PROJECT FILES

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE CSBRG-0008-00(301), Taliaferro Co.
CR 82 (Bethany Church Rd.) over
North Fork of Ogeechee River
PI No. 0008301

OFFICE Materials and Research
Forest Park, Georgia

DATE July 27, 2010

FROM DB for Georgene M. Geary, P. E., State Materials and Research Engineer

TO Paul Liles, P.E., State Bridge and Structural Design Engineer

SUBJECT Bridge Foundation Investigation
CR 582/Bethany Church Rd @ North Fork of Ogeechee River

As requested, a Bridge Foundation Investigation has been performed for the project mentioned above. The results of this work are attached.

If additional information is needed, please contact Catherine Armstrong of the Geotechnical Engineering Bureau at 404-675-1731.

GMG:CAA

Attachments

Copy: Tony Collins, District Engineer, Tennille
Attn: Renee Decker
Bryan Gibbs, Area Engineer, Madison
Mike Clements, P.E., State Bridge Maintenance Engineer

BRIDGE FOUNDATION INVESTIGATION

PROJECT NUMBER CSBRG-0008-00(301), Taliaferro Co.
P.I. NUMBER 0008301
LOCATION (See Map) CR 82/Bethany Church Rd. over North Fork of Ogeechee River, Bridge No. 265-5019-0

GENERAL INFORMATION

GEOLOGIC FORMATION Biotitic Gneiss/ Amphibolite Formation of the Georgia Piedmont Region.

MAXIMUM PILE DESIGN LOADS

END BEARING = 90 %
FRICTION = 10%

HP 10 X 42 = 55 Tons
HP 12 X 53 = 70 Tons
HP 14 X 73 = 96 Tons

FOUNDATION RECOMMENDATIONS

BENTS	PILE FOOTING (PILE TYPE)	PILE BENT (PILE TYPE)
1 & 4		H-pile
2 & 3	H-pile	

ELEVATIONS

BENTS	MINIMUM TIP	ESTIMATED TIP
1	454	448
2	451	448
3	455	450
4	462	455

NOTES

Elevations All elevations are based on an Elevation of 479.90 at the corner of the east endbent.

PDO Driving resistance after Minimum Tip Elevations are achieved

Waiting Period None required.

Theoretical Scour Appears feasible for the material encountered.

Erosion We concur with the use of 24 inches of Type I riprap and filter fabric.

Points Pile points are recommended for each pile to be driven at Bents 2 and 3 to insure adequate penetration into very dense weathered rock.

Temporary Shoring/ Cofferdams Shoring or coffer dams will be required to construct the pile footings at Bents 2 & 3 if the excavations cannot be safely sloped back. Because

groundwater was encountered near the footing elevations, dewatering of the excavations may also be required. We recommend that the Construction Office evaluate the need for cofferdams at this site.

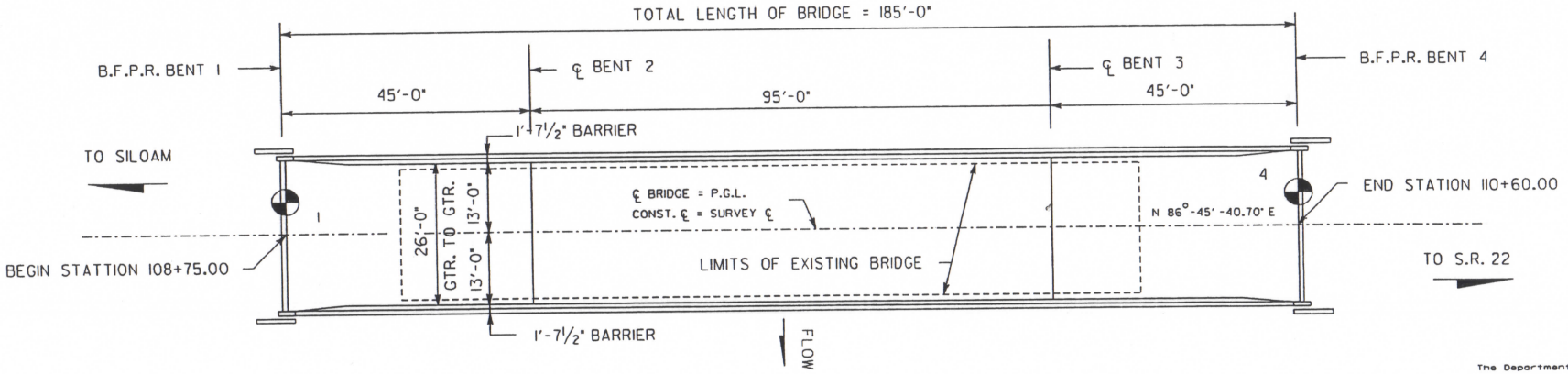
Special Problems Erratic pile lengths can be expected.

Hard driving can be expected.

As Built Foundation Information The as built foundation information should be forwarded to the Geotechnical Engineering Bureau upon completion of the foundation system.

Prepared By Catherine Armstrong, T.E.A.

Reviewed By _____, PE

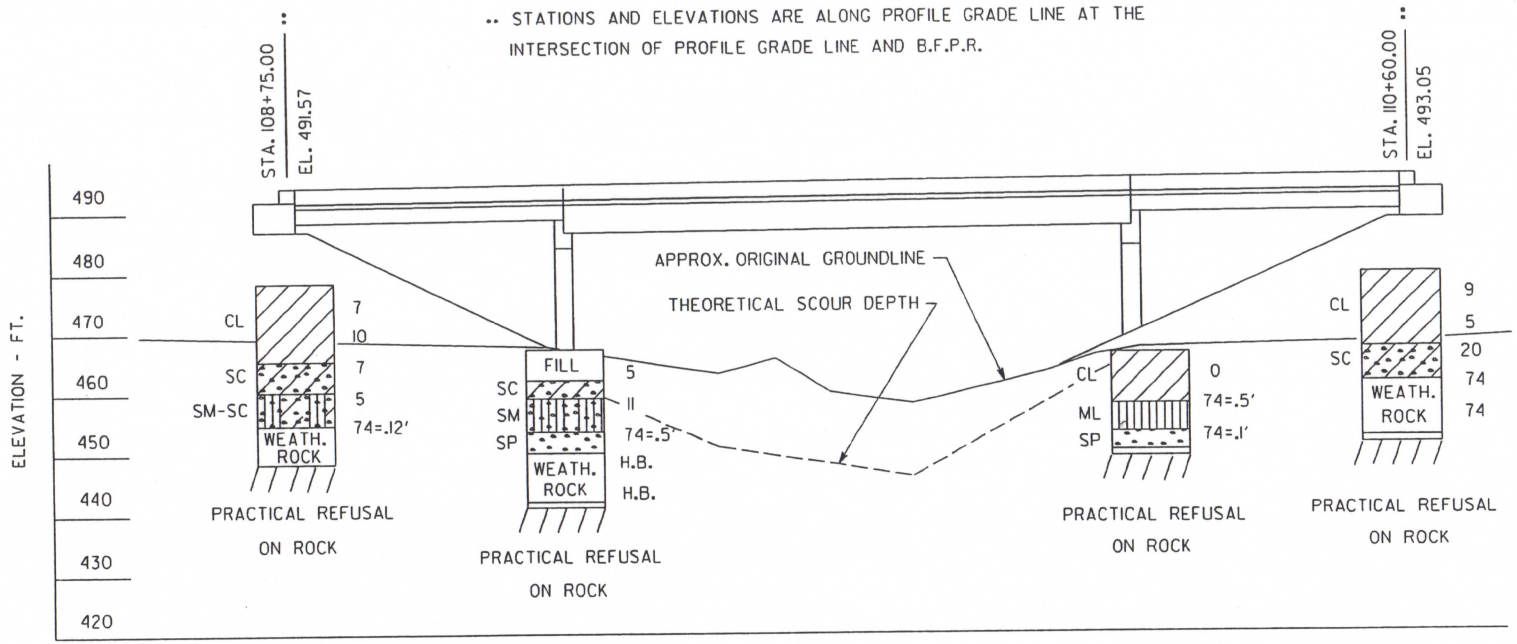


The Department of Transportation in making this foundation report available to contractors assumes no responsibility for its accuracy.

No claim will be considered if the contractor relies on this information in his bidding or in his construction operations and finds that it is inaccurate.

This foundation investigation report is not considered as a part of the Plans and Specifications or Contract on the job.

.. STATIONS AND ELEVATIONS ARE ALONG PROFILE GRADE LINE AT THE INTERSECTION OF PROFILE GRADE LINE AND B.F.P.R.



CLASSIFICATION OF SOILS FOR REPORT PURPOSES

(UNIFIED CLASSIFICATION SYSTEM)

NAME	LETTER	NAME	LETTER
WELL-GRADED SILTY SAND	SW-SM	CLAYEY SAND	SC
WELL-GRADED SILTY GRAVEL	GW-GM	CLAYEY SAND, HIGH LIQUID LIMIT	SC-H
WELL-GRADED GRAVEL	GW	SILTY SAND, HIGH LIQUID LIMIT	SM-H
POORLY-GRADED GRAVEL	GP	ORGANIC SILT, LOW LIQUID LIMIT OR ORGANIC CLAY, LOW LIQUID LIMIT	OL
SILTY GRAVEL	GM	INORGANIC SILT, LOW LIQUID LIMIT	ML
CLAYEY GRAVEL	GC	INORGANIC SILTY LEAN CLAY	ML-CL
CLAYEY SILTY GRAVEL	GM-GC	LEAN CLAY	CL
WELL-GRADED SAND	SW	INORGANIC SILT, HIGH LIQUID LIMIT	MH
POORLY-GRADED SAND	SP	ORGANIC CLAY, HIGH LIQUID LIMIT OR ORGANIC SILT, HIGH LIQUID LIMIT	OH
POORLY-GRADED SILTY SAND	SP-SM	FAT CLAY	CH
SILTY SAND	SM	PEAT	PT
SILTY CLAYEY SAND	SM-SC	GROUND WATER LEVEL	

BRIDGE NO. 1

BY	REVISIONS	DATE

GEORGIA
DEPARTMENT OF TRANSPORTA
GEOTECHNICAL ENGINEERING BUREAU

BORING LOCATION & SOIL PROFILE
CSBRG-0008-00(301)
C.R. 82 (BETHANY CHURCH ROAD
OVER NORTH FORK OGEECHEE RIV
TALIAFERRO COUNTY

NO SCALE

DRAWN W.B. P.I. NUMBER 00083

7/14/2010

Georgia Department of Transportation
Office of Materials and Research
Geotechnical Engineering Bureau

QUALITY 1 "Working Together Works"

Project: CSBRG-0008-00(301) Taliaferro CR82 o/ North Fork of Ogeechee River — 6/15/2010

Boring Number: 1 — Boring Location: 6' left of cl @ Bent 1 — Ground Elev: 478.34 ft

P.I. Number: 0008301 — Drilling Method: Rotary — Water Level: — Crew Chief: C. Black

Elevation ft	Strata Description	USCS	Sample No.	SPT	Unit Wt.	% Moist.	LL	PI	% Pass 75µ	Rock RQD	% Rock Rec.
480	Ground Line										
	gr sdy cly	CL									
475			1-S	7		17.6	21.6	7.6	54.6		
470	med sft gr sdy cly	CL	2-S	10							
465	lse gr cly sd	SC	3-S	7							
460	soft brn cly sd	SC-SM	4-S	5			21.1	5.4	46.1		
455	v. dse weathered rock		5-S	74=1.0'							
450	v. hard drilling in rock										
	End Boring at 30.0 ft										

Notes: SPT values have been adjusted to reflect the use of the Automatic Hammer
drillied w/ drag bit
P.R.O.R. @ 30'

7/14/2010

Georgia Department of Transportation
Office of Materials and Research
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QUALITY 1 "Working Together Works"

Project: CSBRG-0008-00(301) Taliaferro CR82 o/ North Fork of Ogeechee River — 6/15/2010

Boring Number: 2 — Boring Location: 40.0' right of cl — Ground Elev: 467.08 ft

P.I. Number: 0008301 — Drilling Method: Rotary — Water Level: — Crew Chief: C. Black

Elevation ft	Strata Description	USCS	Sample No.	SPT	Unit Wt.	% Moist.	LL	PI	% Pass 75µ	Rock RQD	% Rock Rec.
	Ground Line										
465	fill										
	v. lse rd sd	SC	1-S	5							
460											
	lse mltc f sd	SM	2-S	11					28.8		
455											
	v. dse tn sd w/ gravel	SP	3-S	74=.5'							
450											
	mltc weathered rock		4-S	HB							
445											
	very hard driling in rock										
	End Boring at 26.0 ft										
440											

Notes: SPT values have been adjusted to reflect the use of the Automatic Hammer
drilled w/ drag bit
P.R.O.R. @ 26'

7/14/2010

Georgia Department of Transportation
Office of Materials and Research
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QUALITY 1 "Working Together Works"

Project: CSBRG-0008-00(301) Taliaferro CR82 o/ North Fork of Ogeechee River — 6/15/2010

Boring Number: 3 — Boring Location: 35' right of CL/ 3' fwd of Bent 3 — Ground Elev: 466.27 ft

P.I. Number: 0008301 — Drilling Method: Rotary — Water Level: — Crew Chief: C. Black

Elevation ft	Strata Description	USCS	Sample No.	SPT	Unit Wt.	% Moist.	LL	PI	% Pass 75µ	Rock RQD	% Rock Rec.
	Ground Line										
465	mltc sdy cly silt	ML		scour							
			1-S	0			30.2	4.5	74.7		
460	v. soft brn f sdy cly silt	ML									
			2-S	74=.5'		16.3			55.6		
455	v. dse gry sdy silt w/shells	ML									
	v. dse sd & weathered rock	SP	~~3-S~~	74=.1'							
450	v. hard drillling in rock										
	End Boring at 17.0 ft										

Notes: SPT values have been adjusted to reflect the use of the Automatic Hammer
drill w/ drag bit
P.R.O.R. @ 17'

7/14/2010

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Office of Materials and Research
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QUALITY 1 "Working Together Works"

Project: CSBRG-0008-00(301) Taliaferro CR82 o/ North Fork of Ogeechee River — 6/15/2010

Boring Number: 4 — Boring Location: 6' left of CL — Ground Elev: 479.40 ft

P.I. Number: 0008301 — Drilling Method: Rotary — Water Level: — Crew Chief: C. Black

Elevation ft	Strata Description	USCS	Sample No.	SPT	Unit Wt.	% Moist.	LL	PI	% Pass 75µ	Rock RQD	% Rock Rec.
480	Ground Line										
	brn sdy cl	CL									
475	med sft brn sdy cl (no recovery)	CL	1-S	9							
470	soft brn sdy cl	CL	2-S	5			25.4	0.9	49.6		
465	med. dse. brn cly sd	SC	3-S	20					41.5		
460	v. dse weathered rock		~~4-S~~	HB							
455			~~5-S~~	HB							
	v. hard drilling in rock										
	End Boring at 28.0 ft										
450											

Notes: SPT values have been adjusted to reflect the use of the Automatic Hammer
drill w/ drag bit
P.R.O.R. @ 28'

GEORGIA DEPARTMENT OF TRANSPORTATION
15 KENNEDY DRIVE - FOREST PARK, GA 30297

SOIL MECHANICS LABORATORY

UNIFIED SOIL CLASSIFICATION SYSTEM REPORTING FORM

Project Number:	CSBRG-0008-00 (301)	County:	Taliaferro	PI Nunber:	8301
Date Report Issued:	7/7/2010 7/12/2010	Engineer:	Catherine A Armstrong	Date of Test:	6/25/2010
Date Samples Received:	6/24/2010	Technician:	Yamecka Smith		
Sample Type:	Jar (Disturbed)	Location:	CR 82 over North Fork Ogeechee		

Sample Number	B1S1	B1S4	B2S2	B3S1	B3S2	B4S2	B4S3	
% Pass 4.75 mm (#4)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
% Pass 2.00 mm (#10)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
% Pass 425 µm (#40)	77.7	95.8	90.9	98.5	81.8	88.2	68.6	
% Pass 250 µm (#60)	70.4	79.4	62.8	92.0	73.1	78.2	58.4	
% Pass 75 µm (#200)	54.6	46.1	28.8	74.7	55.6	49.6	41.5	
% Clay (20 µm)								
% Organics								
Liquid Limits	21.6	21.1	NP	30.2	NP	25.4	NP	
Plasticity Index	7.6	5.4	NP	4.5	NP	0.9	NP	
Unified Classification	**CL**	**SC-SM**	**SM**	**ML**	**ML**	**SM**	**SM**	
Specific Gravity								
Permeability (cm/sec)								
Insitu Moisture	17.6	X	X	X	16.3	X	X	

Sample Number								
% Pass 4.75 mm (#4)								
% Pass 2.00 mm (#10)								
% Pass 425 µm (#40)								
% Pass 250 µm (#60)								
% Pass 75 µm (#200)								
% Clay (20 µm)								
% Organics								
Liquid Limits								
Plasticity Index								
Unified Classification								
Specific Gravity								
Permeability (cm/sec)								
Insitu Moisture								

REMARKS/ ADDITIONAL INFORMATION:
Samples denoted with an "X" is indicative of an insuficient amount of sample material being collected in order to complete testing

Sample Number	Depth Sampled	Blow Counts
B1S1	5.0 - 6.5	1.3.3
B1S4	20.0 - 21.5	3.2.2
B2S2	10.0 - 11.5	1.2.7
B3S1	5.0 - 6.5	0.0.0
B3S2	10.0 - 10.5	60 = 6
B4S2	10.0 - 11.5	2.2.2
B4S3	15.0 - 16.5	2.5.11