

PROJECT: 33468.1.1 ID: B-4113

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.	B-4113	1	26
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33468.1.1	BRZ-1106(3)	P.E. CONST.	

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CAUTION NOTICE

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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 (ON-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.

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STATE PROJECT 33468.1.1 I.D. NO. B-4113
 F.A. PROJECT BRZ-1106(3)
 COUNTY FRANKLIN
 PROJECT DESCRIPTION N/A

SITE DESCRIPTION BRIDGE NO. 15 ON SR 1106
OVER LITTLE RIVER

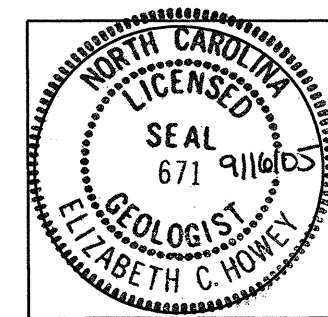
For Letting

INVESTIGATED BY F&R, Inc. PERSONNEL C. BALDWIN
 CHECKED BY E. HOWEY, P.E., L.G. J. GILCHRIST
 SUBMITTED BY F&R, Inc. J. SEHULSTER
 DATE 8/2005 D. RACEY
D. JENKS
M. JONES
B. BOSTIAN

DRAWN BY: D. RACEY

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.



Elizabeth C. Howey
 SIGNATURE - ELIZABETH C. HOWEY, P.E., L.G.



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310 Hubert St., Raleigh, NC 27603
 Telephone: (919) 828-3441
 Facsimile: (919) 828-5751

August 22, 2005

Mr. Njoroge Wainaina, P.E.
 State Geotechnical Engineer
 North Carolina Department of Transportation
 PO Box 25201
 Raleigh, North Carolina 27611-5201

Re: Bridge Foundation Investigation
 State Project: 33468.1.1
 TIP No.: B-4113
 F.A. Number: BRZ-1106(3)
 County: Franklin
 Description: Bridge No. 15 on SR 1106 over Little River

Dear Mr. Wainaina:

The Raleigh, North Carolina office of Froehling & Robertson, Inc. (F&R) is pleased to submit the accompanying Bridge Foundation Investigation Report. The work was performed in general accordance with F&R's Proposal 0666-043G dated July 19, 2005. Please contact us at your earliest convenience to discuss any comments regarding this report or our services in general.

Sincerely,

Chris Baldwin
 Christopher R. Baldwin
 Staff Geologist

Elizabeth C. Howey
 Elizabeth C. Howey, L.G., P.E.
 Project Geotechnical Engineer

9/16/05



SITE DESCRIPTION

The proposed construction will involve a new two-span bridge to replace an existing two-span bridge on SR 1106 over Little River. The existing bridge is 60.5 feet long supported by timber piles with timber abutments at each end bent. The proposed replacement bridge will contain two spans with lengths of 50 and 85 feet; therefore, the new structure will be approximately 74.5 feet longer than the existing bridge. The proposed skew angle is 115 degrees.

METHOD OF EXPLORATION

A subsurface investigation was conducted in July, 2005. F&R proposed to advance 6 borings at the site, two borings at each proposed bent location. However, five borings were advanced at the right side of Bent 1 due to both boulders encountered in the existing fill and mechanical problems. Borings B1-B(1) (terminated due to a broken auger) and B1-B(4) (terminated due to a pump malfunction which did not allow the coring required to advance the boring) were combined into one boring log due to their very close proximity to each other. Borings B1-B(2) and B1-B(3) were terminated with shallow auger refusal on apparent boulders at depths of 6.5 and 5.0 feet, respectively. Boring B1-B(5) was advanced to perform rock coring at this side of Bent 1. In addition, these borings on the right side of Bent 1 were offset to avoid a tree that had fallen over the power lines between the time of the site visit and drill mobilization to the site; the borings were advanced as close as safely possible to the proposed location. Hand auger borings were also advanced to characterize the material near the ground surface on each side of the existing embankment at End Bent 1 and on the right side of Bent 1. The information obtained from these borings is included on the attached cross sections and boring logs.

The drilled borings were advanced with a CME-550 track-mounted drill rig with a 140-pound automatic hammer, utilizing 2-1/4 inch (at end Bent locations) and 3-1/4 inch (at Bent 1) inside diameter hollow stem augers. Standard penetration tests (SPT) were performed, in general accordance with ASTM D-1586, at all boring locations to aid in foundation analysis. Representative soil samples were obtained for visual classification in the field and returned to our office for potential laboratory analysis. Seven samples were selected and subjected to grain size, Atterberg Limits, and natural moisture content testing in accordance with AASHTO T-87, T-88, T-89, and T-90 as modified by NCDOT.



Two samples of the alluvial strata obtained were subjected to grain size analysis; the grain size curves are attached. One Shelby tube was obtained within the area of Hydraulic Scour and provided to NCDOT for Erosion Function Apparatus (EFA) testing.

Boring collar elevations were surveyed using Benchmark NCDOT monument "GPS B4113-1" located at -L- Station 30+77.71, 13.91 feet left, with an elevation of 370.30 feet. Due to the distance of this benchmark from the bridge, a temporary benchmark (metal pipe) was set at the location of the EB2-B boring located at -L- Station 25+17, 15 feet right, with an elevation of 346.72 feet. This temporary benchmark was utilized to perform the remainder of the surveying for the profile and section views.

GEOLOGY

Based on review of the *Geologic Map of North Carolina* (1985), the project site is situated in an area of igneous intrusive rock of the Raleigh Belt. More specifically, the area is mapped and described as "foliated to massive granitic rock" (PPmg). The rock encountered in our borings is granite and exhibits the characteristics of the rock described in this area. A diabase dike is mapped nearby but diabase was not recovered in our borings.

STRATIGRAPHY

Existing roadway embankment was encountered at the ground surface in the borings advanced near the end bents of the existing bridge. The embankment extends to depths of 3.0 to 12.0 feet (elevation 334.7 to 343.7 feet) and consists of loose to medium dense, fine to coarse sand with some clay (A-2-4, A-1-b) and soft to medium stiff, fine to coarse sandy clay (A-6). At the ground surface at B1-A and beneath the embankment at End Bent 2 the borings encountered alluvial soil consisting of very loose to loose, fine to coarse sand (A-2-4, A-1-b) and soft, fine to coarse sandy clay (A-6). The alluvium extends to depths of 8.0 to 17.5 feet (elevation 329.7 to 332.2 feet) in these borings. The embankment in borings EB1-A, EB1-B and B1-B and the alluvium in the remainder of the borings are underlain by weathered rock and/or crystalline rock (granite) to the boring termination depths of 6.0 to 30.4 feet (elevation 316.2 to 341.7 feet). The borings at the end bent locations were terminated by auger refusal while the borings at Bent 1 were advanced with NQ-3 coring equipment to their boring terminations. The rock properties of the recovered core are discussed below.



ROCK PROPERTIES

Crystalline rock was cored at Bent 1 of the proposed bridge. The recovered core consists of white, brown, black and pink, moderately to very slightly weathered, very hard, foliated to massive granite. The first core run at B1-A was a short run of only 1.3 feet; the upper 0.8 foot of material was not recovered and was designated as weathered rock. The recovery and Rock Quality Designation (RQD) values in this run were both 38%, reflecting the crystalline rock recovered in the lower 0.5 foot of the core run. Core recoveries were 100% in the remainder of the core runs advanced at Bent 1. The Rock Quality Designation (RQD) ranged from 74% to 100% in material designated as crystalline rock. Four samples of the recovered core were trimmed and subjected to unconfined compressive strength. Their tested strengths ranged from 5,207 to 25,886 psi. The results are included with the laboratory test results.

GROUND WATER

Ground water was generally measured in the borings immediately after drilling and after a stabilization period of 24 hours. Borings at End Bent 1 were dry immediately after drilling. Boring EB1-A was backfilled immediately after drilling (B.I.A.D.) due to its location in a driveway while boring EB1-B remained dry after a stabilization period of 24 hours. In borings advanced at Bent 1 and End Bent 2, ground water was encountered at elevations ranging from 337.7 to 341.2 feet. Boring EB2-A caved at a depth of 1.0 foot when the augers were removed. The water surface of Little River was measured at elevation 338.7 feet during our field investigation.

NOTES TO THE DESIGNER

Apparent boulders were encountered within the fill in borings advanced at the right side of Bent 1; shallow auger refusal was obtained in borings B1-B(2) and B1-B(3) at depths of 6.5 and 5.0 feet, respectively. It should also be noted that a diabase dike is mapped in the vicinity of this site although diabase was not encountered in our borings.

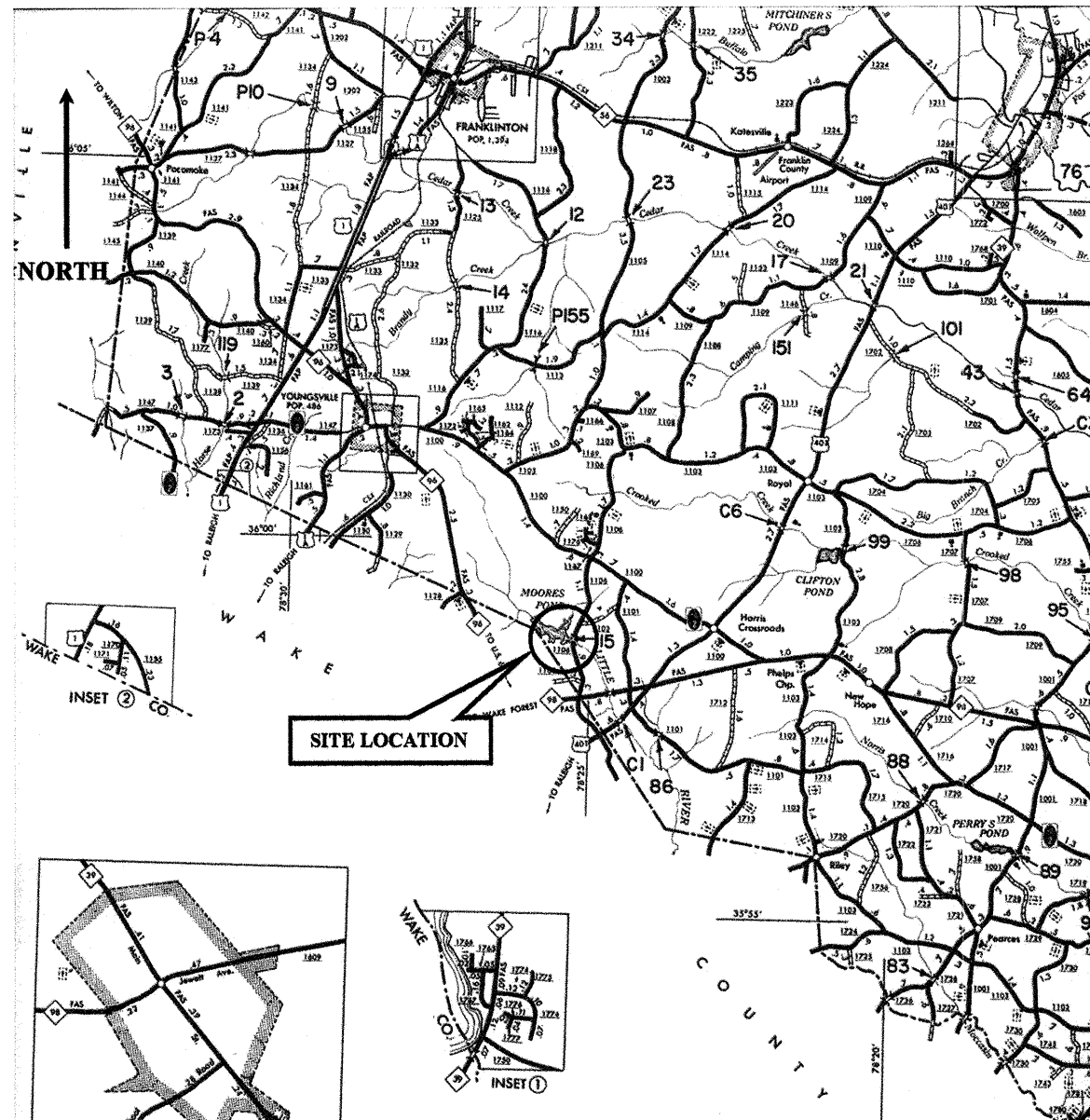


QUALIFICATIONS OF REPORT

This report has been prepared for the exclusive use of the North Carolina Department of Transportation and their assignees for specific application to the referenced property in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. The conclusions provided in this report do not reflect variations in subsurface conditions, which could exist intermediate of the boring locations, or in unexplored areas of the site. Should such variations become apparent during construction, we reserve the right to re-evaluate our conclusions based upon an on-site observation of the conditions. In the event that changes are made in the proposed construction plans, the findings presented in this report shall not be considered valid unless reviewed by our firm and conclusions of this report modified or verified in writing.



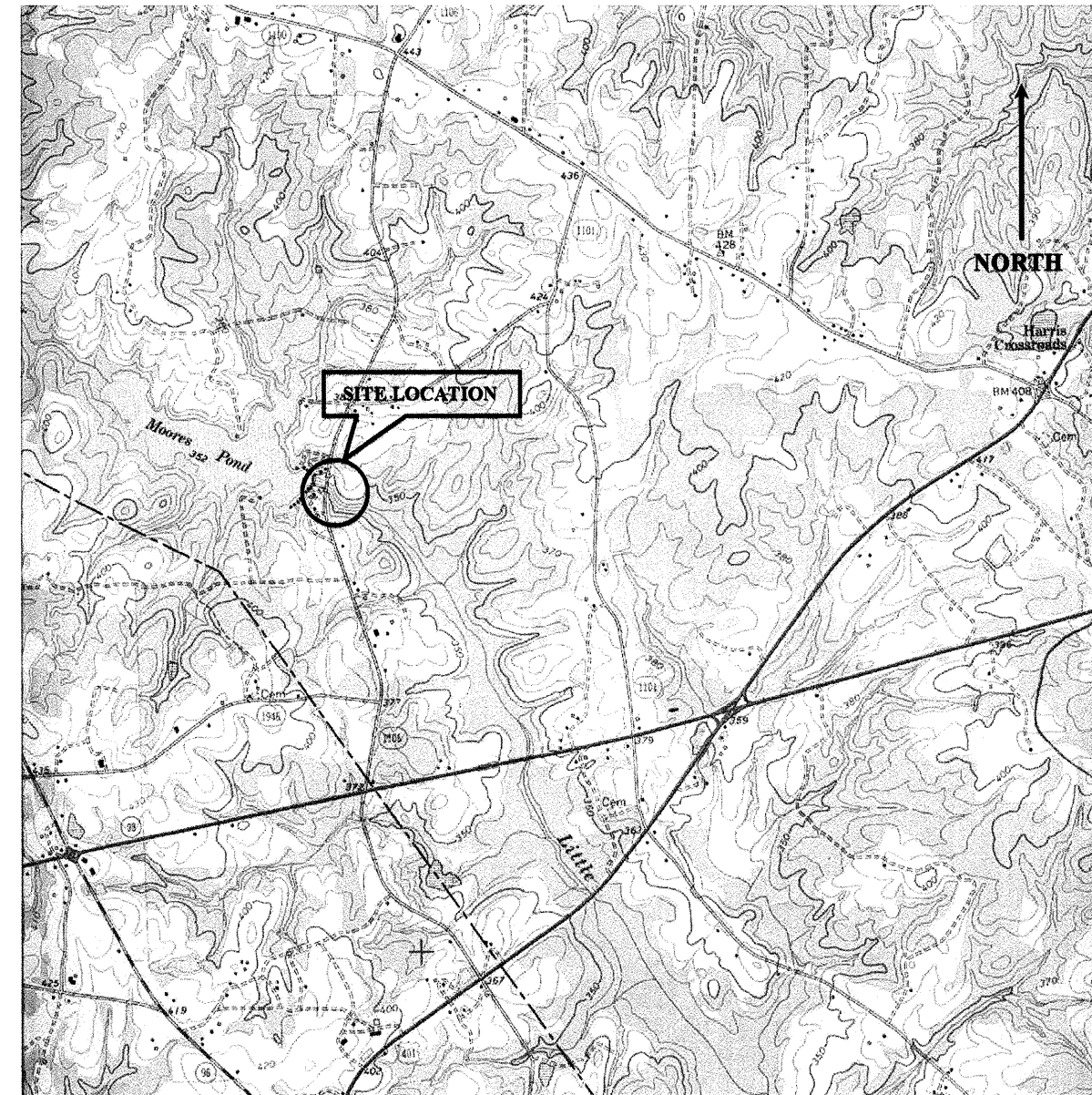
FIGURE 1



SITE VICINITY MAP

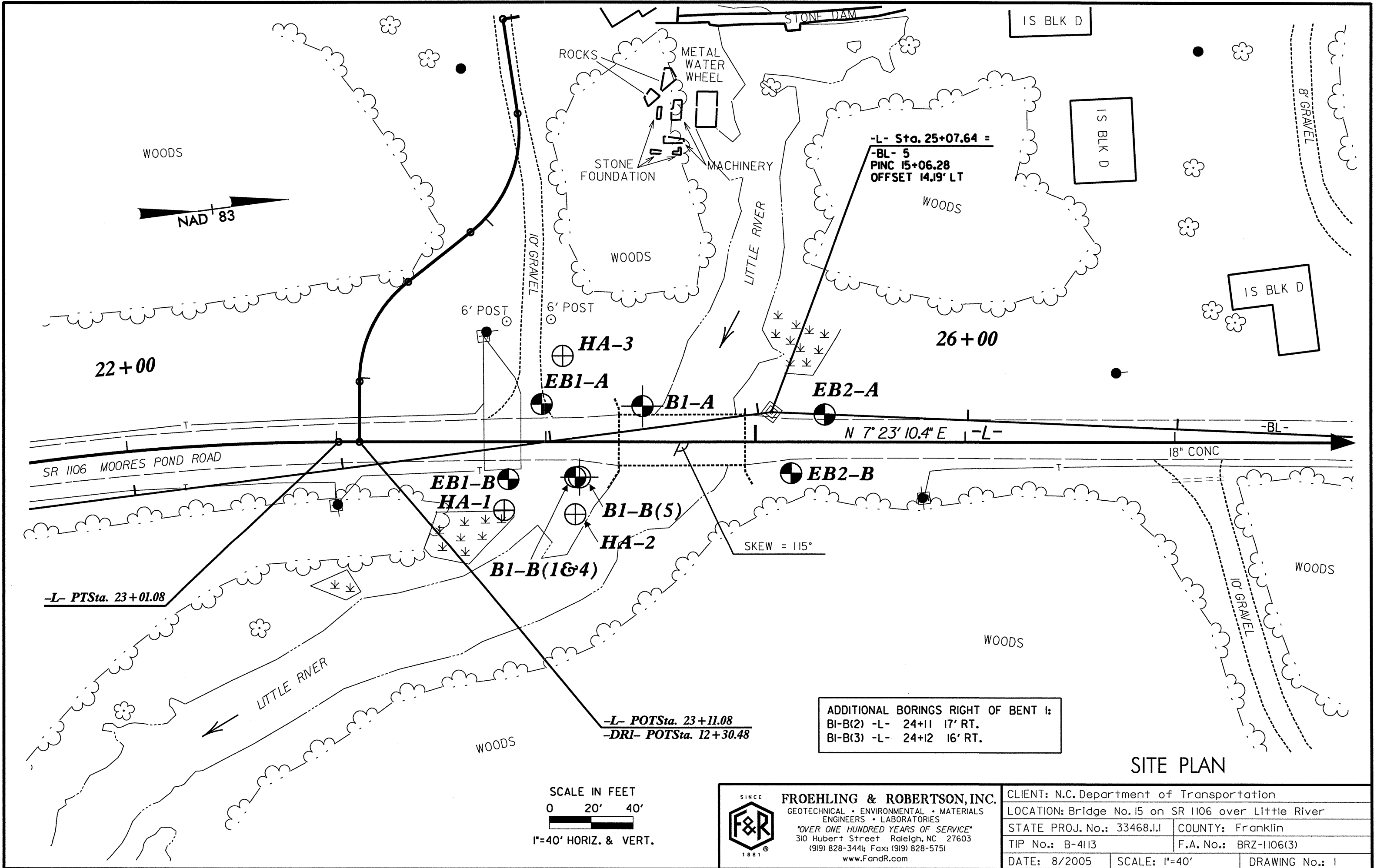
Adapted from an NCDOT Bridge Location Map of Franklin County, North Carolina, dated January 1, 1990.
Scale 1"=2.5 mi. (approx.)

FIGURE 2



SITE LOCATION PLAN

Adapted from a USGS Quadrangle 7.5 min. Topographic Map of Rolesville, North Carolina, dated 1967, photorevised 1973.
Scale 1"=2000' (approx.)



ADDITIONAL BORINGS RIGHT OF BENT 1:
 BI-B(2) -L- 24+11 17' RT.
 BI-B(3) -L- 24+12 16' RT.

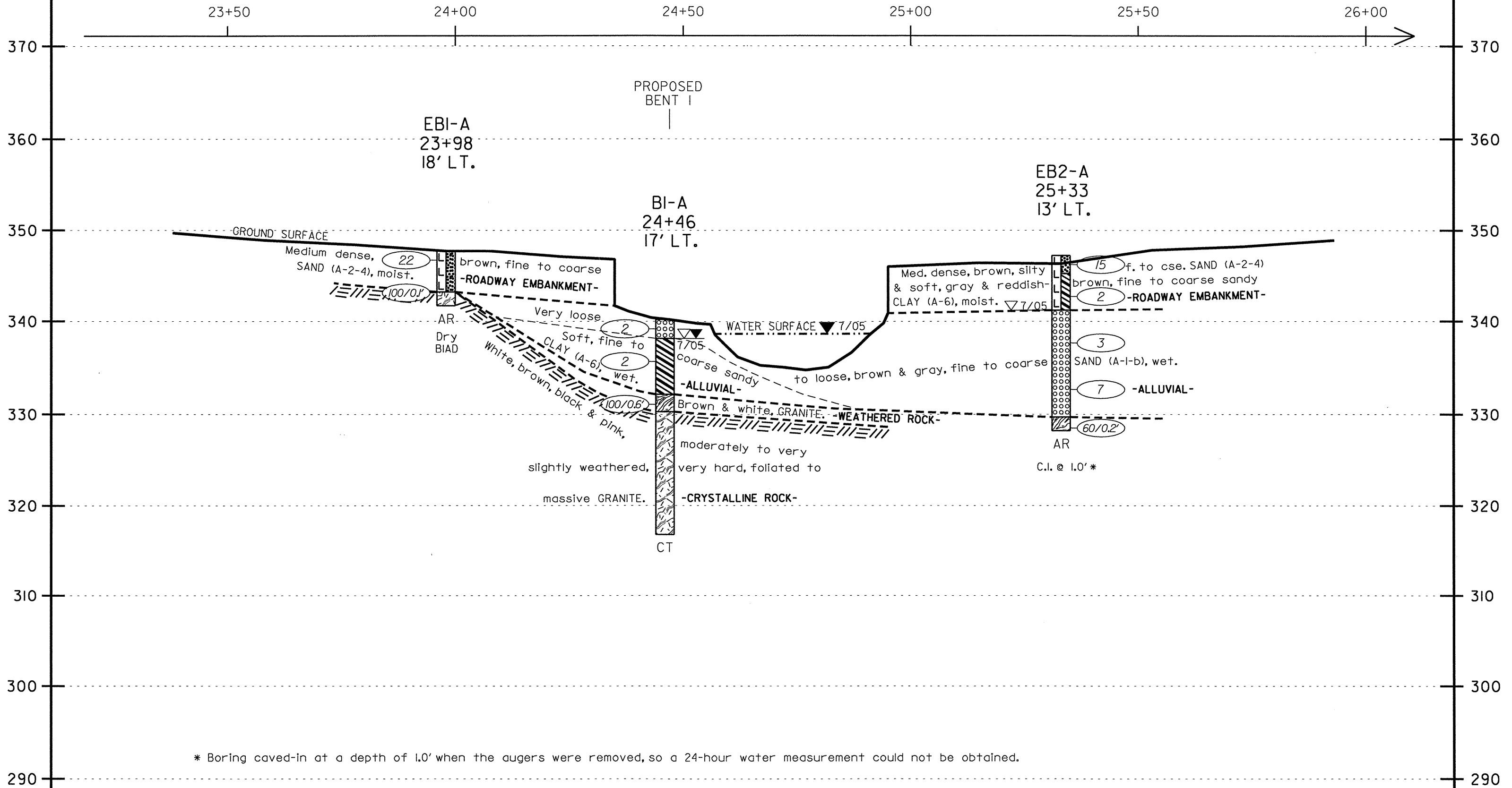
SITE PLAN

SCALE IN FEET
 0 20' 40'
 1"=40' HORIZ. & VERT.

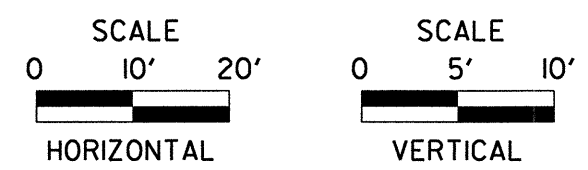
SINCE 1881 **F&R** **FROEHLING & ROBERTSON, INC.**
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CLIENT: N.C. Department of Transportation		
LOCATION: Bridge No. 15 on SR 1106 over Little River		
STATE PROJ. No.: 33468.l1	COUNTY: Franklin	
TIP No.: B-4113	F.A. No.: BRZ-1106(3)	
DATE: 8/2005	SCALE: 1"=40'	DRAWING No.: 1

PROFILE 15' LEFT OF -L-

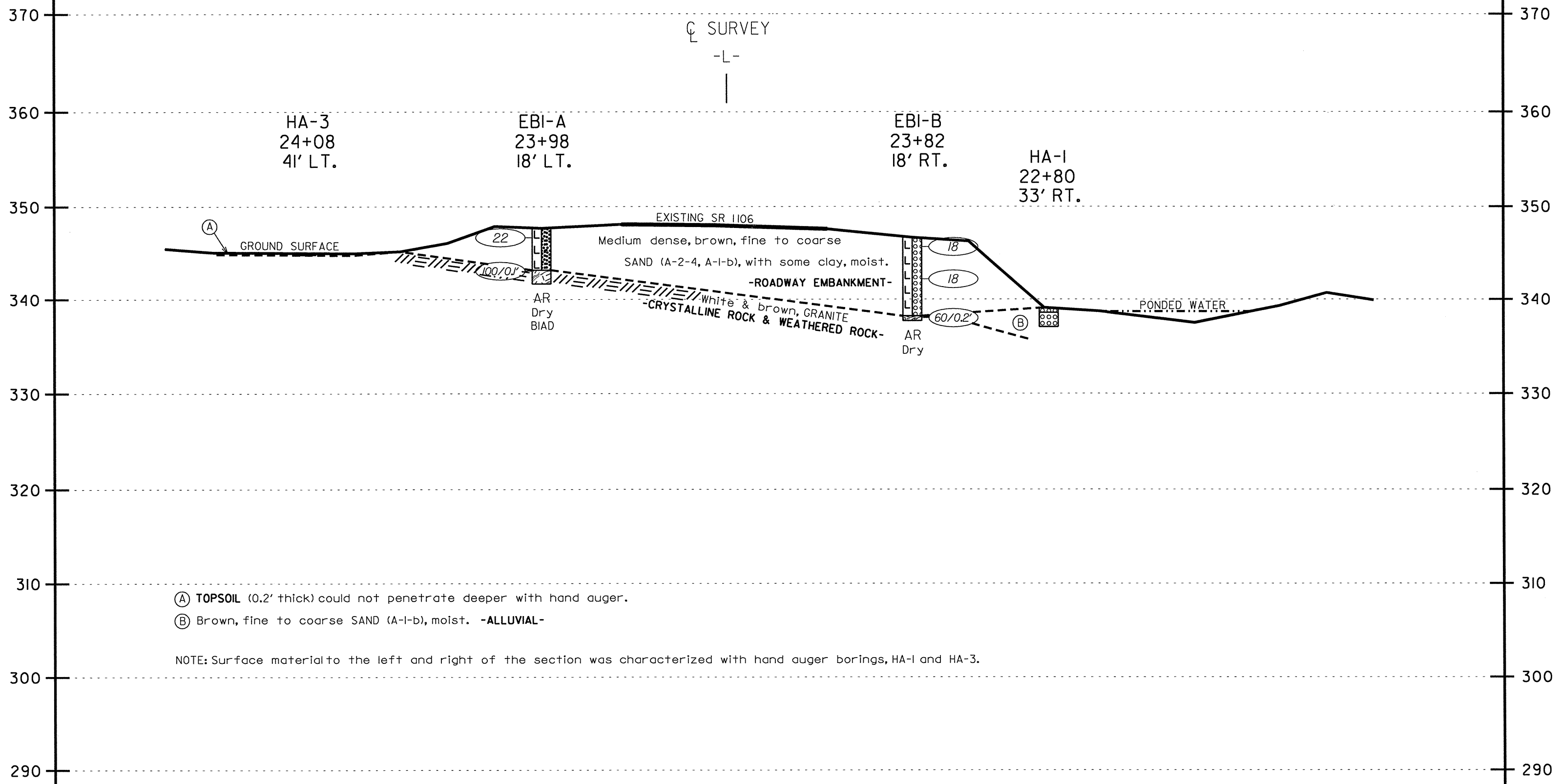


* Boring caved-in at a depth of 1.0' when the augers were removed, so a 24-hour water measurement could not be obtained.



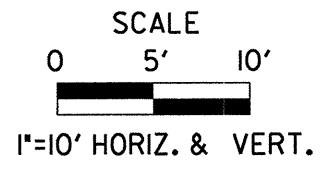
 <p>FROEHLING & ROBERTSON, INC. GEOTECHNICAL • ENVIRONMENTAL • MATERIALS ENGINEERS • LABORATORIES <i>"OVER ONE HUNDRED YEARS OF SERVICE"</i> 310 Hubert Street Raleigh, North Carolina 27603 (919) 828-3441; Fax: (919) 828-5751</p>	CLIENT: N.C. Department of Transportation		
	LOCATION: Bridge No. 15 on SR 1106 over Little River		
	STATE PROJ. No.: 33468.1.1	COUNTY: Franklin	
	TIP No.: B-4113	FA No.: BRZ-1106(3)	
	DATE: 8/2005	SCALE: 1"=20' HORIZ.; 1"=10' VERT.	DRAWING No.: 2

SECTION THROUGH PROPOSED END BENT 1



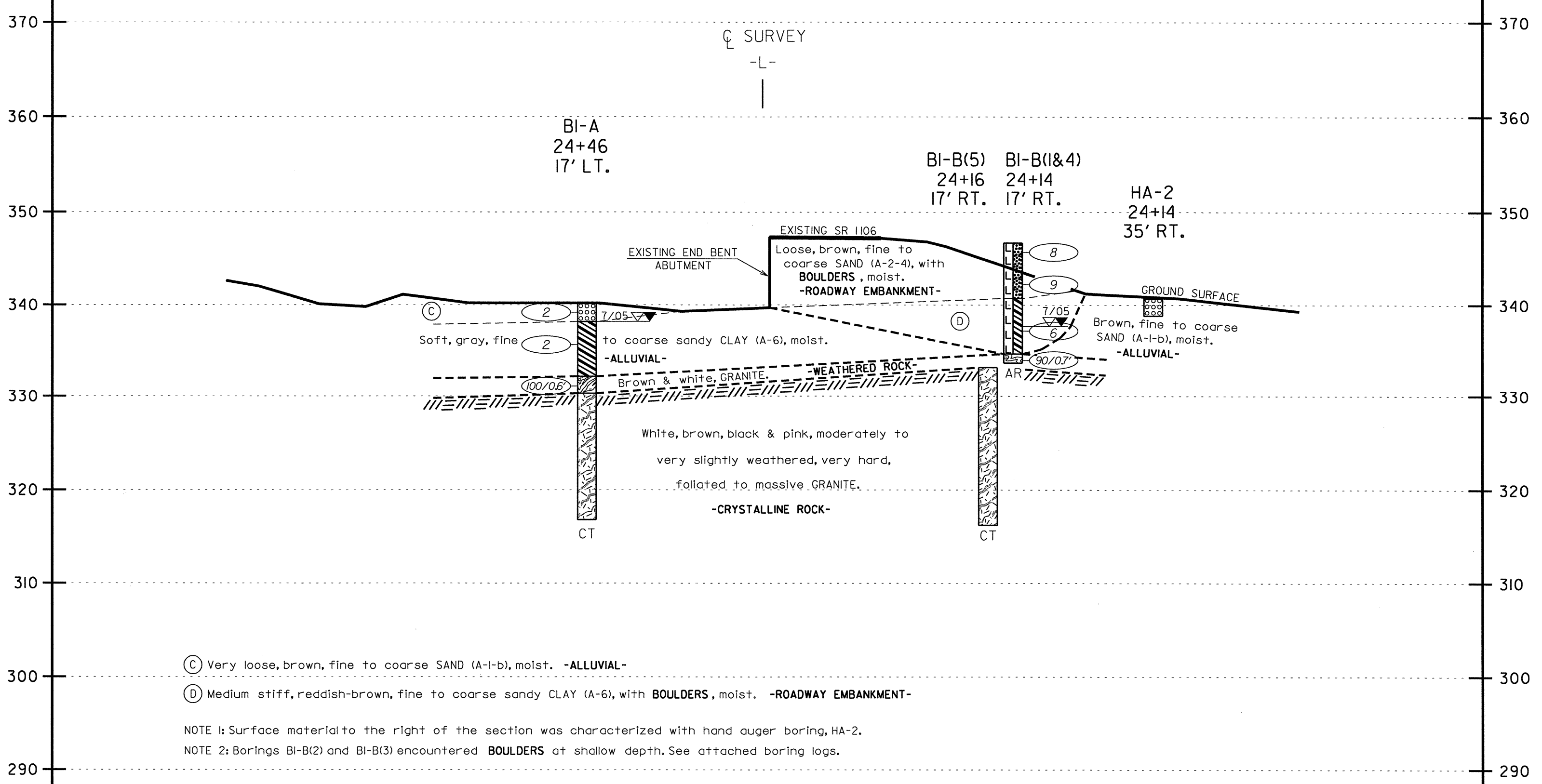
- (A) TOPSOIL (0.2' thick) could not penetrate deeper with hand auger.
- (B) Brown, fine to coarse SAND (A-I-b), moist. -ALLUVIAL-

NOTE: Surface material to the left and right of the section was characterized with hand auger borings, HA-1 and HA-3.



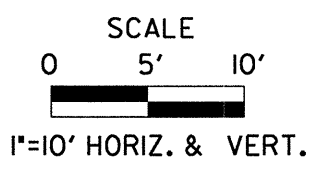
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	CLIENT: N.C. Department of Transportation		
	LOCATION: Bridge No. 15 on SR 1106 over Little River		
STATE PROJ. No.: 33468.1.1		COUNTY: Franklin	
TIP No.: B-4113		FA No.: BRZ-1106(3)	
DATE: 8/2005	SCALE: 1"=10' HORIZ. & VERT.	DRAWING No.: 3	

SECTION THROUGH PROPOSED BENT 1



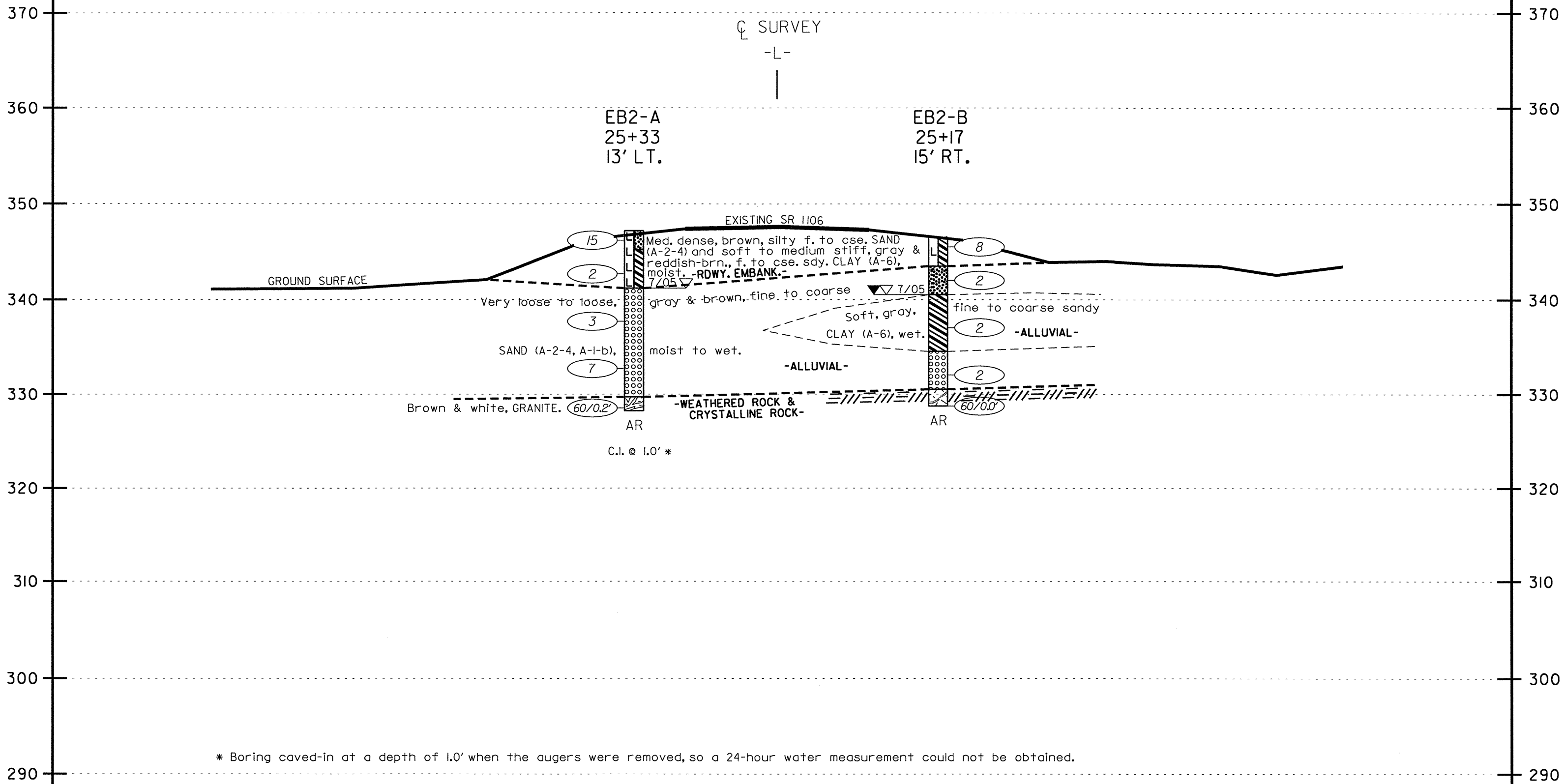
- Ⓒ Very loose, brown, fine to coarse SAND (A-1-b), moist. -ALLUVIAL-
- Ⓓ Medium stiff, reddish-brown, fine to coarse sandy CLAY (A-6), with **BOULDERS**, moist. -ROADWAY EMBANKMENT-

NOTE 1: Surface material to the right of the section was characterized with hand auger boring, HA-2.
 NOTE 2: Borings BI-B(2) and BI-B(3) encountered **BOULDERS** at shallow depth. See attached boring logs.

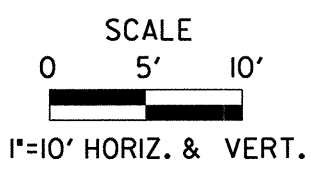


	FROEHLING & ROBERTSON, INC.		CLIENT: N.C. Department of Transportation	
	GEOTECHNICAL • ENVIRONMENTAL • MATERIALS ENGINEERS • LABORATORIES "OVER ONE HUNDRED YEARS OF SERVICE"		LOCATION: Bridge No. 15 on SR 1106 over Little River	
	310 Hubert Street Raleigh, North Carolina 27603 (919) 828-3441; Fax: (919) 828-5751		STATE PROJ. No.: 33468.1.1	COUNTY: Franklin
			TIP No.: B-4113	FA No.: BRZ-1106(3)
			DATE: 8/2005	SCALE: 1"=10' HORIZ. & VERT.

SECTION THROUGH PROPOSED END BENT 2



* Boring caved-in at a depth of 1.0' when the augers were removed, so a 24-hour water measurement could not be obtained.



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	LOCATION: Bridge No. 15 on SR 1106 over Little River		
	STATE PROJ. No.: 33468.I.I	COUNTY: Franklin	
	TIP No.: B-4113	FA No.: BRZ-1106(3)	
	DATE: 8/2005	SCALE: 1"=10' HORIZ. & VERT.	DRAWING No.: 5



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N.C.D.O.T. GEOTECHNICAL UNIT
 BORING LOG

SHEET 1 OF 1

PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin							
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River							GROUND WATER (ft)						
BORING NO. EB1-A		BORING LOCATION 23+98		OFFSET 18ft LT	ALIGNMENT -L-		0 HR. Dry						
COLLAR ELEV. 347.7 ft		NORTHING 811,542		EASTING 2,171,314		24 HR. B.I.A.D.*							
TOTAL DEPTH 6.0 ft		DRILL MACHINE CME 550 Track		DRILL METHOD 2.25" ID HSA		HAMMER TYPE Automatic							
DATE STARTED 7/26/05		COMPLETED 7/26/05		SURFACE WATER DEPTH N/A									
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
347.7													Ground Surface
347.7	0.0	8	12	10									SS-8 M
344.2	3.5	2	3	100/0.1									100/0.1
													343.2
													341.7
													341.7

-ROADWAY EMBANKMENT-
Brown, fine to coarse SAND (A-2-4(0)), with some clay, trace silt.

-CRYSTALLINE ROCK-
White & brown, foliated to massive GRANITE.

Boring Terminated by Auger Refusal at Elevation 341.7 ft in CRYSTALLINE ROCK (GRANITE)

NOTES:
 1) Geologist indicates strata break in split spoon at a depth of 4.5' (elev. 343.2').
 2) Auger refusal at a depth of 6.0' (elev. 341.7').

* Boring backfilled immediately after drilling (B.I.A.D.) due to location in driveway.

NCDOT BORE SINGLE G66-069.GPJ NC_DOT.GDT 9/15/05



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N.C.D.O.T. GEOTECHNICAL UNIT
 BORING LOG

SHEET 1 OF 1

PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin							
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River							GROUND WATER (ft)						
BORING NO. EB1-B		BORING LOCATION 23+82		OFFSET 18ft RT	ALIGNMENT -L-		0 HR. Dry						
COLLAR ELEV. 346.7 ft		NORTHING 811,522		EASTING 2,171,347		24 HR. Dry							
TOTAL DEPTH 9.0 ft		DRILL MACHINE CME 550 Track		DRILL METHOD 2.25" ID HSA		HAMMER TYPE Automatic							
DATE STARTED 7/26/05		COMPLETED 7/26/05		SURFACE WATER DEPTH N/A									
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
346.7													Ground Surface
346.7	0.0	3	8	10									M
343.2	3.5	2	6	12									SS-6 M
													338.2
													337.7
													337.7

-ROADWAY EMBANKMENT-
Brown, fine to coarse SAND (A-1-b(0)), with some clay & gravel.

-WEATHERED ROCK-
White & brown, foliated to massive GRANITE.

Boring Terminated by Auger Refusal at Elevation 337.7 ft in WEATHERED ROCK (GRANITE)

NOTES:
 1) Driller indicates harder drilling at a depth of 8.5' (elev. 338.2').
 2) Auger refusal at a depth of 9.0' (elev. 337.7').

NCDOT BORE SINGLE G66-069.GPJ NC_DOT.GDT 9/15/05



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 "OVER ONE HUNDRED YEARS OF SERVICE"

N.C.D.O.T. GEOTECHNICAL UNIT
 BORING LOG

SHEET 1 OF 1

Sheet 13 of 26

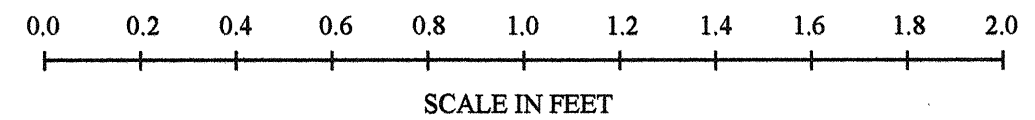
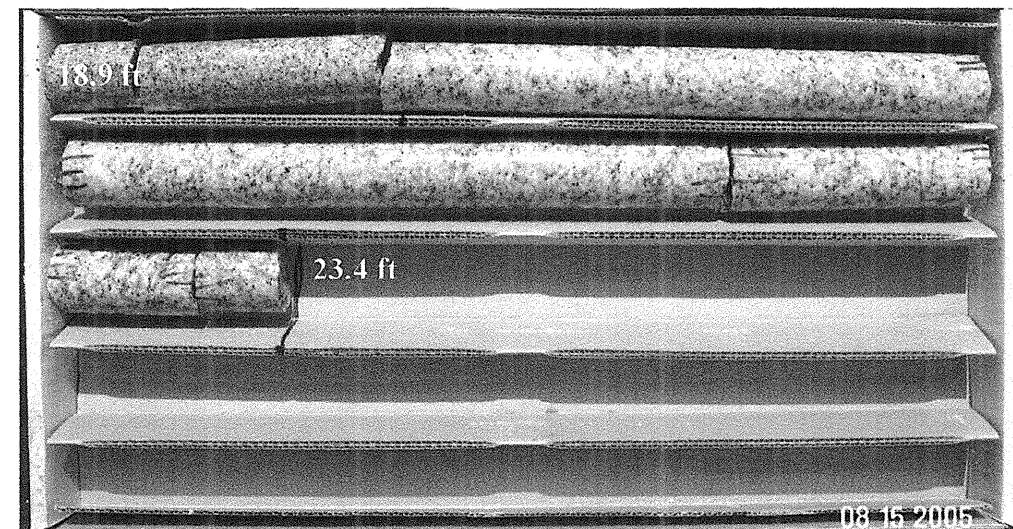
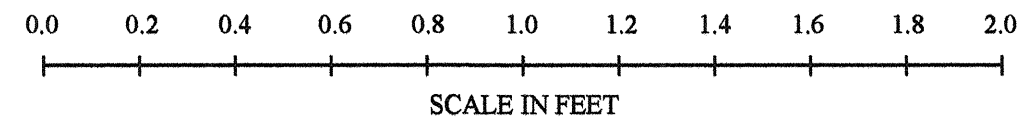
PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin							
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River						GROUND WATER (ft)							
BORING NO. B1-A		BORING LOCATION 24+46		OFFSET 17ft LT		ALIGNMENT -L-							
COLLAR ELEV. 340.2 ft		NORTHING 811,590		EASTING 2,171,321		0 HR. 2.0							
TOTAL DEPTH 23.4 ft		DRILL MACHINE CME 550 Track		DRILL METHOD 3.25" ID HSA/NQ-3 Core		HAMMER TYPE Automatic							
DATE STARTED 7/28/05		COMPLETED 7/29/05		SURFACE WATER DEPTH N/A									
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
340.2													Ground Surface
340.2	0.0	1	1	1									340.2 0.0
336.7	3.5	1	WOH	2									338.2 -ALLUVIAL- Brown, fine to coarse SAND (A-1-b). 2.0
331.7	8.5	60	40/0.1'										332.2 Gray, fine to coarse sandy CLAY (A-6(2)), with trace silt. 8.0
													330.3 -WEATHERED ROCK- Brown, severely weathered, soft, foliated to massive GRANITE. 9.9
													-CRYSTALLINE ROCK- White, brown, black & pink, moderately to very slightly weathered, very hard, foliated to massive GRANITE.
													316.8 Boring Terminated at Elevation 316.8 ft in CRYSTALLINE ROCK (GRANITE) 23.4

NOTES:
 1) Driller indicates harder drilling at a depth of 8.0' (elev. 332.2').
 2) Coring began at a depth of 9.1' (elev. 331.1').

CORE BORING REPORT							DATE: 7/28-29/2005	
PROJECT:	33468.1.1	ID. NO.:	B-4113	BORING NO.:	B1-A	GEOLOGIST:	Chris Baldwin	
DESCRIPTION:	Bridge No. 15 on SR 1106 over Little River			SENIOR DRILLER:	Jim Gilchrist			
COUNTY:	Franklin	COLLAR ELEVATION:	340.2 ft	TOTAL DEPTH:	23.4 ft		DRILLING ASSISTANT:	Jason Schulster
Elev. (ft)	Depth (ft)	Drill Rate min./ft	Run Length (ft)	REC (%)	RQD (%)	Sample #	FIELD CLASSIFICATION AND REMARKS	
331.1	9.1	0:37/0.3 ft	1.3	0.5/1.3	0.5/1.3		WR - 9.1 - 9.9 ft Brown, severely weathered, soft Foliated to Massive Granite Very close fracture spacing.	
329.8	10.4	4:56		38%	38%		STRATA BREAK STRATA REC.=0% STRATA RQD=N/A	
329.8	10.4	5:28	5.0	5.0/5.0	3.9/5.0		CR - 9.9 - 23.4 ft White, brown, black and pink, moderately to very slightly weathered, very hard, Foliated to Massive Granite Close to wide fracture spacing.	
324.8	15.4	5:36		100%	78%		4 joints at 0° 2 joints at 10° 1 joint at 20° 2 joints at 30°	
324.8	15.4	5:30					STRATA REC.=100% STRATA RQD=92%	
324.8	15.4	1:57/0.3 ft	4.3	4.3/4.3	4.3/4.3		1 joint at 10°	
320.5	19.7	5:59		100%	100%			
320.5	19.7	6:04						
320.5	19.7	6:15						
320.5	19.7	6:09						
320.5	19.7	5:00/0.7 ft	3.7	3.7/3.7	3.7/3.7			
320.5	19.7	6:39		100%	100%			
320.5	19.7	6:45						
320.5	19.7	7:20						
316.8	23.4						Coring Terminated at Elevation 316.8 ft	
DRILLING EQUIPMENT: CME - 550 Track Rig with automatic hammer.							NOTES:	
HOLE ADVANCEMENT: 1. HSA from 0.0 - 9.1 feet using 3.25" hollow stem augers. 2. Cored using NQ3 w/SICB and a Series 6 diamond impregnated bit from 9.1 - 23.4 feet.								



CORE PHOTOGRAPHS: B1-A 24+46, 17' Lt.





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PROJECT NO. 33468.1.1	ID. B-4113	COUNTY Franklin	GEOLOGIST C. Baldwin
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River			GROUND WATER (ft)
BORING NO. B1-B (1&4)	BORING LOCATION 24+14	OFFSET 17ft RT	ALIGNMENT -L-
COLLAR ELEV. 346.7 ft	NORTHING 811,554	EASTING 2,171,350	0 HR. 9.0 24 HR. 9.0
TOTAL DEPTH 13.0 ft	DRILL MACHINE CME 550 Track	DRILL METHOD 3.25" ID HSA	HAMMER TYPE Automatic
DATE STARTED 7/25/05	COMPLETED 7/26/05	SURFACE WATER DEPTH N/A	

ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT						SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80	100			
346.7	0.0				Ground Surface								
346.7	0.0	2	4	4							SS-1	M	-ROADWAY EMBANKMENT- Brown, fine to coarse SAND (A-2-4(0)), with some clay, trace silt.
343.2	3.5	4	5	4								M	
338.2	8.5	8	2	4									Reddish-brown, fine to coarse sandy CLAY (A-6), with gravel.
334.7	12.0	75	15/0.2'										-WEATHERED ROCK- Brown & white, foliated to massive GRANITE. Boring Terminated by Auger Refusal at Elevation 333.7 ft in WEATHERED ROCK (GRANITE)

- NOTES:
- 1) Driller indicates harder drilling at a depth of 12.0' (elev. 334.7').
 - 2) Auger refusal at a depth of 13.0' (elev. 333.7').
 - 3) B1-B(1) terminated at a depth of 11.0' due to broken auger.
 - 4) B1-B(4) terminated at a depth of 13.0' due to pump malfunction.
 - 5) See B1-B(5) for coring information.

NCDOT BORE SINGLE G66-069.GPJ NC DOT.GDT 9/15/05



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N.C.D.O.T. GEOTECHNICAL UNIT
 BORING LOG

SHEET 1 OF 1

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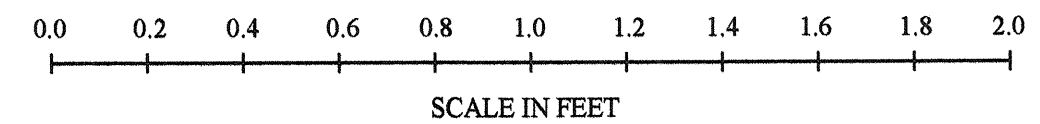
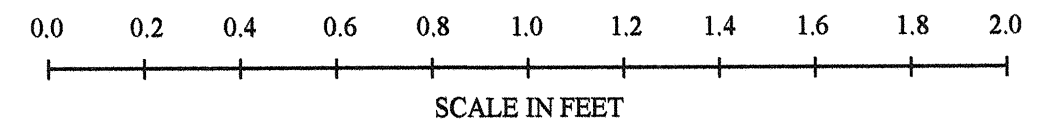
PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin							
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River						GROUND WATER (ft)							
BORING NO. B1-B(5)		BORING LOCATION 24+16		OFFSET 17ft RT		ALIGNMENT -L-							
COLLAR ELEV. 346.6 ft		NORTHING 811,556		EASTING 2,171,351		0 HR. N/A							
TOTAL DEPTH 30.4 ft		DRILL MACHINE CME 550 Track		DRILL METHOD 3.25" ID HSA/NQ-3 Core		HAMMER TYPE Automatic							
DATE STARTED 7/25/05		COMPLETED 7/25/05		SURFACE WATER DEPTH N/A		24 HR. N/A							
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
346.6													Ground Surface
													Augered to attempt coring.
													333.2
										RS-3			-CRYSTALLINE ROCK- White, brown, black & pink, slightly to very slightly weathered, very hard, foliated to massive GRANITE.
										RS-4			
													316.2
													Boring Terminated at Elevation 316.2 ft in CRYSTALLINE ROCK (GRANITE)
													30.4
													NOTES: 1) Auger refusal at a depth of 13.4' (elev. 333.2'). 2) Coring began at a depth of 13.4' (elev. 333.2').

CORE BORING REPORT							DATE: 7/25-27/2005
PROJECT:	33468.1.1	ID. NO.:	B-4113	BORING NO.:	B1-B (5)	GEOLOGIST:	Chris Baldwin
DESCRIPTION:	Bridge No. 15 on SR 1106 over Little River					SENIOR DRILLER:	Jim Gilchrist
COUNTY:	Franklin	COLLAR ELEVATION:	346.6 ft	TOTAL DEPTH:	30.4 ft	DRILLING ASSISTANT:	Jason Schulster
Elev. (ft)	Depth (ft)	Drill Rate min./ft	Run Length (ft)	REC (%)	RQD (%)	Sample #	FIELD CLASSIFICATION AND REMARKS
333.2	13.4	1:01/0.3 ft	2.3	2.3/2.3	1.8/2.3		3 joints at 0° 2 joints at 10° CR - 13.4 - 30.4 ft White, brown, black and pink, slightly to very slightly weathered, very hard, Foliated to Massive Granite Close to wide fracture spacing.
		5:15		100%	78%		
		5:20					1 joint at 70°
330.9	15.7						
330.9	15.7	5:27	5.0	5.0/5.0	3.7/5.0		3 joints at 0° 1 joint at 30° 2 joints at 50° 1 joint at 70°
		5:19		100%	74%		
		5:30					
		5:25					
		5:20					
325.9	20.7						
325.9	20.7	5:47	5.0	5.0/5.0	5.0/5.0		
		5:52		100%	100%		
		6:01					
		5:57					
		5:52					
320.9	25.7						
320.9	25.7	4:38/0.7 ft	4.7	4.7/4.7	4.7/4.7		
		5:50		100%	100%		
		6:04					
		6:16					
		6:03					
316.2	30.4						
							316.2 ft (30.4 ft)
							Coring Terminated at Elevation 316.2 ft
DRILLING EQUIPMENT: CME - 550 Track Rig with automatic hammer.						NOTES:	
HOLE ADVANCEMENT: 1. HSA from 0.0 - 13.4 feet using 3.25" hollow stem augers. 2. Cored using NQ3 w/SICB and a Series 6 diamond impregnated bit from 13.4 - 30.4 feet.							

NCDOT BORE SINGLE G66-069.GPJ NC_DOT.GDT 9/15/05



CORE PHOTOGRAPHS: B1-B (5) 24+16, 17' Rt.





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 BORING LOG

SHEET 1 OF 1

PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin							
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River							GROUND WATER (ft)						
BORING NO. B1-B(2)		BORING LOCATION 24+11		OFFSET 17ft RT	ALIGNMENT -L-		0 HR. N/A						
COLLAR ELEV. 346.5 ft		NORTHING 811,551		EASTING 2,171,350		24 HR. N/A							
TOTAL DEPTH 6.5 ft		DRILL MACHINE CME 550 Track		DRILL METHOD 3.25" ID HSA		HAMMER TYPE Automatic							
DATE STARTED 7/25/05		COMPLETED 7/25/05		SURFACE WATER DEPTH N/A									
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
346.5													Ground Surface
													Augered to attempt coring.
													Boring Terminated by Auger Refusal at Elevation 340.0 ft on BOULDER.
													NOTES: 1) Auger refusal at a depth of 6.5' (elev. 340.0').

NCDOT BORE SINGLE G66-069.GPJ NC_DOT.GDT 9/15/05



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Sheet 1 of 26
 N.C.D.O.T. GEOTECHNICAL UNIT
 BORING LOG

SHEET 1 OF 1

PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin							
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River							GROUND WATER (ft)						
BORING NO. B1-B(3)		BORING LOCATION 24+12		OFFSET 16ft RT	ALIGNMENT -L-		0 HR. N/A						
COLLAR ELEV. 346.7 ft		NORTHING 811,552		EASTING 2,171,349		24 HR. N/A							
TOTAL DEPTH 5.0 ft		DRILL MACHINE CME 550 Track		DRILL METHOD 3.25" ID HSA		HAMMER TYPE Automatic							
DATE STARTED 7/25/05		COMPLETED 7/25/05		SURFACE WATER DEPTH N/A									
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
346.7													Ground Surface
													Augered to attempt coring.
													Boring Terminated by Auger Refusal at Elevation 341.7 ft on BOULDER.
													NOTES: 1) Auger refusal at a depth of 5.0' (elev. 341.7').

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 BORING LOG

SHEET 1 OF 1

PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin						
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River							GROUND WATER (ft)					
BORING NO. EB2-A		BORING LOCATION 25+33		OFFSET 13ft LT	ALIGNMENT -L-	0 HR. 6.0	24 HR. C.I. @ 1.0**					
COLLAR ELEV. 347.2 ft		NORTHING 811,676		EASTING 2,171,336								
TOTAL DEPTH 19.0 ft		DRILL MACHINE CME 550 Track		DRILL METHOD 2.25" ID HSA		HAMMER TYPE Automatic						
DATE STARTED 7/26/05		COMPLETED 7/26/05		SURFACE WATER DEPTH N/A								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
347.2	0.0	5	8	7	Ground Surface							347.2 0.0
343.7	3.5	1	1	1	-ROADWAY EMBANKMENT- Brown, silty fine to coarse SAND (A-2-4). Gray & reddish-brown, fine to coarse sandy CLAY (A-6).					M		345.2 2.0
338.7	8.5	1	1	2	-ALLUVIAL- Gray & brown, coarse SAND (A-1-b(0)), with little clay, trace fine sand.					W		341.2 6.0
333.7	13.5	4	4	3						SS-13	W	329.7 17.5
328.7	18.5	60/0.2			-WEATHERED ROCK- Brown & white, foliated to massive GRANITE.							328.2 19.0

Boring Terminated by Auger Refusal at Elevation 328.2 ft in WEATHERED ROCK (GRANITE)

NOTES:
 1) Driller indicates harder drilling at a depth of 17.5' (elev. 329.7').
 2) Auger refusal at a depth of 19.0' (elev. 328.2').
 * Boring caved-in at a depth of 1.0' when the augers were removed, so a 24-hour water measurement could not be obtained.

NCDOT BORE SINGLE G66-069.GPJ NC DOT.GDT 9/15/05



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 BORING LOG

SHEET 1 OF 1

PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin						
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River							GROUND WATER (ft)					
BORING NO. EB2-B		BORING LOCATION 25+17		OFFSET 15ft RT	ALIGNMENT -L-	0 HR. 6.0	24 HR. 6.0					
COLLAR ELEV. 346.7 ft		NORTHING 811,656		EASTING 2,171,362								
TOTAL DEPTH 17.8 ft		DRILL MACHINE CME 550 Track		DRILL METHOD 2.25" ID HSA		HAMMER TYPE Automatic						
DATE STARTED 7/26/05		COMPLETED 7/26/05		SURFACE WATER DEPTH N/A								
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION
		0.5ft	0.5ft	0.5ft	0	20	40	60	80			
346.7	0.0	1	3	5	Ground Surface							346.7 0.0
343.2	3.5	1	1	1	-ROADWAY EMBANKMENT- Reddish-brown, fine to coarse sandy CLAY (A-6).					M		343.7 3.0
338.2	8.5	WOH		2	-ALLUVIAL- Gray, fine to coarse SAND (A-2-4(0)), with some clay.					SS-16	18.8%	340.7 6.0
333.2	13.5	WOH		1	Gray, fine to coarse sandy CLAY (A-6(4)), with some silt.					SS-17	32.6%	334.7 12.0
328.9	17.8	60/0.0'			Brown, fine to coarse SAND (A-1-b), with some silt & clay.					W		330.7 16.0
		60/0.0'			-CRYSTALLINE ROCK- Brown & white, foliated to massive GRANITE.							328.9 17.8

Boring Terminated with Standard Penetration Test Refusal at Elevation 328.9 ft in CRYSTALLINE ROCK (GRANITE)

NOTES:
 1) Driller indicates harder drilling at a depth of 16.0' (elev. 330.7').
 2) Auger refusal at a depth of 17.8' (elev. 328.9').

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 BORING LOG

SHEET 1 OF 1

PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin								
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River						GROUND WATER (ft)								
BORING NO. HA-1		BORING LOCATION 23+80		OFFSET 33ft RT		ALIGNMENT -L-								
COLLAR ELEV.		NORTHING 814,755		EASTING 2,171,782		0 HR. N/A								
TOTAL DEPTH 2.0 ft		DRILL MACHINE N/A		DRILL METHOD Hand Auger		HAMMER TYPE N/A								
DATE STARTED 8/18/05		COMPLETED 8/18/05		SURFACE WATER DEPTH N/A										
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100
														Ground Surface
														-TOPSOIL- Brown, fine to coarse SAND (A-1-b). -ALLUVIAL- Brown, fine to coarse SAND (A-1-b). Boring Terminated at Depth 2.0 ft
NOTES: 1) Boring performed to characterize material on outer side of cross section after surveying was performed. Collar elevation not obtained.														

NCDOT BORE SINGLE G66-069.GPJ NC DOT.GDT 9/6/05



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 BORING LOG

SHEET 1 OF 1

PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin								
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River						GROUND WATER (ft)								
BORING NO. HA-2		BORING LOCATION 24+14		OFFSET 35ft RT		ALIGNMENT -L-								
COLLAR ELEV.		NORTHING 814,789		EASTING 2,171,788		0 HR. N/A								
TOTAL DEPTH 2.0 ft		DRILL MACHINE N/A		DRILL METHOD Hand Auger		HAMMER TYPE N/A								
DATE STARTED 8/18/05		COMPLETED 8/18/05		SURFACE WATER DEPTH N/A										
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80					100
														Ground Surface
														-TOPSOIL- Brown, fine to coarse SAND (A-1-b). -ALLUVIAL- Brown, fine to coarse SAND (A-1-b). Boring Terminated at Depth 2.0 ft
NOTES: 1) Boring performed to characterize material on outer side of cross section after surveying was performed. Collar elevation not obtained.														

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PROJECT NO. 33468.1.1		ID. B-4113		COUNTY Franklin		GEOLOGIST C. Baldwin							
SITE DESCRIPTION Bridge No. 15 on SR 1106 over Little River							GROUND WATER (ft)						
BORING NO. HA-3		BORING LOCATION 24+08		OFFSET 41ft LT		ALIGNMENT -L-							
COLLAR ELEV.		NORTHING 814,793		EASTING 2,171,712		0 HR. N/A							
TOTAL DEPTH 0.2 ft		DRILL MACHINE N/A		DRILL METHOD Hand Auger		24 HR. N/A							
DATE STARTED 8/18/05		COMPLETED 8/18/05		SURFACE WATER DEPTH N/A									
ELEV. (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	SOIL AND ROCK DESCRIPTION	
		0.5ft	0.5ft	0.5ft	0	20	40	60	80				100
													Ground Surface
													0.0
													0.2
													-TOPSOIL- Brown, fine to coarse SAND (A-1-b). Boring Terminated at Depth 0.2 ft - could not penetrate deeper with hand auger.
													NOTES: 1) Boring performed to characterize material on outer side of cross section after surveying was performed. Collar elevation not obtained.

NCDOT BORE SINGLE G66-069.GPJ NC DOT.GDT 9/6/05



North Carolina Department of Transportation
 Division of Highways
 Materials and Test Unit
 Soils Laboratory

T.I.P. ID NO.: B-4113

REPORT ON SAMPLES OF: SOIL FOR QUALITY

PROJECT: 33468.1.1
 DATE SAMPLED: 7/05
 SAMPLED FROM: -L-
 SUBMITTED BY: E.C. Howey

COUNTY: Franklin
 RECEIVED: 8/1/05
 REPORTED: 8/9/05
 BY: Dave Jenks

TEST RESULTS

PROJ. SAMPLE NO.	EB1-A	EB1-B	B1-A	B1-B	EB2-A	EB2-B	EB2-B
LAB SAMPLE NO.	SS-8	SS-6	SS-20	SS-1	SS-13	SS-16	SS-17
Retained #4 Sieve %	0.2	6.9	0.5	1.0	0.0	0.5	0.0
Passing #10 Sieve %	95.3	84.4	97.6	94.0	96.3	89.0	99.9
Passing #40 Sieve %	59.9	42.8	69.4	55.5	22.5	46.0	92.7
Passing #200 Sieve %	28.5	21.5	39.1	23.7	4.2	25.9	57.4

MINUS #10 FRACTION

SOIL MORTAR - 100%							
Coarse Sand Ret - #60 %	48.3	59.1	40.9	51.1	89.1	56.1	16.2
Fine Sand Ret - #270 %	25.9	18.4	23.2	27.4	0.5	18.1	31.5
Silt 0.053 - 0.010 mm %	4.0	0.7	1.6	3.9	0.0	0.0	28.3
Clay < 0.010 mm %	21.8	21.8	34.3	17.6	10.4	25.8	24.0
L.L.	16	19	35	15	19	31	32
P.L.	NP	NP	20	NP	NP	25	21
P.I.	NP	NP	15	NP	NP	6	11
AASHTO Classification	A-2-4 (0)	A-1-b (0)	A-6 (2)	A-2-4 (0)	A-1-b (0)	A-2-4 (0)	A-6 (4)
Station	23+98	23+82	24+46	24+14	25+33	25+17	25+17
Offset	18 ft LT	18 ft RT	17 ft LT	17 ft RT	13 ft LT	15 ft RT	15 ft RT
Depth (ft)	0.0	3.5	3.5	0.0	13.5	3.5	8.5
to	1.5	5.0	5.0	1.5	15.0	5.0	10.0
Moisture Content (%)			25.3			18.8	32.6
Organic Content (%)							

NT = Not Tested
 NP = Not Plastic
 NA = Not Applicable

E.C. Howey, L.G., P.E.
 Soils Engineer

GEOTECHNICAL UNIT FIELD SCOUR REPORT

PROJECT: 33468.1.1 ID: B-4113 COUNTY: Franklin

DESCRIPTION(1): Bridge No. 15 on SR 1006 over Little River

INFORMATION ON EXISTING BRIDGES Information obtained from: X field inspection microfilm(Reel: Pos:) other

COUNTY BRIDGE NO. 15 BRIDGE LENGTH 60.5' NO. BENTS IN: CHANNEL 1 FLOOD PLAIN 3

FOUNDATION TYPE: Timber piles

EVIDENCE OF SCOUR(2):

ABUTMENTS OR END BENT SLOPES: Minor scouring

INTERIOR BENTS: None observed

CHANNEL BED: None observed

CHANNEL BANKS: Some scouring along banks, fallen trees along banks

EXISTING SCOUR PROTECTION:

TYPE(3): Timber wingwall

EXTENT(4): To the limits of embankment

EFFECTIVENESS(5): Good

OBSTRUCTIONS(6) (DAMS,DEBRIS,ETC.): Stone dam upstream from bridge, several fallen trees in river

DESIGN INFORMATION

CHANNEL BED MATERIAL(7) (SAMPLE RESULTS ATTACHED): A-1-b, A-2-4, A-6

CHANNEL BANK MATERIAL(8) (SAMPLE RESULTS ATTACHED): A-1-b, A-2-4, A-6

CHANNEL BANK COVER(9): Grasses, shrubs and trees

FLOOD PLAIN WIDTH(10): 300±

FLOOD PLAIN COVER(11): Trees, grasses and shrubs

DESIGN INFORMATION CONT.

STREAM IS X DEGRADING AGGRADING (12)

OTHER OBSERVATIONS AND COMMENTS:

CHANNEL MIGRATION TENDENCY (13): Northeast

REPORTED BY: Elizabeth C. Howay DATE: 8/22/2005 Froehling & Robertson, Inc.

GEOTECHNICALLY ADJUSTED SCOUR ELEVATION (14):

Table with 4 columns: Year, B1-A, B1-B. Rows: 100 year, 500 year.

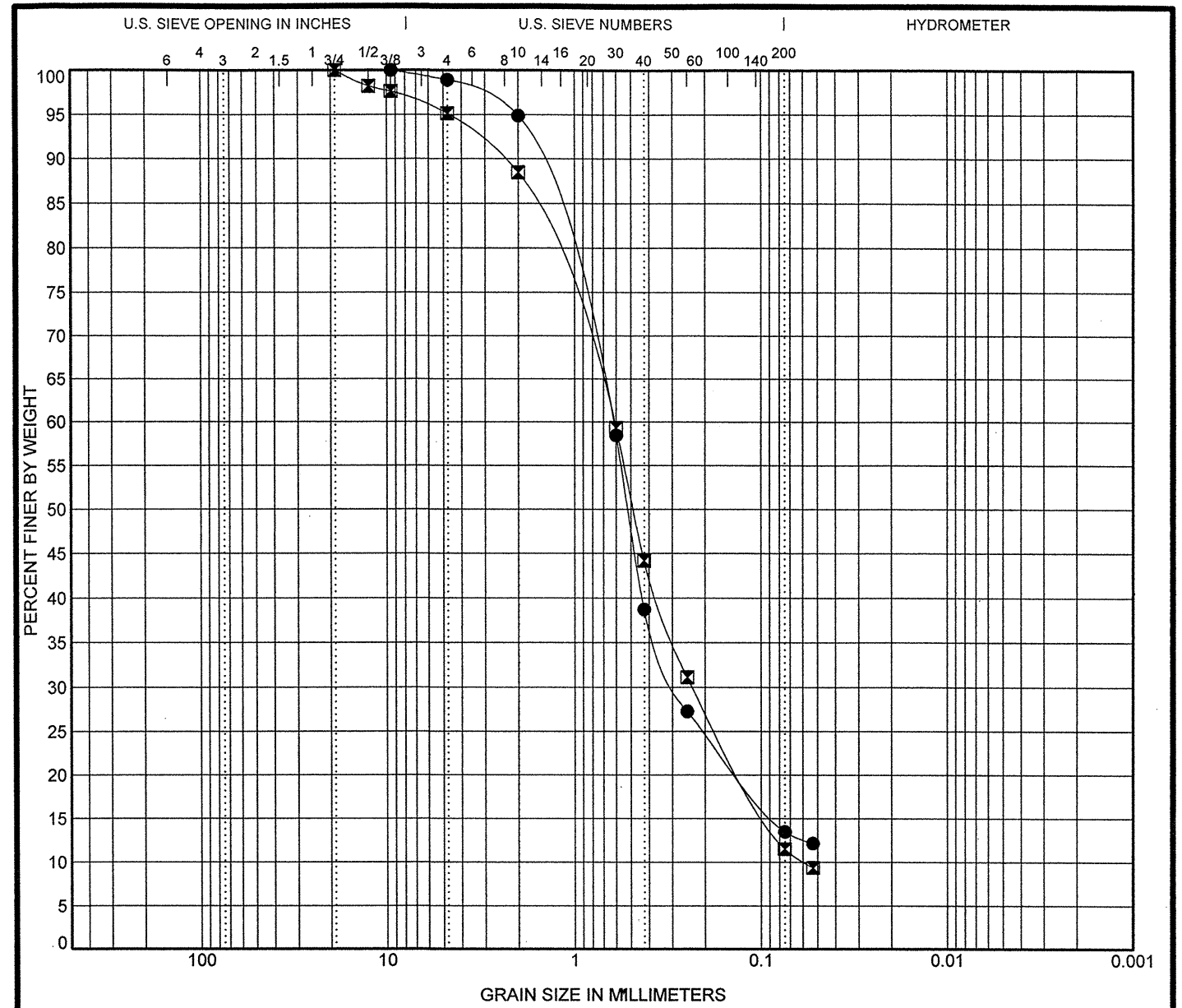
REPORTED BY: David A. NCDOT GEOTECHNICAL UNIT DATE: 9/9/05

INSTRUCTIONS

- (1) GIVE THE DESCRIPTION OF THE SPECIFIC SITE GIVING ROUTE NUMBER AND BODY OF WATER CROSSED. (2) NOTE ANY EVIDENCE OF SCOUR AT THE EXISTING END BENTS OR ABUTMENTS (UNDERMINING, SLOUGHING, SCOUR LOCATIONS, DEGRADATIONS, ETC.) (3) NOTE ANY EXISTING SCOUR PROTECTION (RIP RAP, ETC.) (4) DESCRIBE THE EXTENT OF ANY EXISTING SCOUR PROTECTION. (5) DESCRIBE WHETHER OR NOT THE SCOUR PROTECTION APPEARS TO BE WORKING. (6) NOTE ANY DAMS, FALLEN TREES, DEBRIS AT BENTS, ETC. (7) DESCRIBE THE CHANNEL BED MATERIAL: A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION, ATTACH LAB RESULTS. (8) DESCRIBE THE CHANNEL BANK MATERIAL: A SAMPLE SHOULD BE TAKEN FOR GRAIN SIZE DISTRIBUTION, ATTACH LAB RESULTS. (9) DESCRIBE THE 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 RELATIONSHIP BETWEEN THE HYDRAULICS THEORETICAL SCOUR AND THE GEOTECHNICALLY ADJUSTED SCOUR ELEVATION. 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.

PROJECT #: 33468.1.1 (B-4113)
 COUNTY: Franklin
 DESCRIPTION: Bridge No. 15 on SR 1106 over Little River

SAMPLE #	CHANNEL BED MATERIAL	CHANNEL BANK MATERIAL		
		SS-20	SS-13	SS-16
RETAINED #4		0.5	0.0	0.5
PASSING #10		97.6	96.3	89.0
PASSING #40		69.4	22.5	46.0
PASSING #200		39.1	4.2	25.9
COARSE SAND		40.9	89.1	56.1
FINE SAND		23.2	0.5	18.1
SILT		1.6	0.0	0.0
CLAY		34.3	10.4	25.8
LL		35	19	31
PL		20	NP	25
AASHTO CLASSIFICATION		A-6(2)	A-1-b(0)	A-2-4(0)
STATION		24+46	25+33	25+17
OFFSET		17' LT	13' LT	15' RT
DEPTH		3.5 - 5.0	13.5 - 15.0	3.5 - 5.0




COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample No.	Depth	Classification					LL	PL	PI	Cc	Cu
● SS-12	at 8.5 - 10.0										
☒ SS-19	at 0.0 - 1.5								1.50	10.49	

Sample No.	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SS-12	at 8.5 - 10.0	9.5	0.631	0.284		1.1	85.4		13.5
☒ SS-19	at 0.0 - 1.5	19	0.617	0.233	0.059	4.9	83.6		11.5

SINCE



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GRAIN SIZE DISTRIBUTION

Report No.: G66-069
 Client: NCDOT
 Project: B-4113
 Location: Franklin Co., NC
 Date: 08/01/05



SITE PHOTOGRAPHS



Photograph No. 1: Profile view left of -L-, looking south.



Photograph No. 3: Cross-section view of Bent 1, looking west.



Photograph No. 2: Cross-section view of End Bent 1, looking west.



Photograph No. 4: Cross-section view of End Bent 2, looking east.