

CONTRACT: ID: B-3876

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

STRUCTURE SUBSURFACE INVESTIGATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33320.1.1 (B-3876)	1	17
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
		P.E. CONST.	

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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 UN-PLACED 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.

STATE PROJECT 33320.1.1 I.D. NO. B-3876

F.A. PROJECT BRZ-1004(9)

COUNTY NASH

PROJECT DESCRIPTION BRIDGE NO. 34

ON -L- (SR 1004) OVER PIG BASKET

CREEK AT -L- STATION 22+03.6

INVESTIGATED BY S. P. BROWN PERSONNEL (TIERRA, INC.)

CHECKED BY D. N. ARGENBRIGHT I. T. CRUZ

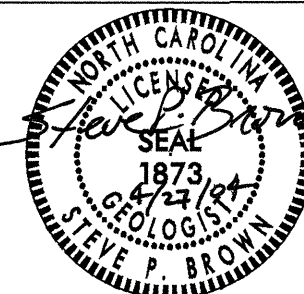
SUBMITTED BY D. N. ARGENBRIGHT S. RIVERA

DATE APRIL 2004

DRAWN BY: S. P. BROWN

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 UNIT

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
B-3876	33320.1.1	2	17

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 WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (ASTM T208, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND 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 ARE DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.		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. 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) 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. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC. NON-CRYSTALLINE ROCK (NCR) FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC. COASTAL PLAIN SEDIMENTARY ROCK (CPS) COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.		ALLUVIUM (ALLUV.) - SOILS WHICH HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, 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 WHICH 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 (F.P.) - 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.) - IRRREGULARLY 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK. ROCK QUALITY DESIGNATION (R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE. SAPROLITE (SAP.) - RESIDUAL SOIL WHICH 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, WHICH HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRODUCED 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 (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. SPT REFUSAL IS LESS THAN 0.1 FOOT PENETRATION WITH 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 (S.R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE. TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.					
SOIL LEGEND AND AASHTO CLASSIFICATION		MINERALOGICAL COMPOSITION		WEATHERING							
GENERAL CLASS. GRANULAR MATERIALS (< 75% PASSING #200) SILT-CLAY MATERIALS (> 75% 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. SL.) - 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 (SL.) - 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. IF TESTED, WOULD YIELD SPT REFUSAL. SEVERE (SEV.) - ALL ROCKS 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 B.P.F. 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. IF TESTED, YIELDS SPT N VALUES < 100 B.P.F. 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.		SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 30 MODERATELY COMPRESSIBLE LIQUID LIMIT 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50		ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE. VERY SLIGHT (V. SL.) - 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 (SL.) - 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. IF TESTED, WOULD YIELD SPT REFUSAL. SEVERE (SEV.) - ALL ROCKS 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 B.P.F. 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. IF TESTED, YIELDS SPT N VALUES < 100 B.P.F. 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.			
CONSISTENCY OR DENSENESS		GROUND WATER		MISCELLANEOUS SYMBOLS							
PRIMARY SOIL TYPE COMPACTNESS OR CONSISTENCY RANGE OF STANDARD PENETRATION RESISTANCE (N-VALUE) RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT ²)		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		ROADWAY EMBANKMENT WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS INFERRED SOIL BOUNDARIES 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					
TEXTURE OR GRAIN SIZE		ABBREVIATIONS		EQUIPMENT USED ON SUBJECT PROJECT							
U.S. STD. SIEVE SIZE OPENING (MM) 4 10 40 60 200 270 4.76 2.0 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 FRAGS - FRAGMENTS MED. - MEDIUM PMT - PRESSUREMETER TEST SD. - SAND, SANDY SL. - SILT, SILTY SLI. - SLIGHTLY TCR - TRICONE REFUSAL T - UNIT WEIGHT W - MOISTURE CONTENT V. - VERY VST - VANE SHEAR TEST		DRILL UNITS: <input type="checkbox"/> MOBILE B- <input type="checkbox"/> BK-51 <input type="checkbox"/> CME-45C <input type="checkbox"/> CME-550 <input type="checkbox"/> PORTABLE HOIST <input checked="" type="checkbox"/> DIEDRICH D-50 TURBO ON TRACKS <input type="checkbox"/> OTHER		ADVANCING TOOLS: <input type="checkbox"/> CLAY BITS <input type="checkbox"/> 6" CONTINUOUS FLIGHT AUGER <input type="checkbox"/> 8" HOLLOW AUGERS <input type="checkbox"/> HARD FACED FINGER BITS <input type="checkbox"/> TUNG-CARBIDE INSERTS <input checked="" type="checkbox"/> CASING <input type="checkbox"/> W/ ADVANCER <input checked="" type="checkbox"/> TRICONE * STEEL TEETH <input type="checkbox"/> TRICONE * TUNG-CARB. <input type="checkbox"/> OTHER		HAMMER TYPE: <input checked="" type="checkbox"/> AUTOMATIC <input type="checkbox"/> MANUAL CORE SIZE: <input type="checkbox"/> -B <input checked="" type="checkbox"/> -N, WD4 <input type="checkbox"/> -H HAND TOOLS: <input type="checkbox"/> POST HOLE DIGGER <input checked="" type="checkbox"/> HAND AUGER <input checked="" type="checkbox"/> SOUNDING ROD <input type="checkbox"/> VANE SHEAR TEST <input type="checkbox"/> OTHER			
SOIL MOISTURE - CORRELATION OF TERMS		FRACTURE SPACING		BEDDING							
SOIL MOISTURE SCALE (ATTERBERG LIMITS) FIELD MOISTURE DESCRIPTION GUIDE FOR FIELD MOISTURE DESCRIPTION LL - LIQUID LIMIT - SATURATED - (SAT.) USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE PL - PLASTIC LIMIT - WET - (W) SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE OM - OPTIMUM MOISTURE - MOIST - (M) SOLID; AT OR NEAR OPTIMUM MOISTURE SL - SHRINKAGE LIMIT - DRY - (D) REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE		TERM SPACING 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		TERM THICKNESS 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							
PLASTICITY		INDURATION									
NONPLASTIC PLASTICITY INDEX (PI) DRY STRENGTH VERY LOW 0-5 SLIGHT 6-15 MEDIUM 16-25 HIGH 26 OR MORE		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.									
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.											



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

LYNDO TIPPETT
SECRETARY

April 22, 2004

STATE PROJECT: 33320.1.1 (B-3876)
FEDERAL PROJECT: BRZ-1004(9)
COUNTY: Nash
DESCRIPTION: Bridge No. 34 on -L- (SR 1004) over Pig Basket Creek
SUBJECT: Geotechnical Report - Bridge Foundation Investigation for Bridge No. 34 on -L- (SR 1004) over Pig Basket Creek at -L- Station 22+03.6

Project Description

Project B-3876 provides for the replacement of an existing bridge on SR 1004 over Pig Basket Creek, approximately 2.5 miles northwest of Nashville. The replacement structure will be constructed approximately 50 feet east (downstream) of the existing alignment. It will consist of three spans with an overall length of 150 feet. Bents are proposed on a 110° skew.

The site was investigated in March 2004, using a Diedrich D-50 Turbo drill with an automatic hammer, mounted on a tracked carrier. Borings were mud drilled through soil, weathered rock, and rock using a tricone bit, N casing, and NWD4 core equipment. Standard Penetration Tests were performed and representative soil and rock samples were submitted to the Materials and Tests Unit laboratory for analysis. Bridge rods were driven to refusal at two locations along the proposed interior bents that were inaccessible to the drill rig.

Physiography and Geology

The project is in very gently rolling terrain, in the vicinity of the boundary between the Piedmont and Coastal Plain Physiographic Provinces. Surface water level in Pig Basket Creek varied little during the investigation, with a measured elevation of 148.2 feet. Woodlands surround the project. Metamorphosed mudstone, siltstone, and volcanic rocks of the Eastern Slate Belt underlie the area. Foundation materials at the site include alluvial and residual soils, weathered rock, metavolcanic rock, and artificial fill.

Foundation Description

Soil Properties

Alluvial deposits consist of 6 to 10 feet of interbedded sandy silt (A-4), silty sand (A-2-4), and gravelly sand (A-1-b). These soils transition at shallow depth from moist to wet, related to a very shallow groundwater table. The sandy silt is very soft to stiff. Sands are very loose to medium dense.

The alluvial deposits rest on residual, very stiff to hard, sandy silt (A-4). All residual soils are below the water table, and are consequently wet. Thickness varies between 5 and 12 feet. Residual soil transitions to weathered rock between elevations 131 and 138 feet.

Several large mounds of artificial fill are present right of -L-, in the vicinity of, and ahead of, End Bent 2. These mounds appear to be waste material placed on the floodplain surface adjacent to the creek bank. Broken blocks of concrete were observed on the mounds' surfaces. Steep and irregular topography prevented rig access to investigate these features.

Rock Properties

Weathered rock is present across the site. It is derived from in-place weathering of the underlying metavolcanic rock. Thickness varies from 5 to 20 feet. The weathered rock grades to metavolcanic rock at elevations between 117 and 129 feet. Less than 2 feet of core were cut at each of the two interior bent borings. The metavolcanic rock is very slightly weathered to fresh, and very hard to hard. Core from boring B1-B is very closely to closely fractured, with a recovery of 60% and an RQD of 47%. A single, unfractured piece of core was obtained from boring B2-A, representing a recovery of 94% and an RQD of 94%.

Groundwater

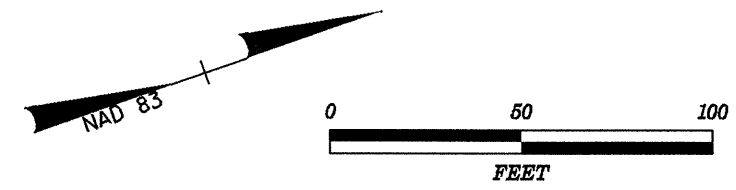
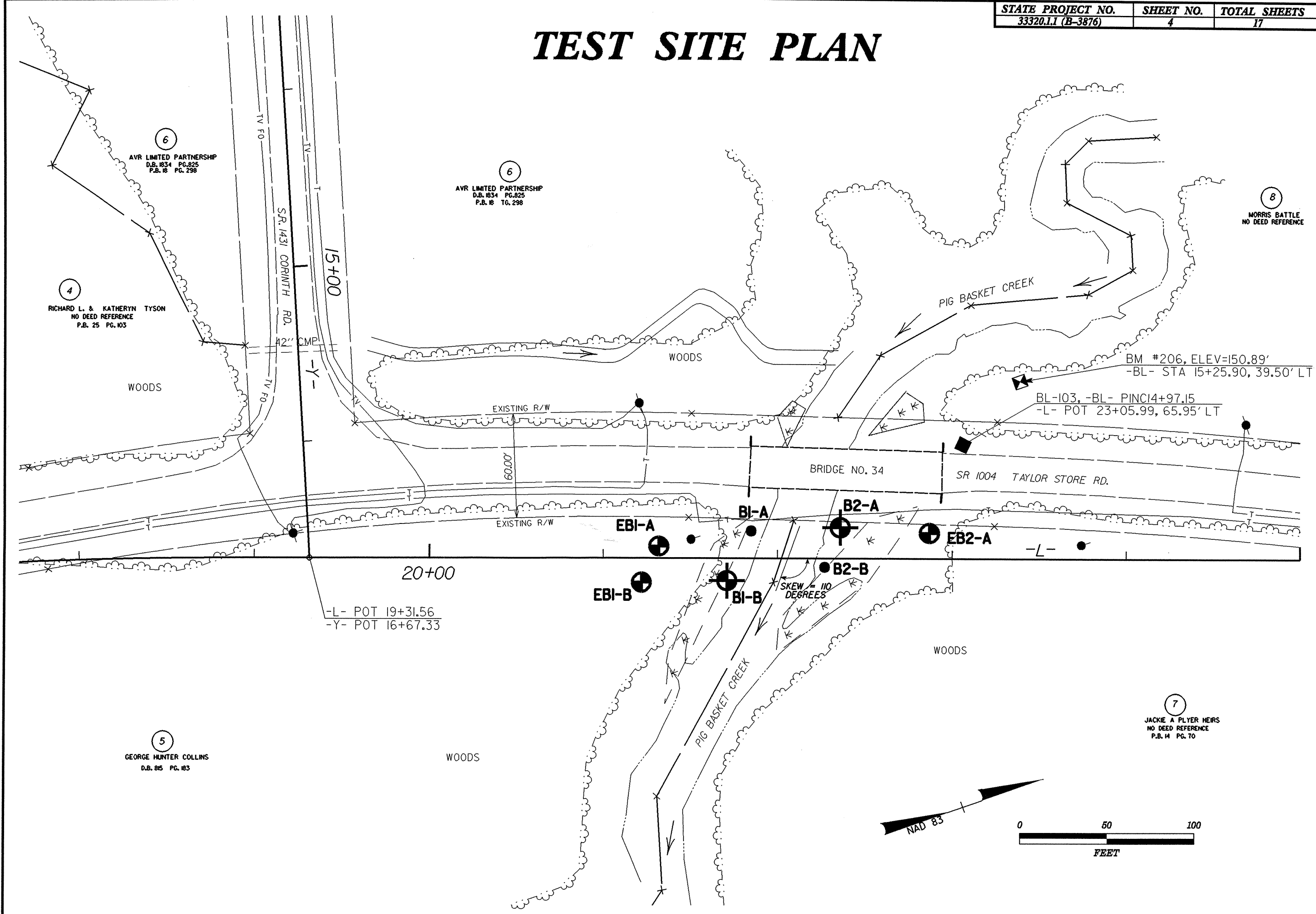
Surface water elevation of Pig Basket Creek was measured at 148.2 feet. Groundwater elevations measured in the five borings varied 0.3 feet or less from the surface water elevation. These elevations indicate that the alluvial soils are highly permeable, and that an equilibrium exists between the water table elevation and the level of Pig Basket Creek.

Respectfully submitted,

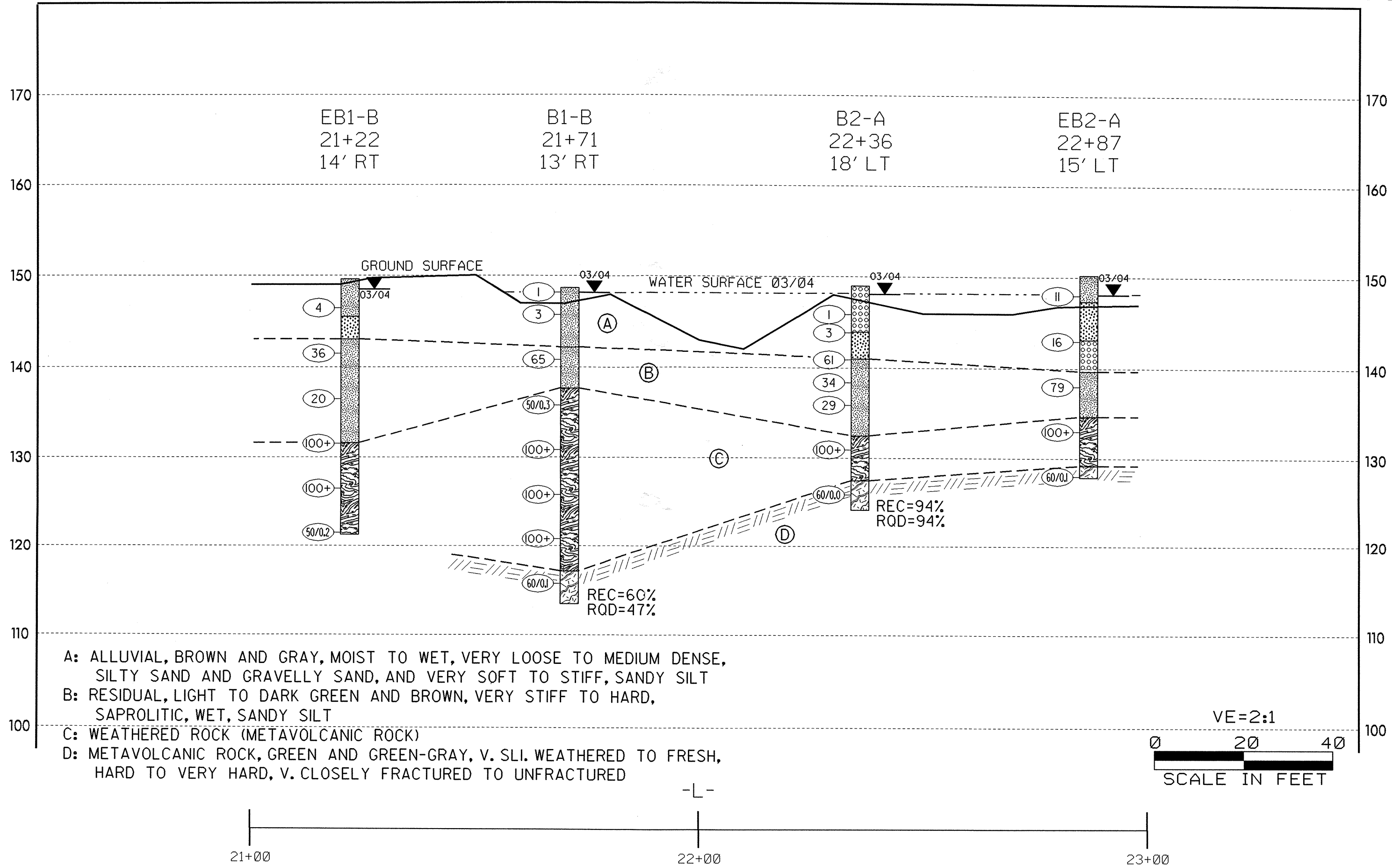
A handwritten signature in black ink that reads "Steve P. Brown".

Steve P. Brown, LG
Project Engineering Geologist

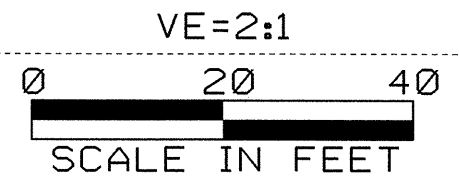
TEST SITE PLAN



PROFILE THROUGH BORINGS PROJECTED ALONG -L-

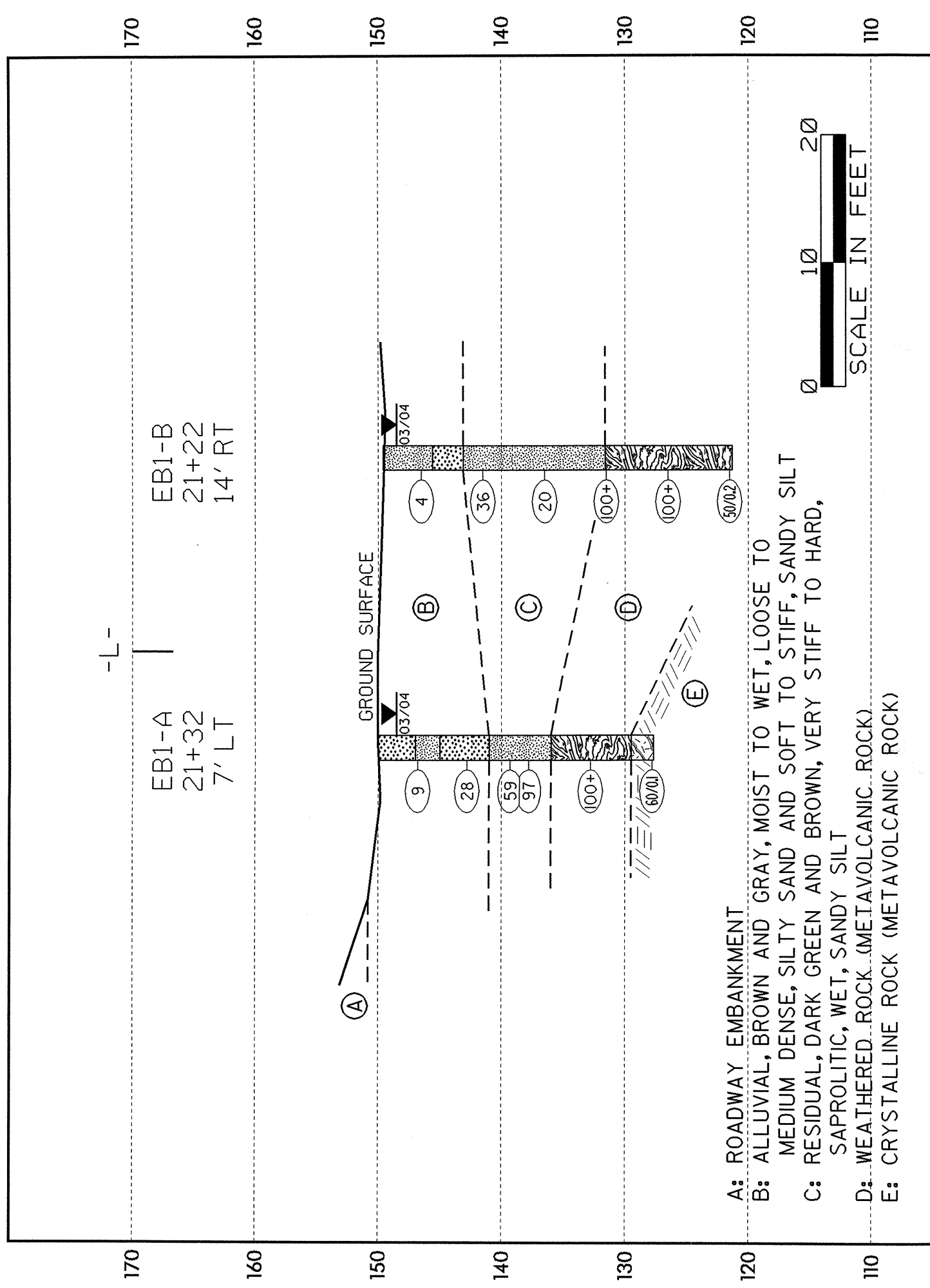


- A: ALLUVIAL, BROWN AND GRAY, MOIST TO WET, VERY LOOSE TO MEDIUM DENSE, SILTY SAND AND GRAVELLY SAND, AND VERY SOFT TO STIFF, SANDY SILT
- B: RESIDUAL, LIGHT TO DARK GREEN AND BROWN, VERY STIFF TO HARD, SAPROLITIC, WET, SANDY SILT
- C: WEATHERED ROCK (METAVOLCANIC ROCK)
- D: METAVOLCANIC ROCK, GREEN AND GREEN-GRAY, V. SLI. WEATHERED TO FRESH, HARD TO VERY HARD, V. CLOSELY FRACTURED TO UNFRACTURED



CROSS SECTION THROUGH END BENT I

BRIDGE NO. 34, 33320.1.1 (B-3876)



A: ROADWAY EMBANKMENT

B: ALLUVIAL, BROWN AND GRAY, MOIST TO WET, LOOSE TO

MEDIUM DENSE, SILTY SAND AND SOFT TO STIFF, SANDY SILT

C: RESIDUAL, DARK GREEN AND BROWN, VERY STIFF TO HARD,

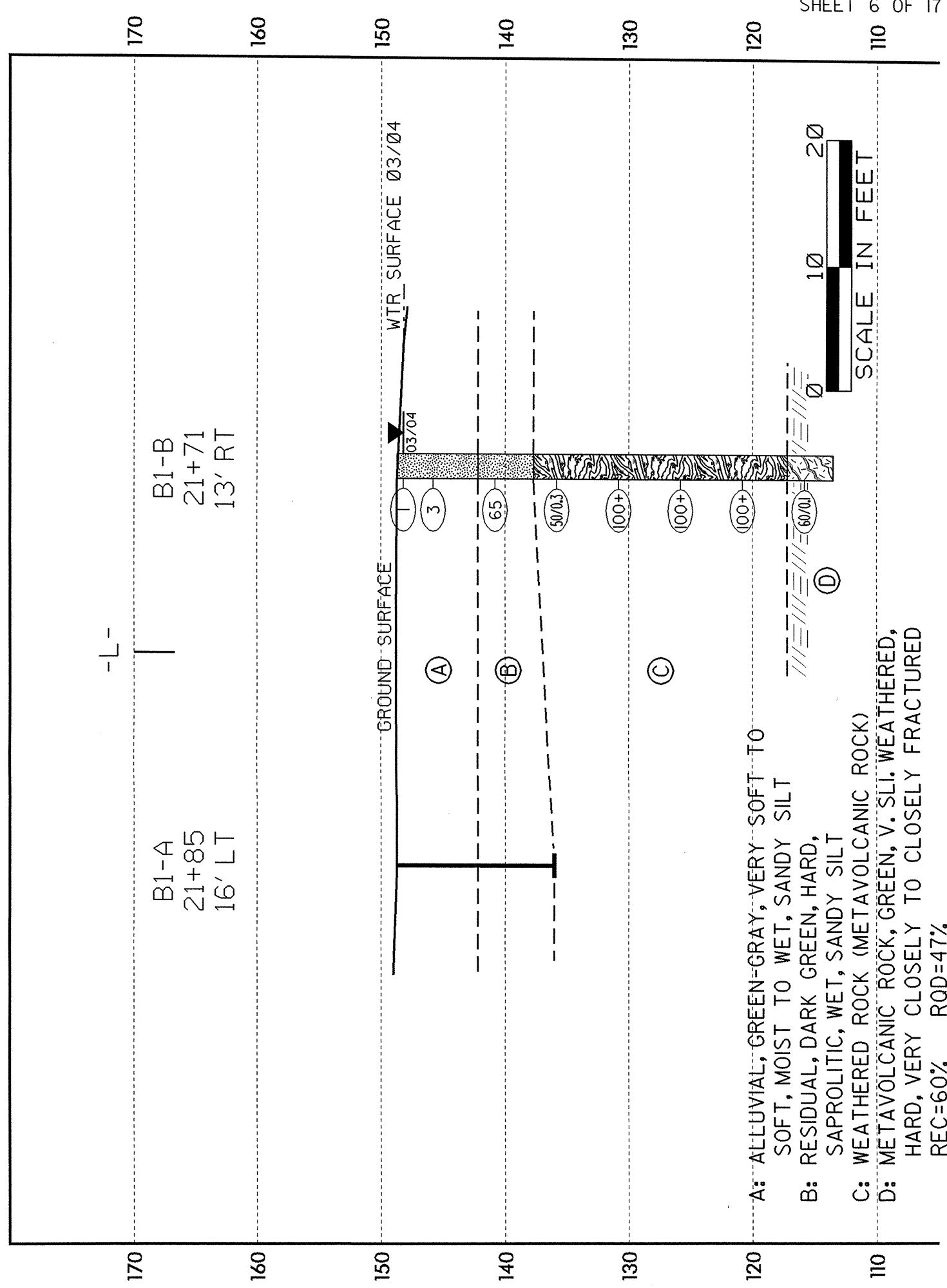
SAPROLITIC, WET, SANDY SILT

D: WEATHERED ROCK (METAVOLCANIC ROCK)

E: CRYSTALLINE ROCK (METAVOLCANIC ROCK)

CROSS SECTION THROUGH BENT I

BRIDGE NO. 34, 33320.1.1 (B-3876)



A: ALLUVIAL, GREEN-GRAY, VERY SOFT TO

SOFT, MOIST TO WET, SANDY SILT

B: RESIDUAL, DARK GREEN, HARD,

SAPROLITIC, WET, SANDY SILT

C: WEATHERED ROCK (METAVOLCANIC ROCK)

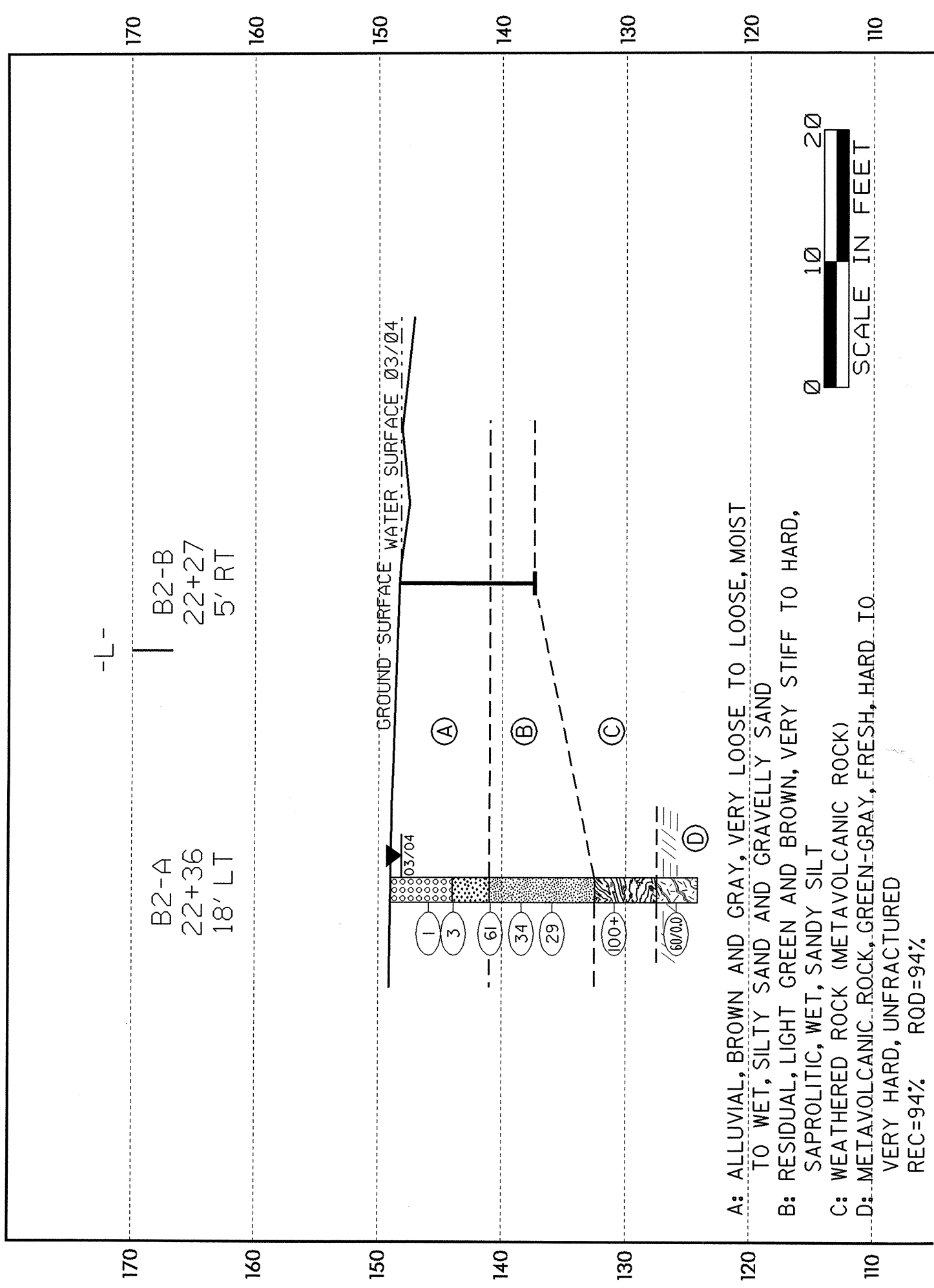
D: METAVOLCANIC ROCK, GREEN, V. SLI. WEATHERED,

HARD, VERY CLOSELY TO CLOSELY FRACTURED

REC=60% RQD=47%

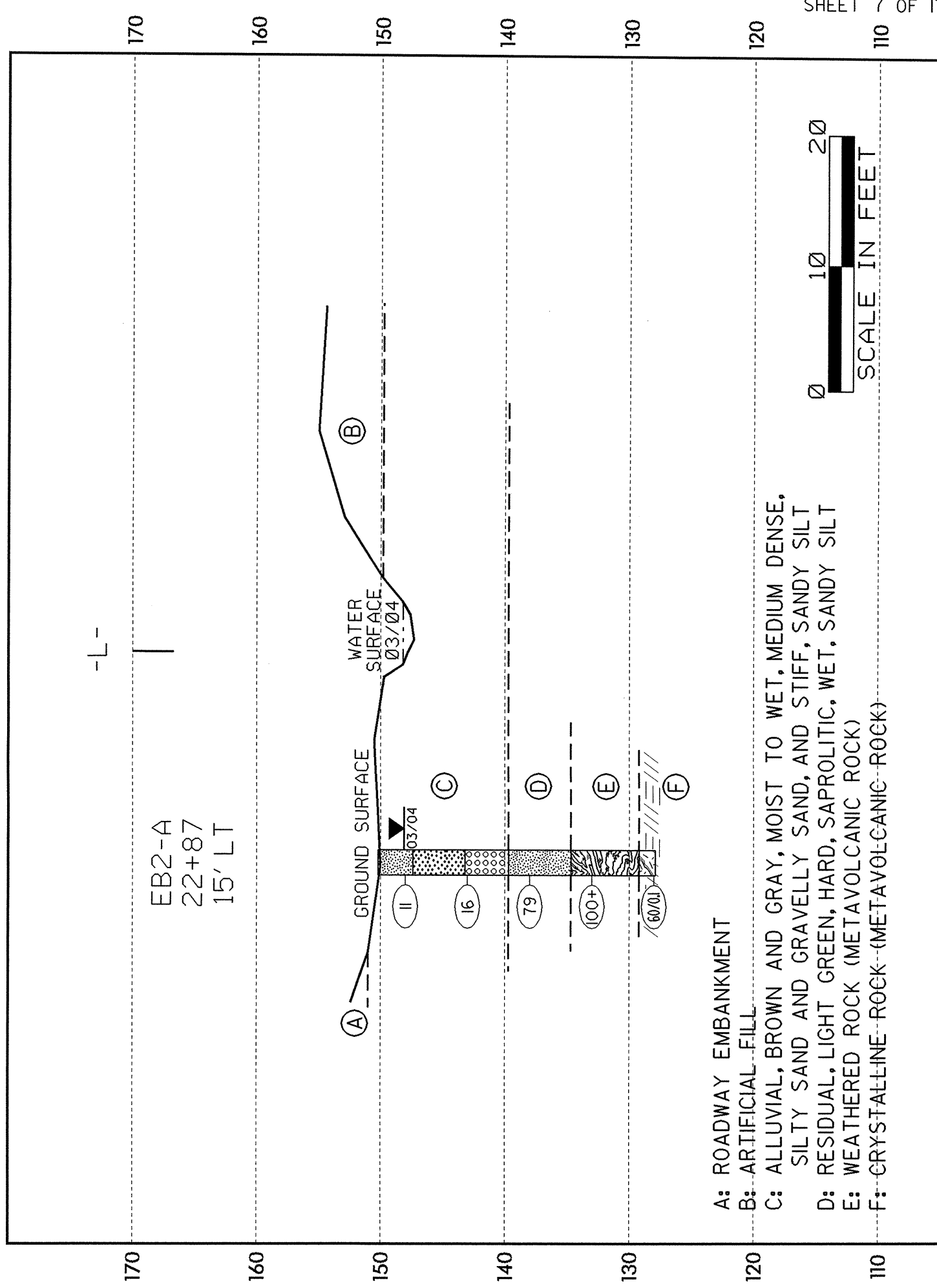
CROSS SECTION THROUGH BENT 2

BRIDGE NO. 34, 33320.1.1 (B-3876)



CROSS SECTION THROUGH END BENT 2

BRIDGE NO. 34, 33320.1.1 (B-3876)



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

SHEET 8 OF 17

PROJECT NO. 33320.1.I		ID. B-3876		COUNTY NASH		GEOLOGIST S. P. BROWN								
SITE DESCRIPTION BRIDGE NO. 34 ON -L- (SR 1004) OVER PIG BASKET CREEK							GROUND WATER							
BORING NO. EBI-A		BORING LOCATION 21+32		OFFSET 7' LT		ALIGNMENT -L-								
COLLAR ELEVATION 150.0'		NORTHING 822016		EASTING 2301155		DEPTH TO ROCK 20.5'								
TOTAL DEPTH 22.3'		DRILL MACHINE DIEDRICH D-50		DRILL METHOD ROTARY W/MUD		HAMMER TYPE AUTOMATIC								
START DATE 3/23/04		COMPLETION DATE 3/23/04		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 20.5'								
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	LOG MOI.	SOIL AND ROCK DESCRIPTION		
		0.5'	0.5'	0.5'		0	25	50	75				100	
150.0													S-5	ALLUVIAL, BROWN, SILTY SAND
	3.2	5	4	5	1.0	X 9							SS-6	LIGHT GRAY, SANDY SILT
145.0	7.2	22	15	13	1.0	X 28							W	GRAY, SILTY SAND
	10.7	22	25	34	1.0	X 59							W	RESIDUAL, BROWN, SAPROLITIC, SANDY SILT
	12.2	16	51	46	1.0	X 97							W	
135.0	17.2	31	45	55	0.9									WEATHERED ROCK (METAVOLCANIC ROCK)
130.0	22.2	60			0.1									CRYSTALLINE ROCK (METAVOLCANIC ROCK)
BORING TERMINATED AT ELEVATION 127.7 FEET IN CRYSTALLINE ROCK (METAVOLCANIC ROCK)														

PROJECT NO. 33320.1.I		ID. B-3876		COUNTY NASH		GEOLOGIST S. P. BROWN								
SITE DESCRIPTION BRIDGE NO. 34 ON -L- (SR 1004) OVER PIG BASKET CREEK							GROUND WATER							
BORING NO. EBI-B		BORING LOCATION 21+22		OFFSET 14' RT		ALIGNMENT -L-								
COLLAR ELEVATION 149.6'		NORTHING 821999		EASTING 2301172		DEPTH TO ROCK 1.1'								
TOTAL DEPTH 28.3'		DRILL MACHINE DIEDRICH D-50		DRILL METHOD ROTARY W/MUD		HAMMER TYPE AUTOMATIC								
START DATE 3/22/04		COMPLETION DATE 3/22/04		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A								
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	LOG MOI.	SOIL AND ROCK DESCRIPTION		
		0.5'	0.5'	0.5'		0	25	50	75				100	
149.6														
	3.1	WOH	1	3	1.0	X 4							SS-1	ALLUVIAL, BROWN, SANDY SILT
145.0	8.1				1.0								SS-2	GRAY, SILTY SAND
	13.1				1.0	X 36							SS-3	RESIDUAL, DARK GREEN AND BROWN, SAPROLITIC, SANDY SILT
	18.1				0.8	X 20							W	
135.0	23.1				0.4									WEATHERED ROCK (METAVOLCANIC ROCK)
130.0	28.1				0.2									WEATHERED ROCK (METAVOLCANIC ROCK)
BORING TERMINATED AT ELEVATION 127.3 FEET IN WEATHERED ROCK (METAVOLCANIC ROCK)														

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT ROD SOUNDING LOG

PROJECT NO. 33320.I.I		ID. B-3876		COUNTY NASH		GEOLOGIST S. P. BROWN					
SITE DESCRIPTION BRIDGE NO. 34 ON -L- (SR 1004) OVER PIG BASKET CREEK							GROUND WATER				
BORING NO. BI-A		BORING LOCATION 21+85		OFFSET 16' LT		ALIGNMENT -L-					
COLLAR ELEVATION 148.7'		NORTHING 822069		EASTING 2301164		0 HR. N/A					
TOTAL DEPTH 12.7'		DRILL MACHINE N/A		DRILL METHOD ROD SOUNDING		HAMMER TYPE MANUAL					
START DATE 3/29/04		COMPLETION DATE 3/29/04		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A					
ELEV.	DEPTH (FT.)	BLOW COUNT	PEN. (FT.)	BLOWS PER FOOT					SAMPLE NUMBER	LOG	SOIL AND ROCK DESCRIPTION
		0.5' 0.5' 0.5'		0	25	50	75	100			
148.7	0.0	1	1.0								
	1.0	1	1.0								
	2.0	4	1.0								
145.0	3.0	3	1.0								
	4.0	2	1.0								
	5.0	2	1.0								
	6.0	7	1.0								
	7.0	2	1.0								
140.0	8.0	29	1.0								
	9.0	33	1.0								
	10.0	37	1.0								
	11.0	41	1.0								
	12.0	42	1.0								
		47	1.0								
		47	1.0								
		87	0.7								
BRIDGE ROD REFUSAL AT ELEVATION 136.0 FEET ON WEATHERED ROCK (METAVOLCANIC ROCK)											

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

PROJECT NO. 33320.I.I		ID. B-3876		COUNTY NASH		GEOLOGIST S. P. BROWN					
SITE DESCRIPTION BRIDGE NO. 34 ON -L- (SR 1004) OVER PIG BASKET CREEK							GROUND WATER				
BORING NO. BI-B		BORING LOCATION 21+71		OFFSET 13' RT		ALIGNMENT -L-					
COLLAR ELEVATION 148.7'		NORTHING 822046		EASTING 2301187		0 HR. N/A					
TOTAL DEPTH 35.2'		DRILL MACHINE DIEDRICH D-50		DRILL METHOD ROTARY W/MUD		HAMMER TYPE AUTOMATIC					
START DATE 3/24/04		COMPLETION DATE 3/24/04		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 31.5'					
ELEV.	DEPTH (FT.)	BLOW COUNT	PEN. (FT.)	BLOWS PER FOOT					SAMPLE NUMBER	LOG	SOIL AND ROCK DESCRIPTION
		0.5' 0.5' 0.5'		0	25	50	75	100			
148.7	0.5	WOHWOH	1								
	1.0		1.0								
145.0	2.9	WOH	1								
	3.0		2								
	4.0										
	5.0										
	6.0										
	7.0										
140.0	7.9	35	29	36							
	8.0										
	9.0										
	10.0										
	11.0										
	12.0										
135.0	12.9	50									
	13.0										
	14.0										
	15.0										
	16.0										
	17.0										
130.0	17.9	91	9								
	18.0										
	19.0										
	20.0										
	21.0										
	22.0										
125.0	22.9	100									
	23.0										
	24.0										
	25.0										
	26.0										
	27.0										
120.0	27.9	100									
	28.0										
	29.0										
	30.0										
	31.0										
	32.0										
115.0	32.9	60									
	33.0										
	34.0										
	35.0										
	36.0										
	37.0										
	38.0										
	39.0										
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	62.0										
	63.0										
	64.0										
	65.0										
	66.0										
	67.0										
	68.0										
	69.0										
	70.0										
BORING TERMINATED AT ELEVATION 113.5 FEET IN METAVOLCANIC ROCK											

CORE BORING REPORT

PROJECT: 33320.1.1 ID: B-3876 COUNTY: Nash BORING NO: B1-B
 DESCRIPTION: Bridge No. 34 on -L- (SR 1004) over Pig Basket Creek
 LOCATION OF BORING: -L- Station 21+71, 13' Rt COMPLETION DATE: 3/24/04
 COLLAR or GROUND ELEVATION: 148.7 ft CORE SIZE: NWD4 GEOLOGIST: S. P. Brown
 CORE EQUIPMENT: N rods, N casing, split NWD4 core barrel DRILLER: Cruz (Tierra)

ELEV (ft)	DEPTH (ft)	DRILL RATE (min/ft)	RUN (ft)	REC (ft) (%)	RQD (ft) (%)	SAMPLE NUMBER	FIELD CLASSIFICATION and REMARKS
115.0	33.7	1:19 0:40/0.5	1.5	0.9 (60%)	0.7 (47%)		Green, very slightly weathered, hard, very closely to closely, fractured, foliated, metavolcanic rock
113.5	35.2						
BOREHOLE TERMINATED AT ELEVATION OF 113.5 FEET, IN METAVOLCANIC ROCK.							

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT ROD SOUNDING LOG SHEET 11 OF 17

PROJECT NO. 33320.1.1		ID. B-3876		COUNTY NASH		GEOLOGIST S. P. BROWN							
SITE DESCRIPTION BRIDGE NO. 34 ON -L- (SR 1004) OVER PIG BASKET CREEK							GROUND WATER						
BORING NO. B2-A		BORING LOCATION 22+36		OFFSET 18' LT		ALIGNMENT -L-							
COLLAR ELEVATION 149.0'		NORTHING 822118		EASTING 2301179		0 HR. N/A							
TOTAL DEPTH 24.8'		DRILL MACHINE DIEDRICH D-50		DRILL METHOD ROTARY W/MUD		HAMMER TYPE AUTOMATIC							
START DATE 3/26/04		COMPLETION DATE 3/26/04		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 21.5'							
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	LOG MOI. G	SOIL AND ROCK DESCRIPTION	
		0.5'	0.5'	0.5'		0	25	50	75				100
149.0													
145.0	3.1	1	0	1	1.0							SS-12	ALLUVIAL, BROWN, GRAVELLY SAND
	5.1	1	1	2	1.0								GRAY, SILTY SAND
140.0	8.1	44	35	26	1.0								RESIDUAL, LIGHT GREEN AND BROWN, SAPROLITIC, SANDY SILT
	10.6	13	15	19	1.0								
135.0	13.1	11	15	14	1.0								
130.0	18.1	38	62		0.9								WEATHERED ROCK (METAVOLCANIC ROCK)
125.0	23.1	60			0.0							RS-1	METAVOLCANIC ROCK, GREEN-GRAY, FRESH, HARD TO V. HARD, UNFRACTURED REC=94% ROD=94%
BORING TERMINATED AT ELEVATION 124.2 FEET IN METAVOLCANIC ROCK													

PROJECT NO. 33320.1.1		ID. B-3876		COUNTY NASH		GEOLOGIST S. P. BROWN							
SITE DESCRIPTION BRIDGE NO. 34 ON -L- (SR 1004) OVER PIG BASKET CREEK							GROUND WATER						
BORING NO. B2-B		BORING LOCATION 22+27		OFFSET 5' RT		ALIGNMENT -L-							
COLLAR ELEVATION 148.3'		NORTHING 822102		EASTING 2301198		0 HR. N/A							
TOTAL DEPTH 10.9'		DRILL MACHINE N/A		DRILL METHOD ROD SOUNDING		HAMMER TYPE MANUAL							
START DATE 3/29/04		COMPLETION DATE 3/29/04		SURFACE WATER DEPTH N/A		DEPTH TO ROCK N/A							
ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	LOG MOI. G	SOIL AND ROCK DESCRIPTION	
		0.5'	0.5'	0.5'		0	25	50	75				100
148.3	0.0	WOH	WOH		1.0								
	1.0	1	1		1.0								
145.0	2.0	0	1		1.0								
	3.0	0	1		1.0								
	4.0	1	1		1.0								
	5.0	1	1		1.0								
140.0	6.0	4	16		1.0								
	7.0	33	36		1.0								
	8.0	35	47		1.0								
	9.0	37	85		1.0								
	10.0	87	100		0.9								
BRIDGE ROD REFUSAL AT ELEVATION 137.4 FEET ON WEATHERED ROCK (METAVOLCANIC ROCK)													

CORE BORING REPORT

PROJECT: 33320.1.1 ID: B-3876 COUNTY: Nash BORING NO: B2-A

DESCRIPTION: Bridge No. 34 on -L- (SR 1004) over Pig Basket Creek

LOCATION OF BORING: -L- Station 22+36, 18' Lt COMPLETION DATE: 3/26/04

COLLAR or GROUND ELEVATION: 149.0 ft CORE SIZE: NWD4 GEOLOGIST: S. P. Brown

CORE EQUIPMENT: N rods, N casing, split NWD4 core barrel DRILLER: Cruz (Tierra)

ELEV (ft)	DEPTH (ft)	DRILL RATE (min/ft)	RUN (ft)	REC (ft) (%)	RQD (ft) (%)	SAMPLE NUMBER	FIELD CLASSIFICATION and REMARKS
125.9	23.1	1:58	1.7	1.6 (94%)	1.6 (94%)	RS-1	Green-gray, fresh, hard to very hard, unfractured, foliated, metavolcanic rock
		1:46/0.7				23.1 - 23.6	
124.2	24.8						

BOREHOLE TERMINATED AT ELEVATION OF 124.2 FEET, IN METAVOLCANIC ROCK.

EB1-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-4	7 LT	21+32	12.2-13.7	A-4(4)	33	8	19.9	15.7	42.3	22.1	96	81	66	-	-
S-5	7 LT	21+32	0.5-1.5	A-2-4(0)	18	NP	21.9	52.3	11.8	14.1	100	95	31	-	-
SS-6	7 LT	21+32	3.2-4.7	A-4(1)	24	4	1.6	35.6	44.7	18.1	100	100	77	-	-

EB1-B

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-1	14 RT	21+22	3.1-4.0	A-4(3)	25	8	7.6	37.4	36.9	18.1	100	97	67	-	-
SS-2	14 RT	21+22	4.0-4.6	A-2-4(0)	19	NP	40.2	47.8	5.9	6.0	97	79	15	-	-
SS-3	14 RT	21+22	8.1-9.6	A-4(0)	31	NP	18.5	30.6	38.9	12.1	95	85	57	-	-

B1-B

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-7	13 RT	21+71	0.5-2.0	A-4(2)	27	8	20.1	28.5	31.3	20.1	100	94	56	-	-
SS-8	13 RT	21+71	7.9-9.4	A-4(1)	29	6	32.5	23.6	35.8	8.1	100	74	51	15.6	-

B2-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-12	18 LT	22+36	3.1-4.6	A-1-b(0)	19	NP	78.3	14.2	3.5	4.0	86	28	7	-	-

EB2-A

SOIL TEST RESULTS															
SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC
							C.SAND	F.SAND	SILT	CLAY	10	40	200		
SS-9	15 LT	22+87	2.2-2.8	A-4(2)	22	6	4.8	21.3	45.7	28.1	100	99	81	-	-
SS-10	15 LT	22+87	7.2-8.7	A-1-b(0)	18	NP	51.3	26.7	14.0	8.0	67	45	17	-	-
SS-11	15 LT	22+87	12.2-13.7	A-4(1)	29	7	24.9	18.5	38.5	18.1	83	67	52	-	-

PROJECT: 33320.1.1 ID: B-3876 COUNTY: Nash
 DESCRIPTION(1): Bridge No. 34 on -L- (SR 1004) over Pig Basket Creek

INFORMATION ON EXISTING BRIDGE

Information obtained from: field inspection
 microfilm (Reel: _____ Pos: _____)
 other: _____

BR. NO.: 34 BR. LENGTH: 111' NO. BENTS: 4 NO. BENTS IN: CHANNEL: 2 FLOODPLAIN: 2
 FOUNDATION TYPE: Wood piles.

EVIDENCE OF SCOUR(2):

ABUTMENTS OR END BENT SLOPES: None.
 INTERIOR BENTS: Interior bents are in channel. See note on Channel Bed, below.
 CHANNEL BED: Several large, longitudinal sand bars and parallel scour troughs are present across full width of channel, under bridge, and up and downstream of bridge.
 CHANNEL BANKS: None.

EXISTING SCOUR PROTECTION:

TYPE(3): Endslopes protected by riprap.
 EXTENT(4): End slopes entirely covered with riprap. Timber wing walls extend 6' out from bridge.
 EFFECTIVENESS(5): Very effective. No scour has occurred around ends of wing walls or of end slope.
 OBSTRUCTIONS(6) (DAMS,DEBRIS,ETC.): Minor limbs and logs lodged against piles and hung in deck.

DESIGN INFORMATION

CHANNEL BED MATERIAL(7): Sandy silt (SS-7) and gravelly sand (SS-12).
 CHANNEL BANK MATERIAL(8): Sandy silt (SS-1, SS-6, SS-9), silty sand (SS-2, S-5), and gravelly sand (SS-10).
 CHANNEL BANK COVER(9): Brush, weeds, and trees.
 FLOOD PLAIN WIDTH(10): 2,300' (800' behind bridge and 1500' ahead of bridge).
 FLOOD PLAIN COVER(11): Brush, weeds, and trees.

DESIGN INFORMATION CONT.

STREAM IS: X DEGRADING AGGRADING AT EQUILIBRIUM (12)

OTHER OBSERVATIONS AND COMMENTS: _____

CHANNEL MIGRATION TENDENCY (13): Low tendency to migrate southeast (towards EB1).

GEOTECHNICALLY ADJUSTED SCOUR ELEVATIONS(14):

Interior Bent 1: 142.6'
 The geotechnically adjusted scour elevation agrees with theoretical elevation shown on the Bridge Survey and Hydraulic Design Report.

Interior Bent 2: 142.0'
 The geotechnically adjusted scour elevation agrees with theoretical elevation shown on the Bridge Survey and Hydraulic Design Report.

REPORTED BY: S. P. Brown
 S. P. Brown

DATE: 4/27/04

- INSTRUCTIONS**
- (1) GIVE THE DESCRIPTION OF THE SPECIFIC SITE, INCLUDING 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 BASED ON OBSERVATION AND/OR SAMPLES.
 - (8) DESCRIBE THE CHANNEL BANK MATERIAL BASED ON OBSERVATION AND/OR SAMPLES.
 - (9) DESCRIBE THE BANK COVERING (GRASS, TREES, RIP RAP, NONE, ETC.)
 - (10) GIVE THE APPROXIMATE FLOOD PLAIN WIDTH (ESTIMATE).
 - (11) DESCRIBE THE FLOOD PLAIN COVERING (GRASS, TREES, CROPS, ETC.)
 - (12) CHECK THE APPROPRIATE SPACE AS TO WHETHER THE STREAM IS DEGRADING OR AGGRADING.
 - (13) DESCRIBE THE POTENTIAL OF THE BODY OF WATER TO MIGRATE LATERALLY DURING THE LIFE OF THE BRIDGE (APPROXIMATELY 100 YEARS).
 - (14) GIVE THE GEOTECHNICALLY ADJUSTED 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 THE RELATIONSHIP BETWEEN THE HYDRAULICS THEORETICAL SCOUR AND THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION. IF THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION IS DEPENDENT ON SCOUR COUNTER MEASURES, EXPLAIN. (RIPRAP ARMORING ON SLOPES, ETC.) THE GEOTECHNICALLY ADJUSTED 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.

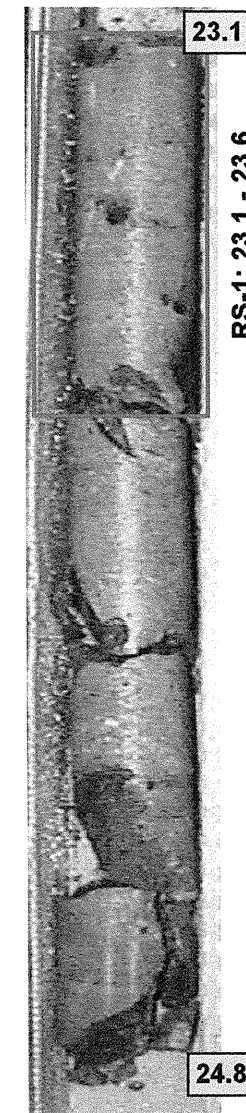
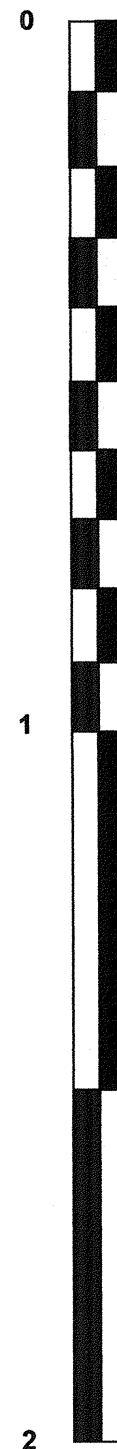
CORE PHOTOGRAPHS

B1-B

BOX 1: 33.7 - 35.2 FT

B2-A

BOX 1: 23.1 - 24.8 FT



SITE PHOTOGRAPH

