

STATE NO.	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	36271.1.1 (B-3924)	1	9

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

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STRUCTURE
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 36271.1.1 (B-3924) F.A. PROJ. BRZ-1335(2)
COUNTY Watauga
PROJECT DESCRIPTION Bridge No.33 on SR-1335 over Meat Camp 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 RALEIGH 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.

PROJECT: 36271.1.1 ID: B-3924

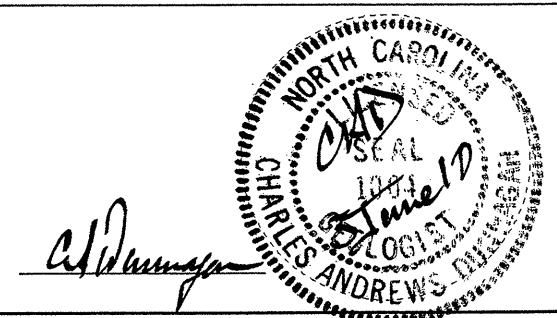
- PERSONNEL
- | |
|---------------------|
| <u>M M Hager</u> |
| <u>G K Rose</u> |
| <u>R D Childers</u> |
| <u>T B Daniel</u> |
| <u>C J Coffey</u> |
| <u>M E Hart</u> |

INVESTIGATED BY C A Dunnagan
CHECKED BY W D Fryr Jr
SUBMITTED BY W D Fryr Jr
DATE June 2010

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

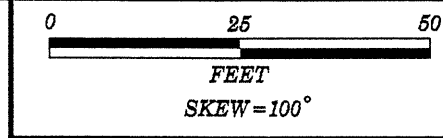
PROJECT REFERENCE NO. 36271.II (B-3924) SHEET NO. 2/9

SUBSURFACE INVESTIGATION

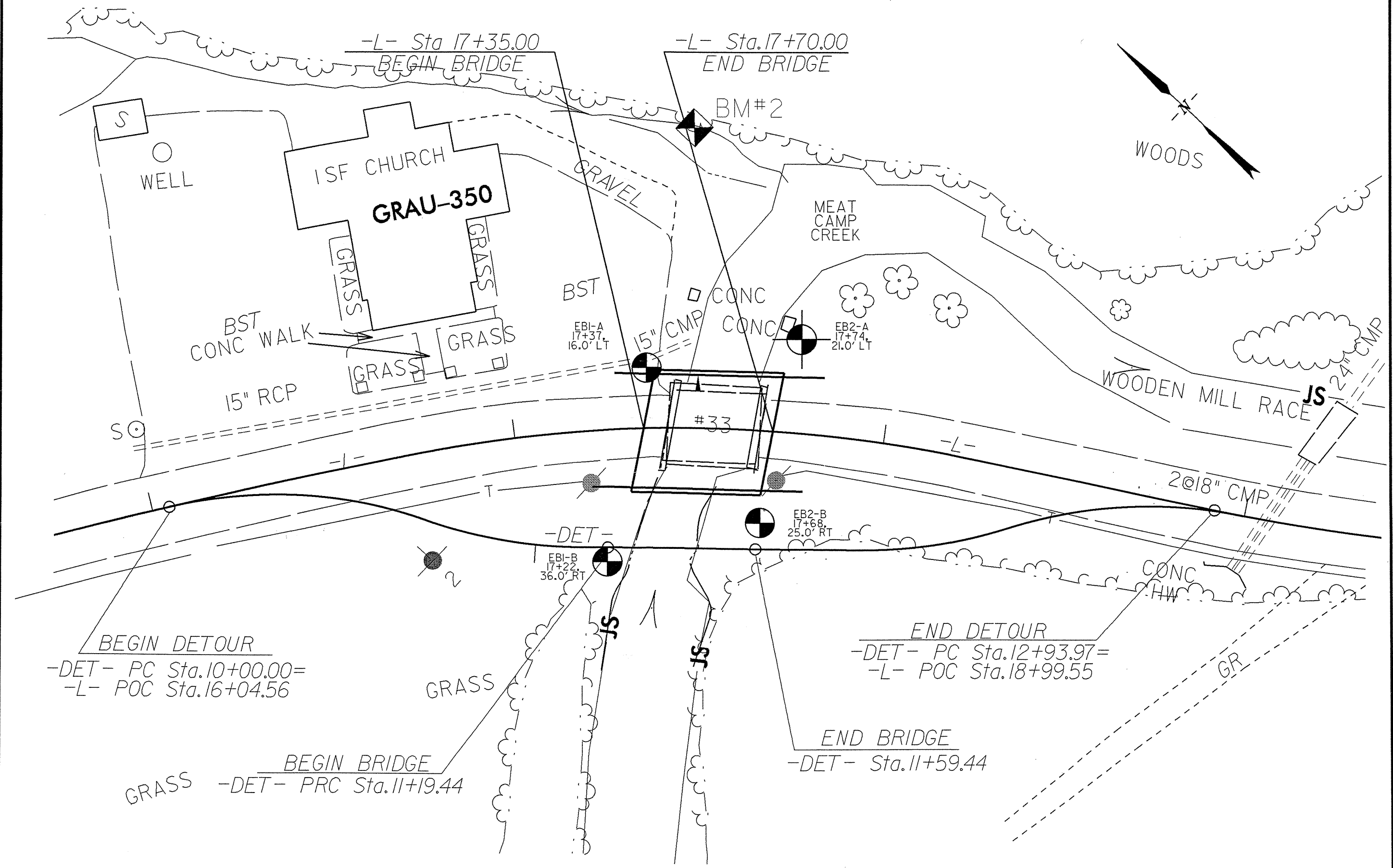
SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

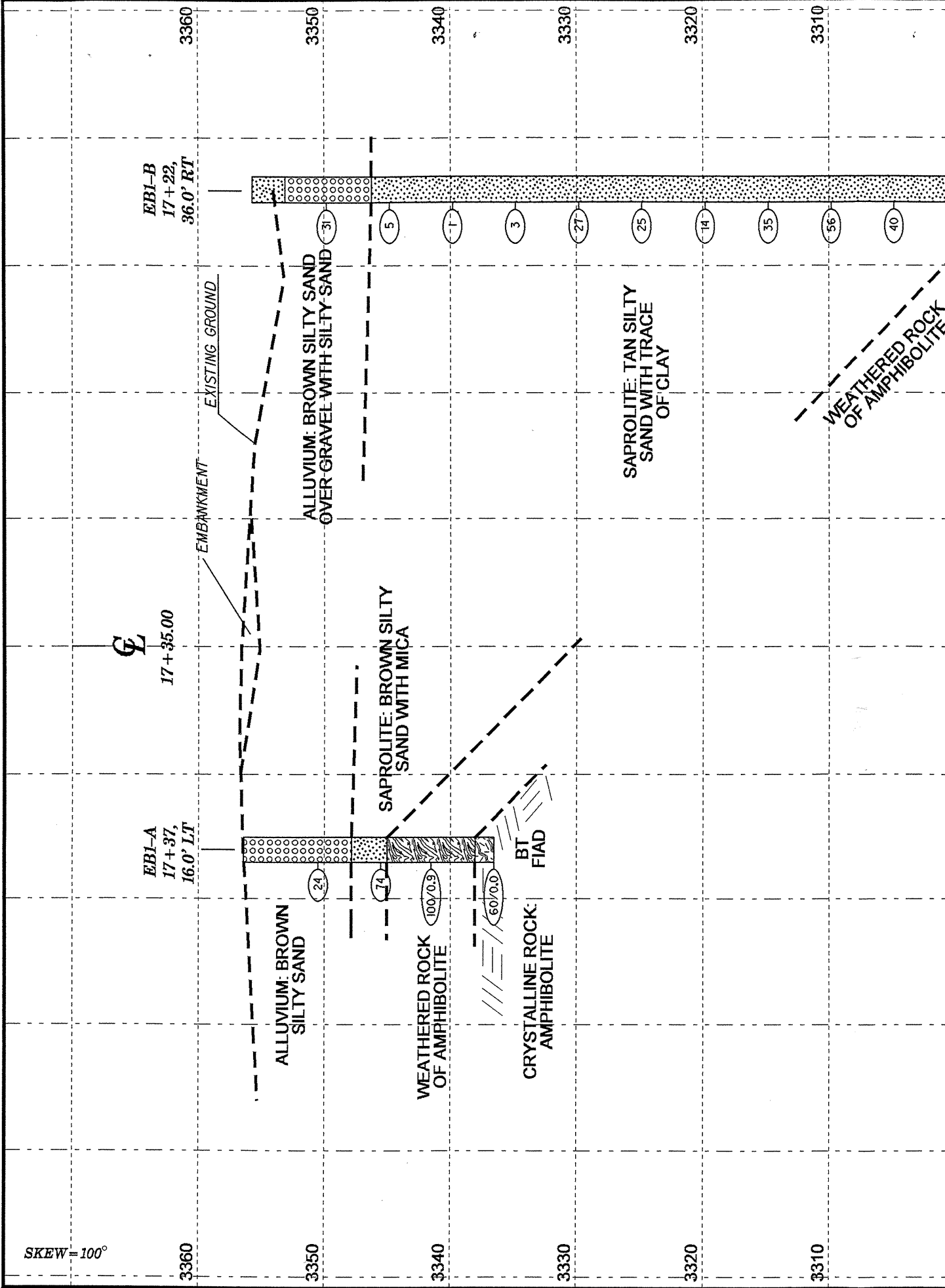
SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS	
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (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, MOST WITH INTERBEDDED FINE SAND LAYERS, HIGH 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. THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.		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 DISLODGED 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. 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 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.	
SOIL LEGEND AND AASHTO CLASSIFICATION		MINERALOGICAL COMPOSITION		WEATHERING		ROCK HARDNESS	
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 VERY SLIGHT (V SL.) SLIGHT (SL.) MODERATE (MOD.) MODERATELY SEVERE (MOD. SEV.) SEVERE (SEV.) VERY SEVERE (V SEV.) COMPLETE		VERY HARD HARD MODERATELY HARD MEDIUM HARD SOFT VERY SOFT	
GROUP CLASS. A-1, A-3, A-2, A-4, A-5, A-6, A-7, A-1, A-2, A-3, A-4, A-5, A-6, A-7		COMPRESSIBILITY SLIGHTLY COMPRESSIBLE MODERATELY COMPRESSIBLE HIGHLY COMPRESSIBLE		ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING, ROCK RINGS UNDER HAMMER IF CRYSTALLINE. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY, ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE. 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. 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. 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. IF TESTED, WOULD YIELD SPT REFUSAL. 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. IF TESTED, YIELDS SPT N VALUES > 100 BPF. 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. IF TESTED, YIELDS SPT N VALUES < 100 BPF. 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.		CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK. CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN. 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. CAN BE GROUVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK. CAN BE GROUVED 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. 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.	
% PASSING #10, #20, #40		PERCENTAGE OF MATERIAL ORGANIC MATERIAL TRACE OF ORGANIC MATTER LITTLE ORGANIC MATTER MODERATELY ORGANIC HIGHLY ORGANIC		ROCK HARDNESS		BENCH MARK: BM#2-8-INCH SPIKE IN ROOT OF 18-INCH BEECH TREE. -BL- STA 14+58, 68.40' LT ELEVATION: 3356.70 FT.	
LIQUID LIMIT PLASTIC INDEX GROUP INDEX		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 SEEP		FRACTURE SPACING TERM SPACING VERY WIDE WIDE MODERATELY CLOSE CLOSE VERY CLOSE		BEDDING TERM THICKNESS VERY THICKLY BEDDED THICKLY BEDDED MODERATELY BEDDED VERY THINLY BEDDED THICKLY LAMINATED THINLY LAMINATED	
USUAL TYPES OF MAJOR MATERIALS		MISCELLANEOUS SYMBOLS		INDURATION FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.		NOTES:	
GENERATING AS A SUBGRADE		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		SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION SLOPE INDICATOR INSTALLATION SPT N-VALUE SPT REFUSAL			
PI OF A-7-5 SUBGROUP IS <= LL - 30 ; PI OF A-7-6 SUBGROUP IS >= LL - 30		CONSISTENCY OR DENSENESS		ABBREVIATIONS		INDURATION FRIABLE MODERATELY INDURATED INDURATED EXTREMELY INDURATED	
PRIMARY SOIL TYPE		RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)		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			
TEXTURE OR GRAIN SIZE		U.S. STD. SIEVE SIZE OPENING (MM)		MOISTURE CONTENT V - VERY VST - VANE SHEAR TEST WEA. - WEATHERED W - UNIT WEIGHT WG - DRY UNIT WEIGHT WOH - WEIGHT OF HAMMER FIAD - FILLED IMMEDIATELY AFTER DRILLING		INDURATION FRIABLE MODERATELY INDURATED INDURATED EXTREMELY INDURATED	
SOIL MOISTURE - CORRELATION OF TERMS		FIELD MOISTURE DESCRIPTION		ADVANCING TOOLS CLAY BITS 6" CONTINUOUS FLIGHT AUGER 6" HOLLOW AUGERS HARD FACED FINGER BITS TUNG-CARBIDE INSERTS CASING W/ ADVANCER TRICONE STEEL TEETH TRICONE TUNG-CARB. CORE BIT			
PLASTICITY		DRILL UNITS		HAMMER TYPE		INDURATION FRIABLE MODERATELY INDURATED INDURATED EXTREMELY INDURATED	
NONPLASTIC LOW PLASTICITY MED. PLASTICITY HIGH PLASTICITY		MOBILE B- BK-51 CME-45C CME-550 PORTABLE HOIST		AUTOMATIC MANUAL CORE SIZE: -B- -N- -H- HAND TOOLS: POST HOLE DIGGER HAND AUGER SOUNDING ROD VANE SHEAR TEST			
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.		EQUIPMENT USED ON SUBJECT PROJECT		INDURATION FRIABLE MODERATELY INDURATED INDURATED EXTREMELY INDURATED	
PLASTICITY INDEX (PI) DRY STRENGTH		SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION		DRILL UNITS			

BRIDGE NO. 33 ON SR-1335 OVER MEAT CAMP CREEK

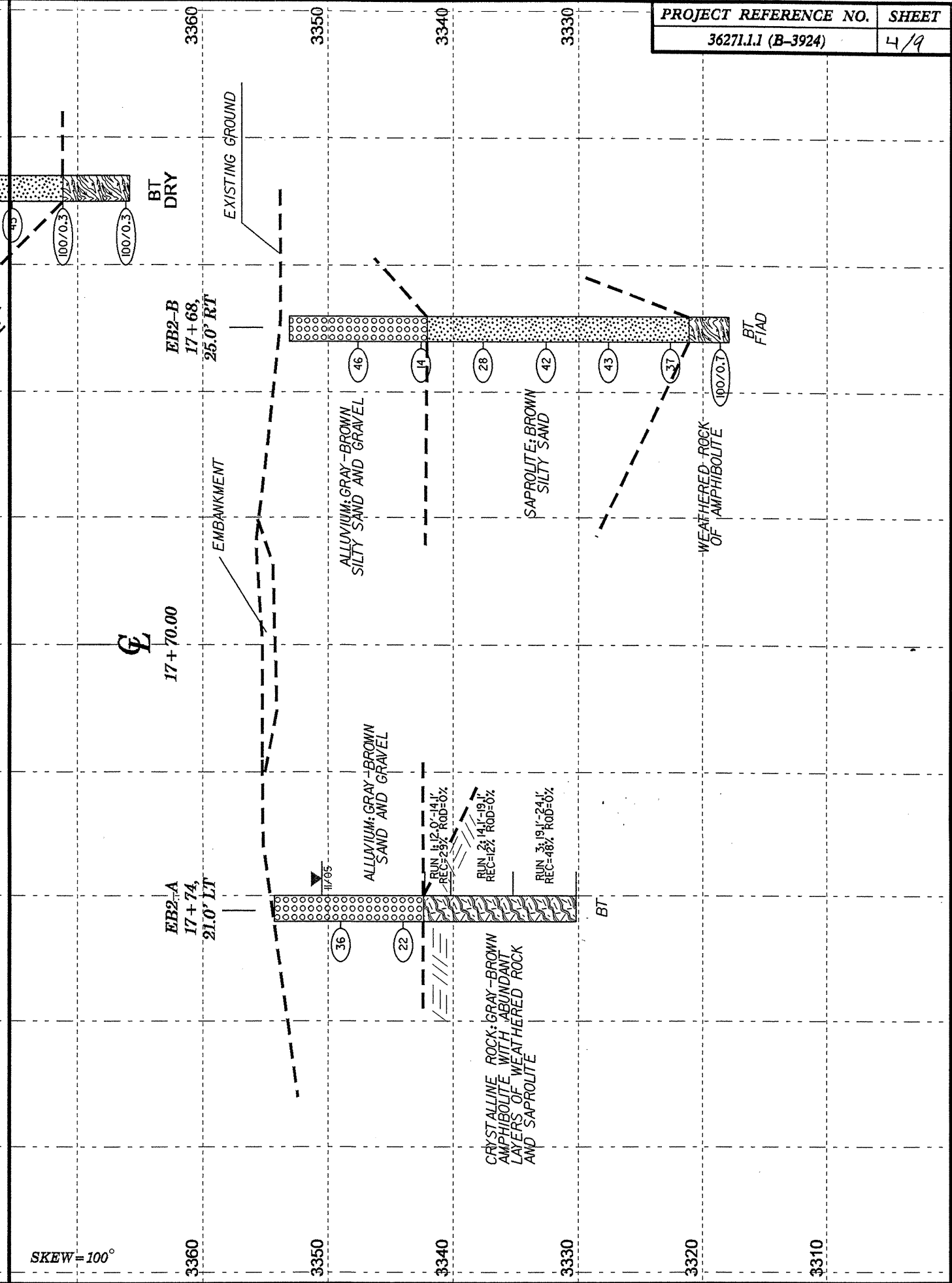


PROJECT REFERENCE NO.	SHEET
36271.1.1 (B-3924)	3/9
PLAN VIEW	





VE = 1



VE = 1

PROJECT NO. 36271.1.1	ID. B-3924	COUNTY Watauga	GEOLOGIST Hager, M. M.
SITE DESCRIPTION Bridge No. 33 on SR-1335 over Meat Camp Creek			GROUND WTR (ft)
BORING NO. EB1-A	STATION 17+37	OFFSET 16 ft LT	ALIGNMENT -L-
COLLAR ELEV. 3,356.4 ft	TOTAL DEPTH 19.9 ft	NORTHING 937,323	EASTING 1,212,226
DRILL MACHINE CME-550	DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic	
DRILLER Rose, G. K.	START DATE 05/26/10	COMP. DATE 05/26/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
3360														3,356.4	GROUND SURFACE	0.0
3355															ALLUVIAL Brown-gray sand and gravel.	
3350	3,351.5	4.9	4	12	12											
3345	3,346.5	9.9	3	2	72										SAPROLITE Brown silty sand with mica.	11.4
3340	3,341.5	14.9	55	45/0.4											WEATHERED ROCK Weathered rock of amphibolite.	18.4
3335	3,336.5	19.9	60/0.0												CRYSTALLINE ROCK Amphibolite.	19.9
3330															Boring Terminated with Standard Penetration Test Refusal at Elevation 3,336.5 ft in amphibolite.	
3325																
3320																
3315																
3310																
3305																
3300																
3295																
3290																
3285																
3280																

NCDOT BORE SINGLE BORE CORE LOGS.GPJ NC_DOT.GDT 06/02/10

PROJECT NO. 36271.1.1	ID. B-3924	COUNTY Watauga	GEOLOGIST Hager, M. M.
SITE DESCRIPTION Bridge No. 33 on SR-1335 over Meat Camp Creek			GROUND WTR (ft)
BORING NO. EB1-B	STATION 17+22	OFFSET 36 ft RT	ALIGNMENT -L-
COLLAR ELEV. 3,355.7 ft	TOTAL DEPTH 65.2 ft	NORTHING 937,295	EASTING 1,212,181
DRILL MACHINE CME-550	DRILL METHOD NW Casing w/ SPT	HAMMER TYPE Automatic	
DRILLER Rose, G. K.	START DATE 05/27/10	COMP. DATE 05/27/10	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
3360														3,355.7	GROUND SURFACE	0.0
3355															ALLUVIAL Brown silty sand.	2.6
3350	3,350.8	4.9	22	16	15										ALLUVIAL Brown gravel with silty sand.	
3345	3,345.8	9.9	5	2	3										SAPROLITE Tan silty sand with trace of clay.	9.5
3340	3,340.8	14.9	1	WOH	1											
3335	3,335.8	19.9	1	1	2											
3330	3,330.8	24.9	10	14	13											
3325	3,325.8	29.9	5	10	15											
3320	3,320.8	34.9	4	5	9											
3315	3,315.8	39.9	6	16	19											
3310	3,310.8	44.9	4	8	48											
3305	3,305.8	49.9	11	18	22											
3300	3,300.8	54.9	25	15	30											
3295	3,295.8	59.9	100/0.3													
3290	3,290.8	64.9	100/0.3													
3285																
3280																

NCDOT BORE SINGLE BORE CORE LOGS.GPJ NC_DOT.GDT 06/02/10

PROJECT NO. 36271.1.1		ID. B-3924		COUNTY Watauga		GEOLOGIST N/A											
SITE DESCRIPTION Bridge No. 33 on SR-1335 over Meat Camp Creek							GROUND WTR (ft)										
BORING NO. EB2-A		STATION 17+74		OFFSET 21 ft LT		ALIGNMENT -L-											
COLLAR ELEV. 2,254.3 ft		TOTAL DEPTH 24.1 ft		NORTHING 937,298		EASTING 1,212,261											
DRILL MACHINE CME-550		DRILL METHOD NW Casing W/SPT & Core			HAMMER TYPE Automatic												
DRILLER Coffey, Jr., C.		START DATE 11/17/05		COMP. DATE 11/17/05		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100							
2255															2,254.3	GROUND SURFACE	0.0
																ALLUVIAL	
																Gray-brown sand and gravel.	
2250	2,250.0	4.3															
			28	19	17												
2245	2,245.0	9.3															
			10	10	12												
2240															2,242.4	CRYSTALLINE ROCK	11.9
																Gray-brown amphibolite, fractured with abundant layers of weathered rock and saprolite.	
2235																	
2230															2,230.2		24.1
																Boring Terminated at Elevation 2,230.2 ft in amphibolite.	
2225																	Logged by T B Daniel.
2220																	
2215																	
2210																	
2205																	
2200																	
2195																	
2190																	
2185																	
2180																	
2175																	

NCDOT BORE SINGLE BORE_CORE_LOGS.GPJ NC_DOT.GDT 06/03/10

PROJECT NO. 36271.1.1		ID. B-3924		COUNTY Watauga		GEOLOGIST N/A						
SITE DESCRIPTION Bridge No. 33 on SR-1335 over Meat Camp Creek							GROUND WTR (ft)					
BORING NO. EB2-A		STATION 17+74		OFFSET 21 ft LT		ALIGNMENT -L-						
COLLAR ELEV. 2,254.3 ft		TOTAL DEPTH 24.1 ft		NORTHING 937,298		EASTING 1,212,261						
DRILL MACHINE CME-550		DRILL METHOD NW Casing W/SPT & Core			HAMMER TYPE Automatic							
DRILLER Coffey, Jr., C.		START DATE 11/17/05		COMP. DATE 11/17/05		SURFACE WATER DEPTH N/A						
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN		STRATA		SAMP. NO.	LOG	DESCRIPTION AND REMARKS	DEPTH (ft)
					REC. (ft) %	RQD (ft) %	REC. (ft) %	RQD (ft) %				
2242.27												
	2,242.3	12.0	2.1	NA/2.1	(0.6)	(0.0)					Begin Coring @ 12.0 ft	
2240	2,240.2	14.1	5.0	NA/5.0	(0.6)	(0.0)					CRYSTALLINE ROCK	
					12%	0%					Gray-brown amphibolite, fractured with abundant layers of weathered rock and saprolite. (continued)	
2235	2,235.2	19.1	5.0	NA/5.0	(2.4)	(0.0)						
					48%	0%						
2230	2,230.2	24.1									Boring Terminated at Elevation 2,230.2 ft in amphibolite.	24.1
2225											Logged by T B Daniel.	
2220												
2215												
2210												
2205												
2200												
2195												
2190												
2185												
2180												
2175												

NCDOT BORE SINGLE BORE_CORE_LOGS.GPJ NC_DOT.GDT 06/03/10



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

PROJECT NO. 36271.1.1		ID. B-3924		COUNTY Watauga		GEOLOGIST N/A											
SITE DESCRIPTION Bridge No. 33 on SR-1335 over Meat Camp Creek							GROUND WTR (ft)										
BORING NO. EB2-B		STATION 17+68		OFFSET 25 ft RT		ALIGNMENT -L-											
COLLAR ELEV. 3,353.1 ft		TOTAL DEPTH 35.2 ft		NORTHING 937,273		EASTING 1,212,217											
DRILL MACHINE CME-550		DRILL METHOD NW Casing w/ SPT				HAMMER TYPE Automatic											
DRILLER Coffey, Jr., C.		START DATE 11/18/05		COMP. DATE 11/18/05		SURFACE WATER DEPTH N/A											
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION			
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)		
3355															3,353.1	0.0	GROUND SURFACE
3350	3,348.6	4.5	31	27	19									Sat.			ALLUVIAL Gray-brown silty sand and gravel.
3345	3,343.6	9.5	9	6	8									Sat.			
3340	3,338.6	14.5	10	13	15									M			SAPROLITE Brown silty sand.
3335	3,333.6	19.5	12	16	26									M			
3330	3,328.6	24.5	12	20	23									M			
3325	3,323.6	29.5	13	16	21									M			
3320	3,318.6	34.5	52	50/0.2						100/0.7				M	3,321.1	32.0	WEATHERED ROCK Weathered rock of amphibolite.
3315															3,317.9	35.2	Boring Terminated at Elevation 3,317.9 ft in weathered rock of amphibolite. Logged by T B Daniel.
3310																	
3305																	
3300																	
3295																	
3290																	
3285																	
3280																	
3275																	

NCDOT BORE SINGLE CORE LOGS.GPJ NC DOT.GDT 06/03/10



FIELD SCOUR REPORT

WBS: 36271.1.1 TIP: B-3924 COUNTY: Watauga

DESCRIPTION(1): Bridge No. 33 on SR-1335 over Meat Camp Creek

EXISTING BRIDGE

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

Bridge No.: 33 Length: 25ft Total Bents: 3 Bents in Channel: 1 Bents in Floodplain: 2
 Foundation Type: Footings(?)

EVIDENCE OF SCOUR(2)

Abutments or End Bent Slopes: None noted.

Interior Bents: None noted.

Channel Bed: None noted.

Channel Bank: Minor amounts immediately beyond the ends of the end-bent walls.

EXISTING SCOUR PROTECTION

Type(3): Wooden end-bent walls.

Extent(4): Two feet beyond width of bridge.

Effectiveness(5): Good.

Obstructions(6): Beams (wooden, approx. one foot diameter) 35 ft left and right of centerline on creek bed.

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 and cobbles with boulders.

Channel Bank Material(8): Sand and gravel with cobbles and boulders.

Channel Bank Cover(9): Grass with occasional shrubs.

Floodplain Width(10): EB1>100ft; EB2<20ft.

Floodplain Cover(11): Grass except for the asphalt parking lot at EB1-A.

Stream is(12): Aggrading _____ Degrading _____ Static X

Channel Migration Tendency(13): Southwest.

Observations and Other Comments: _____

Reported by: C A Dunnagan Date: 6/2/2010

DESIGN SCOUR ELEVATIONS(14)

Feet _____ Meters _____

BENTS

EB1		EB2									
N/A	N/A										

Comparison of DSE to Hydraulics Unit theoretical scour:
 According to the Hrdraulic Design Report dated 25 Feb 2010, there is no local scour and the end-bents sre not affected.

DSE determined by: C A Dunnagan Date: 6/2/2010

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											

CORE PHOTOS
UNAVAILABLE

36271.1.1 (B-3924)
Watauga County
Bridge No. 33 on SR-1335
Over Meat Camp Creek

CORE PHOTOS
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