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STATE OF NORTH CAROLINA

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

STRUCTURE SUBSURFACE INVESTIGATION

COUNTY CABARRUS

PROJECT DESCRIPTION BRIDGE NO. 103 OVER DUTCH BUFFALO CREEK ON NC 49 BETWEEN

SR 1006 AND SR 2444

SITE DESCRIPTION .

STATE N.C

1

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CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOLI TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEICH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (1991) 707-8050. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOCS, ROCK CORES AND SOLI TEST DATA ARE NOT PART OF THE CONTRACT.

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARRES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE)TEST DATA CAN BE RELIED ON ONLY TO THE DECREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOLI MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOL MOISTURE CONDITIONS MAY YARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPHIONO 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 INVESTIGATION AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONTENS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

J.K. STICKNEY

C.L. SMITH

M.R. MOORE

R.W. TODD

R.J. TUCKER

R.S. HINSON

INVESTIGATED BY _____. BEVERLY DRAWN BY _J.E. BEVERLY JEB CHECKED BY ______C.B. LITTLE SUBMITTED BY ______. DATE ______ FEBRUARY 2016



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

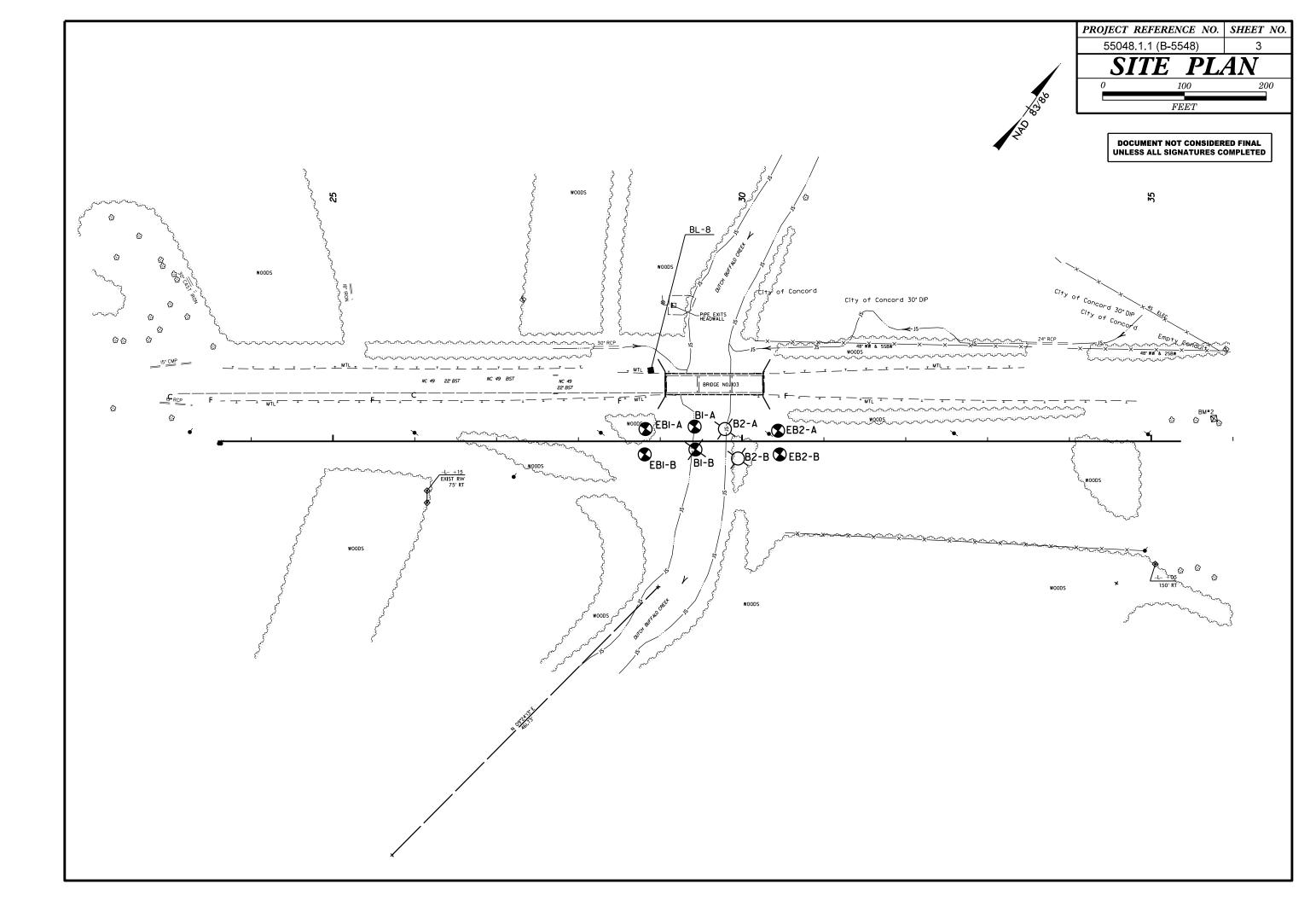
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

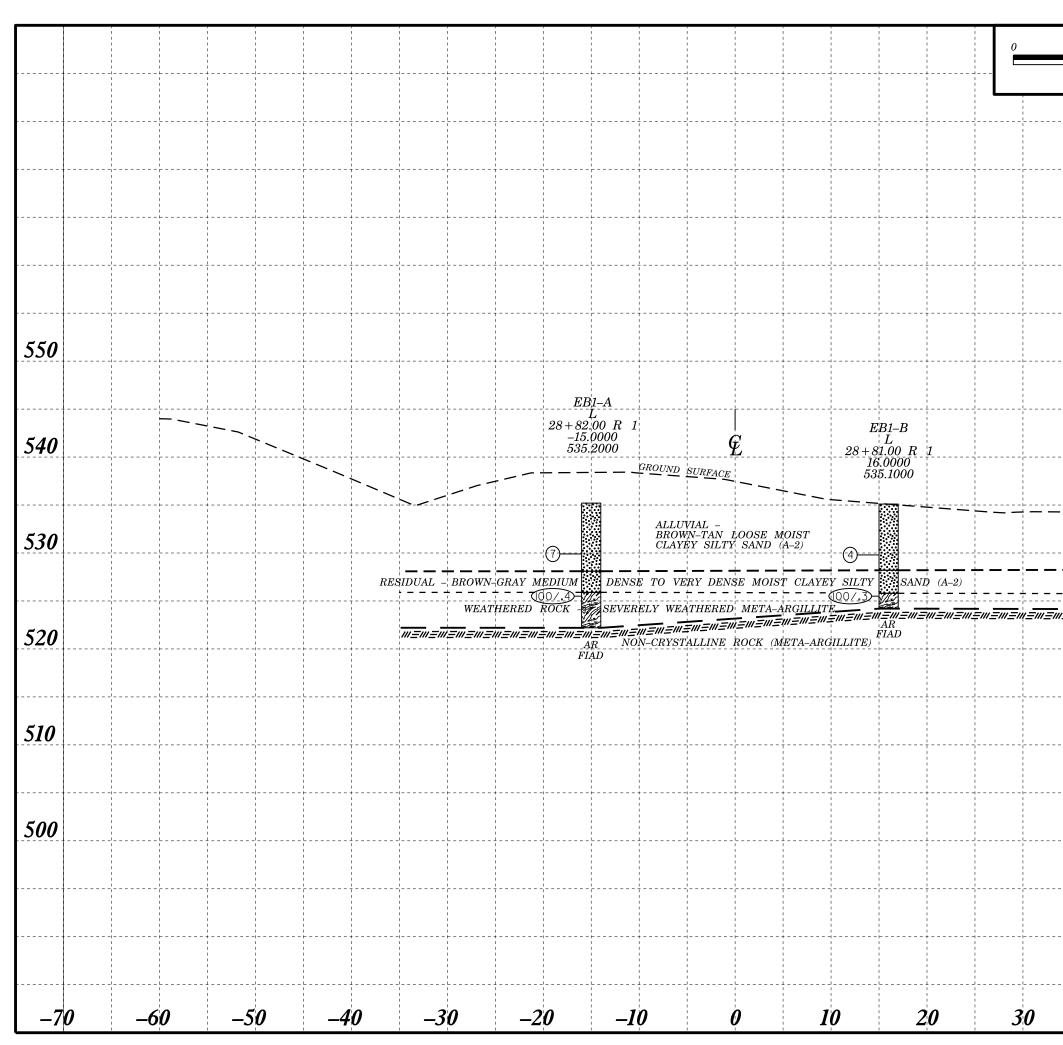
			SOIL C	ESCRIPT	ION						GRADATIC	N						ROCK DE	SCRIPTION
BE PENETI ACCORDIN IS BI CONSISTE	RATED WITH NG TO THE ASED ON TH NCY, COLOR) UNCONSOLIDA H A CONTINUOU STANDARD PE HE AASHTO SY , TEXTURE, MOI	S FLIGHT PON NETRATION TE STEM. BASIC (STURE, AASHTO	VER AUGER A ST (AASHTO DESCRIPTIONS CLASSIFICA	ND YIELD LE T 206, ASTM GENERALLY TION, AND OT	SS THAN 1 D1586). SO INCLUDE T HER PERTIM	00 BLOWS PE IL CLASSIFIO THE FOLLOWINNENT FACTOR	ER FOOT CATION NG: NS SUCH	UNIFORMLY GRADED - IN	NDICATE	GOOD REPRESENTATION O ES THAT SOIL PARTICLES IXTURE OF UNIFORM PAR ANGULARITY OF	S ARE ALL TICLE SIZE	APPROXIMA ES OF TWO	TELY THE SAME SIZE.	ROCK LINE I SPT REFUSA BLOWS IN N REPRESENTE	INDICATE AL IS PE NON-COAS ED BY A	S THE LEVEN NETRATION B STAL PLAIN ZONE OF WE	L AT WHICH NON-COA Y A SPLIT SPOON SA MATERIAL, THE TRA ATHERED ROCK.	WOULD YIELD SPT REFUSAL IF TEST ISTAL PLAIN MATERIAL WOULD YIELD AMPLER EQUAL TO OR LESS THAN 0. INSITION BETWEEN SOIL AND ROCK
		GICAL COMPOS									ROUNDNESS OF SOIL GRA		GIGNATED BY	THE TERMS:		RIALS AR	E TYPICALLY	DIVIDED AS FOLLOW	
		OIL LEGE							- <u>ANGULAR, SUBAN</u>		SUBROUNDED, OR ROUNDE				WEATHERED ROCK (WR)			100 BLOWS PER FO	IN MATERIAL THAT WOULD YIELD SP1 DOT IF TESTED.
GENERAL		GRANULAR MATER			Y MATERIALS	0) RGANIC MATERI	ALS			INERALOGICAL CO			- 10	CRYSTALLINE	E	2.2	FINE TO COARSE (GRAIN IGNEOUS AND METAMORPHIC RC REFUSAL IF TESTED. ROCK TYPE IN
CLASS. GROUP	A-1	≤ 35% PASSING	200) A-2	(> 35% P A-4 A-5	ASSING \$200) A-6 A-7		A-4, A-5				ICH AS QUARTZ,FELDSPAN RIPTIONS WHEN THEY AR				ROCK (CR)		H.H.	GNEISS, GABBRO, SO	CHIST, ETC.
	A-1-a A-1-b		2-5 A-2-6 A-2-	7	A-7-5 A-7-6		A-6, A-7				COMPRESSIB	LITY			NON-CRYSTAL ROCK (NCR)	ALLINE		SEDIMENTARY ROCH	GRAIN METAMORPHIC AND NON-COAST < THAT WOULD YEILD SPT REFUSAL
SYMBOL	000000000000000000000000000000000000000										OMPRESSIBLE (COMPRESSIBLE		LL < 31 LL = 31 -	50	COASTAL PL	AIN			DES PHYLLITE, SLATE, SANDSTONE, ET EDIMENTS CEMENTED INTO ROCK, BUT
% Passing	00000000	20000000+**/=:+*/*/*		•••••••••••••••••••••••••••••••••••••••			SILT-			LY COM	PRESSIBLE		LL > 50		SEDIMENTAR (CP)	RY ROCK		SPT REFUSAL. ROO SHELL BEDS, ETC.	K TYPE INCLUDES LIMESTONE, SANDS
	50 MX 80 MX 50 MX	51 MN				GRANULAR SOILS	CLAY	MUCK, PEAT		F	PERCENTAGE OF GRANULAR SILT - C		AL						HERING
	5 MX 25 MX	10 MX 35 MX 35	MX 35 MX 35 M	1X 36 MN 36 M	N 36 MN 36 M	4	50125		ORGANIC MATERIAL TRACE OF ORGANIC MA		GRANULAR SILT - C SOILS SOILS 2 - 3% 3 - 5		<u>OTHER</u> TRACE	<u>MATERIAL</u> 1 - 10%	FRESH		RESH, CRYSTA		TS MAY SHOW SLIGHT STAINING. ROCK
MATERIAL PASSING #40						SOL	LS WITH		LITTLE ORGANIC MATT	TER	3 - 5% 5 - 12	2%	LITTLE	10 - 20%	VERY SLIGHT				SOME JOINTS MAY SHOW THIN CLAY C
LL PI	- 6 MX		MN 40 MX 41 M MX 11 MN 11 M			' LIT	TLE OR	HIGHLY	MODERATELY ORGANIC HIGHLY ORGANIC		5 - 10% 12 - 2 > 10% > 20%		HIGHLY	20 - 35% 35% AND ABOVE	(V SLI.)		ALS ON A BRO CRYSTALLINE		SHINE BRIGHTLY. ROCK RINGS UNDER H
GROUP INDEX	0	0 0	4 MX		X 16 MX NO M	(AMO	DERATE UNTS OF	ORGANIC SOILS			GROUND WA	TER			SLIGHT				AND DISCOLORATION EXTENDS INTO RO
	TONE FRAGS.	FINE SIL1	Y OR CLAYEY	SILTY	CLAYEY		RGANIC ATTER	50125	∇	WAT	ER LEVEL IN BORE HOLE	IMMEDIAT	ELY AFTER	DRILLING	(SLI.)				IN GRANITOID ROCKS SOME OCCASIONA RYSTALLINE ROCKS RING UNDER HAMMER
OF MAJOR (MATERIALS	GRAVEL, AND SAND	SAND GRAY	el and sand	SOILS	SOILS				▼	STA	TIC WATER LEVEL AFTER	<u>24</u> но	DURS		MODERATE				SCOLORATION AND WEATHERING EFFECT
GEN. RATING AS SUBGRADE		EXCELLENT TO G	000	FAIR	to poor	FAIR TO	POOR	UNSUITABLE		PERC	CHED WATER, SATURATED	ZONE, OR	WATER BEAR	ING STRATA	(MOD.)				DULL AND DISCOLORED, SOME SHOW CLA SHOWS SIGNIFICANT LOSS OF STRENGTH
H5 SUBURHUE		PIOF A-7-5 SUB	ROUP IS ≤ LL	- 30 : PIOF A-	7-6 SUBGROUP	S > LL - 30				SPRI	ING OR SEEP				MODERATELY		RESH ROCK.		R STAINED. IN GRANITOID ROCKS.ALL F
			ISISTENC								MISCELLANEOUS	SYMBO	LS		SEVERE	AND DI	SCOLORED AN	D A MAJORITY SHOW	KAOLINIZATION. ROCK SHOWS SEVERE L
PRIMARY S		COMPACT			F STANDARD N RESISTENC		NGE OF UNC IPRESSIVE S				NT (RF) 25/025 DIP &	DIP DIRE			(MOD, SEV.)			ATED WITH A GEOLOGIS <u>(IELD SPT REFUSAL</u>	ST'S PICK. ROCK GIVES "CLUNK" SOUND
		CONSIS		(N-	VALUE)		(TONS/FT	2)	WITH SOIL DE			ICK STRUC			SEVERE				R STAINED. ROCK FABRIC CLEAR AND E
GENERAL GRANULA		VERY LO			< 4 TO 10				SOIL SYMBOL			TEST BORI	NG 🔿	SLOPE INDICATOR	(SEV.)	TO SOM	ME EXTENT. S	OME FRAGMENTS OF S	IN GRANITOID ROCKS ALL FELDSPARS A TRONG ROCK USUALLY REMAIN.
MATERIA	L	MEDIUM			TO 30 TO 50		N/A		ARTIFICIAL FI	ILL (AF		BORING		CONE PENETROMETER TEST	VERY			<u>'IELD SPT N VALUES .</u> DUARTZ DISCOLORED O	<u>> 100 BPF</u> R STAINED. ROCK FABRIC ELEMENTS AF
(NON-COF	HESIVE)	VERY			50						\leftarrow				SEVERE (V SEV.)	BUT M	ASS IS EFFEC	TIVELY REDUCED TO S	SOIL STATUS, WITH ONLY FRAGMENTS OF ROCK WEATHERED TO A DEGREE THAT
GENERAL	.LY	VERY			< 2 TO 4		< 0.25 0.25 TO (- INFERRED SOI	L BOOM	Ý	BORING	•	SOUNDING ROD	(V SEV.)				AIN. <u>IF TESTED, WOULD YIELD SPT N I</u>
SILT-CLA MATERIA		MEDIUM			TO 8 TO 15		0.5 TO 1 1 TO 2		INFERRED ROC	CK LINE		ORING WEL	ч 🕂	TEST BORING WITH CORE	COMPLETE				T DISCERNIBLE.OR DISCERNIBLE ONLY BE PRESENT AS DIKES OR STRINGERS
COHESIV		VERY	STIFF		TO 30 30		2 TO 4 > 4	ł	ALLUVIAL SOI	L BOUN		METER LLATION	\bigcirc	- SPT N-VALUE			AN EXAMPLE.		
			EXTURE							F	RECOMMENDATION	SYMBC	LS		 				ARDNESS
U.S. STD. SIE	VE SIZE		4 10	40	60 20	0 270					INCLASSIFIED EXCAVATIO	1 - E		SIFIED EXCAVATION -	VERY HARD			HED BY KNIFE OR SHA WS OF THE GEOLOGIST	RP PICK. BREAKING OF HAND SPECIMEN 'S PICK.
OPENING (MM	1)		4.76 2.00	0.42	0.25 0.0		3				INSUITABLE WASTE INCLASSIFIED EXCAVATIO	د⊒ ۷-	USED I	ABLE, BUT NOT TO BE N THE TOP 3 FEET OF	HARD		E SCRATCHED TACH HAND SF		WLY WITH DIFFICULTY. HARD HAMMER B
BOULDER (BLDR.)			RAVEL	COARSE SAND	FIN	ND DI	SILT (SL.)	CLAY (CL.)		<u> </u>	INCLASSIFIED EXCAVATION	ROCK	EMBANK	MENT OR BACKFILL	MODERATELY				OUGES OR GROOVES TO 0.25 INCHES D
				(CSE. SD.)	(F 5				AR - AUGER REFUSAL		ABBREVIATI MED MEDIUM	UNS	VCT -	VANE SHEAR TEST	HARD		ATED BY HARD DERATE BLOWS		ST'S PICK. HAND SPECIMENS CAN BE D
GRAIN MM SIZE IN.	305 12	75 3	2.0		0.25	0.05	0.005		BT - BORING TERMINATED	ם	MICA MICACEOU		WEA	WEATHERED	MEDIUM	CAN BE	E GROOVED OF	GOUGED 0.05 INCHES	DEEP BY FIRM PRESSURE OF KNIFE
	ç	SOIL MOIS	TURE - I	CORRELA	TION OF	TERMS	5		CL CLAY CPT - CONE PENETRATION	N TEST	MOD MODERATE NP - NON PLASTI			NIT WEIGHT RY UNIT WEIGHT	HARD		E EXCAVATED OF A GEOLOG		PEICES 1 INCH MAXIMUM SIZE BY HARD
	MOISTURE ERBERG LI		FIELD MO DESCRI		GUIDE FOR	FIELD MO	DISTURE DES	CRIPTION	CSE COARSE DMT - DILATOMETER TES	ат.	ORG ORGANIC PMT - PRESSUREI	METER TEG		IPLE ABBREVIATIONS	SOFT				KNIFE OR PICK. CAN BE EXCAVATED IN
			- SATURA				Y WET. USU		DPT - DYNAMIC PENETRA		EST SAP SAPROLITI	С	S - BL	JLK				KEN BY FINGER PRESS	BY MODERATE BLOWS OF A PICK POIN SURE.
			(SAT.				ROUND WATE		e - VOID RATIO F - FINE		SD SAND, SAND' SL SILT, SILTY			SPLIT SPOON SHELBY TUBE	VERY SOF T				AVATED READILY WITH POINT OF PICK. BY FINGER PRESSURE. CAN BE SCRATCH
PLASTIC		LIMII				PEOUTRES	DRYING TO		 FOSS FOSSILIFEROUS FRAC FRACTURED, FRAC 	TURES	SLI SLIGHTLY TCR - TRICONE F	EFUSAL	RS - F RT - F	ROCK RECOMPACTED TRIAXIAL		FINGER	NAIL.		
RANGE <			- WET -	(W)	ATTAIN OF				FRAGS FRAGMENTS HI HIGHLY		ω - MOISTURE CI V - VERY		CBR -	CALIFORNIA BEARING RATIO			TURE SPA		BEDDING
PLL.	PLASTI									UIPM	ENT USED ON SU	BJECT			TERM VERY WID		MORE	<u>SPACING</u> THAN 10 FEET	TERM VERY THICKLY BEDDED
		M MOISTURE	- MOIST	- (M)	SOLID; AT	OR NEAR (OPTIMUM MO	ISTURE	DRILL UNITS:	ADV/	ANCING TOOLS:		HAMMER T	YPE:	WIDE MODERATI	ELY CLO		TO 10 FEET TO 3 FEET	THICKLY BEDDED 1 THINLY BEDDED 0.
56.			007	(2)	REQUIRES	ADDITIONA	L WATER TO)	CME-45C		CLAY BITS		X AUTO	MATIC MANUAL	CLOSE VERY CLO	OSE		16 TO 1 FOOT THAN Ø.16 FEET	VERY THINLY BEDDED 0.0 THICKLY LAMINATED 0.00
			- DRY -	(0)	ATTAIN OF	тімим мо	ISTURE		CME-55		6"CONTINUOUS FLIGHT A	JGER	CORE SIZE						THINLY LAMINATED <
				STICITY							8 HOLLOW AUGERS HARD FACED FINGER BIT	c	∐-₿	Н					RATION NING OF MATERIAL BY CEMENTING, HE
NON	PLASTIC		PLAST	CITY INDEX 0-5	(PI)	!	DRY STRENG VERY LOW		X CME-550		TUNGCARBIDE INSERTS	2			FUR SEDIME		UCKS, INDUKA		FINGER FREES NUMEROUS GRAINS;
SLIG	HTLY PLAS ERATELY P			6-15 16-25			SLIGHT MEDIUM		VANE SHEAR TEST			CER	HAND TOO		FRIAE	DLE			BY HAMMER DISINTEGRATES SAMPLE.
	ILY PLAST		2	6 OR MORE			HIGH		PORTABLE HOIST			L TEETH		THOLE DIGGER	MODE	RATELY	INDURATED		E SEPARATED FROM SAMPLE WITH ST Y WHEN HIT WITH HAMMER.
			(COLOR					1			-CARB.		NDING ROD	INDUF	RATED			FFICULT TO SEPARATE WITH STEEL
		INCLUDE COL								X	CORE BIT			SHEAR TEST	1.50				BREAK WITH HAMMER.
MOL	DIFIERS SU	JCH AS LIGHT	DARK, STREA	KED, ETC. AR	E USED TO	DESCRIBE	APPEARANCE						🗖		EXTR	EMELY I	NDURATED		BLOWS REQUIRED TO BREAK SAMPLI S ACROSS GRAINS.

PROJECT REFERENCE NO. B-5548



	TERMS AND DEFINITIONS
D. AN INFERRED SPT REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
FOOT PER 60	AQUIFER - A WATER BEARING FORMATION OR STRATA.
IS OFTEN	ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
	ARGILLACEDUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING
N VALUES >	A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, SUCH AS SHALE, SLATE, ETC.
CK 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 GROUND
CLUDES GRANITE.	SURFACE.
L PLAIN	CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
IF TESTED.	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED
TONE, CEMENTED	BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.
OATINGS IF OPEN. AMMER BLOWS IF	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
CK UP TO	FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
L FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
5. IN Y. ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
ELDSPARS DULL	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE
OSS OF STRENGTH	FIELD.
WHEN STRUCK.	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
VIDENT BUT	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.
RE KAOLINIZED	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS
E DISCERNIBLE	USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.
STRONG ROCK ONLY MINOR	PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.
ALUES < 100 BPF	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
IN SMALL AND	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
SAPROLITE IS	ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
S REQUIRES	SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
LOWS 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 TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.
EP CAN BE	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.
ETACHED	STANDARD PENETRATION TEST (PENETRATION RESISTANCE)(SPT) - NUMBER OF BLOWS (N OR BPF) OF
R PICK POINT. BLOWS OF THE	A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.
FRAGMENTS T. SMALL, THIN	STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.
	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL
PIECES 1 INCH	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.
ED READILY BY	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
	BENCH MARK: BL-8 @ N 613291.1170 E 1579698.9470 STA. 23+38.52
THICKNESS	
4 FEET .5 - 4 FEET	ELEVATION: 543.02 FEET
6 - 1.5 FEET	NOTES:
3 - 0.16 FEET 08 - 0.03 FEET	SOIL STRATIGRAPHY IS THROUGH THE BORINGS.
0.008 FEET	FIAD = FILLED IMMEDIATELY AFTER DRILLING
	FIAD - FILLED IMMEDIATELT AFTER DRILLING
AT, PRESSURE, ETC.	BORINGS B2-A AND B2-B WERE PERFORMED UNDER PROJECT R-2533CA IN JULY 1999
EEL PROBE;	
PROBE;	
	DATE: 8-15-14
	DATE: 8-13-14

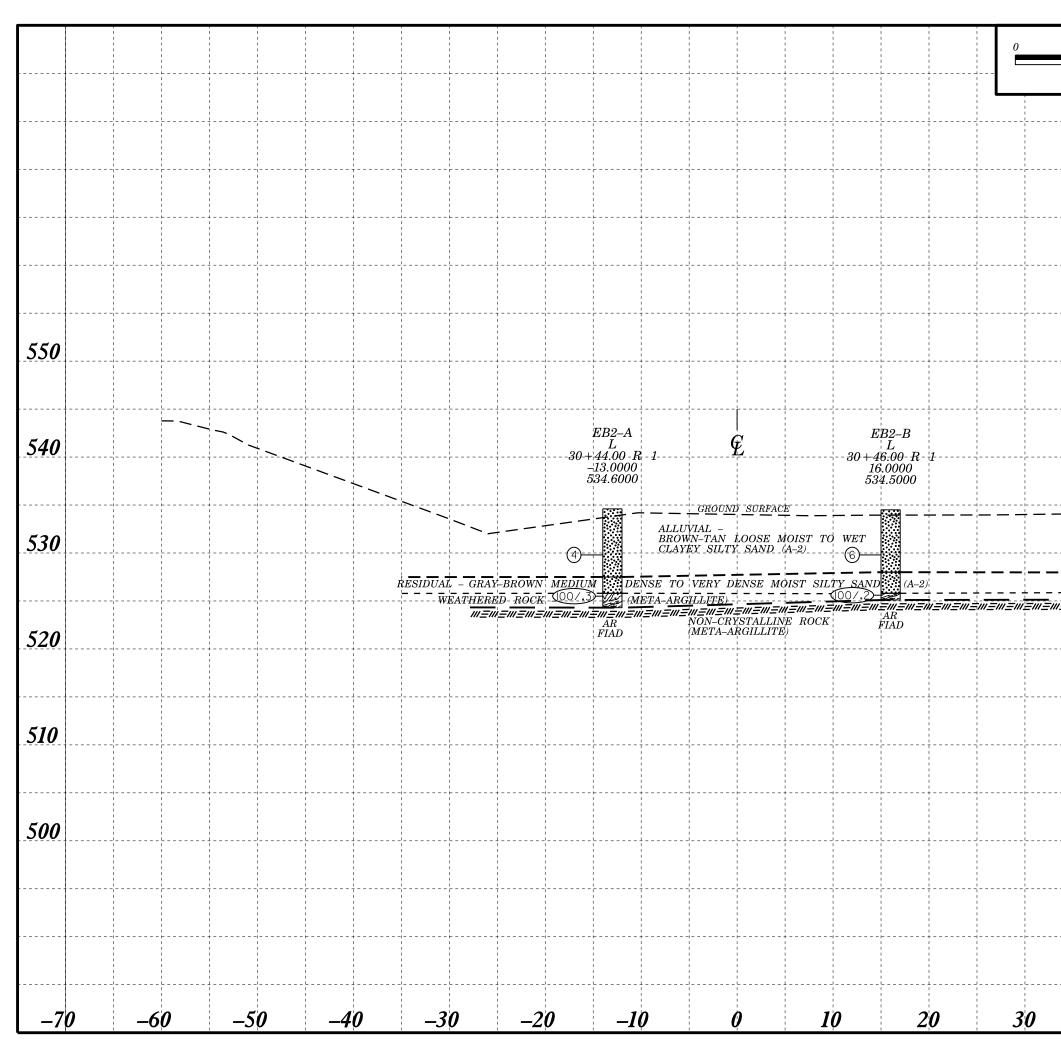




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	55048.1.1	(B-5548)	4 NT 1
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			520
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					-18.0000 532.6000		\boldsymbol{G}	29+43 10.	8.00 R 1 0000 . 8 000						 	1 		 	
		·	$\begin{array}{c} - \begin{matrix} L \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\$	¹				531	. 8 000		L		<u>1</u> 1 1			$-\frac{1}{1}$		·	
530									- 							 	1 I 1 I 1 I 1 I		530
		_ + ~ _			<u></u>	<u>/ 12</u> /15				2/15	+		 			· - 		·	550
					VIAL TAN-	<u>wn_LOUSE, M</u>		-40/.4)-	WEAT	THERED	ROCK M	ETA-ARĞILI	ITE		-+			1	
		 				 ++ 		<u> </u>	<u>'''='''</u>		<u>, =,, =</u> ,					· - +		· +	
520					00/.3										1				520
520			- WEATHERED R SEVERELY WEA	OCK – ATHERED META–A	ARGILLITE				NON	CRYSTAI	LINE RO)CK –							520
					00/.2				GRAY WITH	Y VERY S I VERY O	LIGHTLY CLOSE TO	OCK – WEATHERI O MODERAI	D TÒ H ELY CLO	FRESH, HAR OSE FRACT	D META-A URE SPAC	RGILLITE ING			
		·				 		 		<i>=98%, RQI</i>	D=27%		 			- 		·	
510					(00/.2)	I I I I I I I I										 	1 1 1 1 1 1 1		510
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					007.2	1 1 1 1 1 1 1 1										 		1 1 1	
						 		 			 	 		 	 	$-\frac{1}{1}$		·	
500																			500
500					<u>(00/.2)</u> BT				BT							· - 			500
									 	 	 		+ 			· - +		·	
<i>490</i>						1 1 1 1 1 1 1 1										 		1 1 1	490
770									. J		±				·	· - <u> </u>		·	770
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-70	-60	-50	-40	-30	-20	-10	0		10		20	30	 	40		50	60		70

490								· · · · · · · · · · · · · · · · · · ·						490
						BT IAD								
500									BT FIAD					500
510					-									510
	META-ARGI REC = 76%, F	LLITE WITH VER	Y CLOSE TO CL	OSE FRACTURE					NOI GRA ME REC	N–CRYSTALLINE AY MODERATELY TA–ARGILLITE WI C=53% RQD=10%	ROCK – WEATHERED TO F TH VERY CLOSE T	RESH, MODERA O CLOSE FRAC	TELY HARD TO HAR TURE SPACING	RD
520	NON-CRYSI GRAY MOD	ALLINE ROCK – ERATELY WEATHI LLITE WITH VER QD=6%	RED TO FRESH	MODERATELY H	ARD TO HARD									520
530						7.6000 	G <u>R</u> O <u>UN</u> D	SURFACE						530
520					E 29+7 -18	32–A L 9.00 R 1 5.0000 7.6000	<u>E</u>		21.0000 533.1000	UVIAL - BROWN	SOFT WET SANDY	SILT (A-4)		520
540									$\begin{array}{c} B2-B\\$	1				540
550														
											<i>FEET</i> <i>VE</i> = 1:1		SECTION THROUGH STA. 29+85.0 -L SKEW = 90 Di	EBENT 2
										0	10	20	ECT REFERENCE N 55048.1.1 (B-5548)	6

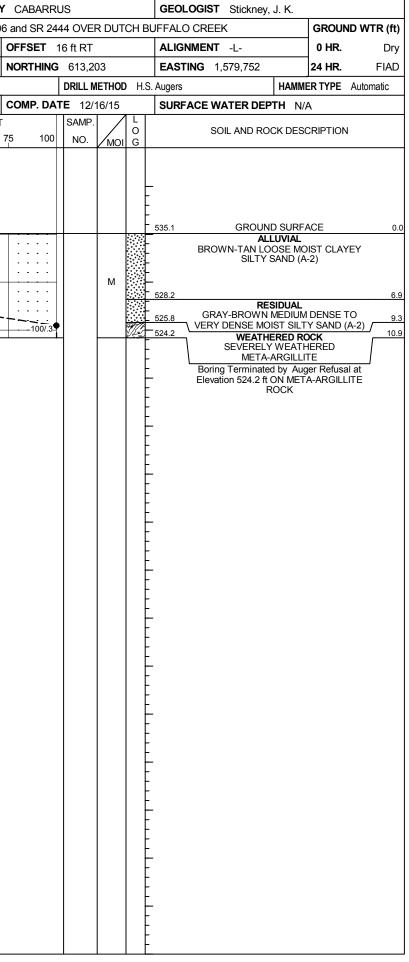


	PROJECT REA	FERENCE NO.	SHEET
10 20	55048.1.1	(B -5548)	7 ENT 2
FEET $VE = 1:1$	SECTION II ST. SKE	HROUGH END B 4.30+45.79 –L– W = 90 DEG.	ENI Z
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GEOTECHNICAL BORING REPORT BORE LOG

WBS	5504	8.1.1			TI	P B-554	8	C	OUNT	1 CABARR	US			G	EOLOGIST Stickney, J. K.	1		WBS	5 5048	.1.1			TI	P B-5548		COUNTY
SITE	DESCF	RIPTION	BRID	GE N	O. 103	BON NC 4	49, BET\	NEEN	SR 100	6 and SR 24	44 OVE	R DU	TCHE	BUFF	FALO CREEK	GROUND W	TR (ft)	SITE	DESCR	IPTION	BRID	DGE N	O. 103	ON NC 49	, BETWEE	N SR 1006
BOR	ing no	EB1-	A		S	TATION	28+82			OFFSET	15 ft LT			A	LIGNMENT -L-	0 HR.	6.0	BOR	ing no.	EB1-I	В		S	TATION 2	28+81	0
COL	LAR EL	EV. 53	35.2 ft		т	OTAL DE	PTH 13	3.0 ft		NORTHING	613,2	29		E	ASTING 1,579,735	24 HR.	FIAD	COL	LAR ELE	EV. 53	35.1 ft		т	OTAL DEP	TH 10.9 ft	t N
DRILL	RIG/HAI	MMER EF	F./DATI	E HFC	00072 C	ME-550X 8	84% 05/1	5/2015			DRILL N	IETHO	DH.	.S. Au	gers HAMM	ER TYPE Auto	matic	DRIL	L RIG/HAM	IMER EF	F./DATE	E HFC)0072 C	ME-550X 84	% 05/15/201	15
	LER S					TART DA				COMP. DA				_					LER SI						E 12/16/1	
ELEV	DRIVE	DEPTH		W CO					R FOOT		SAMP.							ELEV	DRIVE			W CO				PER FOOT
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	-	0	25	50		75 100	NO.	мо	0		SOIL AND ROCK DES			(ft)	ELEV (ft)	(ft)	0.5ft		0.5ft	0		50 7
	(11)												0	ELI	Εν. (π)	L	EPTH (ft)		(11)						1	
540		+												┝				540		-						
		Ŧ												F					-	F						
505		‡												- 535	5.2 GROUND SURF	ACE	0.0	505								
535		<u>+</u>													ALLUVIAL		0.0	535						1		
		+												-	BROWN-TAN LOOSE MC SILTY SAND (A				-	-						
530	530.9	4.3	3	2	5									F	X	,		530	530.8	4.3	2	3	1			
		ŧ	ľ	-	Ŭ	 7 · · ·						M		528	2 1		7.1		-	-	2		'	•4		
		<u>†</u>					÷- -;-;	· · ·	 					Ē	RESIDUAL				-					· · · · ·		· · · · ·
525	525.9	9.3	100/.4					· · [100/.4		1	977	525	VERY DENSE MOIST CL	AYEY SILTY	9.3	525	525.8 -	- 9.3	100/.3	-				
		+	1									1		1	SAND (A-2)					<u> </u>						
1	-	<u>†</u>					• • •	•••		••••	-		12	<u> </u>	SEVERELY WEATH	HERED	13.0		-	F						
	-	‡												F	META-ARGILLI Boring Terminated by Aug		/		-	-						
		t												E	Elevation 522.2 ft ON MET	A-ARGILLITE			-							
		ł												F	ROCK				-	-						
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SHEET 8



GEOTECHNICAL BORING REPORT BORE LOG

SHEET 9

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·	55048				L		-5548						BARF				GEOLOGIS	· · ·	ey, J. K.	1	
				DGE N	1					EEN	SR 1				VER	DUTO	CH BUFFALO			-	ND WTR (
	NG NO.						DN 2							18 ft LT			ALIGNMEN			0 HR.	0
	AR ELE				l		DEP					NOR	THING	613,2			EASTING			24 HR.	3.
	RIG/HAN			TE HF	- 1												W Casing w/ SP1		_ <u> </u>		Automatic
DRIL	ER S		T			AR1	DATI					COM	P. DA	TE 12/	15/15	<u> </u>	SURFACE	WATER DE	EPTH N	/A	
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	0.5ft	OW COL	JNT 0.5ft	0		ВI 25 	_ows	50		75	100	SAMP. NO.	мо	I G	ELEV. (ft)	SOIL AND R	OCK DES	CRIPTION	DEPTH
535		 - -									<u></u>	- <u></u>					532.6			ACE	1
530	- 	- 4.7				+ + [_	· · ·		· · · ·		· · · ·		· · ·		▼		- TAN- - - - 527.4	BROWN LO		ST SILTY S	SAND
525	-	-	1	100/.3			· · ·			+ -	· · · ·	-+	100/.8		M		-	SEVERE MET	HERED R	HERED ITE	
520	_522 <u>9</u>	<u>9.7</u>	100/.3	-			· · · ·		· · ·		· · · ·		100/.3					"E: BARREL So Could N			
	517.9 - -	- - 14.7	100/.2	4			· · · ·		· · · ·		· · · ·	 	 100/.2	,			- - -				
515	 		100/.2				· · · · · · · ·	. . .	· · · · · · · ·	- - -	 		 100/.2	,			 - - -				
510	- - - 507.9 -	24.7	100/.2				· · · ·	· ·	· · · ·	•	· · · ·	· · ·	100/.2				- -				
505	-	- - -	1007.2				· · · ·	-	· · ·	•	· · · ·	· · ·					- - -				
500	- - 499.9	<u>32 7</u>	100/.2				· · · ·		· · ·	. .	· · · ·		100/.2				- - - 499.9 - Bori	ing Terminate	ed at Eleva	ition 499.9	3 ft IN
																	- - - - - - - - - - - - -		LY WEAT RGILLITE		
																	- - - - - -				
	-																- - - -				
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GEOTECHNICAL BORING REPORT

SHEET 10

WBS	55048	3.1.1			Т	IP B-5548	COUNT	Y CABARF	RUS			GEOLOGIST Stickney,	J. K.	
SITE	DESCR	IPTION	BRI	DGE N	10. 10	03 ON NC 49, BE	TWEEN SR 1	1006 and SF	R 2444 C	VER	DUT	CH BUFFALO CREEK	GROU	ND WTR (f
BORI	NG NO.	B1-B			S	TATION 29+43		OFFSET	10 ft RT			ALIGNMENT -L-	0 HR.	0.0
COLL	AR EL	EV. 53	1.8 ft		Т	OTAL DEPTH 3	2.1 ft	NORTHING	613,2	244		EASTING 1,579,800	24 HR.	2.8
DRILL	RIG/HAI	MMER E	FF./DAT	E HF	00072	2 CME-550X 84% C	5/15/2015	. <u> </u>	DRILL M	NETHO	D N	V Casing w/ Core	HAMMER TYPE	Automatic
	LER S					TART DATE 12		COMP. DA	I			SURFACE WATER DEPT		
ELEV	DRIVE	DEPTH	· · · ·	wcou		11	OWS PER FOOT	L	SAMP.	V/	1.			
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0 25	50	75 100	NO.	мо	0 G	SOIL AND ROC ELEV. (ft)	K DESCRIPTION	I DEPTH (
535 530		- - - - -								-			SURFACE JVIAL SE WET SILTY S	AND
525	- <u>527.6</u> - - - -	<u>4.2</u>	1007.4				· · · · · · · · · · · · · · · · · · ·	100/.4				525.6 BLUE-GRAY SEVE	RED ROCK RELY WEATHEF RGILLITE ALLINE ROCK	4 RED 6
520 515	- - - - -	+ + + + + +										FRESH, HARD MET VERY CLOSE TO M FRACTUR		
510							· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				- -		
505	-			-				· · · · · · · · · · · · · · · · · · ·				- - -		
500		-				· · · · · · ·			-			- 499.7 Boring Terminated a META-ARGI	t Elevation 499.7	32 ft IN
												· · · · · · · · · · · · · · · · · · ·		
												· - - - - - - - - - - -		

									С	OF	RE LOG				
WBS	55048	3.1.1			TIP	B-554	8	С	DUNT	ΥC	ABARRUS	GEOLOGIST Stickney,	J. K.		
SITE	DESCR	IPTION	BRI	DGE NO	103 (DN NC	49, BET	WEEN	I SR 1	1006	and SR 2444 OVER DUT	CH BUFFALO CREEK		GROUN	D WTR (
BORI	NG NO.	B1-B			STAT	TION	29+43			OF	SET 10 ft RT	ALIGNMENT -L-		0 HR.	0
COLL	AR ELI	E V . 53	1.8 ft		тоти	AL DE	PTH 32	.1 ft		NO	RTHING 613,244	EASTING 1,579,800	2	24 HR.	2
DRILL	RIG/HAI	MMER EI	F./DA	TE HFOO	072 CM	E-550X	84% 05/	15/2015	,		DRILL METHOD N	W Casing w/ Core	HAMME	R TYPE	Automatic
DRILL	LER S	mith, C	.L.		STAF		TE 12/1	5/15		co	MP. DATE 12/15/15	SURFACE WATER DEP	TH N/A	۱	
CORE	ESIZE	NW					N 25.9 f							···	
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	Samp. No.	STR REC. (ft) %	ATA RQD (ft) %	L O G	ELEV. (ft)	DESCRIPTION AND REMARK	S		DEPTH
525.6	525.6	- 6.2	- 2 0	2:00/1 0	(2.6)	(1.0)		(05.5)	(7.0)		505 C	Begin Coring @ 6.2 ft			
	525.0 -	- 0.2	3.6	3:00/1.0	(3.6) 100%	(1.2) 33%		(25.5) 98%	(7.0) 27%			NON-CRYSTALLINE ROCK Y SLIGHTLY WEATHERED TO	FRESH, I		_
ŀ	522.0	9.8	5.0	3:30/1.0	(5.0)	(1.6)		1				E WITH VERY CLOSE TO MO FRACTURE SPACING		.Y CLOSE	
520	-		0.0	0.000 1.0	100%						- R1=	7, R2=8, R3=10, R4=6, R5=7, F ROCK TYPE B	RMR=38		
	- 517.0	14.8													
515		-	5.0	3:15/1.0	(4.8) 96%	(2.4) 48%									
	-	-			0070	4070]			-				
-	512.0	19.8	5.0	3:45/1.0	(4.8)	(1.3)									
510	-	- 1	0.0		96%	26%					-				
	- 507.0	24.8													
505		-	5.0	NM	(5.0) 100%	(0.5) 10%									
		-									-				
ļ	502.0	29.8	2.3	NM	(2.3)	(0.0)									
500	499.7	32.1			100%			<u> </u>			- 499.7 Poring Torminate	ed at Elevation 499.7 ft IN MET			3

GEOTECHNICAL BORING REPORT POPEIOC

SHEET 11

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GEO_BRDG0103.GPJ_NC_DOT.GDT_2/24/16

B5548 ШU Z CORE OT

NBS	55048	3.1.1			Т	IP B-5548		COUNT	Y CABARR	US			GEOLOGIST Stickney,	J. K.	
SITE D	DESCR		BR	IDGE	NO. 10	03 ON NC 4	9, BETW	EEN SR	1006 and SR	2444 (OTU	H BUFFALO CREEK		GROUND WTR (ft
BORIN	IG NO	B2-A	<u>ا</u>		s	TATION 29)+79		OFFSET 1	5 ft LT			ALIGNMENT -L-		0 HR. N/A
COLLA	AR ELI	EV . 52	27.6 ft		Т	OTAL DEPT	H 30.6	ft	NORTHING	613,2	285		EASTING 1,579,814		24 HR. N/A
RILL F	RIG/HA	MMER E	FF./DA	TE D	orilled in	July 1999				DRILL.	METHOD) NV	V Casing w/ Core	HAMM	ER TYPE Automatic
RILL	ER S	mith, C	.L.		s	TART DATE	07/14/9	99	COMP. DAT	E 07	14/99		SURFACE WATER DEP	TH N/	'A
LEV	DRIVE ELEV	DEPTH	BLC	ow co	UNT			PER FOO		SAMP	\mathbf{V}	L O	SOIL AND ROO		CRIPTION
(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0 2	5	50 	75 100	NO.	моі	G	ELEV. (ft)		DEPTH (1
530		-											_		
		+										F	527.6 GROUNE) SURF/	ACE 0.
	-								1 1				NON-CRYST GRAY MODERATE	ALLINE	ROCK
525	-	F											 FRESH, MODERAT 	ELY HA	RD TO HARD
	-	Ŧ											META-ARGILLITE V CLOSE FRAC		
520	-	F													
	-	F										-	-		
	-	Ŧ													
515	-	ŧ					· · · ·						-		
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510	-	ŧ					· · · · ·	· · · ·							
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500	-	F											-		
	-	F										F	497.0		30.
	-	Ŧ]		-	Boring Terminated a META-ARG		
	-	F										F	- This boring from me		
		F										F	performe	d in 7/1	999
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SHEET 11

GEOTECHNICAL BORING REPORT CORE LOG

					715	D 65								<u> </u>	
WBS 55048.1.1 TIP B-5548 COUNT SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR											ABARRUS	GEOLOGIST Stickney			
				DGE NO	T			WEE	N SR	1		I		-1	D WTR (ft
BORING NO. B2-A STATION 29+79										+	FSET 15 ft LT	ALIGNMENT -L-	0 HR.	N/A	
COLLAR ELEV. 527.6 ft TOTAL DEPTH 30.6 ft								.6 ft		NO	RTHING 613,285	EASTING 1,579,814	24 HR.	N/A	
DRILL RIG/HAMMER EFF./DATE Drilled in July 1999								<u> </u>		. —	DRILL METHOD NW	Г — ·····	ſ		Automatic
	LER S		C.L.				TE 07/1			co	MP. DATE 07/14/99	SURFACE WATER DEP	PTH N	/A	
COR	E SIZE	NW	·r	····	TOTAL RUN 30.6 ft										
ELEV (ft)	RUN ELEV (ft)	I RUN (ft)	DRILL RATE (Min/ft)	REC. (ft) %	JN RQD (ft) %	SAMP. NO.	816 REC. (ft) %	ATA RQD (ft) %	L O G	ELEV. (ft)	ESCRIPTION AND REMARK	S		DEPTH (f	
527.6															
525	527.6 - 523.1	0.0 4.5	4.5		(2.9) 64%	(0.4) 9%		(23.2) 76%	(1.9) 6%			NON-CRYSTALLINE ROCI Y WEATHERED TO FRESH, GILLITE WITH VERY CLOSE SPACING	MODEF		
520			4.5		(3.3) 73%	(0.0) 0%					- - -				
515	518 <u>.6</u>	9.0	5.0		(4.4) 88%	(0.4) 8%					- - -				
515	513.6	- <u>14.0</u>	4.8		(3.3) 69%	(0.0) 0%					 - - -				
510	508.8	18.8	5.0		(5.0)	(1.1)					-				
505	503.8	23.8			100%						- - 				
500		+ + +	6.8		(4.3) 63%	(0.0) 0%					- - -				
	497.0	30.6									- 497.0 Boring Terminated	at Elevation 497.0 ft IN MET	A-ARGII	LITE ROC	<u>30.</u>
	- - -	+									This boring from	n metric project R-2533CC pe	erformed	in 7/1999	
	-	+									- - -				
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GEOTECHNICAL BORING REPORT POPEIOC

SHEET 12

/BS 55048.1.1	TIP B-5548 COUNT	Y CABARRUS	GEOLOGIST Stickney, J. K.			
ITE DESCRIPTION BRIDGE NO	D. 103 ON NC 49, BETWEEN SR 1	1006 and SR 2444 OVER DUTC	H BUFFALO CREEK	GROUND WTR (ft)		
ORING NO. B2-B	STATION 29+95	OFFSET 21 ft RT	ALIGNMENT -L-	0 HR. N/A		
OLLAR ELEV. 533.1 ft	TOTAL DEPTH 30.2 ft	NORTHING 613,265	EASTING 1,579,848	24 HR. N/A		
RILL RIG/HAMMER EFF./DATE Drille	ed in July 1999	DRILL METHOD NW	Casing w/ Core HAMM	ER TYPE Automatic		
RILLER Smith, C.L.	START DATE 07/15/99	COMP. DATE 07/15/99	SURFACE WATER DEPTH N/	A		
EV DRIVE DEPTH BLOW COUN (ft) (ft) 0.5ft 0.5ft (75 100 SAMP. ▼ L NO. MOI G	SOIL AND ROCK DESC	CRIPTION DEPTH (ft)		
30			533.1 GROUND SURFA ALLUVIAL BROWN SOFT WET SANU 529.8 NON-CRYSTALLINE GRAY MODERATELY WEA FRESH, MODERATELY HA	DY SILT (A-4) <u>3.3</u> ROCK ATHERED TO		
			META-ARGILLITE WITH VE CLOSE FRACTURE S	RY CLOSE TO		
			- 502.9 Boring Terminated at Elevat	30.2		
			META-ARGILLITE F			
			This boring from metric proj performed in 7/19			

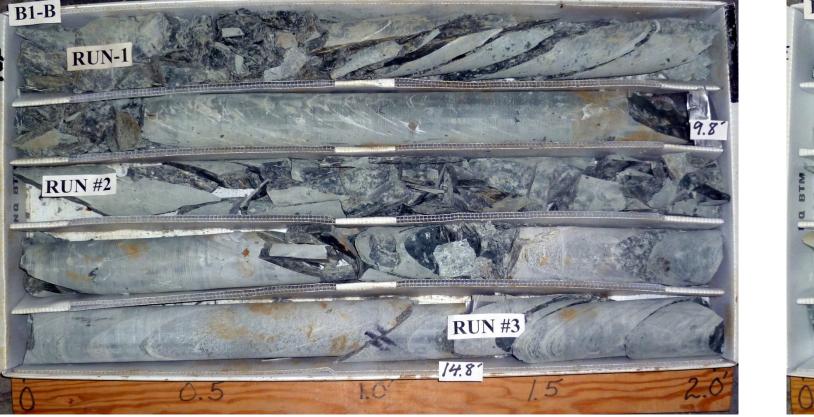
WBS 55048.1.1					TIP	B-554	18	С			RE L		GEOLOGIST Stickney, J. K.				
SITE	DESCF	RIPTION	BRI	DGE NC	0. 103 (ON NC	249, BET	WEE	N SR	1006	and SF	2444 OVER DUT	CH BUFFALO CREEK	· · · · · · · · · · · · · · · · · · ·			
BORING NO. B2-B					T						FSET	21 ft RT	ALIGNMENT -L-		0 HR. N/		
COLLAR ELEV. 533.1 ft											RTHING	613,265	EASTING 1,579,8	48	24 HR. N/		
DRILL RIG/HAMMER EFF./DATE Drilled					d in July	lee ,						DRILL METHOD N	W Casing w/ Core	HAM	MER TYPE Automatic		
		Smith, C		-	1	r · · · · · · · · · · · · · · · · · · ·						TE 07/15/99	SURFACE WATER	DEPTH N	I/A		
	E SIZE				тот	AL RU	N 26.9 f	 t		1			. 1				
ELEV RUN DEPTH RUN DRILL (ft) ELEV (ft) (ft) RATE					REC	UN RQD	SAMP.	STR	ATA	L							
(ft)	ELEV (ft)	(ft)		(ft)	RATE (Min/ft)	(ft)	(ft) %	NO.	(ft) %	(ft) %	O G	ELEV. (ft)	DESCRIPTION AND REM	ARKS	DEPTH	
529.8													Begin Coring @ 3.3	3 ft			
	529.8	3.3	6.1		(1.5) 25%	(0.7) 11%		(14.3) 53%	(2.6) 10%		- 529.8	GRAY MODERATE	NON-CRYSTALLINE F		RATELY HARD		
		t									L		RGILLITE WITH VERY CLO SPACING				
525	523.7	9.4											of Honto				
Ī	020.1	T	4.9		(2.0) 41%	(0.0) 0%			1		Ľ						
520		Ŧ			4170	0%					F						
	518.8	14.3	50		(0.7)	(0.0)					-						
		‡	5.0		(2.7) 54%	(0.0) 0%					-						
515	540 0 ⁻	+									-						
-	513.8	<u> 19.3</u> +	4.6		(3.7)	(0.8)					-						
540		‡			80%	17%					}- -						
510	509.2	23.9			(4.4)	(1.4)					-						
		<u>t</u>	6.3		(4.4) 70%	(1.1) 17%					L						
505	-	ł									_						
	502.9	30.2									502.9				3		
		+									-	Boring Terminat	ed at Elevation 502.9 ft IN	META-ARGI	LLITE ROCK		
	-	Ŧ					-				-	This boring fr	om metric project R-2533C	C performed	l in 7/1999		
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GEOTECHNICAL BORING REPORT 000000

GEOTECHNICAL BORING REPORT BORE LOG

WBS 55048.1.1 TIP B-5548 COUNTY CABARRUS	GEOLOGIST Stickney, J. K.	GEOLOGIST Stickney, J. K.				ТІ	TIP B-5548 COUNT	Y CABARR	US	GEOLOGIST Stickney, J. K.	
SITE DESCRIPTION BRIDGE NO. 103 ON NC 49, BETWEEN SR 1006 and SR 2444 OVER	ER DUTCH BUFFALO CREEK	GROUND WTR (ft)	SITE	SITE DESCRIPTION BRIDGE NO.			3 ON NC 49, BETWEEN SR 10)06 and SR 2444 OVER DUTC		CH BUFFALO CREEK	GROUND WTR (ft)
BORING NO. EB2-A STATION 30+44 OFFSET 13 ft LT	ALIGNMENT -L-	0 HR. 5.9	BORING NO. EB2-B		S	TATION 30+46	OFFSET 16 ft RT		ALIGNMENT -L-	0 HR. 5.8	
COLLAR ELEV. 534.6 ft TOTAL DEPTH 10.3 ft NORTHING 613,32	321 EASTING 1,579,869	24 HR. FIAD	COL	LAR ELEV. 5	34.5 ft	Т	OTAL DEPTH 9.4 ft	NORTHING 613,298		EASTING 1,579,887	24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE HF00072 CME-550X 84% 05/15/2015 DRILL MI	METHOD H.S. Augers HAMM	IER TYPE Automatic	DRIL	L RIG/HAMMER E	FF./DATE	HFO0072 C	CME-550X 84% 05/15/2015		DRILL METHO	D H.S. Augers	HAMMER TYPE Automatic
DRILLER Smith, C.L. START DATE 12/16/15 COMP. DATE 12/1		Ά	DRILLER Smith, C.L.				TART DATE 12/16/15	COMP. DA	TE 12/16/15	SURFACE WATER DEPTH	I N/A
ELEV (ft) DRIVE ELEV (ft) DEPTH BLOW COUNT BLOWS PER FOOT SAMP. (ft) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO.	D. L O MOI G ELEV. (ft)	CRIPTION DEPTH (ft)	ELEV (ft)	(DRIVE ELEV (ft) (ft)	BLOW 0	COUNT 5ft 0.5ft	BLOWS PER FOC 0 25 50	от 75 100	SAMP. NO. MOI	L O SOIL AND ROCK G	DESCRIPTION
535		ACE 0.0	535							-534.5 GROUND	SURFACE 0.0
535	W -534.6 GROUND SURF. ALLUVIAL BROWN-TAN LOOSE MC CLAYEY SILTY SAN W -527.5 S25.8 GRAY-BROWN MEDIUM S24.3 GRAY-BROWN S24.3 GRAY-BROWN MEDIUM S24.3 GRAY-BROWN MEDIUM S24.3 GRAY-BROWN MEDIUM S24.3 GRAY-BROWN MEDIUM S24.3 GRAY-BROWN S24.3	7.1 A DENSE TO TY SAND (A-2) 0CK HERED ITE ger Refusal at	535	520 0 2 7	2 3	3		· · · · · · · · · · · · · · · · · · ·		-534.5 GROUND : ALLU BROWN-TAN LOOS CLAYEY SILT 528.0 528.0 525.8 GRAY-BROWN ME 525.1 VERY DENSE SI VERY DENSE SI NETA-AR Boring Terminated t Elevation 525.1 ft ON RO - - - - - - - - - - - - -	VIAL SE MOIST TO WET Y SAND (A-2) 6.5 DUAL CDIUM DENSE TO 8.7 9.4 ED ROCK VEATHERED IGILLITE IN AUGER Refusal at I META-ARGILLITE
NACDOT BOF											

SHEET 13

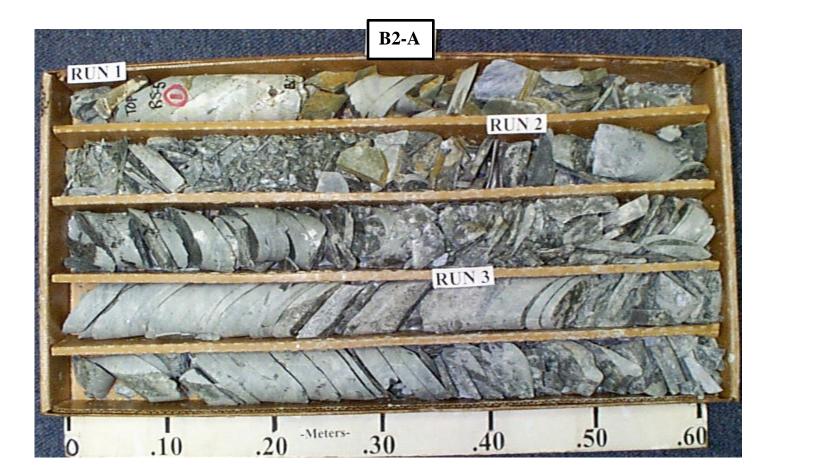


CORE PHOTOS

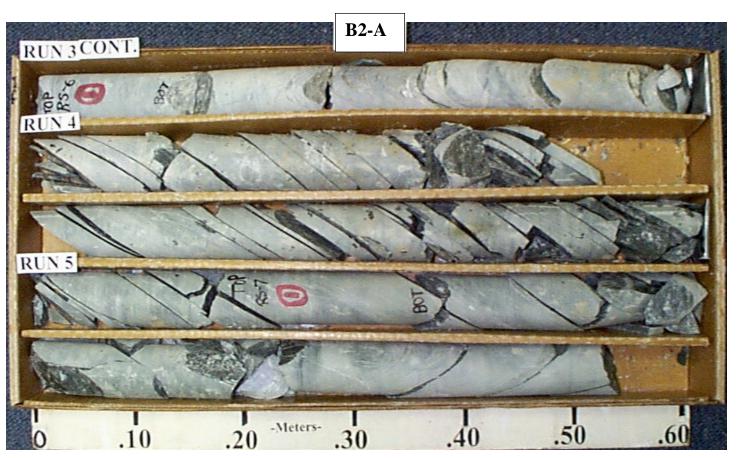


CORE PHOTOS

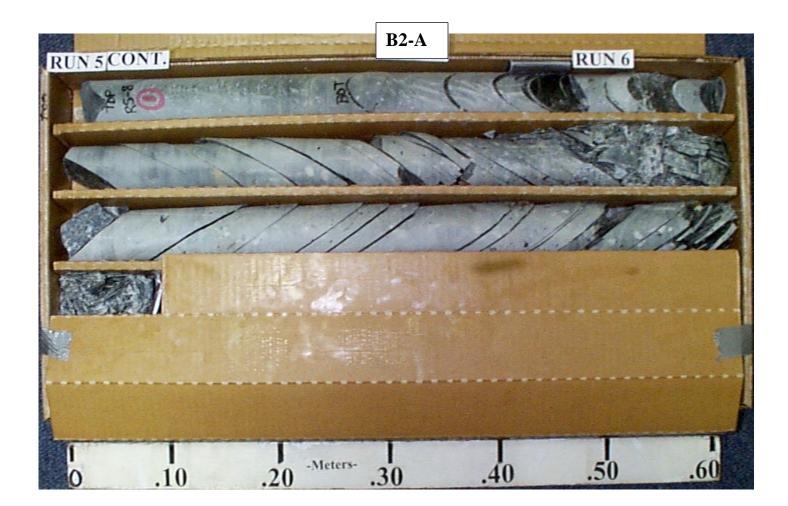


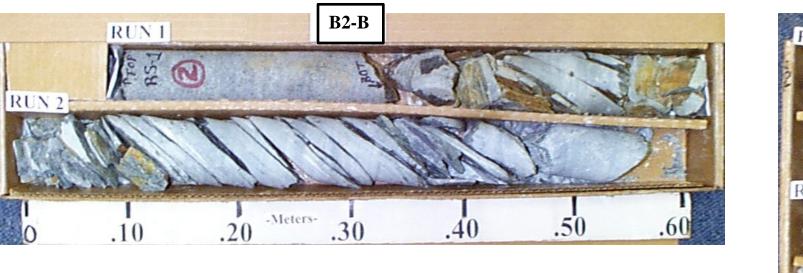


CORE PHOTOS



CORE PHOTOS





B2-B RUN 2 CONT. RUN 3 RUN 4 RUN 4 RUN 5 RUN

CORE PHOTOS



CORE PHOTOS

