

CONTRACT: ID: B-3852

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	33299.1.1 (B-3852)	1	21
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33299.1.1	BRZ-3389(1)	P.E.	
		CONST.	

CAUTION NOTICE

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

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

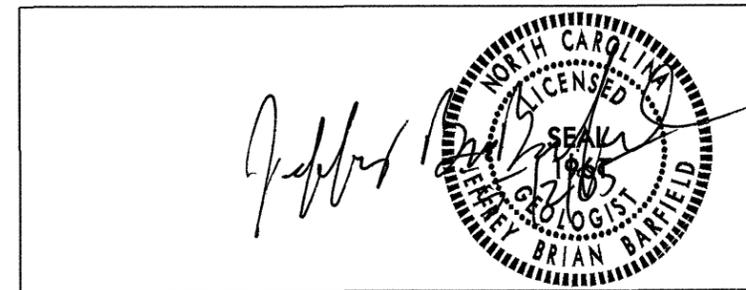
STATE PROJECT 33299.1.1 I.D. NO. B-3852
 F.A. PROJECT BRZ-3389(1)
 COUNTY GUILFORD
 PROJECT DESCRIPTION BRIDGE NO. 449 ON
SR 3389 (WOODY MILL ROAD) OVER
ALAMANCE CREEK AT -L- STATION 18+72.5

INVESTIGATED BY J. B. BARFIELD PERSONNEL N. D. MOHS
 CHECKED BY J. B. BARFIELD C. D. CZAJKA
 SUBMITTED BY N. T. ROBERSON R. TOOTHMAN
 DATE MAY 2005 B. FOSTER
W. DUGGINS
C. HUEN

DRAWN BY: ANK

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT 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.
B-3852	33299.1.1	2

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 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. EXAMPLES: <i>VERY STIFF, GRAY SILTY CLAY, MOST 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.		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:		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 DISLODGED 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.) - 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 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 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 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 (S.C.R.) - 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. 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<p align="center">SOIL LEGEND AND AASHTO CLASSIFICATION</p> <table border="1"> <tr> <th>GENERAL CLASS.</th> <th>GRANULAR MATERIALS (<math>35\%</math> PASSING #200)</th> <th>SILT-CLAY MATERIALS (>85% PASSING #200)</th> <th>ORGANIC MATERIALS</th> </tr> <tr> <td>GROUP CLASS.</td> <td>A-1, A-3</td> <td>A-2, A-4, A-5, A-6, A-7</td> <td>A-1, A-2, A-3</td> </tr> <tr> <td>SYMBOL</td> <td></td> <td></td> <td></td> </tr> <tr> <td>% PASSING</td> <td>50 MX, 30 MX, 15 MX</td> <td>40 MX, 35 MX, 30 MX, 25 MX, 20 MX, 15 MX, 10 MX, 5 MX</td> <td>GRANULAR SOILS, SILT-CLAY SOILS, MUCK, PEAT</td> </tr> <tr> <td>LIQUID LIMIT</td> <td>6 MX</td> <td>10 MX, 15 MX, 20 MX, 25 MX, 30 MX, 35 MX, 40 MX</td> <td>SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER, HIGHLY ORGANIC SOILS</td> </tr> <tr> <td>GROUP INDEX</td> <td>0</td> <td>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30</td> <td></td> </tr> <tr> <td>USUAL TYPES OF MAJOR MATERIALS</td> <td>STONE FRAGS, GRAVEL AND SAND</td> <td>FINE SAND, SILTY OR CLAYEY GRAVEL AND SAND, SILTY SOILS, CLAYEY SOILS</td> <td></td> </tr> <tr> <td>GEN. RATING AS A SUBGRADE</td> <td>EXCELLENT TO GOOD</td> <td>FAIR TO POOR</td> <td>FAIR TO POOR, POOR, UNSUITABLE</td> </tr> </table> <p align="center">P.I. OF A-7-5 ≤ L.L. - 30 + P.I. OF A-7-6 > L.L. - 30</p>		GENERAL CLASS.	GRANULAR MATERIALS (35% PASSING #200)	SILT-CLAY MATERIALS (>85% PASSING #200)	ORGANIC MATERIALS	GROUP CLASS.	A-1, A-3	A-2, A-4, A-5, A-6, A-7	A-1, A-2, A-3	SYMBOL				% PASSING	50 MX, 30 MX, 15 MX	40 MX, 35 MX, 30 MX, 25 MX, 20 MX, 15 MX, 10 MX, 5 MX	GRANULAR SOILS, SILT-CLAY SOILS, MUCK, PEAT	LIQUID LIMIT	6 MX	10 MX, 15 MX, 20 MX, 25 MX, 30 MX, 35 MX, 40 MX	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER, HIGHLY ORGANIC SOILS	GROUP INDEX	0	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30		USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS, GRAVEL AND SAND	FINE SAND, SILTY OR CLAYEY GRAVEL AND SAND, SILTY SOILS, CLAYEY SOILS		GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD	FAIR TO POOR	FAIR TO POOR, POOR, UNSUITABLE	<p align="center">MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p align="center">COMPRESSIBILITY</p> <p>SLIGHTLY COMPRESSIBLE LIQUID LIMIT LESS THAN 30 MODERATELY COMPRESSIBLE LIQUID LIMIT 31-50 HIGHLY COMPRESSIBLE LIQUID LIMIT GREATER THAN 50</p> <p align="center">PERCENTAGE OF MATERIAL</p> <table border="1"> <tr> <th>ORGANIC MATERIAL</th> <th>GRANULAR SOILS</th> <th>SILT-CLAY SOILS</th> <th>OTHER MATERIAL</th> </tr> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE 1 - 10%</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE 10 - 20%</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME 20 - 35%</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>>10%</td> <td>>20%</td> <td>HIGHLY 35% AND ABOVE</td> </tr> </table> <p align="center">GROUND WATER</p> <p> 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</p>		ORGANIC MATERIAL	GRANULAR SOILS	SILT-CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE 1 - 10%	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE 10 - 20%	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME 20 - 35%	HIGHLY ORGANIC	>10%	>20%	HIGHLY 35% AND ABOVE									
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Michael F. Easley
GOVERNOR

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

Lyndo Tippet
SECRETARY

May 2, 2005

STATE PROJECT: 33299.1.1 (B-3852)
F.A. PROJECT: BRZ-3389(1)
COUNTY: Guilford

DESCRIPTION: Bridge No. 449 on SR 3389 (Woody Mill Road) over Alamance Creek at
-L- Station 18+72.5

SUBJECT: Geotechnical Report – Structure Inventory Report

Project Description

A four-span bridge, 195-feet in length with a 120° skew, is proposed on -L- (SR 3389) over Alamance Creek to replace the existing structure. The new bridge will be 89 feet longer than the existing bridge and relocated approximately 40 feet upstream. The project is located in Southeast Guilford County about five miles southeast of Greensboro.

The subsurface investigation was conducted during March of 2005 using a track-mounted CME 850, and Mobile B-57 drill machines. Two Standard Penetration Test borings were performed at each of the five proposed bent locations. An additional Standard Penetration Test was performed at B3-C on centerline. All borings were advanced until crystalline or non-crystalline rock was encountered. Rock core was obtained from one boring along each of the three interior bents. Representative soil samples were obtained for visual classification in the field and selected samples were sent to the Materials and Test Unit for laboratory analysis.

Physiography and Geology

The project is located in gently rolling terrain of the Piedmont Physiographic Province. Geologically, the site is located within the Carolina Slate Belt, and is underlain by slate and meta-gabbro. The area consists of a mixture of wooded land and sparse homes. Alamance Creek is a tributary of the Haw River.

Soil Properties

Soils encountered at the project site include roadway embankment, alluvial and residual soils.

Roadway embankment soils were encountered at B3-B and EB2-B. These soils consist primarily of red-brown, moist, medium stiff, silty clay (A-7-5). These soils are approximately 10.0 feet thick and are underlain by alluvial soils.

Alluvial soils were encountered in most borings and range in thickness from 1.0 to 5.2 feet. Alluvial soils consist of tan-orange and brown, very loose to medium dense, silty sand with angular gravel (A-2-4), and brown, soft, sandy silt (A-4). The alluvial soils were deposited on weathered and crystalline rock.

Residual soils were only encountered at end bent one. These soils consists of red-brown and red-orange, moist, medium dense, clayey sand (A-2-7), red-brown, moist, medium stiff, sandy clay (A-6) and a orange-green, dry, very hard, saprolitic sandy silt (A-4). Residual soils are derived from the underlying weathered rock

Rock Properties

Weathered rock was present in all but one of the borings (B3-C). Weathered rock is derived from the underlying crystalline rock. The weathered rock ranges in thickness from 0.5 to 3.7 feet. The top of the weathered rock was encountered at elevations ranging from 609.5 to 617.6 feet.

Non-crystalline rock was encountered in two borings EB1-A, EB1-B. Both borings were terminated on the non-crystalline rock and no samples were taken. The top of the non-crystalline rock ranges from 613.0 to 615.2 feet and consists of green, hard, slate.

Crystalline rock was recorded in all but two borings where non-crystalline rock was encountered. The top of the crystalline rock ranges from 609.1 to 616.6 feet in elevation. Crystalline rock consists of green and gray fresh to slightly weathered, hard to very hard, closely fractured, meta-gabbro. Rock core was obtained from borings B1-B, B2-B, and B3-A and the following field data was recorded. Rock core recovery (REC) ranges from 33% to 100% and rock quality designation (RQD) ranges 10% to 100%. Representative rock core samples were sent to the Materials and Tests Unit to be tested for unit weight and compressive strength.

Groundwater

Groundwater was encountered at most boring locations. Groundwater elevations ranged from 610.4 to 622.8 feet. Surface water in Alamance Creek was at an elevation of 612.0 feet (3-15-05).

Notice

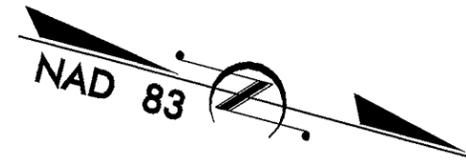
This Geotechnical foundation report is based on the bridge survey report for Alamance Creek dated October 2004. If significant changes are made in the design or location of the proposed structure, the subsurface information should be reviewed and modified as necessary.

Respectfully submitted,

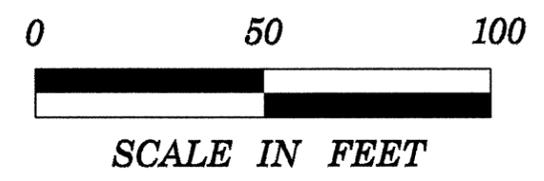
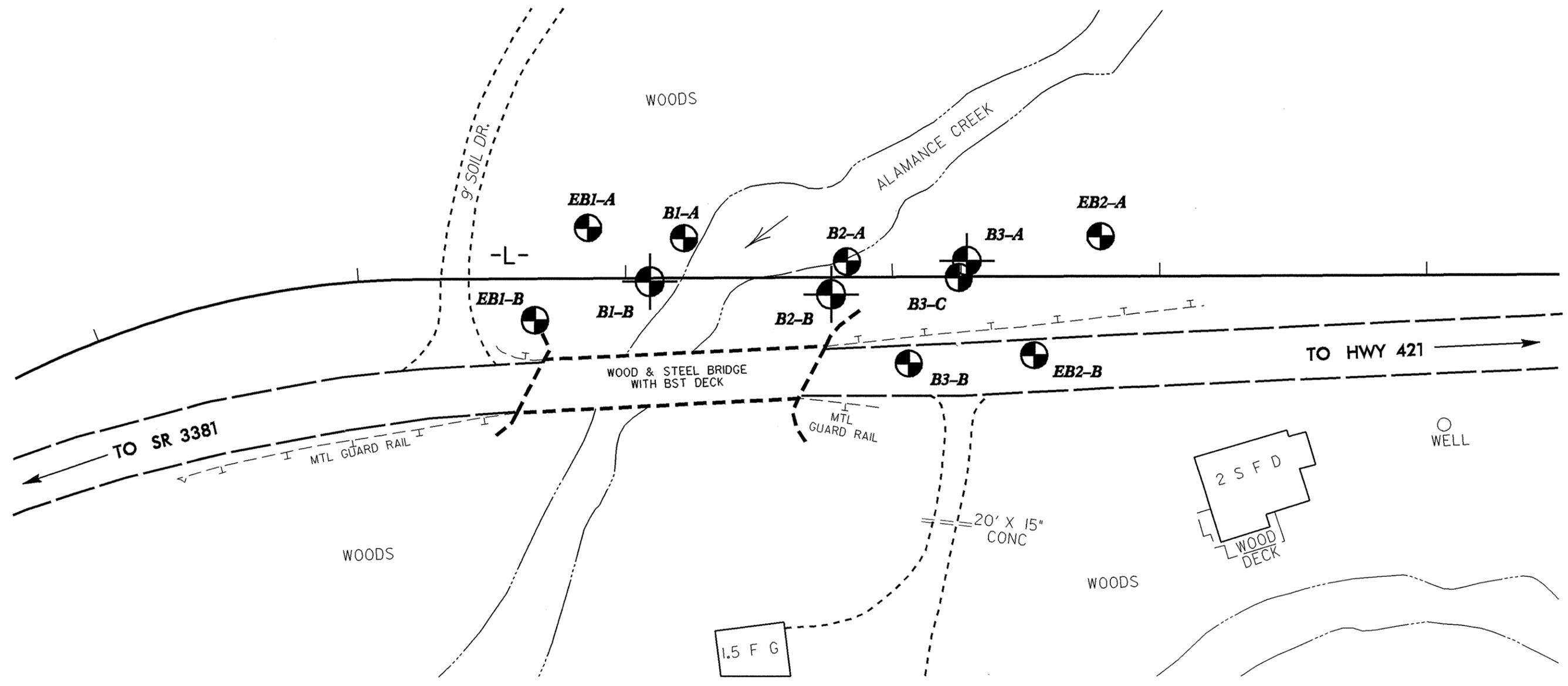
A handwritten signature in black ink, appearing to read "Jeffrey Barfield".

J. B. Barfield, LG
Project Geologist

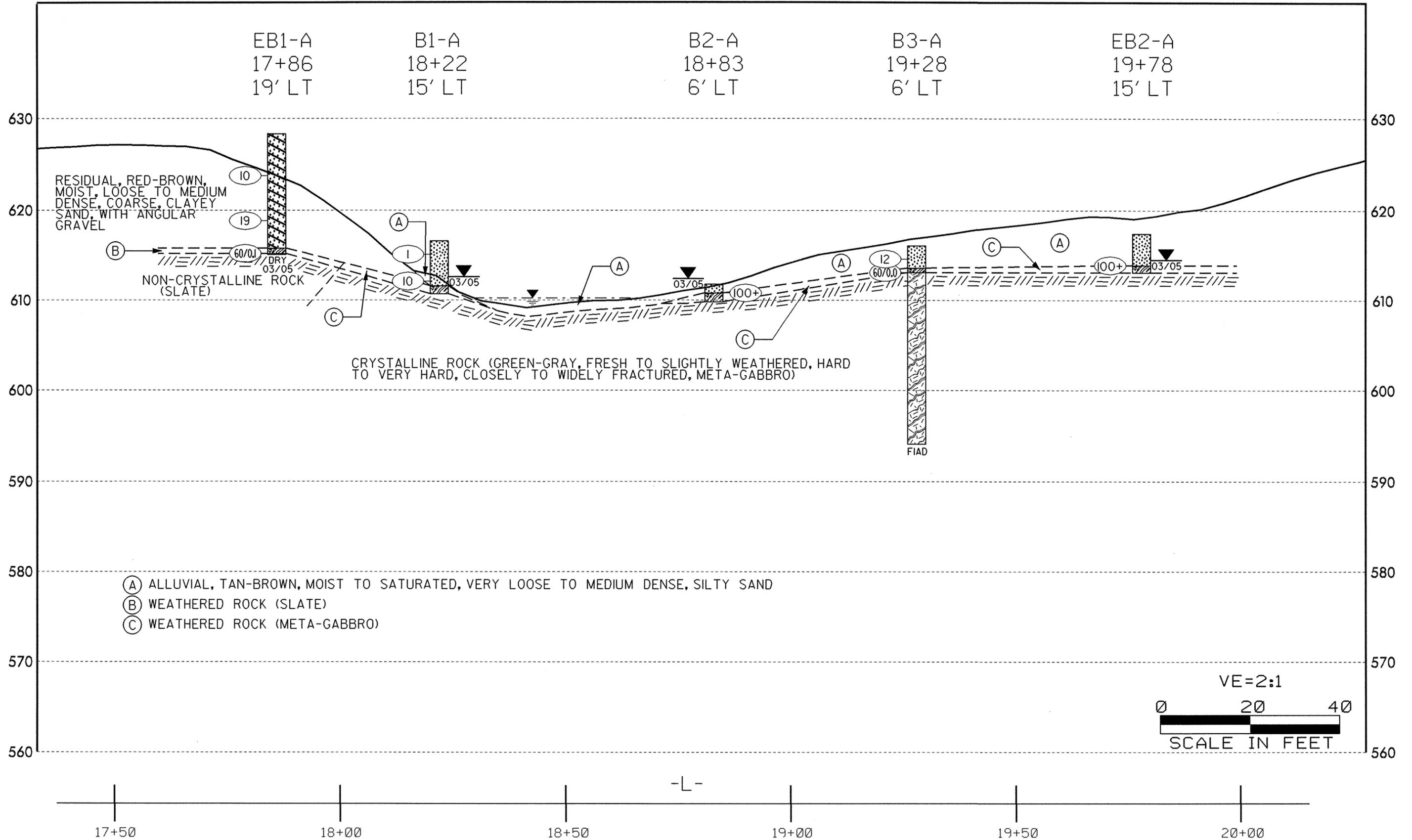
TEST SITE PLAN



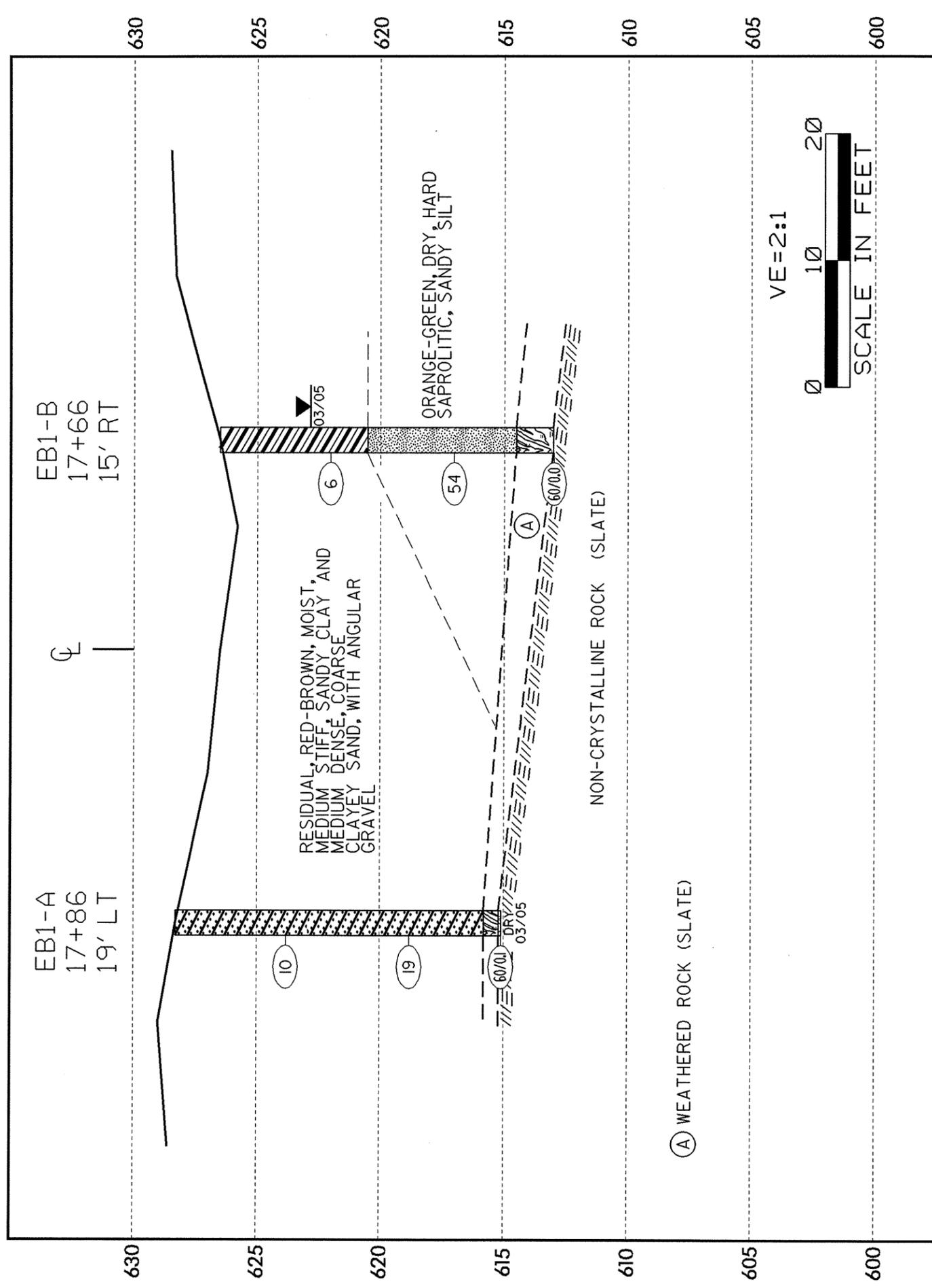
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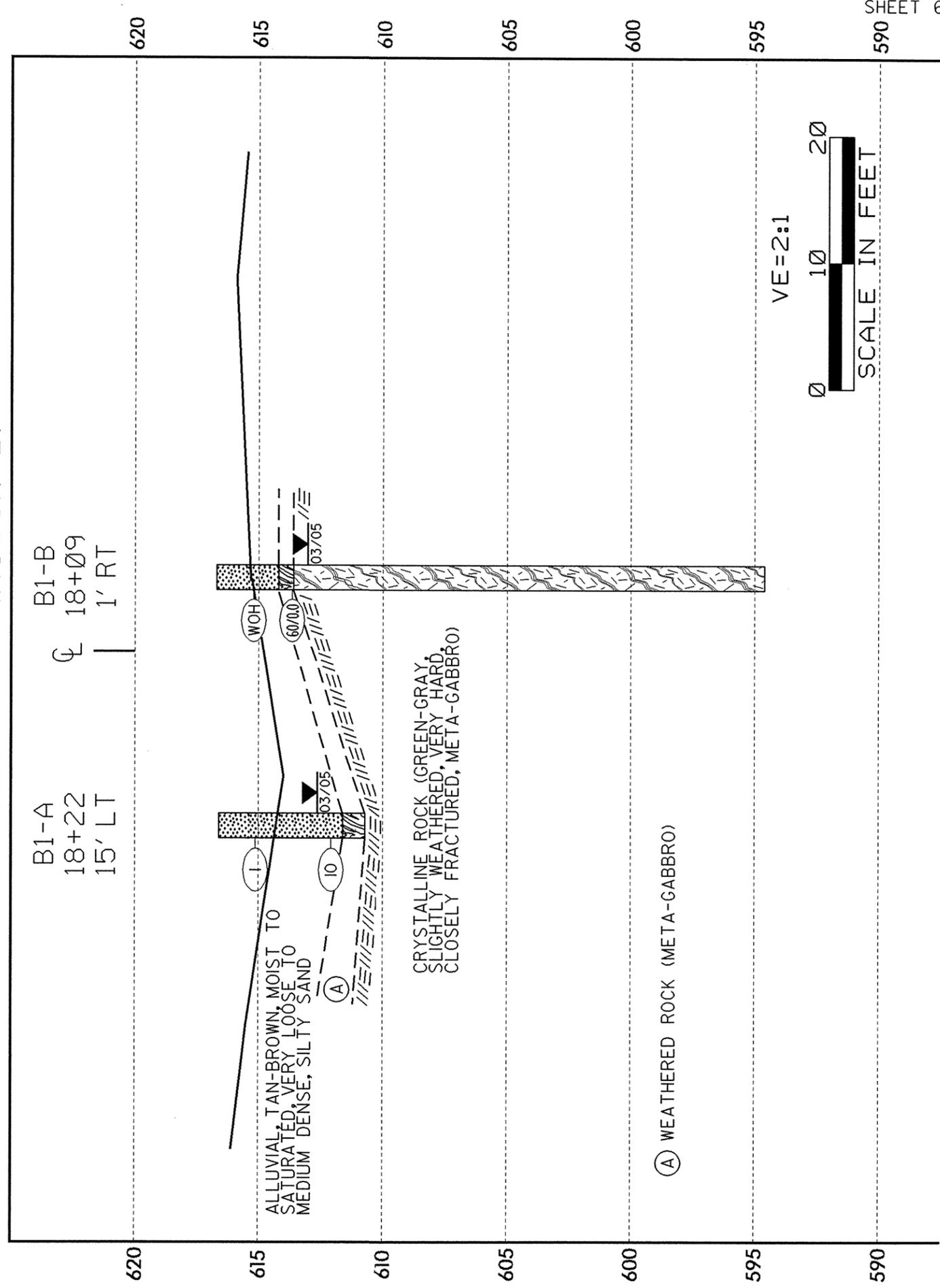
PROFILE THROUGH BORINGS PROJECTED ALONG -L-



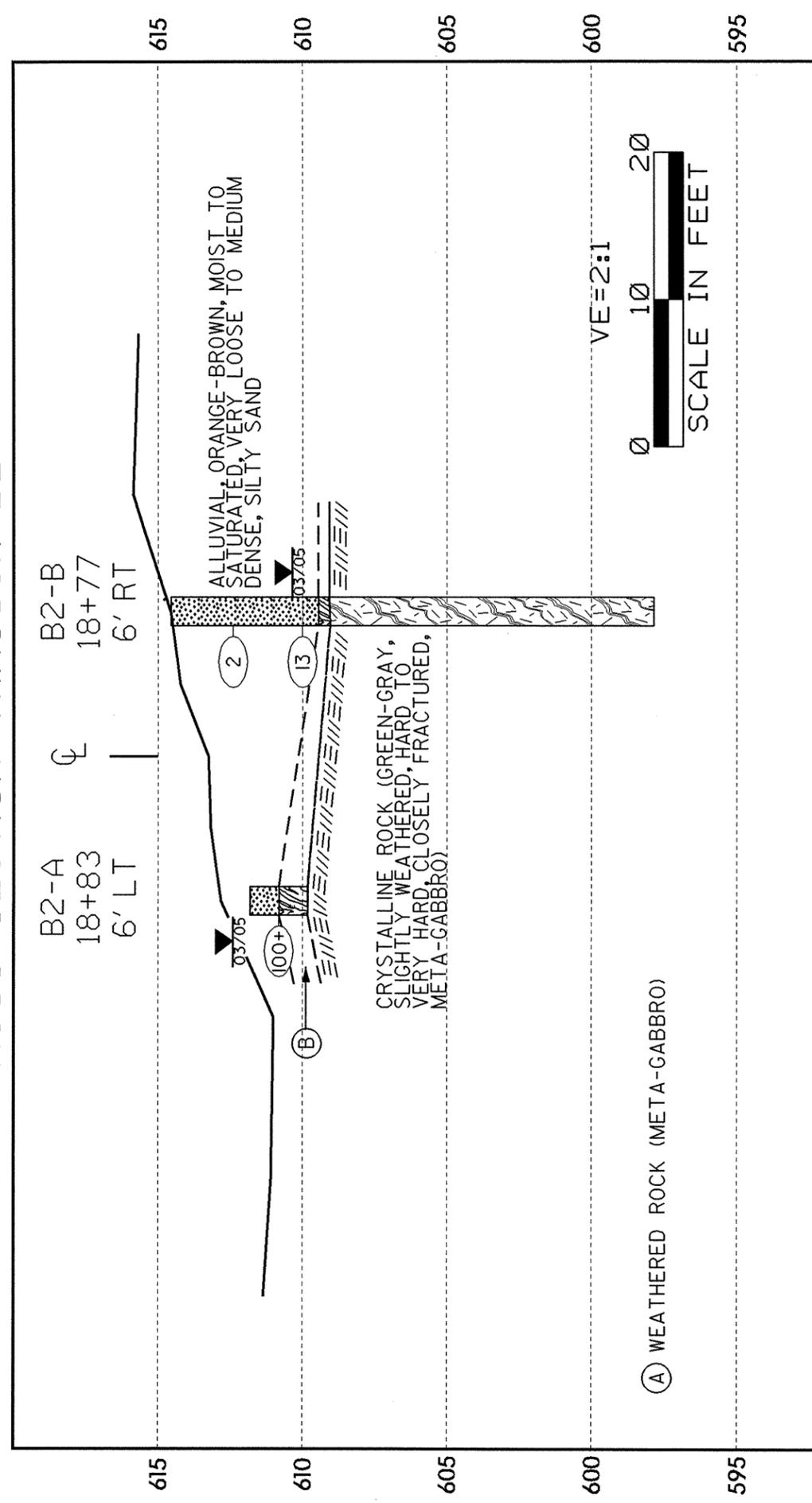
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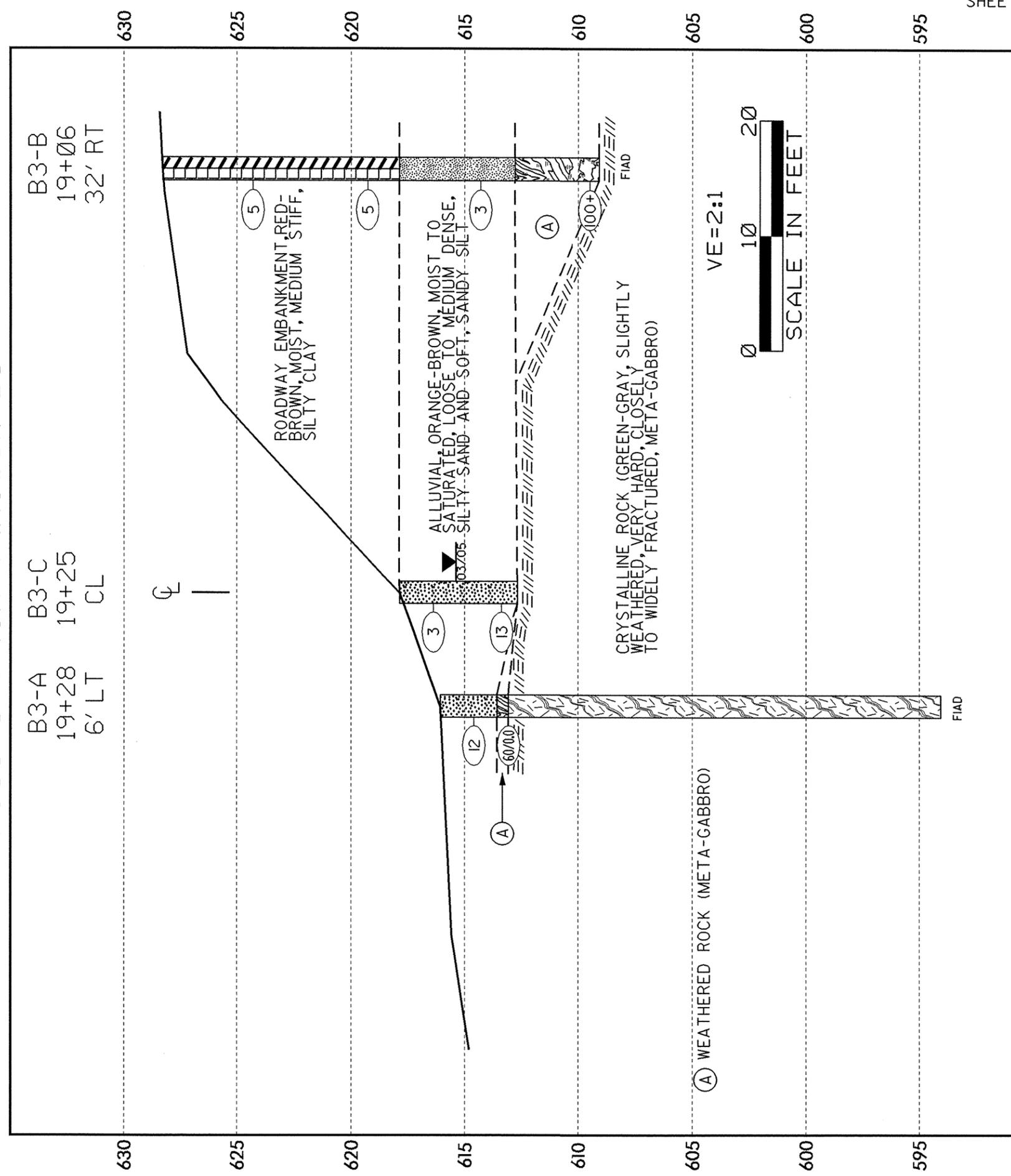
CROSS SECTION THROUGH BI BRIDGE #449, 33299.1.1 (B-3852)



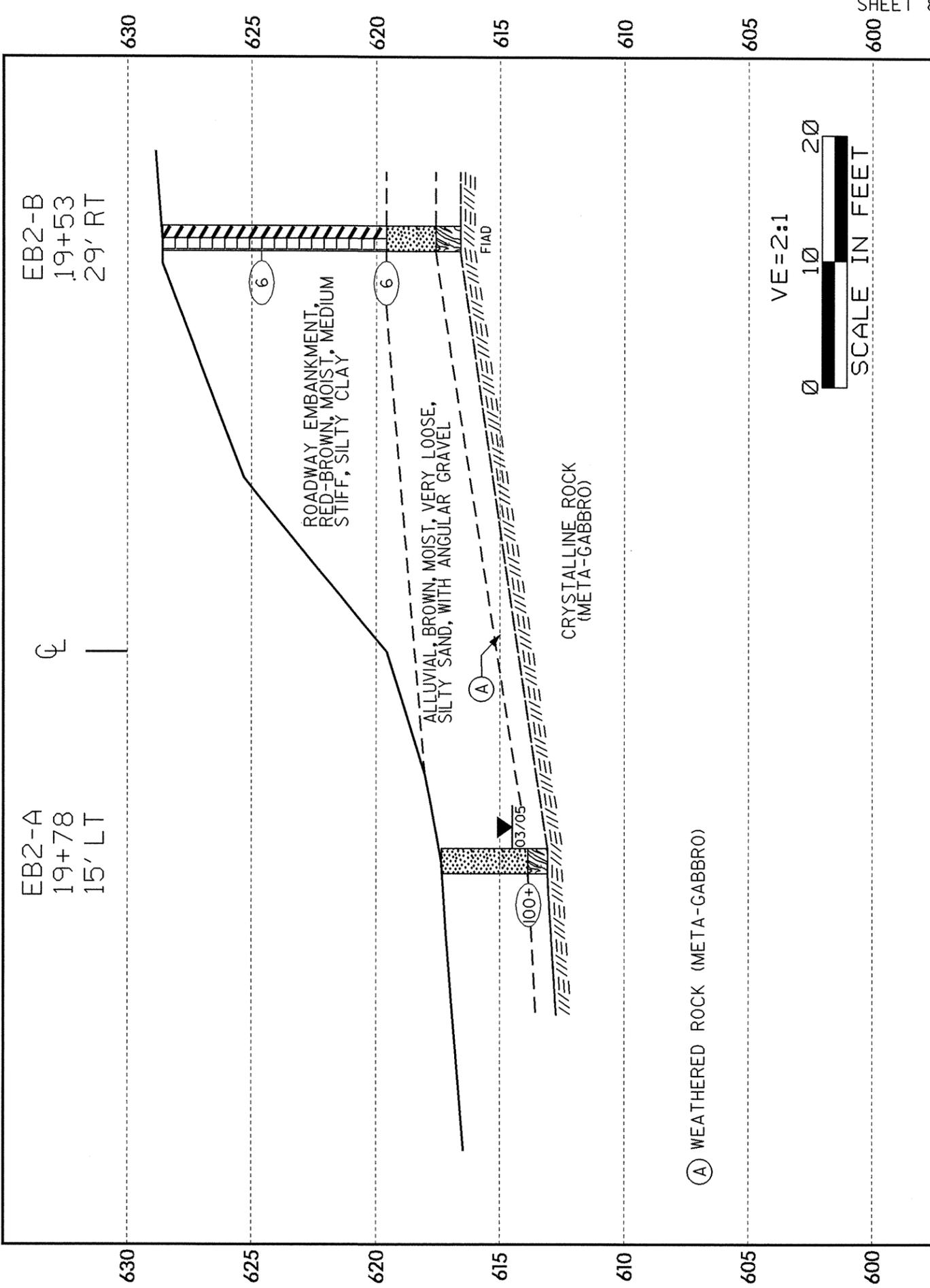
CROSS SECTION THROUGH B2 BRIDGE #449, 33299.1.1 (B-3852)



CROSS SECTION THROUGH B3 BRIDGE #449, 33299.1.1 (B-3852)



CROSS SECTION THROUGH EB2 BRIDGE #449, 33299.1.1 (B-3852)



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GEOTECHNICAL UNIT BORING LOG

PROJECT NO. 33299.1.1		ID: B-3852		COUNTY GUILFORD		GEOLOGIST N. D. MOHS								
SITE DESCRIPTION BRIDGE NO. 449 ON SR 3389 OVER ALAMANCE CREEK AT -L- STA. 18+72.5						GROUND WATER								
BORING NO. BI-B		BORING LOCATION 18+09		OFFSET 1' RT		ALIGNMENT -L-								
COLLAR ELEVATION 616.7'		NORTHING 808087		EASTING 1801208		0 HR. N/A								
TOTAL DEPTH 22.1'		DRILL MACHINE CME-850		DRILL METHOD ROTARY / CORE		HAMMER TYPE AUTOMATIC								
START DATE 3/8/05		COMPLETION DATE 3/9/05		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 3.1'								
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				
616.7	0.5	WOH	WOH	WOH	1.0									
615.0	3.1	60			0.0									ALLUVIAL, BROWN, SILTY SAND
														WEATHERED ROCK (META-GABBRO)
610.0														CRYSTALLINE ROCK, GREEN-GRAY, SLIGHTLY WEATHERED, VERY HARD, CLOSELY FRACTURED, META-GABBRO
605.0														
600.0														REC=100% ROD=60%
595.0														
590.0														CORING TERMINATED AT ELEVATION 594.6 FEET IN CRYSTALLINE ROCK (META-GABBRO)
585.0														
580.0														
575.0														
570.0														
565.0														
560.0														
555.0														
550.0														
545.0														
540.0														

CORE BORING REPORT									
PROJECT: 33299.1.1		ID: B-3852		COUNTY: GUILFORD		BORING NO: B1-B			
DESCRIPTION: BRIDGE NO. 449 ON SR 3389 (WOODY MILL RD.) OVER ALAMANCE CREEK AT -L- STATION 18+72.5									
LOCATION OF BORING: 18+09 1' RT						COMPLETION DATE: 3/9/2005			
COLLAR or GROUND ELEVATION: 616.7 ft				CORE SIZE: NQ-2		GEOLOGIST: N. D. MOHS			
CORE EQUIPMENT: CME-850				DRILLER: R. TOOTHMAN					
ELEV (ft)	DEPTH (ft)	DRILL RATE (min/ft)	RUN (ft)	REC (ft) (%)	RQD (ft) (%)	SAMPLE NUMBER	FIELD CLASSIFICATION and REMARKS		
613.6	3.1	3:11 3:48 4:47 12:39	4.0	3.9 (98%)	1.4 (35%)	RS-1	CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, VERY HARD, CLOSELY FRACTURED, META-GABBRO		
609.6	7.1								
609.6	7.1	3:03 3:50 3:48 4:49	5.0	5.0 (100%)	3.9 (78%)		CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, VERY HARD, CLOSELY FRACTURED, META-GABBRO		
604.6	12.1	8:34							
604.6	12.1	4:52 3:54 4:21 4:14	5.0	5.0 (100%)	3.8 (76%)	RS-2	CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, VERY HARD, CLOSELY FRACTURED, META-GABBRO		
599.6	17.1	7:03							
599.6	17.1	4:28 4:40 4:42 6:33	5.0	5.0 (100%)	2.3 (46%)		CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, VERY HARD, CLOSELY FRACTURED, META-GABBRO		
594.6	22.1	8:51							
BOREHOLE TERMINATED AT ELEVATION OF 594.6 FEET, IN ROCK.									

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GEOTECHNICAL UNIT BORING LOG

PROJECT NO. 33299.1.1	ID. B-3852	COUNTY GUILFORD	GEOLOGIST N. D. MOHS
SITE DESCRIPTION BRIDGE NO. 449 ON SR 3389 OVER ALAMANCE CREEK AT -L- STA. 18+72.5			GROUND WATER
BORING NO. B2-B	BORING LOCATION 18+77	OFFSET 6' RT	ALIGNMENT -L-
COLLAR ELEVATION 614.6'	NORTHING 808157	EASTING 1801182	24 HR. 4.2'/7.3'
TOTAL DEPTH 16.7'	DRILL MACHINE CME-850	DRILL METHOD ROTARY / CORE	HAMMER TYPE AUTOMATIC
START DATE 3/10/05	COMPLETION DATE 3/10/05	SURFACE WATER DEPTH N/A	DEPTH TO ROCK 5.5'

ELEV. (FT.)	DEPTH (FT.)	BLOW COUNT			PEN. (FT.)	BLOWS PER FOOT				SAMPLE NUMBER	LOG MOI.	LOG	SOIL AND ROCK DESCRIPTION
		0.5'	1.0'	1.5'		0	25	50	75				
614.6	1	2	1	1	1.0								ALLUVIAL, ORANGE-BROWN, SILTY SAND WITH ANGULAR GRAVEL
610.0	3.5	4	5	8	1.0								WEATHERED ROCK (META-GABBRO) CRYSTALLINE ROCK, GREEN-GRAY, SLIGHTLY WEATHERED, HARD TO VERY HARD, CLOSELY FRACTURED, META-GABBRO REC=76% ROD=82%
605.0										RS-3			
600.0										RS-4			
595.0													CORING TERMINATED AT ELEVATION 597.9 FEET IN CRYSTALLINE ROCK (META-GABBRO)
590.0													
585.0													
580.0													
575.0													
570.0													
565.0													
560.0													
555.0													
550.0													
545.0													
540.0													
535.0													

CORE BORING REPORT									
PROJECT: 33299.1.1		ID: B-3852		COUNTY: GUILFORD		BORING NO: B2-B			
DESCRIPTION: BRIDGE NO. 449 ON SR 3389 (WOODY MILL RD.) OVER ALAMANCE CREEK AT -L- STATION 18+72.5									
LOCATION OF BORING: 18+77 6' RT				COMPLETION DATE: 3/10/2005					
COLLAR or GROUND ELEVATION: 614.6 ft				CORE SIZE: NQ-2		GEOLOGIST: N. D. MOHS			
CORE EQUIPMENT: CME-850				DRILLER: R. TOOTHMAN					
ELEV (ft)	DEPTH (ft)	DRILL RATE (min/ft)	RUN (ft)	REC (%)	RQD (%)	SAMPLE NUMBER	FIELD CLASSIFICATION and REMARKS		
609.1	5.5	3:05 2:30/2	1.2	0.4 (33%)	0.0 (0%)		CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, HARD, CLOSELY FRACTURED, META-GABBRO		
607.9	6.7								
607.9	6.7	4:32 5:27 3:49 3:53	5.0	4.7 (94%)	4.2 (84%)		CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, HARD, CLOSELY FRACTURED, META-GABBRO		
602.9	11.7	5:36				RS-3			
602.9	11.7	4:23 4:13 4:24 3:55	5.0	5.0 (100%)	5.0 (100%)		CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, HARD, CLOSELY FRACTURED, META-GABBRO		
597.9	16.7	6:22				RS-4			
BOREHOLE TERMINATED AT ELEVATION OF 597.9 FEET, IN ROCK.									

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GEOTECHNICAL UNIT BORING LOG

PROJECT NO. 33299.1.1		ID. B-3852		COUNTY GUILFORD		GEOLOGIST N. D. MOHS							
SITE DESCRIPTION BRIDGE NO. 449 ON SR 3389 OVER ALAMANCE CREEK AT -L- STA. 18+72.5							GROUND WATER						
BORING NO. B3-A		BORING LOCATION 19+28		OFFSET 6' LT		ALIGNMENT -L-							
COLLAR ELEVATION 616.1'		NORTHING 808201		EASTING 1801171		24 HR. FIAD							
TOTAL DEPTH 22.0'		DRILL MACHINE CME-850		DRILL METHOD ROTARY / CORE		HAMMER TYPE AUTOMATIC							
START DATE 3/9/05		COMPLETION DATE 3/10/05		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 3.0'							
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
616.1	0.5	4	6	6	1.0								
615.0	3.0	60			0.0				60/0.0				ALLUVIAL, BROWN, SILTY SAND WEATHERED ROCK (META-GABBRO)
610.0													
605.0										RS-5			CRYSTALLINE ROCK, GREEN-GRAY, FRESH TO SLIGHTLY WEATHERED, VERY HARD, CLOSELY TO WIDELY FRACTURED, META-GABBRO
600.0										RS-6			REC=96% ROD=78%
595.0													
590.0													CORING TERMINATED AT ELEVATION 594.1 FEET IN CRYSTALLINE ROCK (META-GABBRO)
585.0													
580.0													
575.0													
570.0													
565.0													
560.0													
555.0													
550.0													
545.0													
540.0													

CORE BORING REPORT							
PROJECT: 33299.1.1		ID: B-3852		COUNTY: GUILFORD		BORING NO: B3-A	
DESCRIPTION: BRIDGE NO. 449 ON SR 3389 (WOODY MILL RD.) OVER ALAMANCE CREEK AT -L- STATION 18+72.5							
LOCATION OF BORING: 19+28 6' LT				COMPLETION DATE: 3/10/2005			
COLLAR or GROUND ELEVATION: 616.1 ft		CORE SIZE: NQ-2		GEOLOGIST: N. D. MOHS			
CORE EQUIPMENT: CME-850				DRILLER: R. TOOTHMAN			
ELEV (ft)	DEPTH (ft)	DRILL RATE (min/ft)	RUN (ft)	REC (%)	RQD (%)	SAMPLE NUMBER	FIELD CLASSIFICATION and REMARKS
613.1	3.0	2:20	4.0	3.3	0.4		3.0'-3.3': CRYSTALLINE, GREEN, SLIGHTLY WEATHERED, HARD, CLOSELY FRACTURED, META-MUDSTONE
		4:09					
		5:30					
		6:50/0.5					
609.1	7.0	4:20/0.5		(83%)	(10%)		3.3'-6.5': CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, HARD, CLOSELY FRACTURED, META-GABBRO
609.1	7.0	4:00	5.0	5.0	4.4	RS-5	CRYSTALLINE, GREEN-GRAY, SLIGHTLY WEATHERED, VERY HARD, CLOSELY FRACTURED, META-GABBRO
		4:13					
		4:37					
		5:35					
604.1	12.0	7:51		(100%)	(88%)		
604.1	12.0	4:51	5.0	5.0	5.0		CRYSTALLINE, GREEN-GRAY, FRESH, VERY HARD, WIDELY FRACTURED, META-GABBRO
		4:58					
		5:43					
		5:47					
599.1	17.0	9:48		(100%)	(100%)		
599.1	17.0	4:18	5.0	5.0	5.0	RS-6	CRYSTALLINE, GREEN-GRAY, FRESH, VERY HARD, WIDELY FRACTURED, META-GABBRO
		5:59					
		6:11					
		6:24					
594.1	22.0	9:12		(100%)	(100%)		
BOREHOLE TERMINATED AT ELEVATION OF 594.1 FEET, IN ROCK.							

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 GEOTECHNICAL UNIT BORING LOG

SHEET 15

PROJECT NO. 33299.1.1		ID. B-3852		COUNTY GUILFORD		GEOLOGIST N. D. MOHS								
SITE DESCRIPTION BRIDGE NO. 449 ON SR 3389 OVER ALAMANCE CREEK AT -L- STA. 18+72.5							GROUND WATER							
BORING NO. B3-B		BORING LOCATION 19+06		OFFSET 32' RT		ALIGNMENT -L-								
COLLAR ELEVATION 628.3'		NORTHING 808189		EASTING 1801214		0 HR. DRY/15.8' 24 HR. FIAD								
TOTAL DEPTH 19.2'		DRILL MACHINE MOBILE B-57		DRILL METHOD H.S. AUGERS		HAMMER TYPE AUTOMATIC								
START DATE 3/11/05		COMPLETION DATE 3/11/05		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 19.2'								
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				
628.3														
625.0	3.0	2	2	3	1.0	X 5						SS-7	M	ROADWAY EMBANKMENT, RED-BROWN, SILTY CLAY
620.0	8.0	2	2	3	1.0	X 5						SS-8	M	
615.0	13.0	1	1	2	1.0	X 3						SS-9	M	ALLUVIAL, BROWN, SANDY SILT
610.0	18.0	13	40	60	0.6					100+*				WEATHERED ROCK (META-GABBRO)
AUGER REFUSAL AT ELEVATION 609.1 FEET ON CRYSTALLINE ROCK (META-GABBRO)														

PROJECT NO. 33299.1.1		ID. B-3852		COUNTY GUILFORD		GEOLOGIST N. D. MOHS								
SITE DESCRIPTION BRIDGE NO. 449 ON SR 3389 OVER ALAMANCE CREEK AT -L- STA. 18+72.5							GROUND WATER							
BORING NO. B3-C		BORING LOCATION 19+25		OFFSET CL		ALIGNMENT -L-								
COLLAR ELEVATION 617.9'		NORTHING 808199		EASTING 1801178		0 HR. N/A 24 HR. DRY/2.5'								
TOTAL DEPTH 5.2'		DRILL MACHINE CME-850		DRILL METHOD ROTARY W/WATER		HAMMER TYPE AUTOMATIC								
START DATE 3/10/05		COMPLETION DATE 3/10/05		SURFACE WATER DEPTH N/A		DEPTH TO ROCK 5.2'								
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				
617.9	0.5	3	2	1	1.0	X 3						SS-6	M	
615.0	3.5	4	6	7	1.0	X 13								ALLUVIAL, ORANGE-BROWN, SILTY SAND
TRICONE REFUSAL AT ELEVATION 612.7 FEET ON CRYSTALLINE ROCK (META-GABBRO)														

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-3	19 LT -L-	17+86	3.50-5.00	A-2-7(1)	42	19	30.1	21.4	24.2	24.2	55	43	29	-	-

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	15 RT -L-	17+66	3.50-5.00	A-6(2)	24	11	23.8	29.9	22.0	24.2	94	84	47	-	-
SS-2	15 RT -L-	17+66	8.50-10.00	A-4(0)	29	2	26.9	29.9	35.2	8.1	92	75	46	-	-

B1-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	15 LT -L-	18+22	0.50-2.00	A-2-4(0)	21	NP	36.0	36.4	17.6	10.1	98	84	30	-	-
SS-5	15 LT -L-	18+22	3.50-5.00	A-2-4(0)	20	NP	33.9	41.4	16.6	8.1	100	87	29	-	-

B3-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	32 RT -L-	19+06	3.00-4.50	A-7-5(16)	51	21	12.7	16.4	30.5	40.4	97	89	73	-	-
SS-8	32 RT -L-	19+06	8.00-9.50	A-7-6(19)	55	27	9.5	12.3	29.7	48.5	87	82	70	-	-
SS-9	32 RT -L-	19+06	13.00-14.50	A-4(0)	25	6	23.0	37.8	14.9	24.2	100	93	43	-	-

B3-C

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-6	CL -L-	19+25	0.50-2.00	A-2-4(0)	27	8	52.3	20.6	14.9	12.1	89	57	26	-	-

GEOTECHNICAL UNIT FIELD SCOUR REPORT

PROJECT: 33299.1.1 ID: B-3852 COUNTY: Guilford

DESCRIPTION(1): Bridge No. 449 on SR 3389 (Woody Mill Rd.) over Alamance Creek

INFORMATION ON EXISTING BRIDGE

- Information obtained from: [x] field inspection [] microfilm (Reel: ___ Pos: ___) [] other: _____

BR. NO.: 449 BR. LENGTH: 106 NO. BENTS: 4 NO. BENTS IN: CHANNEL: 1 FLOODPLAIN: 2

FOUNDATION TYPE: Timber Piles/ Spread Footings

EVIDENCE OF SCOUR(2):

ABUTMENTS OR END BENT SLOPES: None

INTERIOR BENTS: B1 (concrete cased), degradation

CHANNEL BED: Very little

CHANNEL BANKS: EB1 side of channel has minor scour

EXISTING SCOUR PROTECTION:

TYPE(3): Rip-Rap and and wing walls on both sides

EXTENT(4): 20x20 area of coverage on each side

EFFECTIVENESS(5): Appears satisfactory

OBSTRUCTIONS(6) (DAMS,DEBRIS,ETC.): None

DESIGN INFORMATION

CHANNEL BED MATERIAL(7): Silty Sand, Sand, Gravel and Boulders

CHANNEL BANK MATERIAL(8): Silty Sand (SS-4, SS-5) and Sandy Silt (SS-9)

CHANNEL BANK COVER(9): Trees, Shrubs, Grass

FLOOD PLAIN WIDTH(10): 200 feet

FLOOD PLAIN COVER(11): Trees, Shrubs, Grass

DESIGN INFORMATION CONT.

STREAM IS: X DEGRADING AGGRADING (12)

OTHER OBSERVATIONS AND COMMENTS: Sewer line crosses creek, outcrop downstream approximately 100 ft. and old mill dam approximately 150' upstream

CHANNEL MIGRATION TENDENCY (13): Migration is to the north towards (End Bent 1)

GEOTECHNICALLY ADJUSTED SCOUR ELEVATIONS(14):

The Geotechnical Engineering Unit estimates the overtopping scour is limited by the presence of weathered and crystalline rock. The Geotechnically Adjusted Scour Elevation is 610.7' for B1, 609.1' for B2, and 611.0' for B3. These elevations are 5.0' to 9.0' higher than the theoretical scour provided in the Hydraulic Design Report.

REPORTED BY: J. B. Barfield DATE: 5/2/05

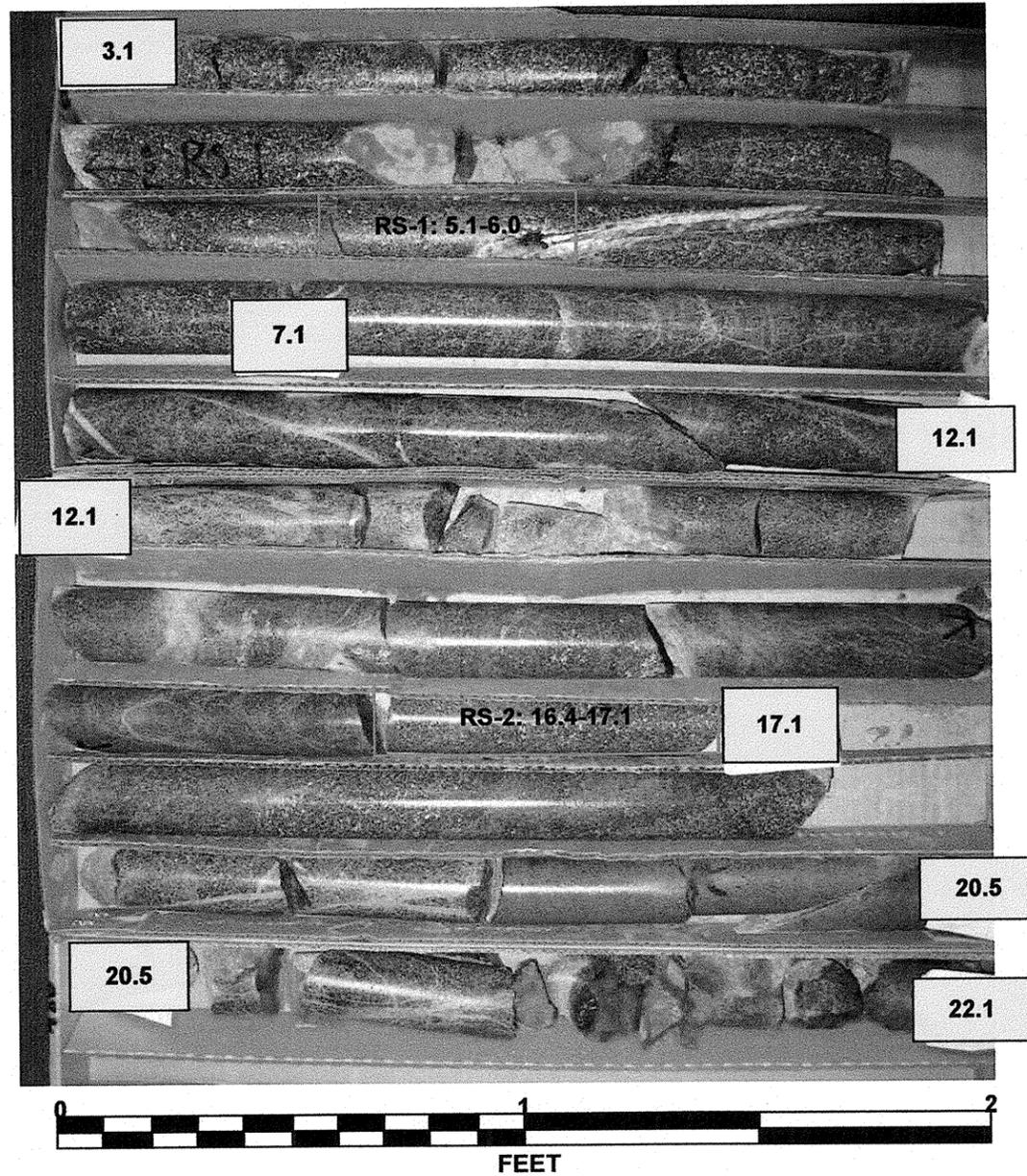
INSTRUCTIONS

- (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

BOXES 1 - 3: 3.1 - 22.1 FEET



CORE PHOTOGRAPHS

B2-B

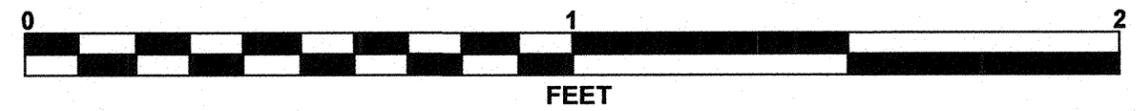
BOXES 1 & 2: 5.5 - 16.7 FEET



CORE PHOTOGRAPHS

B3-A

BOXES 1 & 2: 3.0-22.0 FEET



SITE PHOTOGRAPH

