

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

CONTENTS

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STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33314.1.1 (B-3869) F.A. PROJ. BRSTP-1151(3)
 COUNTY MADISON
 PROJECT DESCRIPTION BRIDGE NO. 146 ON SR-1151 OVER BIG PINE CREEK

SITE DESCRIPTION _____

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN BALDWIN BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN 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.

- PERSONNEL
- T B DANIEL
 - M M HAGER
 - C J COFFEY
 - R D CHILDERS
 - M M HAGER
 - D O CHEEK

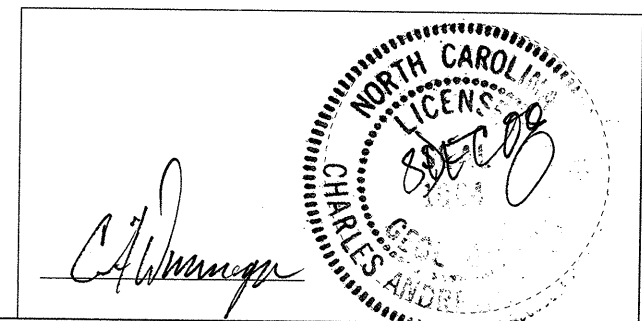
INVESTIGATED BY C A DUNNAGAN
 CHECKED BY W D FRYE, Jr
 SUBMITTED BY W D FRYE, Jr
 DATE DECEMBER 2008

PROJECT: 33314.1.1 ID: B-3869

DRAWN BY: C A DUNNAGAN

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.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. 33314.1.1(B-3869)	SHEET NO. 2/17
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SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION	GRADATION	ROCK DESCRIPTION	TERMS AND DEFINITIONS
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>	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. ANGULARITY OF GRAINS THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <u>ANGULAR</u> , <u>SUBANGULAR</u> , <u>SUBROUNDED</u> , OR <u>ROUNDED</u> .	HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL, AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS: WEATHERED ROCK (WR) CRYSTALLINE ROCK (CR) NON-CRYSTALLINE ROCK (NCR) COASTAL PLAIN SEDIMENTARY ROCK (CP)	ALLUVIUM (ALLUV.) - SOILS THAT 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, 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 AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. 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. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOGGED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT. LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS. MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS, MOTTLED 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 INTERVENING IMPERVIOUS STRATUM. RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (RQD) - 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 EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK. SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS. SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE. STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE. STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER. BENCH MARK: BM-101: -BL- STA 10+71.79' LT, 8" SPIKE IN 38" WHITE OAK ELEVATION: 2474.58 FT.
SOIL LEGEND AND AASHTO CLASSIFICATION	MINERALOGICAL COMPOSITION	WEATHERING	
GENERAL CLASS. GRANULAR MATERIALS (<= 35% PASSING #200) SILT-CLAY MATERIALS (> 35% PASSING #200) ORGANIC MATERIALS	MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.	FRESH - ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V SLI.) - ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. SLIGHT (SLI.) - ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH, OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED, CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS. MODERATE (MOD.) - SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK. MODERATELY SEVERE (MOD. SEV.) - ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES 'CLUNK' SOUND WHEN STRUCK. <i>IF TESTED, WOULD YIELD SPT REFUSAL</i> SEVERE (SEV.) - ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT, SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i> VERY SEVERE (V SEV.) - ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED, ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. <i>IF TESTED, YIELDS SPT N VALUES < 100 BPF</i> COMPLETE - ROCK REDUCED TO SOIL, ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.	
COMPRESSIONIBILITY	PERCENTAGE OF MATERIAL	GROUND WATER	
SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE	ORGANIC MATERIAL GRANULAR SOILS TRACE OF ORGANIC MATTER 2 - 3% LITTLE ORGANIC MATTER 3 - 5% MODERATELY ORGANIC 5 - 10% HIGHLY ORGANIC >10%	WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP	
CONSISTENCY OR DENSENESS	MISCELLANEOUS SYMBOLS	ROCK HARDNESS	
PRIMARY SOIL TYPE COMPACTNESS OR PENETRATION RESISTANCE RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/F ²)	ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRED SOIL BOUNDARY INFERRED ROCK LINE ALLUVIAL SOIL BOUNDARY DIP & DIP DIRECTION OF ROCK STRUCTURES SOUNDING ROD	VERY HARD - CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. HARD - CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. 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. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS. MEDIUM HARD - CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. SOFT - CAN BE GROOVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE. VERY SOFT - CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGER NAIL.	
TEXTURE OR GRAIN SIZE	ABBREVIATIONS	FRACTURE SPACING	BEDDING
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.76 2.00 0.42 0.25 0.075 0.053	AR - AUGER REFUSAL BT - BORING TERMINATED CL - CLAY CPT - CONE PENETRATION TEST CSE - COARSE DMT - DILATOMETER TEST DPT - DYNAMIC PENETRATION TEST e - VOID RATIO F - FINE FOSS. - FOSSILIFEROUS FRAC. - FRACTURED, FRACTURES FRAGS. - FRAGMENTS HI. - HIGHLY MED. - MEDIUM MICA. - MICACEOUS MOD. - MODERATELY NP - NON PLASTIC ORG. - ORGANIC PMT - PRESSUREMETER TEST SAP. - SAPROLITIC SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL w - MOISTURE CONTENT v - VERY VST - VANE SHEAR TEST WEA. - WEATHERED W - UNIT WEIGHT % - DRY UNIT WEIGHT FIAD - FILLED IMMEDIATELY AFTER DRILLING BT-BORING TERMINATED	VERY WIDE - MORE THAN 10 FEET WIDE - 3 TO 10 FEET MODERATELY CLOSE - 1 TO 3 FEET CLOSE - 0.16 TO 1 FEET VERY CLOSE - LESS THAN 0.16 FEET	VERY THICKLY BEDDED - > 4 FEET THICKLY BEDDED - 1.5 - 4 FEET THINLY BEDDED - 0.16 - 1.5 FEET VERY THINLY BEDDED - 0.03 - 0.16 FEET THICKLY LAMINATED - 0.008 - 0.03 FEET THINLY LAMINATED - < 0.008 FEET
SOIL MOISTURE - CORRELATION OF TERMS	EQUIPMENT USED ON SUBJECT PROJECT	INDURATION	
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION	DRILL UNITS: MOBILE B- BK-51 CME-45C CME-550 PORTABLE HOIST 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 HAMMER TYPE: AUTOMATIC MANUAL CORE SIZE: B-NXWL-H HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST	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.	
PLASTICITY			NOTES:
NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY			
COLOR			
DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.			

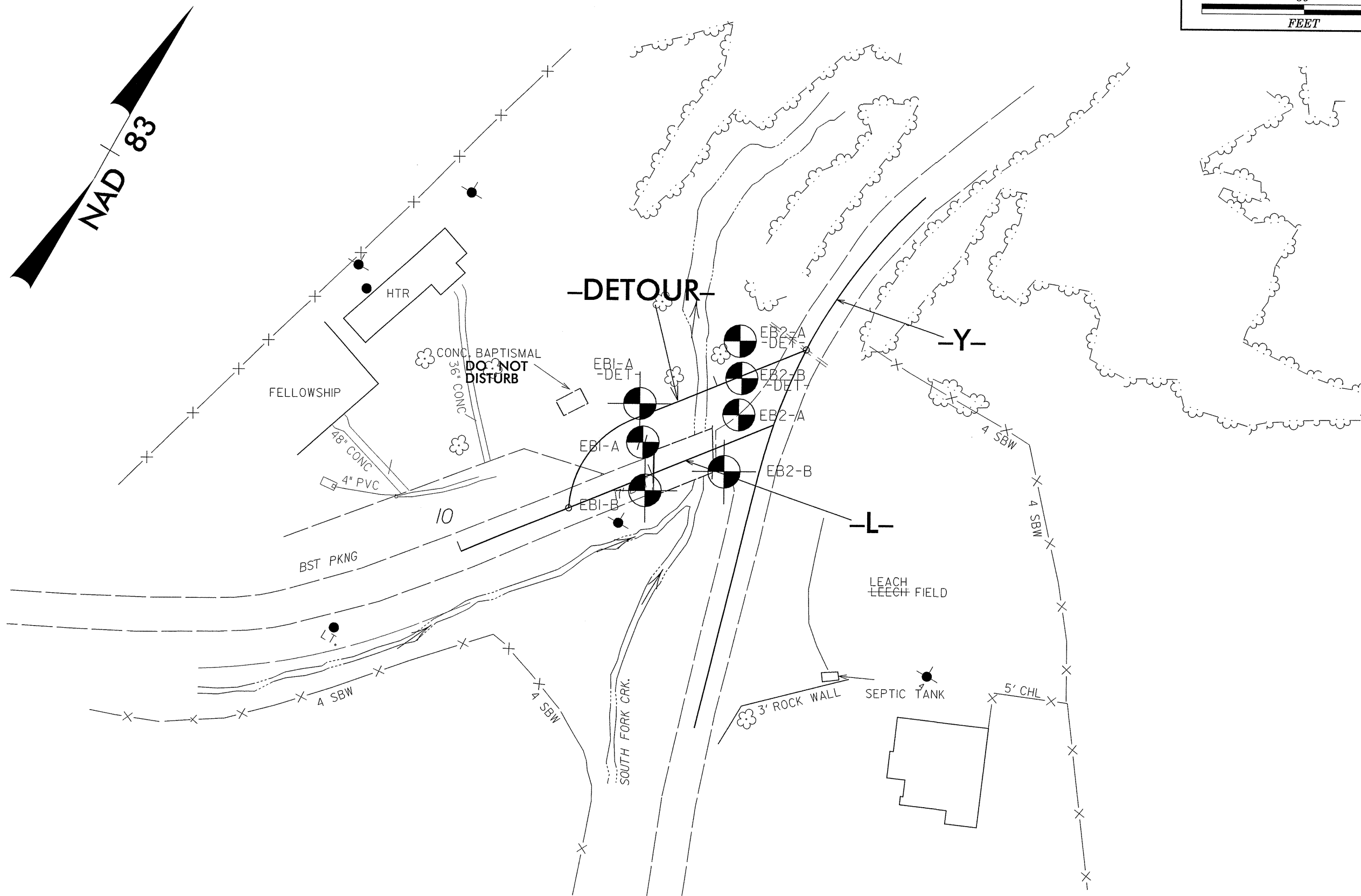
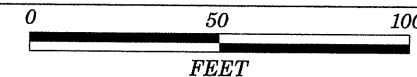
BRIDGE No. 146 ON SR-1151 OVER BIG PINE CREEK

PROJECT REFERENCE NO. SHEET

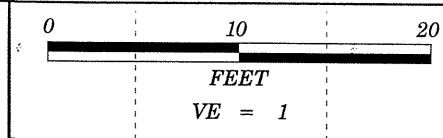
33314.1.1 (B-3869)

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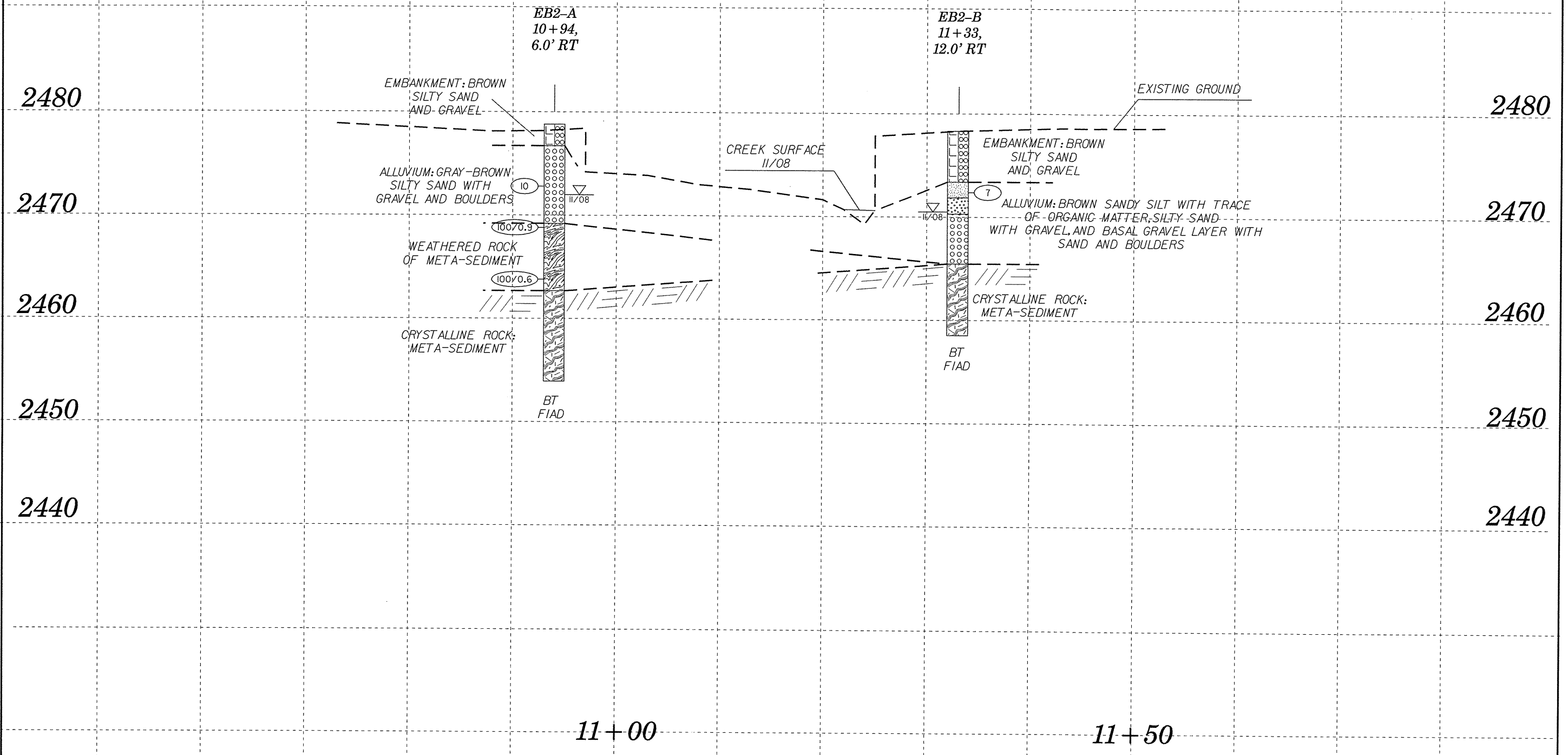
SITE PLAN



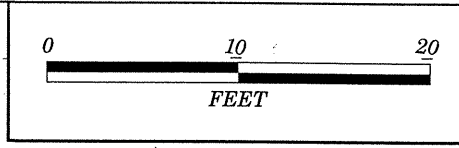
PROFILE 12.0 FEET RIGHT OF CENTERLINE -L-



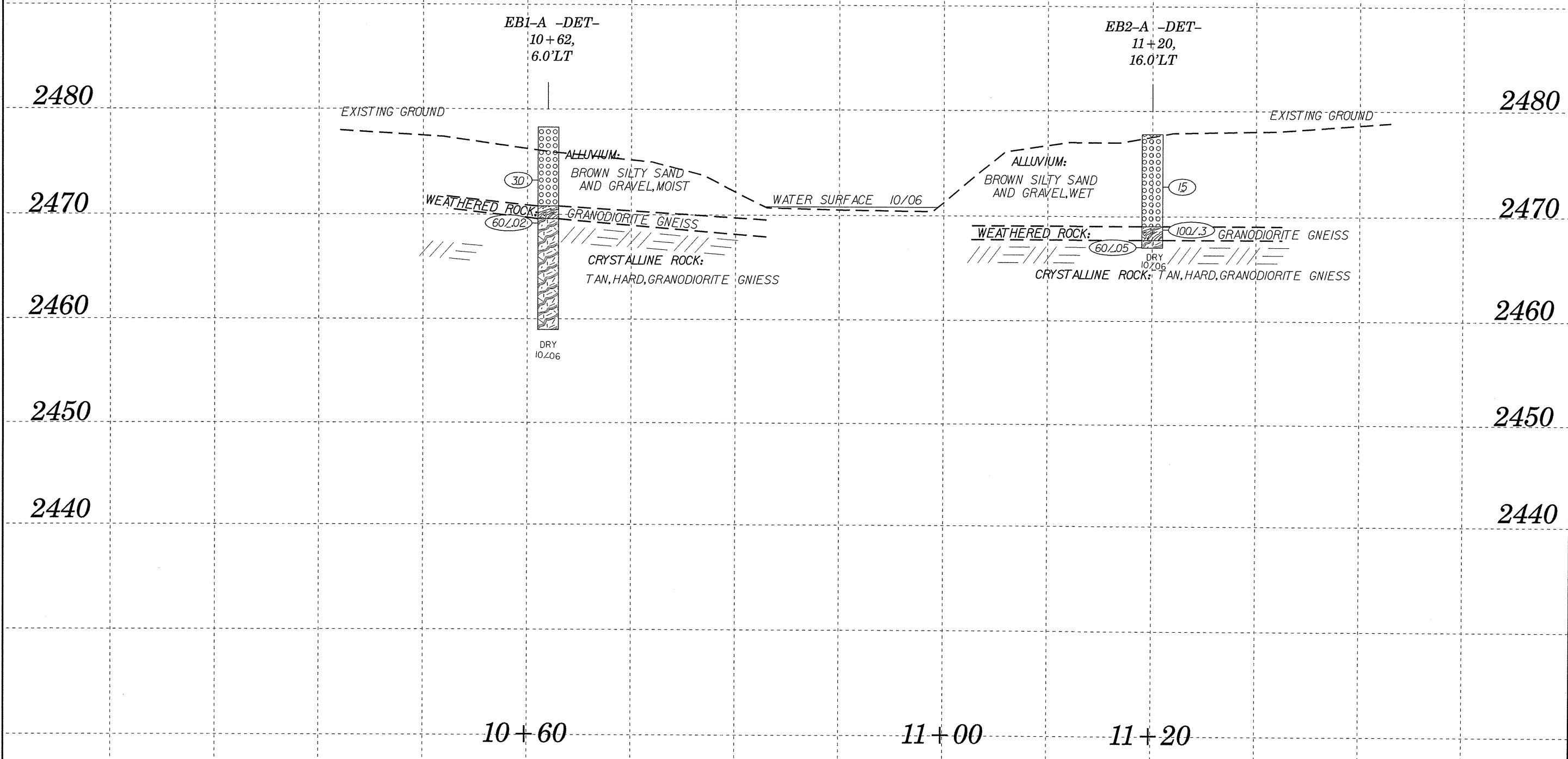
PROJECT REFERENCE NO.	SHEET
33314.1.1 (B-3869)	4/17
PROFILE RIGHT OF -L-	

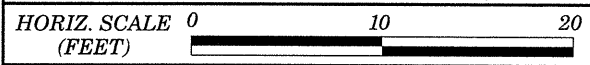
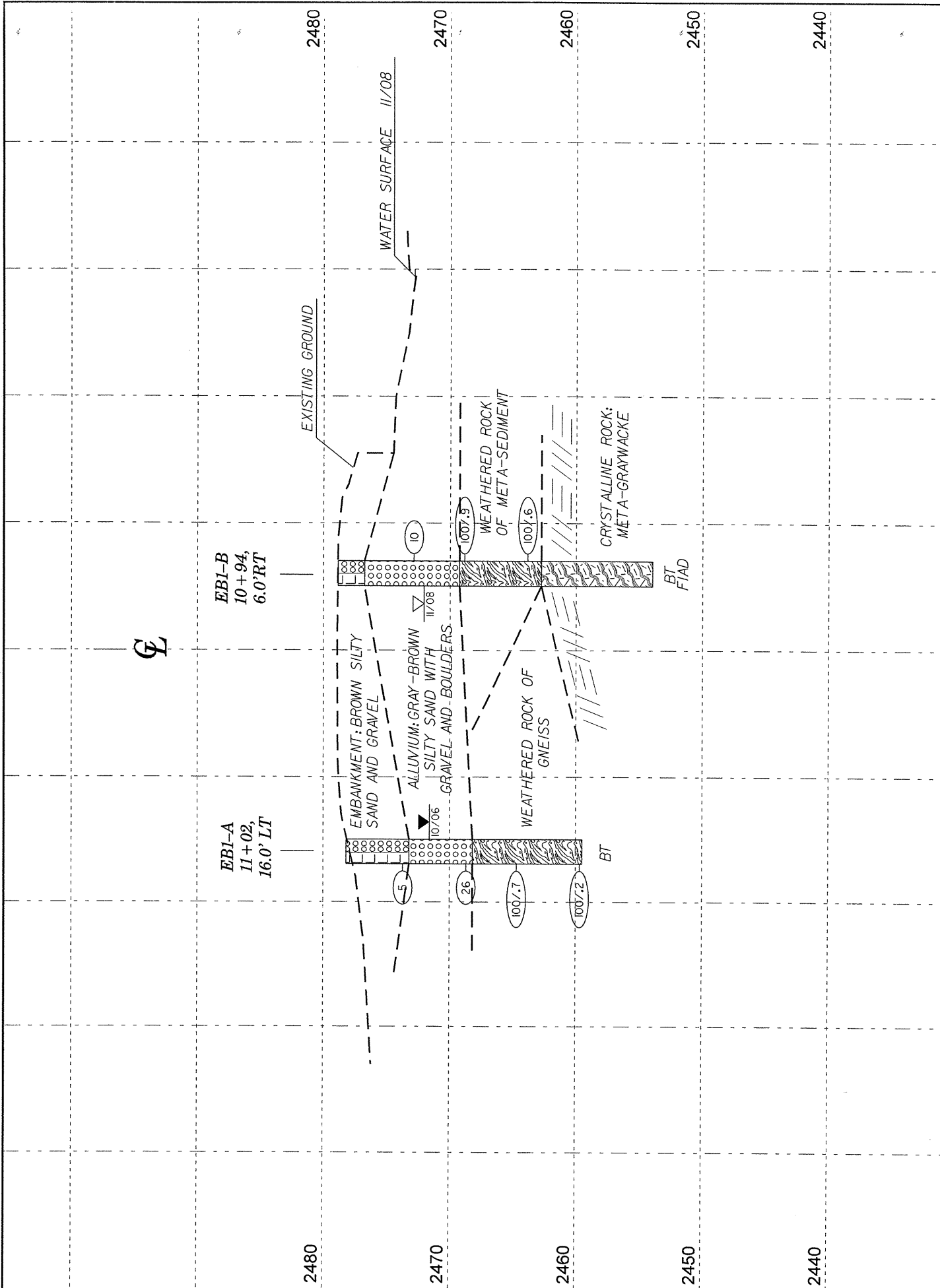


PROFILE THROUGH EB1-A -DET- AND EB2-A -DET-



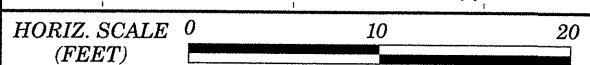
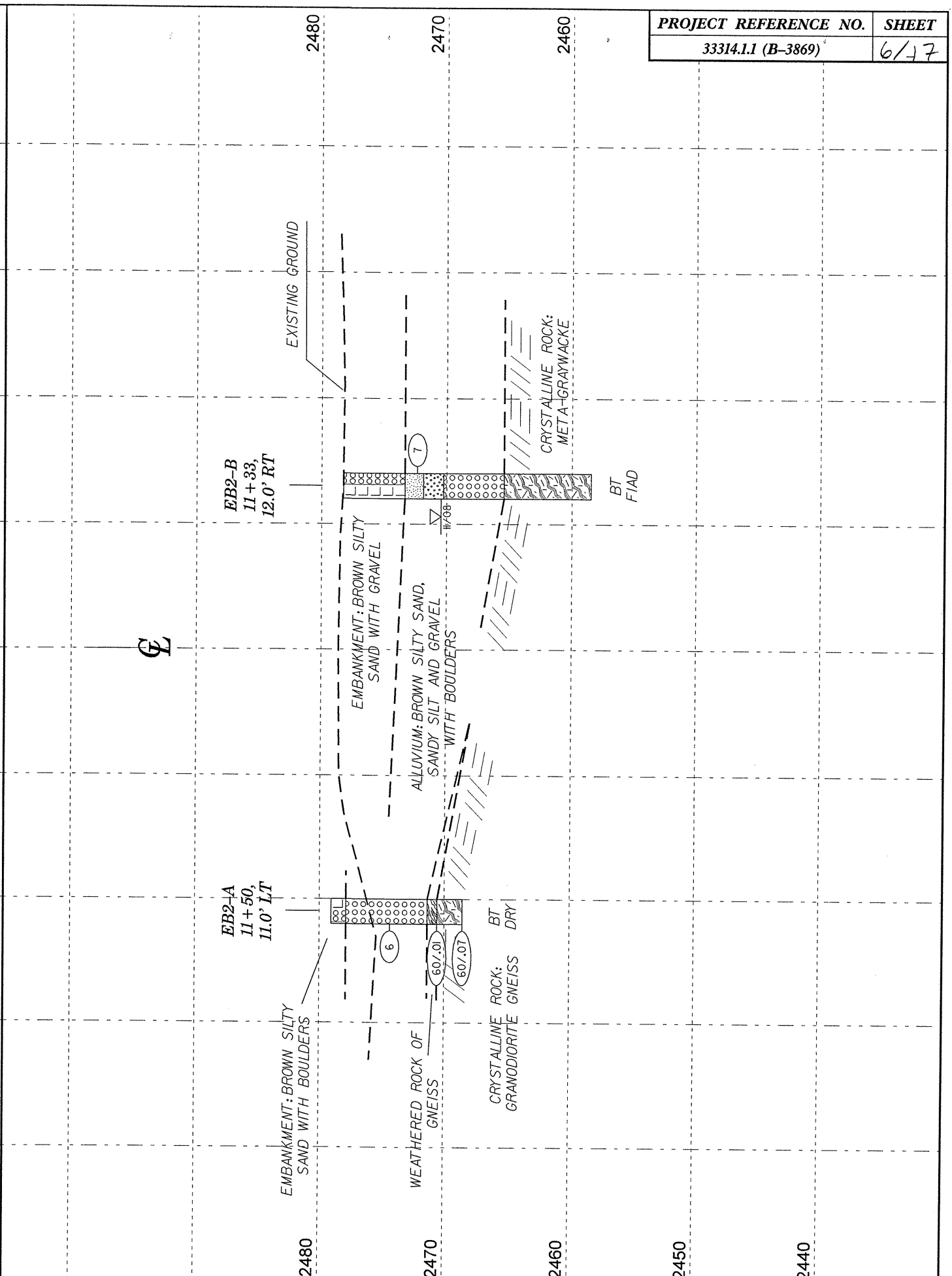
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33314.1.1 B-3869	5/17
PROFILE LEFT OF -DET-	





VE = 1

CROSS SECTION END BENT ONE

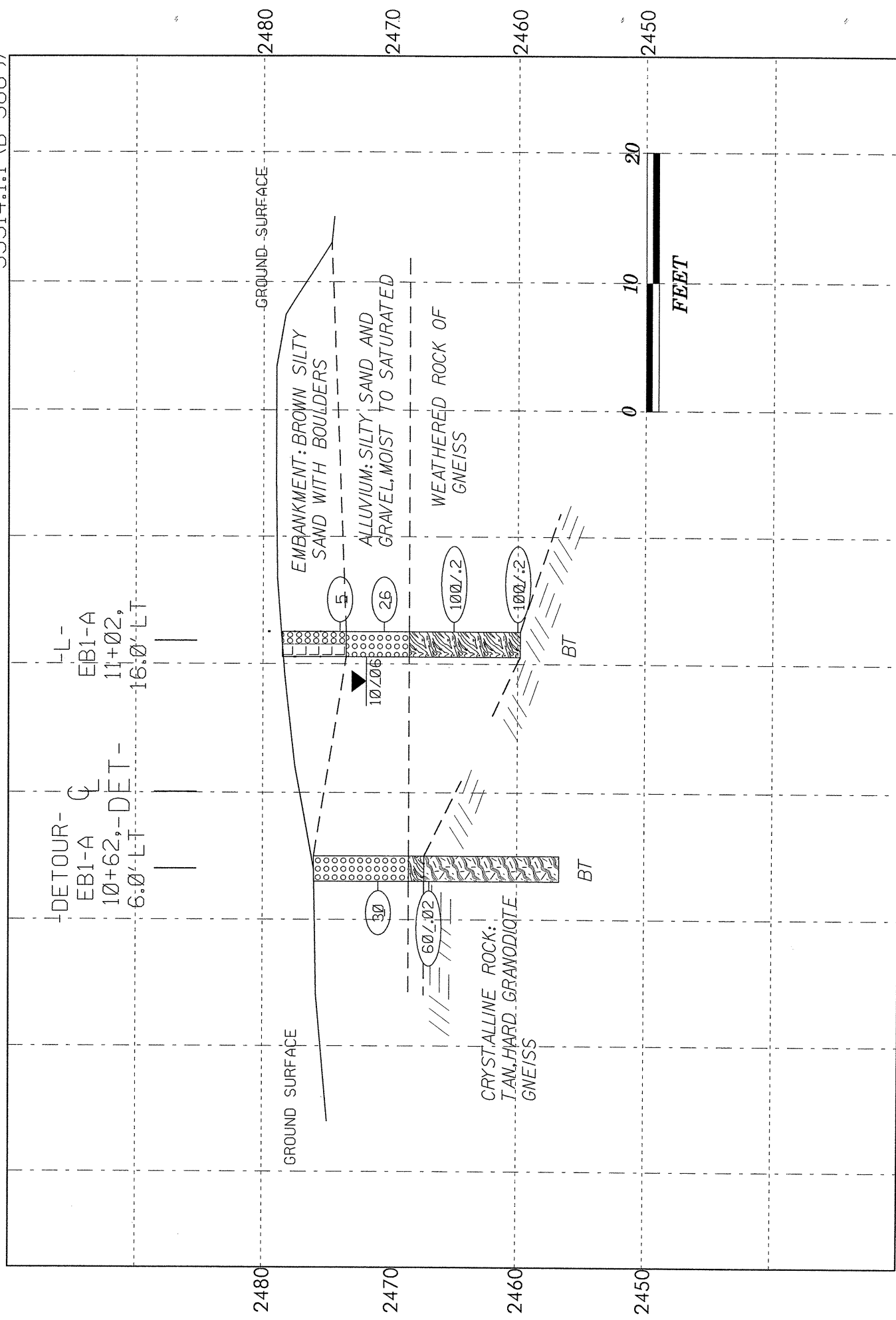


VE = 1

CROSS SECTION END BENT TWO

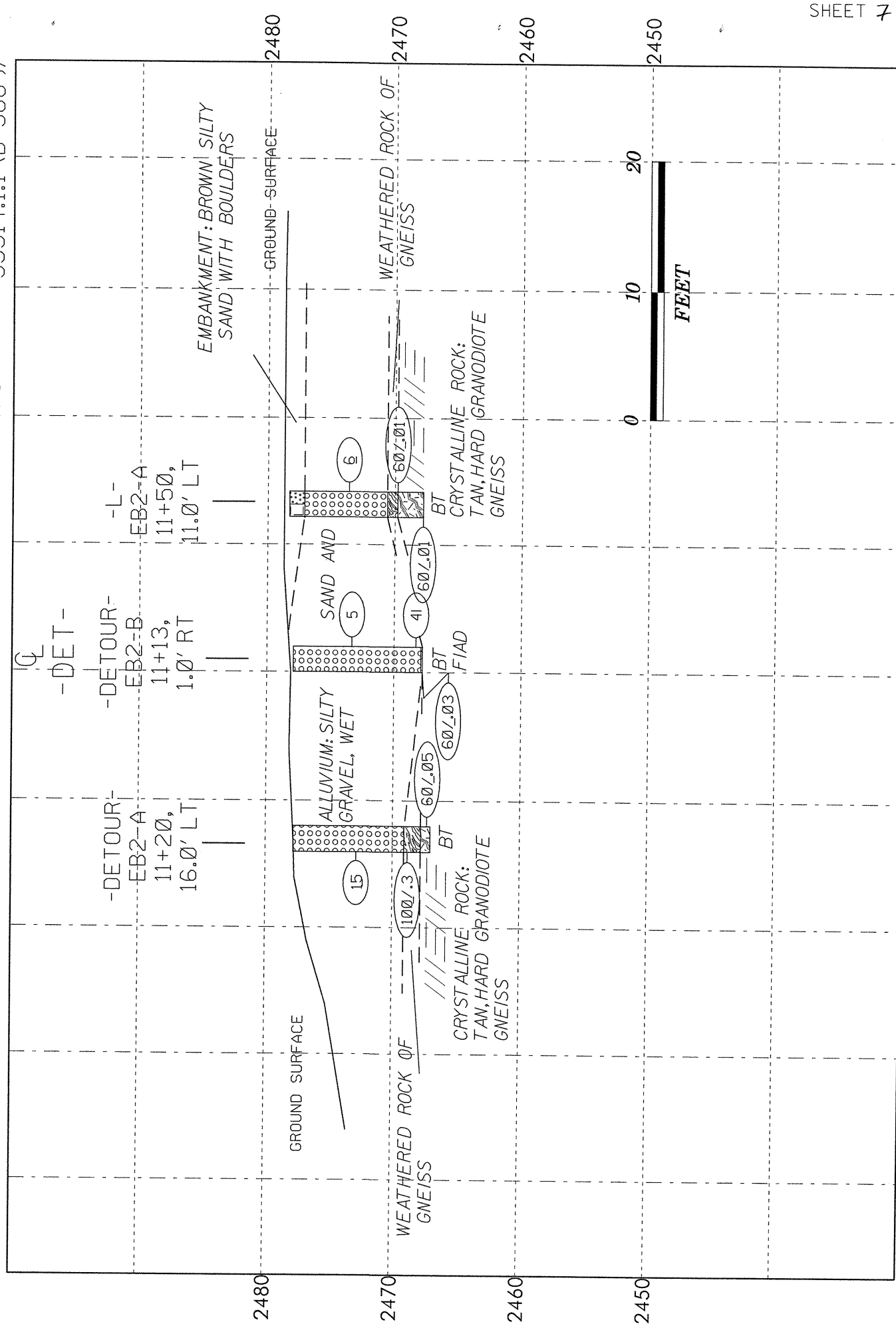
CROSS SECTION THROUGH DETOUR END BENT ONE

BRIDGE NO. 146,
33314.1.1 (B-3869)



CROSS SECTION THROUGH DETOUR END BENT TWO

BRIDGE NO. 146,
33314.1.1 (B-3869)



PROJECT NO. 33314.1.1	ID. B-3869	COUNTY MADISON	GEOLOGIST Daniel, T. B.
SITE DESCRIPTION BRIDGE NO. 146 ON SR-1151 OVER BIG PINE CREEK			GROUND WTR (ft)
BORING NO. EB1-A	STATION 11+02	OFFSET 16ft LT	ALIGNMENT -L-
COLLAR ELEV. 2,476.0 ft	TOTAL DEPTH 18.7 ft	NORTHING 762,739	EASTING 869,687
DRILL MACHINE CME-550X		DRILL METHOD H.S. Augers	HAMMER TYPE Automatic
START DATE 10/16/06	COMP. DATE 10/16/06	SURFACE WATER DEPTH N/A	DEPTH TO ROCK N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG ELEV. (ft)	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2480																
2475														2,476.0	GROUND SURFACE	0.0
	2,472.5	3.5	5	2	3									2,471.0	ROADWAY EMBANKMENT EMBANKMENT: BROWN SILTY SAND WITH BOULDERS	5.0
2470																
	2,467.5	8.5	10	14	12									2,466.0	ALLUVIAL ALLUVIUM: BROWN SILTY SAND AND GRAVEL	10.0
2465																
	2,462.5	13.5	22	68	32											
2460																
	2,457.5	18.5														
2455																
		100/2														
2450																
2445																
2440																
2435																
2430																
2425																
2420																
2415																
2410																
2405																
2400																

NCDOT BORE SINGLE B3869.GPJ NC_DOT.GDT 12/1/08

Boring Terminated by Auger Refusal at Elevation 2,457.3 ft CRYSTALLINE ROCK: TAN, HARD, GRANODIORITE GNEISS

PROJECT NO. 33314.4.4	ID. B-3869	COUNTY Madison	GEOLOGIST Hager, M. M.
SITE DESCRIPTION Bridge NO. 146 ON SR-1151 OVER BIG PINE CREEK.			GROUND WTR (ft)
BORING NO. EB1-B	STATION 10+94	OFFSET 6ft RT	ALIGNMENT -L-
COLLAR ELEV. 2,478.8 ft	TOTAL DEPTH 24.9 ft	NORTHING 762,721	EASTING 869,701
DRILL MACHINE CME-550	DRILL METHOD NW Casing w/ SPT Core	HAMMER TYPE Automatic	
START DATE 11/20/08	COMP. DATE 11/20/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 16.1 ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2480														2478.8	0.0
														2476.7	2.1
2475	2,473.8	5.0													
			1	4	6										
2470	2,468.8	10.0													
			34	39	61/0.4										
2465	2,463.8	15.0													
			80	20/0.1											
2460															
2455															
2450															
2445															
2440															
2435															
2430															
2425															
2420															
2415															
2410															
2405															
2400															

NCDOT BORE SINGLE BORELOGS NOV08.GPJ NC_DOT_GDT 11/26/08

PROJECT NO. 33314.4.4	ID. B-3869	COUNTY Madison	GEOLOGIST Hager, M. M.
SITE DESCRIPTION Bridge NO. 146 ON SR-1151 OVER BIG PINE CREEK.			GROUND WTR (ft)
BORING NO. EB1-B	STATION 10+94	OFFSET 6ft RT	ALIGNMENT -L-
COLLAR ELEV. 2,478.8 ft	TOTAL DEPTH 24.9 ft	NORTHING 762,721	EASTING 869,701
DRILL MACHINE CME-550	DRILL METHOD NW Casing w/ SPT Core	HAMMER TYPE Automatic	
START DATE 11/20/08	COMP. DATE 11/20/08	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 16.1 ft

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		L O G	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (%)	ROD (%)		REC. (%)	ROD (%)			
2462.78												
	2,462.7	16.1	3.8	0:59	(1.2)	(0.3)					2,462.7	16.1
2460												
	2,458.9	19.9		1:08	32%	8%						
			5.0	0:55/0.8								
				0:58	(3.8)	(1.8)						
				1:24	76%	36%						
				1:53								
2455	2,453.9	24.9		1:52							2,453.9	24.9
				1:40								
2450												
2445												
2440												
2435												
2430												
2425												
2420												
2415												
2410												
2405												
2400												
2395												
2390												
2385												

NCDOT CORE SINGLE BORELOGS NOV08.GPJ NC_DOT_GDT 11/26/08

PROJECT NO. 33314.1.1	ID. B-3869	COUNTY MADISON	GEOLOGIST Daniel, T. B.
SITE DESCRIPTION BRIDGE NO. 146 ON SR-1151 OVER BIG PINE CREEK			GROUND WTR (ft)
BORING NO. EB2-A	STATION 11+50	OFFSET 11ft LT	ALIGNMENT -L-
COLLAR ELEV. 2,478.3 ft	TOTAL DEPTH 10.5 ft	NORTHING 762,776	EASTING 869,719
DRILL MACHINE CME-550X		DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic
START DATE 10/19/06	COMP. DATE 10/19/06	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 8.5 ft

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
2480															2,478.3	GROUND SURFACE	0.0
2475	2,474.6	3.7	13	4	2										2,477.1	ROADWAY EMBANKMENT EMBANKMENT: BROWN SILTY SAND WITH BOULDERS	1.2
2470	2,469.8	8.5													2,470.6	ALLUVIAL ALLUVIUM: BROWN SILTY SAND AND GRAVEL	7.7
	2,467.8	10.5													2,469.8	WEATHERED ROCK WEATHERED ROCK OF GNEISS	8.5
2465															2,467.8	CRYSTALLINE ROCK CRYSTALLINE ROCK: TAN, HARD, GRANODIORITE GNEISS	10.5
2460																Boring Terminated with Standard Penetration Test Refusal at Elevation 2,467.8 ft	
2455																	
2450																	
2445																	
2440																	
2435																	
2430																	
2425																	
2420																	
2415																	
2410																	
2405																	
2400																	

NCDOT BORE SINGLE B3869.GPJ NC_DOT.GDT 12/1/08

PROJECT NO. 33314.4.4		ID. B-3869		COUNTY Madison		GEOLOGIST Hager, M. M.									
SITE DESCRIPTION Bridge NO. 146 ON SR-1151 OVER BIG PINE CREEK.							GROUND WTR (ft)								
BORING NO. EB2-B		STATION 11+33		OFFSET 12ft RT		ALIGNMENT -L-									
COLLAR ELEV. 2,478.3 ft		TOTAL DEPTH 19.8 ft		NORTHING 762,776		EASTING 869,721									
DRILL MACHINE CME-550		DRILL METHOD NW Casing w/ SPT Core			HAMMER TYPE Automatic										
START DATE 11/20/08		COMP. DATE 11/20/08		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 12.8 ft									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
2480														2,478.3	0.0
														2,473.4	4.9
2475	2,473.4	4.9	12	5	2									2,471.9	6.4
2470														2,470.3	8.0
2465														2,465.5	12.8
2460														2,458.5	19.8
2455														Boring Terminated at Elevation 2,458.5 ft in meta-graywacke.	
2450															
2445															
2440															
2435															
2430															
2425															
2420															
2415															
2410															
2405															
2400															

NCDOT BORE SINGLE BORELOGS NOV08.GPJ NC_DOT.GDT 11/26/08

PROJECT NO. 33314.4.4		ID. B-3869		COUNTY Madison		GEOLOGIST Hager, M. M.						
SITE DESCRIPTION Bridge NO. 146 ON SR-1151 OVER BIG PINE CREEK.							GROUND WTR (ft)					
BORING NO. EB2-B		STATION 11+33		OFFSET 12ft RT		ALIGNMENT -L-						
COLLAR ELEV. 2,478.3 ft		TOTAL DEPTH 19.8 ft		NORTHING 762,776		EASTING 869,721						
DRILL MACHINE CME-550		DRILL METHOD NW Casing w/ SPT Core			HAMMER TYPE Automatic							
START DATE 11/20/08		COMP. DATE 11/20/08		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 12.8 ft						
CORE SIZE NXWL		TOTAL RUN 7.0 ft		DRILLER Cheek, D. O.								
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		SAMP. NO.	STRATA		LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %		REC. (ft) %	RQD (ft) %			
2465.46												
	2,465.5	12.8	2.0	1:22	(1.8)	(0.7)						
	2,463.5	14.8		1:12	90%	35%						
2460			5.0	0:20	(4.6)	(3.5)						
				1:24	92%	70%						
				1:31								
				1:35								
				1:34								
2455												
2450												
2445												
2440												
2435												
2430												
2425												
2420												
2415												
2410												
2405												
2395												
2390												

NCDOT BORE SINGLE BORELOGS NOV08.GPJ NC_DOT.GDT 11/26/08

PROJECT NO. 33314.1.1		ID. B-3869		COUNTY MADISON		GEOLOGIST Daniel, T. B.										
SITE DESCRIPTION BRIDGE NO. 146 ON SR-1151 OVER BIG PINE CREEK							GROUND WTR (ft)									
BORING NO. EB1-A		STATION 10+62		OFFSET 6ft LT		ALIGNMENT -DET-										
COLLAR ELEV. 2,478.5 ft		TOTAL DEPTH 19.3 ft		NORTHING 762,755		EASTING 869,676										
DRILL MACHINE CME-550X		DRILL METHOD H.S. Augers				HAMMER TYPE Automatic										
START DATE 10/16/06		COMP. DATE 10/17/06		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 8.7 ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2480														2,478.5	0.0	GROUND SURFACE
2475	2,474.4	4.1	13	17	13									2,471.0	7.5	ALLUVIAL ALLUVIUM: BROWN SILTY SAND AND GRAVEL, MOIST
2470	2,469.4	9.1	60/02											2,469.8	8.7	WEATHERED ROCK WEATHERED ROCK OF GNEISS
2465														2,464.2	14.3	CRYSTALLINE ROCK WHITE TO TAN GRANODIORITE GNEISS. PREDOMINATELY QUARZT WITH FELDSPAR AND BIOTITE. HARD; VERY SLIGHTLY WEATHERED.
2460														2,459.2	19.3	CRYSTALLINE ROCK WHITE TO TAN GRANODIORITE GNEISS. PREDOMINATELY QUARZT WITH FELDSPAR AND BIOTITE. HARD; VERY SLIGHTLY WEATHERED.
2455																Boring Terminated with Standard Penetration Test Refusal at Elevation 2,459.2 ft
2450																CRYSTALLINE ROCK: TAN, HARD, GRANODIORITE GNEISS
2445																
2440																
2435																
2430																
2425																
2420																
2415																
2410																
2405																
2400																

NCDOT BORE SINGLE B3869.GPJ NC_DOT.GDT 12/1/08

CORE BORING REPORT							DATE 18-Oct-06
PROJECT: 33314.1.1		I. D. NO: B-3869		BORING NO: EB1-A (-DET-)		GEOLOGIST: C A Dunnagan	
DESCRIPTION: Bridge No. 146 on SR-1151 over Big Pine Creek							
COUNTY: Madison		COLLAR ELEVATION: 2476.0 FT.		TOTAL DEPTH: 19.3 FT.			
ELEV. (FEET)	DEPTH (FEET)	DRILL RATE (MIN./FT.)	RUN (FEET)	REC. FEET (%)	RQD. FEET (%)	SAMP. #	FIELD CLASSIFICATION AND REMARKS
2466.8	9.2			4.6	2.9		White to light tan granodiorite gneiss. Predominately quartz with trace amounts of feldspar and biotite. Hard, very slightly weathered. Generally massive with weakly foliated zones. Slightly fractured with joints at 10° and 45°.
2461.7	14.3		5.1	90	57		
2461.7	14.3			4.0	2.8		
2456.7	19.3	20	5.0	80	56		
CORING TERMINATED AT ELEVATION 2456.7 FT.							
DRILLER: R D Childers		CORE SIZE: NXWL		EQUIPMENT: CME-550			

PROJECT NO. 33314.1.1		ID. B-3869		COUNTY MADISON		GEOLOGIST Daniel, T. B.										
SITE DESCRIPTION BRIDGE NO. 146 ON SR-1151 OVER BIG PINE CREEK							GROUND WTR (ft)									
BORING NO. EB2-A(-DET-)		STATION 11+20		OFFSET 16ft LT		ALIGNMENT -DET-										
COLLAR ELEV. 2,477.8 ft		TOTAL DEPTH 10.8 ft		NORTHING 762,806		EASTING 869,707										
DRILL MACHINE CME-550X		DRILL METHOD NW Casing w/ SPT			HAMMER TYPE Automatic											
START DATE 10/18/06		COMP. DATE 10/18/06		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 10.0 ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2480														2,477.8	GROUND SURFACE	0.0
2475	2,473.8	4.0													ALLUVIAL ALLUVIUM: GRAY TO BROWN SILTY SAND WITH GRAVEL	
2470	2,468.8	9.0	WOH	WOH	15											
	2,467.1	10.7														
2465			60/05	0										2,467.0	WEATHERED ROCK WEATHERED ROCK OF GNEISS CRYSTALLINE ROCK: TAN, HARD, GRANODIORITE GNEISS Boring Terminated with Standard Penetration Test Refusal at Elevation 2,467.0 ft CRYSTALLINE ROCK: TAN, HARD, GRANODIORITE GNEISS	10.8
2460																
2455																
2450																
2445																
2440																
2435																
2430																
2425																
2420																
2415																
2410																
2405																
2400																

NCDOT BORE SINGLE B3869.GPJ NC_DOT_GDT 12/1/08

PROJECT NO. 33314.1.1		ID. B-3869		COUNTY MADISON		GEOLOGIST Daniel, T. B.										
SITE DESCRIPTION BRIDGE NO. 146 ON SR-1151 OVER BIG PINE CREEK							GROUND WTR (ft)									
BORING NO. EB2-B		STATION 11+13		OFFSET 1ft RT		ALIGNMENT -DET-										
COLLAR ELEV. 2,477.9 ft		TOTAL DEPTH 10.2 ft		NORTHING 762,791		EASTING 869,713										
DRILL MACHINE CME-550X		DRILL METHOD H.S. Augers			HAMMER TYPE Automatic											
START DATE 03/05/07		COMP. DATE 03/05/07		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 10.1 ft										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	L O G	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
2480														2,477.9	GROUND SURFACE	0.0
2475	2,474.3	3.6													ALLUVIAL Brown silty sand with gravel.	
2470	2,469.3	8.6														
	2,467.7	10.2														
2465			60/03											2,467.7	CRYSTALLINE ROCK Granodiorite gneiss. Boring Terminated with Standard Penetration Test Refusal at Elevation 2,467.7 ft CRYSTALLINE ROCK: TAN, HARD, GRANODIORITE GNEISS	10.1
2460																
2455																
2450																
2445																
2440																
2435																
2430																
2425																
2420																
2415																
2410																
2405																
2400																

NCDOT BORE SINGLE B3869.GPJ NC_DOT_GDT 12/1/08

JCS
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	B-3869
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REPORT ON SAMPLES OF:	Soils for Quality
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PROJECT:	33314.1.1	COUNTY:	Madison	Owner:	NCDOT
DATE SAMPLED:	10.18.06	DATE RECEIVED:	10.19.06	DATE REPORTED:	10.25.06
SAMPLED FROM:	Bridge	SAMPLED BY:	C. A. Dunnagan		
SUBMITTED BY:	W. D. Frye		2002	STANDARD SPECIFICATION	
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-1						
Lab Sample No.	A	153940					
HiCAMS Sample #	--						
Retained #4 Sieve %	0.0						
Passing #10 Sieve %	92						
Passing #40 Sieve %	72						
Passing #200 Sieve %	41						

MINUS #10 FRACTION

Soil Mortar - 100%							
Coarse Sand -Ret. #60	45						
Fine Sand - Ret. #270	16						
Silt 0.05-0.005 mm %	25						
Clay < 0.005 mm %	14						
Passing # 40 Sieve %	--						
Passing # 200 Sieve %	--						

Liquid Limit	33						
Plastic Index	NP						
AASHTO Classification	A-4 (1)						
Quantity							
Texture							
Station	13+02						
Hole No.							
Depth (ft) From:	4.5						
To:	5.1						

Remarks:
A-153940

CC:

C. A. Dunnagan	
File	

SOILS ENGINEER:	
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FIELD SCOUR REPORT

WBS: 33314.1.1 TIP: B-3869 COUNTY: Madison

DESCRIPTION(1): Bridge No. 146 on SR-1151 over Big Pine Creek

EXISTING BRIDGE

Information from: Field Inspection Microfilm _____ (reel _____ pos: _____)
 Other (explain) _____

Bridge No.: 146 Length: 29.0ft Total Bents: 2 Bents in Channel: 0 Bents in Floodplain: 2
 Foundation Type: Pile

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: Very minor amount along concrete pile cap at EB2.

Interior Bents: NA

Channel Bed: None noted.

Channel Bank: Undercutting of bank from EB2-B to 20.0ft upstream.

EXISTING SCOUR PROTECTION

Type(3): Pile & panel end bent walls.

Extent(4): Walls extend +/- 5.0ft beyond either side of bridge.

Effectiveness(5): Fine.

Obstructions(6): None noted.

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).
- 14 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 theoretical 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.

DESIGN INFORMATION

Channel Bed Material(7): Sand, gravel, cobbles and boulders.

Channel Bank Material(8): Silty sand.

Channel Bank Cover(9): Trees, shrubs and grass.

Floodplain Width(10): > 100ft.

Floodplain Cover(11): Grass.

Stream is(12): Aggrading _____ Degrading Static _____

Channel Migration Tendency(13): Southeast.

Observations and Other Comments: _____

DESIGN SCOUR ELEVATIONS(14)

Feet _____ Meters _____

BENTS

	B1	B2	B3	B4									
SB Lanes, Lt													
SB Lanes, Rt													
NB Lanes, Lt													
NB Lanes, Rt													

Comparison of DSE to Hydraulics Unit theoretical scour:
 No scour indicated in Bridge Report & Hydraulic Design Report (9/05).

SOIL ANALYSIS RESULTS FROM CHANNEL BED AND BANK MATERIAL

Bed or Bank													
Sample No.													
Retained #4													
Passed #10													
Passed #40													
Passed #200													
Coarse Sand													
Fine Sand													
Silt													
Clay													
LL													
PI													
AASHTO													
Station													
Offset													
Depth													



33314.1.1 (B-3869)
 Madison County
 Bridge No. 146 on SR-1151
 Over Big Pine Creek.
 EB1-B
 Box 1 of 1



33314.1.1 (B-3869)
 Madison County
 Bridge No. 146 on SR-1151
 Over Big Pine Creek.
 EB2-B
 Box 1 of 1

1



33314.1.1 (B-3869)
Madison County
Bridge No. 146 on SR-1151
Over Big Pine Creek.
EB1-A (-DET-)
Box 1 of 1