

PROJECT: 8.2732701 ID: B-3126

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

STRUCTURE SUBSURFACE INVESTIGATION

STATE PROJECT 8.2732701 I.D. NO. B-3126

F.A. PROJECT BRZ-1718(3)

COUNTY CALDWELL

PROJECT DESCRIPTION _____

SITE DESCRIPTION BRIDGE NO. 90 ON SR 1718
OVER GUNPOWDER CREEK

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3126	1	23
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
8.2732701	BRZ-1718(3)	P.E.	
		CONST.	

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 SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL UNIT @ (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL 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 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 DEGREE OF RELIABILITY 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 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 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

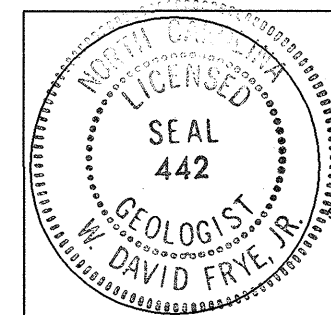
SUBMITTED BY W.D. FRYE E.A. SMITH

DATE JANUARY 2001 T.B. DANIEL

DRAWN BY: J.W. MANN

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.



W. D. Frye, Jr.
SIGNATURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

Table with 4 columns: ID (B-3126), STATE PROJECT NO. (8,2732701), SHEET NO. (2), TOTAL SHEETS (23)

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...

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED) GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL.

ALLUVIUM (ALLUV.) - SOILS WHICH HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA.

SOIL LEGEND AND AASHTO CLASSIFICATION

Table with columns for General Class, Group Class, Symbol, % Passing, Liquid Limit, Group Index, and Soil Types. Includes AASHTO classification codes like A-1, A-2, etc.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 30 MODERATELY COMPRESSIBLE LIQUID LIMIT 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

Table showing percentages for Organic Material, Granular Soils, Silty Clay, and Other Material. Includes categories like Trace of Organic Matter, Little Organic Matter, etc.

GROUND WATER

Water level in bore hole immediately after drilling. Static water level after 24 hours. Perched water, saturated zone or water bearing strata. Spring or seepage.

WEATHERING

WEATHERED ROCK (WR) NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER FOOT. CRYSTALLINE ROCK (CR) FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED.

WEATHERING

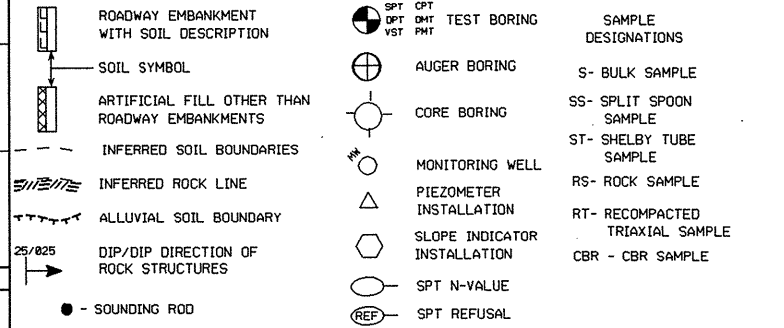
FRESH ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. 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.

CONSISTENCY OR DENSENESS

Table mapping soil types to consistency ranges (e.g., Very Loose, Loose, Medium Dense, Dense, Very Dense) and unconfined compressive strength ranges.

MISCELLANEOUS SYMBOLS



ABBREVIATIONS

- AR - AUGER REFUSAL, BT - BORING TERMINATED, CL - CLAY, CPT - CONE PENETRATION TEST, CSE - COARSE, DMT - DILATOMETER TEST, DPT - DYNAMIC PENETRATION TEST, etc.

WEATHERING

SLIGHT ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. MODERATE SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED.

TEXTURE OR GRAIN SIZE

Table showing U.S. Std. Sieve Size (mm) and corresponding grain size ranges for Boulder, Cobble, Gravel, Coarse Sand, Fine Sand, Silt, and Clay.

SOIL MOISTURE - CORRELATION OF TERMS

Table correlating Soil Moisture Scale (Atterberg Limits) with Field Moisture Description (Saturated, Wet, Moist, Dry) and Guide for Field Moisture Description.

EQUIPMENT USED ON SUBJECT PROJECT

- DRILL UNITS: MOBILE B-, BK-51, CME-45, CME-550, PORTABLE HOIST, OTHER. ADVANCING TOOLS: CLAY BITS, 6" CONTINUOUS FLIGHT AUGER, 8" HOLLOW AUGERS, HARD FACED FINGER BITS, TUNG-CARBIDE INSERTS, CASING w/ ADVANCER, TRICONE STEEL TEETH, TRICONE TUNG-CARB., CORE BIT, OTHER.

ROCK HARDNESS

VERY HARD CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. HARD SEVERAL HARD BLOWS OF THE GEOLOGISTS PICK. HARD CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. MODERATELY HARD CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK.

ROCK HARDNESS

VERY SEVERE ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS. COMPLETE ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS.

PLASTICITY

Table showing Plasticity Index (PI) ranges for Nonplastic, Low Plasticity, Medium Plasticity, and High Plasticity, along with corresponding Dry Strength.

COLOR

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.

FRACTURE SPACING

Table showing Fracture Spacing (Term, Spacing) and Bedding (Term, Thickness).

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC. FRIABLE RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE. MODERATELY INDURATED GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER. INDURATED GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER. EXTREMELY INDURATED SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

ROCK HARDNESS

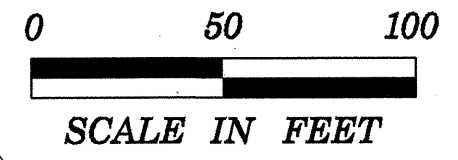
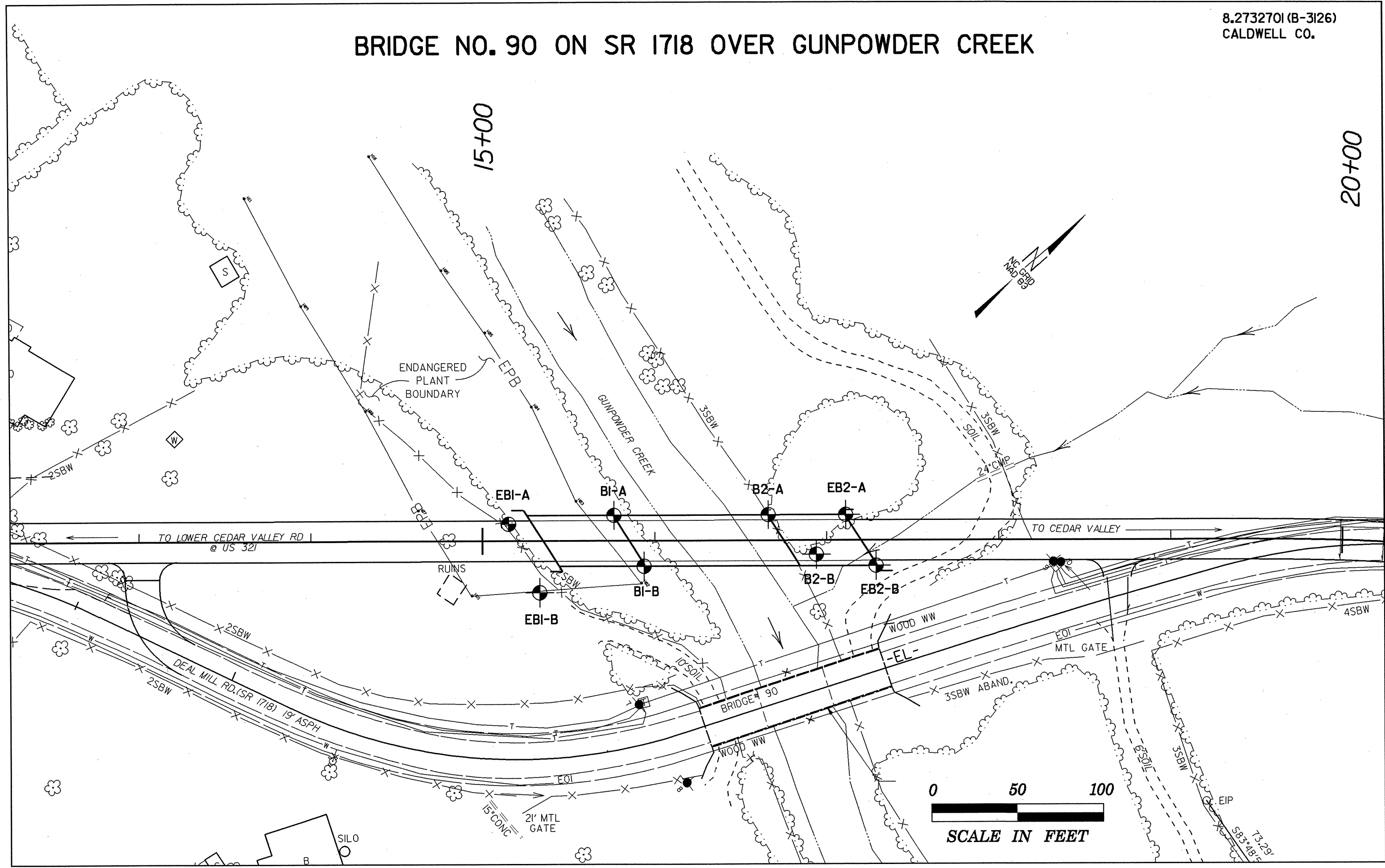
SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS IN OR B.P.F. OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER.

BENCH MARK: BM-2 RR SPIKE IN 36' MAPLE TREE

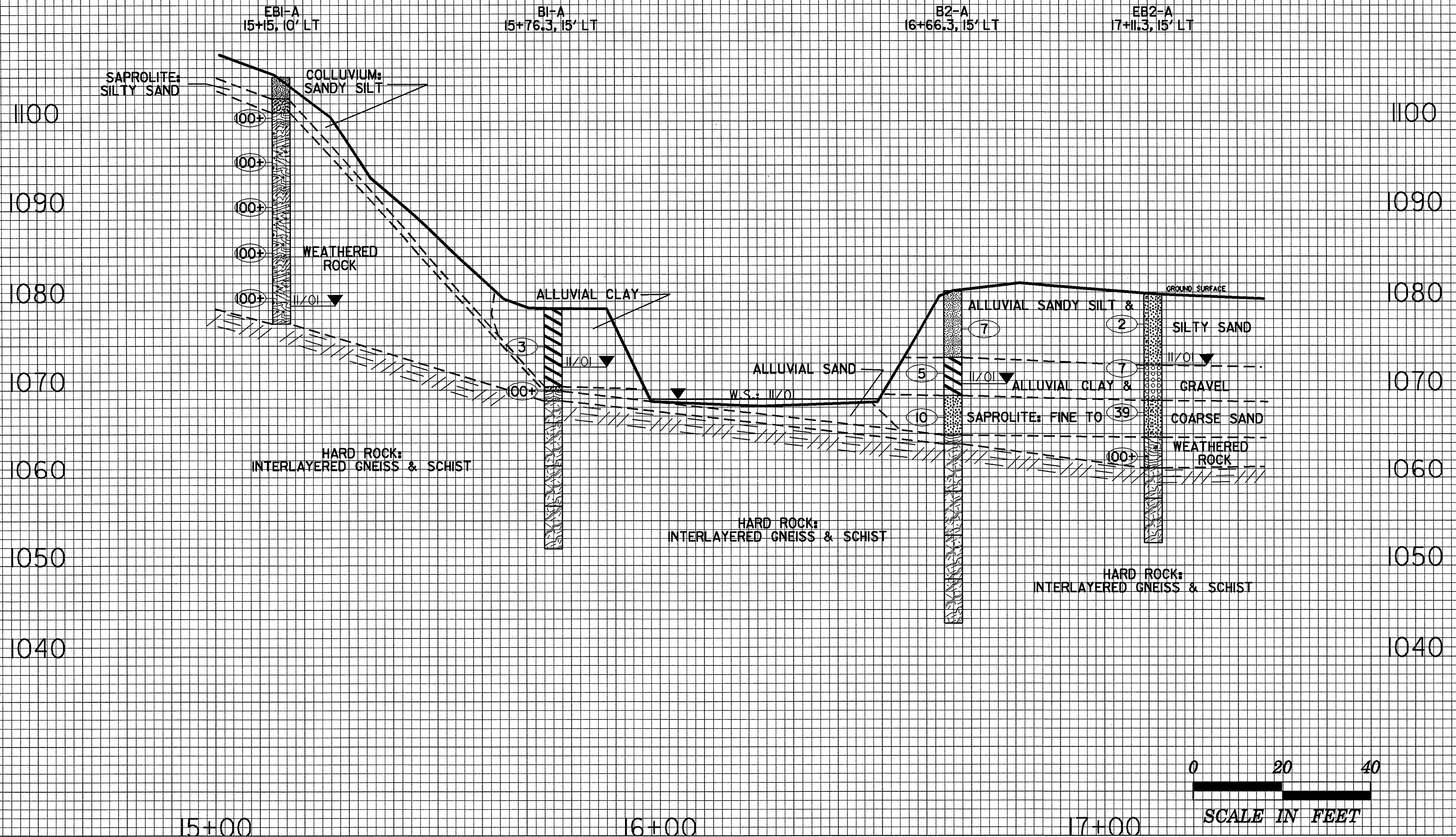
ELEVATION: 1084.85 FT

NOTES:

BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

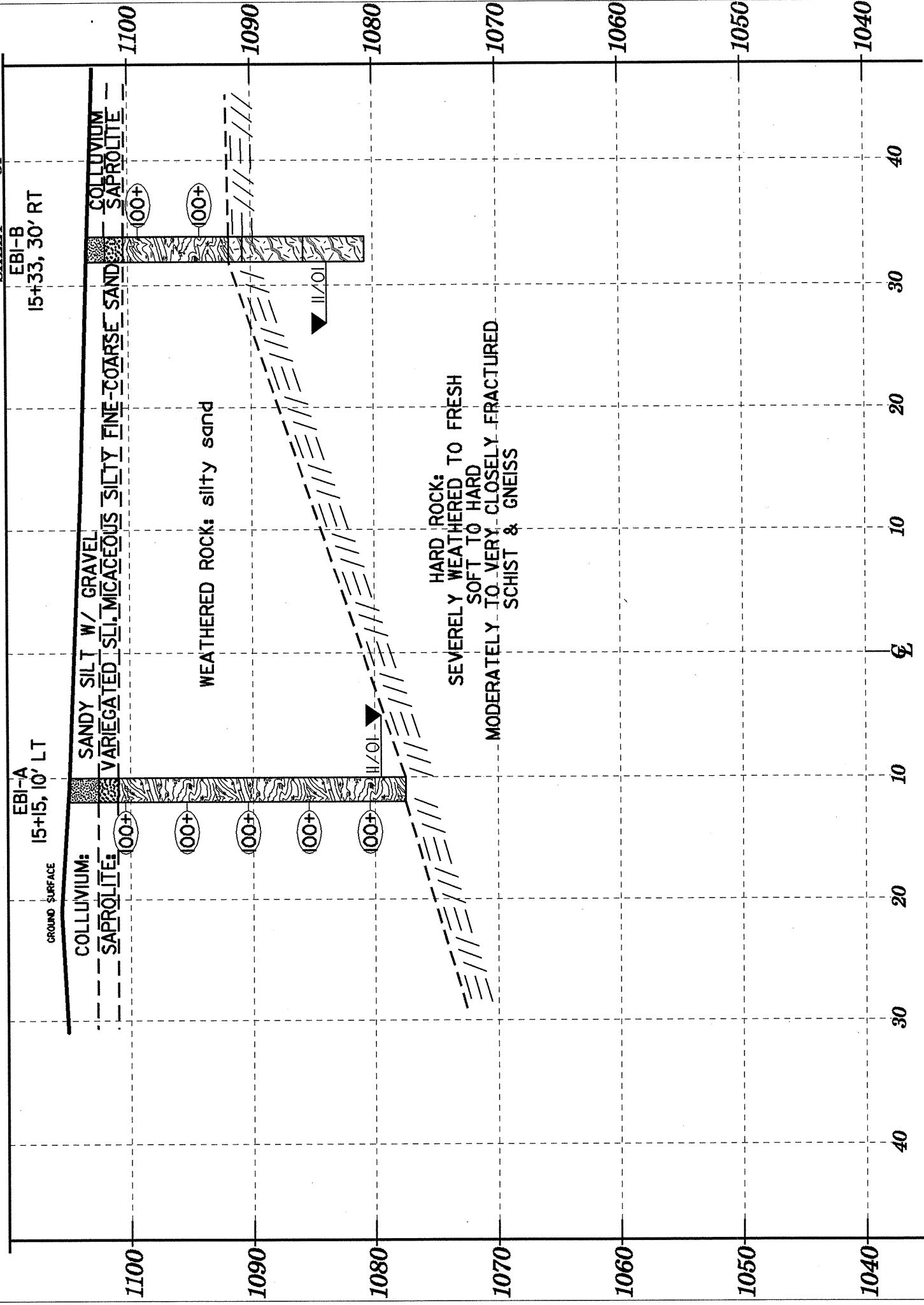


PROFILE 15 FEET LEFT OF -L-



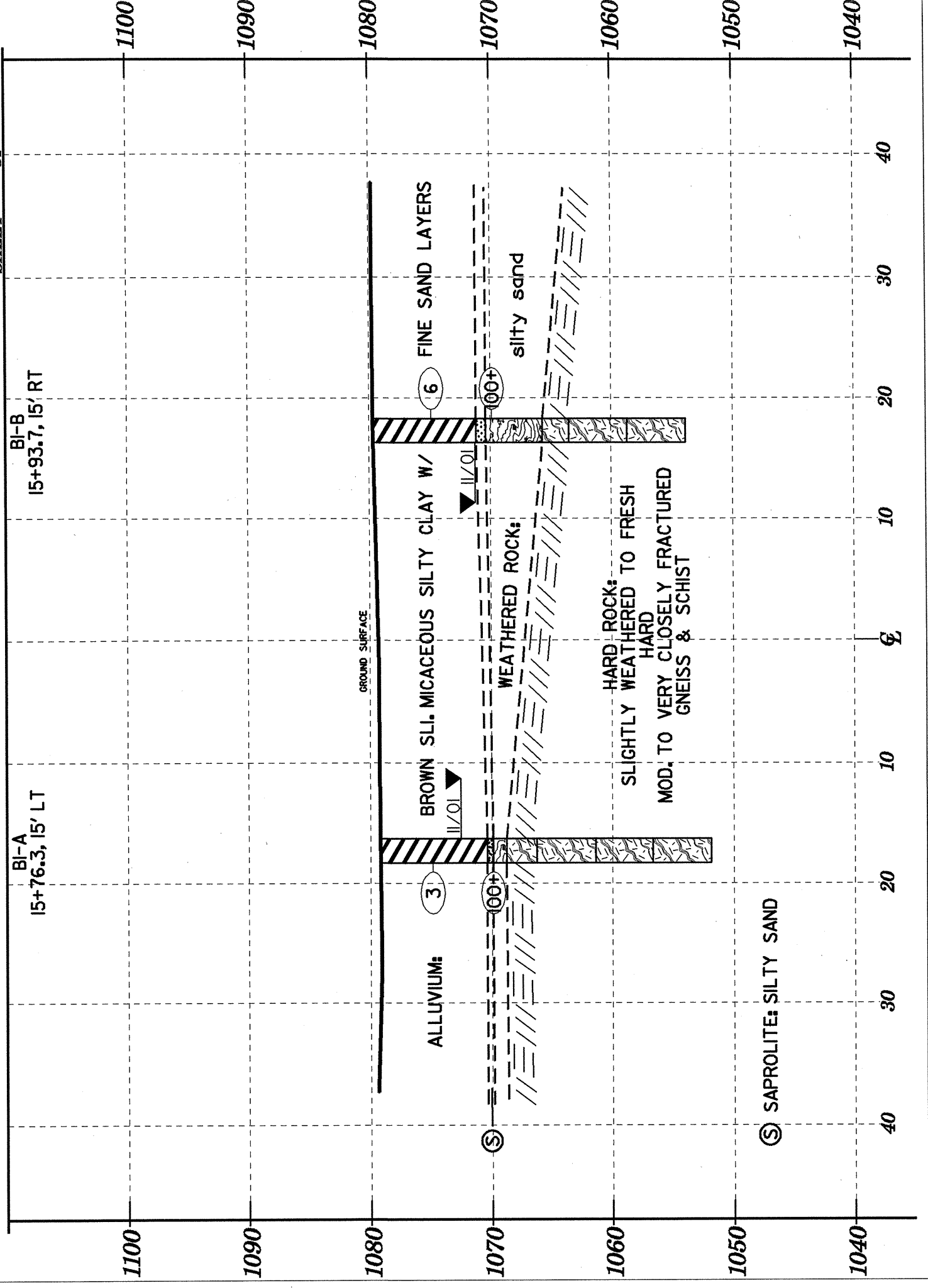
SECTION THROUGH EBI BORINGS

PROJECT 82732701 (B-3126)
COUNTY CALDWELL
SHEET OF



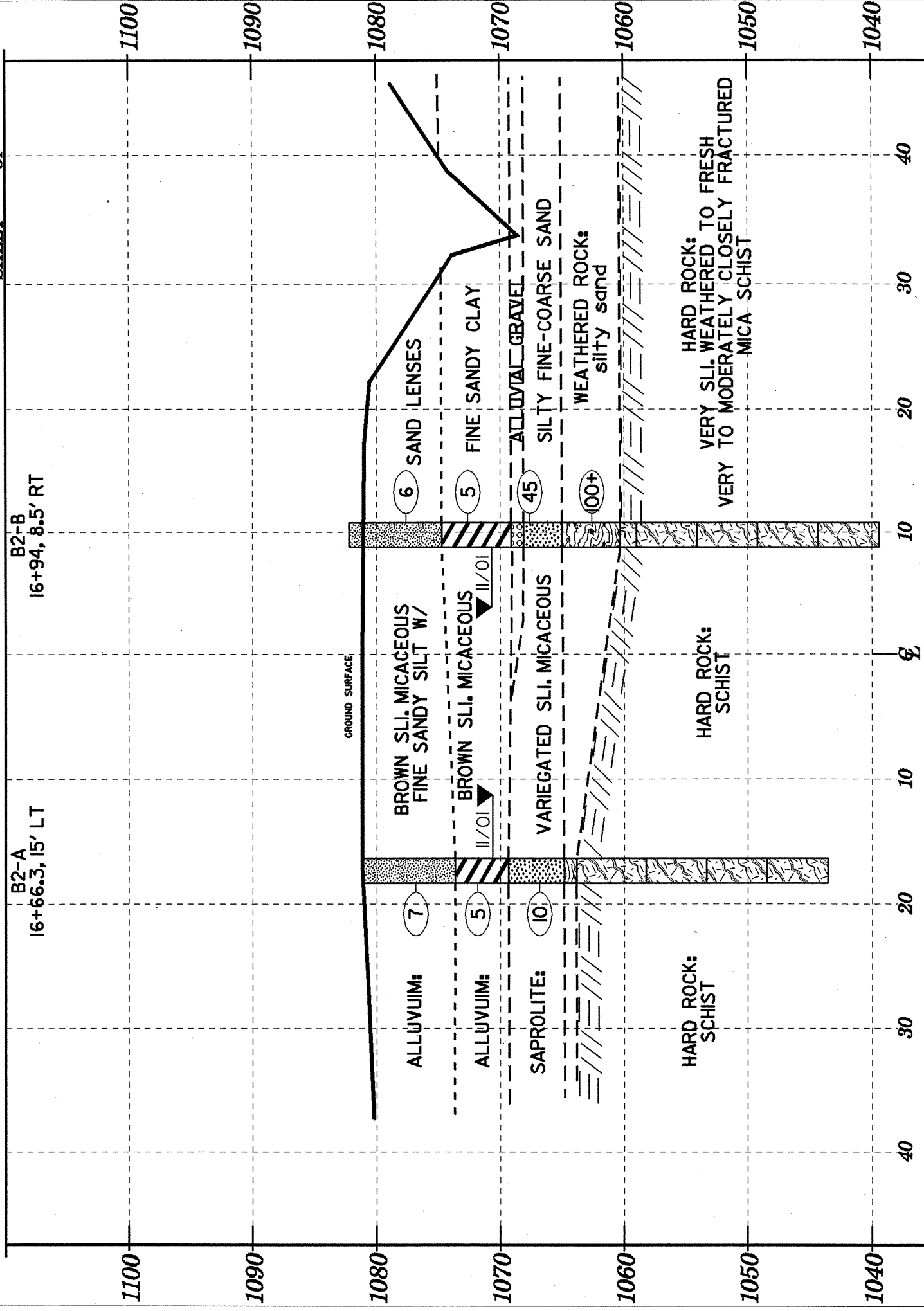
SECTION THROUGH B1 PROPOSED

PROJECT 82732701 (B-3126)
COUNTY CALDWELL
SHEET OF



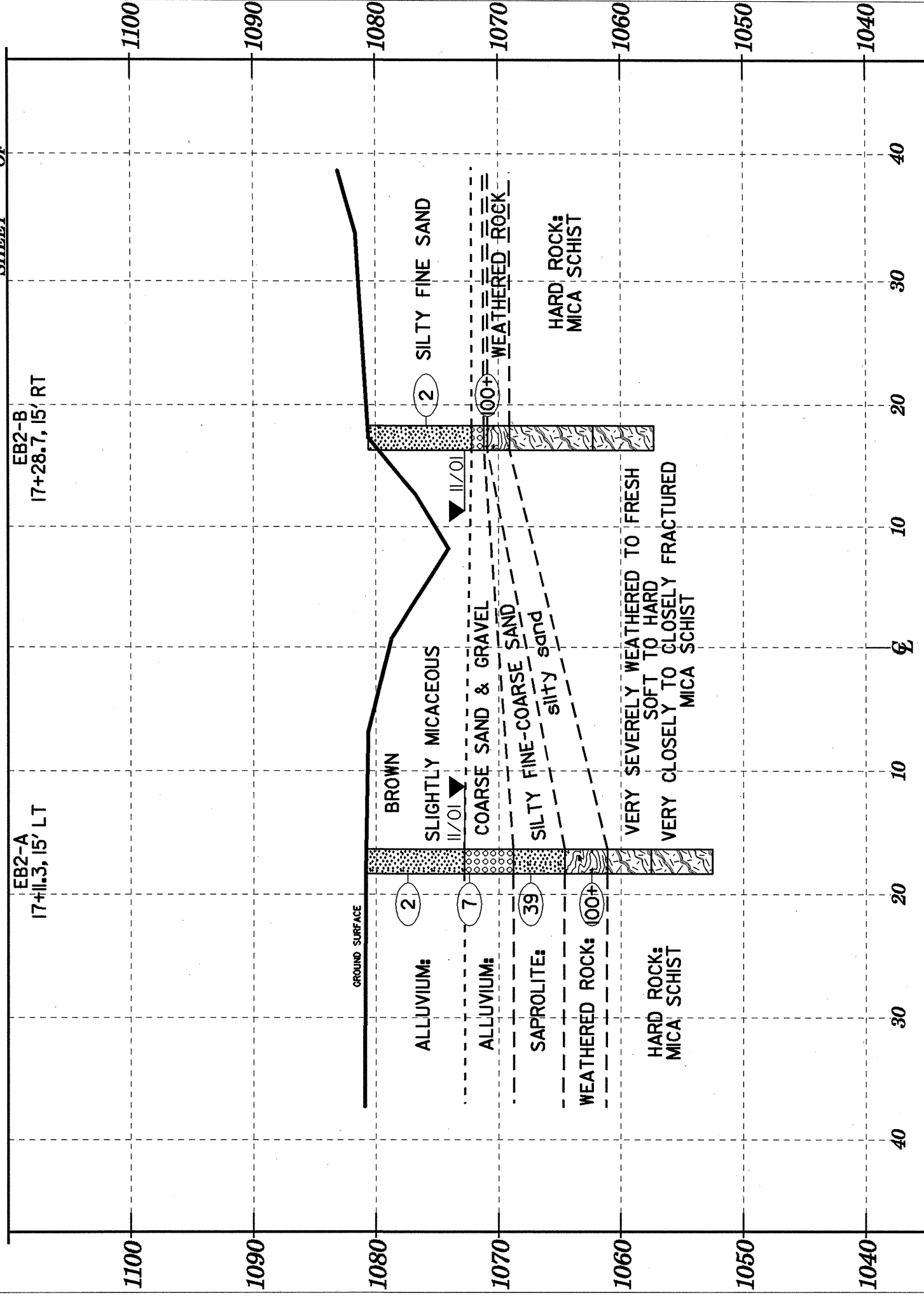
SECTION THROUGH B2 PROPOSED

PROJECT 8.2732701 (B-3126)
COUNTY CALDWELL
SHEET OF



SECTION THROUGH EB2 PROPOSED

PROJECT 8.2732701 (B-3126)
COUNTY CALDWELL
SHEET OF



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

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PROJECT NO 8.2732701		ID B-3126		COUNTY CALDWELL		GEOLOGIST T.B.DANIEL								
SITE DESCRIPTION BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK							GND WATER							
BORING NO EB1-A		NORTHING 0.00		EASTING 0.00		0 HR 11.50ft								
ALIGNMENT -L-		BORING LOCATION 15+15.000		OFFSET 10.00ft LT		24 HR 25.50ft								
COLLAR ELEV 1104.99ft		TOTAL DEPTH 27.50ft		START DATE 11/26/01		COMPLETION DATE 11/27/01								
DRILL MACHINE CME-550 X			DRILL METHOD H.S. AUGERS			HAMMER TYPE AUTOMATIC								
SURFACE WATER DEPTH			DEPTH TO ROCK 27.50ft			Log EB1-A, Page 1 of 1								
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT					SAMPLE NO	MOI	LOG	SOIL AND ROCK DESCRIPTION
		6in	6in	6in		0	25	50	75	100				
1104.99						Ground Surface								
1100.00	4.60		100		0.4					100				COLLUVIUM: RED/BROWN SANDY SILT WITH GRAVEL
	9.60		100		0.2					100				SAPROLITE: RED/BROWN SLI. MICACEOUS SILTY FINE SAND
1090.00	14.60	84	16		0.6					100	SS-9	M		WEATHERED ROCK: SILTY SAND
	19.60	38	62		0.9					100	SS-10	M		
1080.00	24.60		100		0.4					100			▼	
1077.49						BORING TERMINATED ON ROCK AT ELEVATION 1077.49								

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL UNIT BORING LOG

PROJECT NO 8.2732701		ID B-3126		COUNTY CALDWELL		GEOLOGIST T.B.DANIEL								
SITE DESCRIPTION BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK						GND WATER								
BORING NO EB1-B		NORTHING 0.00		EASTING 0.00		0 HR 16.00ft								
ALIGNMENT -L-		BORING LOCATION 15+33.000		OFFSET 30.00ft RT		24 HR 19.60ft								
COLLAR ELEV 1103.35ft		TOTAL DEPTH 22.70ft		START DATE 11/26/01		COMPLETION DATE 11/26/01								
DRILL MACHINE CME-550 X			DRILL METHOD SPT CORE BORING			HAMMER TYPE AUTOMATIC								
SURFACE WATER DEPTH			DEPTH TO ROCK 11.60ft			Log EB1-B, Page 1 of 1								
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT					SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75	100				
1103.35														Ground Surface
1100.00	4.20	55	45	0.8							100	SS-8	M	COLLUVIUM: RED/BROWN SANDY SILT WITH GRAVEL
	9.20	50		0.1							50			SAPROLITE: BLACK/BROWN/WHITE SILTY FINE TO COARSE SAND
1090.00												CORE # 1		WEATHERED ROCK
												CORE # 2		GNEISS & MICA SCHIST REC=91% RQD=91%
												CORE # 3		INTERLAYERED SCHIST & GNEISS REC=96% RQD=22%
1080.65														INTERLAYERED SCHIST & GNEISS REC=96% RQD=30%
														BORING TERMINATED IN ROCK AT ELEVATION 1080.65

CORE BORING REPORT

PROJECT: 8.2732701 I. D. NO: B-3126 BORING NO: EB1-B GEOLOGIST: J.W. MANN

DESCRIPTION: BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

COUNTY: CALDWELL COLLAR ELEVATION: 1103.4 FT. TOTAL DEPTH: 22.7 FT.

ELEV. (FEET)	DEPTH (FEET)	DRILL RATE (MIN./FT.)	RUN (FEET)	REC. FEET %	RQD. FEET %	SAMP. #	FIELD CLASSIFICATION AND REMARKS
1091.8	11.6		1.1	1.0	1.0		INTERLAYERED MICA SCHIST & GRANITIC GNEISS. ROCK IS SEVERELY WEATHERED TO FRESH, SOFT TO HARD, & MODERATELY CLOSELY TO VERY CLOSELY FRACTURED.
				91	91		
1090.7	12.7						INTERLAYERED MICA SCHIST & GRANITIC GNEISS. ROCK IS SEVERELY WEATHERED TO FRESH, SOFT TO HARD, & MODERATELY CLOSELY TO VERY CLOSELY FRACTURED.
1090.7	12.7		5.0	4.8	1.1		
				96	22		
1085.7	17.7						INTERLAYERED MICA SCHIST & GRANITIC GNEISS. ROCK IS SEVERELY WEATHERED TO FRESH, SOFT TO HARD, & MODERATELY CLOSELY TO VERY CLOSELY FRACTURED.
1085.7	17.7		5.0	4.8	1.5		
				96	30		
1080.7	22.7						
1080.7	22.7						

CORING TERMINATED AT ELEVATION 1080.7 FT.

DRILLER: E.A.SMITH CORE SIZE: NXWL EQUIPMENT: CME-550-X

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

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PROJECT NO 8.2732701		ID B-3126		COUNTY CALDWELL		GEOLOGIST T.B.DANIEL								
SITE DESCRIPTION BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK							GND WATER							
BORING NO B1-A		NORTHING 0.00		EASTING 0.00		0 HR 7.20ft								
ALIGNMENT -L-		BORING LOCATION 15+76.300		OFFSET 15.00ft LT		24 HR 6.60ft								
COLLAR ELEV 1079.17ft		TOTAL DEPTH 27.30ft		START DATE 11/20/01		COMPLETION DATE 11/20/01								
DRILL MACHINE CME-550 X			DRILL METHOD SPT CORE BORING			HAMMER TYPE AUTOMATIC								
SURFACE WATER DEPTH			DEPTH TO ROCK 10.40ft			Log B1-A, Page 1 of 1								
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT					SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75	100				
1079.17														Ground Surface
	4.30	2	1	2	1.5	3					SS-7			ALLUVIUM: BROWN SLI. MICACEOUS SILTY CLAY W/ FINE SAND LAYERS
1070.00	9.30	25	100		0.9						CORE # 1			SAPROLITE: GRAY/BROWN SLI. MICACEOUS SILTY SAND
											CORE # 2			WEATHERED ROCK: SILTY SAND
											CORE # 3			GNEISS & SCHIST REC=96% RQD=24%
											CORE # 4			MICA SCHIST REC=96% RQD=59%
														GNEISS REC=100% RQD=79%
														INTERLAYERED MICA SCHIST & GNEISS REC=100% RQD=77%
1051.87														BORING TERMINATED IN ROCK AT ELEVATION 1051.87

SHEET 1 OF 1

CORE BORING REPORT

DATE 11/20/01

PROJECT: 8.2732701 I. D. NO: B-3126 BORING NO: B1-A GEOLOGIST: J.W. MANN

DESCRIPTION: BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

COUNTY: CALDWELL COLLAR ELEVATION: 1079.2 FT. TOTAL DEPTH: 27.3 FT.

ELEV. (FEET)	DEPTH (FEET)	DRILL RATE MIN./FT.	RUN (FEET)	REC. FEET %	RQD. FEET %	SAMP. #	FIELD CLASSIFICATION AND REMARKS
1068.8	10.4		2.5	2.4	0.6		INTERLAYERED GNEISS & MICA SCHIST. ROCK IS SLIGHTLY WEATHERED TO FRESH, HARD, & VERY CLOSELY TO CLOSELY FRACTURED.
1066.3	12.9			96	24		
1066.3	12.9		4.9	4.7	2.9	RS-1	PREDOMINANTLY MICA SCHIST. ROCK IS VERY SLIGHTLY WEATHERED, HARD, & VERY CLOSELY TO CLOSELY FRACTURED.
1061.4	17.8			96	59		
1061.4	17.8		4.7	4.7	3.7	RS-2	PREDOMINANTLY GNEISS. ROCK IS FRESH, HARD, GENERALLY MODERATELY FRACTURED.
1056.7	22.5			96	79		
1056.7	22.5		4.8	4.8	3.7		INTERLAYERED MICA SCHIST & GNEISS. ROCK IS FRESH, HARD, & CLOSELY TO MODERATELY CLOSELY FRACTURED.
1051.9	27.3			100	77		
1051.9	27.3						

CORING TERMINATED AT ELEVATION 1051.9 FT.

DRILLER: E.A.SMITH CORE SIZE: NXWL EQUIPMENT: CME-550

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

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PROJECT NO 8.2732701		ID B-3126		COUNTY CALDWELL		GEOLOGIST T.B.DANIEL								
SITE DESCRIPTION BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK							GND WATER							
BORING NO B1-B		NORTHING 0.00		EASTING 0.00		0 HR 8.20ft								
ALIGNMENT -L-		BORING LOCATION 15+93.700		OFFSET 15.00ft RT		24 HR 8.40ft								
COLLAR ELEV 1079.67ft		TOTAL DEPTH 25.80ft		START DATE 11/21/01		COMPLETION DATE 11/21/01								
DRILL MACHINE CME-550 X			DRILL METHOD SPT CORE BORING			HAMMER TYPE AUTOMATIC								
SURFACE WATER DEPTH			DEPTH TO ROCK 14.00ft			Log B1-B, Page 1 of 1								
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT					SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75	100				
1079.67														Ground Surface
	4.80	3	3	3	1.5									ALLUVIUM: BROWN SLI. MICACEOUS SILTY CLAY WITH FINE SAND LAYERS
	9.80	50			0.1									SAPROLITE: WHITE/GRAY SILTY FINE TO COARSE SAND
														WEATHERED ROCK: SILTY SAND
														GNEISS & SCHIST REC=95% RQD=91%
														INTERLAYERED MICA SCHIST & GNEISS REC=98% RQD=79%
														INTERLAYERED MICA SCHIST & GNEISS REC=100% RQD=90%
														BORING TERMINATED IN ROCK AT ELEVATION 1053.87

SHEET 1 1

DATE 11/21/01

CORE BORING REPORT

PROJECT: 8.2732701 I. D. NO: B-3126 BORING NO: B1-B GEOLOGIST: J.W. MANN

DESCRIPTION: BRIDGE NO. 90 ON SR1718 OVER GUNPOWDER CREEK

COUNTY: CALDWELL COLLAR ELEVATION: 1079.7 FT. TOTAL DEPTH: 25.8 FT.

ELEV. (FEET)	DEPTH (FEET)	DRILL RATE MIN./FT.	RUN (FEET)	REC. FEET %	RQD. FEET %	SAMP. #	FIELD CLASSIFICATION AND REMARKS
1065.7	14.0		2.2	2.1	2.0		INTERLAYERED MICA SCHIST & GNEISS. ROCK IS GENERALLY VERY SLIGHTLY WEATHERED TO FRESH, HARD, & CLOSELY TO MODERATELY CLOSELY FRACTURED.
				95	91		
1063.5	16.2						
1063.5	16.2			4.7	3.8		
			4.8	98	79		
1058.7	21.0						
1058.7	21.0			4.8	4.3	RS-3	
			4.8	100	90	RS-4	
1053.9	25.8						
1053.9	25.8						

CORING TERMINATED AT ELEVATION 1053.9 FT.

DRILLER: E.A.SMITH CORE SIZE: NXWL EQUIPMENT: CME 550-X

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

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SHEET 1 OF 1

PROJECT NO 8.2732701		ID B-3126		COUNTY CALDWELL		GEOLOGIST T.B.DANIEL								
SITE DESCRIPTION BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK						GND WATER								
BORING NO B2-A		NORTHING 0.00		EASTING 0.00		0 HR 11.00ft								
ALIGNMENT -L-		BORING LOCATION 16+66.300		OFFSET 15.00ft LT		24 HR 10.50ft								
COLLAR ELEV 1081.13ft		TOTAL DEPTH 37.60ft		START DATE 11/14/01		COMPLETION DATE 11/15/01								
DRILL MACHINE CME-550 X			DRILL METHOD SPT CORE BORING			HAMMER TYPE AUTOMATIC								
SURFACE WATER DEPTH			DEPTH TO ROCK 17.30ft			Log B2-A, Page 1 of 1								
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT					SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75	100				
1081.13														Ground Surface
	4.30	3	4	3	1.5									ALLUVIUM: BROWN SLI. MICACEOUS FINE SANDY SILT
	9.30	2	2	3	1.5									ALLUVIUM: BROWN SLI. MICACEOUS FINE SANDY CLAY
	14.30	3	4	6	1.5									SAPROLITE: YELLOW/BROWN/GRAY SILTY FINE TO COARSE SAND
														WEATHERED ROCK: SILTY SAND
														MICA SCHIST REC=91% RQD=41%
														MICA SCHIST REC=100% RQD=96%
														MICA SCHIST REC=100% RQD=20%
														MICA SCHIST REC=100% RQD=61%
														BORING TERMINATED IN ROCK AT ELEVATION 1043.53

CORE BORING REPORT							DATE 11/20/01
PROJECT: 8.2732701		I. D. NO: B-3126		BORING NO: B2-A		GEOLOGIST: J.W. MANN	
DESCRIPTION: BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK							
COUNTY: CALDWELL		COLLAR ELEVATION: 1081.1 FT.		TOTAL DEPTH: 37.6 FT.			
ELEV. (FEET)	DEPTH (FEET)	DRILL RATE (MIN./FT.)	RUN (FEET)	REC. FEET %	RQD. FEET %	SAMP. #	FIELD CLASSIFICATION AND REMARKS
1063.8	17.3		5.6	5.1	2.3		PREDOMINANTLY MICA SCHIST. ROCK IS LIGHT TO DARK GRAY, VERY SLIGHTLY WEATHERED TO PREDOMINANTLY FRESH, HARD, & GENERALLY VERY CLOSELY TO CLOSELY FRACTURED.
1058.2	22.9			91	41	RS-5	
1058.2	22.9			4.9	4.7	RS-6	
				100	96		
1053.3	27.8			4.9	1.0		
1053.3	27.8			96	20		
1048.4	32.7			4.9	3.0		
1048.4	32.7			100	61		
1043.5	37.6						
CORING TERMINATED AT ELEVATION 1043.5 FT.							
DRILLER: E.A.SMITH		CORE SIZE: NXWL		EQUIPMENT: CME-550			

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

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PROJECT NO 8.2732701		ID B-3126		COUNTY CALDWELL		GEOLOGIST T.B.DANIEL								
SITE DESCRIPTION BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK						GND WATER								
BORING NO B2-B		NORTHING 0.00		EASTING 0.00		0 HR 12.00ft								
ALIGNMENT -L-		BORING LOCATION 16+94.000		OFFSET 8.50ft RT		24 HR 11.50ft								
COLLAR ELEV 1082.20ft		TOTAL DEPTH 42.80ft		START DATE 11/20/01		COMPLETION DATE 11/20/01								
DRILL MACHINE CME-550 X			DRILL METHOD SPT CORE BORING			HAMMER TYPE AUTOMATIC								
SURFACE WATER DEPTH N/A			DEPTH TO ROCK 21.90ft			Log B2-B, Page 1 of 1								
ELEV	DEPTH	BLOW CT			PEN (ft)	BLOWS PER FOOT					SAMPLE NO	LOG	SOIL AND ROCK DESCRIPTION	
		6in	6in	6in		0	25	50	75	100				
1082.20														
1080.00	4.60	3	3	3	1.5	6								ALLUVIUM: BROWN/TAN SLI. MICACEOUS FINE SANDY SILT WITH SILTY SAND LENSES
1070.00	9.60	1	2	3	1.5	5								ALLUVIUM: BROWN SLI. MICACEOUS FINE SANDY CLAY
	14.60	7	16	29	1.5			45						ALLUVIUM: GRAVEL
	19.60	100			0.5				100					SAPROLITE: WHITE/GRAY/BROWN SLI. MICACEOUS SILTY FINE TO COARSE SAND
														WEATHERED ROCK: SILTY SAND
														MICA SCHIST REC=92% RQD=92%
														MICA SCHIST REC=98% RQD=45%
														MICA SCHIST REC=100% RQD=71%
														MICA SCHIST REC=100% RQD=55%
														MICA SCHIST REC=98% RQD=88%
1039.40														BORING TERMINATED IN ROCK AT ELEVATION 1039.4

SHEET 1 1

DATE 11/14/01

CORE BORING REPORT

PROJECT: 8.2732701 I. D. NO: B-3126 BORING NO: B2-B GEOLOGIST: J.W. MANN

DESCRIPTION: BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

COUNTY: CALDWELL COLLAR ELEVATION: 1082.2 FT. TOTAL DEPTH: 42.8 FT.

ELEV. (FEET)	DEPTH (FEET)	DRILL RATE MIN./FT.	RUN (FEET)	REC. FEET %	RQD. FEET %	SAMP. #	FIELD CLASSIFICATION AND REMARKS
1060.3	21.9		1.3	1.2	1.2		
1059.0	23.2			92	92		
1059.0	23.2		4.9	4.8	2.2		
1054.1	28.1			98	45		
1054.1	28.1		4.9	4.9	3.5		LIGHT TO DARK GRAY, FRESH, HARD, VERY TO MODERATELY CLOSELY FRACTURED, MICA SCHIST. CRUSHED ROCK ZONE FROM 27.5-28.1 FT.
1049.2	33.0			100	71		
1049.2	33.0		4.9	4.9	2.7		
1044.3	37.9			100	55		
1044.3	37.9		4.9	4.8	4.3	RS-7	
1039.4	42.8			98	88		
1039.4	42.8						

CORING TERMINATED AT ELEVATION 1039.4 FT.

DRILLER: E.A.SMITH CORE SIZE: NXWL EQUIPMENT: CME-550-X

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: x field inspection microfilm(Reel: Pos:) other

COUNTY BRIDGE NO. 90 BRIDGE LENGTH 111 Ft. NO. BENTS: 4 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.

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.

DESIGN INFORMATION CONT.

STREAM IS x DEGRADING AGGRADING (13)

OTHER OBSERVATIONS AND COMMENTS: Both A-side wingwalls failing. EB2 approach embankment sides have sloughed behind wingwalls.

CHANNEL MIGRATION TENDENCY (14): Toward bank of Bent Two.

CRITICAL SCOUR ELEVATION (15):

Bent One: 1067.5 feet

Bent Two: 1065.0 feet

REPORTED BY: J. W. Mann, TEG-III DATE: 12/18/01

INSTRUCTIONS

- (1) 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 ON 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'

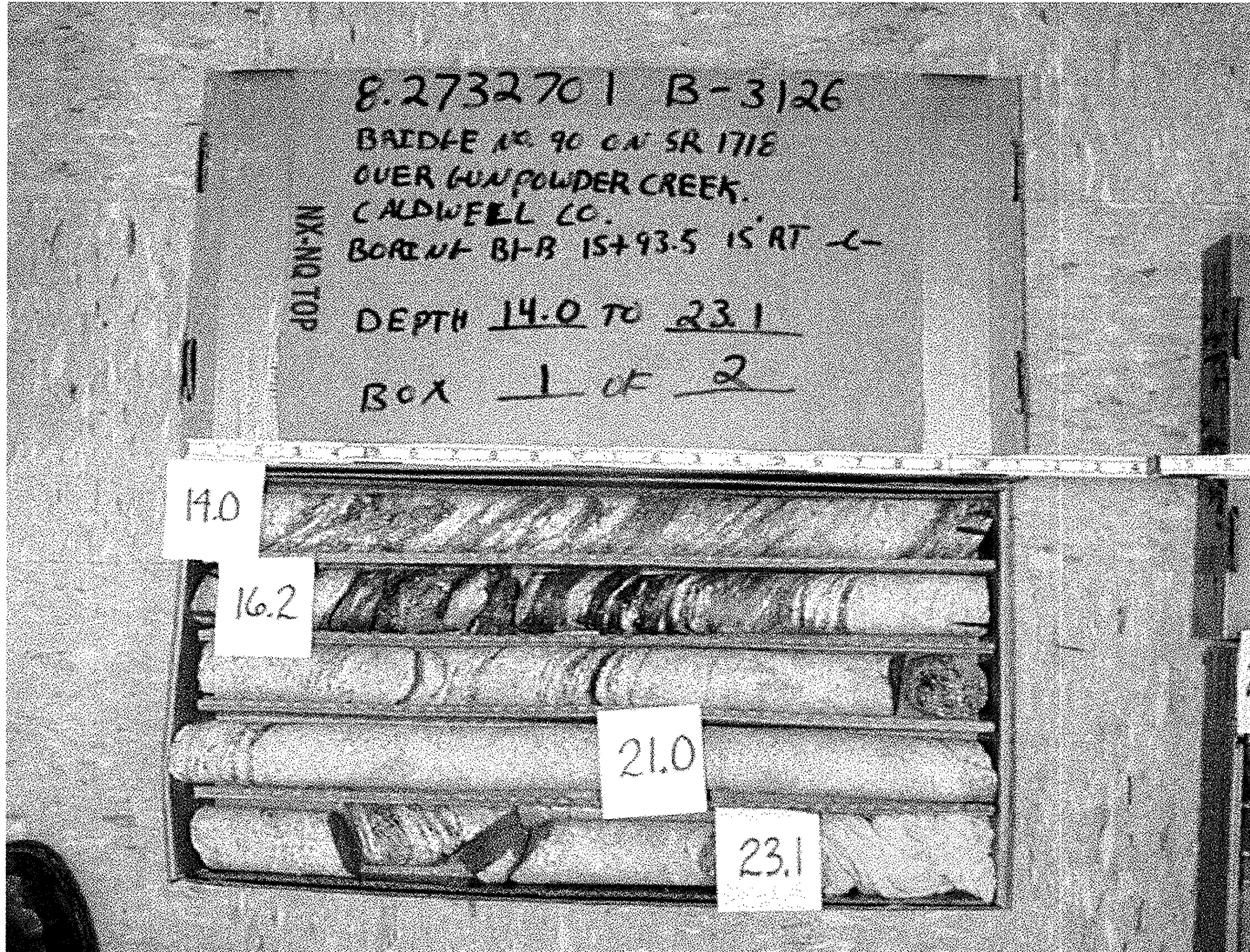


8.2732701 (B-3126)
 CALDWELL COUNTY
 BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

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

BOX 2 OF 2

DEPTH: 19.8-27.3'

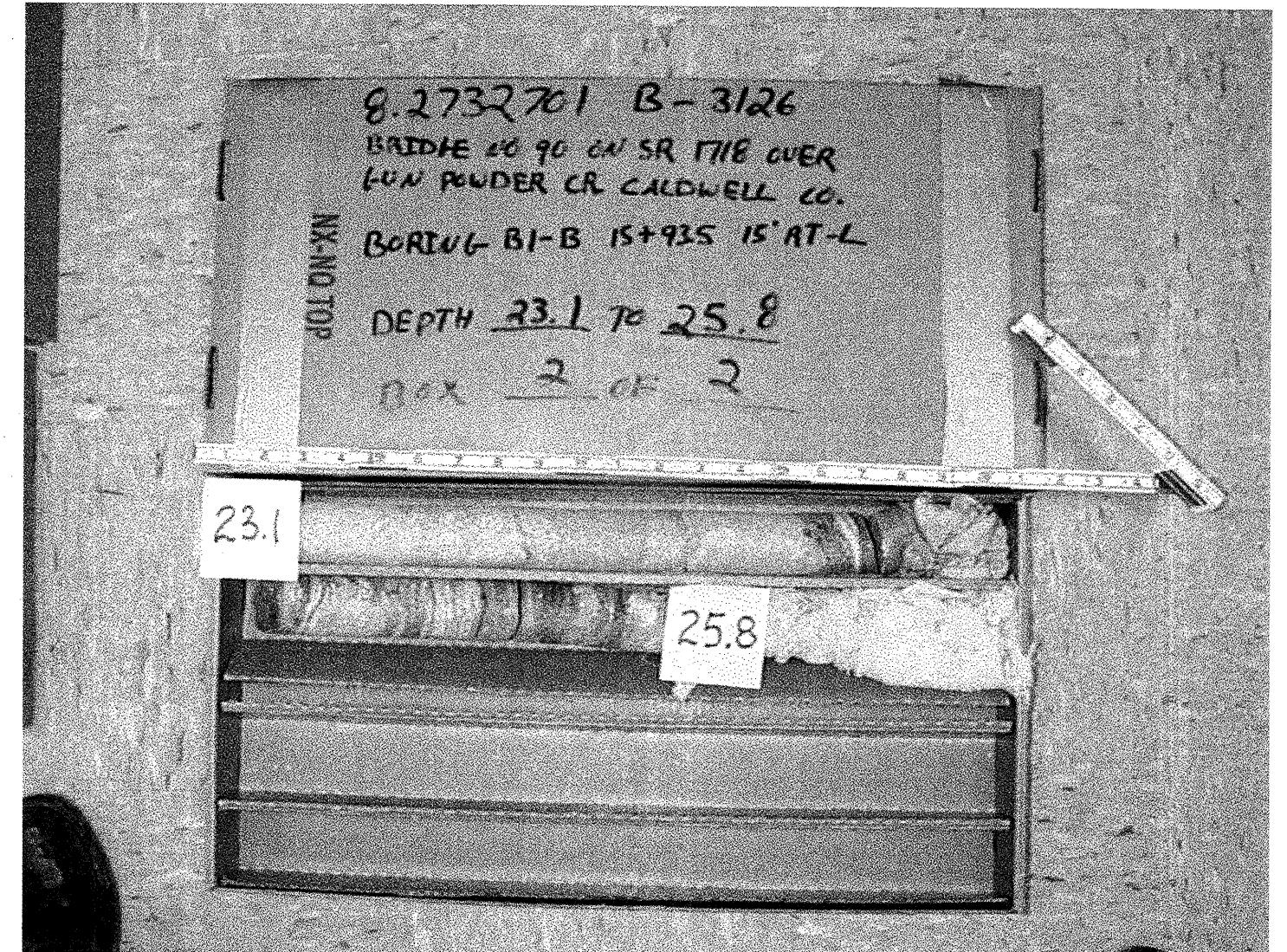


8.2732701 (B-3126)
 CALDWELL COUNTY
 BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

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

BOX 1 OF 2

DEPTH: 14.0-23.1'

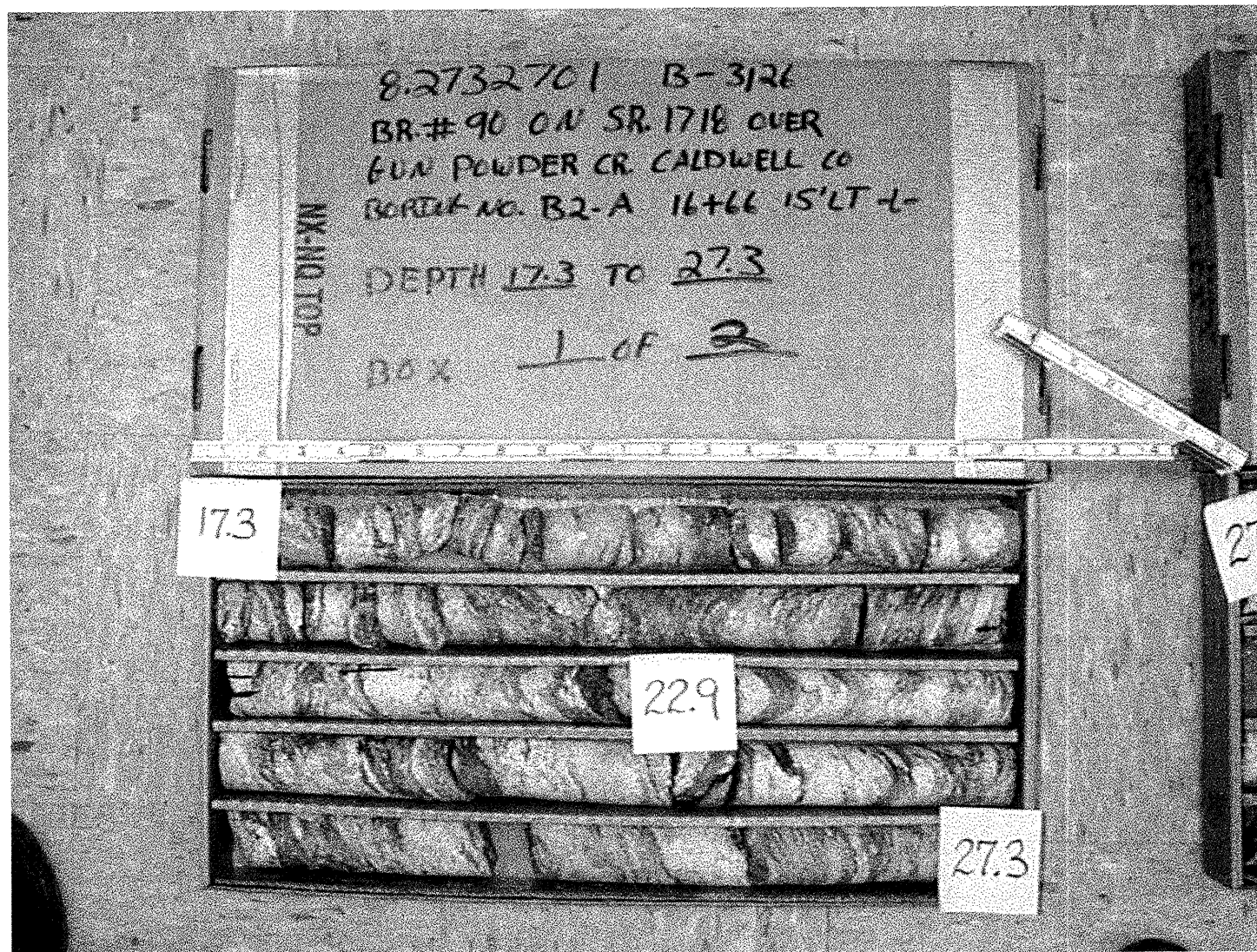


8.2732701 (B-3126)
 CALDWELL COUNTY
 BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

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

BOX 2 OF 2

DEPTH: 23.1-25.8'

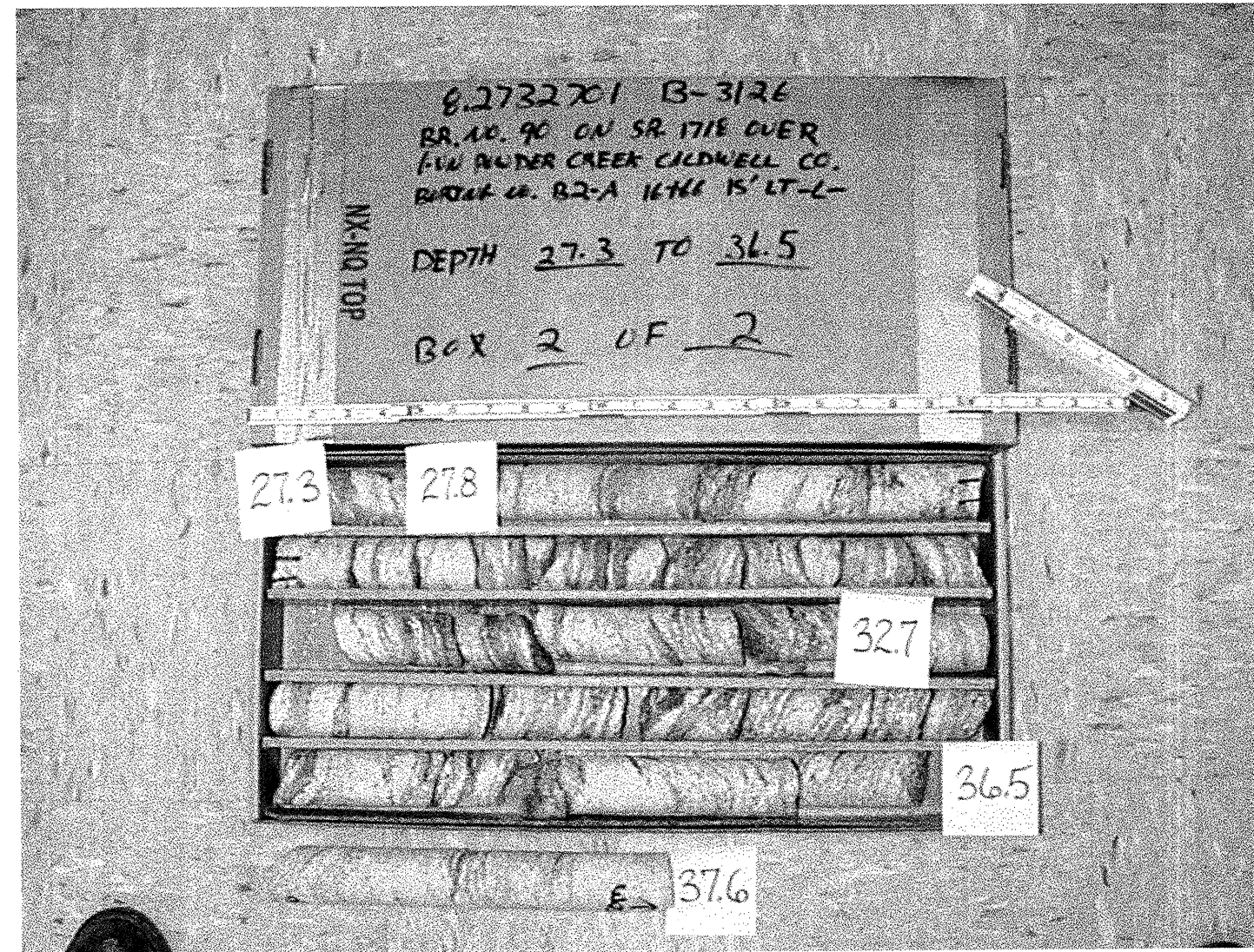


8.2732701 (B-3126)
CALDWELL COUNTY
BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

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

BOX 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'

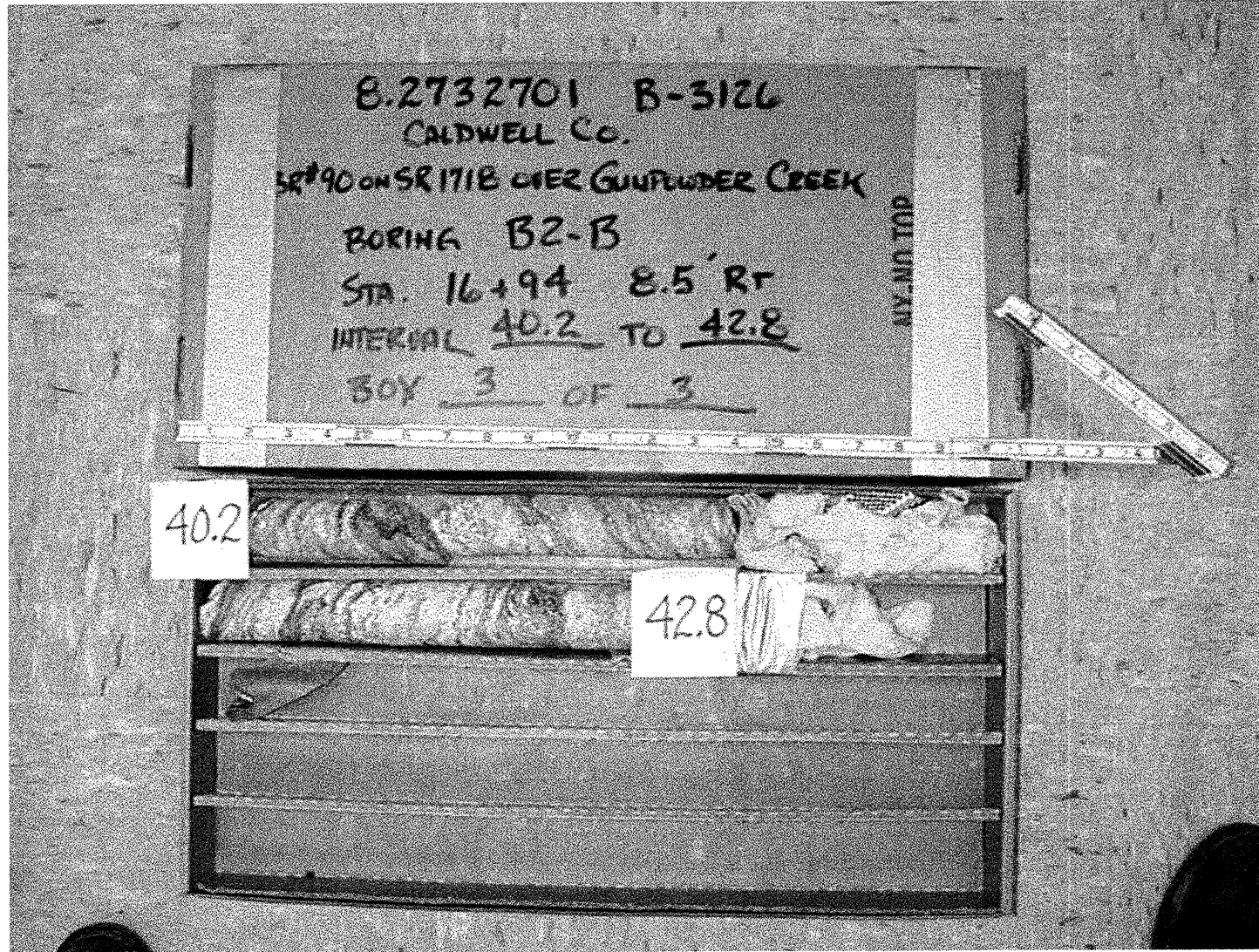


8.2732701 (B-3126)
 CALDWELL COUNTY
 BRIDGE NO. 90 ON SR 1718 OVER GUNPOWDER CREEK

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 ON 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 ON SR 1718 OVER GUNPOWDER CREEK

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

BOX 1 OF 1

DEPTH: 11.5-23.3'