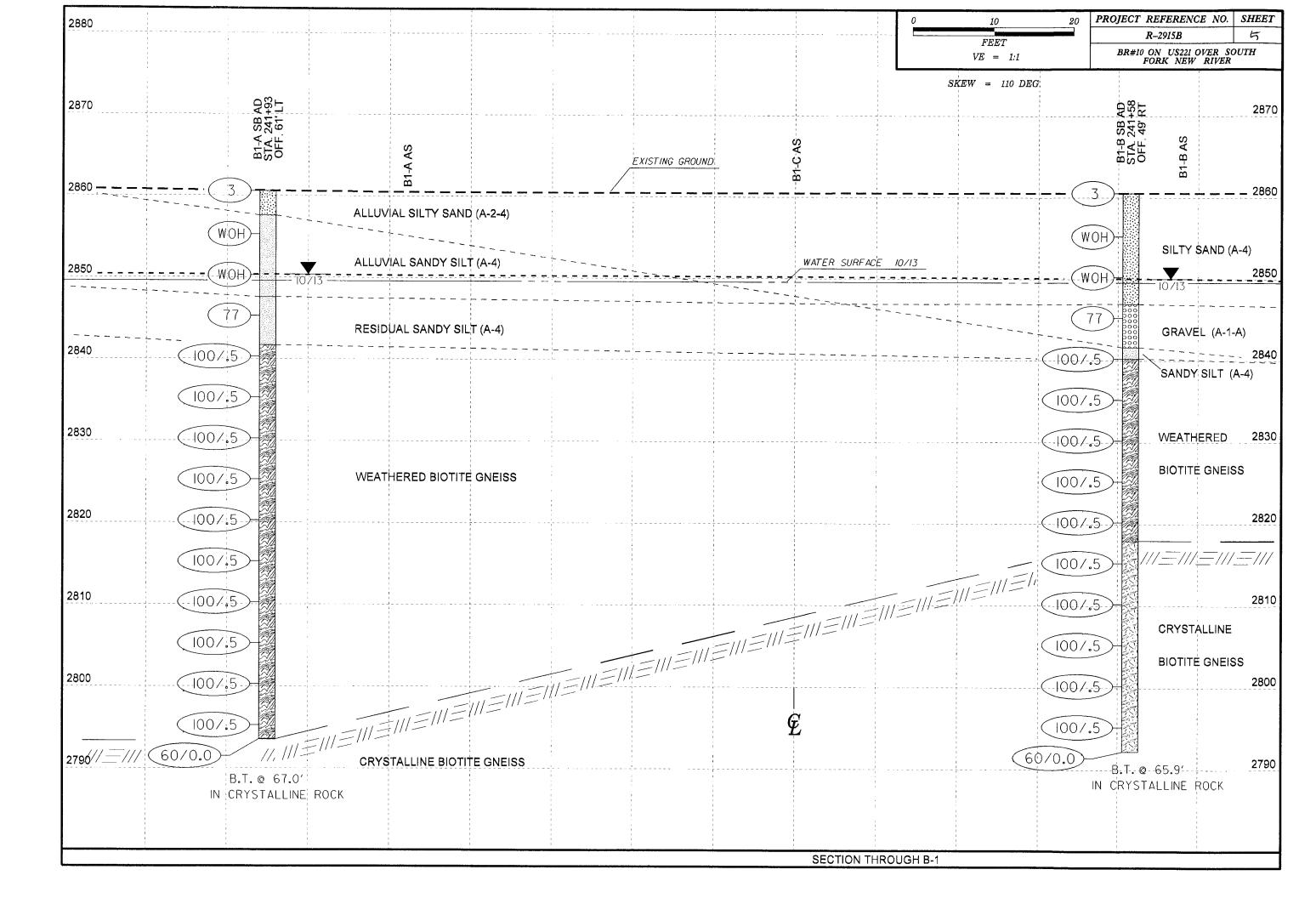
SUBSURFACE INVESTIGATION

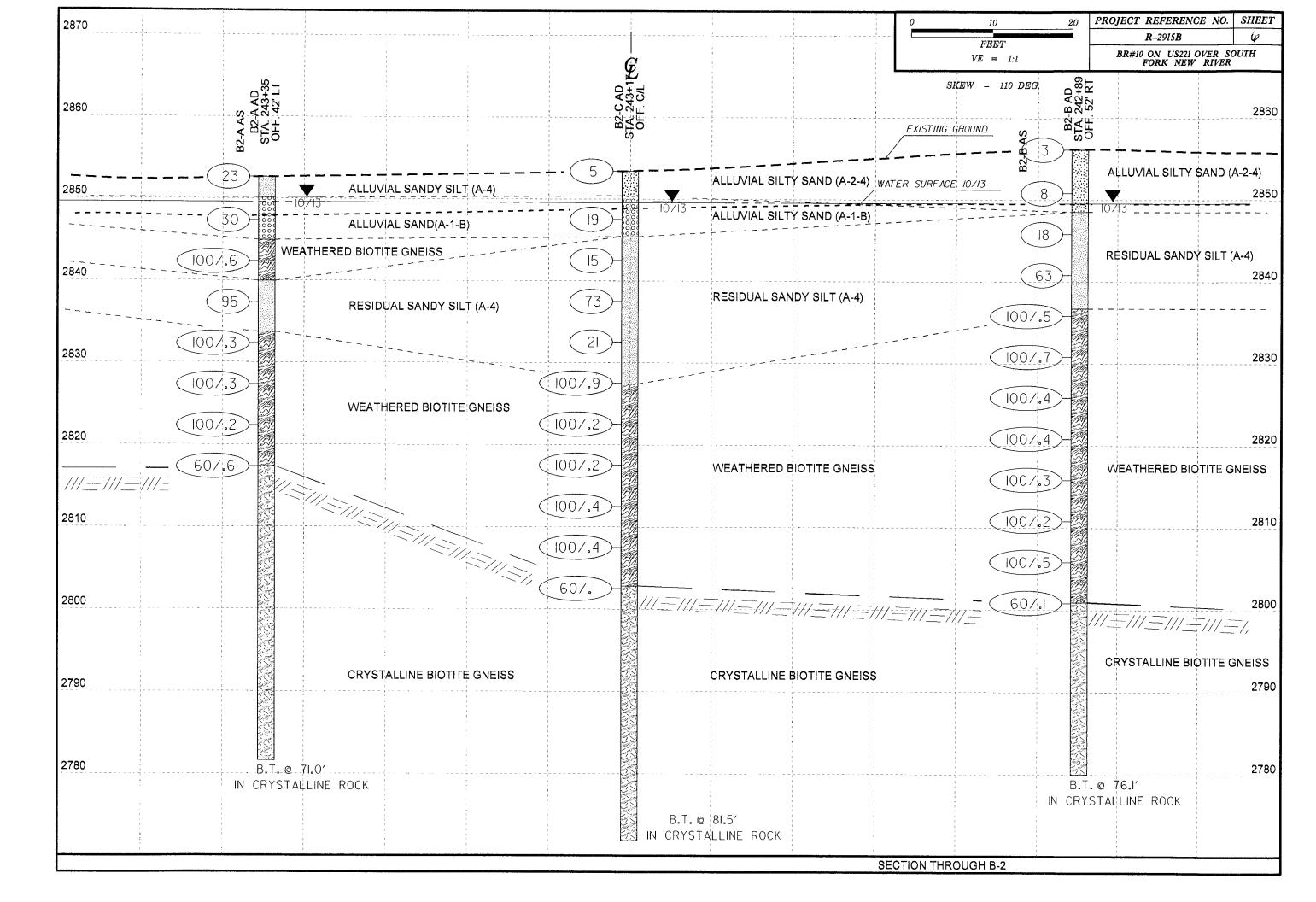
	SOIL AND ROCK LEGEND, T	ERMS, SYMBOLS, AND ABBREVIATIONS	
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN	<u>VELL GRAPED</u> - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. <u>UNIFORM</u> - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (ASSAFT) T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE:	PODRLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE	ADUIFER - A WATER BEARING FORMATION OR STRATA.
CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT EACTORS SUCH	ANGULARITY OF GRAINS	OF WEATHERED ROCK, ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	AKENALEUUS - APPLIED TO KOLKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: VERY STAFF, BRAY, SETY CLAY, AUST WITH INTERSEDUED FIVE SAND LAVERS, HORT, PLASTIC, 147-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBROUNDED, OR ROUNDED.	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100	ARGILLACEDUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION	ROCK (WR) BLOWS PER FOOT IF TESTED.	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS DECANIC MATERIALS	MINERAL NAMES SUCH AS DUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS	CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE.	AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.
(2 30% PASSING *200) (> 35% PASSING *200)	WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	GNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
CLASS. 4-1-2 4-1-1 0-2-40-2-50-2-50-2-7 8-7-5 0-2 4-6-4-7	COMPRESSIBILITY SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 31	ROCK (NCR) SEDIMENTARY ROCK THAT WOULD YELD SPT REFUSAL IF TESTED, ROCK TYPE	COLLUYIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
SYMBOL 0000400000000000000000000000000000000	MODERATELY COMPRESSIBLE LIQUID LIMIT EDUAL TO 31-50	COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL
2 PASSING	HIGHLY COMPRESSIBLE LIOUID LIMIT GREATER THAN 50 PERCENTAGE OF MATERIAL	SEDIMENTARY ROCK SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED (CP) SHELL BEDS, ETC.	LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
* 10 50 MX GRANULAR SILT MUCK. 40 38 MX 50 MX 51 MN SOULS PEAT	ORGANIC MATERIAL GRANULAR SILT - CLAY	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
# 40 38 MX 50 MX 51 MN # 200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN 36 MN	UNGANIL MATERIAL SOILS 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	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
10000 LIMIT 48 MX 41 MN 48 MX 41 MN 48 MX 41 MN 48 MX 41 MN SOILS WITH	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN.	HORIZONT AL.
LASTIC INLEX 6 MX NP 18 MX 18 MX II MN 11 MN 10 MX 10 MX 11 MN 11 MN LITTLE OR HIGHLY	MUDERATELY ORGANIC 5 - 10% 12 - 20% SOME 20 - 35% HIGHLY ORGANIC >10% >20% HIGHLY 35% AND ABOVE	(V SL),) CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF	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 MODERATE ORGANIC	GROUND WATER	OF A CRYSTALLINE NATURE. SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
DE MAJDR GRAYFI AND FINE SILTY OR CLAYEY SILTY CLAYEY ORGANIC	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) I INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
MATERIALS SAND SAND GRAVEL AND SAND SOILS SOILS MATTER	STATIC WATER LEVEL AFTER 24 HOURS	CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS, MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS, IN	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
AS A EXCELLENT TO GOOD FAIR TO POOR FAIR TO POOR UNSUITABLE	PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA	(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.
SUBGRADE PUUR PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30	OMM SPRING OR SEEP	DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	MODERATELY ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL SEVERE AND DISCOLORED AND A MAJORITY BHOW KAOLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH	THE STREAM. FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN
PRIMARY SOIL TYPE COMPACTNESS OR RANGE OF STANDARD RANGE OF UNCONFINED		(MOD, SEV.) AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK, ROCK GIVES 'CLUNK' SDUND WHEN STRUCK,	THE FIELD.
CONSISTENCY (N-VALUE) (TONS/FT ²)	WITH SOIL DESCRIPTION VST PHT LEST BOHING DESIGNATIONS		JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
GENERALLY	S - BULK SAMPLE AUGER BORING S - BULK SAMPLE	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED (SEV.) IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KADLINIZED TO SOME	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
MATERIAL MEDIUM DENSE 10 TO 30 N/A	SS - SPLIT SPOON ARTIFICIAL FILL (AF) OTHER SAMPLE SAMPLE	EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. IF TESTED, YIELDS SPT N VALUES > 100 BPF	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
(NON-COHESIVE) DENSE 30 TO 50 VERY DENSE >50	THAN ROADWAY EMBANKMENT - CORE BORING ST - SHELBY TUBE	VERY SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN
VERY SOFT (2 (0.25	- INFERRED SOIL BOUNDARY SAMPLE MONITORING WELL BE RECEIVED.	(V SEV.) THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR	SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN
GENERALLY SDFT 2 10 4 9.25 TD 9.50	INFERRED ROCK LINE A PIEZOMETER A PIEZOMETER	VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 188 BPF	INTERVENING IMPERVIOUS STRATUM.
MATERIAL STIFF 8 TO 15 1 TO 2	ALLUVIAL SOIL BOUNDARY ALLUVIAL SOIL BOUNDARY ALLUVIAL SOIL BOUNDARY ALLUVIAL SOIL BOUNDARY ALLUVIAL SOIL BOUNDARY ALLUVIAL SOIL BOUNDARY	RIAXIAL 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	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
(COHESIVE) VERY STIFF 15 TO 38 2 TO 4 HARD >30 >4	SLOPE INDICATOR	ALSO AN EXAMPLE.	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND
TEXTURE OR GRAIN SIZE	ROCK STRUCTURES RATIO SAMPLE	ROCK HARDNESS	EXPRESSED AS A PERCENTAGE.
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	◆ SOUNDING ROD (REF)— SPT REFUSAL	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
OPENING (MM) 4.76 2.00 8.42 0.25 0.075 0.053		SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED	SILE - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND
BOULDER COBBLE GRAVEL COARSE FINE SILT CLAY	ABBREVIATIONS AR - AUGER REFUSAL HJ HIGHLY ## - MOISTURE CONTER	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.)	BT - BORING TERMINATED MED MEDIUM V - VERY	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR
GRAIN MM 305 75 2.8 0.25 0.05 0.005 SIZE IN 12 3	CL CLAY MICA MICACEOUS VST - VANE SHEAR TE CPT - CONE PENETRATION TEST MOD MODERATELY WEA WEATHERED	EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK, HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.	SLIP PLANE.
	CSE COARSE NP - NON PLASTIC 7 - UNIT WEIGHT DMT - DILATOMETER TEST ORG ORGANIC 7 - DRY UNIT WEIGH	MEDIUM CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. HARO CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARO BLOWS OF THE	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE FIELD MOISTURE CHARGE FOR THE AMERICAN PROPERTY OF THE AMER	DPT - DYNAMIC PENETRATION TEST PMT - PRESSUREMETER TEST	POINT OF A GEOLOGIST'S PICK.	A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
(ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	e - VOID RATIO SAP SAPROLITIC F - FINE SD SAND, SANDY	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK, CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH
- SATURATED - USUALLY L10010; VERY WET, USUALLY	FOSS FOSSILIFEROUS SL SILT, SILTY	PIECES CAN BE BROKEN BY FINGER PRESSURE.	OF STRATUM AND EXPRESSED AS A PERCENTAGE.
(SAT.) FROM BELOW THE GROUND WATER TABLE	FRAC FRACTURED, FRACTURES SLI SLIGHTLY FRAGS FRAGMENTS TCR - TRICONE REFUSAL	VERY CAN BE CARVED WITH KNIFE, CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE, CAN BE SCRATCHED READILY BY	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO DR GREATER THAN 4 INCHES DIVIDED BY THE
LASTIC SEMISOLIDA PEDILIDES DEVINO TO		FINGERNAIL.	TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
RANGE - WET - (N) STRIBUTO, RECORDS STRIBUTO	EQUIPMENT USED ON SUBJECT PROJECT	FRACTURE SPACING BEDDING	<u>IOPSOIL (TS.)</u> - SURFACE SOILS USUALLY CONTAINING DRGANIC MATTER.
	DRILL UNITS: ADVANCING TOOLS: HAMMER TYPE:	TERM SPACING TERM THICKNESS VERY HIDE MODE TWAN 10 SECT VERY THICKLY BEDDED > 4 FEET	BENCH MARK: -BL- 57
OM OPTIMUM MOISTURE - MOIST - (M) SOLID: AT OR NEAR OPTIMUM MOISTURE	CLAY BITS X AUTOMATIC MA	NUAL WIDE 3 TO 10 FEFT THICKLY BEDDED 1.5 - 4 FEET	5.5047101 0070 07 FT
SL SHRINKAGE LIMITREQUIRES ADDITIONAL WATER TO	MOBILE 8- CONTINUOUS FLIGHT AUGER CORE SIZE:	MODERATELY CLOSE 1 TO 3 FEET THINLY BEDDED 0.16 - 1.5 FEET CLOSE 0.16 TO 1 FEET VERY THINLY BEDDED 0.03 - 0.16 FEET	ELEVATION: 2870.93 FT.
- DRY - (D) ATTAIN OPTIMUM MOISTURE	BK-5I B' HOLLOW AUGERS -B	VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	NOTES:
PLASTICITY	CME-45C HARD FACED FINGER BITS X -N 0-2	INDURATION	
PLASTICITY INDEX (PD) DRY STRENGTH	TUNG -CARRIDE INCERTS	FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT	CME-550 X CASING X W/ ADVANCER	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS:	
MED. PLASTICITY 16-25 MEDIUM	HAND TOOLS:	GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
HIGH PLASTICITY 26 DR MORE HIGH	TOST HOLE BIOCH	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.	
COLOR	X SUM93 D-50 TRICONE TUNGCARB. HAND AUGER	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE;	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	CORE BIT SOUNDING ROD VANE SHEAR TEST	DIFFICULT TO BREAK WITH HAMMER.	
MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.		EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.	

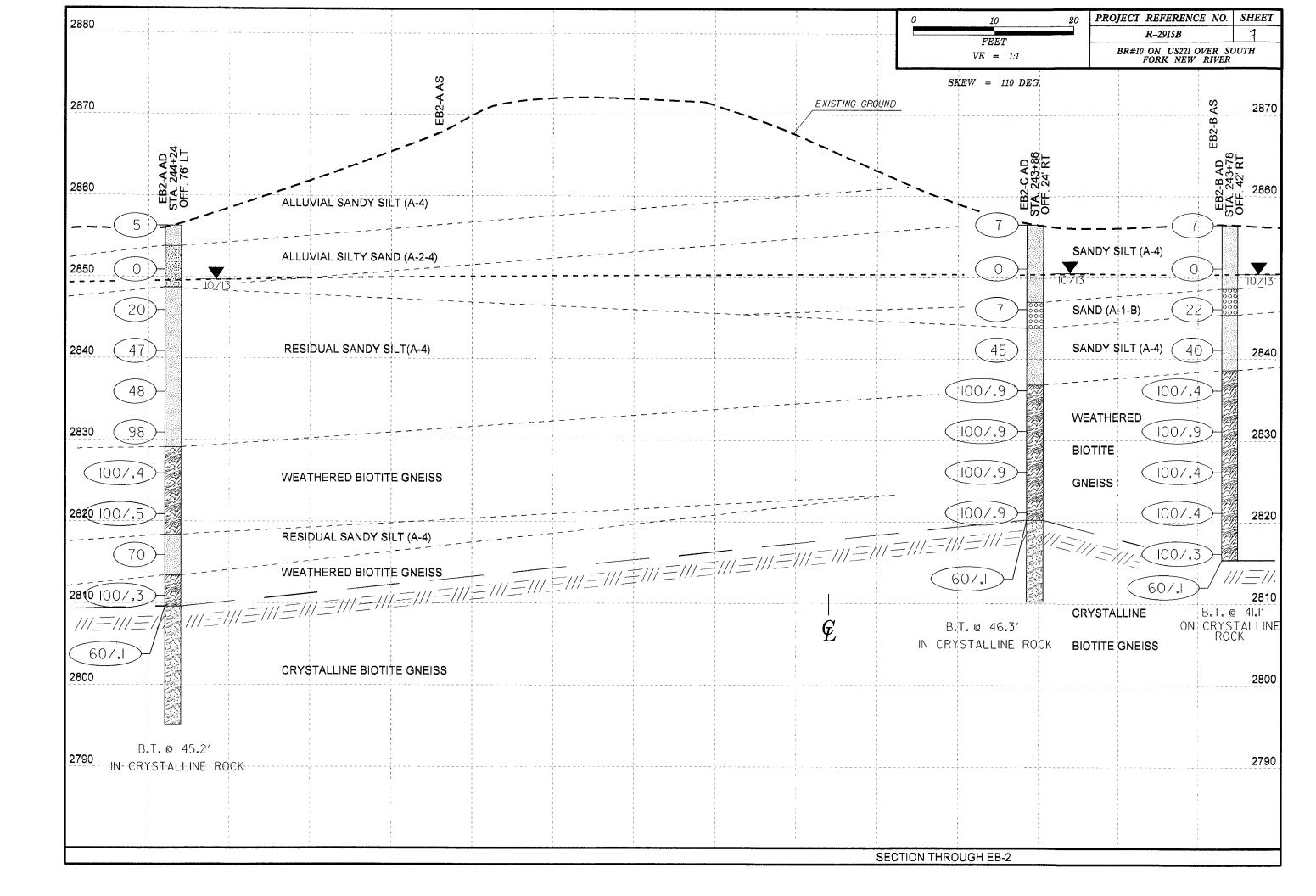
PROJECT REFERENCE NO. SHEET NO. R-29I5B 345I8.I.3

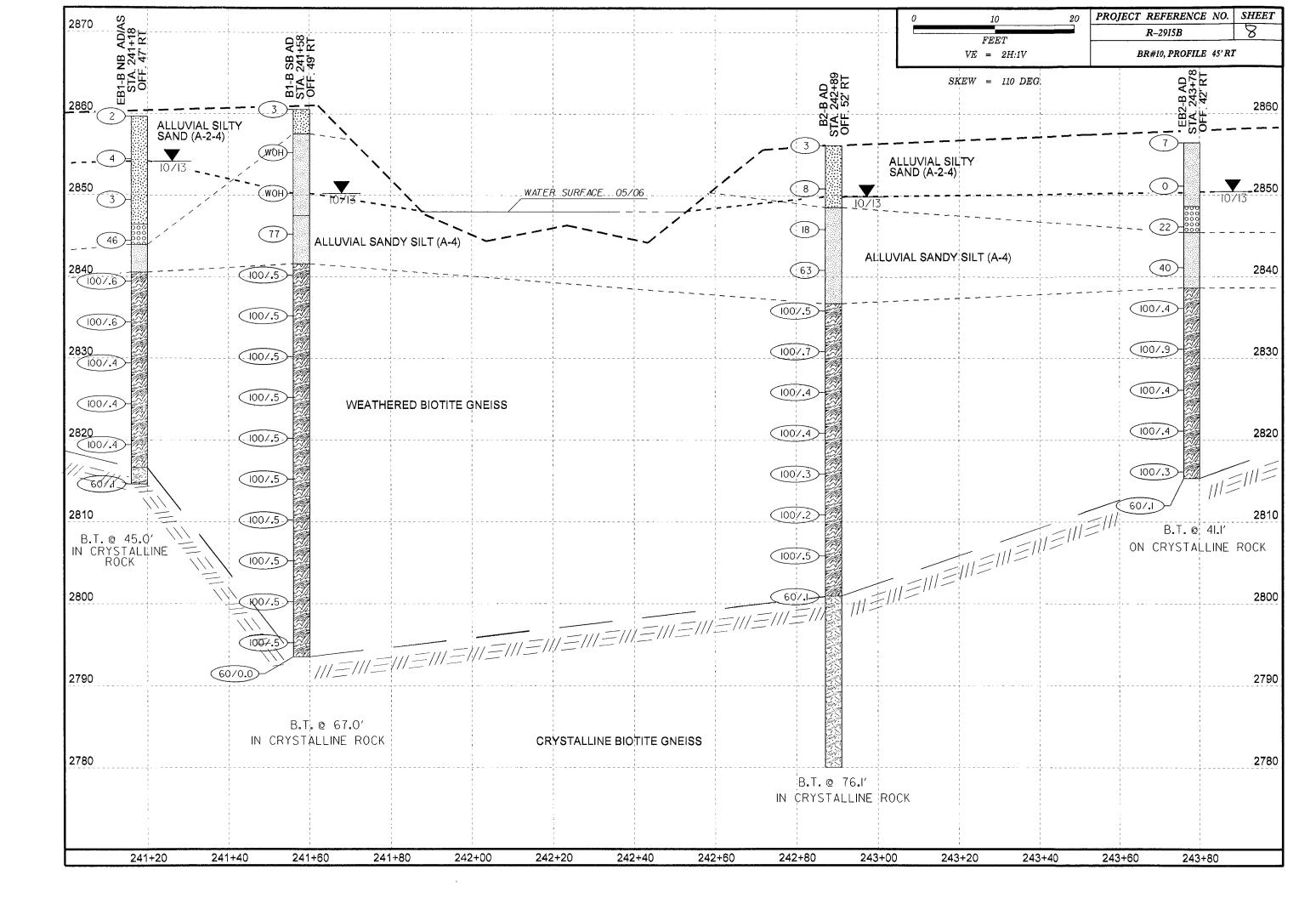












NCDOT GEOTECHNICAL ENGINEERING UNIT

SHEET

	3451						R-2915B	L	Y ASHE				GEOLOGIST B. Smith	, G.I.T.		
SITE	DESC	RIPTIO	N Bri	dge 10) over	Sc	outh Fork of New Riv	er on							GROUNI	D WTR
BOR	NG NO	. EB1	-A		_ [ST/	ATION 241+57		OFFSET	77 ft LT			ALIGNMENT -L-		0 HR.	N
COL	AR EL	.EV . 2	860.5	ft	1	LO.	TAL DEPTH 40.2 f		NORTHING	935,0	013		EASTING 1,263,735		24 HR.	8
DRILL	RIG/HA	MMER	FF./D/	ATE S	UM009	93 C	DIEDRICH D-50 86% 08/	15/2013	[DD N	IW Casing w/ Advancer	НАММ	ER TYPE	
DRIL	LER J	l. Bare			5	 ST/	ART DATE 10/08/1	3	COMP. DA	٠			SURFACE WATER DEF			
ELEV	DRIVE	DEPTH	BL	ow co		Τ.	1	PER FOOT	!	SAMP.		1 [SOM ACE WATER DEP	111 (4/		
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft		1	50	75 100	NO.	MO	0 1 G	SOIL AND RO ELEV. (ft)	CK DESC	CRIPTION	DEDX
						П					VIVIO		ELEV. (II)			DEPT
2865			1													
		‡											_ -			
		‡					·									
2860	_	<u>‡</u>	-	-	 	+				ļ	ļ	1000000	~ 2,860.5 GROUN		ACE	
		İ		Ì									_	LUVIAL		
		+											Brown to dark brow SANDY SILT (n, soft, m A-4) w/ s	nod. organic ome mica	, f.
855	2,855.3	5.2	WOH	1	1-	-	@ 2				Sat.		<u>-</u>			
		Ŧ									W		2,852.8			
850	2,850.3	102											Brown to dark gray SILTY f. SAND (, loose, n A-2-4) w/	nod. organin 'some mica	ic,
.000		-	WOH	4	30]					Sat.	000	⁻ 2,849.2			
		‡					: : : : : <u>)</u> : :					000	2,847.8 Brown and gray, den	se to v. d SAND (A-	lense, grave -1-a)	el w/ /
845	2,845.3	15.2	4	14	26	41						000		ense f t	ocse SANI	<u> </u>
ŀ		\pm	"	14	20						Sat.		(A-1-b) w	// little gra		
	•	Ŧ			1								- RES	SIDUAL		
840	2,840.3	20.2	12	23	57	-					l w		 Brown to orange micaceous, saproli 			1)
İ		‡							80		''		2,837.8			
025	2,835.3	25.2											- WEATHE -	RED RO	CK	
033		- 23.2	63	37/0.4		H			- 100/0.9				– (biotit	e gneiss)		
ı		‡			1								<u>.</u>			
830	2,830.3	30.2_	100/0.4						<u> </u>				-			
		1	100/0.2	1					100/0.4				•			
	-	Ŧ										100	•			
825	2,825.3	35.2	70	30.0/1	1				100/0.6			97	.			
	-	‡							100/0.6				•			
	- 2.820.3	40.2											· ^ 2,820.3			
ĺ	-,020.3	- 40.2	60/0.0			T			60/0.0	1		1	Boring Termina			
		<u> </u>				Ì							Penetration Test 2,820.3 ft ON CR	YSTALL		
	-	Ł											(GN	IĖISS)		
	-	Ī		}								F				
	-	Ī														
	_	‡				İ							-			
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	1	<u> </u>														
	-	-		í								L				



	34518						R-2915B		Y ASHE				GEOLOGIST B. Worley	, P.G.		
SITE	DESCR	IPTION	l Brid	dge 10) over	S	outh Fork of New	River on						G	ROUN	D WTR (ft
BORI	NG NO.	EB1	-В			STA	ATION 241+18		OFFSET 4	17 ft RT			ALIGNMENT -L-	0	HR.	N/A
OLL	AR ELI	E V . 2,	859.6	ft	1	ro	TAL DEPTH 45.	O ft	NORTHING	934,9	961		EASTING 1,263,853	24	HR.	5.5
RILL	RIG/HA	MMER E	FF./DA	TE S	UM009	93 E	DIEDRICH D-50 86%	08/15/2013		DRILL N	VIETHO	D N	W Casing w/ Advancer	HAMMER	TYPE	Automatic
RILI	LER J.	. Bare			s	ST/	ART DATE 10/03	3/13	COMP. DA	TE 10/	03/13		SURFACE WATER DEPT	H N/A		
LEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BL0	0.5ft			BLOW 0 25	S PER FOOT	75 100	SAMP.	MOI	L O G	SOIL AND ROCK	K DESCRIF	PTION	DEDTIL
						T		J			VIVIO	3	ELEV. (II)			DEPTH (f
860															_	
000	2,859.6	0.0	WOH	1	1	+			1	 	М		_2,859.6 GROUND			0.
	-	‡							: : : :				Brown to dark brow	n, v. loose	to loose	ı,
855	- 2,854.4	5.2	L				1				W		moderatly organic to sl SAND (A-2-4), slig	ightly organ	nic. SIL	ΓΥ f.
		ļ	1	1	3	1	• 4				W		micac	eous	COUS IO	
	-	<u> </u>					1:									
850	2,849.4	10.2	WOH	1	2	-	<u> </u>						-			
	-	_	****	'			\$ 3				M					
45												000	2,846.4 Dense cse SAND ar	nd GRAVE	L (A-1-b	13.
1	2,844.4	15.2	13	17	29	\parallel		2 46			М	000	2,843.9 RESI I	DUAL		15.
	-	F						$\{[],\ldots\}$							- 10	IDV
40	2,839.4	20.2						1+	 			**	2,840.5 Brown, hard, micaceou	(A-4)	•	\DY <u>19</u>
	-	-	18	64	36/0.1	1			100/0.6				WEATHER	ED ROCK		
35	-	- -										黨	(biotite	gneiss)		
55	2,834.4	25.2	60	40/0.1	-				1				_			
	-	-							100/0.6							
30	- 2,829.4	- 30.2											_			
-	z,029.4 -	IJU.∠	100/0.4					:	100/0.4							
]															
25	2,824.4	35.2	100/0 1						+				-			
	7		100/0.4	1		$\ \ $			100/0.4							
20	1					$\ $										
\dashv	2,819.4	40.2	100/0.4						100/0.4				-			
	†	-											2,816.6			43.
15	2,814.7-	- - 44.9	00.15					-					CRYSTALL -2,814.6	INE ROCK	(45.
	1	-]	60/0.1						60/0.1			E	(biotite o		n de1	
	1	-										<u> </u>	Boring Terminate Penetration Test Re	efusal at El	levation	
	-	-											2,814.6 ft IN CRYS (BIOTITE)		ROCK	
	1	<u> </u>										F	·	•		
	7	_										F				
	7	-										-	•			
	‡	-										F				
	1	- -						•				_				
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	1	-		ĺĺ					į			F				
	7	-										F				
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NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

SHEET

					TI				/ ASHE				GEOLOGIST B. Worley, F		
SITE	DESCR	IPTION	l Brid	dge 10	over S	South Fork of	New Riv	er on						GROUN	ID WTR (f
30RII	NG NO.	EB1	-C		ST	TATION 241	+31		OFFSET	23 ft RT			ALIGNMENT -L-	0 HR.	N/
COLL	AR ELE	EV . 2,	860.1	ft	TC	OTAL DEPTH	45.2 ft		NORTHING	934.9	77		EASTING 1,263,831	24 HR.	8.
						DIEDRICH D-50						D NI		AMMER TYPE	
	ER J.					TART DATE			COMP. DA	ь			SURFACE WATER DEPTH		
	DRIVE	DEPTH	BLO	OW CO				ER FOOT		SAMP.		1 [TOOKI AGE WATER DEF 111	14//	
(ft)	ELEV (ft)	(ft)	0.5ft	· · · · · ·	~ ————	0 25			75 100	NO.	моі	O G	SOIL AND ROCK I	DESCRIPTION	DEDTU
	<u>.</u>		1	<u> </u>		<u> </u>		1	-l		MICI				DEPTH
1005															
865															
	-											E			
860	2,860.1	0.0											2,860.1 GROUND SU	JRFACE	
	-		1	1	2	9 3					D		ALLUV	AL	
	7												Brown to dark brown, slightly organic, micaceo		
855	2,855.0	5.1	1		2								Slightly organic, inicaceo SILTY f. SAN		nica,
	~	-	'	'		∳ 3 · · ·					M				
	-	_					<i>.</i>				W				
850	2,850.0	10.1_	WOH	1	1	1					М		<u></u>		
	_	-			1						"				
845	2,845.0	15 1										000	2,846,6 Alluvial GRAVI	EL (A-1-b)	1
040	_م45_u_ -	13.1.	6	9	15							000	-2,844.6 RESIDU	AL	1
	4												Brown v. stiff, slightly mic	aceous sanrol	itic f
840	2,840.0	20.1_							<u> </u>			3977	2,840.6 SANDY SIL	T (A-4)	1
	-		17	40	60/0.4				100/0.9	,			WEATHERE	O ROCK	
	-	-											(biotite gn	eiss)	
835	2,835.0	_25.1_	38	62/0.3									-		
	-		36	02/0.3					100/0.8)					
	-	_		İ											
830	2,830.0	30.1	45	55/0.4	1							913	-		
	1								100/0.9						
825	2,825.0	25.1													
020	۷,025.۷	- 30.1	100/0.3	1					100/0.3	•			-		
	-	-													
820	2,820.0	40.1													
	-	_	48	52/0.3					100/0.8	•					
	-	_]								2,817.1 CRYSTALLIN	E ROCK	4:
815	2.815.0	45.1	60/0.1	ļ			· · · ·		L	\dashv			2,814.9 (biotite gn		<u> </u>
	-	-	3.0.1	1								-	Boring Terminated	with Standard	
		-											Penetration Test Refu 2,814.9 ft IN CRYST		
	_	_										-	- (BIOTITE GI	NEISS)	
]	_										F			
	1	_										F			
	-	-											_		
	1	-													
	_	_										lE	_		
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	1	-													
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	7	_										F			
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	1											[



AAD2	34518	3.1.3			Т	IP R-2915B	COUNT	Y ASHE				GEOLOGIST B. Smith, G.I.	•	
SITE	DESCR	IPTION	Brio	lge 10	over	South Fork of	f New River on						GROUND WI	TR (f
BOR	NG NO.	B1-A	١		s	TATION 24	1+93	OFFSET	31 ft LT			ALIGNMENT -L-	0 HR.	N/
COLI	AR ELE	EV . 2,	860.6	ft	Т	OTAL DEPTH	f 67.0 ft	NORTHING	935,0	47		EASTING 1,263,754	24 HR.	10.
					UM0093	B DIEDRICH D-5	50 86% 08/15/2013	1			א מנ	_L,,	MER TYPE Autor	
	LER J.					TART DATE		COMP. DA	L			SURFACE WATER DEPTH		
ELEV	DRIVE	DEPTH	BLO	OW CO			BLOWS PER FOO	<u> </u>	SAMP.	V /	1			
(ft)	ELEV (ft)	(ft)	0.5ft	T	T	0 25		75 100	NO.	МО	0	SOIL AND ROCK DE		≅PTH
	(14)	 							+	VIVIO	1	ELEV. (II)	DE	<u>-rin</u>
				}				İ						
2865		E										_		
	-										1	•		
2860	2,860.6~	0.0	1	2	1	 			<u> </u>		2022	2,860.6 GROUND SUR		
	٦	F	1	_	'	9 3				М		- ALLUVIAI		
	-	ţ										2,857.6 Brown, v. loose, mod. or SAND (A-2-4) w/ so		3
2855	2,855.3	5.3	WOH	1	1					٠,,		Dark brown to dark gray	and black, soft,	
	-					♥ 2		· · · · ·		W		highly organic, f. SANDY S to little clay and so		
	-							: : : : :		W				
2850	_2,850.3	10.3	WOH	1	1	2				W		<u>-</u>		
	-	F					<u> </u>					2,847.6		
2845	2,845.3	153]								RESIDUAI		
_070	-,		14	29	48	1		. 677		Sat.		Brown, hard, highly micace SANDY SILT (
	1	_						: : : : :				. 2,841.7	, ,	1:
2840	2,840.3	20.3	100/0									WEATHERED F	ROCK	
	-		100/0.5	1				100/0.5		}		(biotite gneis	s)	
	-										M			
2835	2,835.3	25.3	100/0.3					100/0.3				-		
	-	_												
	-													
2830	2,830.3	30.3	100/0.3					100/0.3				<u>-</u>		
	-													
2825	2,825.3	35.3												
-020		-	100/0.3					100/0.3						
	4													
2820	2,820.3	40.3	100/0									_		
	7	[100/0.3					100/0.3			1	<u>. </u>		
	1	_												
2815	2,815.3	45.3	30	70/0.3								-		
	‡	_						. 100/0.8						
		L - #-				: : : :								
2810	2,810.3	50.3	100/0.3		<u> </u>			100/0,3				-		
į	1	-												
BUE	2,805.3	- - 55.3												
2000	-	-	63	37/0.3				- 100/0.8				-		
]	_	ŀ		İ	: : : :								
800	2,800.3	60.3									9			
	7		100/0.5					100/0,5				<u>.</u>		
	‡	-									穷			
2795	2,795.3	65.3	100/0.4					1000			鰯	-		
}	2,793.6	67.0	60/0.0		ļ	1		100/0.4				2,793.6 Roring Terminated will	h Standard	67
	-	-	30,0.0					- 5,0,0				Boring Terminated wit Penetration Test Refusa	l at Elevation	
	_	-										2,793.6 ft ON CRYSTAI (GNEISS)	LINE ROCK	
	‡	-										(
	1	_									t			

NCDOT GEOTECHNICAL ENGINEERING UNIT

SHEET

MR2	34518). I.J				P R-2915B	j 	COUNT	Y ASHE				GEOLOGIST B. Smith	1, G.I. I .	
SITE	DESCR	IPTION	l Brid	dge 10	over S	South Fork o	f New Riv	er on						GROU	IND WTR (ff
BORI	NG NO	. B1-E	3		S ⁻	TATION 24	1+58		OFFSET	49 ft RT			ALIGNMENT -L-	0 HR.	N/A
COLL	AR ELI	EV. 2,	860.5	ft	TO	OTAL DEPTI	H 65.9 ft		NORTHIN	3 935,0	001		EASTING 1,263,850	24 HR.	10.5
ORILL	RIG/HA	MMER E	FF./DA	TE S	UM0093	DIEDRICH D-	50 86% 08/	15/2013	<u> </u>	,		D N\	W Casing w/ Advancer	HAMMER TYPE	Automatic
DRILI	LER J	. Bare			S	TART DATE	10/02/1	3	COMP. DA				SURFACE WATER DEF		
LEV	DRIVE	DEPTH	BLO	ow co	UNT		BLOWS F	PER FOOT		SAMP.	1	11			
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	5 8	50	75 100	NO.	MOI	0 G	SOIL AND RO ELEV. (ft)	CK DESCRIPTION	N DEPTH
								·	•		1				<u> </u>
2865															
		-										-	- ·		
ŀ		Ŧ										-			
2860	2,860.5	0.0	1	1	2	4 3				-	M			D SURFACE	(
	•	‡											Brown to dark brov	wn and grav v loo	ise to
	2,855.4	5.1											loose, moderately to	highly organic, SI	
2855	- 2,000.4 -		1	2	2	9 4		l			w		_ SAND	, with mica	
	-	+				· · · ·						F	•		
850	2,850.4	10.1				: : : :							•		
	-	‡	WOH	1	1	•2					Sat.		- ·		
	-	‡											2,846.9		13
845	2,845.4	15.1	22	40	18							000	Brown, v. dense, GI	RAVEL with coarse 4-1-a)	
	-	Ĺ		'-	,-			. \$58, .			Sat.	000	2,844.0 RE	SIDUAL	16
	-	-						:					Brown, hard, highly	micaceous santo	
840	2,840.4	20.1	89	11/0.1					100/0.6				_ \ SANDY	/ SILT (A-4)	
İ	-											**	WEATH	ERED ROCK	
	2,835.4	25.1	3										(bioti	te gneiss)	
835	.2,0001.4_ - -		30	45	55/0.2				. 100/0.7	•			<u>-</u>		
	-														
830	2,830.4	30.1			.										
	-	-	62	38/0.2					. 100/0.7				-		
	-	ļ													
825	2,825.4	35.1	100/0.2				· · · ·		100/0 2	,			-		
	-	<u> </u>													
	-	-													
820	2,820.4	40.1	60/0.1	1					60/0.1				2,820.3 CRYSTA	LLINE ROCK	40
	-	-											(biotit	te gneiss)	
815	-												(Sioth	(a g.10100)	
.013	-	_											<u>.</u>		
	_	t													•
810	-	-													
	-	F											_		
	-	ļ.													
805	_									İ			_		
	-														
	-	_													
800	_	<u> </u>											-		
	-	<u> </u>													
795	-	ļ													
, 35		-	 	 				<u> </u>	1	-			-2,794.6 Boring Terminated a	t Elevation 2 794 6	65 3 ft IN
	_	<u> </u>]											·- ·
	_											F			
	-	F	1										_		
	-	†								1					



	34518				<u> </u>	R-291				Υ /	ASHE GEOLOGIST B. Smith, G.I.T.	
SITE	DESCR	IPTION	Brid	ge 10 ov	·			River	on		GROUND WT	TR (ft)
BORIN	NG NO.	B1-B			STA	TION	241+58			OF	FFSET 49 ft RT ALIGNMENT -L- 0 HR.	N/A
	AR ELE				<u></u>		PTH 65.			NO	DRTHING 935,001 EASTING 1,263,850 24 HR.	10.5
DRILL	RIG/HAI	MMER E	FF./DA	TE SUMO	093 DIE	DRICH	D-50 86%	08/15/2	2013	, .	DRILL METHOD NW Casing w/ Advancer HAMMER TYPE Auton	matic
	ER J.				STAI	RT DA	TE 10/0	2/13		CO	DMP. DATE 10/02/13 SURFACE WATER DEPTH N/A	
	SIZE	NQ-2					N 25.7 f					
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft)	JN RQD (ft) %	SAMP. NO.	STR REC. (ft) %	RQD (ft)	L O G	DESCRIPTION AND REMARKS ELEV. (ft) DE	EPTH (ft)
8389.8	2,820.3	- 40.2	0.7	1:17/0.7	(0.6)	(0.0)		(25.3)	(10.0)		Begin Coring @ 40.2 ft 2,820.3 CRYSTALLINE ROCK	40.2
	2,820.3 2,819.67 2,814.6	-	5.0	1:36/1.0 1:28/1.0 1:22/1.0 0:50/1.0 1:02/1.0 1:14/1.0	(0.8) 86% / (4.8) 96%	0% / (1.5)		98%	(10.0) 39%		Very dark gray and black, mod. severly weathered to v. slightly weathered, med. hard to hard, close-fractured, biotite gneiss	40.2
2810	2,809.6	- - - 50.9	5.0	1:17/1.0 1:07/1.0 1:23/1.0 1:22/1.0 1:18/1.0	(5.0)	52%	!					
2805	2,804.6 - -	- - - 55.9	5.0	1:25/1.0 1:29/1.0 1:09/1.0 1:22/1.0 1:15/1.0	(5.0)	(2.7)						
2800	- -2 <u>,799.6</u> -	- - - 60.9 -	5.0	2:08/1.0 1:00/1.0 0:55/1.0 1:03/1.0	(5.0)	(1.9)						
2795	2,794.6-	- - 65.9		1:38/1.0 1:01/1.0 1:10/1.0 1:45/1.0	100%	38%	·					65.9

NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

SHEET

	34518					P R-2915			Y ASHE				GEOLOGIST B. Smith, G.I.T.		
SITE D	ESCR	IPTION	l Brid	dge 10	over S	South Fork	of New Riv	er on	,					GROUN	ID WTR (1
BORIN	IG NO.	B2-A	١		s.	TATION 2	43+35		OFFSET	42 ft LT			ALIGNMENT -L-	0 HR.	N/
	AR ELE					OTAL DEPT			NORTHING	3 935,1	186		EASTING 1,263,788	24 HR.	2.
RILL	RIG/HAN	MMER E	FF./DA	TE SI	JM0093	DIEDRICH D	-50 86% 08/	15/2013		DRILL I	METHO	D N	W Casing w/ Advancer HAMN	ER TYPE	Automatic
DRILLI	ER J.	Bare			S ⁻	TART DATE	09/26/1	3	COMP. DA	TE 09/	26/13		SURFACE WATER DEPTH N	/A	
revi	DRIVE ELEV	DEPTH	BLO	OW CO	UNT			PER FOOT		SAMP.	W/	L	SOIL AND ROCK DES	CRIPTION	
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	25 5 J	50 .L	75 100	NO.	MOI		ELEV. (ft)		DEPTH
855		-													
2	2,852.6	- 00				J							- - 2,852.6 GROUND SURF	ACE	
850	‡	-	5	10	13	: : : :	23				W		2,850.1 ALLUVIAL		
0.50	1	-					1					000	Brown, v. stiff, moderatly or SILT (A-4), with gravel,		IDY /
_2	,847.4	5.2	11	20	10						Sat.	000	Light tan-brown to brown, de	nse, fine to	cse
845	_	-					9 30				Sat.		SAND (A-1~b), with _2,844.9		
,	2,842.4	- 10.2	1										. WEATHERED RO	оск	
	.,042.4	- 10.2	62	38/0.1					100/0.6	•			biotite gneiss.)	
840	-	_					<u> </u>		1			977	_2,839.9 . RESIDUAL		1
2	,837.4	15.2	30	45	50							<u> </u>	Brown, hard, highly micaceo	us sanroliti	ic f
335	1	_	30	43	"				💠 9 ह	5	Sat.	 	SANDY SILT (A		
		-										477	2,833.7 WEATHERED RO	OCK.	1
_2	2,832.4	20.2	100/0.3						100/0.3	•					
330	1	_											(biotite gneiss)	
_2	.827.4	- - 25.2													
325	1	-	100/0.3						100/0.3	'					
020	1	-											-		
2	,822.4	30.2	100/0.2						100/0.2	,					
320	‡	- -											-		
2	817.4	- - 35 2											2,817.3		3
	1	-	60/0.1						60/0.1	'			CRYSTALLINE R	оск	
315	+	- -											(biotite gneiss)	
	1	-													
310	1	-											_		
	1	-				1::::			: : : :		}				
	1	-													
305	-	-								1			-		
	7	-													
300	†	-				: : : :									
	7	-											-		
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95	‡	-											_		
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785		-											-		
	1	-													
_						1		<u> </u>	1 1	-			2,781.6 Boring Terminated at Elevation	n 2 781 6 f	71 t IN
	1	-										[-	4,7 0 1.0 1	. 111
	1											F			
	I	_										F			



WRS	34518	2 1 2			TID	R-291	ED.		OLINIT	·····	CUE	CEOLOGIST D C-	35 CIT		
	DESCR		l Bric	lge 10 ov					OUNT	Υ /-	//SHE	GEOLOGIST B. Sm	itn, G.I. I.		ID WTR (ft)
	ING NO.			190 10 00			243+35	TUVE		OF	FSET 42 ft LT	ALIGNMENT -L-		0 HR.	N/A
	LAR ELI			ft	 		PTH 71	.0 ft		 	RTHING 935,186	EASTING 1,263,788	 }	24 HR.	2.5
DRILL	. RIG/HAI	MMER E	FF./DA	TE SUMO	J				2013		DRILL METHOD NV			ــــــــــــــــــــــــــــــــــــــ	Automatic
DRIL	LER J	. Bare			STAI	RT DA	TE 09/2	26/13	•• ••	co	MP. DATE 09/26/13	SURFACE WATER D	EPTH N	/A	
COR	E SIZE	NQ-2					N 35.71								
ELEV (ft)	RUN ELEV	DEPTH		DRILL RATE	REC.	JN RQD	SAMP.	REC.	RQD	L		DESCRIPTION AND REMAI	RKS		
	(ft)	(ft)	(ft)	(Min/ft)	(ft) %	(ft) %	NO.	(ft) %	(ft) %	G	ELEV. (ft)				DEPTH (ft)
2817.31	2,817.3 2,816.6	35.3	0.7	1:51/0.7	(0.6)	(0.4)		(33.2)	(11.9)		2,817.3	Begin Coring @ 35.3 CRYSTALLINE ROCK	<u>ft</u>	· ···	35.3
2815	-		5.0	1:41/1.0 1:47/1.0 1:42/1.0	86% (4.9)	57% / (1.7)		93%	33%		- Light gray, dark gray,	brown and orange-brown, s	li. to mod.	sev. weath	ering,
	- 2,811.6-	41.0		1:39/1.0	98%	34%						d zones) to soft (in mod. se o v. close fracture spacing,		d zones), o	close
2810	-		5.0	1:33/1.0 1:55/1.0	(4.9) 98%	(1.8) 36%					<u>-</u>				
	-	-		2:01/1.0 1:22/1.0							<u>.</u>				
2805	2,806.6-	46.0	5.0	1:38/1.0 1:49/1.0	(4.9)	(1.2)					- -				
	-	F		1:45/1.0	98%	24%					- -				
	2,801.6-	51.0	5.0	2:12/1.0 2:00/1.0 1:30/1.0	(4.2)	(1.0)					- -				
2800	_		3.0	1:21/1.0 1:36/1.0	84%	(1.0) 20%					- -				
	2,796.6-	56.0		1:20/1.0 1:04/1.0							= -				İ
2795	-	-	5.0	2:18/1.0 1:33/1.0	(4.7) 94%	(2.4) 48%					- - -				
	-	<u> </u>		1:19/1.0 1:36/1.0							<u>.</u>				
2790	2,791.6- -	61.0	5.0	1:14/1.0 1:38/1.0	(4.8)	(0.4)					- -				
	-			1:08/1.0	96%	8%					- -				
	2,786.6-	66.0	5.0	1:45/1.0 1:03/1.0 1:20/1.0	(4.2)	(3.0)					- -				
2785		_	0.0	2:08/1.0 2:03/1.0	84%	60%					- - -				
	2,781.6-	71.0		1:34/1.0 1:30/1.0							- - 2,781.6				71.0
	-										- Boring -	Terminated at Elevation 2,	781.6 ft IN		
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NCDOT GEOTECHNICAL ENGINEERING UNIT

BORELOG REPORT

518.1.3 TIP R-2915B COUNTY ASHE GEOLOGIST B. Smith, G.I.T.

SHEET

WBS 34518.1.3 SITE DESCRIPTION Bridge 10 over South Fork of New River on **GROUND WTR (ft)** BORING NO. B2-B **STATION** 242+89 OFFSET 52 ft RT ALIGNMENT -L-0 HR. N/A COLLAR ELEV. 2,856.1 ft TOTAL DEPTH 76.1 ft **NORTHING** 935,130 **EASTING** 1,263,876 24 HR. 6.3 DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013 DRILL METHOD NW Casing w/ Advancer HAMMER TYPE Automatic DRILLER J. Bare **START DATE** 10/01/13 COMP. DATE 10/01/13 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH BLOW COUNT BLOWS PER FOOT SAMP. SOIL AND ROCK DESCRIPTION (ft) 0.5ft 0.5ft 0.5ft (ft) 75 100 NO. (ft) MOI 2860 **GROUND SURFACE** 2855 ALLUVIAL M Brown, v. loose to loose, moderatly organic, SILTY f. SAND (A-2-4), with mica, trace 2,851.0 Sat. 2850 2,848.5 RESIDUAL Brown to orange-brown, v. stiff to hard, 8 10 Sat. highly micaceous, saprolitic, f. SANDY SILT 2,841.0 15.1 2840 Sat. 2,836.7 2,836.0 20.1 100/0.5 WEATHERED ROCK (biotite gneiss) 2,831.0 25.1 -100/0.7 2,826.0 30.1 100/0.4 2825 2,821.0 35.1 100/0. 2820 2815 2,816.0 40.1 100/0.3 2,811.0 45.1 100/0.7 100/0.2 2,806.0 50.1 2805 _100/0.5 2,801.0 55.1 60/0. 60/0.1 2800 CRYSTALLINE ROCK (biotite gneiss) 2795 გ 2790 ს 2785



13

***	34518	1.1.3			T	IP R-2	2915B		COUNT	Y ASI	I E				GEOLOGIST B. Smith	, G.I.T.		
SITE	DESCR	IPTION	Bric	lge 10	over :	South F	ork of	New Riv	er on								GROUN	D WTR (ft)
BOR	ING NO.	B2-B	1		s	TATIO	N 242	2+89		OFFS	ET 52	2 ft RT			ALIGNMENT -L-		0 HR.	N/A
COLI	AR ELI	E V. 2,	856.1	ft	T	OTAL [DEPTH	76.1 ft		NORT	HING	935,1	30		EASTING 1,263,876		24 HR.	6.3
DRILL	RIG/HAI	MMER E	FF./DA	TE S				0 86% 08/1						D N	W Casing w/ Advancer	, <u> </u>		Automatic
	LER J.							10/01/13		COME	P. DAT				SURFACE WATER DEP			
ELEV	DRIVE	DEPTH	BLC	ow co				BLOWS P				SAMP.		11				
(ft)	ELEV (ft)	(ft)		0.5ft	0.5ft	0	25	5	0	75	100	NO.	MOI	O G	SOIL AND RO	CK DESCI	RIPTION	DEPTH (ft
2780	· 			L		L		Match	Line				L	\rfloor				
	-	_													Boring Terminated a	t Elevation	2,780.0 ר	ft IN
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	-														<u>_</u> -			
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WBS	34518	3.1.3			TIP	R-291	15B	_ C	OUNT	Y A	SHE		GEOLOGIST B. Smit	h, G.I <i>.</i> T.		
SITE	DESCR	IPTION	Bric	lge 10 ov	er Sou	th For	k of New	River	on						GROUNI	D WTR (ft
BOR	ING NO.	B2-B			STA	TION	242+89			OF	FSET 52 ft RT		ALIGNMENT -L-		0 HR.	N/A
COLI	LAR ELI	E V. 2,	356.1	ft	TOT	AL DE	PTH 76	.1 ft		NO	RTHING 935,130		EASTING 1,263,876		24 HR.	6.3
DRILL	RIG/HAI	MMER E	FF./DA	TE SUMO	093 DIE	DRICH	I D-50 86%	08/15/2	2013		DRILL MET	HOD NW	V Casing w/ Advancer	HAMM	ER TYPE	Automatic
DRIL	LER J.	Bare			STA	RT DA	TE 10/0	1/13		СО	MP. DATE 10/01/	13	SURFACE WATER DE	PTH N	/A	
COR	E SIZE	NQ-2			TOTA	AL RU	N 20.9 f	t								
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 0 G	ELEV. (ft)	[DESCRIPTION AND REMAR	<s< td=""><td>- An</td><td>DEPTH (f</td></s<>	- An	DEPTH (f
800.93				-									Begin Coring @ 55.2 ft			
	2,800.9 2,800.07 - - 2,795.0		5.0	1:38/0.9 1:30/1.0 1:36/1.0 1:17/1.0 1:20/1.0 0:53/1.0	(0.8) 89% / (4.2) 84%	(0.5) \56% / (3.0) 60%		(19.2) 92%	(15.3) 73%				CRYSTALLINE ROCK to dark gray, with dark green mod. weathered zones, mod spacing, gneiss	and browr		
2790	2,790.0	66.1	5.0	1:18/1.0 1:23/1.0 1:14/1.0 1:31/1.0 2:06/1.0 2:33/1.0	(4.6) 92% (4.8)	(3.5) 70% (4.8)					- - - -		•			
2785	2,785.0	71.1		2:38/1.0 2:30/1.0 2:35/1.0 2:30/1.0	96%	96%					- - - -					
	-		5.0	2:14/1.0 2:44/1.0 1:50/1.0 2:01/1.0	(4.8) 96%	(3.5) 70%					 - -					
	2,780.0	76,1		2:17/1.0							2,780.0	Borino	Terminated at Elevation 2,7	80 0 ft IN		76.





	34310			,		P R-29151		Y ASHE			GEOLOGIST B. Smith, G.	
				ige 10			of New River on	T			T	GROUND WTR (ft)
	ING NO.					TATION 24		OFFSET			ALIGNMENT -L-	0 HR. N/A
COL	LAR ELE	V. 2,	853.4	ft	TO	OTAL DEPT	'H 81.5 ft	NORTHING	935,10	63	EASTING 1,263,827	24 HR. 3.7
DRIL	L RIG/HAI	MMER E	FF./DA	TE S	UM0093	DIEDRICH D	-50 86% 08/15/2013		DRILL M	IETHOD NV	V Casing w/ Advancer HA	MMER TYPE Automatic
DRIL	LER J.	Ваге			S	TART DATE	09/30/13	COMP. DA	TE 10/0	01/13	SURFACE WATER DEPTH	N/A
ELEV	DRIVE	DEPTH	BLC	ow co	UNT		BLOWS PER FOO	Г	SAMP.	V L	COLL AND DOCK D	FECRIPTION
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	25 50	75 100	NO.	MOI G	SOIL AND ROCK D ELEV. (ft)	DEPTH (ft)
2855												
2000	2,853.4	- - กก									- 2,853.4 GROUND SU	RFACE 0.0
		_	2	3	2	9 5				м	ALLUVI	
2850		-				<u> </u>				V	2,850.4 Brown, loose, moderatel	
	2,847.9	- - 5.5				• • •		.		000	SAND (A-2-4), with m Tan-brown to brown, me	
	-	-	8	10	9			.		Sat. 0000-	SAND (A-1-b), v	vith gravel
2845		-							1 1	800	2,845.4 RESIDU	8.0 A L
	2,842.9	- - 10.5	ļ					· · · · ·			Brown to orange-brown,	
	-	<u>-</u>	4	7	8	15		· · · · ·		Sat.	micaceous, saprolitic, f.	SANDY SILT (A-4)
2840	-	-									-	
	2,837.9	15.5	20	31	42					. F		
2835	1	-	20	"	'-			73		Sat.		
2000	1	-									-	
	2,832.9	<u> 20.5 </u>	5	10	11					Sat.		
2830	-	-						.		Cui.		
	2,827.9	- - - 25.5				1					•	
Ì	2,021.9-	- 23.3	9	32	68/0.4	1 1 1		÷┝∺÷÷╻		777	2,827.4 WEATHERED	26.0 ROCK
2825		-						. 100/0.9	1			
Ì	2.822.9	- - 30.5									(biotite gne	eiss)
Ì	-	_	100/0.2					100/0.2	<u>'</u>			
2820	-	-										
ı	2,817.9	- 35.5_	400/0.0						.			
		- -	100/0.2	1				100/0.2				
2815	1 -	-									•	
ı	2,812.9	40.5	100/0.4						,			
2810	7	-										
	1	-									•	
	2,807.9	_45.5_ -	100/0.4	į.				. 100/0.4	,			
2805] -]	-										
	2,802.9	50.5						.			2,802.8	50.6
	-	- 00.0	60/0.1	1				60/0.1	'		CRYSTALLINE	
2800		-									(biotite gne	eiss)
		-		}								
	1	-]			
2795	-	-										
		-										
2790	‡	-										
2130		-						1				
2785		-										
		-										
		• •										
2780		-										
	+	•										
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2775	1	-		<u> </u>		1			J			·

NCDOT GEOTECHNICAL ENGINEERING UNIT

SHEET

MRS	34518	3.1.3			LO T		R-2915B		COUNT	Y ASHE				GEOLOGIST B. Smith	, G.I.T.		
SITE	DESCR	IPTION	l Bric	dge 10	over	Sou	th Fork of Ne	ew Riv	er on		<u></u>					т	ID WTR (
30RI	NG NO.	B2-0	;		s	TAT	TION 243+1	7		OFFSET	CL			ALIGNMENT -L-		0 HR.	N
COLL	AR ELI	EV. 2,	853.4	ft	T	OTA	AL DEPTH	81.5 ft		NORTHIN		163		EASTING 1,263,827		24 HR.	3
RILL	RIG/HAI	MMER E	FF./DA	TE S	UM009	3 DIE	DRICH D-50 8	6% 08/	15/2013	 	. ,		D N	W Casing w/ Advancer	HAMM	ER TYPE	
PRILL	LER J.	Bare			s	STAF	RT DATE 09	9/30/1	3	COMP. DA				SURFACE WATER DEF			
LEV	DRIVE ELEV	DC: 11	BLC	ow co	UNT	\prod	BL	OWS F	ER FOOT	-	SAMP	V	L	SOIL AND RO			
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0		5	0	75 100	NO.	МО	I G	ELEV. (ft)	CK DESI	JRIPHON	DEPTH
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775				 		#			Line		↓	L	ارجيرا	·			
	-	-												2,771.9			
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WBS	34518	3.1.3			TIP	R-291	5B	C	OUNT	Y A	SHE	T	GEOLOGIST B. Smith	, G.I.T.		
			l Brid	ge 10 ov	L							1		<u> </u>	GROUN	ID WTR (ft)
BOR	ING NO.	B2-C	;		STA	TION	243+17			OF	FSET CL		ALIGNMENT -L-		0 HR.	N/A
COL	LAR ELE	≡V. 2,	853.4	ft	тот	AL DEI	PTH 81	.5 ft	•	NO	RTHING 935,163		EASTING 1,263,827		24 HR.	3.7
DRILI	RIG/HAI	MMER E	FF./DA	TE SUMO	093 DIE	EDRICH	D-50 86%	08/15/2	2013	L	DRILL METH	OD NW	Casing w/ Advancer	HAMM	ER TYPE	Automatic
DRIL	LER J.	Bare			STAF	RT DA	TE 09/3	0/13		СО	MP. DATE 10/01/1:	3	SURFACE WATER DEF	TH N/	A	
COR	E SIZE	NQ-2		***************************************	TOTA	AL RU	N 30.9 f	t								
ELEV	RUN ELEV	DEPTH		DRILL RATE	REC.	JN RQD	SAMP.	STR REC.	ATA RQD	0.7		Di	ESCRIPTION AND REMARK	9		
(ft)	(ft)	(ft)	(ft)	(Min/ft)	REC. (ft) %	RQD (ft) %	NO.	REC. (ft) %	(ft) %	Ğ	ELEV. (ft)					DEPTH (ft)
2802.79	2 802 8	50 6	0.9	2:01/0.9	(0.8)	(0.5)		(27.6)	/0.0\		- 2,802.8		Begin Coring @ 50.6 ft CRYSTALLINE ROCK			50.6
2800	2,802.8 2,801.9 -	51.5	5.0	1:46/1.0 1:44/1.0 1:21/1.0	89% / (3.3) 66%	(0.3) 56% / (0.0) 0%		(27.6) 89%	(8.9) 29%		- brown to or		vn, light to dark gray, dark gray (50.6'-62.7'), v. sli. to mod. w			. to
	2,796.9	56.5		1:38/1.0	(4.0)	(4.5)					- mod. hard t -		.6'-62.7'), hard to mod. hard (close fracture spacing, gneis		5'), close to	o v.
2795	_		5.0	2:02/1.0 1:29/1.0 1:18/1.0	(4.6) 92%	(1.5) 30%					- 					
	2,791.9	61.5	5.0	1:39/1.0 1:29/1.0	(4.2)	(4.0)					- -					
2790	_	-	3.0	1:35/1.0 1:52/1.0 1:59/1.0	(4.2) 84%	(1.8) 36%					• - •					
	2,786.9	66.5	5.0	1:10/1.0 1:41/1.0 1:35/1.0	(5.0)	(1.7)					- •					
2785	_	- - -	3.0	1:39/1.0 1:58/1.0	100%	34%					• - •					
	2,781.9	71.5	5,0	1:28/1.0 1:56/1.0 1:39/1.0	(4.8)	(1.7)					• -					
2780	_		3.0	1:41/1.0 1:38/1.0	96%	34%					• 					
	2,776.9	76.5		1:43/1.0 1:30/1.0							•					
2775	-		5.0	2:01/1.0	(4.9) 98%	(1.7) 34%					- -					
	2,771.9	81.5		1:39/1.0 1:36/1.0 1:54/1.0							. 2,771.9					81.5
	-	-		1.0 11 1.0								Boring	Terminated at Elevation 2,77	1.9 ft IN	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	01.0
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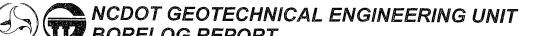
NCDOT GEOTECHNICAL ENGINEERING UNIT BORELOG REPORT

SHEET

WBS 34518.1.3 TIP R-2915B COUNTY ASHE GEOLOGIST B. Smith, G.I.T. SITE DESCRIPTION Bridge 10 over South Fork of New River on GROUND WTR (ft) BORING NO. EB2-A **STATION** 244+24 OFFSET 76 ft LT ALIGNMENT -L-0 HR. COLLAR ELEV. 2,856.2 ft TOTAL DEPTH 61.6 ft **NORTHING** 935,278 **EASTING** 1,263,762 24 HR. 6.6 DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013 DRILL METHOD NW Casing w/ Advancer HAMMER TYPE Automatic DRILLER J. Bare **START DATE** 09/24/13 COMP. DATE 09/25/13 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH **BLOW COUNT** ELEV (ft) SOIL AND ROCK DESCRIPTION 0.5ft | 0.5ft | 0.5ft 75 100 NO. MOI G DEPTH (ft) 2860 **GROUND SURFACE** 2.856.2 2855 ALLUVIAL М Brown to dark brown, med. stiff, moderately organic, f. SANDY SILT (A-4), with mica Gray to black, v. loose, highly organic, SILTY SAND, trace mica WOH WOH WOH Sat. 2,848.6 RESIDUAL Brown to orange-brown, gray and black, v. Sat. stiff to hard, highly micaceous, saprolitic, f. SANDY SILT (A-4) 2840 Sat. Sat. 2,830.8 25.4 Sat. 2,829.0 WEATHERED ROCK 2825 2,825.8 30.4 (biotite gneiss) 2,820.8 7 35.4 100/0. 2820 RESIDUAL 2815 2,815.8 40.4 Brown, gray and black, hard, highly 18 15 55 Sat. micaceous, saprolitic, f. SANDY SILT, trace quartz fragments 2,810.8 45.4 100/0.3 2,809.5 46.7 100/0.3 60/0.0 WEATHERED ROCK (biotite gneiss) . 60/0.0 CRYSTALLINE ROCK (biotite gneiss) 2805 2800 2795 Boring Terminated at Elevation 2,794.6 ft 3.4 -⊗⊳



WBS 34518.1.3		TIP R	-291	5B	C	DUNT	Y A	ASHE		GEOLOGIST B. Sm	th, G.I.T.		
SITE DESCRIPTION	Bridge 10 ov	er South	Fork	of New	River	on				·		GROUN	ID WTR (ft)
BORING NO. EB2-	A	STATIC	ON :	244+24			OF	FSET	76 ft LT	ALIGNMENT -L-		0 HR.	N/A
COLLAR ELEV. 2,8	356.2 ft	TOTAL	DEF	PTH 61.	6 ft		NO	RTHING	935,278	EASTING 1,263,762		24 HR.	6.6
DRILL RIG/HAMMER EF	FF./DATE SUMO	093 DIED	RICH	D-50 86%	08/15/2	013	·		DRILL METHOD NV	V Casing w/ Advancer	HAMN	ER TYPE	Automatic
DRILLER J. Bare		START	DAT	E 09/2	4/13		СО	MP. DA	TE 09/25/13	SURFACE WATER D	EPTH N	/A	
CORE SIZE NQ-2				V 14.4 ft									
ELEV RUN DEPTH (ft) (ft)	RUN (ft) DRILL RATE (Min/ft)	RUN REC. R (ft) %	RQD (ft) %	SAMP. NO.	STR. REC. (ft) %	ATA RQD (ft) %	L O G	ELEV. (1		DESCRIPTION AND REMAR	RKS		DEPTH (ft)
2809.53										Begin Coring @ 46.7			
2,809.5 46.7	4.4 N=60/0.0 1:01/0.4 2:34/1.0 2:19/1.0 1:21/1.0 2:17/1.0	(4.4) (1 100% 2 (4.8) (1 96% 2	1.2) 27% 1.2) 24%		(13.4) 93%	(3.7) 26%	11/1/1/	- 2,809.5 - - - -	Gray, brown and orar soft, c	CRYSTALLINE ROCK nge-brown, mod. to mod. ser lose to v. close fracture spar	r. weatherin	ng, med. ha s	46.7 ard to
2800 2,800.1 56.1	2:17/1.0 1:58/1.0 2:36/1.0 2:05/1.0 1:45/1.0							- - -					
	5.0 1:51/1.0 2:39/1.0 1:05/1.0 1:12/1.0	(4.2) (1 84% 2	1.3)					-					
2795 2,795.1 61.1	1:19/1.0						بجفية	2,795.1	Rori	ing Terminated at Elevation	794 6 ft		61.1
										ng Terminated at Elevation	2,794.6 it		



SHEET

BORELOG REPORT WBS 34518.1.3 **TIP** R-2915B COUNTY ASHE GEOLOGIST B. Smith, G.I.T. SITE DESCRIPTION Bridge 10 over South Fork of New River on GROUND WTR (ft) BORING NO. EB2-C **STATION** 243+86 OFFSET 24 ft RT ALIGNMENT -L-0 HR. N/A **COLLAR ELEV.** 2,856.5 ft TOTAL DEPTH 46.3 ft **NORTHING** 935,230 **EASTING** 1,263,859 24 HR. 6.0 DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013 DRILL METHOD NW Casing w/ Advancer HAMMER TYPE Automatic DRILLER J. Bare **START DATE** 09/26/13 COMP. DATE 09/27/13 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH **BLOW COUNT** 0 SOIL AND ROCK DESCRIPTION (ft) 0.5ft 0.5ft 0.5ft 50 75 100 (ft) NO. MOI G DEPTH (ft) 2860 2,856.5 GROUND SURFACE 2.856.5 ALLUVIAL 2855 M Brown to dark gray, med. stiff to v. soft, moderate to highly organic, f. SANDY SILT (A-4), with gravel and mica, trace clay Sat. WOH WOH WOH 2850 ALLUVIAL Sat. Z₁843.8 Tan-brown to brown, med. dense, f. to cse SAND (A-1-b), with gravel ALLUVIAL 20 25 2840 Sat. Brown, hard, highly micaceous, saprolitic, f. SANDY SILT (A-4) 2,836.8 WEATHERED ROCK 24 42 58/0.4 100/0.9 (biotite gneiss) 26 51 49/0,4 100/0.9 33 55 42/0.2 2825 100/0.7 2,821.1 35.4 2,820.2 36.3 100/0.3 CRYSTALLINE ROCK (biotite gneiss) 2815 . . . Boring Terminated at Elevation 2,810.2 ft IN





WB	S 3451	8.1.3			TIP	R-291	15B	С	OUNT	Υ	ASHE	GEOLOGIST B. Smith	G.I.T.		
SIT	E DESC	RIPTION	l Bric	lge 10 ov	er Sou	ıth For	k of New	River	on					GROUNI	WTR (ft)
во	RING NO	D. EB2	-C		STA	TION	243+86			OF	FSET 24 ft RT	ALIGNMENT -L-	···	0 HR.	N/A
СО	LLAR EI	EV . 2,	856.5	ft	тот	AL DE	PTH 46	.3 ft		NO	RTHING 935,230	EASTING 1,263,859	·	24 HR.	6.0
DRI	LL RIG/H	AMMER E	FF./DA	TE SUMO	0093 DII	EDRICH	I D-50 86%	08/15/2	2013		DRILL METHOD NV	/ Casing w/ Advancer	намм	ER TYPE	Automatic
DRI	LLER	J. Bare			STAI	RT DA	TE 09/2	6/13		СО	MP. DATE 09/27/13	SURFACE WATER DEP	TH N/	Ά	
СО	RE SIZE	NQ-2			тот	AL RU	N 10.0 f	ft	· · · · · · · · · · · · · · · · · · ·						
ELE'		DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	AL RU UN RQD (ft) %	SAMP. NO.	STR REC. (ft) %	ATA RQD (ft) %	L O G	ELEV. (ft)	PESCRIPTION AND REMARKS	3		DEPTH (ft)
8980	2,820.2	36.3	5.0	N=60/0 0	(4.5)	(3.3)		(0.5)	(6.7)	لارجين	2,820.2	Begin Coring @ 36.3 ft CRYSTALLINE ROCK			
2815	2,815.2	‡	5.0	N=60/0.0 2:29/1.0 2:08/1.0 1:28/1.0 1:36/1.0 1:19/1.0	(5.0)	(3.4)		(9.5) 95%	(6.7) 67%		- light to dark gray an	d brown, v. sli. to mod. weathe zones med. hard, close fractu	ring, mo re spacir	stly hard wit ng, gneiss	36.3 h
	2,810.2	46.3	0.0	1:22/1.0 1:43/1.0 1:30/1.0 1:29/1.0	100%	68%					- - - - 2,810.2				46.3
											Boring	Terminated at Elevation 2,810	D.2 ft IN		

SHEET

WBS 34518.1.3 TIP R-2915B COUNTY ASHE GEOLOGIST B. Smith, G.I.T. SITE DESCRIPTION Bridge 10 over South Fork of New River on GROUND WTR (ft) BORING NO. EB2-B **STATION** 243+78 OFFSET 42 ft RT ALIGNMENT -L-0 HR. N/A COLLAR ELEV. 2,856.4 ft TOTAL DEPTH 41.1 ft **NORTHING** 935,220 **EASTING** 1,263,881 24 HR. 6.0 DRILL RIG/HAMMER EFF./DATE SUM0093 DIEDRICH D-50 86% 08/15/2013 DRILL METHOD NW Casing w/ Advancer HAMMER TYPE Automatic DRILLER J. Bare **START DATE** 09/27/13 COMP. DATE 09/27/13 SURFACE WATER DEPTH N/A ELEV DRIVE DEPTH **BLOW COUNT** BLOWS PER FOOT SAMP. SOIL AND ROCK DESCRIPTION (ft) 0.5ft 0.5ft 0.5ft 50 75 (ft) 100 NO. MOI G ELEV. (ft) DEPTH (ft) 2860 2,856.4 **GROUND SURFACE** ALLUVIAL 2855 М Brown to dark gray, med. stiff to v. soft, moderately to highly organic, f. SANDY SILT 2,851.1 5.3 (A-4), with mica, trace clay Sat.-WOH WOH WOH 2850 Brown, med. dense, f. to cse SAND (A-1-b), with gravel 10 <u>ŏŏ</u>− 2,845.4 12 Sat. RESIDUAL Brown to orange-brown, v. stiff to hard, highly micaceous, saprolitic, f. SANDY SILT 2,841.1 15.3 21 2840 (A-4) Sat. 2,838.6 WEATHERED ROCK 2,836.1 20.3 (biotite gneiss) 2835 100/0.4 2,831.1 25.3 34 66/0.4 100/0.9 2,826.1<u>T</u> 30.3 100/0.4 2825 100/0.4 2,821.1 35.3 2820 100/0.4 2,816.1 40.3 2,815.3 41.1 100/0. _100/0.38 Boring Terminated with Standard Penetration Test Refusal at Elevation 2,815.3 ft ON CRYSTALLINE ROCK (GNEISS) 3.↑ **₽**4

[8

BORING B1-B

BOX 1 OF 3

DEPTH: 40.2-49.4

R-2915 B 34518.1.3

BORING B1-B

BOX 2 OF 3

DEPTH: 49.4-58.8





BORING B1-B

BOX 3 OF 3

DEPTH: 58.8-65.9



R-2915 B 34518.1.3

BORING B2-A

BOX 1 OF 4

DEPTH: 35.3-45.3



BORING B2-A

BOX 2 OF 4

DEPTH: 45.3-55.3

R-2915 B 34518.1.3

BORING B2-A

BOX 3 OF 4

DEPTH: 55.3-65.3





BORING B2-A

BOX 4 OF 4

DEPTH: 65.3-71.0



R-2915 B 34518.1.3

BORING B2-B

BOX 1 OF 3

DEPTH: 55.2-65.2



BORING B2-B

BOX 2 OF 3

DEPTH: 65.2-75.2

R-2915 B 34518.1.3

BORING B2-B

BOX 3 OF 3

DEPTH: 75.2-76.1

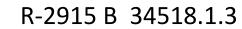




BORING B2-C

BOX 1 OF 4

DEPTH: 50.6-60.6



BORING B2-C

BOX 2 OF 4

DEPTH: 60.6-70.6





BORING B2-C

BOX 3 OF 4

DEPTH: 70.6-80.6

R-2915 B 34518.1.3

BORING B2-C

BOX 4 OF 4

DEPTH: 80.6-81.5





BORING EB2-A

BOX 1 OF 2

DEPTH: 46.7-56.7

R-2915 B 34518.1.3

BORING EB2-A

BOX 1 OF 2

DEPTH: 46.7-56.7





BORING EB2-C

BOX 1 OF 1

DEPTH: 36.5-46.3



SHEET

TITLE SHEET

LEGEND

PROFILE

SITE PLAN

STATE OF NORTH CAROLINA

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

CONTENTS DESCRIPTION

STRUCTURE SUBSURFACE INVESTIGATION

ROJ. REF		NO	R-29I5B	34518.1.3	3	F.A. PROJ.	
		TION .	US 221 F	ROM SR	1003	(IDLEWILD) TO NORTH	
						EW RIVER	
ITE DES	CRIPTION	RE	TAINING W	ALL I, ST	A. 219	+22 TO 22I+63	

N.C.	R-2915B	34518.1.3	1	4

CAUTION NOTICE

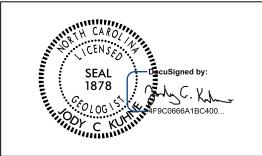
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOCS, ROCK COPES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT 1991 707-6850. NETHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOCS, ROCK CORES, OR SOIL TEST DATA ARE 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 BORNOS OR BETWEEN SAMPLED STRATA WITHIN THE BORCHOLE, THE LABORATORY SAMPLE DATA AND THE IN STIL OIL-PLACED TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE OR SOIL MOISTURE CONDITIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPORATION AND WAND AS WELL AS OTHER NON-CLIMATIC FACTORS. 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 INVESTICATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTICATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

DO CHEEK
CJ COFFEY
INVESTIGATED BY JC KUHNE
CHECKED BY
SUBMITTED BY JC KUHNE
DATE

PERSONNEL DC ELLIOTT



PROJECT REFERENCE NO. SHEET NO. R-2915B 34518.1.3 2 OF 4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

	SOIL AND ROCK LEGEND, TER	MS, SYMBOLS, AND ABBREVIATIONS	
SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS	WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED. WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO 1206, ASTM D-1566). SOIL	POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.	SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE	ADUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	ANGULARITY OF GRAINS	OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:	ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS,
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: VERY STIFF, GRAY, SULTY CLAY, MOST WITH INTERBEDGED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6	THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <u>ANGULAR</u> , <u>SUBANGULAR</u> , <u>SUBROUNDED</u> , OR <u>ROUNDED</u> .	WEATHERED NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 1000 ROCK (WR)	OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION	ROCK (WR) BLOWS PER FOOT IF TESTED. CRYSTALLINE FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS (∠ 35% PASSING *200) (> 35% PASSING *200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	ROCK (CR) WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.	GROUND SURFACE. 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	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
CLASS. A-1-8 A-1-6 A-2-4 A-2-5 A-2-6 A-2-7 A-7-6 A-3 A-6. A-7	SLIGHTLY COMPRESSIBLE LIOUID LIMIT LESS THAN 31 MODERATELY COMPRESSIBLE LIOUID LIMIT EQUAL TO 31-50	ROCK (NCR) INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD	OF SLOPE.
SYMBOL 000000000000000000000000000000000000	HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50	SEDIMENTARY ROCK SPT REFUSAL ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.	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.
7. PASSING GRANULAR SILT-	PERCENTAGE OF MATERIAL GRANULAR SILT - CLAY	WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
= 40 38 MX 58 MX 51 MN S0 MX 51 MN S0 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN S0 MN S0 MX 50 MX 10 MX 55 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN 36 MN S0 MN S	UKGANIC MATERIAL SOILS SOILS OTHER MATERIAL	FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
LIDUID LIMIT	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LITTLE 10 - 20%	HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN,	HORIZONTAL.
PLASTIC INDEX 6 MX NP 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN LITTLE OR HIGH	HIGHLY OPCONIC	(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 MODERATE ORGA AMOUNTS OF SOLU	GROUND WATER	SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL, AND GRAVEL AND SAND SAND SAND SAND SAND SAND SAND	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING	(SLI.) 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SHIPE SHI	STATIC WATER LEVEL AFTER 24 HOURS	MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM
AS A EXCELLENT TO GOOD FAIR TO POOR FAIR TO POOR UNSUIT		DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
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	THE STREAM.
CONSISTENCY OR DENSENESS RANGE OF STANDARD RANGE OF UNCONFINED	MISCELLANEOUS SYMBOLS	SEVERE AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
PRIMARY SOIL TYPE COMPACTNESS OF PENETRATION RESISTENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION POPT DMT TEST BORING W/ CORE	IF TESTED, WOULD YIELD SPT REFUSAL	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
GENERALLY VERY LOOSE <4	SOIL SYMBOL AUGER BORING SPT N-VALUE	SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED (SEV.) IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
GRANULAR LUUSE 4 TO 10 N/A	M	EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN.	ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
MATERIAL DENSE 30 TO 50 VERY DENSE 550	ARTIFICIAL FILL (AF) OTHER — CORE BORING REF— SPT REFUSAL THAN ROADWAY EMBANKMENT	VERY SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
VERY SOFT <2 (0.25	— — INFERRED SOIL BOUNDARY MONITORING WELL	(V SEV.) THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING, SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN
GENERALLY SOFT 2 TO 4 0.25 TO 0.50	INFERRED ROCK LINE A PIEZOMETER INSTALLATION	VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPT N VALUES < 100 BPF	INTERVENING IMPERVIOUS STRATUM.
MATERIAL STIFF 8 TO 15 1 TO 2	SLOPE INDICATOR	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	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD >30 >4	25/025 DIP & DIP DIRECTION OF	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	ROCK STRUCTURES ONE PENETROMETER TEST	ROCK HARDNESS VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE
U.S. STD. SIEVE SIZE 4 10 40 60 200 270	SOUNDING ROD	VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK,	PARENT ROCK.
OPENING (MM) 4.76 2.00 0.42 0.25 0.075 0.053	ABBREVIATIONS	HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY, HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.	SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL
BOULDER COBBLE GRAVEL SAND SAND SILT CLAY	AR - AUGER REFUSAL MED MEDIUM VST - VANE SHEAR TEST BT - BORING TERMINATED MICA MICACEOUS WEA WEATHERED	MODERATELY CAN BE SCRATCHED BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE	TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR
GRAIN MM 305 75 2.0 0.25 0.05 0.005	CL CLAY MOD MODERATELY γ - UNIT WEIGHT CPT - CONE PENETRATION TEST NP - NON PLASTIC γ_{r} - DRY UNIT WEIGHT	HARD EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.	SLIP PLANE.
SIZE IN. 12 3	CSE COARSE ORG ORGANIC	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 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH
SOIL MOISTURE - CORRELATION OF TERMS SOIL MOISTURE SCALE FIELD MOISTURE CHIPS FOR FIELD MOISTURE DESCRIPTION	DMT - DILATOMETER TEST PMT - PRESSUREMETER TEST SAMPLE ABBREVIATIONS DPT - DYNAMIC PENETRATION TEST SAP SAPROLITIC S - BULK	POINT OF A GEOLOGIST'S PICK.	A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
(ATTERBERG LIMITS) CELE MOISTONE GUIDE FOR FIELD MOISTURE DESCRIPTION CONTROL FOR FIELD MOISTURE DESCRIPTION	IN e - VOID RATIO SD SAND, SANDY SS - SPLIT SPOON F - FINE SL SILT, SILTY ST - SHELBY TUBE	SOFT CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	FOSS FOSSILIFEROUS SLI SLIGHTLY RS - ROCK FRAC FRACTURED, FRACTURES TCR - TRICONE REFUSAL RT - RECOMPACTED TRIAX	PIECES CAN BE BROKEN BY FINGER PRESSURE.	OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY
(SAT.) FROM BELOW THE GROUND WATER TAB	FRAGS FRAGMENTS ω - MOISTURE CONTENT CBR - CALIFORNIA BEARIN	SOFT OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY 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.
PLASTIC SEMISOLID; REQUIRES DRYING TO	HI HIGHLY V - VERY RATIO EQUIPMENT USED ON SUBJECT PROJECT	FINGERNAIL. FRACTURE SPACING BEDDING	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
(PI) PLASTIC LIMIT ATTAIN OPTIMUM MOISTURE	HAMPER TYPE	TERM SPACING TERM THICKNESS	BENCH MARK: NA
OM OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTU	F AUTOMATIC MANUAL	VERY THICKLY BEDDED > 4 FEET	
SL SHRINKAGE LIMIT	MOBILE B- CLAY BITS CLAY BITS CORE SIZE-	MODERATELY CLOSE 1 TO 3 FEET THINKY BEDDED 0.16 - 1.5 FEET THINKY BEDDED 0.2 - 0.16 - 1.5 FEET THINKY BEDDED 0.2 - 0.16 - 1.5 FEET	ELEVATION: FT.
REQUIRES ADDITIONAL WATER TO - DRY - (D) ATTAIN OPTIMUM MOISTURE	RY-51	CLOSE 0.16 TO 1 FEET VERY CLOSE LESS THAN 0.16 FEET THICKLY LAMINATED 0.008 - 0.03 FEET THINLY LAMINATED < 0.008 FEET	NOTES:
PLASTICITY	— — — — — — — — — — — — — — — — — — —	INDURATION	
PLASTICITY INDEX (PI) DRY STRENGTH		FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	
NONPLASTIC 0-5 VERY LOW LOW PLASTICITY 6-15 SLIGHT	CME-550	FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS: GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.	
MED. PLASTICITY 16-25 MEDIUM HIGH PLASTICITY 26 OR MORE HIGH	PORTABLE HOIST TRICONE STEEL TEETH POST HOLE DIGGER	MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE;	
COLOR	TRICONE TUNGCARB. HAND AUGER	BREAKS EASILY WHEN HIT WITH HAMMER.	
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY).	CORE BIT SOUNDING ROD	INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.	
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.	

