## STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

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## STRUCTURE SUBSURFACE INVESTIGATION

	FERENCE I		50.1.1	I	F.A.	PROJ		
	DESCRIPT	-ION			HANGING	DOG	CREEK	
ITE DES	CRIPTION .							

STATE	STATE PROJECT REFE	RENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BD-5114K _ 4	5360.1.11	1	13

#### CAUTION NOTICE

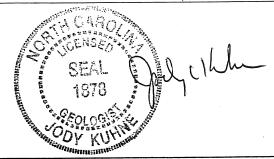
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FELD BORNING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENMINERING UNIT AT 1919/250-408B. NEITHER THE SUBSURFACE PLANS AND REPORTS. MOR THE FIELD BORNING LOSS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

CENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A CEDTECHNICAL INTERRECTATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARLY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA WITHIN THE BORRHOLE. THE LABORATORY SAMPLE DATA AND THE NISTU (IN-PLACE) TEST DATA CAN BE RELED ON ONLY TO THE DEGREE OF RELIABLITY INTERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE 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 DIFFERENT, FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR 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 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 OF 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.

	_BRETT SMITH
	F&H CONSULTANTS
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-	_ DO CHEEK
	_ DM MULLEN
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INVESTIGATED E	BY _ JC KUHNE
CHECKED BY	
	_ JC_KUHNE
DATE	15/2011
Physica de	

**PERSONNEL** 



## NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

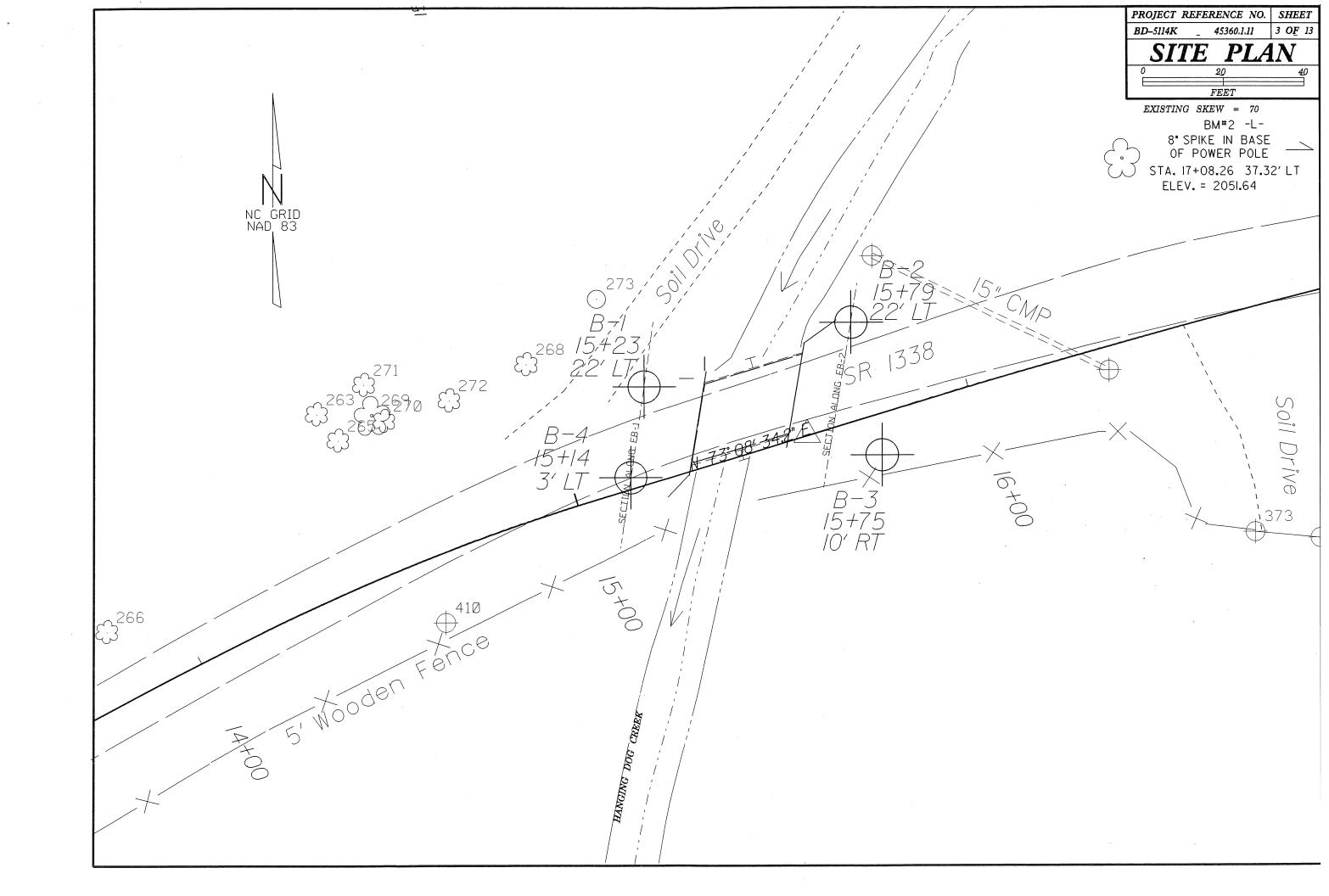
#### DIVISION OF HIGHWAYS

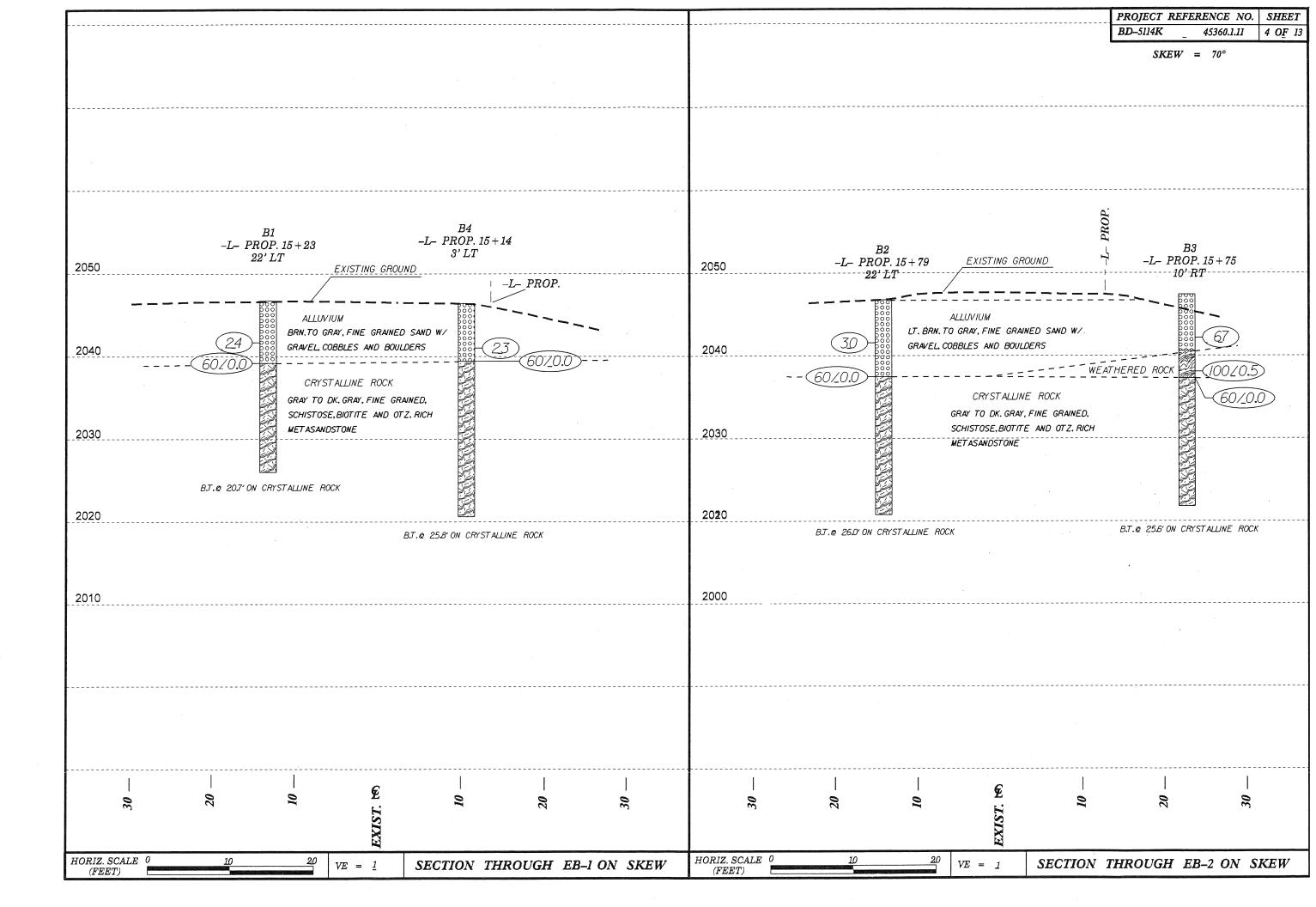
### GEOTECHNICAL ENGINEERING UNIT

## SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

				SOIL AND RO	CK LEGEND, TERM	s, symbol	S, AND ABBREVIA	ATIONS		
	SOIL DESCRIPTION			GRADATION			ROCK D	DESCRIPTION	CUCAL AN INCORPO	TERMS AND DEFINITIONS
con to dollerococo to be	THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR	WEATHERED EARTH MATERIALS	WELL GRADED - INDICATES A GOOD R UNIFORM - INDICATES THAT SOIL PAR	EPRESENTATION OF PARTICLE SIZES	FROM FINE TO COARSE. E SAME SIZE, (ALSO	POCK LINE INDI	NON-COASTAL PLAIN MATERIAL THAT ICATES THE LEVEL AT WHICH NON-CO	MASTAL PLAIN MATERIAL WOULD YII	ELU SPI REFUSAL.	ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.
THAT CAN BE PENETRATED W	ATTH A CONTINUOUS ELIGHT POWER AUGER, AND	YIELD LESS THAN	POORLY GRADED)  GAP-GRADED - INDICATES A MIXTURE			SPT REFLISAL IS	S PENETRATION BY A SPLIT SPOON S L PLAIN MATERIAL, THE TRANSITION	SAMPLER EQUAL TO OR LESS THAN	N 0.1 FOOT PER 60 BLOWS.	AGUIFER - A WATER BEARING FORMATION OR STRATA.  ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.
CLASSIFICATION IS BASED O	RDING TO STANDARD PENETRATION TEST (AASHT IN THE AASHTO SYSTEM, BASIC DESCRIPTIONS (	GENERALLY SHALL INCLUDE:		ANGULARITY OF GRAINS	OILLOI	OF WEATHERED				ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS,
CONSISTENCY, COLOR, TEXTUR AS MINERALOGICAL COMPOSIT	RE, MOISTURE, AASHTO CLASSIFICATION, AND OTH TION, ANGULARITY, STRUCTURE, PLASTICITY, ETC.	HER MERTINENT FACTORS SUCH .EXAMPLE:	THE ANGULARITY OR ROUNDNESS OF	SOIL GRAINS IS DESIGNATED BY THE	TERMS: ANGULAR,	WEATHERED	CITIZATION	_AIN MATERIAL THAT WOULD YIELD	SPT N VALUES > IAA	OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.
	FF, GRAY, SILTY CLAY, WOIST WITH INTERBEDOED FINE SAND LAYERS.		SUBANGULAR, SUBROUNDED, OR ROUND		011	ROCK (WR)	BLOWS PER FOOT	T (F TESTED.		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
	LEGEND AND AASHTO CLASS			DEPAR MICA TALC MOUTH ETC ARE		CRYSTALLINE ROCK (CR)	FINE TO COARSE	GRAIN IGNEOUS AND METAMORPHIC T REFUSAL IF TESTED, ROCK TYPE	ROCK THAT INCLUDES GRANITE,	GROUND SURFACE.
	AR MATERIALS SILT-CLAY MATERI PASSING *200) (> 35% PASSING *		MINERAL NAMES SUCH AS DUARTZ, FEI WHENEVER THEY ARE CONSIDERED OF	SIGNIFICANCE.	OSCO IN DESCRIPTIONS	ROCK (CR)	GNEISS, GABBRO, S	SCHIST, ETC.		CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
GROUP A-1 A-		A-7 A-1, A-2 A-4, A-5		COMPRESSIBILITY		NON-CRYSTALLINE ROCK (NCR)	SEDIMENTARY ROC	GRAIN METAMORPHIC AND NON-COA:	AL IF TESTED, ROCK TYPE	COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
CLASS. A-1-b 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 MODERATELY COMPRESSIBLE		LESS THAN 31 EQUAL TO 31-50	COASTAL PLAIN	CDASTAL PLAIN S	ITE, SLATE, SANDSTONE, ETC. SEDIMENTS CEMENTED INTO ROCK, B	BUT MAY NOT YIELD	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL
SYMBOL 000000000000000000000000000000000000			HIGHLY COMPRESSIBLE	LIQUID LIMIT	GREATER THAN 50	SEDIMENTARY ROCK	K SPT REFUSAL, RO SHELL BEDS, ETC.	OCK TYPE INCLUDES LIMESTONE, SAI	NDSTONE, CEMENTED	LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
% PASSING		SILT-	P	ERCENTAGE OF MATERIA LAR SILT - CLAY	AL	<u> </u>		ATHERING		DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.
* 10 50 MX * 40 38 MX 50 MX 51 H		GRANULAR CLAY PEAT	ORGANIC MATERIAL SOI	LS SOILS	OTHER MATERIAL		CK FRESH, CRYSTALS BRIGHT, FEW JO	DINTS MAY SHOW SLIGHT STAINING.	ROCK RINGS UNDER	DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE
	MX 35 MX 35 MX 35 MX 35 MX 36 MN 36 MN 36 MN		TRACE OF ORGANIC MATTER 2 - LITTLE ORGANIC MATTER 3 -		RACE 1 - 10% TTLE 10 - 20%	HAH	MMER IF CRYSTALLINE.			HORIZONTAL.
LIQUID LIMIT	40 MX 41 MN 40 MX 41 MN 48 MX 41 MN 40 MX		MODERATELY ORGANIC 5 -	10% 12 - 20% SC	DME 20 - 35%	VERY SLIGHT ROO (V SLI.) CRY	CK GENERALLY FRESH, JOINTS STAINE YSTALS ON A BROKEN SPECIMEN FAC	IED, SOME JOINTS MAY SHOW THIN O Œ SHINE BRIGHTLY. ROCK RINGS UN	CLAT CUATINGS IF OPEN, NDER HAMMER BLOWS [F	DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HÓRIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.
	P 18 HX 18 HX 11 HN 11 HN 10 HX 13 HX 11 HN	HIGHLY	HIGHLY ORGANIC >10	X >20% HI GROUND WATER	GHLY 35% AND ABOVE	OF	A CRYSTALLINE NATURE.			FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE
GROUP INDEX 0 0 USUAL TYPES STONE FRAGS.		AMOUNTS OF SOILS	✓ WATER LEVEL I	N BORE HOLE IMMEDIATELY AFTER	DRILLING	(SLIJ) 1 IN	CK GENERALLY FRESH, JOINTS STAINE NCH. OPEN JOINTS MAY CONTAIN CLA	AY. IN GRANITOID ROCKS SOME OCC	CASIONAL FELDSPAR	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.
OF MAJOR GRAVEL, AND SOL	NE SILTY OR CLAYEY SILTY CLAND GRAVEL AND SAND SOILS SOI	AYEY ORGANIC ILS MATTER	1 .	_EVEL AFTER _24_ HOURS		CRY	YSTALS ARE DULL AND DISCOLORED.	CRYSTALLINE ROCKS RING UNDER I	HAMMER BLOWS.	FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.
MATERIALS SAND SHIP	ND STATES THE STATE OF THE STAT				WILL OTTO T	(MOD.) GRA	GNIFICANT PORTIONS OF ROCK SHOW ANITOID ROCKS, MOST FELDSPARS ARE	RE DULL AND DISCOLORED, SOME SHO	OW CLAY, ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGED FROM PARENT MATERIAL.
AS A EXCELL	ENT TO GOOD FAIR TO PO	OR FAIR TO POOR UNSUITABL	-	, SATURATED ZONE, OR WATER BEAR	TING SIKATA	DUL	LL SOUND UNDER HAMMER BLOWS AND	ID SHOWS SIGNIFICANT LOSS OF STI	RENGTH AS COMPARED	FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY
SUBGRADE PLOF 4-7-5 SUB	 	SUBGROUP IS > LL - 30	SPRING OR SEE			MODERATELY ALL	TH FRESH ROCK. L ROCK EXCEPT QUARTZ DISCOLORED	OR STAINED. IN GRANITOID ROCKS	S, ALL FELDSPARS DULL	THE STREAM.
1101 H 7 3 300	CONSISTENCY OR DENSEN	IESS .	l l	MISCELLANEOUS SYMBOL	S	SEVERE ÁND	D DISCOLORED AND A MAJORITY SHOW D CAN BE EXCAVATED WITH A GEOLOG	W KAOLINIZATION, ROCK SHOWS SEV	VERE LOSS OF STRENGTH	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
PRIMARY SOIL TYPE	COMPACTNESS OR RANGE OF STAND	NARD RANGE OF UNCONFINED FENCE COMPRESSIVE STRENGTH	ROADWAY EMBANKMENT		ING SAMPLE DESIGNATIONS	<u>IF</u>	TESTED, WOULD YIELD SPT REFUSAL			JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
TIGHAN SOLE THE	CUNSISTENCY (N-VALUE)	(TONS/FT <sup>2</sup> )	WITH SOIL DESCRIPTION	•	S - BULK SAMPLE		L ROCK EXCEPT QUARTZ DISCOLORED STRENGTH TO STRONG SOIL. IN GRAI	O OR STAINED, ROCK FABRIC CLEAR	AND EVIDENT BUT REDUCED	LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO
GENERALLY	VERY LOOSE		SOIL SYMBOL	AUGER BORING		EX.	TENT. SOME FRAGMENTS OF STRONG	RDCK USUALLY REMAIN.		ITS LATERAL EXTENT.  LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.
GRANULAR MATERIAL	MEDIUM DENSE 10 TO 30	N/A	ARTIFICIAL FILL (AF) 0		SAMPLE		TESTED, YIELDS SPT N VALUES > 10		ENTS ARE DISCERNIDIE BUT	MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN
(NON-COHESIVE)	DENSE 30 TO 50  VERY DENSE >50		THAN ROADWAY EMBANK		ST - SHELBY TUBE SAMPLE	(V SEV.) THE	L ROCK EXCEPT QUARTZ DISCOLORED E MASS IS EFFECTIVELY REDUCED TO	TO SOIL STATUS, WITH ONLY FRAGME	ENTS OF STRONG ROCK	SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.  PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF A
	VERY SOFT <2	⟨∅,25	- INFERRED SOIL BOUNDAI	MONITORING W		REN	MAINING, SAPROLITE IS AN EXAMPLE STIGES OF THE ORIGINAL ROCK FABR	OF ROCK WEATHERED TO A DEGREE	E SUCH THAT ONLY MINOR	INTERVENING IMPERVIOUS STRATUM.
GENERALLY SILT-CLAY	SOFT 2 TO 4 MEDIUM STIFF 4 TO 8	0.25 TO 0.50 0.5 TO 1.0	INFERRED ROCK LINE	∧ PIEZOMETER	RT - RECOMPACTED TRIAXIAL	COMPLETE ROC	CK RETUCED TO SOIL ROCK FABRIC!	NOT DISCERNIBLE, OR DISCERNIBLE	ONLY IN SMALL AND	RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.
MATERIAL	STIFF 8 TO 15	1 TO 2	***** ALLUVIAL SOIL BOUNDA		SAMPLE	SCA	ATTERED CONCENTRATIONS, OUARTZ M	MAY BE PRESENT AS DIKES OR STR	RINGERS. SAPROLITE IS	ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF
(COHESIVE)	VERY STIFF 15 TO 30 HARD >30	2 TO 4	25/825 DIP & DIP DIRECTION C	F SLOPE INDICAT	CBR - CALIFORNIA BEARING	ALS	SO AN EXAMPLE,	HARDNESS		ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN ( EXPRESSED AS A PERCENTAGE.
	TEXTURE OR GRAIN SIZ	ZE	ROCK STRUCTURES	SPT N-VALUE	RATIO SAMPLE	WEDY LIVES CO	ANNOT BE SCRATCHED BY KNIFE OR		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	REF SPT REFUSAL		SI	EVERAL HARD BLOWS OF THE GEOLOG	GIST'S PICK.		PARENT ROCK.  SILL - AN INTRUSIVE BODY OF IGNEOUS BOCK OF APPROXIMATELY UNIFORM THICKNESS AND
OPENING (MM)	4.76 2.00 0.42 0.25	0.075 0.053	_	ABBREVIATIONS			AN BE SCRATCHED BY KNIFE OR PICK	K ONLY WITH DIFFICULTY, HARD HE	AMMER BLOWS REQUIRED	RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL
BOULDER COBBL	LE GRAVEL COARSE	FINE SILT CLAY	AR - AUGER REFUSAL	HI HIGHLY	ω - MOISTURE CONTENT	1	O DETACH HAND SPECIMEN. AN BE SCRATCHED BY KNIFE OR PICE	CK. GOUGES OR GROOVES TO 0.25 IN	NCHES 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
(BLDR.) (COB		(F SD.) (SL.) (CL.)	BT - BORING TERMINATED  CL CLAY	MED MEDIUM MICA MICACEOUS	V = VERY VST - VAME SHEAR TEST	HARD EX	XCAVATED BY HARD BLOW OF A GEOL	DLOGIST'S PICK. HAND SPECIMENS C	AN BE DETACHED	SLIP PLANE.
GRAIN MM 305	75 2.0 0.25	0.05 0.005	CPT - CONE PENETRATION TEST	MOD MODERATELY	WEA WEATHERED	MEDIUM C	Y MODERATE BLOWS. AN BE GROOVED OR GOUGED 0.05 INC	ICHES DEEP BY FIRM PRESSURE OF	KNIFE OR PICK POINT.	STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WI
SIZE IN. 12	MOISTURE - CORRELATION	OF TERMS	CSE COARSE  DMT - DILATOMETER TEST	NP - NON PLASTIC ORG ORGANIC	$\gamma$ - UNIT WEIGHT $\gamma$ - DRY UNIT WEIGHT	HARD C	AN BE EXCAVATED IN SMALL CHIPS	TO PEICES 1 INCH MAXIMUM SIZE E	BY HARD BLOWS OF THE	A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER, SPT REFUSAL IS PENETRATION EQUAL TO OR LESS
SOIL MOISTURE SCA	ETELD MOTOTUDE		DPT - DYNAMIC PENETRATION TE		<u>.</u>		OINT OF A GEOLOGIST'S PICK. CAN BE GROVED OR GOUGED READILY	BY KNIFE OR PICK, CAN BE EXCAV	VATED IN FRAGMENTS	THAN 0.1 FOOT PER 60 BLOWS.  STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH.
(ATTERBERG LIMITS)		E FOR FIELD MOISTURE DESCRIPTION	e - VOID RATIO F - FINE	SD SAND, SANDY		FI	ROM CHIPS TO SEVERAL INCHES IN S	SIZE BY MODERATE BLOWS OF A P	PICK POINT. SMALL, THIN	OF STRATUM AND EXPRESSED AS A PERCENTAGE.
		ALLY LIQUID; VERY WET, USUALLY	FOSS FOSSILIFEROUS FRAC FRACTURED, FRACTURES	SL SILT, SILTY SLI SLIGHTLY		1	IECES CAN BE BROKEN BY FINGER PI AN BE CARVED WITH KNIFE, CAN BE		OF PICK. PIECES 1 INCH	STRATA ROCK QUALITY DESIGNATION (SROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY
LL _ LIOUID LI		M BELOW THE GROUND WATER TABLE	FRAGS FRAGMENTS	TCR - TRICONE REFUSAL		SOFT OF	R MORE IN THICKNESS CAN BE BROKE	EN BY FINGER PRESSURE. CAN BE	SCRATCHED READILY BY	TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.
PLASTIC T	SEM SEM	ISOLID; REQUIRES DRYING TO	EULITOME	NT USED ON SUBJECT	PROJECT		INGERNAIL. CTURE SPACING	T BEDDI	ING	TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
RANGE < PLASTIC I		AIN OPTIMUM MOISTURE				TERM	SPACING	TERM	THICKNESS	BENCH MARK: _ BM #2 SPIKE IN BASE OF TELEPHONE POLE
PLL + LEASTICE		TO AT OR USAB COTTON		OVANCING TOOLS:	HAMMER TYPE:  AUTOMATIC MANUAL	VERY WIDE	MORE THAN 10 FEET	VERY THICKLY BEDDED THICKLY BEDDED	> 4 FEET L5 - 4 FEET	-L- STA. 17+08.26 37.32 'LT
OM OPTIMUM M SL SHRINKAGE	AUTO LOVE	LID; AT OR NEAR OPTIMUM MOISTURE	MOBILE B	CLAY BITS	A ROTONETTO L TIANGEL	WIDE MODERATELY	3 TO 10 FEET CLOSE 1 TO 3 FEET	THINLY BEDDED	0.16 - 1.5 FEET 0.03 - 0.16 FEET	ELEVATION: _ 2051.64 F
SL SHRINKAGE	REQU	UIRES ADDITIONAL WATER TO		6 CONTINUOUS FLIGHT AUGER	CORE SIZE:	CLOSE	0.16 TO 1 FEET LESS THAN 0.16 FEET	VERY THINLY BEDDED THICKLY LAMINATED	0.008 - 0.03 FEET	NOTES:
		AIN OPTIMUM MOISTURE	BK-5l	8' HOLLOW AUGERS	B	VERY CLOSE		THINLY LAMINATED	< 0.008 FEET	- <sup>1</sup> - <sup>1</sup> - <sup>1</sup>
	PLASTICITY		X CME-45C	HARD FACED FINGER BITS	N	FOR CERTIFIES	( ROCKS, INDURATION IS THE HARDEN	OURATION	TNG. HEAT, PRESSURE, ETC	-
	PLASTICITY INDEX (PI)	DRY STRENGTH		TUNGCARBIDE INSERTS	H		DIIDDING	G WITH FINGER FREES NUMEROUS OF		
NONPLASTIC	0-5 6-15	VERY LOW SLIGHT	CME-550 X	CASING X W/ ADVANCER		FRIABL		BLOW BY HAMMER DISINTEGRATES		
LOW PLASTICITY MED. PLASTICITY	6-15 16-25	MEDIUM	l	TRICONESTEEL TEETH	HAND TOOLS:  POST HOLE DIGGER	MODERA		CAN BE SEPARATED FROM SAMPLE	WITH STEEL PROBE;	
HIGH PLASTICITY	26 OR MORE	HIGH		7	HAND AUGER		BREAKS	EASILY WHEN HIT WITH HAMMER.		
	COLOR				SOUNDING ROD	INDURA		ARE DIFFICULT TO SEPARATE WITH JLT TO BREAK WITH HAMMER.	H STEEL PROBE;	
	UDE COLOR OR COLOR COMBINATIONS (TAN			]	VANE SHEAR TEST	EALDER		HAMMER BLOWS REQUIRED TO BREAK	K SAMPLE;	
MODIFIERS SUCH AS	LIGHT, DARK, STREAKED, ETC. ARE USED TO	DESCRIBE APPEARANCE.				EXIMEN		BREAKS ACROSS GRAINS.		
										REVISED 02/23/06







	WBS	45360	.1.11			T	ΊP	BD-5114k		COUN	TY	CHEROI	KEE				GEOLOGIST Kuhne, J. C.
	SITE	DESCR	IPTION	BR.	NO. 4	12 ON	I SF	R 1338 OVI	ER HAI	IGING [	oog	CREEK					GROUND WTR (fi
	BOR	ING NO.	B-1	也	PP	s	TA	TION 15+	23		0	FFSET	23 ft	LT			ALIGNMENT -L- PROP. 0 HR. FIAI
	COLI	AR ELE	<b>EV</b> . 2,	046.7	ft	T	ОТ	AL DEPTH	20.7	ft	N	ORTHING	5 56	88,24	ļ7 ———		<b>EASTING</b> 505,382 <b>24 HR</b> . FIAE
	DRILL	RIG/HAI	MMER E	FF./DA	TE F	kH9274	4 CN	ME-45C 85%	10/06/2	010			DRI	LL MI	ETHO	D SP	PT Core Boring HAMMER TYPE Automatic
	DRIL	LER C	ontract	Driller		s	TA	RT DATE	06/22/	11	C	OMP. DA			2/11	<del></del>	SURFACE WATER DEPTH N/A
	ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLC 0.5ft	0.5ft					PER FOO	OT 75	100	SAI N	MP. O.	MOI	L O G	SOIL AND ROCK DESCRIPTION  ELEV. (ft)  DEPTH (
	2050	_ - -	-													-	
	2045	2,041.7-	-	25	12	12					-				М	00000 00000 00000 00000 00000 00000 0000	ALLUVIAL BRN. TO GRAY, FINE GRAINED SAND W/ GRAVEL, COBBLES, BOULDERS
	2035	2,039.2	7.5	60/0.0	-												CRYSTALLINE ROCK GRAY TO DK. GRAY, FINE GRAINED, SCHISTOSE, BIOTITE AND QTZ. RICH METASANDSTONE
	2030	-					-										2,026.0
	2025		-		-											-	Boring Terminated BY AUGER REFUSAL at Elevation 2,026.0 ft IN CRYSTALLINE ROCK, METASANDSTONE
	2020		-														<del>-</del> - - -
	2010	-	- - - - -													-	- -
	2005	- - - - - -	- - - -													- - - - -	<del>-</del>
T.GDT 8/3/11			- - - - -					,								-	
SS.GPJ NC_DOT	1990	- - - - -	- - - -													-	· · - -
114K_BORELOC	1985	† - - - -	-														
DOT BORE SINGLE_BD-5114K_BORELOGS.GPJ_NC_DOT.GDT_8/3/11	1980	1	-														
OT BO		‡	-													-	

NCDOT GEOTECHNICAL ENGINEERING UNIT

SHEET

COUNTY CHEROKEE GEOLOGIST Kuhne, J. C. **TIP** BD-5114K WBS 45360.1.11 SITE DESCRIPTION BR. NO. 42 ON SR 1338 OVER HANGING DOG CREEK GROUND WTR (ft) 0 HR. ALIGNMENT -L- PROP. FIAD OFFSET 23 ft LT **STATION** 15+23 BORING NO. B-1 **NORTHING** 568,247 **EASTING** 505,382 24 HR. FIAD TOTAL DEPTH 20.7 ft COLLAR ELEV. 2,046.7 ft DRILL RIG/HAMMER EFF/DATE F&H9274 CME-45C 85% 10/06/2010 DRILL METHOD SPT Core Boring HAMMER TYPE Automatic **START DATE** 06/22/11 COMP. DATE 06/22/11 SURFACE WATER DEPTH N/A DRILLER Contract Driller CORE SIZE NQ2 TOTAL RUN 13.2 ft RUN REC. RQD (ft) (ft) % % STRATA
REC. RQD
(ft) (ft)
% % DRILL RATE (Min/ft) RUN ELEV DEPTH RUN (ft) (ft) SAMP. ELEV DESCRIPTION AND REMARKS ELEV. (ft) (ft) Begin Coring @ 7.5 ft CRYSTALLINE ROCK 2,039.2 7.5 3.2 2,039.2 -N=60/0.0 (3.2) (2.6) 3:39/1.0 100% 81% 2:00/1.0 1:43/1.0 (4.0) <u>2,036.0</u> <u>10.</u>7 (4.6) (4.6) 92% 92% 2,031.0 15.7 2:20/1.0 2:18/1.0 2:29/1.0 1:59/1.0 3:23/1.0 2030 2,026.0 20.7 Boring Terminated BY AUGER REFUSAL at Elevation 2,026.0 ft IN 2025 CRYSTALLINE ROCK, METASANDSTONE 2020 2015 2010 2005 2000 1995 1990 1985 일 1980 1975 1975 <u>5</u> 1970 1965 1960



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VBS	45360	.1.11			T	TIP	BD-5114	K COL	JNT	/ CHE	ROK	ŒE			GEOLOGIST Kuhne, J. C.	
ITE	DESCR	IPTION	N BR	. NO.	42 OI	N S	SR 1338 O\	ER HANGING	G DC	G CRE	EK					GROUND WTR
OR	NG NO.	B-2	EI	328	, [	ST	ATION 15	+79		OFFSE	ET 2	22 ft LT			ALIGNMENT -L- PROP.	0 HR. FI
OLI	AR ELE	<b>EV</b> . 2,	,046.8	ft		то	TAL DEPT	H 26.0 ft		NORT	HING	568,2	263		<b>EASTING</b> 505,433	<b>24 HR</b> . Fl
RILL	RIG/HAI	MER E	EFF/D/	ATE F	&H927	74 (	CME-45C 85	% 10/06/2010	1			DRILL I	METHO	D SI	PT Core Boring HA	MMER TYPE Automat
RIL	LER C	ontrac	t Drille	er	Ţ;	ST	ART DATE	06/22/11		COMP	. DA	TE 06/	22/11		SURFACE WATER DEPTH	N/A
LEV	DRIVE	DEPTH	BL	ow co	TAUC	T		BLOWS PER F	ООТ			SAMP.	V/	L	SOIL AND ROCK D	ECCDIDTION
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5f	t	0 2	5 50		75 1	100	NO.	МОІ		ELEV. (ft)	DEPT
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)45	_	-				-		+		+				500 500	<ul><li>LT. TO DK. BROWN, FIN</li><li>W/ RK FRAGS, COBBLE</li></ul>	E GRAINED SAND S AND BOULDERS
	2,042.1	4.7					1 :				: :			1008 1008 1008	-	
40	-		3	14	16			30		1		1	М	[553 [233]	- 	
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	_	-													<ul> <li>Boring Terminated BY AU</li> <li>Elevation 2,020.8 ft IN</li> </ul>	CRYSTALLINE
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NCDOT GEOTECHNICAL ENGINEERING UNIT

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WBS	45360	.1.11			TIP	BD-51	14K	C	TNUC	Y C	HEROI	KEE		GEOLOGI	ST Kuhne	, J. C.		
SITE	DESCR	PTION	I BR.	NO. 42 (	ON SR	1338	OVER H	ANGII	NG DO	OG C	REEK						GROUN	ID WTR (ft)
BOR	ING NO.	B-2			STAT	ION	15+79			OFI	SET	22 ft LT		ALIGNME	NT -L- PR	OP.	0 HR.	FIAD
COL	LAR ELE	<b>V</b> . 2,	046.8	ft	TOTA	AL DEF	<b>PTH</b> 26.	0 ft		NO	RTHING	<b>3</b> 568,263		EASTING	505,433		24 HR.	FIAD
DRILI	RIG/HA	MMER E	FF/DA	TE F&H9	274 CN	1E-45C	85% 10/06	6/2010				DRILL METH	IOD SPT	Core Boring		HAMN	IER TYPE	Automatic
DRIL	LER C	ontract	Driller		STAF	RT DA	Γ <b>E</b> 06/2:	2/11		со	MP. DA	TE 06/22/1	1	SURFACE	WATER DI	EPTH N	/A	
COR	E SIZE	NQ2			TOTA	AL RUI	16.7 ft			<u> </u>								
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	REC. (ft)	RQD (ft) %	SAMP. : NO.	STR REC. (ft) %	RQD (ft) %	L O G	ELEV.	(ft)	D	ESCRIPTION	I AND REMAF	RKS		DEPTH (ft)
2037.4	1 // // / /	0.3		11 00/0	(1.5)	(4.0)					- 2,037.5			Begin Cor	ring @ 9.3 f	<u>t</u>		9.3
2035	2,037.5- 2,035.8_ - -	11.0	5.0	N=60/0.0 1:36/0.7 3:24/1.0 1:44/1.0 1:31/1.0 1:32/1.0 1:34/1.0 1:50/1.0	(1.7) 100% (4.8) 96%	(1.2) 71% (4.8) 96%				1111	- 2,037.5 - - - -	٠.		CRISIA	LLINE ROCK			9.3
2030	2,030.8	<del>-</del> -	5.0	1:57/1.0 2:00/1.0 2:00/1.0 2:00/1.0	(5.0) 100%	(5.0) 100%					- - - -							
2025	_	<del>-</del> -	5.0	2:27/1.0 2:20/1.0 2:00/1.0 2:05/1.0 2:00/1.0	(4.9) 98%	(4.9) 98%					- - - -							26.0
	2,020.8	26.0		2:05/1.0							_ 2,020.8  - - -	Boring 1	Ferminated CRYS	d BY AUGER TALLINE RO	REFUSAL at CK, METASA	Elevation NDSTONE	2,020.8 ft IN	Z6.0
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WBS	45360	1.11		-	TI	<b>P</b> BD-5	114K	COUNT	Y CHERO	KEE			GEOLOG	SIST Kuhne, J	C.	
SITE	DESCR	IPTION	N BR.	NO. 4	12 ON	SR 1338	OVER HAN	GING DO	OG CREEK				1		GROU	ND WTR (f
BOR	NG NO.	B-3	EF	OK	S	TATION	15+75		OFFSET	10 ft RT			ALIGNME	ENT -L-, PROF	). 0 HR.	7.
OLI	AR ELE	<b>EV</b> . 2		<del></del>	TO	OTAL DE	PTH 25.6 f	t .	NORTHING				EASTING	505,441	24 HR.	FIA
RILL	. RIG/HAI	MMER E	FF/DA	TE F	 &Н9274	CME-45C	85% 10/06/20	)10	<b>!</b>	DRILL I	METHO	<b>D</b> SP	T Core Boring	1	HAMMER TYPE	Automatic
RIL	LER C	ontrac	t Driller	r	S	TART DA	TE 06/22/1	1	COMP. DA	<u> </u>			·	E WATER DEP	TH N/A	
_EV	DRIVE	DEPTH	BLC	ow co	UNT		BLOWS	PER FOOT	-	SAMP.	<b>V</b> /	L	<u> </u>	0011 4110 000	N/ DECODIDATION	
(ft)	ELEV (ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25	50	75 100	NO.	МОІ	O G	ELEV. (ft)	SOIL AND ROC	CK DESCRIPTION	N DEPTH
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	2,042.7-	- 4.7	16	48	19						M					
40		_									\_\\\_	777	2,040.6	WEATHE	RED ROCK	
	2,038.1 2,037.3	9.3 10.1	100:-											RN., FINE TO COA		
	2,037.3	10.1	100/.5 60/0.0						100+ 60/0.0				2,037.3	CRYSTAL	LINE ROCK	1
35													-	GRAINED, SCHI	RAY/BLACK, FIN STOSE, QTZ. AN	ID
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GEOLOGIST Kuhne, J. C. WBS 45360.1.11 **TIP** BD-5114K COUNTY CHEROKEE GROUND WTR (ft) SITE DESCRIPTION BR. NO. 42 ON SR 1338 OVER HANGING DOG CREEK ALIGNMENT -L- PROP. 0 HR. 7.0 OFFSET 10 ft RT BORING NO. B-3 STATION 15+75 FIAD **NORTHING** 568,230 **EASTING** 505,441 24 HR. TOTAL DEPTH 25.6 ft COLLAR ELEV. 2,047.4 ft HAMMER TYPE Automatic **DRILL METHOD** SPT Core Boring DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010 COMP. DATE 06/22/11 SURFACE WATER DEPTH N/A **START DATE** 06/22/11 **DRILLER** Contract Driller CORE SIZE NQ2 TOTAL RUN 15.5 ft STRATA REC. RQD (ft) (ft) % RUN DEPTH RUN (ft) DRILL RATE (Min/ft) RUN REC. RQD (ft) (ft) % % SAMP. DESCRIPTION AND REMARKS NO. DEPTH (ft) ELEV. (ft) Begin Coring @ 10.1 ft CRYSTALLINE ROCK 2.037.3 10.1 0.5 N=60/0.0 (0.5) (0.0) 5.0 1:24/0.5 100% 0% (4.6) (3.3) 92% 66% 3:15/1.0 (5.0) (4.2) 3:03/1.0 100% 84% 2030 3:22/1.0 3:30/1.0 (5.0) (3.8) 4:00/1.0 100% 76% 2,026.8 20.6 2025 3:20/1.0 3:27/1.0 3:36/1.0 2,021.8 25.6 Boring Terminated BY AUGER REFUSAL at Elevation 2,021.8 ft IN CRYSTALLINE ROCK, METASANDSTONE



SHEET

Color   Colo	NBS	45360	.1.11			Ti	P BD-5	5114	К	COUNT	Y CH	IEROP	KEE			GEOLO	GIST Kuhne, J	. C.		
LL RIGHAMMER EFF, DATE	SITE	DESCR	IPTION	N BR.	NO. 4	42 ON	SR 133	8 OV	ER HAN	GING DO	G CF	REEK						(	GROUNE	WTR (f
LL RIG/HAMMER EFF, DATE	3ORII	NG NO.	B-4	UV	1/1	SI	ration	15-	+14		OFF	SET :	3 ft LT	***********		ALIGNM	ENT -L- PROF	Р.	0 HR.	FIA
ILLER   Contract Driller   START DATE   06/25/11   COMP. DATE   06/25/11   SURFACE WATER DEPTH   N/A	COLL	AR ELE	<b>V</b> . 2	046.5	ft	TO	OTAL DI	EPTH	<b>d</b> 25.8 ft		NOR	THING	568,2	25		EASTIN	<b>G</b> 505,379	2	4 HR.	FIA
V   DRIVE   CH   DEPTH   BLOW COUNT   CH   CH   CH   CH   CH   CH   CH   C	DRILL	RIG/HAN	MER E	FF/DA	TE F	&H9274	CME-450	C 85%	% 10/06/20	10			DRILL N	METHO	D SF	T Core Borir	ng	НАММЕ	R TYPE	Automatic
SOL AND ROCK DESCRIPTION   O	ORILI	LER C	ontrac	t Driller	r	ST	TART DA	ATE	06/25/1	1	CON	IP. DA	TE 06/:	25/11		SURFAC	E WATER DEP	TH N/A		
(fit) (fit) 0.5ft 0.5ft 0.5ft 0 25 50 75 100 NO. MOI G ELEV.(fit)    Columbia	LEV	DRIVE FLEV		BLC	ow co	UNT							SAMP.	V/			SOIL AND RO	CK DESCF	RIPTION	
2,046.5 - GROUND SURFACE ALLUVIAL BRN/GRAY, FINE GRAINED SAND W/ RK FRAGS., COBBLES, BOULDERS  2,041.6 - 4.9  0 2,039.5 - 7.0  60/0.0  60/0.0  60/0.0  60/0.0  7,046.5 - GROUND SURFACE BRN/GRAY, FINE GRAINED SAND W/ RK FRAGS., COBBLES, BOULDERS  60/0.0  6	(ft)	(ft)	(ft)	0.5ft	0.5ft	0.5ft	0	25 	5 5	0	75 1	100	NO.	МО		ELEV. (ft)				DEPTH
2,046.5 - GROUND SURFACE ALLUVIAL BRN/GRAY, FINE GRAINED SAND W/ RK FRAGS., COBBLES, BOULDERS  2,041.6 - 4.9  0 2,039.5 - 7.0  60/0.0  60/0.0  60/0.0  60/0.0  7,046.5 - GROUND SURFACE BRN/GRAY, FINE GRAINED SAND W/ RK FRAGS., COBBLES, BOULDERS  60/0.0  6																			al.	
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5 2,041.6 4.9 11 14 9 23		-	_													2.046.5	- GROUN	D SURFAC	· E	
2,041.6 - 4.9	045	-		<del>                                     </del>	<u> </u>			· - j			T		1		200		ALI	UVIAL		DV
0 2,039.5 7.0 60/0.0 60		-	-												388	- е				KK
2,039.5 7.0 60/0.0 CRYSTALLINE ROCK GRAY TO DK. GRAY, FINE GRAINED, SEMI-SCHISTOSE, QTZ. AND BIOTITE RICH METASANDSTONE  2,020.7 Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE	-	2,041.6	- 4.9	11	14									١						
GRAY TO DK. GRAY, FINE GRAINED, SEMI-SCHISTOSE, QTZ. AND BIOTITE RICH METASANDSTONE  2,020.7  Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE	040	2,039.5	- - 7.0			3		•2	3		+-	60/0 0	,	M		-2,039.5	CDVCTA	I I INE PO	CK	
RICH METASANDSTONE  RICH METASANDSTONE  2,020.7  Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE		-	_	60/0.0													GRAY TO DK. GF	RAY, FINE	GRAINED	
2,020.7  Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE	035		-								-		-			_	RICH MET	SANDST	ONE	_
2,020.7  Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE		3									-	: : :								
2,020.7  Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE		]									-									
2,020.7  Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE	030	-						+			+-					-				
2,020.7  Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE		]	_								1:	: : :								
Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE	025	_	_													<del>-</del>				
Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE		_	_		ļ			-			-									
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ROCK, METASANDSTONE  ROCK, MET		_	_													- В	oring Terminated E Elevation 2,020.7	BY AUGER If IN CRY	REFUSAI STALLINE	L at
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## NCDOT GEOTECHNICAL ENGINEERING UNIT CORE BORING REPORT

GEOLOGIST Kuhne, J. C. COUNTY CHEROKEE **TIP** BD-5114K WBS 45360.1.11 GROUND WTR (ft) SITE DESCRIPTION BR. NO. 42 ON SR 1338 OVER HANGING DOG CREEK 0 HR. FIAD OFFSET 3 ft LT ALIGNMENT -L- PROP STATION 15+14 BORING NO. B-4 24 HR. FIAD **NORTHING** 568,225 **EASTING** 505,379 COLLAR ELEV. 2,046.5 ft TOTAL DEPTH 25.8 ft DRILL METHOD SPT Core Boring HAMMER TYPE Automatic **DRILL RIG/HAMMER EFF./DATE** F&H9274 CME-45C 85% 10/06/2010 COMP. DATE 06/25/11 SURFACE WATER DEPTH N/A **START DATE** 06/25/11 **DRILLER** Contract Driller TOTAL RUN 18.8 ft CORE SIZE NQ2 RUN REC. RC (ft) (f % | STRATA | L | REC. | RQD | O | (ft) | (ft) | G | DRILL RATE (Min/ft) RUN ELEV (ft) SAMP. NO. DEPTH RUN (ft) (ft) ELEV (ft) RQD (ft) % DESCRIPTION AND REMARKS (ft) ELEV. (ft) Begin Coring @ 7.0 ft CRYSTALLINE ROCK 2,039.5 . 2039.45 (3.8) (3.6) 100% 95% (4.9) (4.8) 98% 96% 2,030.7 15.8 4:14/1.0 5.0 5:01/1.0 (4.9) (4.9) 6:01/1.0 98% 98% 2030 8:36/1.0 6:20/1.0 5:39/1.0 2025 2,025.7 20.8 5:10/1.0 (5.0) (4.7) 4:37/1.0 100% 94% 3:50/1.0 3:52/1.0 2,020.7 25.8 Boring Terminated BY AUGER REFUSAL at Elevation 2,020.7 ft IN CRYSTALLINE ROCK, METASANDSTONE



# FIELD SCOUR REPORT

WBS:	45360.1.11 TIP:	BD-5114K	COUNTY: CHEROK	ŒΕ
DESCRIPTION(1): B	RIDGE NO. 42 ON SR 1	338 OVER HANG	ING DOG CREEK	
		EXISTING B	RIDGE	
Information from:	Field Inspection _ Other (explain) _	XX Micro	film (reel	pos:)
Bridge No.: 42 Foundation Type: W	2 Length: 25 VOOD PIERS ON CONC	Total Bents: 2 RETE STRIP FOO	Bents in Channel: 0	Bents in Floodplain:2_
EVIDENCE OF SO Abutments or En	COUR(2) nd Bent Slopes: NONE			
Interior Bents: N				
Channel Bed: N	ONE			
Channel Bank: <u>N</u>	E CORNER, EDGE OF	ABUTMENT		
EXISTING SCOUR Type(3): R	R PROTECTION IP RAP @ NE CORNER			
Extent(4): F	ROM ABUTMENT TO 10	)' UPSTREAM		
Effectiveness(5): E	FFECTIVE			
Obstructions(6): N	ONE			

#### **INSTRUCTIONS**

- 1 Describe the specific site's location, including route number and body of water crossed.
- 2 Note scour evidence at existing end bents or abutments (e.g. undermining, sloughing, degradations).
- 3 Note existing scour protection (e.g. rip rap).
- 4 Describe extent of existing scour protection.
- 5 Describe whether or not the scour protection appears to be working.
- 6 Note obstructions such as dams, fallen trees, debris at bents, etc.
- 7 Describe the channel bed material based on observation and/or samples. Include any lab results with report.
- 8 Describe the channel bank material based on observation and/or samples. Include any lab results with report.
- 9 Describe the material covering the banks (e.g. grass, trees, rip rap, none).
- 10 Determine the approximate floodplain width from field observation or a topographic map.
- 11 Describe the material covering the floodplain (e.g. grass, trees, crops).
- 12 Use professional judgement to specify if the stream is degrading, aggrading, or static.
- 13 Describe potential and direction of the stream to migrate laterally during the bridge's life (approx. 100 years).
- Give the design scour elevation (DSE) expected over the life of the bridge (approx. 100 years). This elevation can be given as a range across the site, or for each bent. Discuss the relationship between the Hydraulics Unit theoritical scour and the DSE. If the DSE is dependent on scour counter measures, explain (e.g. rip rap armoring on slopes). The DSE is based on the erodability of materials, giving consideration to the influence of joints, foliation, bedding characteristics, % core recovery, % RQD, differential weathering, shear strength, observations at existing structures, other tests deemed appropriate, and overall geologic conditions at the site.

			DES	IGN IN	FORM	<u>ATION</u>					
Channel Bed	Material(7):	SAND- A	\-2 TO A	\-2-4 WIT	ГН СОВЕ	BLES AN	ID BOUL	DERS			
	-										
Channel Bank	Material(8):	SAND- A	∖-2 TO A	\-2-4 WIT							
Channel Bar	nk Cover(9):	TREES,	SHRUB	S AND G	BRASS (	NORTH)	. GRASS	ONLY (	SOUTH)	)	
Floodplair	n Width(10):	> 200'								·	
	n Cover(11):										
Sti	ream is(12):	Ag	grading	-	Degr	ading		Sta	itic XX	-	
Channel Migration Te	ndency(13):	SLIGHTI	_Y TO T	HE WES	ST						
Observations and	Other Comm	ents:									
DESIGN SCOUR E	ELEVATION	S(14)				Feet	_XX_	Mete	ers	-	
	BENTS										
			*								<del>,</del>
							ļ				
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		•									
	L			l	<u> </u>	L		L		L	
Comparison of DSI	E to Hvdrauli	ics Unit th	neoretica	al scour:							
NO BSR AVAILAB											
SOIL ANALYSIS F	RESULTS FF	ROM CH	ANNEL	BED AN	D BANK	MATER	RIAL		<del>-,</del>	T	
Bed or Bank										ļ	
Sample No Retained #4					ļ					1	
Passed #10										-	
Passed #10											
Passed #200										<del> </del>	
Coarse Sand					<b></b>			_		İ	
Fine Sand											
Silt										1	
Clay											
LL										1	
PI											
AASHTO											
Station											
Offset											
Depth										<u> </u>	

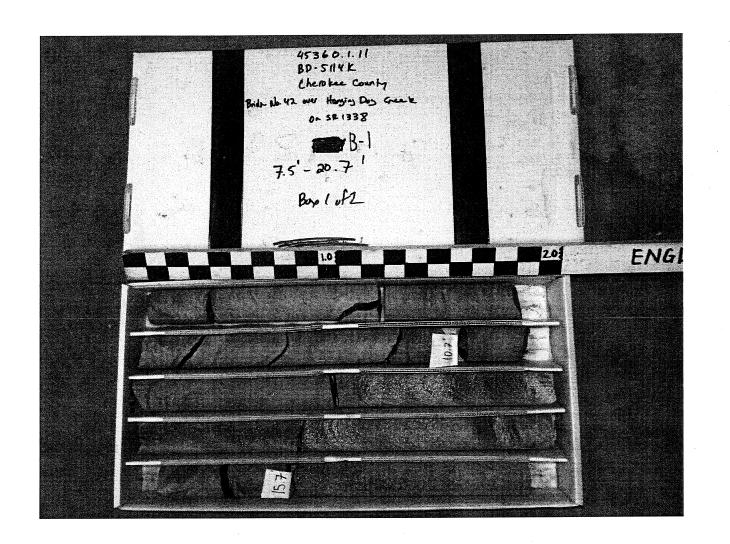
Template Revised 02/07/00

Reported by: \_

Date: 8 7 20

BORING B1 BOX 1 OF 2

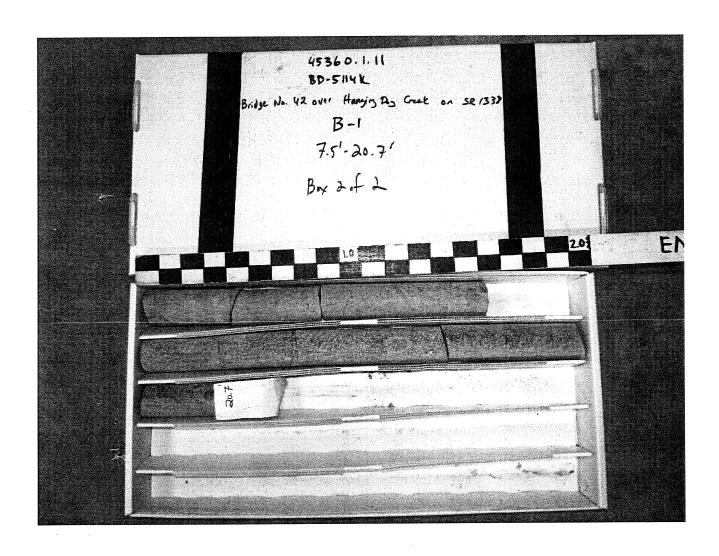
DEPTH: 7.5' – 16.7'



BD-5114K, 45360.1.11

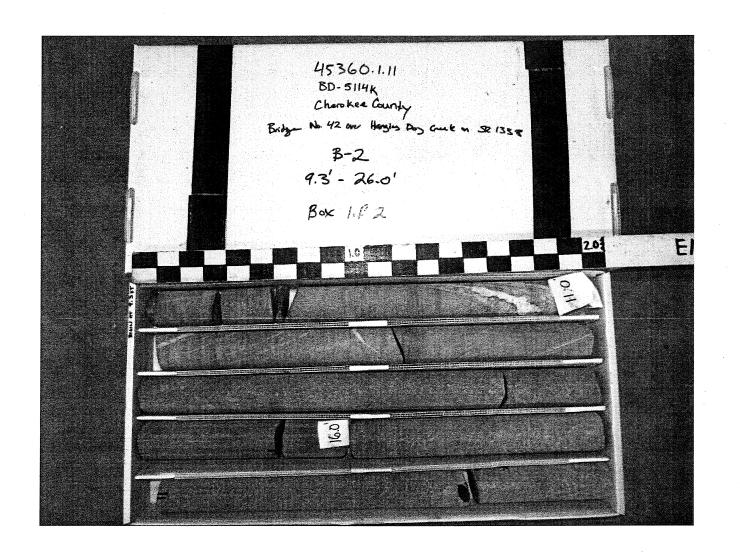
BORING B1 BOX 2 OF 2

DEPTH: 16.7' – 20.7'



BORING B2 BOX 1 OF 2

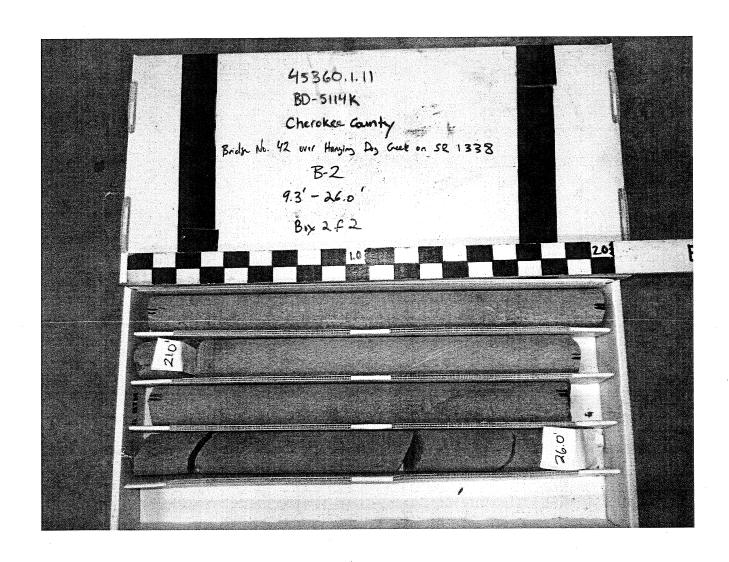
DEPTH: 9.3' – 19.2'



BD-5114K, 45360.1.11

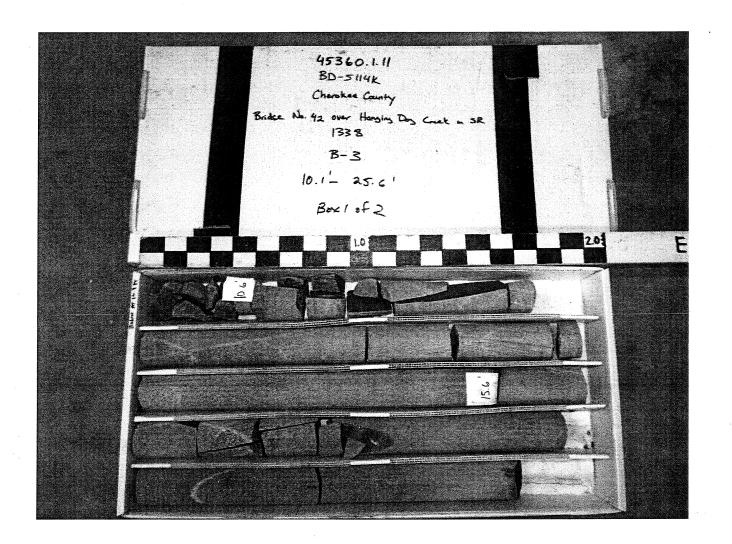
BORING B2 BOX 2 OF 2

DEPTH: 19.2' – 26.0'



BORING B3 BOX 1 OF 2

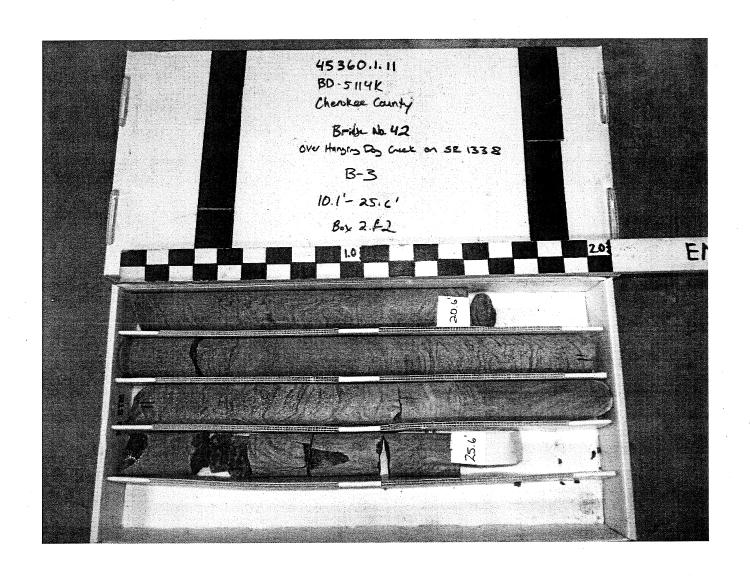
DEPTH: 10.1' – 19.4'



BD-5114K, 45360.1.11

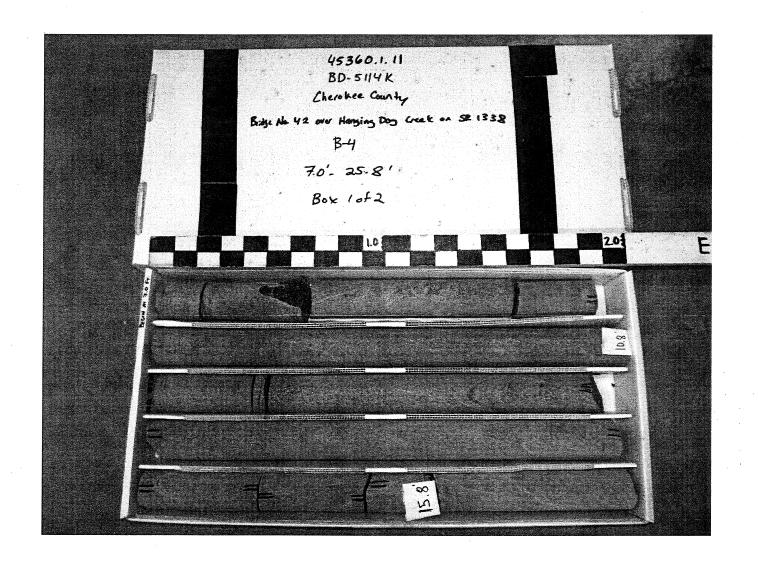
BORING B3 BOX 2 OF 2

DEPTH: 19.4' – 25.6'



BORING B4 BOX 1 OF 2

DEPTH: 7.0' – 16.7'



BD-5114K, 45360.1.11

BORING B4 BOX 2 OF 2

DEPTH: 16.7' – 25.8'

