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DRAWN BY: ____J.W. MANN

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT

STRUCTURE SUBSURFACE INVESTIGATION

STAT	ΓE P	ROJECT_	8.2732	<u> 701 </u>	I.D.	NO.	B-3	<u> 3126</u>
F.A.	PR0.	JECT	BRZ-171	8(3)				
		DESCRIF						
		,						
SITE	DES	CRIPTION	BRIDGE	E NO.	90	ON	SR	1718
			OVFR					

8.2732701		В	(Z-1718G)		P.E.	
STATE PRO	U.NO.	P.	A. PROJ. NO.		DESCRIP	TION
N.C.]	B-3	126		1	23
STATE S	TATE PRO	RCL	REFERENCE	NO.	SHEET NO.	TOTAL SHRETS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOLL TEST DATA AVAILABLE MAY EDER REVEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL UNIT @ (99) 250-4088, NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOLL TEST DATA IS 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 BORNES 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 DEGREE OF RELIABLITY INHERENT 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 MY 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 DEFERENT. FOR BIDDING AND 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 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.

INVESTIGATED BY J.W. MANN PERSONNEL D.O. CHEEK

CHECKED BY W.D. FRYE J.T. WILLIAMS

SUBMITTED BY W.D. FRYE E.A. SMITH

DATE JANUARY 2001 T.B. DANIEL

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - 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.



AL J. Truze Jr.

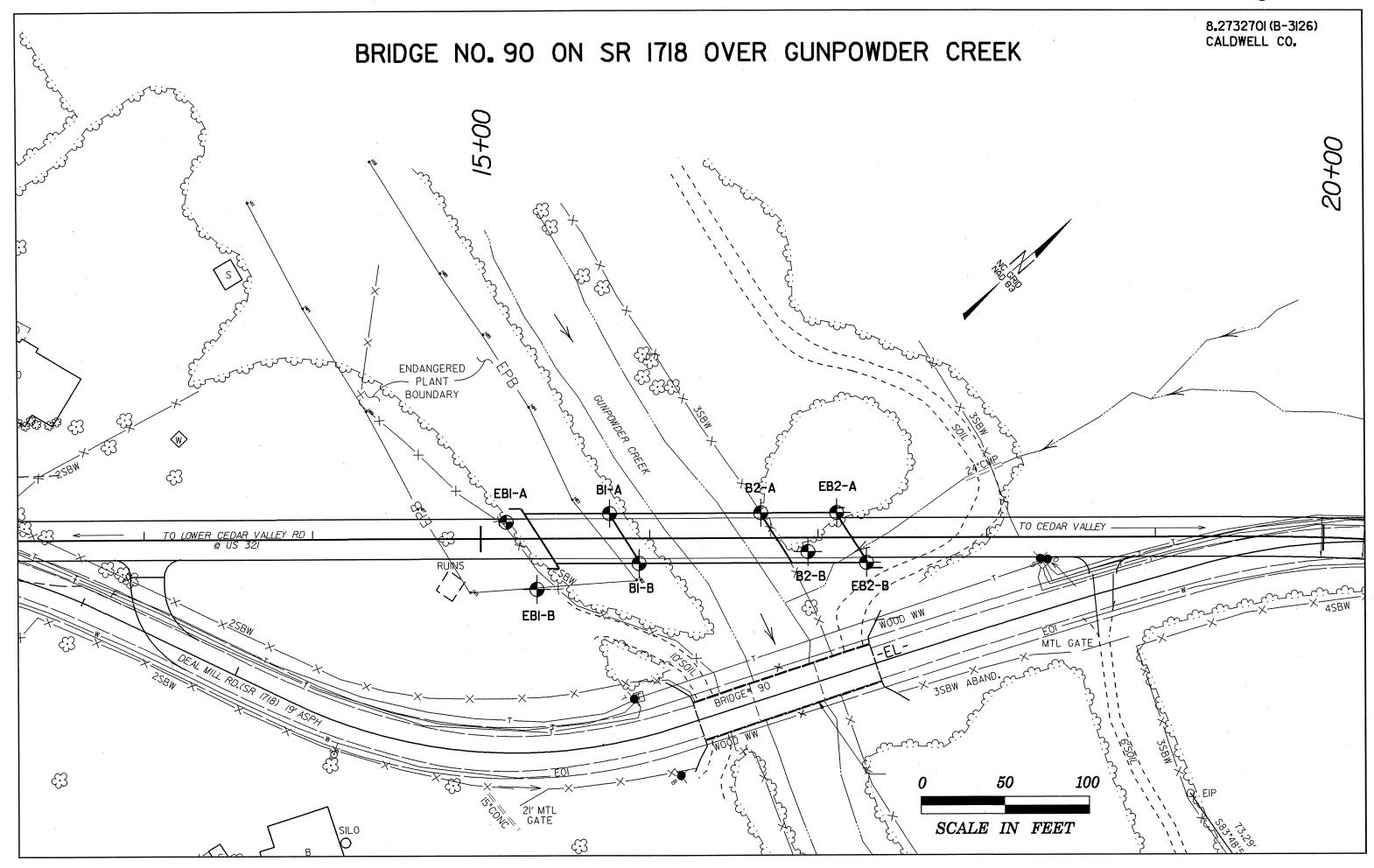
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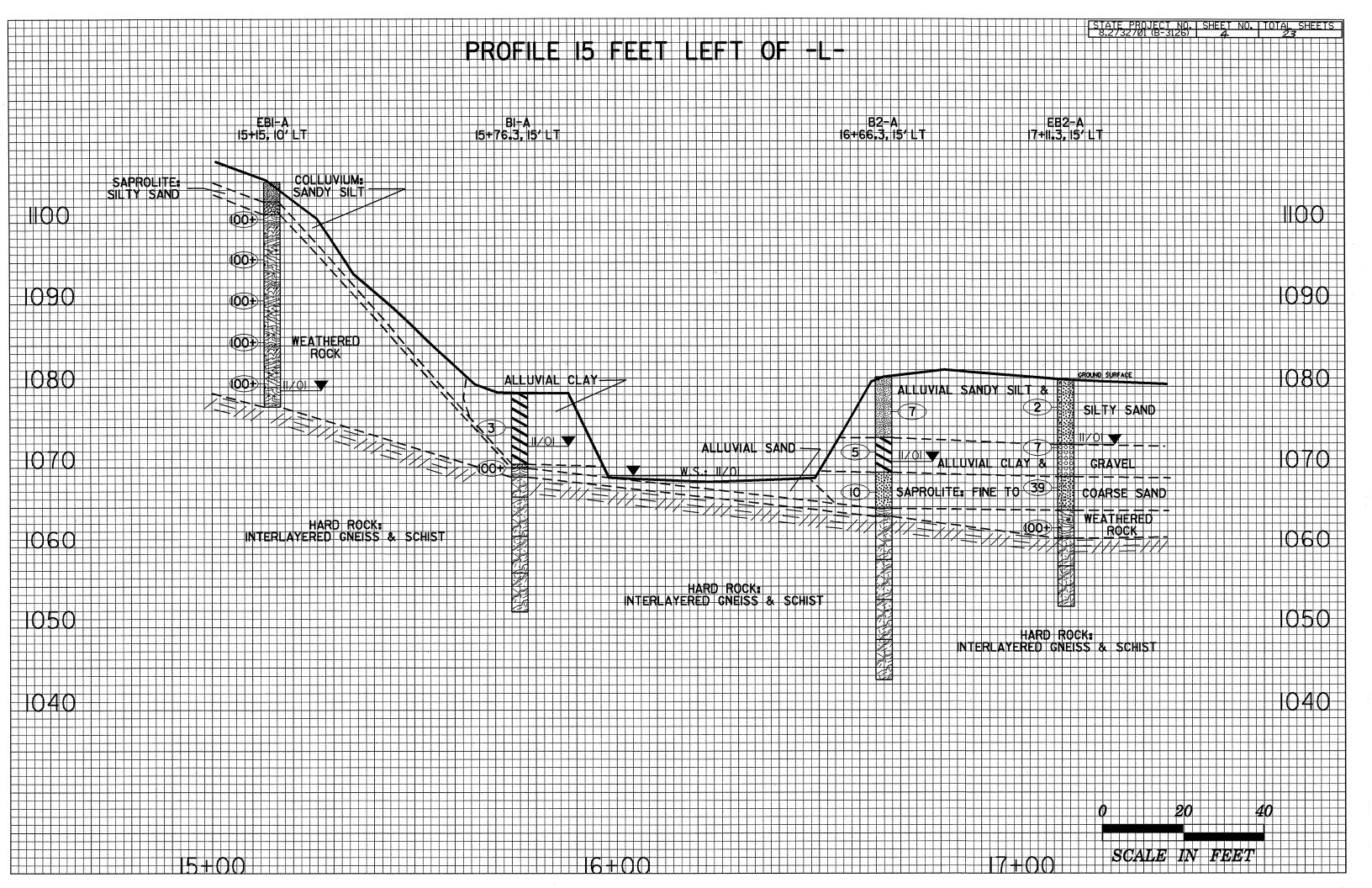
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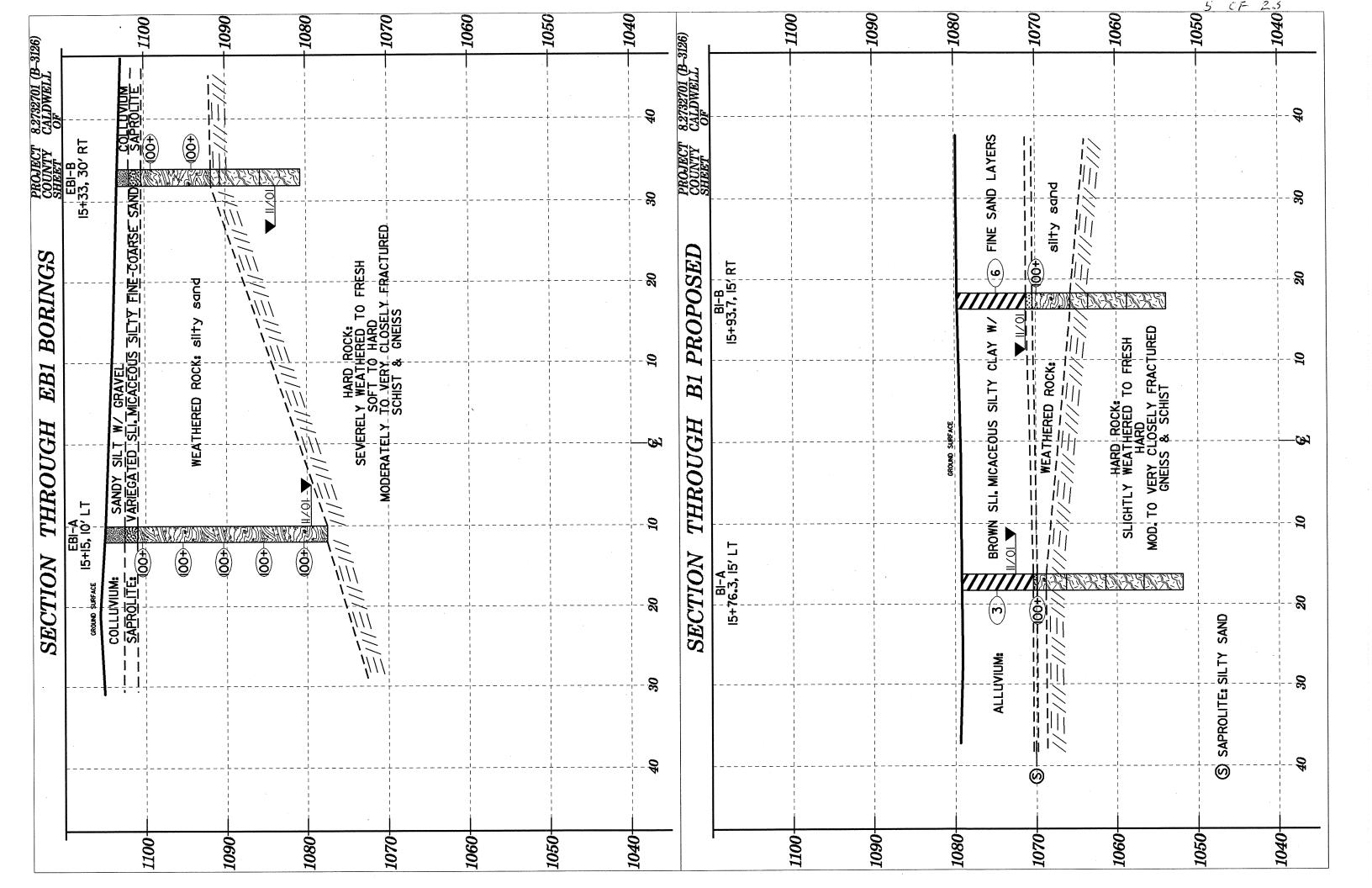
SUBSURFACE INVESTIGATION

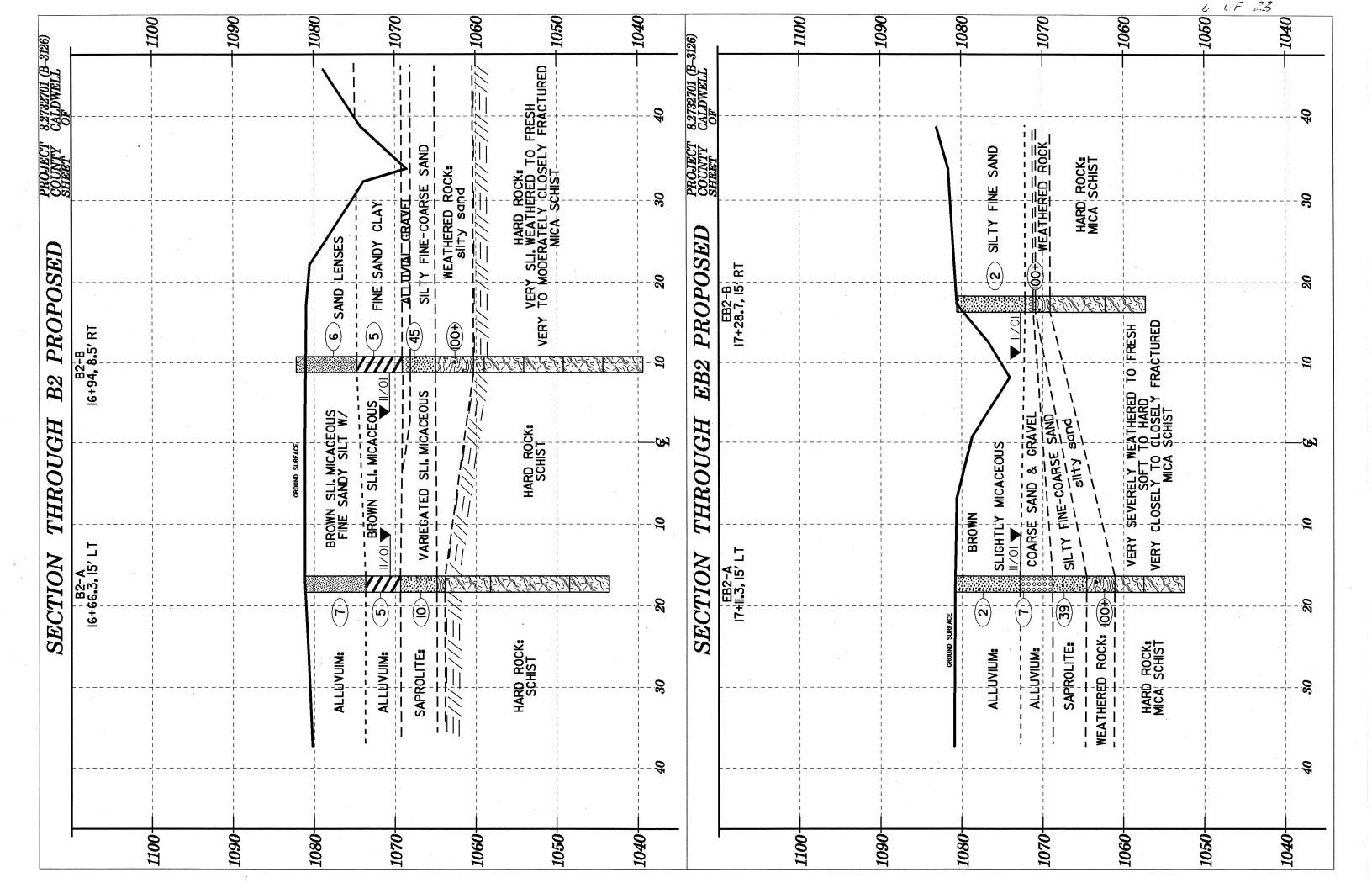
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	SOIL AND RO	CK LEGEND, TERMS	s, symbols, and a	BBREVIATIONS			
SOIL DESCRIPTION	GRADATION			ROCK DESCRIPTION	TERMS AND DEFINITIONS		
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T286, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO CLASSIFICATION, SEDERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH	WELL GRADED- INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FF UNIFORM- INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE POORLY GRADED: GAP-GRADED- INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MI ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE	ORE SIZES.	ROCK LINE INDICATES THE LEVEL SPT REFUSAL IS PENETRATION BY	I MATERIAL THAT WHEN TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. AS SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZON DIVIDED AS FOLOWS:	ALLUVIUM (ALLUV.) - SOILS WHICH HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND, ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS,		
AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: VERY STIFF, GRAY SULY CLAY, MOST WITH INTERSEDGED FINE SAND UNERS, HIGHLY PLASTIC, A-7-6	SUBANGULAR, SUBROUNDED, OR ROUNDED.	TERRIS; HNOOLHR,		NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER FOOT.	OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC. ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL		
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITIO		CDYSTALL INE	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT	AT WHICH IS IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.		
GENERAL GRANULAR MATERIALS SILT-CLAY MATERIALS ORGANIC MATERIALS (\$5% PASSING *200) (\$5% PASSING *200)	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	USED IN DESCRIPTIONS	ROCK (CR)	WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.	CALCAREOUS (CALC.) - SOILS WHICH 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 SLIGHTLY COMPRESSIBLE LIQUID LIMIT	LESS THAN 30	NUN-CRYSTALLINE	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED, ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.	COLLUYIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.		
CLHSS. A-1-to A-1-to A-2-to A-2	MODERATELY COMPRESSIBLE LIQUID LIMIT		COASTAL PLAIN SEDIMENTARY ROCK	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL, ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED	CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.		
2 PASSING SILT-	PERCENTAGE OF MATERIA	ìL	(P)	SHELL BEDS, ETC. WEATHERING	DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT		
* 10 50 MX GRANULAR CLAY MUCH	URBANIC MATERIAL SOILS SOILS	OTHER MATERIAL		BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER	ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE		
* 200 15 MX 25 MX 10 MX 35 MX 35 MX 35 MX 35 MX 36 MX 40 MX 41 MX 41 MX 42 MX 42 MX 43 MX 43 MX 43 MX 44 MX	LITTLE ORGANIC MATTER 3 - 5% 5 - 12% LIT MODERATELY ORGANIC 5 - 10% 12 - 20% SQI	HE 20 - 33%		NE. SH JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. ON SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF	HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF		
PLASTIC BIDEX 6 MX N.P. 10 MX 10 MX 11 MN 11 MN 10 MX 10 MX 11 MN 11 MN LITTLE OR HIGHL GROUP INDEX 0 0 0 4 MX 8 MX 12 MX 16 MX No MX MODERATE ORGAN		GHLY 35% AND ABOVE	OF A CRYSTALLINE NA		THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH, FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE		
USUAL TYPES STONE FRACS. OF MAJOR GRAVEL AND SOLUTION SO	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER	DRILLING.	(SLI.) 1 INCH. OPEN JOINTS	NAY CONTAIN CLAY, IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.	SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.		
MATERIALS SAND SAND GRAVEL AND SAND SUILS SUILS SUILS	STATIC WATER LEVEL AFTER 24 HOURS. PERCHED WATER, SATURATED ZONE OR WATER BEAF	DING CIDATA		OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN T FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY, ROCK HAS	FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.		
AS A EXCELLENT TO GOOD FAIR TO POOR POOR POOR UNSUIT/ SUBGRADE P.I. OF A-7-5 ≤ L.L 30 : P.I. OF A-7-6 > L.L 30	BLE SPRING OR SEEPAGE	ALMO STATE	DULL SOUND UNDER H	MMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED	FLOOD PLAIN (F.P.) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM,		
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS		SEVERE AND DISCOLORED AND	RRTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL A MAJORITY SHOW KAOLINIZATION, ROCK SHOWS SEVERE LOSS OF STRENGTH ED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK,	FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.		
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARO RANGE OF UNCONFINED PENETRATION RESISTENCE (N-VALUE) (TONS/FT2)	ROADWAY EMBANKMENT ROADWAY EMBANKMENT WITH SOIL DESCRIPTION SPT CPT DPT OMT TEST BORI	NG SAMPLE DESIGNATIONS	<u>IF TESTED, WOULD YIE</u>	LD SPT REFUSAL	JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.		
GENERALLY VERY LOOSE 44	SOIL SYMBOL AUGER BORING	DESIGNATIONS	(SEV.) IN STRENGTH TO STRE	JARTZ DISCOLORED OR STAINED ROCK FABRIC CLEAR AND EVIDENT BUT REDUCI ING SOIL, IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME INTS OF STRONG ROCK USUALLY REMAIN.	ITS LATERAL EXTENT.		
GRANULAR MEDIUM DENSE 10 TO 30 N/A	ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS OTHER THAN ROADWAY EMBANKMENTS OTHER THAN ROADWAY EMBANKMENTS MONITORING WE	SS- SPLIT SPOON SAMPLE ST- SHELBY TUBE	VERY SEVERE ALL ROCK EXCEPT OU (V. SEV.) THE MASS IS EFFECT! REMAINING, SAPROLITE	<u>IT N VALUES > 100 BPF</u> RRIZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT VELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR	LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE. PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN		
GENERALLY SOFT 2 TO 4 0.25 TO 0.5 SILT-CLAY MEDIUM STIFF 4 TO 8 0.5 TO 1	SITE INFERRED ROCK LINE A PIEZOMETER INSTALLATION	RS- ROCK SAMPLE	COMPLETE ROCK REDUCED TO SO	GINAL ROCK FABRIC REMAIN. IF TESTED, YIELDS SPI N VALUES < 100 BPF L. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND	INTERVENING IMPERVIOUS STRATUM. RESIDUAL SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.		
MATERIAL STIFF 8 TO 15 1 TO 2 (COHESIVE) VERY STIFF 15 TO 30 2 TO 4 HARD >30 >4	SLOPE INDICATE		SCATTERED CONCENTRA ALSO AN EXAMPLE.	ATIONS, QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS, SAPROLITE IS	ROCK QUALITY DESIGNATION (R.Q.D.) - 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	25/025 DIP/DIP DIRECTION OF INSTALLATION ROCK STRUCTURES SPT N-VALUE	CBR - CBR SAMPLE		ROCK HARDNESS	EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL WHICH RETAINS THE RELIC STRUCTURE OR FABRIC OF THE		
U.S. STD. SIEVE SIZE 4 10 40 60 200 270 OPENING (MM) 4.76 2.0 0.42 0.25 0.075 0.053	• - SOUNDING ROD REF SPT REFUSAL		SEVERAL HARD BLOW	ED BY KNIFE OR SHARP PICK, BREAKING OF HAND SPECIMENS REQUIRES S OF THE GEOLOGISTS PICK,	PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND		
POLITOR CORPLE CRAVEL COARSE FINE STIT CLAY	ABBREVIATIONS		TO DETACH HAND SP		RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, WHICH HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS		
(BLDR.) (COB.) (GR.) (GSE. SD.) (SL.) (GL.) GRAIN MM 305 75 2.0 0.25 0.05 0.005	AR - AUGER REFUSAL PMT - PRESS BT - BORING TERMINATED SD SAND, SA CL CLAY SL SILT, SI			BY KNIFE OR PICK, GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE BLOW OF A GEOLOGISTS PICK, HAND SPECIMENS CAN BE DETACHED	SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.		
SIZE IN. 12* 3' SOIL MOISTURE - CORRELATION OF TERMS	CPT - CONE PENETRATION TEST SLI SLIGHT CSE, - COARSE TCR - TRICON DMT - DILATOMETER TEST	NE REFUSAL	MEDIUM CAN BE GROOVED OR HARD CAN BE EXCAVATED	GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. 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 B.P.F.) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF LFOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS LESS THAN 0.1 FOOT PENETRATION		
SOIL MOISTURE SCALE SOIL MOISTURE SCALE (ATTERBERG LIMITS) DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	DPT - DYNAMIC PENETRATION TEST 7d - DRY UI	NIT WEIGHT		STS PICK. SOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FRAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN	WITH 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH		
- SATURATED - USUALLY LIQUID; VERY WET, USUALLY	F FINE W - MOISTURI FOSS FOSSILIFEROUS V VERY FRAC FRACTURED VST - VANE S		PIECES CAN BE BRO	EMAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN YEAR BY FINGER PRESSURE. H KNIFE, CAN BE EXCAVATED READILY WITH POINT OF PICK, PIECES 1 INCH	OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (S.R.O.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY:		
LL LIQUID LIMIT (SAT.) FROM BELOW THE GROUND WATER TABLE SEMISOLIDE REQUIRES DRYING TO	FRAGS FRAGMENTS MED MEDIUM			SS 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. TOPSOIL (1.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.		
RANGE - WET - (W) SEMISULLOT REGULARS BRING TO ATTAIN OPTIMUM MOISTURE	EQUIPMENT USED ON SUBJECT	PROJECT	FRACTURE SPACE	TEDM THICKNESS			
MOTOT (A) SOLIDAT OD NEAD OPTIMIM MOTOTIL	DRILL UNITS: ADVANCING TOOLS:	HAMMER TYPE: AUTOMATIC MANUAL	VERY WIDE MORE TH	IAN 10 FEET VERY THICKLY BEDDED > 4 FEET	BENCH MARK: BM-2 RR SPIKE IN 36' MAPLE TREE		
OM _ OPTIMUM MOISTURE - MOIST - (M) SULLU; AT UR NEAR OPTIMUM MOISTUR SL _ SHRINKAGE LIMIT	MOBILE B- CLAY BITS G*CONTINUOUS FLIGHT AUGER		WIDE 3 TO 10 MODERATELY CLOSE 1 TO 3 F CLOSE 0.16 TO	FEET THINLY BEDDED 0.16 - 1.5 FEET	ELEVATION: 1084.85 FT		
- DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE	BK-51 8* HOLLOW AUGERS	CORE SIZE:		AN 0.16 FEET THICKLY LAMINATED 0.008 FEET THINLY LAMINATED < 0.008 FEET	NOTES:		
PLASTICITY	CME-45 HARD FACED FINGER BITS	X -N XWL	EOD GEDIMENTADA BOOKS INDIRATION	INDURATION I IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.	-		
PLASTICITY INDEX (PI) DRY STRENGTH · NONPLASTIC 0-5 VERY LOW	TUNG,-CARBIDE INSERTS X CME-550	-H	,	RUBBING WITH FINGER FREES NUMEROUS GRAINS;			
LOW PLASTICITY 6-15 SLIGHT	CASING A W/ ADVANCER	HAND TOOLS:	FRIABLE	GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.			
HIGH PLASTICITY . 26 OR MORE HIGH	PORTABLE HOIST TRICONE STEEL TEETH	POST HOLE DIGGER HAND AUGER	MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.			
COLOR	OTHER TRICONE TRICONE TUNGCARB.	SOUNDING ROD	INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.			
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YEL-BRN, BLUE-GRAY) MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.	OTHER OTHER	VANE SHEAR TEST	EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.			
	<u> </u>		Li	AHILLE CONTH CYHDUC	DEVICED 00/15/00		









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			DGE			SR 1718		JNPOW	DER CRE	r			· · · · · · · · · · · · · · · · · · ·	GND WATER
BORING		<i>+</i>				HING 0.0			····	EASTING				0 HR 11.50ft
ALIGNM						IG LOCAT				OFFSET		LT	y	24 HR 25.50ft
COLLAR					TOTA:	L DEPTH	27.50ft		START DA	TE 11/26	/01		COMPLETION D.	ATE 11/27/01
DRILL M	ACHINE (CME-	550 X			·	DRILL	метно	D H.S. AL	JGERS			HAMMER TYPE	AUTOMATIC
SURFACE	E WATER						DEPTH	TO ROC	CK 27.50ff				Log EB1-A, Page 1 of 1	
ELEV	DEPTH	BI	_OW	CT	PEN	E	BLOWS F			SAMPLE	Y /			ID ROCK
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PROJECT	ΓNO 8.27	32701			ID B-3	126	COU	NTY CA	LDWELL		GEO	LOG	IST T.B.DANIEL	
SITE DES	CRIPTION	BRI	DGE I					JNPOW	DER CRE					GND WATER
BORING	NO EB1-B	3		1	NORTI	HING 0.0	0			EASTING	0.00			0 HR 16.00ft
ALIGNM	ENT -L-			1	BORIN	G LOCAT	TION 15-	+33.000		OFFSET	30.00ft	RT		24 HR 19.60ft
COLLAR	ELEV 110	03.35f	t		FOTAI	DEPTH	22.70ft		START DA	ATE 11/26	01		COMPLETION D	ATE 11/26/01
DRILL M	ACHINE (CME-5	550 X				DRILL	METHO	D SPT CO	ORE BORIN	NG		HAMMER TYPE	AUTOMATIC
SURFACI	E WATER								CK 11.60f				Log EB1-B, Page 1 of 1	
ELEV	DEPTH		OW (PEN		BLOWS F			SAMPLE	MOI	닔		ID ROCK
		6in	6in	6in	(ft)	0 2	25 (50 I	75 10	NO NO	MOI	Ğ	DESCF	RIPTION
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1103.35								Surface					COLLUMBA	RED/BROWN
1100.00_	‡													WITH GRAVEL /
1100.00	4.20	55	45		0.8					SS-8	М		SAPR	OLITE:
	‡										'*'	S		NWHITE SILTY
	† † 9.20	50			0.1				50_					ARSE SAND
	‡ 3.20	30			"				2	N			WEATHER	RED ROCK
4000 00	‡									CORE#1			CNEISS & M	IICA SCHIST
1090.00_	_									CORE#2	V			RQD=91% /
	<u> </u>													ED SCHIST &
1	Ł									CORE#3	*		GNEISS REC=	96% RQD=22%
-	Ł			1							- ▼			ED SCHIST &
1080.65 -	+												GNEISS REC=	96% RQD=30%
1000.03	F					BORING	TERMO	ATED	NEROCKE					
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,					CC	RE	DATE 11/26/01 BORING REPORT
						,	
PROJE	CT: _	8.2732	2701	I. D. NO:	B-3′	126	BORING NO: EB1-B GEOLOGIST: J.W. MANN
DESCR	IPTION	: BRID <u>GE</u>	NO. 90	OON SR	1718 OV	ER GUI	NPOWDER CREEK
COUNT	Y:	CALDWI	<u>ELL</u>		COLLA	R ELE\	/ATION:1103.4 FT TOTAL DEPTH:22.7 FT.
		DRILL		REC.	RQD.		
ELEV.			RUN	FEET	FEET	SAMP.	FIELD CLASSIFICATION AND REMARKS
(FEET)		MIN./FT.	(FEET)	%	%	#	
1091.8	11.6		1.1	1.0	1.0		
			' '	91	91		
1090.7	12.7						
1090.7	12.7						INTERLAYERED MICA SCHIST & GRANITIC GNEISS. ROCK IS SEVERELY
				4.8	1.1		WEATHERED TO FRESH, SOFT TO HARD, & MODERATELY CLOSELY TO
			5.0	96	22		VERY CLOSELY FRACTURED.
1085.7	17.7			96	22		
1085.7	17.7						
	·			4.8	1.5		
			5.0				
	`			96	30		
1080.7	22.7			·		ļ	
1080.7	22.7						
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						<b></b>	CORING TERMINATED AT ELEVATION 1080.7 FT.
DF	RILLER:	E.A.SN	<u>/ITH</u>			CORI	E SIZE: NXWL EQUIPMENT: CME-550-X

									OMILB	0111110				
	ΓNO 8.27				ID B-3				LDWELL		GEO	LOG	IST T.B.DANIEL	
	SCRIPTION	BRI	DGE I					JNPOW	DER CRE	T				GND WATER
BORING						HING 0.0				EASTING				0 HR 7.20ft
ALIGNM						IG LOCAT				OFFSET		LT		24 HR 6.60ft
	ELEV 10				<b>TOTA</b>	L DEPTH	27.30ft		START DA	TE 11/20/	01		COMPLETION DA	ATE 11/20/01
DRILL M	ACHINE (	CME-	550 X				DRILL	метно	D SPT CO	ORE BORIN	NG		HAMMER TYPE	
SURFACI	E WATER	DEPT	H				1		CK 10.40f				Log B1-A, Page 1 of 1	
	T		OW (	CT	PEN	E	BLOWS F			SAMPLE	<b>y</b> /	Ŀ		D ROCK
ELEV	DEPTH	6in	6in	6in	(ft)	0 2	25 5	50	75 10	1	MOI	[일		RIPTION
<b> </b>	<b></b>	<b> </b>			+ -	H				H	Y	╒	52001	
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1	<u>t</u> .	71												
1079.17	-	<u> </u>	<b> </b>		+	<del> </del>	-Ground	оппасе			<u> </u>	K		
	‡											$\mathbb{N}$	ALLUVIUM: E	
	4.30	2	1	2	1.5	3			1	* .		N	MICACEOUS SIL	TY CLAY W/ FINE AYERS
-	<u> </u>					X				SS-7	₩	[7]	3/ ((A)) L	, , <u>, , , , , , , , , , , , , , , , , </u>
-	+					H			<b> </b>		-			
1070.00_	9.30	25	100		0.9			====	100			丫	045501	
	‡								<u> </u>	CORE # 1		緣	SAPROLITE: GR	AY/BROWN SLI. SILTY SAND
	<u>†</u> 1													
-	<u>+</u>									CORE#2		厂		OCK: SILTY SAND
] -	F I			,								测	GNEISS & SCH	
1060.00_	‡									CORE#3		爲	MICA SCHIS	
1000.00	<b>_</b>		.						1	POINE # 3			RQD:	
	<u>t</u>								<u> </u>				GNEISS REC=1	
-	<u> </u>									CORE#4		纫	INTERLAYERED	
] -	<u> </u>					[								00% RQD=77%
1051.87	F									1		<b>1</b> 2		
	<b> </b>					BORING	TERMIN	ATED I	ROCK-	1		1		
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PROJE	CT:	8.273	2701	I. D. NO			BORING NO: <u>B1-A</u> GEOLOGIST: <u>J.W. MANN</u>
							SECEOGOT. S.VV. IMPARIN
DESCR	IPTION	: BRIDGE	NO. 9	00 ON SR	1718 O\	/ER GU	NPOWDER CREEK
COUNT	Y:	CALDW	ELL	-	COLLA	R ELE	/ATION: <u>1079.2</u> FT. TOTAL DEPTH: <u>27.3</u> FT.
		<u> </u>	Ī		<u> </u>	Т	
		DRILL		REC.	RQD.		
	DEPTH	Î	RUN	FEET	FEET	SAMP.	FIELD CLASSIFICATION AND REMARKS
(FEET)	(FEET)	MIN./FT.	(FEET)	%	%	#	
1068.8	10.4			2.4	0.6		INTERLAYERED GNEISS & MICA SCHIST. ROCK IS SLIGHTLY WEATHERED TO FRESH, HARD, & VERY CLOSELY TO CLOSELY FRACTURED.
			2.5				
				96	24		
1066.3			<u> </u>			<del> </del>	
1066.3	12.9		-				PREDOMINANTLY MICA SCHIST. ROCK IS VERY SLIGHTLY WEATHERED,
			1	4.7	2.9	RS-1	HARD, & VERY CLOSELY TO CLOSELY FRACTURED.
			4.9	00			
1001.4	170			96	59		
1061.4 1061.4	17.8 17.8						DDEDOMINANTI V CNEICC DOCK IO EDECUL HARD, CENEDALLY
1001.4	17.0			4.7	3.7		PREDOMINANTLY GNEISS. ROCK IS FRESH, HARD, GENERALLY MODERATELY FRACTURED.
			4.7	4.7	3.7	RS-2	WODERATELY FRACTURED.
			7.7	96	79	110-2	
1056.7	22.5			. 00	, 0		
1056.7	22.5						INTERLAYERED MICA SCHIST & GNEISS. ROCK IS FRESH, HARD, &
				4.8	3.7		CLOSELY TO MODERATELY CLOSELY FRACTURED.
			4.8				The second secon
				100	77		
1051.9	27.3						
1051.9	27.3						
				2.7			
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		ليبينين	L			L	CODING TERMINATED AT
							CORING TERMINATED AT ELEVATION 1051.9 FT.
			-			<del></del>	222711011 1001.0 11.
DR	ILLER	E.A.SN	ИΤН			CORF	SIZE: NXWL EQUIPMENT: CME-550
				<del>-</del> ·			

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	r NO 8.27				ID B-3				LDWELL		GEO	LOG	SIST T.B.DANIEL	
	CRIPTIO	N BRI	DGE					UNPOWI	DER CRE	r				GND WATER
BORING						HING 0.0				EASTING	0.00			0 HR 8.20ft
ALIGNM				<del></del>		IG LOCAT				OFFSET		RT	-	24 HR 8.40ft
	ELEV 10				TOTA!	L DEPTH	7			TE 11/21/		·	COMPLETION DA	ATE 11/21/01
	ACHINE (								~	DRE BORIN	NG.		HAMMER TYPE	AUTOMATIC
SURFACI	WATER				T				K 14.00f				Log B1-B, Page 1 of 1	
ELEV	DEPTH	1	OW		PEN			PER FOC		SAMPLE	$ \Psi $	6		D ROCK
		6in	6in	6in	(ft)	0 2	25 ! <del> </del>	50 1	75 10 	d NO	MOI	Ğ	DESCR	IPTION
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1079.67—	<u> </u>		<u> </u>				Ground	Surface						A
1073.07	-					<del> </del>						14	ALLUVIUM: E	RDOWN SLI
-	F		1									$\mathbb{N}$	MICACEOUS SIL	TY CLAY WITH
] =	4.80	3	3	3	1.5	6							FINE SAN	
] -	<u>L</u>		*.			X::::							e e e e e e e e e e e e e e e e e e e	
-	Ė					- <del> </del>			50-		Y	$\underline{U}$		
1070.00_	9.80	50			0.1					d		3	SAPROLITE: WH	TE/GRAY SILTY
_	-												FINE TO CO.	ARSE SAND/
] =													WEATHERED RO	CK: SILTY SAND
_	_									CORE # 1			<b>GNEISS &amp; SCH</b>	
_	<u> </u>									CORE#2			RQD=	
1060.00													INTERLAYERED	
=	Ė									CORE#3			GNEISS REC=9	·
_										CORE # 3			INTERLAYERED	
1053.87													GNEISS REC=1	00% RQD=90%
-	_					BORING	TERMIN	IATED IN	ROCK-					
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					CC	RE	BORING REPORT
PRO IF	ст.	g 273 [,]	2701	LD NO	. рэ	126	DODING NO.
FROJE	O1	0.213	2701	I. D. NO	. <u>D-3</u>	120	BORING NO: B1-B GEOLOGIST: J.W. MANN
DESCR	IPTION	: BRIDGE	NO. 9	ON SI	R1718 O\	/ER GU	INPOWDER CREEK
COUNT	Y:	CALDWI	ELL		COLLA	R ELE\	/ATION: <u>1079.7</u> FT. TOTAL DEPTH: <u>25.8</u> FT.
		DRILL		REC.	RQD.		
ELEV.	DEPTH	l	RUN	FEET	FEET	SAMP.	FIELD CLASSIFICATION AND REMARKS
(FEET)	(FEET)	MIN./FT.	(FEET)	%	%	#	
1065.7	14.0			2.1	20		
			2.2	2.1	2.0		
	4.		2.2	95	91		
1063.5	16.2			- 33			
1063.5	16.2					<del> </del>	
				4.7	3.8		INTERLAYERED MICA SCHIST & GNEISS. ROCK IS GENERALLY VERY
			4.8				SLIGHTLY WEATHERED TO FRESH, HARD, & CLOSELY TO MODERATELY
				98	79		CLOSELY FRACTURED.
1058.7	21.0				-		
1058.7	21.0					RS-3	
				4.8	4.3		
·			4.8	~			
				100	90	RS-4	
1053.9							
1053.9	25.8						
				•			
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							CORING TERMINATED AT ELEVATION 1053.9 FT.
DR	ILLER:	E.A.SM	IITH			CORE	E SIZE: NXWL EQUIPMENT: CME 550-X

PROJECT	NO 8.27	32701			ID B-3	126	COU	NTY CAI	DWELL		GEO	LOG	IST T.B.DANIEL	
SITE DES	CRIPTIO	N' BRI	DGE	NO.	90 ON	SR 1718 (	OVER G	JNPOW	DER CRE	EK				GND WATER
BORING 1	NO B2-A				NORT	HING 0.0	0			EASTING	0.00			0 HR 11.00ft
ALIGNM	ENT -L-				BORIN	IG LOCAT	TION 164	<b>⊦</b> 66.300		OFFSET	15.00ft	LT		24 HR 10.50ft
COLLAR	ELEV 10	81.131	ft		TOTA	L DEPTH	37.60ft	5	START DA	ATE 11/14	/01		COMPLETION DA	ATE 11/15/01
DRILL M	ACHINE (	CME-	550 X				DRILL	METHO	SPT CO	ORE BORIN	٧G		HAMMER TYPE	AUTOMATIC
SURFACE	WATER	DEPT	Ή				DEPTH	TO ROC	K 17.30f	t			Log B2-A, Page 1 of 1	
ELEV	DEPTH	BI	OW (	CT	PEN	E	BLOWS F	PER FOC	T	SAMPLE	Y/			D ROCK
ELEV	DEFIN	6in	6in	6in	(ft)	0 2	5 5	50	75 10	NO NO	MOI	g	DESCR	IPTION
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1081.13				<b></b>	+		Ground	Sunace					A	
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_	4.30	3	4	3	1.5	7							MICHOLOGOTI	AL OAND! OIL!
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_	9.30	2	2	3	1.5	-5					Y		ALLUVIUM: E MICACEOUS FIN	
1070.00	_			ć		17:						$\square$	WIOAGEGGGTII	C OAND I CEAT
-	_ 14.30	3	4	6	1.5								SAPRO	
_	- 14.50	J	7		'.5	<del>X</del>							YELLOW/BROW	
_												5	FINE TO CO.	
-	<del>-</del>									CORE # 1			MICA SCHIS	OCK: SILTY SAND
1060.00_			.		1 1								RQD=	
. 1	_													
-	_	,								CORE#2			MICA SCHIST	
	E :												RQD	-96%
-	_									CORE#3				
1050.00 <u></u>										DOME # 0			MICA SCHIST RQD=	REC=100%
1030.00	_												T(QD-	-2070
_	_									CORE#4			MICA SCHIST	RFC=100%
_	_												RQD=	
1043.53 -	_				.					<u> </u>				
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					CC	RE	BORING REPORT
PROJE	CT: _	8.2732	2701	I. D. NO:	B-3	• 126	BORING NO: <u>B2-A</u> GEOLOGIST: <u>J.W. MANN</u>
DESCR	IPTION:	BRIDGE	NO. 90	ON SR	1718 OVI	ER GUI	NPOWDER CREEK
COUNT		CALDWI					/ATION:
ELEV.			RUN	REC. FEET	RQD. FEET	SAMP.	FIELD CLASSIFICATION AND REMARKS
(FEET) 1063.8		MIN./FT.	(FEET)	%	%	#	
1003.0	17.5		5.6	5.1	2.3		
1058.2	22.9			91	41	RS-5	
1058.2	22.9			4.9	4.7		
1052.2	27.0		4.9	100	96	RS-6	PREDOMINANTLY MICA SCHIST. ROCK IS LIGHT TO DARK GRAY, VERY
1053.3 1053.3	27.8						SLIGHTLY WEATHERED TO PREDOMINANTLY FRESH, HARD, & GENERALLY VERY CLOSELY TO CLOSELY FRACTURED.
			4.9	4.9	1.0		
1048.4				96	20		
1048.4	32.7		4.9	4.9	3.0		
1043.5	37.6		7.0	100	61		
			·				
		,					
		,					
				-	<u></u>		CORING TERMINATED AT ELEVATION 1043.5 FT.
	W.L.ED.	E.A.SN	AITU			COR	E SIZE: NXWL EQUIPMENT: CME-550

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	C
GEOTECHNICAL UNIT BORING LOG	

										ORING						
	NO 8.27				D B-3			NTY CAL			GEO	LOG	IST T.B.DANIEL			
		N BRI	DGE		D. 90 ON SR 1718 OVER GUNPOWDER CREEK									GND WATER		
BORING	NO B2-B				NORTHING 0.00 EASTING									0 HR 12.00ft		
ALIGNM											8.50ft F	<del>RT</del>		24 HR 11.50ft		
	ELEV 10				TOTAL DEPTH 42.80ft START DATE 1						01		COMPLETION D.	MPLETION DATE 11/20/01		
DRILL M	ACHINE (	CME-	550 X		DRILL METHOD SPT CORE BORII						VG_		HAMMER TYPE	AUTOMATIC		
SURFACE	WATER				DEPTH TO ROCK 21.90ft							<del></del> .	Log B2-B, Page 1 of 1			
ELEV	DEPTH	1	OW		PEN					SAMPLE	MOI	P		ID ROCK		
<u> </u>	ļ	6in	6in	6in	(ft)	0 2	25 :	50 7	75 10 	NO NO	MOI	Ğ	DESCF	RIPTION		
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1082.20	<u> </u>	ļ	<b> </b>	-			Ground	Surface		<b> </b>				***************************************		
1080.00_	<u>t</u>												ALLUVIUM: BR			
-	4.60	3	3	3	1.5								MICACEOUS FII	NE SANDY SILT SAND LENSES		
-	4.60	٦	3.	3	1.5	X			-,-,	SS-3	W		WITH OILT C	AND LLINOLO		
-	‡					17			-,							
-	9.60	1	2	3	1.5								ALLUVIUM: I			
-	<u> </u>	7.				<b> </b>	<u> </u>			SS-4	Y	$\mathbb{N}$	MICACEOUS FI	NE SANDY CLAY		
1070.00	<del>L</del> -					- <del> -</del>		1::::::								
-	14.60	7	16	29	1.5			45		00.5		0000	ALLUVIUM	: GRAVEL		
-	F						<b>X</b>	-		SS-5	W		SAPRO	DLITE:		
_	‡								100				WHITE/GRAY			
-	19.60	100			0.5				>	SS-6	м		COARS	SILTY FINE TO		
1060.00	<u> </u>				ŀ					CORE#1			WEATHERED RO			
-	Ι.									CORE#2		No.	MICA SCHIS			
_	<u> </u>					<u> </u>								=92%		
-	E	^											MICA SCHIS			
_	F									CORE#3		W.		=45%		
1050.00	F												MICA SCHIST RQD:			
	_									CORE#4						
_	t									CORE # 4		繆	MICA SCHIST			
_						L		L					RQD	=55%		
-	F									CORE # 5		粉	MICA COLUC	T DEC-000/		
-													MICA SCHIS RQD:			
1 <del>83</del> 9:48—	<u>L</u>												NQD	-0070		
1009.40						BORING	TERMI	ATED I	LROCK-							
-	-					AT	ELEVA	ION 103	9.4							
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					CC	RE	BORING REPORT
ROJE	CT: _	8.2732	2701	I. D. NO:	B-3	126	BORING NO: <u>B2-B</u> GEOLOGIST: <u>J.W. MANN</u>
ESCR	IPTION:	: BRID <u>GE</u>	NO. 90	ON SR	1718 OV	ER GUN	UNPOWDER CREEK
OUNT	Y:	CALDWI	ELL	•	COLLA	R ELEV	EVATION: 1082.2 FT. TOTAL DEPTH: 42.8 FT.
`		DRILL		REC.	RQD.		
ELEV.		i	RUN	FEET	FEET	SAMP.	
FEET)	(FEET)	MIN./FT.	(FEET)	%	% .	#	
060.3	21.9			1.2	1.2		
			1.3	1.2	1.2		
			1.5	92	92		
059.0	23.2			0_			
59.0	23.2						
,				4.8	2.2		
·			4.9				
				98	45		
54.1	28.1						
54.1	28.1			4.0	.0.5		
			4.9	4.9	3.5		LIGHT TO DARK GRAY, FRESH, HARD, VERY TO MODERATELY CLOSELY
	-		4.9	100	71		FRACTURED, MICA SCHIST. CRUSHED ROCK ZONE FROM 27.5-28.1 FT.
49.2	33.0			,00			
49.2	33.0						
				4.9	2.7		
	,		4.9				
				100	55		
)44.3 )44.3						<u> </u>	
144.5	37.8			4.8	4.3		
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				98	88		
39.4	42.8			-			
39.4	42.8		***				
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			لـــــا			<u> </u>	OODING TERMINATED AT
					· .		CORING TERMINATED AT ELEVATION 1039.4 FT.
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DF	(ILLEK:	E.A.SI	/IIIH			COR	RE SIZE: NXWL EQUIPMENT: CME-550-X

### 13 OF 23

NORTH CAROLINA	DEPARTMENT OF	F TRANSPORTA	1OIT
GEOTEC	HNICAL UNIT BO	RING LOG	

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PROJECT					D B-3			NTY CAL			GEO	LOG	IST T.B.DANIEL	Г	
SITE DES			DGE I					UNPOWE	ER CRE					GND WATER	
BORING N		<u> </u>				IING 0.00		. 4 4 5 5 5		EASTING				0 HR 8.00ft	
ALIGNME							TON 17+11.300 OFFSE					LT	T	24 HR 8.00ft	
COLLAR					ГОТАІ	DEPTH							COMPLETION D.		
DRILL MA					DRILL METHOD SPT CORE BORING DEPTH TO ROCK 19.70ft							HAMMER TYPE AUTOMATIC			
SURFACE	WATER		H OW (	~ <del>-</del>	PEN					SAMPLE		111	Log EB2-A, Page 1 of 1	ID ROCK	
ELEV	DEPTH	l			1 1			PER FOO	1 5 10	_1	MOI	စြွ		RIPTION	
		6in	OIII	OIN	(ft)	<del>Ĭ</del>	<u> </u>	<del> </del>	<del></del>	9 NO	MOI	G	DESCR	RIPTION	
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1080.79	_						Ground	Surface							
	_												ALLUVIUM: I		
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_	_	٠.				<b>X</b>				SS-1	D				
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	8.40	1	-3	4	1.5	1-1-7					<b>Y</b>	0000	ALLUVIUM: COA	DOE CAND AND	
1070.00_			٠.									0000		VEL	
-	- 40.40	مَد	40		, ,		k	L				0000			
I	_ 13.40	10	18	21	1.5		3	¥		SS-2	М		SAPRO WHITE/BROV		
=	_												MICACEOUS		
=	- - 18.40	100			0.3				100				COARS	E SAND /	
4000 00	_	1.00								CORE#1			WEATHERED RO	OCK: SILTY SAND	
1060.00										CORE # 1		×	MICA SCHIS		
_	_									CORE # 2				=56%	
-	_						<u> </u>			CORE # 2			MICA SCHIS	T REC=88% =40%	
4050 40 7	_												KQD	-4070	
1052.49						BORING	TERMI	ATED II	ŘŐČK						
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SHEET _1_ 1_ DATE ___11/14/01 **CORE BORING REPORT** PROJECT: <u>8.2732701</u> I. D. NO: <u>B-3126</u> BORING NO: EB2-A GEOLOGIST: J.W. MANN DESCRIPTION: BRIDGE NO. 90 ON SR1718 OVER GUNPOWDER CREEK COUNTY: CALDWELL COLLAR ELEVATION: 1080.8 FT. TOTAL DEPTH: 28.3 FT. RQD. DRILL REC. RATE FEET FEET ELEV. DEPTH RUN SAMP. FIELD CLASSIFICATION AND REMARKS (FEET) (FEET) MIN./FT. (FEET) 1061.1 19.7 3.6 2.0 3.6 56 100 RECOVERED ROCK: SLIGHTLY WEATHERED TO FRESH, MODERATELY HARD TO HARD, VERY CLOSELY TO CLOSELY FRACTURED, MICA GNEISS. 1057.5 23.3 1057.5 23.3 SOFT, VERY SEVERELY WEATHERED ZONE FROM 24.9-25.5 FT. 4.4 2.0 5.0 88 40 1052.5 28.3 1052.5 28.3 **CORING TERMINATED AT** ELEVATION 1052.5 FT. CORE SIZE: NXWL EQUIPMENT: _ CME 550-X DRILLER: E.A.SMITH

TOTOLOG		GEOTECHNICAL UNIT BORING LOG													
BORING NO EB2-B											·	GEO	LOG	IST T.B.DANIEL	
ALIGNMENT -L-  COLLAR ELEV 1080 58t TOTAL DEPTH 23.30f START DATE 11/20/01 COMPLETION DATE 11/20/01  DRILL MACHINE CME-550 DEPTH WAS DEPTH TOTAL DEPTH 23.30f START DATE 11/20/01  DRILL METHOD SPT CRE BORING  SURFACE WATER DEPTH WAS DEPTH TOTAL DEPTH 23.30f START DATE 11/20/01  ELEV DEPTH TOROCK N/A  ELEV DEPTH 6in 6in 6in 6in 6in (ft) (ft) 0 25 50 75 100 NO NO NO NO NO DESCRIPTION  BLOWS PERFOUND NO NO NO NO NO NO NO NO NO DESCRIPTION  A4.70 1 1 1 1 1 1.5 -2  4.70 1 1 1 1 1 1.5 -2  1070.00 9.70 14 100 NO NO NO NO NO NO NO NO NO NO NO NO NO				DGE I					MOAN	JER CRE	T	2 0 00			
COLLAR ELEV   1080.58f															
DRILL MACHINE CME-550 X   DRILL METHOD SPT CORE BORING   HAMMER TYPE AUTOMATIC			20 50	······································									ΚI	COLUMN TOTAL	····
SURFACE WATER DEPTH N/A   DEPTH TO ROCK N/A   Log EB2-B, Page 1 of 1   SOIL AND ROCK   DESCRIPTION						IUIAI	DEPTH	·						†	
ELEV DEPTH 6in 6in 6in (ft) 0 25 50 75 100 NO MOI G SOIL AND ROCK DESCRIPTION  1080.58														·	AUTOMATIC
1080.58  1080.58  4.70 1 1 1 1 1.5  9.70 14 100 1.0  1060.00 1057.28	SURFACE	WATER				Inchi					TOANS	-1	1		D DOC!
1080.58 - Ground Surface - ALLUVIUM: BROWN SLI.  1070.00 9.70 14 100 1.0 - Ground Surface - ALLUVIUM: BROWN SLI.  1070.00 9.70 14 100 1.0 - Ground Surface - ALLUVIUM: COARSE SD. & GR.  SAPROLITE: SLI. MIC. SL. FINE SD.  WEATHERED ROCK: SILTY SAND  MICA SCHIST REC=71%  RQD=34%  MICA SCHIST & WEATHERED ROCK REC=64% RQD=0%	ELEV	DEPTH	1 .			1 1						-   ▼/	ပြွ	Y	
ALLUVIUM: BROWN SLI. MICACEOUS SILTY FINE SAND  1.0			6in	6in	6in	(π)	<del>-</del>		<del> </del>	<del>                                     </del>	H NO	MOI	G	DESCR	IPTION
ALLUVIUM: BROWN SLI. MICACEOUS SILTY FINE SAND  1.0	-	<u> </u>			l	i i									
ALLUVIUM: BROWN SLI. MICACEOUS SILTY FINE SAND  1.0	-	Ė													
ALLUVIUM: BROWN SLI. MICACEOUS SILTY FINE SAND  1070.00 9.70 14 100 1.0 1.0 CORE # 1  1060.00 1067.28 ALLUVIUM: COARSE SD. & GR. SAPROLITE: SLI. MIC. SL. FINE SD. WEATHERED ROCK: SILTY SAND/ MICA SCHIST REC=71% RQD=34%  MICA SCHIST & WEATHERED ROCK REC=64% RQD=0%		<u> </u>										,			
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1060.00_T	-	_	·								   	ا			
1057,28 T ROCK REC=64% RQD=0%	1060.00_	_									CORE#	1			
BORING-TERMINATEO IN ROCKAT ELEVAT ON 1057,28	4057.00 =	_												ROCK REC=	64% RQD=0%
AT ELEVATION 1057.28	1057.28				<b></b>		BORING	TERMI	IATED II	LBOCK-	l				
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						<b>ハバー</b> 1	BORING ILFORT
PROJE	CT:	8.2732	<u>2701</u>	I. D. NO:	B-3	126	BORING NO: EB2-B GEOLOGIST: J.W. MANN
DESCR	IPTION:	: BRID <u>GE</u>	. NO. 9	<u> 30 ON SF</u>	<u>₹1718 O\</u>	/ER GU	INPOWDER CREEK
COUNT	Y:	CALDWI	ELL	-	COLLA	R ELEV	VATION: 1080.6 FT. TOTAL DEPTH: 23.3 FT.
		DRILL		REC.	RQD.		
	DEPTH	1	RUN	FEET	FEET	SAMP.	FIELD CLASSIFICATION AND REMARKS
(FEET)	(FEET)	MIN./FT.	(FEET)	%	%	#	
1069.1	11.5		1	4.8	2.3		
, 2000 0	40.2	· · · · · · · · · · · · · · · · · · ·	6.8	71	34		VERY SEVERELY TO MODERATELY WEATHERED, SOFT TO HARD, VERY
1062.3 1062.3	1	<del> </del>	<del> </del>		<b> </b>	-	CLOSELY TO CLOSELY FRACTURED, MICA GNEISS. SEVERAL UNRECOVERED ROCK ZONES.
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	L	<u></u>	1			<del></del>	CORING TERMINATED AT
				·			ELEVATION 1057.3 FT.
DI	RILLER:	: E.A.SI	мітн			COR	E SIZE: NXWL EQUIPMENT: CME 550-X
				-			

	SOIL TEST RESULTS														
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	PL. I.	C. SAND	% BY WEI F. SAND	GHT SILT	CLAY	% PAS	SING 40	SIEVES 200	MOISTURE	% ORGANIC
SS-1	15' LT	17+11	3.9-4.9'	A-2-4(0)	21	NP	27	51	8	14	100	94	27		
SS-2	15' LT	17+11	13.9-14.9'	A-2-4(Ø)	33	NP	45	36	11	8	85	60	24		
SS-3	8.5' RT	16+94	5.1-6.1'	A-4(5)	31	7	12	35	25	28	99	98	58		
SS-4	8.5' RT	16+94	10.1-11.1	A-7-6(4)	42	17	26	30	10	34	87	73	43		
SS-5	8.5' RT	16+94	15.1-16.1	A-2-4(Ø)	30	NP	47	37	10	6	94	66	23		
SS-6	8.5′ RT	16+94	19.6-20.1	A-2-4(0)	24	NP	47	38	9	6	85	60	21		
SS-7	15′ LT	15+76.3	4.8-5.8′	A-7-6(8)	44	15	8	28	32	32	87	85	61		
SS-8	30' RT	15+33	4.2-5.0'	A-2-4(Ø)	27	NP	41	41	10	8	89	69	23		
SS-9	10' LT	15+15	14.6-15.1′	A-2-4(Ø)	33	NP	38	38	14	10	85	65	30		
SS-10	10' LT	15+15	19.6-20.5	A-2-4(Ø)	31	NP	45	38	9	8	81	58	20		
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#### GEOTECHNICAL UNIT FIELD SCOUR REPORT

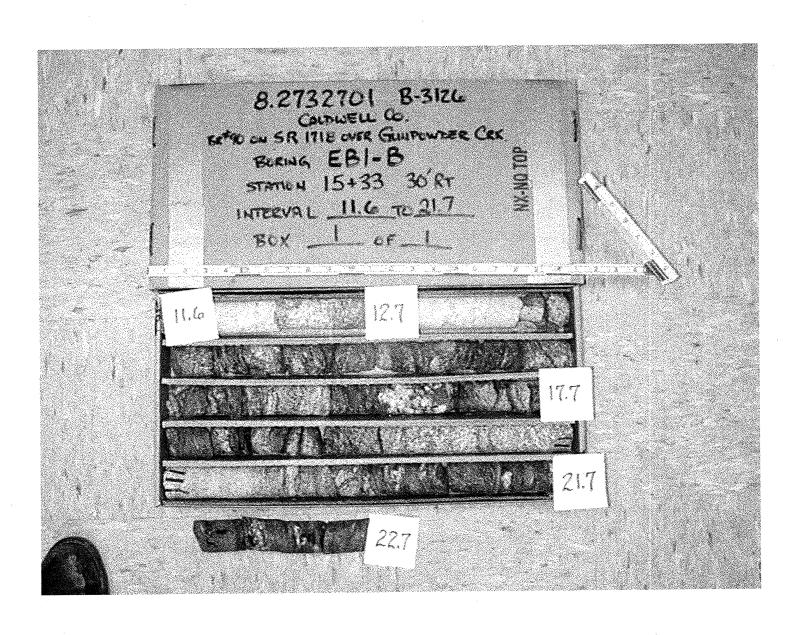
PROJECT: 8.2732701   ID:   B-3126     COUNTY:   Caldwell	
DESCRIPTION(1): Bridge No. 90 on SR-1718 Over Gunpowder Creek	
INFORMATION ON EXISTING BRIDGES Information obtained from: field inspection microfilm(Reel: Pos: other	_)
NO. BENTS: 4  COUNTY BRIDGE NO. 90 BRIDGE LENGTH 111 Ft. NO. BENTS IN: CHANNEL 0 FLOOD PLAIN 4	
FOUNDATION TYPE: Timber Pile on footings for bents; vertical abutments.	
EVIDENCE OF SCOUR(2):	
ABUTMENTS OR END BENT SLOPES: None	
INTERIOR BENTS: Beneath upstream end of Bent Two.	
CHANNEL BED: None	
CHANNEL BANKS:Upstream bank of Bent Two.	
EXISTING SCOUR PROTECTION:	
TYPE(3): None	
EXTENT(4) N/A	
EFFECTIVENESS(5): N/A	
OBSTRUCTIONS(6) (DAMS,DEBRIS,ETC.): None	
DESIGN INFORMATION	
CHANNEL BED MATERIAL(7) (SAMPLE RESULTS ATTACHED): Silt, sand, pebbles.	
CHANNEL BANK MATERIAL(8) (SAMPLE RESULTS ATTACHED): Alluvial silt, sand, and clay.	
	<del></del>
FOUNDATION BEARING MATERIAL(9): Weathered Rock, Hard Rock.	
CHANNEL BANK COVER(10) Brush and trees.	
FLOOD PLAIN WIDTH(11): 280 feet	
FLOOD PLAIN COVER(12): Sporadic trees, pasture.	

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DES	SIGN INFORMATION CONT. PAGE 2
STR	REAM IS x DEGRADING AGGRADING (13)
OTH	HER OBSERVATIONS AND COMMENTS: Both A-side wingwalls failing. EB2 approach embankment
	sides have sloughed behind wingwalls.
CHA	ANNEL MIGRATION TENDENCY (14): Toward bank of Bent Two.
CRI	TICAL SCOUR ELEVATION (15):
٠.	Bent One: 1067.5 feet
	Bent Two: 1065.0 feet
	Bent 1wo. 1003.01eet
	REPORTED BY: J. W. Mann, TEG-III DATE: 12/18/01
(1)	INSTRUCTIONS  GIVE THE DESCRIPTION OF THE SPECIFIC SITE GIVING ROUTE NUMBER AND BODY OF WATER CROSSED.
(2)	NOTE ANY EVIDENCE OF SCOUR AT THE EXISTING END BENTS OR ABUTMENTS (UNDERMINING,
(~)	SLOUGHING, SCOUR LOCATIONS, DEGRADATIONS, ETC.)
(3)	NOTE ANY EXISTING SCOUR PROTECTION (RIP RAP, ETC.)
(4)	DESCRIBE THE EXTENT OF ANY EXISTING SCOUR PROTECTION.
(5)	DESCRIBE WHETHER OR NOT THE SCOUR PROTECTION APPEARS TO BE WORKING.
(6)	NOTE ANY DAMS, FALLEN TREES, DEBRIS AT BENTS, ETC.
(7)	DESCRIBE THE CHANNEL BED MATERIAL: A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION,
	ATTACH LAB RESULTS.
(8)	DESCRIBE THE CHANNEL BANK MATERIAL: A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE
	DISTRIBUTION, ATTACH LAB RESULTS.
(9)	DESCRIBE THE FOUNDATION BEARING MATERIAL,
(10)	DESCRIBE THE BANK COVERING (GRASS, TREES, RIP RAP, NONE, ETC.
(11)	GIVE THE APPROXIMATE FLOOD PLAIN WIDTH (ESTIMATE).
(12)	DESCRIBE THE FLOOD PLAIN COVERING (GRASS, TREES, CROPS, ETC.)
(13)	CHECK THE APPROPRIATE SPACE AS TO WHETHER THE STREAM IS DEGRADING OR AGGRADING
(14)	DESCRIBE THE POTENTIAL OF THE BODY OF WATER TO MIGRATE LATERALLY DURING THE LIFE OF THE
	BRIDGE (APPROXIMATELY 100 YEARS).
(15)	GIVE THE CRITICAL SCOUR ELEVATION EXPECTED OVER THE LIFE OF THE BRIDGE (APPROXIMATELY

100 YEARS). THIS CAN BE GIVEN AS AN ELEVATION RANGE ACROSS THE SITE, OR ON A BENT BY BENT BASIS WHERE VARIATIONS EXIST. DISCUSS RELATIONSHIP BETWEEN THE HYDRAULICS THEORETICAL SCOUR AND THE CRITICAL SCOUR ELEVATION. IF THE CRITICAL SCOUR ELEVATIONS DEPENDENT ON SCOUR COUNTER MEASURES, EXPLAIN. (RIP RAP ARMORING ON SLOPES, ETC.) THEORETICAL SCOUR ELEVATION IS BASED ON THE ERODABILITY OF MATERIALS WITH CONSIDERATION FOR JOINTING, FOLIATION, BEDDING ORIENTATION AND FREQUENCY; CORE RECOVERY PERCENTAGE; PERCENTAGE RQD; DIFFERENTIAL WEATHERING, SHEAR STRENGTH; OBSERVATIONS AT EXISTING STRUCTURES;

OTHER TESTS DEEMED APPROPRIATE; AND OVERALL GEOLOGIC CONDITIONS AT THE SITE.

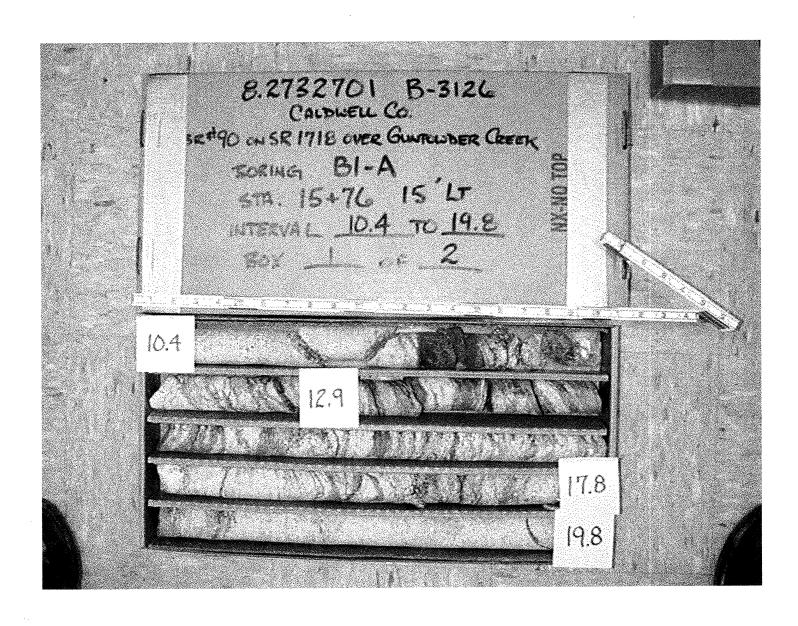


8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 0N SR 1718 OVER GUNPOWDER CREEK

EB1-B@ STATION 15+33, 30' LT (-L-)

BOX 1 OF 1

DEPTH: 11.7-22.7'

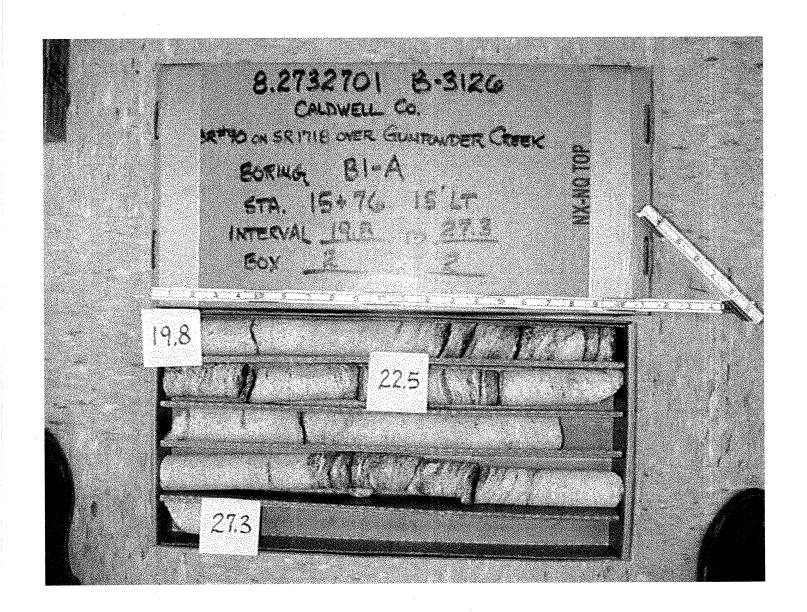


8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

B1-A @ STATION 15+76.3, 15' LT (-L-)

BOX 1 OF 2

**DEPTH**: 10.4-19.8'

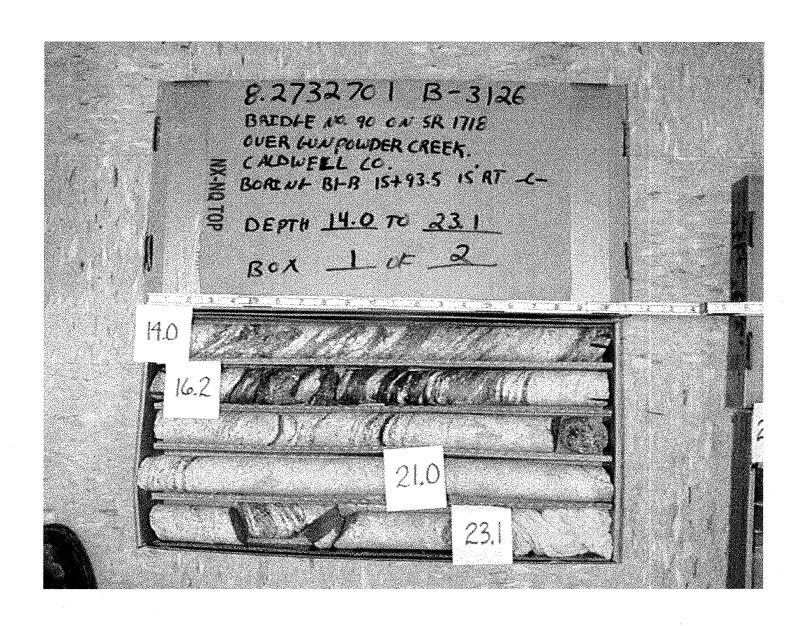


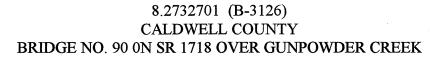
8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 0N SR 1718 OVER GUNPOWDER CREEK

B1-A @ STATION 15+76.3, 15' LT (-L-)

BOX 2 OF 2

DEPTH: 19.8-27.3'





B1-B @ STATION 15+93.7, 15' RT (-L-)

BOX 1 OF 2

DEPTH: 14.0-23.1'



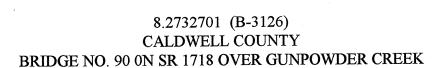
8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 0N SR 1718 OVER GUNPOWDER CREEK

B1-B @ STATION 15+93.7, 15' RT (-L-)

BOX 2 OF 2

DEPTH: 23.1-25.8'

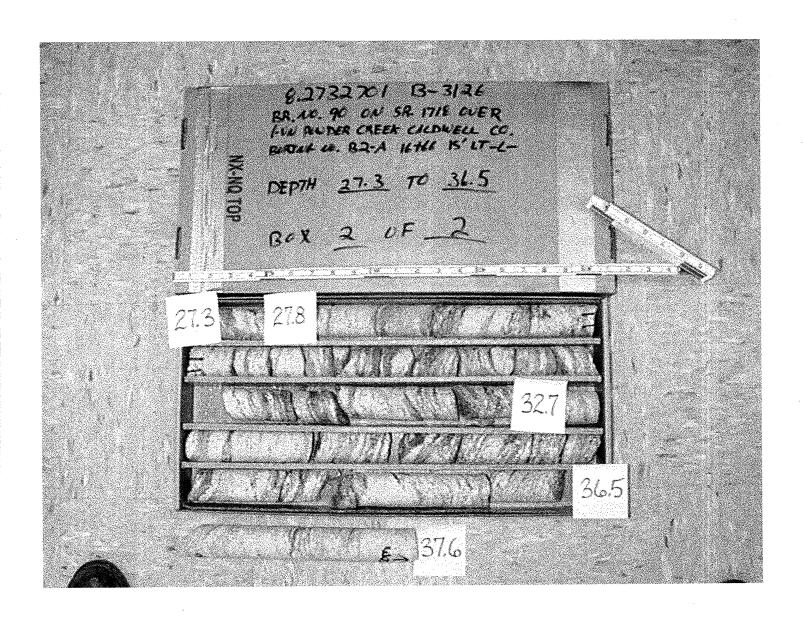




B2-A@ STATION 16+66.3, 15' LT (-L-)

BOX 1 OF 2

DEPTH: 17.3-27.3'



8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

B2-A @ STATION 16+66.3, 15' LT (-L-)

BOX 2 OF 2

DEPTH: 27.3-37.6





8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

B2-B@ STATION 16+94, 8.5' RT (-L-)

BOX 1 OF 3

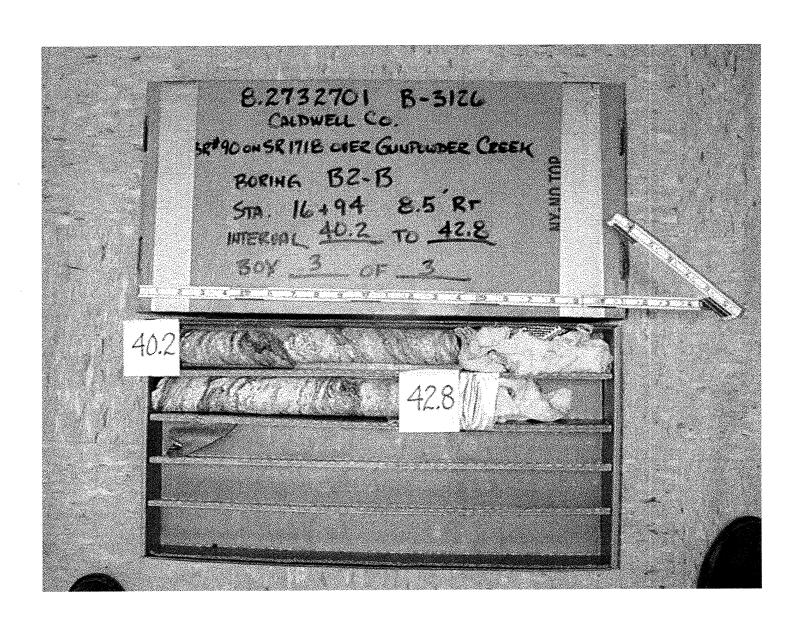
**DEPTH**: 21.9-31.1'

8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

B2-B@ STATION 16+94, 8.5' RT (-L-)

BOX 2 OF 3

DEPTH: 31.1-40.2'



#### 8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

B2-B@ STATION 16+94, 8.5' RT (-L-)

BOX 3 OF 3

DEPTH: 40.2-42.8'



8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 0N SR 1718 OVER GUNPOWDER CREEK

EB2-A@ STATION 17+11.3, 15' LT (-L-)

BOX 1 OF 1

DEPTH: 19.7-28.3'



8.2732701 (B-3126) CALDWELL COUNTY BRIDGE NO. 90 0N SR 1718 OVER GUNPOWDER CREEK

EB2-B@ STATION 17+28.7, 15' RT (-L-)

BOX 1 OF 1

DEPTH: 11.5-23.3'