GEORGIA DEPARTMENT OF TRANSPORTATION

GDOT Project No: NH000-0575-01(028)

PI No: 713640

JBT Project No. 255717

Bridge No. 37
I-575 REVERSIBLE OVER BIG SHANTY RD

November, 2009

COBB COUNTY

DESIGN CALCULATIONS

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior to the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.

(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.

(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to pertinent factors and without proper regard for their purpose, could lead to erroneous conclusions.

(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.

(d) GTP has no responsibility for the use of this information not under its direct control.

Prepared for Georgia Transportation Partners
Atlanta, Georgia

J.B. TRIMBLE, INC.
2550 Heritage Ct, SE Suite 250
Atlanta, GA 30339-3062
(770) 952-1022

Purpose of Calculation

Bridge design calculations for Bridge #37 were made for costing purposes.

1. Specifications and References

AASHTO 17th Edition, 2002
GDOT Bridge Design Manual, 2008

2. Computer

Computer Type Used: PC
Operating System: Windows XP, Pentium 4, 2GB RAM (min.)

3. Computer Programs (Standard Computer Program)

Excel, Microsoft Office 2003 – JBT Calculation Spreadsheets
BRLLCA, 2008 – Live Load Case Program, by GDOT
BRPIER, 2008 – Pier Design and Analysis, by GDOT
BRSPAN, 2008 – Simple Beam Design and Analysis, by GDOT
LEAP Geomath 08.01.00.01 – Bridge and Structure Geometry, by Bentley Systems Inc.

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Bridge Geometry Output	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	LEAP GEOMATH	08.01.00.01

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	25	25	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bridge Geometry Output
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

PJC
10-13-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Alignment ID: 575align

Start Station: 1131+56.0807

P.I.	North	East	Trans	Spiral-In	Spiral-Out	Radius
1	1,464,967.2430	2,177,372.1042	None			
2	1,467,148.7660	2,177,009.8572	None			

***** End of Report *****

PJC
10-13-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Alignment ID: 575align

Element # 1 Shape: Tangent

	Station	North	East	Direction	Radius
Start:	1131+56.0807	1,464,967.2430	2,177,372.1042	N 9 25 41.06 W	INFINITY
End:	1153+67.4752	1,467,148.7660	2,177,009.8572	N 9 25 41.06 W	INFINITY
Length:	2,211.3945		Delta:	0 00 00.00	

***** End of Report *****

PJC 10/13/09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Profile ID: 575vert

VPI	Station	Elevation	Trans	Parabola-1	Parabola-2
1	1139+00.0000	964.4000	None		
2	1143+00.0000	968.6000	None		

***** End of Report *****

PJC 10-13-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Profile ID: 575vert

Elem		Start	End	Apex		Transition
1	Sta	1139+00.0000	1143+00.0000	None	Length	400.0000
	Elev	964.4000	968.6000	None	Type	Tangent
	Grade	0.0105	0.0105			

***** End of Report *****

PJC 10-14-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37-2.gmd

XSection ID: 575xsect

SLOPE BREAK POINTS: 6

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1139+00.0000	0.0000	1	-47.7708		
				-0.010400	BAR
		2	-46.1458		
				-0.010400	IFBAR-HOVB
		3	-20.1458		
				-0.010400	HOVBAR
		4	-18.1458		
				-0.010400	HOVB-CUTLN
		5	-4.1667		
				-0.010400	CUTLN-HOVB
		6	0.0000		

SLOPE BREAK POINTS: 6

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1143+00.0000	0.0000	1	-42.0542		
				-0.010400	BAR
		2	-40.4292		
				-0.010400	IFBAR-HOVB
		3	-14.4292		
				-0.010400	HOVBAR
		4	-12.4292		
				-0.010400	HOVB-CUTLN
		5	-4.1667		
				-0.010400	CUTLN-HOVB
		6	0.0000		

***** End of Report *****

PJC
10-14-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
, , | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

XSection ID: E-575NBxsect EXISTING NB

SLOPE BREAK POINTS: 5

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1140+00.0000	0.0000	1	-7.4167		
				-0.010400	
		2	-5.2500		
				-0.010400	
		3	0.0000		
				-0.010400	
		4	35.2500		
				-0.010400	
		5	37.4167		

SLOPE BREAK POINTS: 5

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1142+50.0000	0.0000	1	-7.4167		
				-0.010400	
		2	-5.2500		
				-0.010400	
		3	0.0000		
				-0.010400	
		4	35.2500		
				-0.010400	
		5	37.4167		

***** End of Report *****

Feet Datafile Modification Date: 10/13/2009 14:02

PJC
10-14-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
, , | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

XSection ID: E-575SBxsect EXIST. SB

SLOPE BREAK POINTS: 5

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1140+00.0000	-64.0000	1	-37.4167		
				0.010400	
		2	-35.2500		
				0.010400	
		3	0.0000		
				0.010400	
		4	5.2500		
				0.010400	
		5	7.4167		

SLOPE BREAK POINTS: 5

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
1142+50.0000	-64.0000	1	-37.4167		
				0.010400	
		2	-35.2500		
				0.010400	
		3	0.0000		
				0.010400	
		4	5.2500		
				0.010400	
		5	7.4167		

***** End of Report *****

Feet Datafile Modification Date: 10/13/2009 14:02

PJC
10-13-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
, , | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/13/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Alignment ID: BigShalign

Start Station: 247+49.6578

P.I.	North	East	Trans	Spiral-In	Spiral-Out	Radius
1	1,465,828.7390	2,176,980.0290	None			
2	1,465,990.2796	2,177,394.8591	Arc			1,000.0000
3	1,465,940.8972	2,177,671.5395	None			

***** End of Report *****

Feet Datafile Modification Date: 10/13/2009 14:02

PJC 10-13-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Alignment ID: BigShalign

Element # 1 Shape: Tangent

	Station	North	East	Direction	Radius
Start:	247+49.6578	1,465,828.7390	2,176,980.0290	N 68 43 24.13 E	INFINITY
End:	249+13.7785	1,465,888.2937	2,177,132.9632	N 68 43 24.13 E	INFINITY
Length:	164.1207		Delta:	0 00 00.00	

Transition Point: TC Station: 249+13.7785

Element # 2 Shape: Arc Radius 1,000.0000

	Station	North	East	Direction	Radius
Start:	249+13.7785	1,465,888.2937	2,177,132.9632	N 68 43 24.13 E	1,000.0000
End:	254+61.7477	1,465,940.8972	2,177,671.5394	S 79 52 49.11 E	1,000.0000
Length:	547.9692	Sense: Right	Delta:	31 23 46.76	

Transition Point: CT Station: 254+61.7477

Element # 3 Shape: Tangent

	Station	North	East	Direction	Radius
Start:	254+61.7477	1,465,940.8972	2,177,671.5394	S 79 52 49.14 E	INFINITY
End:	254+61.7478	1,465,940.8972	2,177,671.5395	S 79 52 49.14 E	INFINITY
Length:	0.0001		Delta:	0 00 00.00	

***** End of Report *****

PJC 10-13-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Profile ID: BigShvert

VPI	Station	Elevation	Trans	Parabola-1	Parabola-2
1	248+00.0000	944.0576	None		
2	248+50.0000	944.2345	None		
3	249+00.0000	944.3917	None		
4	249+50.0000	944.5492	None		
5	250+00.0000	944.6963	None		
6	250+50.0000	944.8132	None		
7	251+00.0000	944.8383	None		
8	251+50.0000	944.9736	None		
9	252+00.0000	945.1654	None		

***** End of Report *****

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

Profile ID: BigShvert

Elem		Start	End	Apex		Transition
1	Sta	248+00.0000	248+50.0000	None	Length	50.0000
	Elev	944.0576	944.2345	None	Type	Tangent
	Grade	0.0035	0.0035			
3	Sta	248+50.0000	249+00.0000	None	Length	50.0000
	Elev	944.2345	944.3917	None	Type	Tangent
	Grade	0.0031	0.0031			
5	Sta	249+00.0000	249+50.0000	None	Length	50.0000
	Elev	944.3917	944.5492	None	Type	Tangent
	Grade	0.0032	0.0032			
7	Sta	249+50.0000	250+00.0000	None	Length	50.0000
	Elev	944.5492	944.6963	None	Type	Tangent
	Grade	0.0029	0.0029			
9	Sta	250+00.0000	250+50.0000	None	Length	50.0000
	Elev	944.6963	944.8132	None	Type	Tangent
	Grade	0.0023	0.0023			
11	Sta	250+50.0000	251+00.0000	None	Length	50.0000
	Elev	944.8132	944.8383	None	Type	Tangent
	Grade	0.0005	0.0005			
13	Sta	251+00.0000	251+50.0000	None	Length	50.0000
	Elev	944.8383	944.9736	None	Type	Tangent
	Grade	0.0027	0.0027			
15	Sta	251+50.0000	252+00.0000	None	Length	50.0000
	Elev	944.9736	945.1654	None	Type	Tangent
	Grade	0.0038	0.0038			

***** End of Report *****

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

XSection ID: BigShxsect

SLOPE BREAK POINTS: 3

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
248+00.0000	0.0000	1	-24.0000		
				-0.080000	
		2	0.0000		
				-0.080000	
		3	24.0000		

SLOPE BREAK POINTS: 3

STATION	PGL-OFFSET	POINT	DIST-FR-PGL	GRADE	DESCRIPTION
252+00.0000	0.0000	1	-24.0000		
				-0.080000	
		2	0.0000		
				-0.080000	
		3	24.0000		

***** End of Report *****

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

COORDINATE REPORT

Station Ref: 575

ID	STATION	OFFSET (ft)	NORTH (ft)	EAST (ft)	575 ELEV (ft)
B1&PGL	1140+37.2500	0.0000	1,465,836.5095	2,177,227.7605	965.8411
B2&PGL	1140+78.2500	0.0000	1,465,876.9557	2,177,221.0443	966.2716
B3&PGL	1141+58.2500	0.0000	1,465,955.8750	2,177,207.9395	967.1116
B4&PGL	1141+94.2500	0.0000	1,465,991.3887	2,177,202.0424	967.4896
B1&EOD	1140+29.7334	-45.9167	1,465,821.5728	2,177,183.6953	966.2397
B4&EOD	1141+87.1015	-43.6677	1,465,977.1837	2,177,160.1356	967.8687
BScl&575cl	1141+17.9083	0.0000	1,465,916.0782	2,177,214.5479	966.6880

Intersection: 0.0000ft LT BigShalign 249+99.9914 = 0.0000ft RT 575align 1141+17.9083

E-CL&E-B1 R	1140+32.0116	-32.0000	1,465,826.0999	2,177,197.0508	966.1189
E-CL&E-B4R	1141+89.0116	-32.0000	1,465,980.9791	2,177,171.3328	967.7674

***** End of Report *****

PJC 10-14/09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

SPAN AND GIRDER REPORT

SPAN ID: B1-B2 ROADWAY: 575 ALIGNMENT: 575align NUMBER OF GIRDERS: 5
STARTING PIER: B1 STATION: 1140+37.2500 AZM: N 71.274984 SKEW: -9.296944
ENDING PIER: B2 STATION: 1140+78.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
S1-G1	3.0474	1.5770	N 351.390720	41.1003	38.8148	INFINITY
S1-G2	11.6531	9.5876	N 350.571928	41.0000	38.7201	INFINITY
S1-G3	20.2663	18.2008	N 350.571928	41.0000	38.7201	INFINITY
S1-G4	28.8794	26.8139	N 350.571928	41.0000	38.7201	INFINITY
S1-G5	37.4925	35.4270	N 350.571928	41.0000	38.7201	INFINITY

***** End of Report *****

PJC 10-14-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

SPAN AND GIRDER REPORT

SPAN ID: B2-B3 ROADWAY: 575 ALIGNMENT: 575align NUMBER OF GIRDERS: 5
STARTING PIER: B2 STATION: 1140+78.2500 AZM: N 71.274984 SKEW: -9.296944
ENDING PIER: B3 STATION: 1141+58.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
S2-G1	1.5770	1.7383	N 351.390720	80.1958	78.6721	INFINITY
S2-G2	9.5876	8.5876	N 350.571928	80.0000	78.4800	INFINITY
S2-G3	18.2008	17.2008	N 350.571928	80.0000	78.4800	INFINITY
S2-G4	26.8139	25.8139	N 350.571928	80.0000	78.4800	INFINITY
S2-G5	35.4270	34.4270	N 350.571928	80.0000	78.4800	INFINITY

***** End of Report *****

PJC 10-14-09

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

SPAN AND GIRDER REPORT

SPAN ID: B3-B4 ROADWAY: 575 ALIGNMENT: 575align NUMBER OF GIRDERS: 5
STARTING PIER: B3 STATION: 1141+58.2500 AZM: N 71.274984 SKEW: -9.296944
ENDING PIER: B4 STATION: 1141+94.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
S3-G1	1.7383	3.0474	N 351.390720	36.0881	33.8026	INFINITY
S3-G2	8.5876	9.3741	N 350.571928	36.0000	33.7201	INFINITY
S3-G3	17.2008	17.9873	N 350.571928	36.0000	33.7201	INFINITY
S3-G4	25.8139	26.6004	N 350.571928	36.0000	33.7201	INFINITY
S3-G5	34.4270	35.2135	N 350.571928	36.0000	33.7201	INFINITY

***** End of Report *****

PJG 10-14-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
, , | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

EXISTING

SPAN AND GIRDER REPORT

SPAN ID: E-B1RT-E-B2RT ROADWAY: E-575NB ALIGNMENT: 575align NUMBER OF GIRDERS: 2
STARTING PIER: E-B1RT STATION: 1140+37.2500 AZM: N 71.274984 SKEW: -9.296944
ENDING PIER: E-B2RT STATION: 1140+78.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
E-S1-G1R	3.2054	1.2403	N 350.571928	41.0000	38.9734	INFINITY
E-S1-G6R	42.0489	40.0838	N 350.571928	41.0000	38.9734	INFINITY

***** End of Report *****

Existing plans
38.974'

Feet Datafile Modification Date: 10/14/2009 08:35

PJC 10-14-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
, , | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

EXISTING

SPAN AND GIRDER REPORT

SPAN ID: E-B2RT-E-B3RT ROADWAY: E-575NB ALIGNMENT: 575align NUMBER OF GIRDERS: 2
STARTING PIER: E-B2RT STATION: 1140+78.2500 AZM: N 71.274984 SKEW: -9.296944
ENDING PIER: E-B3RT STATION: 1141+58.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
E-S2-G1R	1.2403	1.2403	N 350.571928	80.0000	78.4800	INFINITY
E-S2-G6R	40.0838	40.0838	N 350.571928	80.0000	78.4800	INFINITY

***** End of Report *****

Existing plans
78.48

Feet Datafile Modification Date: 10/14/2009 08:35

PJC 10-14-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
, , | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

EXISTING

SPAN AND GIRDER REPORT

SPAN ID: E-B3RT-E-B4RT ROADWAY: E-575NB ALIGNMENT: 575align NUMBER OF GIRDERS: 2
STARTING PIER: E-B3RT STATION: 1141+58.2500 AZM: N 71.274984 SKEW: -9.296944
ENDING PIER: E-B4RT STATION: 1141+94.2500 AZM: N 71.274984 SKEW: -9.296944

GIRDER	END POINT DISTANCES ALONG PIER CL			LENGTH		
	START	END	AZIMUTH	CL - CL	SEAT-SEAT	RADIUS
E-S3-G1R	1.2403	3.2054	N 350.571928	36.0000	33.9734	INFINITY
E-S3-G6R	40.0838	42.0489	N 350.571928	36.0000	33.9734	INFINITY

***** End of Report *****

Existing Plans
33.974'

Feet Datafile Modification Date: 10/14/2009 08:35

PJC 10-14-09

Hatch Mott MacDonald Phone: | Sheet 1 of 1
, , | Job No:
Program: LEAP® GEOMATH® Ver: 08.01.00.01 (c) Bentley Systems, Inc | Date: 10/14/2009
Phone: 800-778-4277 Web-Site: www.bentley.com | By:

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37.gmd

CLEARANCE REPORT

SPAN : B2-B3 SPAN ROADWAY: 575

CLEAR ROADWAY: BigSh

PIER ID	HORIZONTAL LT CLR	HORIZONTAL RT CLR
B2	14.46	14.04
B3	-13.45	-14.32

ID	MIN VERTICAL CLR	STATION	OFFSET	REF NODE NUMBER
S2-G1	17.02	249+62.5148	-24.00	10
S2-G2	16.94	249+69.4087	-24.00	10
S2-G3	16.84	249+77.8000	-24.00	10
S2-G4	16.74	249+86.1812	-24.00	10
S2-G5	16.64	249+94.5528	-24.00	10

→ Higher than existing 16.5'

ID	MAX VERTICAL CLR	STATION	OFFSET	REF NODE NUMBER
S2-G1	20.39	249+52.8993	24.00	9
S2-G2	20.30	249+60.8691	24.00	9
S2-G3	20.20	249+69.6842	24.00	9
S2-G4	20.09	249+78.4875	24.00	9
S2-G5	19.99	249+87.2798	24.00	9

LEFT EXTERIOR GIRDER ID: S2-G1
RIGHT EXTERIOR GIRDER ID: S2-G5

LEFT EDGE OF DECK STATION	OFFSET	ALONG	CLR	RIGHT EDGE OF DECK STATION	OFFSET	ALONG	CLR
1140+70.8295	-45.33	-1.30	-3.00	1140+78.2500	0.00	0.70	8.92
1141+10.9233	-44.76	38.80	-3.00	1141+18.2500	0.00	40.70	8.92
1141+51.0171	-44.18	78.90	-3.00	1141+58.2500	0.00	80.70	8.92

MINIMUM CLEARANCE: LT -3.00 RT 8.92
MAXIMUM CLEARANCE: LT -3.00 RT 8.92

***** End of Report *****

Feet Datafile Modification Date: 10/14/2009 08:35

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37-2.gmd

DECK ELEVATIONS ALONG OFFSETS (EQUAL SPACINGS)

SPAN ID: B1-B2 ROADWAY: 575 BETWEEN PIERS : B1 - B2 SPACES = 2

OFFSET	DISTANCE	STATION	OFFSET	ELEVATION
1 EOD	41.1003			
		1140+29.7334	-45.9167	966.2397
		1140+50.2814	-45.6231	966.4524
		1140+70.8295	-45.3294	966.6651
2 GUTTER	41.1003			
		1140+30.0000	-44.2879	966.2256
		1140+50.5481	-43.9942	966.4383
		1140+71.0961	-43.7006	966.6510
3	41.1003			
		1140+34.2662	-18.2269	965.9994
		1140+54.8143	-17.9333	966.2121
		1140+75.3624	-17.6396	966.4248
4	41.1003			
		1140+34.5944	-16.2222	965.9820
		1140+55.1425	-15.9286	966.1947
		1140+75.6905	-15.6349	966.4074
5 CUTLINE	41.0000 ✓			
		1140+36.5679	-4.1667	965.8773
		1140+57.0679	-4.1667	966.0925
		1140+77.5679	-4.1667	966.3078
6 PGL	41.0000			
		1140+37.2500	0.0000	965.8411
		1140+57.7500	0.0000	966.0564
		1140+78.2500	0.0000	966.2716

***** End of Report *****

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37-2.gmd

DECK ELEVATIONS ALONG OFFSETS (EQUAL SPACINGS)

SPAN ID: B2-B3 ROADWAY: 575 BETWEEN PIERS : B2 - B3 SPACES = 2

OFFSET	DISTANCE	STATION	OFFSET	ELEVATION
1 EOD	80.1958			
		1140+70.8295	-45.3294	966.6651
		1141+10.9233	-44.7564	967.0802
		1141+51.0171	-44.1834	967.4952
2 GUTTER	80.1958			
		1140+71.0961	-43.7006	966.6510
		1141+11.1899	-43.1276	967.0660
		1141+51.2838	-42.5546	967.4810
3	80.1958			
		1140+75.3624	-17.6396	966.4248
		1141+15.4562	-17.0666	966.8398
		1141+55.5500	-16.4936	967.2548
4	80.1958			
		1140+75.6905	-15.6349	966.4074
		1141+15.7843	-15.0619	966.8224
		1141+55.8781	-14.4889	967.2374
5 CUTLINE	80.0000			
		1140+77.5679	-4.1667	966.3078
		1141+17.5679	-4.1667	966.7278
		1141+57.5679	-4.1667	967.1478
6 PGL	80.0000			
		1140+78.2500	0.0000	966.2716
		1141+18.2500	0.0000	966.6916
		1141+58.2500	0.0000	967.1116

***** End of Report *****

Filename: N:\TRA\255717\Eng\BR37\Geomath\I-575 BR37-2.gmd

DECK ELEVATIONS ALONG OFFSETS (EQUAL SPACINGS)

SPAN ID: B3-B4 ROADWAY: 575 BETWEEN PIERS : B3 - B4 SPACES = 2

OFFSET	DISTANCE	STATION	OFFSET	ELEVATION
1 EOD	36.0881			
		1141+51.0171	-44.1834	967.4952
		1141+69.0593	-43.9255	967.6819
		1141+87.1015	-43.6677	967.8687
2 GUTTER	36.0881			
		1141+51.2838	-42.5546	967.4810
		1141+69.3260	-42.2967	967.6678
		1141+87.3682	-42.0389	967.8546
3	36.0881			
		1141+55.5500	-16.4936	967.2548
		1141+73.5922	-16.2358	967.4416
		1141+91.6344	-15.9779	967.6283
4	36.0881			
		1141+55.8781	-14.4889	967.2374
		1141+73.9204	-14.2311	967.4242
		1141+91.9626	-13.9732	967.6109
5 CUTLINE	36.0000			
		1141+57.5679	-4.1667	967.1478
		1141+75.5679	-4.1667	967.3368
		1141+93.5679	-4.1667	967.5258
6 PGL	36.0000			
		1141+58.2500	0.0000	967.1116
		1141+76.2500	0.0000	967.3006
		1141+94.2500	0.0000	967.4896

***** End of Report *****

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Slab Design	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Slab Design calculations are included for spans 1&3, and span 2.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	10	10	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Slab Design
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JBT

SPAN 1 & 3

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/18/2009**

PRELIMINARY INFORMATION

INTERMEDIATE SLAB THICKNESS =	**8.500**	IN
OVERHANG SLAB THICKNESS =	**8.500**	IN
GIRDER SPACING =	**8.500**	FT
NUMBER OF GIRDERS =	**6**	
OVERHANG WIDTH =	**3.000**	FT
TOP FLANGE WIDTH =	**10.500**	IN
CONCRETE STRENGTH, f'c =	**3500**	PSI
STEEL STRENGTH, fy =	**60000**	PSI
PARAPET HEIGHT =	**2.667**	FT
PARAPET WIDTH =	**1.625**	FT
PARAPET AREA =	**2.700**	SF
C.G. FROM OUTSIDE =	**0.667**	FT
TOP BAR CLEARANCE =	**2.750**	IN
BOTTOM BAR CLEARANCE =	**1.000**	IN
GROOVED DEPTH =	**0.250**	IN
DESIGN SPEED =	**50.00**	MPH (IF CENTRIFUGAL CONSIDERED)
RADIUS =	**0.00**	FT (IF CENTRIFUGAL CONSIDERED)
WHEEL LOAD =	**16.00**	KIPS **HS20**
IMPACT FACTOR =	**1.30**	
ADDITIONAL LOAD =	**30.00**	PSF
RAILING LOAD =	**10.00**	KIP AT TOP OF PARAPET

BAR DETAILS		
SIZE	AREA	WEIGHT
Not Needed	0	0
No. 3	0.11	0.376
No. 4	0.20	0.668
No. 5	0.31	1.043
No. 6	0.44	1.502
No. 7	0.60	2.044
No. 8	0.79	2.670
No. 9	1.00	3.400
No. 10	1.27	4.300
No. 11	1.56	5.310
No. 14	2.25	7.650
No. 18	4.00	13.600

INTERMEDIATE SLAB DESIGN

BEAM TYPE: **STEEL** (TB, STEEL, PSC, BULB-T)

EFFECTIVE SPAN LENGTH = 8.063 FT *AASHTO 3.24.1.2*

DEAD LOAD

SLAB D.L. =	0.106	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
TOTAL D.L.=	0.136	KIP / FT / LF

DEAD LOAD MOMENT = 1.3 * (WT DL) * (SPAN)^2 / 10 = 1.152 KIP-FT / LF

LIVE LOAD

WHEEL LOAD = 16.00 KIPS

CONT. FACTOR = 0.80
IMPACT = 1.30

LIVE LOAD MOMENT = 2.17 * ((S + 2)/32) * P(LL + I) * 0.8 = 11.355 KIP-FT / LF *AASHTO 3.24.3.1*

CENTRIFUGAL LOAD *AASHTO 3.10.1*

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * ((S + 2)/32) * P (LL+ I) * 0.8 * C = 0.000 KIP-FT / LF *AASHTO TABLE 3.22.1A*

TOTAL DESIGN MOMENT (Ø Mu) = 12.507 KIP-FT / LF = 150.08 K-IN / LF

FLEXURE STRENGTH *AASHTO 8.16.3.2*

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a =	1.681	As				
d_{top} =	5.438	IN	USE **5 BAR**	As =	0.31	IN^2 /LF
d_{bot} =	6.938	IN	USE **5 BAR**	As =	0.31	IN^2 /LF

TOP STEEL

293.625 As - 45.38 As^2 = 150.08 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.750 IN As = 0.65 IN^2 /LF

Ø Mn = 170.97 K-IN / LF ≥ Ø Mu = 150.08 K-IN / LF OK

BOTTOM STEEL

374.625 As - 45.38 As^2 = 150.08 K-IN / LF

BOT BAR = NO. 5 SPACED AT 5.750 IN As = 0.65 IN^2 /LF

Ø Mn = 223.37 K-IN / LF ≥ Ø Mu = 150.08 K-IN / LF OK

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/18/2009**

SPAN 1 & 3

OVERHANG SLAB DESIGN

EFFECTIVE SPAN LENGTH = 2.563 FT *AASHTO 3.24.5.1*

DEAD LOAD

SLAB D.L. =	0.106	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
PARAPET D.L.=	0.405	KIP/FT/LF

DL MOMENT @ FLANGE:

SLAB MOM =	0.349	KIP-FT/LF
ADD'L MOM =	0.013	KIP-FT/LF
PARAPET MOM =	0.768	KIP-FT/LF
TOTAL MOM =	1.130	KIP-FT/LF

DL MOMENT @ EDGE OF BARRIER:

SLAB MOM =	0.140	KIP-FT/LF
ADD'L MOM =	0.000	KIP-FT/LF
PARAPET MOM =	0.388	KIP-FT/LF
TOTAL MOM =	0.528	KIP-FT/LF

DEAD LOAD MOMENT @ FLANGE= 1.3 * TOTAL MOMENT = 1.469 KIP-FT / LF
D.L. MOMENT @ EDGE OF BARRIER= 1.3 * TOTAL MOMENT = 0.687 KIP-FT / LF

LIVE LOAD

WHEEL LOAD	16.00	KIPS
IMPACT =	1.30	
MOM ARM (X)=	0.38	FT
E = 0.8 * X + 3.75 =	4.05	FT

LIVE LOAD MOMENT = 2.17 * (P(LL + I) / E) * X = 4.179 KIP-FT / LF *AASHTO 3.24.5.1.1*

CENTRIFUGAL LOAD

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * (P(LL + I) / E) * X * C = 0.000 KIP-FT / LF

RAILING LOAD *AASHTO 3.24.5.2*

RAILING LOAD = 10.00 KIPS

RAILING LOAD @ FLANGE:

MOM ARM (H) =	3.139	FT
DISTANCE (X) =	1.90	FT
E = 0.8 * X + 5.00 =	6.52	FT

RAILING LOAD @ EDGE OF BARRIER:

MOM ARM (H) =	3.14	FT
DISTANCE (X) =	0.96	FT
E = 0.8 * X + 5.00 =	5.77	FT

RAIL MOM @ FLANGE= 2.17 * (P_{rail}/ E) * H = 10.452 KIP-FT / LF

RAIL MOM @ EDGE OF BARRIER= 2.17 * (P_{rail}/ E) * H = 11.812 KIP-FT / LF

SUMMARY OF MOMENTS:

DL + LL @ FLANGE = 5.648 KIP-FT / LF
DL + RAIL @ FLANGE = 11.921 KIP-FT / LF
DL + RAIL @ BARRIER = 12.499 KIP-FT / LF

TOTAL DESIGN MOMENT (Ø Mu) = 12.499 KIP-FT / LF

FLEXURE STRENGTH *AASHTO 8.16.3.2*

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a = 1.681 As

d_{top} = 5.438 IN USE **5 BAR** As = 0.31 IN^2 /LF

TOP STEEL

293.625 As - 45.38 As^2 = 149.98 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.750 IN As = 0.65 IN^2 /LF

Ø Mn = 170.97 K-IN / LF ≥ Ø Mu = 149.98 K-IN / LF OK

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/15/2009**

SPAN 2

PRELIMINARY INFORMATION

INTERMEDIATE SLAB THICKNESS =	**8.500**	IN
OVERHANG SLAB THICKNESS =	**8.500**	IN
GIRDER SPACING =	**8.500**	FT
NUMBER OF GIRDERS =	**6**	
OVERHANG WIDTH =	**3.000**	FT
TOP FLANGE WIDTH =	**12.000**	IN
CONCRETE STRENGTH, f'c =	**3500**	PSI
STEEL STRENGTH, fy =	**60000**	PSI
PARAPET HEIGHT =	**2.667**	FT
PARAPET WIDTH =	**1.625**	FT
PARAPET AREA =	**2.700**	SF
C.G. FROM OUTSIDE =	**0.667**	FT
TOP BAR CLEARANCE =	**2.750**	IN
BOTTOM BAR CLEARANCE =	**1.000**	IN
GROOVED DEPTH =	**0.250**	IN
DESIGN SPEED =	**50.00**	MPH (IF CENTRIFUGAL CONSIDERED)
RADIUS =	**0.00**	FT (IF CENTRIFUGAL CONSIDERED)
WHEEL LOAD =	**16.00**	KIPS **HS20**
IMPACT FACTOR =	**1.30**	
ADDITIONAL LOAD =	**30.00**	PSF
RAILING LOAD =	**10.00**	KIP AT TOP OF PARAPET

BAR DETAILS		
SIZE	AREA	WEIGHT
Not Needed	0	0
No. 3	0.11	0.376
No. 4	0.20	0.668
No. 5	0.31	1.043
No. 6	0.44	1.502
No. 7	0.60	2.044
No. 8	0.79	2.670
No. 9	1.00	3.400
No. 10	1.27	4.300
No. 11	1.56	5.310
No. 14	2.25	7.650
No. 18	4.00	13.600

INTERMEDIATE SLAB DESIGN

BEAM TYPE: **STEEL** (TB, STEEL, PSC, BULB-T)

EFFECTIVE SPAN LENGTH = 8.000 FT *AASHTO 3.24.1.2*

DEAD LOAD

SLAB D.L. =	0.106	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
TOTAL D.L.=	0.136	KIP / FT / LF

DEAD LOAD MOMENT = 1.3 * (WT DL) * (SPAN)^2 / 10 = 1.134 KIP-FT / LF

LIVE LOAD

WHEEL LOAD = 16.00 KIPS

CONT. FACTOR = 0.80
IMPACT = 1.30

LIVE LOAD MOMENT = 2.17 * ((S + 2)/32) * P(LL + I) * 0.8 = 11.284 KIP-FT / LF *AASHTO 3.24.3.1*

CENTRIFUGAL LOAD *AASHTO 3.10.1*

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * ((S + 2)/32) * P (LL+ I) * 0.8 * C = 0.000 KIP-FT / LF *AASHTO TABLE 3.22.1A*

TOTAL DESIGN MOMENT (Ø Mu) = 12.418 KIP-FT / LF = 149.01 K-IN / LF

FLEXURE STRENGTH *AASHTO 8.16.3.2*

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a =	1.681	As				
d_{top} =	5.438	IN	USE **5 BAR**	As =	0.31	IN^2 /LF
d_{bot} =	6.938	IN	USE **5 BAR**	As =	0.31	IN^2 /LF

TOP STEEL

293.625 As - 45.38 As^2 = 149.01 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN^2 /LF

Ø Mn = 167.73 K-IN / LF ≥ Ø Mu = 149.01 K-IN / LF OK

BOTTOM STEEL

374.625 As - 45.38 As^2 = 149.01 K-IN / LF

BOT BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN^2 /LF

Ø Mn = 219.02 K-IN / LF ≥ Ø Mu = 149.01 K-IN / LF OK

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/15/2009**

SPAN 2

OVERHANG SLAB DESIGN

EFFECTIVE SPAN LENGTH = 2.500 FT *AASHTO 3.24.5.1*

DEAD LOAD

SLAB D.L. =	0.106	KIP/FT/LF
ADDITIONAL D.L. =	0.030	KIP/FT/LF
PARAPET D.L.=	0.405	KIP/FT/LF

DL MOMENT @ FLANGE:

SLAB MOM =	0.332	KIP-FT/LF
ADD'L MOM =	0.011	KIP-FT/LF
PARAPET MOM =	0.743	KIP-FT/LF
TOTAL MOM =	1.086	KIP-FT/LF

DL MOMENT @ EDGE OF BARRIER:

SLAB MOM =	0.140	KIP-FT/LF
ADD'L MOM =	0.000	KIP-FT/LF
PARAPET MOM =	0.388	KIP-FT/LF
TOTAL MOM =	0.528	KIP-FT/LF

DEAD LOAD MOMENT @ FLANGE= 1.3 * TOTAL MOMENT = 1.412 KIP-FT / LF
D.L. MOMENT @ EDGE OF BARRIER= 1.3 * TOTAL MOMENT = 0.687 KIP-FT / LF

LIVE LOAD

WHEEL LOAD 16.00 KIPS

IMPACT =	1.30	
MOM ARM (X)=	0.38	FT
E = 0.8 * X + 3.75 =	4.05	FT

LIVE LOAD MOMENT = 2.17 * (P(LL + I) / E) * X = 4.179 KIP-FT / LF *AASHTO 3.24.5.1.1*

CENTRIFUGAL LOAD

C = 6.68 * S^2/ R = 0.000 FRACTION OF LIVE LOAD

CENTRIFUGAL FORCE MOMENT = 1.3 * (P(LL + I) / E) * X * C = 0.000 KIP-FT / LF

RAILING LOAD *AASHTO 3.24.5.2*

RAILING LOAD = 10.00 KIPS

RAILING LOAD @ FLANGE:

MOM ARM (H) =	3.139	FT
DISTANCE (X) =	1.83	FT
E = 0.8 * X + 5.00 =	6.47	FT

RAILING LOAD @ EDGE OF BARRIER:

MOM ARM (H) =	3.14	FT
DISTANCE (X) =	0.96	FT
E = 0.8 * X + 5.00 =	5.77	FT

RAIL MOM @ FLANGE= 2.17 * (P_{rail}/ E) * H = 10.533 KIP-FT / LF

RAIL MOM @ EDGE OF BARRIER= 2.17 * (P_{rail}/ E) * H = 11.812 KIP-FT / LF

SUMMARY OF MOMENTS:

DL + LL @ FLANGE = 5.591 KIP-FT / LF
DL + RAIL @ FLANGE = 11.945 KIP-FT / LF
DL + RAIL @ BARRIER = 12.499 KIP-FT / LF

TOTAL DESIGN MOMENT (Ø Mu) = 12.499 KIP-FT / LF

FLEXURE STRENGTH *AASHTO 8.16.3.2*

Ø Mn > Mu Ø = 0.90

Ø Mn = Ø * [As * fy * (d - a/2)] where a = As * fy / [0.85 * f'c * b]

a = 1.681 As

d_{top} = 5.438 IN USE **5 BAR** As = 0.31 IN^2 /LF

TOP STEEL

293.625 As - 45.38 As^2 = 149.98 K-IN / LF

TOP BAR = NO. 5 SPACED AT 5.875 IN As = 0.63 IN^2 /LF

Ø Mn = 167.73 K-IN / LF ≥ Ø Mu = 149.98 K-IN / LF OK

SERVICE LOAD DESIGN OF BRIDGE SLAB

Georgia Department of Transportation 13-MAY-04
Office of Bridge and Structural Design 07:49:26
October 2003

WHEEL LOAD (Kips)	fc (ksi)	fs (ksi)	n	SLAB COVER (in)	FUTURE PAVING (kips/ft^2)	CONTINUITY FACTOR
16.00	1.400	24.000	9	2.750	0.030	0.8

EFFECTIVE SPAN LENGTH (ft-in)	SLAB THICKNESS MINIMUM (in)	SLAB THICKNESS ACTUAL (in)	SIZE AND SPACING OF MAIN REINFORCEMENT (in)	DISTRUBUTION REINFORCEMENT MIDDLE HALF	DISTRUBUTION REINFORCEMENT OUTER QUARTERS
6 - 6	7.8889	8.000	# 5 at 6.500	7 -# 4	4 -# 4
6 - 7	7.9167	8.000	# 5 at 6.375	7 -# 4	4 -# 4
6 - 8	7.9445	8.000	# 5 at 6.375	7 -# 4	4 -# 4
6 - 9	7.9722	8.000	# 5 at 6.250	7 -# 4	4 -# 4
6 - 10	7.9998	8.000	# 5 at 6.250	7 -# 4	4 -# 4
6 - 11	8.0309	8.125	# 5 at 6.250	7 -# 4	4 -# 4
7 - 0	8.0585	8.125	# 5 at 6.250	7 -# 4	4 -# 4
7 - 1	8.0860	8.125	# 5 at 6.125	8 -# 4	4 -# 4
7 - 2	8.1134	8.125	# 5 at 6.125	8 -# 4	4 -# 4
7 - 3	8.1446	8.250	# 5 at 6.125	8 -# 4	4 -# 4
7 - 4	8.1719	8.250	# 5 at 6.125	8 -# 4	4 -# 4
7 - 5	8.1992	8.250	# 5 at 6.000	8 -# 4	4 -# 4
7 - 6	8.2265	8.250	# 5 at 6.000	8 -# 4	4 -# 4
7 - 7	8.2577	8.375	# 5 at 6.000	8 -# 4	4 -# 4
7 - 8	8.2849	8.375	# 5 at 6.000	8 -# 4	4 -# 4
7 - 9	8.3121	8.375	# 5 at 5.875	9 -# 4	6 -# 4
7 - 10	8.3392	8.375	# 5 at 5.875	9 -# 4	6 -# 4
7 - 11	8.3662	8.375	# 5 at 5.750	9 -# 4	6 -# 4
8 - 0	8.3976	8.500	# 5 at 5.875	9 -# 4	6 -# 4
8 - 1	8.4246	8.500	# 5 at 5.750	9 -# 4	6 -# 4
8 - 2	8.4515	8.500	# 5 at 5.750	9 -# 4	6 -# 4
8 - 3	8.4784	8.500	# 5 at 5.625	9 -# 4	6 -# 4
8 - 4	8.5099	8.625	# 5 at 5.750	9 -# 4	6 -# 4
8 - 5	8.5367	8.625	# 5 at 5.625	10 -# 4	6 -# 4
8 - 6	8.5636	8.625	# 5 at 5.625	10 -# 4	6 -# 4
8 - 7	8.5903	8.625	# 5 at 5.500	10 -# 4	6 -# 4
8 - 8	8.6170	8.625	# 5 at 5.500	10 -# 4	6 -# 4
8 - 9	8.6487	8.750	# 5 at 5.625	10 -# 4	6 -# 4
8 - 10	8.6754	8.750	# 5 at 5.500	10 -# 4	6 -# 4
8 - 11	8.7020	8.750	# 5 at 5.500	11 -# 4	6 -# 4
9 - 0	8.7286	8.750	# 5 at 5.375	11 -# 4	6 -# 4
9 - 1	8.7605	8.875	# 5 at 5.500	11 -# 4	6 -# 4
9 - 2	8.7871	8.875	# 5 at 5.375	11 -# 4	6 -# 4
9 - 3	8.8136	8.875	# 5 at 5.375	11 -# 4	6 -# 4
9 - 4	8.8401	8.875	# 5 at 5.375	11 -# 4	6 -# 4
9 - 5	8.8665	8.875	# 5 at 5.250	12 -# 4	6 -# 4

Span 1
8'-6"
-1'-6"
+2" (12"/4)
8'-0"

SECTION IV – CONCRETE AND REINFORCING STEEL

BRIDGE DECK DESIGN No. 4.01

When designing bridge decks, the following criteria shall be applied:

For cast-in-place decks north of the fall line:

1. Specify Class AA concrete except for post-tensioned concrete boxes which shall have Class AA as a minimum, but may require a higher 28-day strength.
2. **Specify 2 ¾" (70 mm) cover to top bar reinforcement for bridge decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000.**
3. Specify 2 ½" (65 mm) cover to top bar reinforcement for bridge decks on all other routes.

For cast-in-place decks south of the fall line:

1. Specify Class AA concrete except for post-tensioned concrete boxes which shall have Class AA as a minimum, but may require a higher 28-day strength.
2. Specify 2 ¼" (60 mm) cover to top bar reinforcement for bridge decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000.
3. Specify 2" (50 mm) cover to top bar reinforcement for bridge decks on all other routes.

For bridge decks of precast concrete elements, specify 2" cover to top bar reinforcement statewide.

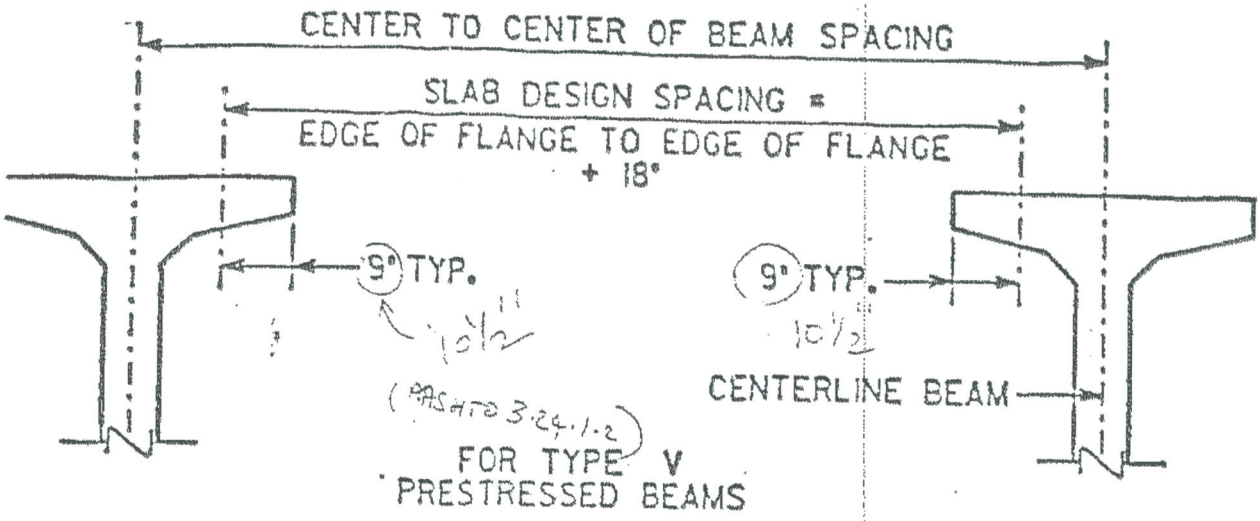
Note that ¼" of concrete thickness may be planed off of the top of cast-in-place decks on interstate routes, state routes and routes with design year ADT equal to or greater than 2000. Therefore, reduce slab thickness accordingly for strength calculations of composite slabs on steel or PSC beams and post-tensioned boxes.

Deck slabs shall be designed by the Service Load method with f_c = 1400 psi (10 MPa), as a rule.

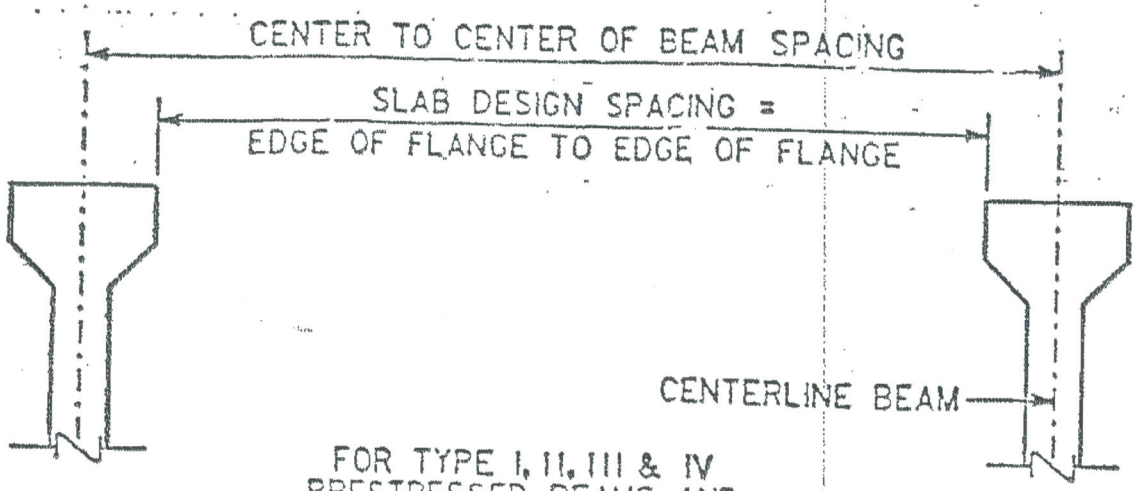
The minimum 28 day strength (f'_c) for the deck concrete shall be 3500 psi (25 MPa). Slabs shall be designed so that the main slab reinforcement is the same in the bottom of the slab as in the top. To achieve this, the effective depth shall be taken as the distance from the bottom of the slab to the centroid of the top main reinforcing steel for both positive and negative moment. Positive and negative moments shall be assumed to be equal and shall be calculated in accordance with the AASHTO Specifications.

See Fig. 4-01 for a location map of the fall line for Georgia.

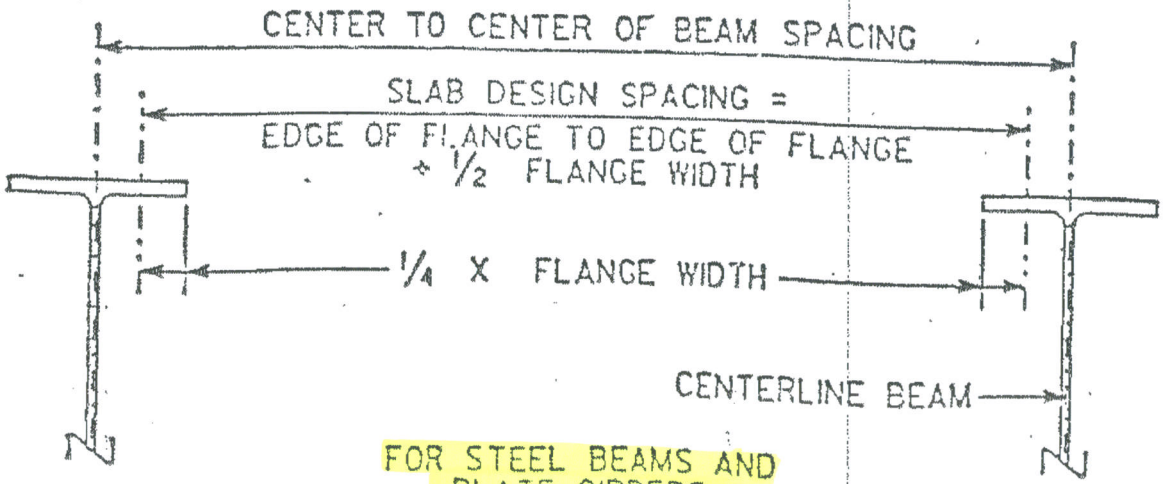
FALL LINE MAP
Figure 4-01



FOR TYPE V
PRESTRESSED BEAMS



FOR TYPE I, II, III & IV
PRESTRESSED BEAMS AND
CONCRETE T-BEAMS



FOR STEEL BEAMS AND
PLATE GIRDERS

FIG. NO. 1 (cont'd)

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Beam Design Input	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Beam Design Input calculations are included for spans 1, 2 and 3.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	7	7	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Input - Span 1
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

PJC 10-22-09

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/18/2009**

SPAN 1

Beam Type W 30 X 99

'D' DIMENSION = 9.25 IN 9 3/8

MIN. COPING DEPTH = 0.375 IN

AASHTO 8.10.1.1 - Compression Flange Width		
wBM FLANGE =	10.50	in.
b = Bm Spacing =	**102.00**	**in. CONTROLS**
b = ¼ Span Length =	117.00	in.
b = WBM FLANGE + 2[6 tSLAB] =	109.50	in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING	8.500	FT
SMALLER BEAM SPACING	8.500	FT
SKEW ANGLE	80.70	DEGREES
SLAB:		
'D' DIMENSION	9.25	IN
DESIGN SLAB DEPTH	8.250	IN
COPING WIDTH	0.875	FT
COPING DEPTH	0.6875	IN
SLAB & COPING WEIGHT	**0.884**	KIP/FT
SIP FORMWORK	**0.122**	KIP/FT
DECK OVERLAY		
AVERAGE THICKNESS	0.250	IN
DECK OVERLAY WEIGHT	**0.027**	KIP/FT
ROADWAY WIDTH	40.000	FT
FUTURE WEARING SURFACE	**0.240**	KIP/FT
UTILITIES		
GAS MAIN (not added to W_{DLC})	**0.00**	KIP/FT
TLPHONE CONDUITS (not added to W_{DL}	**0.00**	KIP/FT
WATER MAIN	**0.00**	KIP/FT
EDGE BEAM:		
DEPTH (from top of slab)	2.02	FT
WIDTH	1.000	FT
EDGE BM. WEIGHT	**1.723**	KIP
DIAPHRAGM:		
Plate (3/8" X 5" X 2'-8")	0.017	KIP
CHANNEL (MC 18" X 42.7")	0.043	KIP/FT
DIAPH. WEIGHT	**0.395**	KIP
END WALL: FIX		
DEPTH (from top of slab)	3.492	FT
WIDTH	0.667	FT
PAVING NOTCH WIDTH	0.667	FT
AVG. PAVING NOTCH DEPTH	0.833	FT
END WALL WEIGHT	**3.135**	KIP
PARAPET:		
SW, PAR., FENCE, & MEDIAN WEIGHT	1.900	KIP/FT
NUMBER OF BEAMS	5	
PARAPET WEIGHT	**0.380**	KIP/FT
SIDEWALK LIVE LOAD:		
SIDEWALK WIDTH	0	FT
SIDEWALK LOAD	0.060	KIP/FT^2
NUMBER OF BEAMS	5	
SIDEWALK LIVE LOAD PER BEAM	0.000	KIP/FT

DEAD LOAD CALCULATION:

			REACTION (K)	MOMENT (K-FT)
SPAN LENGTH	39.00	FT		
BEAM WEIGHT	0.099	KLF		
TOTAL DL	1.752	KIP/LF	34.157	333.031
P-LOADS:				
TYPE	LOAD (K)	POSITION (FT)		
END WALL:	3.135	0.00	3.135	0.000
DIAPHRAGM:	0.395	19.50	0.198	3.852
EDGE BEAM:	1.723	39.00	0.000	0.000
		TOTAL DL :	**37.5**	**336.9**

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

MOMENT	1.545	WHEEL	**VERIFY !!!!**	
	0.773	AXLE		
SHEAR	1.824	WHEEL	**VERIFY !!!!**	
	0.912	AXLE		
IMPACT FACTOR	1.300			
HS 20 LOADING: MIDSPAN:	422	KIP-FT		
MAX:	432.1	KIP-FT		
HS 20 REACTION:			R x DF x I	
TRUCK	54.77	KIP	60.80	KIP
LANE	38.48	KIP	43.35	KIP

	REACTION (K)	MOMENT (K-FT)
TOTAL LL+ I:	**60.8**	**423.9**
MAX TOTAL LL+ I:		**434.0**

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L. =	**98.3**	**760.8**

DEFLECTIONS CALCULATION:

NO. LANES	3		
NO. BEAMS	5		
REDUCTION FACTOR	0.90	FACTOR	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH =	**39.00**	**FT**
Moment Dist. Factor (DFM) =	**1.545**	
End Shear Dist. Factor (DFV) =	**1.824**	
LL Deflection Dist. Factor (DFD) =	**1.080**	
Non- Composite DL (W_{DLNC}) =	**1.033**	**KLF**
Composite DL (W_{DLC}) =	**0.620**	**KLF W/ F.W.S.**
Sidewalk LL (W_{swK}) =	**0.000**	**KLF**
Effective Concrete Width (W_f) =	**102.000**	**IN**
Concrete Slab Thickness (T_f) =	**8.250**	**IN**
Minimum Coping (Df) =	**0.750**	**IN**
P-LOADS:		
XP1	**0.00**	**FT**
P1	**3.135**	**K**
XP2	**19.500**	**FT**
P2	**0.395**	**K**
XP3	**39.000**	**FT**
P3	**1.723**	**K**

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Input - Span 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/23/2009**

SPAN 2

Beam Type Plate Girder

'D' DIMENSION =	9.625	IN
MIN. COPING DEPTH =	0.375	IN

AASHTO 8.10.1.1 - Compression Flange Width

wBM FLANGE =	12.00	in.
b = Bm Spacing =	**102.00**	**in. CONTROLS**
b = ¼ Span Length =	235.50	in.
b = WBM FLANGE + 2[6 tSLAB] =	111.00	in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING	8.500	FT
SMALLER BEAM SPACING	8.500	FT
SKEW ANGLE	80.70	DEGREES
SLAB:		
'D' DIMENSION	9.625	IN
DESIGN SLAB DEPTH	8.250	IN
COPING WIDTH	1.000	FT
COPING DEPTH	0.875	IN
SLAB & COPING WEIGHT	**0.888**	KIP/FT
SIP FORMWORK	**0.120**	KIP/FT
DECK OVERLAY		
AVERAGE THICKNESS	0.250	IN
DECK OVERLAY WEIGHT	**0.027**	KIP/FT
ROADWAY WIDTH	39.000	FT
FUTURE WEARING SURFACE	**0.234**	KIP/FT
UTILITIES		
GAS MAIN (not added to W_{DLC})	**0.00**	KIP/FT
TLPHONE CONDUITS (not added to W_{DL}	**0.00**	KIP/FT
WATER MAIN	**0.00**	KIP/FT
EDGE BEAM:		
DEPTH (from top of slab)	2.30	FT
WIDTH	1.000	FT
EDGE BM. WEIGHT	**2.086**	KIP
DIAPHRAGM:		
Plate (3/8" X 5" X 2'-8")	0.017	KIP
CHANNEL (MC 18" X 42.7")	0.043	KIP/FT
DIAPH. WEIGHT	**0.395**	KIP
PARAPET:		
SW, PAR., FENCE, & MEDIAN WEIGHT	1.900	KIP/FT
NUMBER OF BEAMS	5	
PARAPET WEIGHT	**0.380**	KIP/FT
SIDEWALK LIVE LOAD:		
SIDEWALK WIDTH	0	FT
SIDEWALK LOAD	0.060	KIP/FT^2
NUMBER OF BEAMS	5	
SIDEWALK LIVE LOAD PER BEAM	0.000	KIP/FT

DEAD LOAD CALCULATION:

			REACTION (K)	MOMENT (K-FT)
SPAN LENGTH	78.50	FT		
BEAM WEIGHT	0.191	KLF		
TOTAL DL	1.839	KIP/LF	72.164	1416.210
P-LOADS:				
TYPE	LOAD (K)	POSITION (FT)		
EDGE BEAM:	2.086	0.00	2.086	0.000
DIAPHRAGM:	0.395	19.625	0.296	5.810
DIAPHRAGM:	0.395	39.250	0.197	7.746
DIAPHRAGM:	0.395	58.875	0.099	5.810
EDGE BEAM:	2.086	78.50	0.000	0.000

	REACTION (K)	MOMENT (K-FT)
TOTAL DL :	**74.8**	**1435.6**

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

	MOMENT	1.545	WHEEL	VERIFY !!!!	
		0.773	AXLE		
	SHEAR	1.824	WHEEL	VERIFY !!!!	
		0.912	AXLE		
IMPACT FACTOR		1.246			
HS 20 LOADING:	MIDSPAN:	1133	KIP-FT		
	MAX:	1138.0	KIP-FT		
HS 20 REACTION:				R x DF x I	
	TRUCK	63.44	KIP	66.61	KIP
	LANE	51.12	KIP	53.71	KIP

	REACTION (K)	MOMENT (K-FT)
TOTAL LL+ I:	**66.6**	**1090.6**
MAX TOTAL LL+ I:		**1095.4**

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L. =	**141.5**	**2526.2**

DEFLECTIONS CALCULATION:

NO. LANES	3		
NO. BEAMS	5		
REDUCTION FACTOR	0.90	FACTOR	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH =	**78.50**	**FT**
Moment Dist. Factor (DFM) =	**1.545**	
End Shear Dist. Factor (DFV) =	**1.824**	
LL Deflection Dist. Factor (DFD) =	**1.080**	
Non- Composite DL (W_{DLNC}) =	**1.034**	**KLF**
Composite DL (W_{DLC}) =	**0.614**	**KLF W/ F.W.S.**
Sidewalk LL (W_{swK}) =	**0.000**	**KLF**
Effective Concrete Width (W_f) =	**102.00**	**IN**
Concrete Slab Thickness (T_f) =	**8.250**	**IN**
Minimum Coping (Df) =	**0.750**	**IN**

P-LOADS:

XP1	**0.00**	**FT**
P1	**2.086**	**K**
XP2	**19.625**	**FT**
P2	**0.395**	**K**
XP3	**39.250**	**FT**
P3	**0.395**	**K**
XP4	**58.875**	**FT**
P4	**0.395**	**K**
XP5	**78.500**	**FT**
P5	**2.086**	**K**

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Input - Span 3
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/18/2009**

SPAN 3

Beam Type W 30 X 90

'D' DIMENSION =	9.25	IN
MIN. COPING DEPTH =	0.375	IN

AASHTO 8.10.1.1 - Compression Flange Width

wBM FLANGE =	10.40	in.
b = Bm Spacing =	**102.00**	in.
b = ¼ Span Length =	**102.00**	in.
b = WBM FLANGE + 2[6 tSLAB] =	109.40	in.

BRIDGE GEOMETRY INPUT:

LARGER BEAM SPACING	8.500	FT
SMALLER BEAM SPACING	8.500	FT
SKEW ANGLE	80.70	DEGREES
SLAB:		
'D' DIMENSION	9.25	IN
DESIGN SLAB DEPTH	8.250	IN
COPING WIDTH	0.867	FT
COPING DEPTH	0.6875	IN
SLAB & COPING WEIGHT	**0.884**	KIP/FT
SIP FORMWORK	**0.122**	KIP/FT
DECK OVERLAY		
AVERAGE THICKNESS	0.250	IN
DECK OVERLAY WEIGHT	**0.027**	KIP/FT
ROADWAY WIDTH	38.000	FT
FUTURE WEARING SURFACE	**0.228**	KIP/FT
UTILITIES		
GAS MAIN (not added to W_{DLC})	**0.00**	KIP/FT
TLPHONE CONDUITS (not added to W_{DL}	**0.00**	KIP/FT
WATER MAIN	**0.00**	KIP/FT
EDGE BEAM:		
DEPTH (from top of slab)	2.02	FT
WIDTH	1.000	FT
EDGE BM. WEIGHT	**1.723**	KIP
DIAPHRAGM:		
Plate (3/8" X 5" X 2'-8")	0.017	KIP
CHANNEL (MC 18" X 42.7")	0.043	KIP/FT
DIAPH. WEIGHT	**0.395**	KIP
END WALL: FIX		
DEPTH (from top of slab)	3.482	FT
WIDTH	0.667	FT
PAVING NOTCH WIDTH	0.667	FT
AVG. PAVING NOTCH DEPTH	0.833	FT
END WALL WEIGHT	**3.126**	KIP
PARAPET:		
SW, PAR., FENCE, & MEDIAN WEIGHT	1.900	KIP/FT
NUMBER OF BEAMS	5	
PARAPET WEIGHT	**0.380**	KIP/FT
SIDEWALK LIVE LOAD:		
SIDEWALK WIDTH	0	FT
SIDEWALK LOAD	0.060	KIP/FT^2
NUMBER OF BEAMS	5	
SIDEWALK LIVE LOAD PER BEAM	0.000	KIP/FT

DEAD LOAD CALCULATION:

			REACTION (K)	MOMENT (K-FT)
SPAN LENGTH	34.00	FT		
BEAM WEIGHT	0.090	KLF		
TOTAL DL	1.731	KIP/LF	29.422	250.087

P-LOADS:

TYPE	LOAD (K)	POSITION (FT)		
END WALL:	3.126	0.00	3.126	0.000
DIAPHRAGM:	0.395	17.00	0.198	3.360
EDGE BEAM:	1.723	34.00	0.000	0.000

	REACTION (K)	MOMENT (K-FT)
TOTAL DL :	**32.7**	**253.4**

LIVE LOAD CALCULATION:

BEAM DISTRIBUTION

MOMENT	1.545	WHEEL	**VERIFY !!!!**	
	0.773	AXLE		
SHEAR	1.824	WHEEL	**VERIFY !!!!**	
	0.912	AXLE		
IMPACT FACTOR	1.300			
MILITARY LOADING: MIDSPAN:	360	KIP-FT		

HS 20 REACTION:

			R x DF x I	
TRUCK	52.24	KIP	58.26	KIP
LANE	36.88	KIP	41.75	KIP

	REACTION (K)	MOMENT (K-FT)
TOTAL LL+ I:	**58.3**	**361.6**

	REACTION (K)	MOMENT (K-FT)
TOTAL D.L. + L.L =	**91.0**	**615.1**

DEFLECTIONS CALCULATION:

NO. LANES	3		
NO. BEAMS	5		
REDUCTION FACTOR	0.90	FACTOR	1.080

SIMPLE SPAN PROGRAM INPUT:

LENGTH =	**34.00**	**FT**
Moment Dist. Factor (DFM) =	**1.545**	
End Shear Dist. Factor (DFV) =	**1.824**	
LL Deflection Dist. Factor (DFD) =	**1.080**	
Non- Composite DL (W_{DLNC}) =	**1.033**	**KLF**
Composite DL (W_{DLC}) =	**0.608**	**KLF W/ F.W.S.**
Sidewalk LL (W_{swK}) =	**0.000**	**KLF**
Effective Concrete Width (W_f) =	**102.000**	**IN**
Concrete Slab Thickness (T_f) =	**8.250**	**IN**
Minimum Coping (Df) =	**0.750**	**IN**
P-LOADS:		
XP1	**0.00**	**FT**
P1	**3.126**	**K**
XP2	**17.000**	**FT**
P2	**0.395**	**K**
XP3	**34.000**	**FT**
P3	**1.723**	**K**

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Beam Design Output	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	GDOT BRSPAN	06/26/2008

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Beam design ouptput is included for spans 1, 2 and 3.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	13	13	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Output - Span 1
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

18-OCT-09 GEORGIA DEPARTMENT OF TRANSPORTATION PROB. NO. S2NW
10:32:32 PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
SIMPLE SPAN
REVISED: JUNE 26, 2008

I-575 OVER BIG SHANTY ROAD - SPAN 1

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CB	1	HS20	0 0 0	39.000	1.545	1.824	1.080	3

WDLNC	WDLC	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
1.033	0.620	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	3.135	19.500	0.395	39.000	1.723	0.000	0.000

BEAM DATA

ROLLED BEAM	P	NP	SECTION PROPERTIES I	Y TOP	Y BOT	PLATE GIRDER WEB D	T	TOP FLANGE W	T	BOTTOM FLANGE W	T
30WF 99	0	0	0.0	0.000	0.000	0.00	0.0000	0.00	0.0000	0.00	0.0000
0WF 0											

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC
102.000	8.250	0.000	9.28 K/ROW	25.21 KIPS EACH	9

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	CONSTANT W	T
0.00	0.0000	0.00	0.00	0.00	0.0000	0.00	0.00	0	0

BEAM PROPERTIES

BEAM	AREA	DEPTH	FL. W	FL. T	WEB T	I
30WF 99	29.100	29.700	10.500	0.670	0.520	3990.0

COVER PLATES

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH
0.00	0.0000	0.00	0.00	0.00	0.0000	0.00	0.00

BEAM WITH PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I	MIN TERMINAL WELD
29.100	14.850	14.850	3990.0	4/16

COMPOSITE SECTION PROPERTIES

	BEAM ONLY					BEAM WITH PLATES				
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	8.63	0.38	29.32	12510.9	421.1	8.63	0.38	29.32	12510.9	421.1
27	13.29	5.04	24.66	9585.2		13.29	5.04	24.66	9585.2	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 134

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

MOMENTS (K-FT.) AT SPAN 1/20 POINTS

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
1	3.6	0.4	37.3	41.3	22.4	0.0	100.2 T	0.0
2	6.8	0.8	70.7	78.2	42.4	0.0	186.3 T	0.0
3	9.6	1.2	100.2	110.9	60.1	0.0	258.3 T	0.0
4	12.0	1.5	125.7	139.3	75.4	0.0	316.2 T	0.0
5	14.1	1.9	147.3	163.3	88.4	0.0	360.0 T	0.0
6	15.8	2.3	165.0	183.1	99.0	0.0	391.4 T	0.0
7	17.1	2.7	178.7	198.5	107.3	0.0	412.8 T	0.0
8	18.1	3.1	188.5	209.7	113.2	0.0	429.3 T	0.0
9	18.6	3.5	194.4	216.5	116.7	0.0	433.6 T	0.0
10	18.8	3.9	196.4	219.1	117.9	0.0	423.8 T	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE	R FACTOR	
SP	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S	FS	TOP-S	BOT-S
1	1984	-2535	105	2021	-5353	27000	0.982	0.474
2	3762	-4805	197	3830	-10044	27000	0.982	0.478
3	5332	-6810	274	5426	-14074	27000	0.983	0.484
4	6696	-8549	337	6811	-17443	27000	0.983	0.490
5	7852	-10024	385	7983	-20150	27000	0.984	0.498
6	8801	-11234	420	8944	-22242	27000	0.984	0.505
7	9543	-12179	445	9693	-23788	27000	0.985	0.512
8	10078	-12859	464	10234	-24933	27000	0.985	0.516
9	10406	-13274	470	10564	-25468	27000	0.985	0.521
10	10527	-13423	462	10681	-25342	27000	0.986	0.530

SHEARS (KIPS) AT SPAN 1/20 POINTS S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	1.9	3.3	20.1	25.4	12.1	0.0	60.8 T	0.0
1	1.7	0.2	18.1	20.1	10.9	0.0	51.4 T	0.0
2	1.5	0.2	16.1	17.9	9.7	0.0	47.8 T	0.0
3	1.4	0.2	14.1	15.6	8.5	0.0	44.2 T	0.0
4	1.2	0.2	12.1	13.4	7.3	0.0	40.5 T	0.0
5	1.0	0.2	10.1	11.2	6.0	0.0	36.9 T	0.0
6	0.8	0.2	8.1	9.0	4.8	0.0	33.5 T	0.0
7	0.6	0.2	6.0	6.8	3.6	0.0	30.2 T	0.0
8	0.4	0.2	4.0	4.6	2.4	0.0	27.0 T	0.0
9	0.2	0.2	2.0	2.4	1.2	0.0	24.0 M	0.0
10	0.0	-0.2	0.0	-0.2	0.0	0.0	21.6 M	0.0

	DEAD LOAD DEFLECTIONS (INCHES)					SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE(KIPS)	CON.SPAC(IN)
0	0.000	0.000	0.000	0.000	0.000	60.8	4.53
1	0.007	0.001	0.074	0.082	0.018	53.0	5.20
2	0.014	0.002	0.146	0.162	0.036	51.0	5.41
3	0.020	0.003	0.214	0.237	0.053	49.0	5.63
4	0.026	0.004	0.276	0.307	0.069	47.7	5.78
5	0.032	0.005	0.331	0.368	0.083	46.5	5.93
6	0.036	0.006	0.378	0.420	0.094	45.4	6.07
7	0.040	0.006	0.415	0.461	0.104	44.6	6.18
8	0.042	0.007	0.443	0.492	0.111	43.8	6.29
9	0.044	0.007	0.459	0.510	0.115	43.3	6.37
10	0.045	0.007	0.465	0.517	0.116	43.3	6.37

LIVE LOAD DEFLECTIONS (INCHES)

TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.219	0.139	0.195	0.000	0.000	0.585

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Output - Span 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

23-OCT-09 GEORGIA DEPARTMENT OF TRANSPORTATION PROB. NO. S2NW
16:03:09 PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
SIMPLE SPAN
REVISED: JUNE 26, 2008

I-575 OVER BIG SHANTY ROAD - SPAN 2

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CG	1	HS20	0 0 0	78.500	1.545	1.824	1.080	5

WDLNC	WDLC	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
1.034	0.614	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	2.086	19.625	0.395	39.250	0.395	58.875	0.395
78.500	2.086	0.000	0.000	0.000	0.000	0.000	0.000

BEAM DATA

ROLLED		SECTION PROPERTIES			PLATE GIRDER WEB		TOP FLANGE		BOTTOM FLANGE	
BEAM	P NP	I	Y TOP	Y BOT	D	T	W	T	W	T
0WF	0 0 0	0.0	0.000	0.000	34.00	0.6250	12.00	0.7500	14.00	1.3750
0WF	0									

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC
102.000	8.250	0.000	12.38 K/ROW	25.21 KIPS EACH	9

BOTTOM COVER		PLATE		TOP COVER		PLATE		CONSTANT	
X-BEGIN	THICKNESS	WIDTH	LENGTH	X-BEGIN	THICKNESS	WIDTH	LENGTH	W	T
19.25	2.0000	14.00	40.00	19.25	1.0000	12.00	40.00	0	0

PLATE GIRDER PROPERTIES

WEB		TOP FLANGE		BOTTOM FLANGE		WEB AND FLANGES PROPERTIES			
DEPTH	THICK	WIDTH	THICK	WIDTH	THICK	AREA	Y-TOP	Y-BOTTOM	I
34.00	0.6250	12.00	0.7500	14.00	1.3750	49.500	21.469	14.656	10105.1

WEB AND COVER PLATES

BOTTOM COVER		PLATE		TOP COVER		PLATE	
X-BEGIN	THICKNESS	WIDTH	LENGTH	X-BEGIN	THICKNESS	WIDTH	LENGTH
19.25	2.0000	14.00	40.00	19.25	1.0000	12.00	40.00

WEB WITH COVER PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I
61.250	22.800	14.200	13393.2

COMPOSITE SECTION PROPERTIES

	WEB AND FLANGES					WEB AND PLATES				
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	13.07	4.57	31.55	32253.3	836.5	14.78	6.53	30.47	40752.2	996.4
27	19.98	11.48	24.64	23056.1		21.97	13.72	23.28	28544.7	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 234

NUMBER OF LONGITUDINAL STIFFENERS NEEDED 0

TRANSVERSE STIFFENERS NOT REQUIRED

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

MOMENTS (K-FT.) AT SPAN 1/20 POINTS

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
1	27.8	2.3	151.3	181.4	89.9	0.0	226.0 T	0.0
2	53.0	4.7	286.7	344.4	170.3	0.0	424.8 T	0.0
3	75.6	7.0	406.2	488.8	241.2	0.0	596.5 T	0.0
4	95.6	9.3	509.7	614.6	302.7	0.0	740.9 T	0.0
5	113.0	11.6	597.4	722.0	354.7	0.0	858.1 T	0.0
6	127.4	12.4	669.0	808.9	397.3	0.0	948.2 T	0.0
7	138.7	13.2	724.8	876.7	430.4	0.0	1016.4 T	0.0
8	146.7	14.0	764.6	925.3	454.0	0.0	1068.2 T	0.0
9	151.5	14.7	788.5	954.8	468.2	0.0	1092.9 T	0.0
10	153.1	15.5	796.5	965.1	473.0	0.0	1090.3 T	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE	R FACTOR	
SP	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S	FS	TOP-S	BOT-S
1	5163	-4310	156	5547	-6963	27000	0.931	0.619
2	9797	-8176	295	10519	-13164	27000	0.931	0.621
3	13902	-11599	415	14917	-18602	27000	0.932	0.624
4	17479	-14578	516	18739	-23276	27000	0.933	0.626
5	16794	-12657	536	18445	-20356	27000	0.911	0.622
6	18815	-14179	594	20639	-22686	27000	0.912	0.625
7	20390	-15365	638	22345	-24484	27000	0.913	0.628
8	21520	-16215	671	23575	-25799	27000	0.913	0.629
9	22204	-16729	688	24306	-26534	27000	0.914	0.630
10	22443	-16907	689	24540	-26689	27000	0.915	0.633

SHEARS (KIPS) AT SPAN 1/20 POINTS S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	7.4	2.7	40.6	50.7	24.1	0.0	66.6 T	0.0
1	6.7	0.6	36.5	43.9	21.7	0.0	57.8 T	0.0
2	6.1	0.6	32.5	39.1	19.3	0.0	54.5 T	0.0
3	5.4	0.6	28.4	34.4	16.9	0.0	51.3 T	0.0
4	4.8	0.6	24.4	29.7	14.5	0.0	48.0 T	0.0
5	4.1	0.6	20.3	25.0	12.0	0.0	44.6 T	0.0
6	3.3	0.2	16.2	19.7	9.6	0.0	41.3 T	0.0
7	2.5	0.2	12.2	14.8	7.2	0.0	37.9 T	0.0
8	1.6	0.2	8.1	10.0	4.8	0.0	34.5 T	0.0
9	0.8	0.2	4.1	5.1	2.4	0.0	31.1 T	0.0
10	0.0	0.2	0.0	0.2	0.0	0.0	27.6 T	0.0

	DEAD LOAD DEFLECTIONS (INCHES)					SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE(KIPS)	CON.SPAC(IN)
0	0.000	0.000	0.000	0.000	0.000	66.6	7.17
1	0.075	0.007	0.396	0.479	0.108	59.4	8.03
2	0.148	0.014	0.779	0.941	0.212	58.1	8.21
3	0.216	0.021	1.136	1.372	0.310	57.3	8.34
4	0.277	0.027	1.456	1.759	0.398	56.4	8.47
5	0.329	0.032	1.730	2.091	0.474	55.5	9.13
6	0.373	0.036	1.959	2.368	0.538	54.9	9.23
7	0.408	0.039	2.142	2.589	0.589	54.7	9.26
8	0.434	0.042	2.275	2.751	0.626	54.9	9.23
9	0.449	0.043	2.356	2.849	0.648	55.0	9.20
10	0.455	0.044	2.384	2.882	0.656	55.1	9.19

LIVE LOAD DEFLECTIONS (INCHES)

TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.679	0.507	0.486	0.000	0.000	1.178

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Beam Design Output - Span 3
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

18-OCT-09 GEORGIA DEPARTMENT OF TRANSPORTATION PROB. NO. S2NW
10:30:39 PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
SIMPLE SPAN
REVISED: JUNE 26, 2008

I-575 OVER BIG SHANTY ROAD - SPAN 3

SPAN DATA

BEAM	D/A	L.L.C.	T L M	LENGTH	D.F.M.	D.F.V.	D.F.D.	NPL
CB	1	HS20	0 0 0	34.000	1.545	1.824	1.080	3

WDLNC	WDLC	SWLL	E	W BM	FS	FC	WG	TYPE STEEL
1.033	0.608	0.000	29.00	0.000	27.00	1.400	0.490	572

CONCENTRATED LOADS

X1	P1	X2	P2	X3	P3	X4	P4
0.000	3.126	17.000	0.395	34.000	1.723	0.000	0.000

BEAM DATA

ROLLED BEAM	P	NP	SECTION PROPERTIES I	Y TOP	Y BOT	PLATE GIRDER WEB D	T	TOP FLANGE W	T	BOTTOM FLANGE W	T
30WF 90	0	0	0.0	0.000	0.000	0.00	0.0000	0.00	0.0000	0.00	0.0000
0WF 0											

COMPOSITE SLAB

WIDTH	THICKNESS	COPING	SHEAR CAPACITY	ULTIMATE STRENGTH	N=ES/EC
102.000	8.250	0.000	9.28 K/ROW	25.21 KIPS EACH	9

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	CONSTANT W	T
0.00	0.0000	0.00	0.00	0.00	0.0000	0.00	0.00	0	0

BEAM PROPERTIES

BEAM	AREA	DEPTH	FL. W	FL. T	WEB T	I
30WF 90	26.400	29.500	10.400	0.610	0.470	3610.0

COVER PLATES

BOTTOM COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH	TOP COVER X-BEGIN	THICKNESS	PLATE WIDTH	LENGTH
0.00	0.0000	0.00	0.00	0.00	0.0000	0.00	0.00

BEAM WITH PLATES PROPERTIES

AREA	Y-TOP	Y-BOTTOM	I	MIN TERMINAL WELD
26.400	14.750	14.750	3610.0	4/16

COMPOSITE SECTION PROPERTIES

	BEAM ONLY					BEAM WITH PLATES				
N	YTC	YTS	YBS	I	Q SLAB	YTC	YTS	YBS	I	Q SLAB
9	8.28	0.03	29.47	11474.8	388.6	8.28	0.03	29.47	11474.8	388.6
27	12.78	4.53	24.97	8878.9		12.78	4.53	24.97	8878.9	

NUMBER OF SHEAR CONNECTORS NEEDED TO PROVIDE FOR ULTIMATE STRENGTH 121

SIMPLE SPAN OUTPUT DATA PROBLEM NUMBER S2NW

MOMENTS (K-FT.) AT SPAN 1/20 POINTS

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
1	2.5	0.3	28.4	31.2	16.7	0.0	83.0 T	0.0
2	4.7	0.7	53.7	59.1	31.6	0.0	153.8 T	0.0
3	6.6	1.0	76.1	83.8	44.8	0.0	212.2 T	0.0
4	8.3	1.3	95.5	105.2	56.2	0.0	259.7 T	0.0
5	9.8	1.7	112.0	123.4	65.9	0.0	297.3 T	0.0
6	10.9	2.0	125.4	138.3	73.8	0.0	323.9 T	0.0
7	11.8	2.4	135.8	150.0	79.9	0.0	339.7 T	0.0
8	12.5	2.7	143.3	158.5	84.3	0.0	354.8 M	0.0
9	12.9	3.0	147.8	163.7	87.0	0.0	362.3 M	0.0
10	13.0	3.4	149.3	165.6	87.9	0.0	361.5 M	0.0

STRESS (PSI) AT SPAN 1/20 POINTS

	MINIMUM STRESS		MAXIMUM STRESS			ALLOWABLE	R FACTOR	
SP	TOP-S	BOT-S	TOP-C	TOP-S	BOT-S	FS	TOP-S	BOT-S
1	1630	-2091	90	1633	-4650	27000	0.998	0.450
2	3090	-3964	168	3095	-8703	27000	0.998	0.456
3	4381	-5619	232	4388	-12159	27000	0.998	0.462
4	5502	-7055	285	5510	-15057	27000	0.998	0.469
5	6453	-8273	328	6462	-17434	27000	0.999	0.475
6	7234	-9272	358	7244	-19255	27000	0.999	0.482
7	7845	-10053	377	7856	-20521	27000	0.999	0.490
8	8286	-10615	395	8297	-21549	27000	0.999	0.493
9	8557	-10960	404	8569	-22123	27000	0.999	0.495
10	8658	-11085	404	8670	-22227	27000	0.999	0.499

SHEARS (KIPS) AT SPAN 1/20 POINTS S2NW

SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	SIDEWK	LIVE LOAD	RR-I
0	1.5	3.3	17.6	22.4	10.3	0.0	58.3 T	0.0
1	1.4	0.2	15.8	17.4	9.3	0.0	48.8 T	0.0
2	1.2	0.2	14.0	15.5	8.3	0.0	45.2 T	0.0
3	1.1	0.2	12.3	13.6	7.2	0.0	41.6 T	0.0
4	0.9	0.2	10.5	11.7	6.2	0.0	38.2 T	0.0
5	0.8	0.2	8.8	9.7	5.2	0.0	35.0 T	0.0
6	0.6	0.2	7.0	7.8	4.1	0.0	31.8 T	0.0
7	0.5	0.2	5.3	5.9	3.1	0.0	28.5 T	0.0
8	0.3	0.2	3.5	4.0	2.1	0.0	26.1 M	0.0
9	0.2	0.2	1.8	2.1	1.0	0.0	23.7 M	0.0
10	0.0	-0.2	0.0	-0.2	0.0	0.0	21.3 M	0.0

	DEAD LOAD DEFLECTIONS (INCHES)					SHEAR	
SP	GIRDER	P-LOAD	NON-C.	TOT.NC	COMP.	RANGE(KIPS)	CON.SPAC(IN)
0	0.000	0.000	0.000	0.000	0.000	58.3	4.70
1	0.004	0.001	0.047	0.052	0.011	50.4	5.43
2	0.008	0.002	0.093	0.103	0.022	48.4	5.66
3	0.012	0.002	0.136	0.151	0.033	46.4	5.90
4	0.015	0.003	0.176	0.195	0.042	45.0	6.09
5	0.018	0.004	0.211	0.233	0.051	44.2	6.20
6	0.021	0.004	0.241	0.266	0.058	43.4	6.32
7	0.023	0.005	0.265	0.293	0.063	42.6	6.44
8	0.025	0.005	0.283	0.312	0.068	42.5	6.44
9	0.026	0.005	0.293	0.324	0.070	42.5	6.44
10	0.026	0.005	0.297	0.328	0.071	42.5	6.44

LIVE LOAD DEFLECTIONS (INCHES)

TRUCK	LANE	MILITARY	RAILROAD	SIDEWALK	L/ 800
0.149	0.094	0.140	0.000	0.000	0.510

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Shear Stud Spacing Calculations	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Design calculations for steel beam shear stud spacings are included for spans 1, 2, and 3.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	10	10	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Shear Stud Spacing Calculations	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Design calculations for steel beam shear stud spacings are included for spans 1, 2, and 3.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	10	10	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Shear Stud Spacing Calculations - Span 1
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/18/2009**

STUD SHEAR CONNECTORS

Beam Type W 30 X 90 ~~90~~ Top Flange Width = 10.4" 10.45 OK Stud ∅ = 0.75 " No. of Studs = 3

ADT (2001) = 1,000
ADT (2021) = 80,000
% TRUCKS = 4.4%
DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

$Z_r = \alpha\, d^2$ (kips / studs)			
α \ d (in)	**0.5**	**0.75**	**1**
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

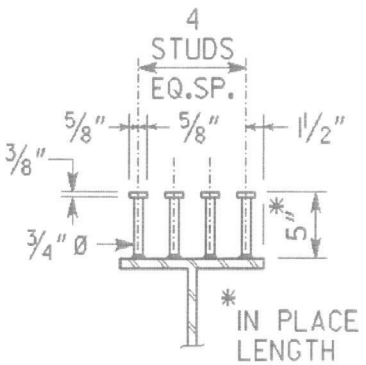
6.19

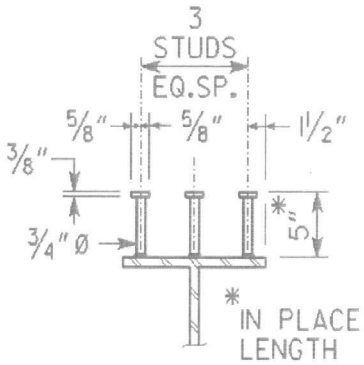
$Z_r = \alpha\, d^2$ (kips / row)			
Number of Studs : 3			
α \ d (in)	**0.5**	**0.75**	**1**
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	**9.28**	16.50

$Z_r = \alpha\, d^2$ (kips / row)			
Number of Studs : 4			
α \ d	**0.5**	**0.75**	**1**
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	12.38	22.00

$E_c = 150^{1.5}\, 33\, (f'_c)^{1/2}$ (AASHTO 10.38.5.1.2)

$S_U = 0.4\, d^2\, (f'_c\, E_c)^{1/2}$			(AASHTO
d (in)	f'_c (psi)	E_c (psi)	S_U (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	**3500**	**3586616**	**25.21**
1	3500	3586616	44.82





AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4"∅ studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, **4** studs are only allowed for beams with a minimum flange width of 12"+/-.

Shear Capacity (Z_r) = 9.28 K/Row

Ultimate Strength (S_U) = 25.21 kips

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

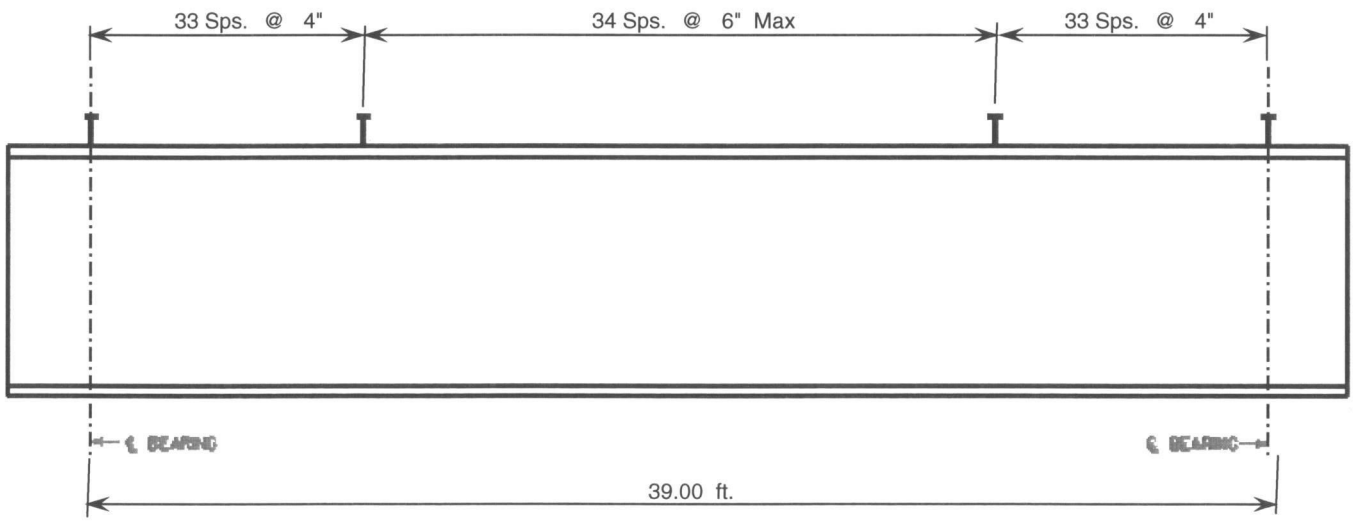
J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/18/2009**

SHEAR STUD SPACING

Design Length = 39 ft.

Location (ft.)	s (in)
0.0	**4.53**
2.0	**5.20**
3.9	**5.41**
5.9	**5.63**
7.8	**5.78**
9.8	**5.93**
11.7	**6.07**
13.7	**6.18**
15.6	**6.29**
17.6	**6.37**
19.5	**6.37**

	Spacing 1	Spacing 2
Stud Spacing:	4 in.	6 in.



CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Shear Stud Spacing Calculations - Span 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/23/2009**

STUD SHEAR CONNECTORS

Beam Type Plate Girder Top Flange Width = 12" Stud ∅ = 0.75 " No. of Studs = 4

$Z_r = \alpha\, d^2$ (kips / studs)			
α \ d (in)	**0.5**	**0.75**	**1**
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

6.19

ADT (2001) = 1,000
ADT (2021) = 80,000
% TRUCKS = 4.4%
DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

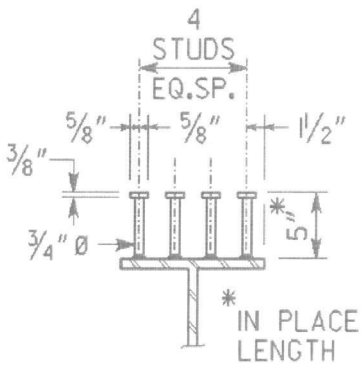
ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

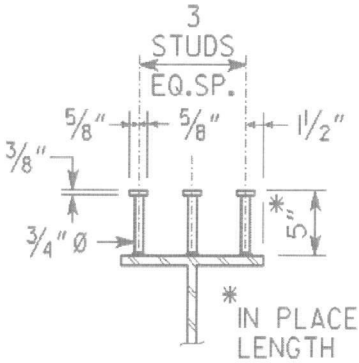
$Z_r = \alpha\, d^2$ (kips / row)			
Number of Studs : 3			
α \ d (in)	**0.5**	**0.75**	**1**
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	9.28	16.50

$Z_r = \alpha\, d^2$ (kips / row)			
Number of Studs : 4			
α \ d	**0.5**	**0.75**	**1**
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	**12.38**	22.00

$E_c = 150^{1.5}\, 33\, (f'_c)^{1/2}$ (AASHTO 10.38.5.1.2)

$S_U = 0.4\, d^2\, (f'_c\, E_c)^{1/2}$			(AASHTO
d (in)	**f'c** (psi)	**Ec** (psi)	**SU** (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	**3500**	**3586616**	**25.21**
1	3500	3586616	44.82





AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4"∅ studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, **4** studs are only allowed for beams with a minimum flange width of 12"+/-.

Shear Capacity (Z_r) = 12.38 K/Row

Ultimate Strength (S_U) = 25.21 kips

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

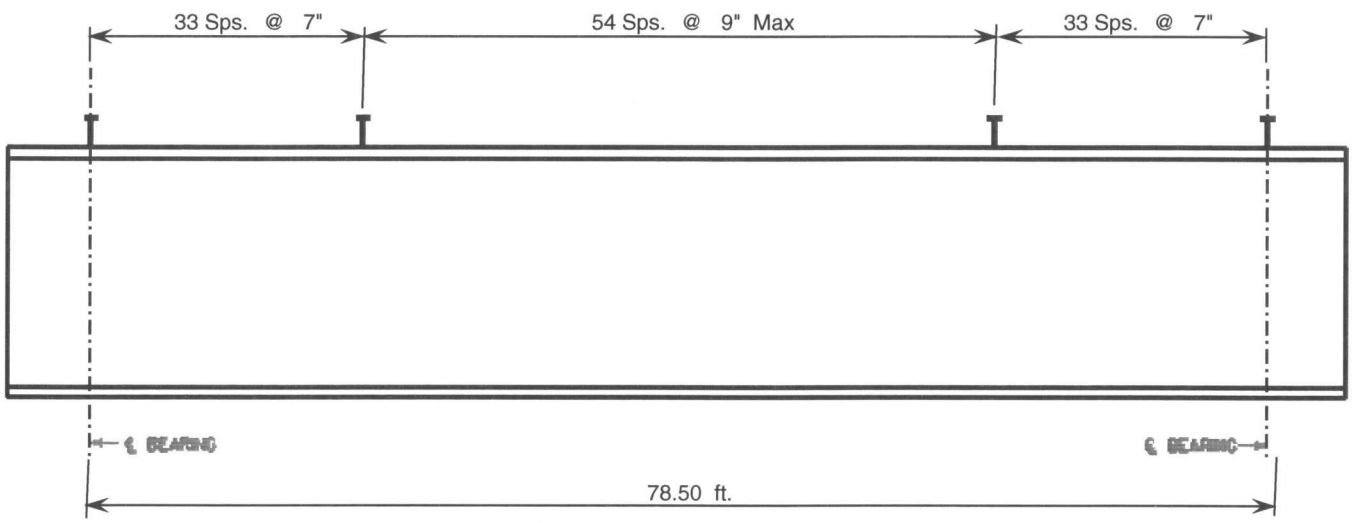
J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/23/2009**

SHEAR STUD SPACING

Design Length = 78.5 ft.

Location (ft.)	**s** **(in)**
0.0	**7.17**
3.9	**8.03**
7.9	**8.21**
11.8	**8.34**
15.7	**8.47**
19.6	**9.13**
23.6	**9.23**
27.5	**9.26**
31.4	**9.23**
35.3	**9.20**
39.3	**9.19**

	Spacing 1	Spacing 2
Stud Spacing:	7 in.	9 in.



CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Shear Stud Spacing Calculations - Span 3
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/18/2009**

STUD SHEAR CONNECTORS

Beam Type W 30 X 90 Top Flange Width = 10.4" Stud ∅ = 0.75 " No. of Studs = 3

$Z_r = \alpha\, d^2$ (kips / studs)			
α \ d (in)	**0.5**	**0.75**	**1**
13000	3.25	7.31	13.00
10600	2.65	5.96	10.60
7850	1.96	4.42	7.85
5500	1.38	3.09	5.50

6.19

ADT (2001) = 1,000
ADT (2021) = 80,000
% TRUCKS = 4.4%
DIRECTIONAL = 100%

ADT (2031) = 119,500 in one direction

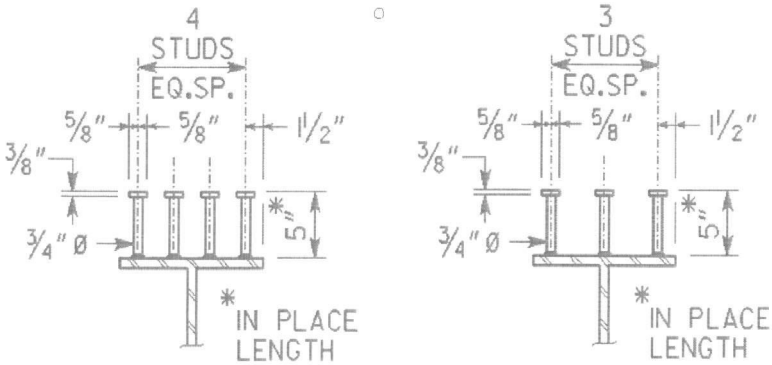
ADTT = 5,258 > 2500
USE 2,000,000 CYCLES

$Z_r = \alpha\, d^2$ (kips / row)			
Number of Studs : 3			
α \ d (in)	**0.5**	**0.75**	**1**
13000	9.75	21.94	39.00
10600	7.95	17.89	31.80
7850	5.89	13.25	23.55
5500	4.13	**9.28**	16.50

$Z_r = \alpha\, d^2$ (kips / row)			
Number of Studs : 4			
α \ d	**0.5**	**0.75**	**1**
13000	13.00	29.25	52.00
10600	10.60	23.85	42.40
7850	7.85	17.66	31.40
5500	5.50	12.38	22.00

$E_c = 150^{1.5}\, 33\, (f'_c)^{1/2}$ (AASHTO 10.38.5.1.2)

$S_U = 0.4\, d^2\, (f'_c\, E_c)^{1/2}$			(AASHTO
d (in)	f'_c (psi)	E_c (psi)	S_U (kips)
0.5	3000	3320561	9.98
0.75	3000	3320561	22.46
1	3000	3320561	39.92
0.5	3500	3586616	11.20
0.75	**3500**	**3586616**	**25.21**
1	3500	3586616	44.82



AASHTO 10.38.2.4 The clear distance between the edge of a girder flange and the edge of the shear connector shall be not less than 1". Adjacent stud shear connectors shall not be closer than 4 diameters center to center.

GDOT calls for 3/4"∅ studs and 1 1/2" clear from edge of girder flange to CL of stud. Therefore, **4** studs are only allowed for beams with a minimum flange width of 12"+/-.

Shear Capacity (Z_r) = 9.28 K/Row

Ultimate Strength (S_U) = 25.21 kips

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

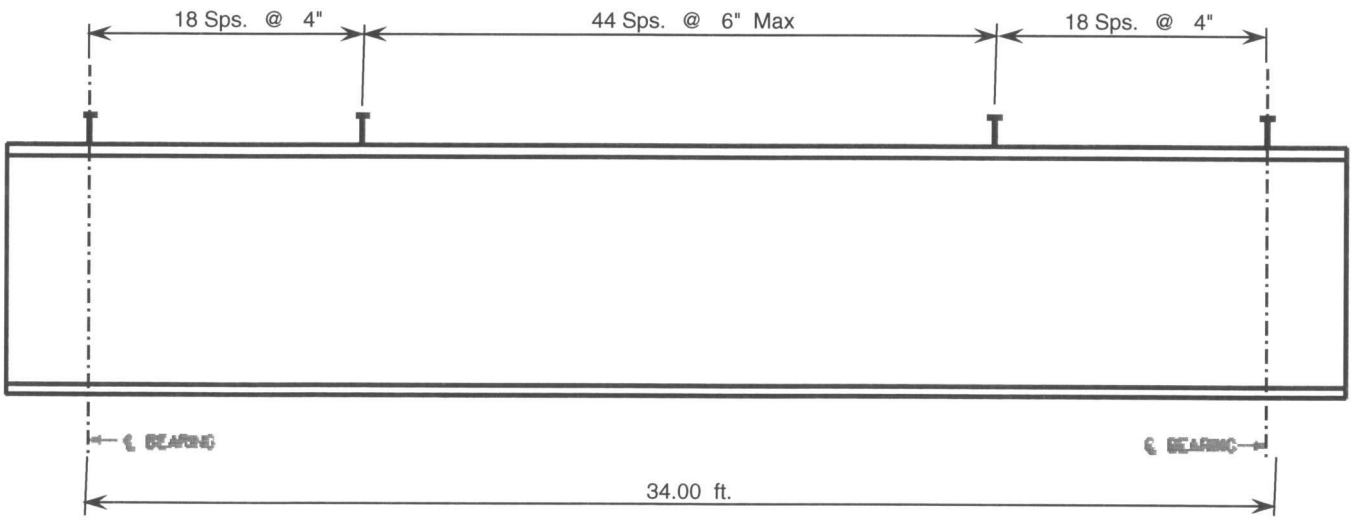
J.B. TRIMBLE, INC.
JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/18/2009**

SHEAR STUD SPACING

Design Length = 34 ft.

Location (ft.)	s (in)
0.0	**4.70**
1.7	**5.43**
3.4	**5.66**
5.1	**5.90**
6.8	**6.09**
8.5	**6.20**
10.2	**6.32**
11.9	**6.44**
13.6	**6.44**
15.3	**6.44**
17.0	**6.44**

	Spacing 1	Spacing 2
Stud Spacing:	4 in.	6 in.



CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Bearing Design	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Bearing Design calculations are included for bearings at bents 1, 2, 3 and 4.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	9	9	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bearing Design
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

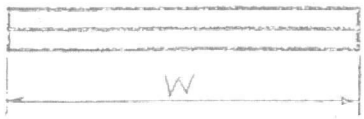
Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

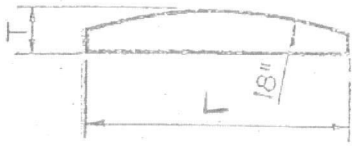
BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

SUGGESTED SHAPE AND SIZE OF SELF LUBRICATING BRONZE PLATES





SIZE AND MAXIMUM LOAD					
W	L	T	WITH SLOTS 2-3X1 3/16	WITH HOLES 2-1 3/16 ϕ	PLAIN
10	7	1			140
10	8	1 1/4			160
10	9	1 1/4			180
10 1/2	7	1			147
10 1/2	8	1 1/4			168
10 1/2	9	1 1/4			189
12	6	1	131	140	144
12	7	1	155	164	168
12	8	1 1/4	179	188	192
12	9	1 1/4			216

USE ONLY THOSE PLATES WHICH HAVE A MAXIMUM LOAD SHOWN

PURPOSE: To standardize plate sizes within the office so that plates may be stocked by suppliers, thus making them more economical.

DESIGN SPECIFICATION: Bronze plates shall conform to ASTM Designation B 22 Alloy B and supplemental specifications and shall have an allowable unit stress of 2000 psi in compression.

LIMITATIONS: Sliding plate type bearings shall not be used where the anticipated total movement (expansion plus contraction) exceeds 3 inches for assemblies without anchor bolts through the flanges and 2 inches for assemblies with anchor bolts through the flanges.

When the gradient of the girder at the bearing exceeds 4.0%, the top of the upper plate (sole plate) shall be beveled to match the girder gradient.

COEFFICIENT OF FRICTION: For design purposes a value of 0.10 shall be used.

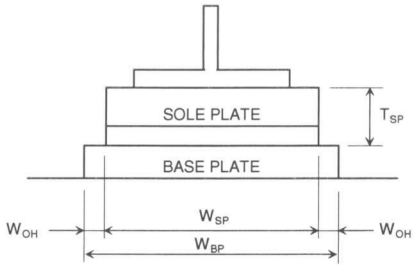
NOTE: WIDTH OF LAB A IS TO BE 2" LESS THAN WIDTH OF SOLE PL

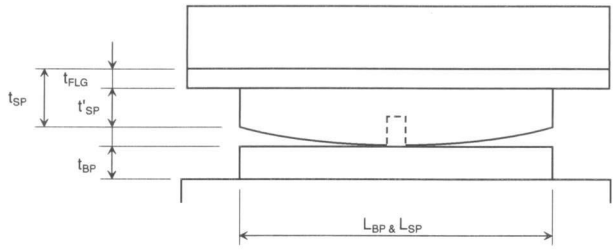
BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PJC 11/3/09





BENT 1

FIXED BEARING CALCULATIONS

GENERAL INPUT:

Beam Type	W 30 X 99		
R (Reaction) =	98.3 Kips		
Bottom Flange Thickness, t_{FLG} =	0.6875 in		17 mm
W_{SP} =	10.500 in		267 mm
W_{BP} =	10.50 in		267 mm
L_{SP} =	9.00 in		229 mm
f'_c =	3500 psi		
$F_b = 0.3f'_c$ =	1.050 ksi	AASHTO Art. 8.15.2.1.3	

SOLE PLATE: M=RL/8 S=$wt^2/6$ f_s=M/S

F_y =	36000 psi	AASHTO Table 10.2B			
$F_{yb} = .55F_y$ =	19.8 ksi	AASHTO 10.32.1A			
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{1/2}$ =	2.08 in.				
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.40				35 mm
Rad (Radius) =	18.00 in				
$= t'_{SP} + Rad - [Rad^2 - (½L_{SP})^2]^{1/2}$ =	1.97 in ----------> use =	2.00	in		51 mm

BASE (MASONRY) PLATE: M=(R/W)(W/2)(W/4)=RW/8 $S_X=W_{SP}T_{BP}^2/6$ f_s=M/S

$L_{BP} = R/(W_{BP}Fb)$ =	8.92 in ----------> use =	9.00	in		229 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP}F_{YB})]^{1/2}$ =	1.79 in ----------> use =	2.00	in		51 mm

ALLOWABLE BEARING ON CONCRETE:

$f_b = R/(L_{BP} * W_{BP})$ = 1.040 ksi **fb < Fb --> OK**

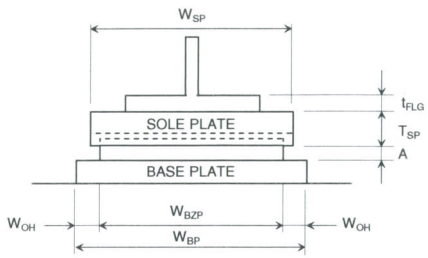
BASE PLATE			SOLE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
10.5"	9"	2"	10.5"	9"	2"	4"

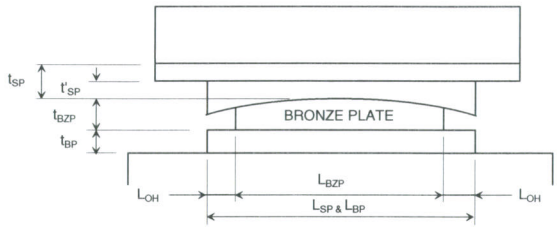
BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PJC 11/3/09





EXPANSION BEARING CALCULATIONS

BENT 2 BK

GENERAL INPUT:

Beam Type	W 30 X 99		
R (Reaction) =	98.3	Kips	
Bottom Flange Thick, t_{FLG} =	0.6875	in	17 mm
W_{SP} =	10.500	in	267 mm
W_{BZP} =	10.50	in	267 mm
W_{BP} =	10.50	in	267 mm
L_{SP} =	9.00	in	229 mm
L_{BP} =	9.00	in	229 mm

ALLOWABLE BEARING ON CONCRETE:

f'_c =	3500	psi	
$F_b = 0.3f'_c$ =	1.050	ksi	
$f_b = R/(L_{BP} * W_{BP})$ =	1.040	ksi	**fb < Fb --> OK**

BRONZE PLATE WIDTH (W_{BZP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911

BEARING CAPACITY =	2000	psi			
L_{BZP} =	4.68	in ----------> use =	7.0	in	178 mm

BASE (MASONRY) PLATE:

Max of W_{OH} or L_{OH} =	1.00	in			
$M = wL^2/2 = f_b \, Max(W_{OH} \text{ or } L_{OH})^2/2$ =	0.52	K-in			
F_y =	36000	psi	AASHTO Table 10.2B		
$F_{yb} = .55F_y$ =	19.8	ksi	AASHTO 10.32.1A		
$t_{BP} = [6M/F_{yb}]^{½}$ =	0.40	in ----------> use =	0.50	in	13 mm

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	2.08	in.		
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.40	in ----------> use =	1.50	in
Rad (Radius) =	18.00	in		
$T_{SP} = t'_{SP} + Rad - [Rad^2 - (½L_{BZP})^2]^{½}$ =	1.84	in ----------> use =	2.00	in

BRONZE PLATE THICKNESS (t_{BZP}):

A =	0.50	in			
$t_{BZP} = (T_{SP} - t'_{SP}) + A$ =	1.00	in ----------> use =	1.00	in	25 mm

BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
10.5"	9"	0.5"	10.5"	9"	1.5"	10.5"	7"	1"	3"

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
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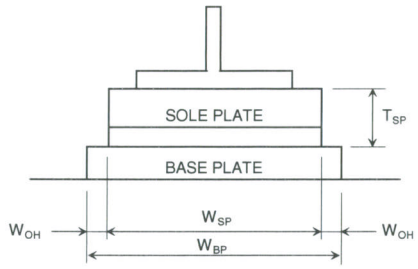
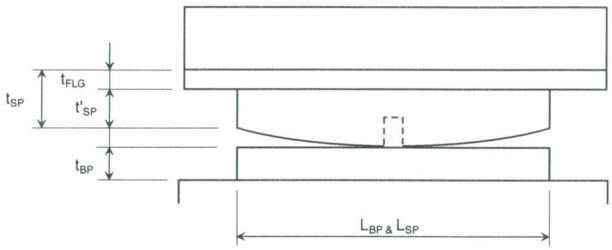
DATE: **10/30/2009**

PJC 11/3/09





BENT 2 AH

FIXED BEARING CALCULATIONS

GENERAL INPUT:

Beam Type	Plate Girder		
R (Reaction) =	141.5 Kips		
Bottom Flange Thickness, t_{FLG} =	1.375 in		35 mm
W_{SP} =	14.00 in		356 mm
W_{BP} =	14.00 in		356 mm
L_{SP} =	9.75 in		248 mm
f'_c =	3500 psi		
$F_b = 0.3f'_c$ =	1.050 ksi	AASHTO Art. 8.15.2.1.3	

SOLE PLATE: M=RL/8 S=$wt^2/6$ f_s=M/S

F_y =	36000 psi	AASHTO Table 10.2B			
$F_{yb} = .55F_y$ =	19.8 ksi	AASHTO 10.32.1A			
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	2.77 in.				
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.40				36 mm
Rad (Radius) =	18.00 in				
$= t'_{SP} + Rad - [Rad^2 - (½L_{SP})^2]^{½}$ =	2.07 in ----------> use =		2.25	in	57 mm

BASE (MASONRY) PLATE: M=(R/W)(W/2)(W/4)=RW/8 $S_X=W_{SP}T_{BP}^2/6$ f_s=M/S

$L_{BP} = R/(W_{BP}Fb)$ =	9.62 in ----------> use =		9.75	in	248 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP}F_{YB})]^{½}$ =	1.93 in ----------> use =		2.00	in	51 mm

ALLOWABLE BEARING ON CONCRETE:

$f_b = R/(L_{BP} * W_{BP})$ = 1.036 ksi **fb < Fb --> OK**

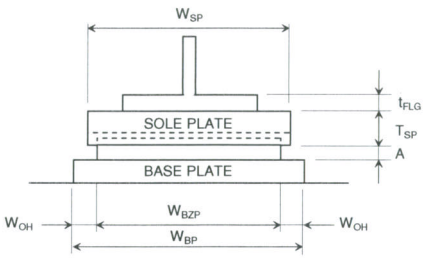
BASE PLATE			SOLE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
14"	9.75"	2"	14"	9.75"	2.25"	4.25"

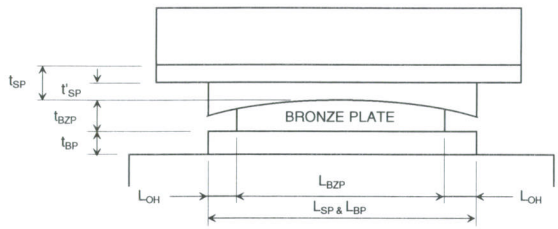
BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PJC 11/3/09





EXPANSION BEARING CALCULATIONS

BENT 3 BK

GENERAL INPUT:

Beam Type	Plate Girder		
R (Reaction) =	141.5	Kips	
Bottom Flange Thick, t_{FLG} =	1.375	in	35 mm
W_{SP} =	14.00	in	356 mm
W_{BZP} =	12.00	in	305 mm
W_{BP} =	14.00	in	356 mm
L_{SP} =	8.00	in	203 mm
L_{BP} =	9.75	in	248 mm

ALLOWABLE BEARING ON CONCRETE:

f'_c =	3500	psi	
$F_b = 0.3f'_c$ =	1.050	ksi	
$f_b = R/(L_{BP} * W_{BP})$ =	1.036	ksi	**fb < Fb --> OK**

BRONZE PLATE WIDTH (W_{BZP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911

BEARING CAPACITY =	2000	psi			
L_{BZP} =	5.89	in ----------> use =	6.0	in	152 mm

BASE (MASONRY) PLATE:

Max of W_{OH} or L_{OH} =	1.88	in			
$M = wL^2/2 = f_b \text{Max}(W_{OH} \text{ or } L_{OH})^2/2$ =	1.82	K-in			
F_y =	36000	psi	AASHTO Table 10.2B		
$F_{yb} = .55F_y$ =	19.8	ksi	AASHTO 10.32.1A		
$t_{BP} = [6M/F_{yb}]^{½}$ =	0.74	in ----------> use =	0.75	in	19 mm

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	3.06	in.		
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.69	in ----------> use =	1.75	in
Rad (Radius) =	18.00	in		
$T_{SP} = t'_{SP} + Rad - [Rad^2 - (½L_{BZP})^2]^{½}$ =	2.00	in ----------> use =	2.00	in

BRONZE PLATE THICKNESS (t_{BZP}):

A =	0.50	in			
$t_{BZP} = (T_{SP} - t'_{SP}) + A$ =	0.75	in ----------> use =	0.75	in	19 mm

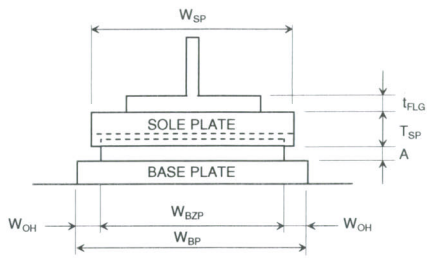
BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
14"	9.75"	0.75"	14"	8"	1.75"	12"	6"	1"	3.5"

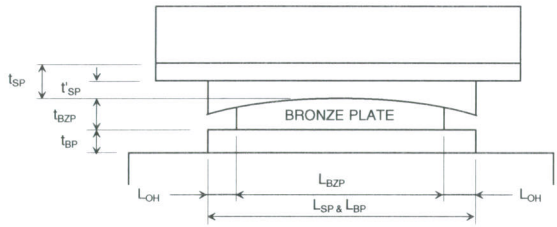
BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PJC 11/3/09





EXPANSION BEARING CALCULATIONS

BENT 3 AH

GENERAL INPUT:

Beam Type	W 30 X 90		
R (Reaction) =	91.0	Kips	
Bottom Flange Thick, t_{FLG} =	0.5625	in	14 mm
W_{SP} =	10.375	in	264 mm
W_{BZP} =	10.00	in	254 mm
W_{BP} =	10.38	in	264 mm
L_{SP} =	9.00	in	229 mm
L_{BP} =	9.00	in	229 mm

ALLOWABLE BEARING ON CONCRETE:

f'_c =	3500	psi	
$F_b = 0.3f'_c$ =	1.050	ksi	
$f_b = R/(L_{BP} * W_{BP})$ =	0.975	ksi	**fb < Fb --> OK**

BRONZE PLATE WIDTH (W_{BZP}):

TYPE = SELF LUBRICATING ASTM B22 ALLOY 911

BEARING CAPACITY =	2000	psi			
L_{BZP} =	4.55	in ----------> use =	7.0	in	178 mm

BASE (MASONRY) PLATE:

Max of W_{OH} or L_{OH} =	1.00	in			
$M = wL^2/2 = f_b \, Max(W_{OH} \text{ or } L_{OH})^2/2$ =	0.49	K-in			
F_y =	36000	psi	AASHTO Table 10.2B		
$F_{yb} = .55F_y$ =	19.8	ksi	AASHTO 10.32.1A		
$t_{BP} = [6M/F_{yb}]^{½}$ =	0.38	in ----------> use =	0.50	in	13 mm

SOLE PLATE:

$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	1.99	in.		
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.43	in ----------> use =	1.50	in
Rad (Radius) =	18.00	in		
$T_{SP} = t'_{SP} + Rad - [Rad^2 - (½L_{BZP})^2]^{½}$ =	1.84	in ----------> use =	2.00	in

BRONZE PLATE THICKNESS (t_{BZP}):

A =	0.50	in			
$t_{BZP} = (T_{SP} - t'_{SP}) + A$ =	1.00	in ----------> use =	1.00	in	25 mm

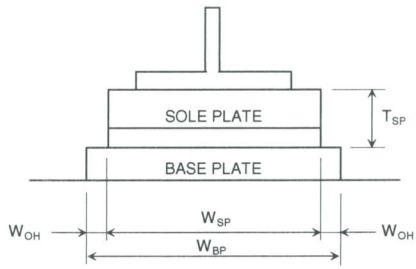
BASE PLATE			SOLE PLATE			BRONZE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
10.375"	9"	0.5"	10.375"	9"	1.5"	10"	7"	1"	3"

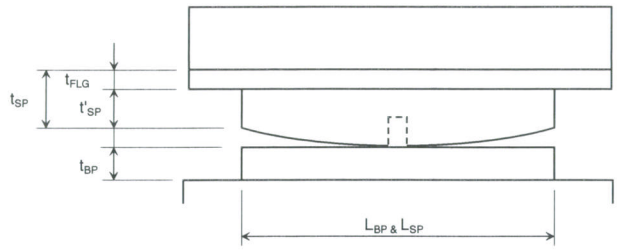
BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/30/2009**

PJC 11/3/09





BENT 4

FIXED BEARING CALCULATIONS

GENERAL INPUT:

Beam Type	W 30 X 90			
R (Reaction) =	91.0	Kips		
Bottom Flange Thickness, t_{FLG} =	0.5625	in		14 mm
W_{SP} =	10.375	in		264 mm
W_{BP} =	10.375	in		264 mm
L_{SP} =	8.50	in		216 mm
f'_c =	3500	psi		
$F_b = 0.3f'_c$ =	1.050	ksi	AASHTO Art. 8.15.2.1.3	

SOLE PLATE: M=RL/8 $S=wt^2/6$ f_s=M/S

F_y =	36000	psi	AASHTO Table 10.2B		
$F_{yb} = .55F_y$ =	19.8	ksi	AASHTO 10.32.1A		
$t_{SP} = [3/4(RW_{SP})/(L_{SP}F_{YB})]^{½}$ =	2.05	in.			
$t'_{SP} = t_{SP} - t_{FLG}$ =	1.49				38 mm
Rad (Radius) =	18.00	in			
$= t'_{SP} + Rad - [Rad^2 - (½L_{SP})^2]^{½}$ =	2.00	in ----------> use =	2.00	in	51 mm

BASE (MASONRY) PLATE: M=(R/W)(W/2)(W/4)=RW/8 $S_X=W_{SP}T_{BP}^2/6$ f_s=M/S

$L_{BP} = R/(W_{BP}Fb)$ =	8.35	in ----------> use =	8.50	in	216 mm
$t_{BP} = [3/4(RL_{BP})/(W_{BP}F_{YB})]^{½}$ =	1.68	in ----------> use =	1.75	in	44 mm

ALLOWABLE BEARING ON CONCRETE:

$f_b = R/(L_{BP} * W_{BP})$ = 1.032 ksi **fb < Fb --> OK**

BASE PLATE			SOLE PLATE			BEARING
WIDTH	LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	DEPTH
10.375"	8.5"	1.75"	10.375"	8.5"	2"	3.75"

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Substructure Design Input	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	Excel	2003

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience prior the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not complete and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work activity, a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Substructure Design Input calculations are included for bent 2.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	5	5	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bent Design Input - Bent 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PJC 10/26/09

PIER DESIGN CALCULATIONS

BENT 2

GENERAL REQUIREMENTS:

Live Load cases:	See GDOT Program BRLLCA		
Skew Angle:	80.70	° FROM CL BRIDGE	
	9.3	° FROM CL BENT	
Concrete Strength:	3500	psi	
Rebar Strength:	60000	psi	
Ec =	3587	ksi	AASHTO 8.7.1
Es =	29000	ksi	AASHTO 8.7.2
Allowable Steel Stress:	24000	psi	AASHTO 8.15.2.2
n = Ec/Es =	8		AASHTO 8.15.3.4
Cap Bar size:	11	#	
Stirup Size:	5	#	
Maximum bars / row in cap:	10	bars	
Column Steel Ratios:	1	% min.	
	8	% max.	
Edge of Column to main rebar:	3.135	in.	

Is Bent Fix "F" or Exp. "E"? E F = Fix E = Exp

Impact Factor

	Length (ft)	Impact
LEFT SPAN	41.00	1.300
RIGHT SPAN	80.00	1.244
	Avg. Impact =	1.27

Soil Weight 0.120 kcf

Columns:

TYPE S (S-SQUARE or RECTANGULAR, C-CIRCULAR, P-PILES)

Pile Spacing: 0.00 ft. MIN 0 ft. MAX
0.00 ft. EMBED 0 ft. EDGE

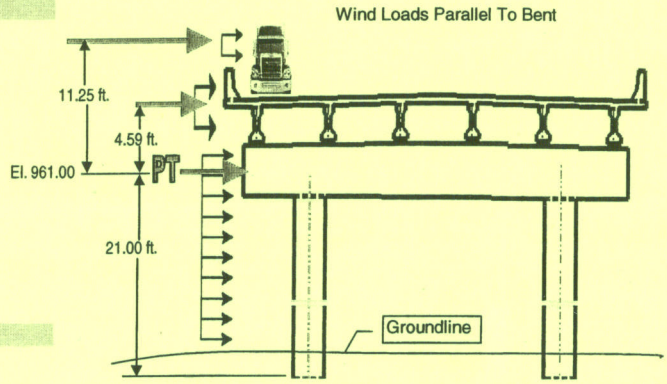
Pile Capacity:

TYPE	14 X 73	STEEL HP		
ALLOWABLE LOAD	192	KIPS =	96	TONS
UPLIFT	0	KIPS =		

WIND ON SUPERSTRUCTURE — AASHTO 3.15.2.1.1

	Left Span	Rigtht Span	TOTAL
Parapet Height =	32 in.	32 in.	
Beam Height =	30 in.	34 in.	
'D' or 'H' Dimension =	9.5 in.	9.5 in.	
Beam + Coping + Slab =	3.29 ft.	3.63 ft.	
Total Height =	5.96 ft.	6.29 ft.	
Span Lengths =	41.00 ft.	80.00 ft.	
Wind Force Area =	122.1 ft^2	251.7 ft^2	374 ft^2
Height of Cap =	3.00 ft.	3.00 ft.	
Wind Force Arm =	4.59 ft.		

Wind Loads Parallel To Bent

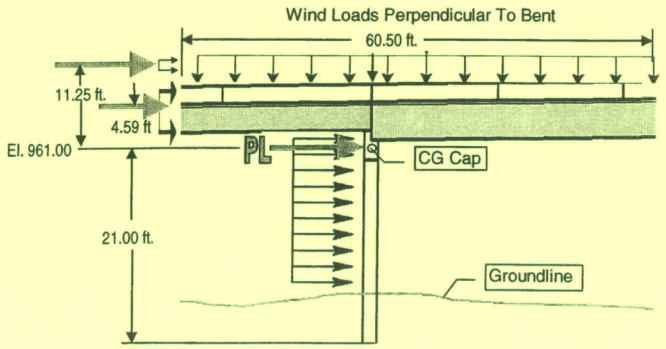


WIND ON SUBSTRUCTURE: — AASHTO 3.15.2.2

Wind Force =	0.040	ksf	PARA. & PERP.
Length of Cap =	38.00	ft.	
Width of Cap =	3.00	ft.	
CG of Cap ELEV =	961.00		
Ground Line ELEV=	942.00		
100 YR Scour ELEV =	0.00		
Depth to Point of Fixity =	2.00		
Pt. of Fixity ELEV =	940.00		
Bot. Cap to Pt. of Fixity =	19.50	ft.	
Design Height of Column =	21.00	ft.	CG Cap to Pt. of Fixity
Exposed Height of Column =	17.50	ft.	
Width of Column =	3.00	ft.	
Depth of Column =	3.00	ft.	
No. of Columns =	2	columns	

	PARA.	PERP.	
M_{CAP} =	7.56	95.76	k-ft.
M_{COL} =	22.58	45.15	k-ft.
M_{TOTAL} =	30.14	140.91	k-ft.
	PT = 1.44	PL = 6.71	kips

Wind Loads Perpendicular To Bent



BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PIER DESIGN CALCULATIONS

BENT 2

WIND ON LIVE LOAD — AASHTO 3.15.2.1.2

Length =	60.50	ft.			
APT = APL =	11.13	ft.	Use-->	11.25	ft.

TRACTION FORCE: For One lane — AASHTO 3.9

LF = **0.00** k

TEMPERATURE FORCE: — AASHTO 3.16

Friction Force due to Temperature:

Δ = Temp. Deflection = ALPHA x Length x Change in Temp.

T_{RISE} =	30	° T_{FALL} =	40	° (Fahrenheit)
Material (C or S):	C	ALPHA =	0.000006	/ ° (Fahrenheit)

Force in Pad = Fs = [G x L x W x Deflection] / (Telas)

	LEFT	RIGHT	
Expansion Length =	41.00	0.00	ft
Δ =	0.118	0.000	in
G = Shear Modulus of Pad =	200	200	psi
L= Length of Pad =	10.50	10.50	in
W = Width of Pad =	12.00	12.00	in
Telas = Bearing Elastomer Depth =	4.250	4.250	in
Fs =	0.70	0.00	KIPS /pad
No. of Beams =	5	5	
Total Temperature Force =	3.50	0.00	kips @ top of seat
	3.75	0.00	kips @ center of cap
P_L =	3.70	0.00	kips
P_T =	0.61	0.00	kips

Difference =	P_L =	3.70	kips	AT CL CAP	
	P_T =	0.61	kips	AT CL CAP	
	P_L =	3.97	kips	AT CL CAP ----->	Use Total Lateral Force
	P_T =	0.65	kips	AT CL CAP	= PL + Equiv. Lateral Force from MDL due to eccentricity

Expansion of Concrete Cap =	**0.00018**	in/in	
Contraction of Concrete Cap =	**0.00044**	in/in	which includes 0.0002 for creep

STREAM FORCE: — AASHTO 3.18.1

100 yr Flood ELEV. =	0	ft.	
Point of Fixity =	21.00	ft.	
Bottom of Stream ELEV =	942.00	ft.	
Pt. of Fixity ELEV =	940.00		
V_{AVG} =	0	FPS @ 100 yr. Flood	
K =	1.4	for square ended piers	
$P_{AVG} = K * (V_{AVG})^2$ =	0.00	psf	AASHTO Eq. (3-4)
$P_{MAX} = 2 * P_{AVG}$ =	0.00	psf	

Piers Aligned with streaam flow:

P_S =	0.000	kips
M =	0.00	k-ft.
$P_{CL\ CAP}$ =	0.000	k

BRIDGE: **I-575 over Big Shanty Road**
COUNTY: **CHEROKEE**
P.I. NO: **713640**
PROJECT: **NH000-0575-01(028)**

J.B. TRIMBLE, INC.

JOB NO: **31-6036**
DESIGNED BY: **SHG**
DATE: **10/24/2009**

PIER DESIGN CALCULATIONS

BENT 2

DEAD LOAD: AASHTO 3.3

LENGTH = 38.00 feet STEP HT = 0.000 ft
STEP WT = 1.417 ft
SKEW = 80.70 degrees

SPAN 2

BEAM	BEAM SPACING	DISTANCE BETWEEN	DISTANCE ALONG	R dl	Add'l DL	DL
1		1.774	1.774	37.5	0.00	37.5
2	8.500	8.613	10.387	37.5	0.00	37.5
3	8.500	8.613	19.000	37.5	0.00	37.5
4	8.500	8.613	27.613	37.5	0.00	37.5
5	8.500	8.613	36.226	37.5	0.0	37.5
		1.774	38.000			
TOTAL		38.000				187.4
					CL Brg to CL Bent =	0.750

SPAN 3

BEAM	BEAM SPACING	DISTANCE BETWEEN	DISTANCE ALONG	R dl	Add'l DL	DL
1		1.774	1.774	74.8	0.00	74.8
2	8.500	8.613	10.387	74.8	0.0	74.8
3	8.500	8.613	19.000	74.8	0.0	74.8
4	8.500	8.613	27.613	74.8	0.0	74.8
5	8.500	8.613	36.226	74.8	0.00	74.8
		1.774	38.000			
TOTAL		38.000				374.2
					CL Brg to CL Bent =	0.750
COMBINED LOADS						561.7

COLUMN = 1.500 FT - checking ¼ points on column

	POINT	MEMBER		DISTANCE ALONG	R dl	Add'l DL	DL	CHECK POINT
7.50								
	G1	1	5.726	1.774	112.3	0.0	112.3	1
	EC	1	4.976	6.750				2
23.00								
	EC	2	0.750	8.250				3
	G2	2	2.137	10.387	112.3	0.0	112.3	4
	CHECK	2	4.307	14.693				5
	G3	2	4.307	19.000	112.3	0.0	112.3	6
	CHECK	2	4.307	23.307				7
	G4	2	4.307	27.613	112.3	0.0	112.3	8
	EC	2	2.137	29.750				9
7.50								
	EC	3	0.750	31.250				10
	G5	3	4.976	36.226	112.3	0.0	112.3	11
				1.774				
			38.000					

ADDITIONAL DL MOMENT DUE TO ECCENTRICITY:

M_{DL} = 140.07 KIP-FT

(EQUIV. LONG FORCE) $F_{EL} = M_{DL} / H_{DESIGN\ OF\ COLUMN}$ = 6.67 KIP

(TOTAL LONG FORCE) $F_L = F_{EL} + P_{L\ TEMP}$ = 10.64 KIP

LIVE LOADS: AASHTO 3.4

	LEFT	RIGHT			
Span Lengths =	41.00	80.00	ft.		
LIVE LOAD REACTION		63.67	KIPS	AXLE LOAD NO IMPACT	**VERIFY !!!!**
		64.72	KIPS	LANE LOAD NO IMPACT	
AVERAGE IMPACT		1.27			
P-LOAD FOR BRLLCA INPUT		41	KIPS		

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Live Load Case Output	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	GDOT BRLLCA	06/26/2008

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Live Load Case ouptput is included for bent 2.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	3	3	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Live Load Case Output - Bent 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

18-OCT-09
11:43:02

PROB. NO.

GEORGIA DEPARTMENT OF TRANSPORTATION
PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
SUMMARY OF THE LIVE LOAD CASE PROGRAM
REVISED: JUNE 26, 2008

I-575 OVER BIG SHANTY ROAD

BRIDGE WIDTH	X1	X2	CENTER LINE DISTANCE	# OF BEAMS	REACTION FORCE	MAXIMUM # OF TRUCKS	# OF COLUMNS	COLUMN WIDTH	SKEW ANGLE
41.750	3.000	0.000	20.875	6	41.000	3	0	0.000	0

D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20
3.000	8.500	8.500	8.500	8.500	4.750														

	NO. OF TRUCKS	BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5	BEAM 6	BEAM 7	BEAM 8	BEAM 9	BEAM 10
LL CASE 1	1	53.059	28.941	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LL CASE 2	2	53.059	67.529	43.412	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LL CASE 3	3	53.059	67.529	69.941	53.059	2.412	0.000	0.000	0.000	0.000	0.000
LL CASE 4	1	0.000	0.000	0.000	6.029	34.971	41.000	0.000	0.000	0.000	0.000
LL CASE 5	2	0.000	0.000	13.265	59.088	50.647	41.000	0.000	0.000	0.000	0.000
LL CASE 6	3	0.000	20.500	66.324	67.529	50.647	41.000	0.000	0.000	0.000	0.000
LL CASE 7	1	0.000	14.471	53.059	14.471	0.000	0.000	0.000	0.000	0.000	0.000
LL CASE 8	2	21.706	67.529	60.294	14.471	0.000	0.000	0.000	0.000	0.000	0.000
LL CASE 9	3	21.706	67.529	67.529	67.529	21.706	0.000	0.000	0.000	0.000	0.000
LL CASE 10	2	0.000	39.794	69.338	53.059	1.809	0.000	0.000	0.000	0.000	0.000
LL CASE 11	3	0.000	39.794	69.338	72.956	47.728	16.184	0.000	0.000	0.000	0.000
LL CASE 12	2	53.059	28.941	0.000	6.029	34.971	41.000	0.000	0.000	0.000	0.000
LL CASE 13	3	53.059	67.529	43.412	6.029	34.971	41.000	0.000	0.000	0.000	0.000

PSC 10/20/09

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
Intermediate Bent Design Output	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	X YES ◯ NO	◯	X	GDOT BRPIER	06/26/2008

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Intermediate bent design ouptput is included for bent 2.

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	6	6	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bent Design Output - Bent 2
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Sufficient sample calculations representative of the scope and conditions in the design calculation were performed and the results compared to demonstrate the computer program adequacy.

24-OCT-09
16:25:30

GEORGIA DEPARTMENT OF TRANSPORTATION
PRECONSTUCTION DIVISION - OFFICE OF BRIDGE & STRUCTURAL DESIGN
THE ANALYSIS AND DESIGN OF PIERS FOR BRIDGES - V 4.2.07 - AASHTO SPECS 1984 INTERIM
REVISED: JUNE 30, 2008
I-575 OVER BIG SHANTY ROAD - BENT 2

PROB. NO. PSC 10/26/09

DESIGN DATA

DESIGN OPTIONS	NO. CAN	NO. COL	NO. LLC	SKEW ANG D M S	F'C PSI	FC PSI	N	FY PSI	FS PSI	EC KSI	ES KSI	CONC. STRAIN	Z FACT	* * * CAP REINFORCING STEEL * * * * CAP MAIN SIZE	STR SIZ	MAX TOP	MAX BOT	MIN SIZE	MIN NO.	TOP CL.	MIN S.SP	DEPTH INCR.	BOT CL.
D D D L	2	2	13	9-18-00	3500.	1400.	8.	60000.	24000.	3587.	29000.	0.0030	170.	11	5	10	11	6	4	2.00	4.00	3.00	2.00

COLUMN REINFORCING STEEL MIN.P	MAX.P	CL.SP.	CLEAR	R MODE	KL COEF	OC	OF	CM	BD1	BD2	IMPACT %	SOIL WT KCF	ALL.S.P. KSF	MIN PL SP	MAX PL SP	EDGE DIST	PILE DEPTH	REBAR CLEAR	ALL.PILE CAPACITY	ALL.PILE UPLIFT	I P
1.00	8.00	2.25	2.625	2	2.00	0.00	0.90	0.00	1.00	0.00	27.00	0.120	0.000	3.00	5.00	1.500	1.000	1.000	192.000	0.000	P

CAP DATA

CN	C	L	A	DE	BC	BE	DH	LH	XB1	XB2	XB3	XB4	XB5	XB6	XB7	XB8
11	C	7.500	0.000	3.000	3.000	0.000	0.000	0.000	5.726	4.976						
12	C	23.000	0.000	3.000	3.000		0.000	0.000	0.750	2.137	4.307	4.307	4.307	4.307	2.137	
13	C	7.500	0.000	3.000	3.000	0.000	0.000	0.000	0.750	4.976						

COLUMN DATA

CN	P	I	T	S	HT	A	DT	BT	DB	BB	DL	FLEX	ND	NB	SZ	ND	NB	SZ	ND	NB	SZ	ND	NB	SZ	SLOPE	EP	AP
21	0	C	T		21.000	0.000	3.000	3.000	0.000	0.000	1.500	0.000	2	4	11	0	0	0	99	99	11	0	0	0	0.000	0.000	0.000
22	0	C	T		21.000	0.000	3.000	3.000	0.000	0.000	1.500	0.000	2	4	11	0	0	0	99	99	11	0	0	0	0.000	0.000	0.000

FOOTING DATA

CN	S/P	B	D	T	DEL.B	DEL.D	DEL.T	R.B/D	R.D/B	S.HT.	NP	SYM.	BP	DP	SET.
31	P	6.000	6.000	3.500	0.500	0.500	0.500	0.000	0.000	0.000	4	1	0.000	0.000	0.000
32	P	6.000	6.000	3.500	0.500	0.500	0.500	0.000	0.000	0.000	4	1	0.000	0.000	0.000

GROUP II WIND

SUPERSTRUCTURE AREA* TRANS.	LONG.	STD. WIND	FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	WIND ON SUPERSTRUCTURE INTENSITIES	* WIND FORCE ARM APT	APL	* WIND ON PIER PT	PL
374.	374.	1	50	0	44	6	41	12	33	16	17	19		4.591	4.591	1.435	6.710

GROUP III WIND

STD. * WIND	FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	* STD. * WIND	FT1	FL1	FT2	FL2	FT3	FL3	FT4	FL4	FT5	FL5	* LENGTHS OF LL TRANS.	LONGI.	* WIND ON LL ARMS APT	APL
	50	0	44	6	41	12	33	16	17	19	1	100	0	88	12	82	24	66	32	34	38	60.5	60.5	11.250	11.250

MISCELLANEOUS FORCES

CENTRI. FT	TRACTION FORCE AND ARMS FL	APT	APL	EXPANSION COEFFICIENT	SHRINKAGE COEFFICIENT	STREAM FLOW PT	PL
0.000	3.460	11.250	11.250	0.00018000	0.00044000	0.649	10.636

DEAD LOAD SUPERSTRUCTURE AND LIVE LOAD CASES

I.D.	NL	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
D.L.	0	111.300	0.000	0.000	111.300	0.000	111.300	0.000	111.300	0.000	0.000	111.300	
LL 1	1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	28.941	0.000	0.000	53.058	
LL 2	2	0.000	0.000	0.000	0.000	0.000	43.411	0.000	67.529	0.000	0.000	53.058	
LL 3	3	2.411	0.000	0.000	53.058	0.000	69.941	0.000	67.529	0.000	0.000	53.058	
LL 4	1	34.970	0.000	0.000	6.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
LL 5	2	50.647	0.000	0.000	59.088	0.000	13.264	0.000	0.000	0.000	0.000	0.000	
LL 6	3	50.647	0.000	0.000	67.529	0.000	66.323	0.000	20.500	0.000	0.000	0.000	
LL 7	1	0.000	0.000	0.000	14.470	0.000	53.058	0.000	14.470	0.000	0.000	0.000	
LL 8	2	21.705	0.000	0.000	67.529	0.000	60.294	0.000	14.470	0.000	0.000	0.000	
LL 9	3	21.705	0.000	0.000	67.529	0.000	67.529	0.000	67.529	0.000	0.000	21.705	
LL10	2	1.808	0.000	0.000	53.058	0.000	69.338	0.000	53.058	0.000	0.000	0.000	
LL11	3	47.727	0.000	0.000	72.955	0.000	69.338	0.000	39.794	0.000	0.000	47.727	
LL12	2	34.970	0.000	0.000	6.029	0.000	0.000	0.000	28.941	0.000	0.000	53.058	
3	3	34.970	0.000	0.000	6.029	0.000	43.411	0.000	67.529	0.000	0.000	34.970	

① Fixed Bearing Rt. Side of Bent → Braking force for Rt. Span

$FL = 0.05 \cdot [(2 \times \frac{90'}{2}) \times 0.64^{k/ft} + 18^k]$ – AASHTO 3.9

$FL = 3.46^k$

MEMBER PROPERTIES

COLUMN PROPERTIES

CN	KT KTM	COTB COBT	COTBM COBTM	TLR TRL	TRC TCR	TLC TCL	DFC DFL	KL PDF	FKBR FKUBR	PCBR PCUBR	PCL FLU	UFMT UFMB	EITTB EILTB	PSIT PSIB	RGTB RGL
	664107.4	0.5000	0.5000	0.4457	1.0000	0.5543	0.5543	0.026239	13.4	90953.5	6423.2	47436.2	189773.9	0.8	10.7
	664107.4	0.5000	0.2587	0.0000	1.0000	0.0000	0.0000	0.5000	26.3	23754.3	19.5	47436.2	189773.9	0.0	10.7
2	664107.4	0.5000	0.5000	0.0000	0.5543	1.0000	0.5543	0.026239	13.4	90953.5	6423.2	47436.2	189773.9	0.8	10.7
	664107.4	0.5000	0.2587	0.4457	0.0000	1.0000	0.4457	0.5000	26.3	23754.3	19.5	47436.2	189773.9	0.0	10.7

CAP PROPERTIES

CN	CO K	KML KMR	COMLR COMRL	FMWT UFEM	FMLP1 FMRP1	FMLP2 FMRP2	FMLP3 FMRP3	FMLP4 FMRP4	FMLP5 FMRP5	FMLP6 FMRP6	FMLP7 FMRP7	FMLP8 FMRP8
2	0.5000	534009.3	0.2968	59.5125	0.7019	2.2077	3.3975	2.8747	1.5457	0.3165	0.0235	
	606358.9	534009.3	0.2968	39545.1	0.0237	0.3169	1.5463	2.8753	3.3974	2.2066	0.7001	

COLUMN MOMENTS(KIP-FEET), SHEARS(KIPS), REACTIONS(KIPS)

LOAD	COL	TRANSVERSE PC	MT	V	MB	RF	ML	MR	* MT	LONGITUDINAL V	MB	MF
UNIT F.AT CL.CAP	1	0.386	4.440	0.500	6.060	0.386	0.000	-4.440	0.750	0.500	10.500	10.500
	2	-0.386	4.440	0.500	6.060	-0.386	-4.440	0.000	0.750	0.500	10.500	10.500
EXPANSION OF CAP	1	0.000	30.777	4.536	64.485	0.000	0.000	-30.777	0.000	0.000	0.000	0.000
	2	0.000	-30.777	-4.536	-64.485	0.000	30.777	0.000	0.000	0.000	0.000	0.000
SHRINKAGE OF CAP	1	0.000	-75.232	-11.089	-157.630	0.000	0.000	75.232	0.000	0.000	0.000	0.000
	2	0.000	75.232	11.089	157.630	0.000	-75.232	0.000	0.000	0.000	0.000	0.000
DEAD LOAD TOTAL	1	303.886 330.211	-10.205	-0.729	-5.105	330.211	675.273	-665.068	0.000	0.000	0.000	0.000
	2	303.914 330.239	10.208	0.729	5.102	330.239	665.065	-675.273	0.000	0.000	0.000	0.000
STREAM FLOW	1	0.251	2.881	0.324	3.933	0.251	0.000	-2.881	7.977	5.318	111.678	111.678
	2	-0.251	2.881	0.324	3.933	-0.251	-2.881	0.000	7.977	5.318	111.678	111.678
TRAC. FORCE 1 LN	1	0.489	2.482	0.280	3.389	0.489	0.000	-2.482	-21.768	-1.707	-55.059	-55.059
	2	-0.489	2.482	0.280	3.389	-0.489	-2.482	0.000	-21.768	-1.707	-55.059	-55.059
D ON SUBSTR.	1	0.554	6.371	0.717	8.697	0.554	0.000	-6.371	-5.033	-3.355	-70.455	-70.455
	2	-0.554	6.371	0.717	8.697	-0.554	-6.371	0.000	-5.033	-3.355	-70.455	-70.455
GROUP 2 WIND 1 1	1	11.362	88.300	9.945	120.537	11.362	0.000	-88.300	4.171	-1.844	-31.787	-31.787
	2	-11.362	88.300	9.945	120.537	-11.362	-88.300	0.000	4.171	-1.844	-31.787	-31.787
GROUP 2 WIND 1 2	1	11.362	88.300	9.945	120.537	11.362	0.000	-88.300	14.236	4.866	109.123	109.123
	2	-11.362	88.300	9.945	120.537	-11.362	-88.300	0.000	14.236	4.866	109.123	109.123
GROUP 2 WIND 2 1	1	10.277	80.079	9.019	109.314	10.277	0.000	-80.079	-3.678	-3.133	-64.763	-64.763
	2	-10.277	80.079	9.019	109.314	-10.277	-80.079	0.000	-3.678	-3.133	-64.763	-64.763
GROUP 2 WIND 2 2	1	9.853	76.859	8.656	104.918	9.853	0.000	-76.859	19.876	5.792	132.818	132.818
	2	-9.853	76.859	8.656	104.918	-9.853	-76.859	0.000	19.876	5.792	132.818	132.818
GROUP 2 WIND 3 1	1	9.841	76.773	8.646	104.801	9.841	0.000	-76.773	-10.974	-4.330	-95.419	-95.419
	2	-9.841	76.773	8.646	104.801	-9.841	-76.773	0.000	-10.974	-4.330	-95.419	-95.419
GROUP 2 WIND 3 2	1	8.992	70.333	7.921	96.010	8.992	0.000	-70.333	26.068	6.809	158.834	158.834
	2	-8.992	70.333	7.921	96.010	-8.992	-70.333	0.000	26.068	6.809	158.834	158.834
GROUP 2 WIND 4 1	1	8.254	64.737	7.291	88.372	8.254	0.000	-64.737	-16.943	-5.310	-120.496	-120.496
	2	-8.254	64.737	7.291	88.372	-8.254	-64.737	0.000	-16.943	-5.310	-120.496	-120.496
GROUP 2 WIND 4 2	1	7.121	56.151	6.324	76.650	7.121	0.000	-56.151	29.092	7.305	171.538	171.538
	2	-7.121	56.151	6.324	76.650	-7.121	-56.151	0.000	29.092	7.305	171.538	171.538
GROUP 2 WIND 5 1	1	4.901	39.325	4.429	53.682	4.901	0.000	-39.325	-23.260	-6.348	-147.038	-147.038
	2	-4.901	39.325	4.429	53.682	-4.901	-39.325	0.000	-23.260	-6.348	-147.038	-147.038
GROUP 2 WIND 5 2	1	3.556	29.129	3.281	39.763	3.556	0.000	-29.129	29.519	7.375	173.332	173.332
	2	-3.556	29.129	3.281	39.763	-3.556	-29.129	0.000	29.519	7.375	173.332	173.332
GROUP 3 WIND 1 1	1	8.634	52.997	5.969	72.344	8.634	0.000	-52.997	7.484	-0.064	6.229	6.229
	2	-8.634	52.997	5.969	72.344	-8.634	-52.997	0.000	7.484	-0.064	6.229	6.229
GROUP 3 WIND 1 2	1	8.634	52.997	5.969	72.344	8.634	0.000	-52.997	10.504	1.949	48.502	48.502
	2	-8.634	52.997	5.969	72.344	-8.634	-52.997	0.000	10.504	1.949	48.502	48.502
JP 3 WIND 2 1	1	7.784	47.870	5.391	65.347	7.784	0.000	-47.870	-0.186	-0.868	-17.108	-17.108
	2	-7.784	47.870	5.391	65.347	-7.784	-47.870	0.000	-0.186	-0.868	-17.108	-17.108
GROUP 3 WIND 2 2	1	7.451	45.862	5.165	62.606	7.451	0.000	-45.862	16.015	2.526	65.272	65.272
	2	-7.451	45.862	5.165	62.606	-7.451	-45.862	0.000	16.015	2.526	65.272	65.272

COLUMN MOMENTS(KIP-FEET), SHEARS(KIPS), REACTIONS(KIPS)

LOAD	COL	PC	MT	V	TRANSVERSE MB	RF	ML	MR	* MT	LONGITUDINAL V	MB	MF
UP 3 WIND 3 1	1	7.442	45.809	5.159	62.533	7.442	0.000	-45.809	-7.316	-1.615	-38.804	-38.804
	2	-7.442	45.809	5.159	62.533	-7.442	-45.809	0.000	-7.316	-1.615	-38.804	-38.804
GROUP 3 WIND 3 2	1	6.777	41.793	4.707	57.051	6.777	0.000	-41.793	22.066	3.160	83.684	83.684
	2	-6.777	41.793	4.707	57.051	-6.777	-41.793	0.000	22.066	3.160	83.684	83.684
GROUP 3 WIND 4 1	1	6.199	38.305	4.314	52.289	6.199	0.000	-38.305	-13.149	-2.226	-56.551	-56.551
	2	-6.199	38.305	4.314	52.289	-6.199	-38.305	0.000	-13.149	-2.226	-56.551	-56.551
GROUP 3 WIND 4 2	1	5.311	32.951	3.711	44.980	5.311	0.000	-32.951	25.021	3.469	92.674	92.674
	2	-5.311	32.951	3.711	44.980	-5.311	-32.951	0.000	25.021	3.469	92.674	92.674
GROUP 3 WIND 5 1	1	3.572	22.459	2.529	30.659	3.572	0.000	-22.459	-19.322	-2.872	-75.335	-75.335
	2	-3.572	22.459	2.529	30.659	-3.572	-22.459	0.000	-19.322	-2.872	-75.335	-75.335
GROUP 3 WIND 5 2	1	2.518	16.101	1.813	21.980	2.518	0.000	-16.101	25.438	3.513	93.944	93.944
	2	-2.518	16.101	1.813	21.980	-2.518	-16.101	0.000	25.438	3.513	93.944	93.944
LIVE LOAD LL 1	1	-7.907	-59.999	-5.659	-58.839	-7.907	0.000	60.000	0.000	0.000	0.000	0.000
	2	89.906	98.452	5.659	20.387	89.906	205.358	-303.810	0.000	0.000	0.000	0.000
LIVE LOAD LL 2	1	18.147	53.480	2.849	6.347	18.147	0.000	-53.480	0.000	0.000	0.000	0.000
	2	145.851	-26.290	-2.849	-33.538	145.851	330.100	-303.810	0.000	0.000	0.000	0.000
LIVE LOAD LL 3	1	73.261	138.391	8.582	41.829	73.261	12.425	-150.816	0.000	0.000	0.000	0.000
	2	148.136	-101.902	-8.582	-78.318	148.136	375.331	-273.429	0.000	0.000	0.000	0.000
LIVE LOAD LL 4	1	47.681	-78.088	-4.537	-17.182	47.681	200.238	-122.150	0.000	0.000	0.000	0.000
	2	-6.682	48.939	4.537	46.331	-6.682	-48.939	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 5	1	120.362	-35.923	-1.583	2.679	120.362	290.005	-254.081	0.000	0.000	0.000	0.000
	2	2.637	8.403	1.583	24.842	2.637	-8.403	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 6	1	141.020	82.907	6.920	62.407	141.020	261.004	-343.912	0.000	0.000	0.000	0.000
	2	43.479	-110.845	-6.920	-34.469	43.479	110.845	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 7	1	40.995	129.803	9.272	64.903	40.995	0.000	-129.803	0.000	0.000	0.000	0.000
	2	41.003	-129.805	-9.272	-64.901	41.003	129.805	0.000	0.000	0.000	0.000	0.000
E LOAD LL 8	1	117.960	145.556	10.529	75.554	117.960	124.283	-269.839	0.000	0.000	0.000	0.000
	2	46.038	-149.257	-10.529	-71.853	46.038	149.257	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL 9	1	110.691	148.483	10.606	74.240	110.691	111.855	-260.338	0.000	0.000	0.000	0.000
	2	110.707	-148.481	-10.606	-74.242	110.707	260.336	-111.855	0.000	0.000	0.000	0.000
LIVE LOAD LL10	1	89.908	224.451	16.089	113.424	89.908	10.353	-234.804	0.000	0.000	0.000	0.000
	2	87.354	-226.049	-16.089	-111.826	87.354	226.049	0.000	0.000	0.000	0.000	0.000
LIVE LOAD LL11	1	136.443	46.593	3.017	16.764	136.443	245.956	-292.549	0.000	0.000	0.000	0.000
	2	113.344	-37.883	-3.017	-25.474	113.344	283.839	-245.956	0.000	0.000	0.000	0.000
LIVE LOAD LL12	1	39.774	-138.088	-10.196	-76.021	39.774	200.238	-62.151	0.000	0.000	0.000	0.000
	2	83.224	147.391	10.196	66.718	83.224	156.419	-303.810	0.000	0.000	0.000	0.000
LIVE LOAD LL13	1	62.672	2.658	0.767	13.443	62.672	180.214	-182.872	0.000	0.000	0.000	0.000
	2	105.546	-18.809	-0.767	2.709	105.546	199.024	-180.214	0.000	0.000	0.000	0.000

CAP ANALYSIS AND DESIGN DATA
CAP MOMENTS AND SHEARS

POINT	MOMENTS(KIP-FEET) D.L.TOT.	G1 MAX.+	G1 MAX.-	G2 MAX.+	G2 MAX.-	G3 MAX.+	G3 MAX.-	** DL T.LT	DL T.RT	SHEARS(KIPS) G1 + LT	G1 + RT	G1 - LT	G1 - RT
P 1	-2.762	-2.762	-2.762	-2.762	-2.762	-2.762	-2.762	-3.113	-147.803	-3.113	-147.803	-3.113	-257.758
P 2	-759.958	-759.958	-1307.093	-759.958	-759.958	-759.958	-1087.584	-156.536	-156.536	-156.536	-156.536	-266.491	-266.491
C 1L	-877.854	-877.854	-1507.454	-877.854	-877.854	-877.854	-1254.860	-157.852		-157.852		-267.807	
C 1R	-864.588	-734.329	-1614.966	-749.798	-983.124	-714.466	-1393.028		237.199		446.493		220.033
P 3	-687.182	-569.798	-1281.920	-579.879	-797.988	-549.474	-1117.265	235.883	235.883	445.177	445.177	218.716	218.716
P 4	-187.109	-68.956	-391.381	-101.136	-275.887	-58.233	-368.679	232.132	87.442	441.427	163.844	214.966	70.276
P 5	173.227	543.310	48.783	216.208	128.843	423.047	71.141	79.883	79.883	156.285	156.285	62.717	62.717
P 6	501.006	1198.750	373.274	501.016	500.996	918.824	424.513	72.325	-72.365	148.726	-57.533	55.158	-158.355
P 7	173.050	551.512	31.945	217.455	130.049	428.464	61.477	-79.924	-79.924	-65.092	-65.092	-165.914	-165.914
P 8	-187.462	-120.261	-402.502	-98.663	-273.454	-92.066	-370.257	-87.483	-232.173	-72.651	-217.341	-173.472	-450.107
P 9	-687.623	-588.726	-1339.452	-576.797	-794.947	-559.567	-1150.500	-235.923	-235.923	-221.091	-221.091	-453.858	-453.858
C 2L	-864.584	-754.592	-1679.427	-746.048	-979.374	-725.095	-1430.123	-237.236		-222.404		-455.171	
C 2R	-877.854	-877.854	-1537.426	-877.854	-877.854	-877.854	-1272.807		157.852		273.041		157.852
P10	-759.958	-759.958	-1333.139	-759.958	-759.958	-759.958	-1103.180	156.536	156.536	271.725	271.725	156.536	156.536
[illegible]	-2.762	-2.762	-2.762	-2.762	-2.762	-2.762	-2.762	147.803	3.113	262.992	3.113	147.803	3.113

CAP DESIGN DATA

PT.	M+ UNF. K-FT.	M- UNF. K-FT.	TOP REINFORCE. AS	NO.SIZE	BOT.REINFORCE. AS	NO.SIZE	LEFT STIRRUPS M.SP.	AV/IN	BAR&SPAC	RIGHT STIRRUPS M.SP.	AV/IN	BAR&SPAC	D IN.	FC PSI	PS %	FS/FF RATIO	FS/FZ RATIO
P 1	-2.124	-2.124	1.76	4 # 11	1.76	4 # 11	0.00	0.000	#5@ 0.00	15.98	0.087	#5@ 7.12	36.00		0.15	0.000	0.005
`	-584.583	-836.603	9.50	7 # 11	1.76	4 # 11	16.50	0.087	#5@ 7.10	16.50	0.087	#5@ 7.10	36.00		0.90	0.579	0.827
	-605.068	-1011.861	11.94	8 # 11	1.76	4 # 11	16.50	0.088	#5@ 7.03	8.25	0.194	D#5@ 6.38	36.00		1.13	0.791	0.842
P 3	-474.533	-803.629	9.31	6 # 11	1.76	4 # 11	8.25	0.194	D#5@ 6.41	8.25	0.194	D#5@ 6.41	36.00		0.88	0.853	0.968
P 4	-89.506	-238.887	2.79	4 # 11	1.76	4 # 11	7.99	0.200	D#5@ 6.21	15.98	0.030	#5@15.98	36.00		0.24	0.457	0.613
P 5	303.718	75.497	1.76	4 # 11	3.91	4 # 11	15.98	0.030	#5@15.98	15.98	0.030	#5@15.98	36.00		0.34	0.689	0.779
P 6	706.782	326.553	1.76	4 # 11	8.66	6 # 11	16.50	0.030	#5@16.50	16.50	0.030	#5@16.50	36.00		0.82	0.874	0.852
P 7	307.875	68.120	1.76	4 # 11	3.97	4 # 11	15.98	0.031	#5@15.98	15.98	0.031	#5@15.98	36.00		0.35	0.718	0.790
P 8	-112.381	-243.252	2.87	4 # 11	1.76	4 # 11	15.98	0.035	#5@15.98	7.99	0.205	D#5@ 6.05	36.00		0.25	0.410	0.624
P 9	-482.306	-829.184	9.75	7 # 11	1.76	4 # 11	8.25	0.199	D#5@ 6.24	8.25	0.199	D#5@ 6.24	36.00		0.92	0.739	0.819
C 2	-613.245	-1040.395	12.47	8 # 11	1.76	4 # 11	8.25	0.199	D#5@ 6.22	16.50	0.091	#5@ 6.80	36.00		1.18	0.835	0.866
P10	-584.583	-848.600	9.70	7 # 11	1.76	4 # 11	16.50	0.090	#5@ 6.85	16.50	0.090	#5@ 6.85	36.00		0.92	0.606	0.838
P11	-2.124	-2.124	1.76	4 # 11	1.76	4 # 11	15.98	0.090	#5@ 6.86	0.00	0.000	#5@ 0.00	36.00		0.15	0.000	0.005

COLUMN ANALYSIS AND DESIGN OUTPUT

CRITICAL COLUMN LOADS

CN	T B	GR	LLC	WC	R	E S	C F	S F	PF	MTF	MLF	PM	MTM	MLM	PU	MTU	MLU	PU/PM	B	D
1	T	1	LL10	0.0				S	590.6	477.8	10.4	590.6	495.8	204.9	1515.4	1272.3	525.7	2.566	36.00	36.00
1	B	3	LL 6	4.2				S	618.1	126.2	458.9	618.1	192.3	529.7	1523.7	474.0	1305.9	2.465	36.00	36.00
2	T	1	LL10	0.0				S	584.4	-473.7	10.4	584.4	491.6	202.4	1513.9	1273.6	524.3	2.591	36.00	36.00
2	B	3	LL 3	5.2				S	620.0	-73.4	460.6	620.0	192.4	531.9	1523.3	472.8	1306.8	2.457	36.00	36.00

COLUMN DESIGN DATA

CN	T B	B FACE 1 NO.SIZE	B FACE 2 NO.SIZE	D FACE 3 NO.SIZE	D FACE 4 NO.SIZE	AS	PS	BD12	BD	SUMPU	SUMPC	DEL.T	DEL.L	CM	R	PHIC
1	T	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.444	1.00	0.000	1209.	33256.	1.038	1.156	1.000	2	0.70
1	B	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.444	1.00	0.000	1064.	29980.	1.037	1.154	1.000	2	0.70
2	T	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.444	1.00	0.000	1209.	33256.	1.038	1.154	1.000	2	0.70
2	B	4 # 11	4 # 11	2 # 11	2 # 11	18.72	1.444	1.00	0.000	1112.	33256.	1.035	1.155	1.000	2	0.70

FOOTING 1 DESIGN LOADS

F	G	LLID	WC	ES	C	S	P	MT	VT	ML	VL	P4	P3	P2	P1	MTF	VBF	VPF	LOAD
1	3	LL 6	3.2			S	446.956	95.870	8.996	344.021	13.087	160.209	30.267	72.719	202.661	-0.591	0.000	-0.171	MAX.P1
1	3	LL 6	4.2			S	579.137	108.938	10.400	458.915	17.416	213.349	40.059	88.505	261.795	-0.768	0.000	-0.222	MAX.MT
		LL 6	4.2			S	579.137	108.938	10.400	458.915	17.416	213.349	40.059	88.505	261.795	-0.768	0.000	-0.222	MAX.VT
		LL 6	4.2			S	579.137	108.938	10.400	458.915	17.416	213.349	40.059	88.505	261.795	-0.768	0.000	-0.222	MAX.VP
1	3	LL 6	4.2			S	579.137	108.938	10.400	458.915	17.416	213.349	40.059	88.505	261.795	-0.768	0.000	-0.222	MAX.ML
1	3	LL 6	4.2			S	579.137	108.938	10.400	458.915	17.416	213.349	40.059	88.505	261.795	-0.768	0.000	-0.222	MAX.VL
1	3	LL 3	4.2			S	392.137	67.595	9.309	353.012	13.397	152.713	19.413	52.805	186.106	-0.591	0.000	-0.171	MAX.P3

FOOTING 1 ANALYSIS/DESIGN RESULTS

FOOTING SIZE				* BAR REINFORCEMENT STEEL				* SECTION CAPACITIES				
B	D	T	P1/PA	AS	NO.SIZE	SPAC.	PLACEMENT	MT.	VB	VP	DS	FC
6.000	6.000	3.500	0.844	0.00	0 # 0 @	0.000	TOP TRAN	0.000	0.000	0.000	28.625	0.000
				0.00	0 # 0 @	0.000	BOT.LONG	0.000	0.000	0.000	28.625	0.000

NUMBER OF PILES = 4 BP = 1.500 DP = 1.500

FOOTING 2 DESIGN LOADS

F	G	LLID	WC	ES	C	S	P	MT	VT	ML	VL	P4	P3	P2	P1	MTF	VBF	VPF	LOAD
2	3	LL 3	5.2			S	445.435	-39.803	-4.645	354.282	13.441	173.628	39.853	58.540	192.315	-0.591	0.000	-0.171	MAX.P1
2	1	LL 3	0.0			S	682.217	-122.135	-13.301	145.181	6.913	176.811	120.353	176.582	233.041	-0.768	0.000	-0.222	MAX.MT
2	1	LL 3	0.0			S	682.217	-122.135	-13.301	145.181	6.913	176.811	120.353	176.582	233.041	-0.768	0.000	-0.222	MAX.VT
2	1	LL 3	0.0			S	682.217	-122.135	-13.301	145.181	6.913	176.811	120.353	176.582	233.041	-0.768	0.000	-0.222	MAX.VP
2	1	LL 3	0.0			S	682.217	-122.135	-13.301	145.181	6.913	176.811	120.353	176.582	233.041	-0.768	0.000	-0.222	MAX.ML
2	1	LL 3	0.0			S	682.217	-122.135	-13.301	145.181	6.913	176.811	120.353	176.582	233.041	-0.768	0.000	-0.222	MAX.VL
2	3	LL13	3.2			S	407.640	59.070	4.402	344.021	13.087	159.193	29.251	54.077	184.019	-0.591	0.000	-0.171	MAX.P3

FOOTING 2 ANALYSIS/DESIGN RESULTS

FOOTING SIZE				* BAR REINFORCEMENT STEEL				* SECTION CAPACITIES				
B	D	T	P1/PA	AS	NO.SIZE	SPAC.	PLACEMENT	MT.	VB	VP	DS	FC
6.000	6.000	3.500	0.801	0.00	0 # 0 @	0.000	TOP TRAN	0.000	0.000	0.000	28.625	0.000
				0.00	0 # 0 @	0.000	BOT.LONG	0.000	0.000	0.000	28.625	0.000

NUMBER OF PILES = 4 BP = 1.500 DP = 1.500

CALCULATION COVER SHEET

PROJECT	JOB NO.	CALC NO.	SHEET
I-75 / I-575 NORTHWEST CORRIDOR	NH000-0575-01(028)	BR#37	1

SUBJECT	DISCIPLINE
References for Design	STRUCTURAL

CALCULATION STATUS DESIGNATION	PRELIMINARY	CONFIRMED	SUPSEDED	VOIDED	INCOMPLETE
					X

COMPUTER PROGRAM/TYPE	SCP	MAINFRAME	PC	PROGRAM	VERSION/RELEASE NO.
	YES NO			NONE	

Note 1: Georgia Department of Transportation (GDOT) terminated Contract Number TOURDPPI60072 for its convenience the completion of all work under that contract and directed that the work with respect to these calculations be discontinued.
(a) These calculations were not completed at the time of GDOT's direction and the information contained herein is not and/or has not been fully verified or checked. These calculations are a work-in-progress and are presented only as such.
(b) Any user is cautioned that the use of these calculations and any related information or calculations, without access to factors and without proper regard for their purpose, could lead to erroneous conclusions.
(c) If any such calculations or any information contained herein is used in future work efforts or any follow on design work a complete confirmation of the information contained herein should be performed prior to any such use.
(d) GTP has no responsibility for the use of this information not under its direct control.

Included Reference Information:

- Roadway information
- Bridge Survey Shots
- Existing Bridge Plans
- Existing Bridge Maintenance Reports
- BFI

NO.	REASON FOR REVISION	TOTAL NO. OF SHEETS	LAST SHEET NO.	BY	CHECKED	APPROVED/ ACCEPTED	DATE
A	As per GDOT's termination for convenience direction	91	91	JCR			11/30/09

RECORD OF REVISIONS

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Roadway Information
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

Chord:	4414.0315
Middle Ordinate:	211.8886
External:	215.8310
Tangent Direction:	N 12°29'10.6370" E
Radial Direction:	S 77°30'49.3629" E
Chord Direction:	N 1°31'05.9930" E
Radial Direction:	N 80°33'01.3493" E
Tangent Direction:	N 9°26'58.6508" W

Element: Linear

PT	( )	1113+37.2862	1463173.5218	2177673.0317
PI	( )	1114+55.3595	1463289.9928	2177653.6464
Tangential Direction:		N 9°26'58.6508" W		
Tangential Length:		118.0733		

Element: Linear

PI	( )	1114+55.3595	1463289.9928	2177653.6464
PI	( )	1121+71.1302	1463995.7223	2177534.1743
Tangential Direction:		N 9°36'30.3830" W		
Tangential Length:		715.7707		

Element: Linear

PI	( )	1121+71.1302	1463995.7223	2177534.1743
PI	( )	1124+28.9373	1464250.1979	2177492.8622
Tangential Direction:		N 9°13'15.8537" W		
Tangential Length:		257.8071		

Element: Linear

PI	( )	1124+28.9373	1464250.1979	2177492.8622
PI	( )	1126+81.1261	1464498.7939	2177450.4448
Tangential Direction:		N 9°40'58.7678" W		
Tangential Length:		252.1889		

BR #36
575
@ Noonday
South

Element: Linear

PI	( )	1126+81.1261	1464498.7939	2177450.4448
PI	( )	1131+56.0807	1464967.2430	2177372.1042
Tangential Direction:		N 9°29'38.2356" W		
Tangential Length:		474.9545		

Element: Linear

PI	( )	1131+56.0807	1464967.2430	2177372.1042
PI	( )	1153+67.4751	1467148.7660	2177009.8572
Tangential Direction:		N 9°25'41.0585" W		
Tangential Length:		2211.3944		

BR #37
575 @
Big
Shanty

Element: Linear

PI	( )	1153+67.4751	1467148.7660	2177009.8572
PI	( )	1162+59.8641	1468028.9379	2176862.6992
Tangential Direction:		N 9°29'29.8448" W		
Tangential Length:		892.3889		

Element: Linear

PROJECT:	NW Corridor
COUNTY:	COBB
BRIDGE:	37
DESCRIPTION:	I-575 over Big Shanty Rd

VERTICAL GRADE DATA FOR NEW ALIGNMENT, ADJUSTED FOR SURVEY DIFF.:

PVC =	1121+44.01	PVI =	1162+44.01
PVI EL. =	945.96	PVI EL. =	989.01
G2 =	1.0500%		

ELEVATION COMPARISON, ADJUSTED FOR SURVEY DIFF.

BENT 1R LEFT SIDE

Geomath Rdy EL. =	965.892
Survey EL. =	965.889
DIFFERENCE =	0.003

BENT 1R RIGHT SIDE

Geomath Rdy EL. =	965.531
Survey EL. =	965.513
DIFFERENCE =	0.018

BENT 2R LEFT SIDE

Geomath Rdy EL. =	966.318
Survey EL. =	966.350
DIFFERENCE =	-0.032

BENT 2R RIGHT SIDE

Geomath Rdy EL. =	965.967
Survey EL. =	966.008
DIFFERENCE =	-0.041

BENT 3R LEFT SIDE

Geomath Rdy EL. =	967.152
Survey EL. =	967.159
DIFFERENCE =	-0.007

BENT 3R RIGHT SIDE

Geomath Rdy EL. =	966.802
Survey EL. =	966.808
DIFFERENCE =	-0.006

BENT 4R LEFT SIDE

Geomath Rdy EL. =	967.538
Survey EL. =	967.473
DIFFERENCE =	0.065

BENT 4R RIGHT SIDE

Geomath Rdy EL. =	967.176
Survey EL. =	967.159
DIFFERENCE =	0.017

BIG SHANTY RD ALIGN.

		Station	Northing	Easting
Element: Linear				
POB	( )	247+49.6578	1465828.7390	2176980.0290
PC	( )	249+13.7784	1465888.2937	2177132.9631
Tangential Direction:		N 68°43'24.1189" E		
Tangential Length:		164.1207		
Element: Circular				
PC	( )	249+13.7784	1465888.2937	2177132.9631
PI	( )	251+94.8312	1465990.2796	2177394.8591
CC	( )		1464956.4544	2177495.8343
PT	( )	254+61.7478	1465940.8972	2177671.5395
Radius:		1000.0000		
Delta:		31°23'46.7968" Right		
Degree of Curvature (Arc):		5°43'46.4806"		
Length:		547.9694		
Tangent:		281.0528		
Chord:		541.1393		
Middle Ordinate:		37.2996		
External:		38.7448		
Tangent Direction:		N 68°43'24.1189" E		
Radial Direction:		S 21°16'35.8811" E		
Chord Direction:		N 84°25'17.5173" E		
Radial Direction:		S 10°07'10.9157" W		
Tangent Direction:		S 79°52'49.0844" E		
Element: Linear				
PT	( )	254+61.7478	1465940.8972	2177671.5395
POE	( )	258+50.8212	1465872.5350	2178054.5600
Tangential Direction:		S 79°52'49.0844" E		
Tangential Length:		389.0734		

Alignment Name: XR 1235+00 Bells Ferry
Alignment Description: I-575 Bells Ferry Road
Alignment Style: MAIN_P_SIDECL

		Station	Northing	Easting
Element: Linear				
POB	( )	286+16.0615	1475623.9135	2178443.0054
PC	( )	286+21.1863	1475619.1440	2178444.8803
Tangential Direction:		S 21°27'32.4974" E		
Tangential Length:		5.1248		
Element: Circular				
PC	( )	286+21.1863	1475619.1440	2178444.8803
PI	( )	289+84.1910	1475281.3030	2178577.6804
CC	( )		1474887.4724	2176583.5214
PT	( )	293+39.3773	1474918.3415	2178583.2832
Radius:		2000.0000		
Delta:		20°34'28.7635" Right		

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Tangent Grade:	-2.57%	
Tangent Length:	50.0000	

Element: Linear

PVI	203+00.0000	961.4398
POE	203+20.6096	960.9102
Tangent Grade:	-2.57%	
Tangent Length:	20.6096	

Horizontal Alignment: XR 1141+00 Big Shanty
Horizontal Description: I-575 Big Shanty
Horizontal Style: MAIN_P_SIDECL

	Station	Elevation

Vertical Alignment: Point Profile
Vertical Description: Big Shanty Point Profile
Vertical Style: Default

Element: Linear

POB	247+49.6578	943.7157
PVI	247+50.0000	943.7180
Tangent Grade:	0.68%	
Tangent Length:	0.3422	

Element: Linear

PVI	247+50.0000	943.7180
PVI	248+00.0000	944.0576
Tangent Grade:	0.68%	
Tangent Length:	50.0000	

Element: Linear

PVI	248+00.0000	944.0576
PVI	248+50.0000	944.2345
Tangent Grade:	0.35%	
Tangent Length:	50.0000	

Element: Linear

PVI	248+50.0000	944.2345
PVI	249+00.0000	944.3917
Tangent Grade:	0.31%	
Tangent Length:	50.0000	

Element: Linear

PVI	249+00.0000	944.3917
PVI	249+50.0000	944.5492
Tangent Grade:	0.32%	
Tangent Length:	50.0000	

Element: Linear

PVI	249+50.0000	944.5492
PVI	250+00.0000	944.6963
Tangent Grade:	0.29%	

J. B. Trimble Inc.

	Tangent Length:	50.0000	
Element: Linear			
	PVI	250+00.0000	944.6963
	PVI	250+50.0000	944.8132
	Tangent Grade:	0.23%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	250+50.0000	944.8132
	PVI	251+00.0000	944.8383
	Tangent Grade:	0.05%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	251+00.0000	944.8383
	PVI	251+50.0000	944.9736
	Tangent Grade:	0.27%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	251+50.0000	944.9736
	PVI	252+00.0000	945.1654
	Tangent Grade:	0.38%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	252+00.0000	945.1654
	PVI	252+50.0000	945.2926
	Tangent Grade:	0.25%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	252+50.0000	945.2926
	PVI	253+00.0000	945.4268
	Tangent Grade:	0.27%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	253+00.0000	945.4268
	PVI	253+50.0000	945.5299
	Tangent Grade:	0.21%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	253+50.0000	945.5299
	PVI	254+00.0000	945.6340
	Tangent Grade:	0.21%	
	Tangent Length:	50.0000	
Element: Linear			
	PVI	254+00.0000	945.6340

J. B. Trimble, Inc.

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bridge Survey Shots
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

SURVEY

I-575 over Big Shanty (Existing Right Bridge)

BENT 1 LEFT SIDE
SVXO10194 N 1465834.607700 E 2177221.970600 Z 965.889 TBRDG
"ZEJ60"
BENT 1 RIGHT SIDE
SVXO10202 N 1465848.044800 E 2177261.814900 Z 965.513 TBRDG
"ZEJ60"

BENT 2 LEFT SIDE
SVXO10193 N 1465875.303000 E 2177215.841400 Z 966.350 TBRDG
"ZEJ59"
BENT 2 RIGHT SIDE
SVXO10201 N 1465888.467000 E 2177254.582700 Z 966.008 TBRDG
"ZEJ59"

BENT 3 LEFT SIDE
SVXO10192 N 1465953.751900 E 2177202.878900 Z 967.159 TBRDG
"ZEJ58"
BENT 3 RIGHT SIDE
SVXO10200 N 1465966.972800 E 2177241.651500 Z 966.808 TBRDG
"ZEJ58"

BENT 4 LEFT SIDE
SVXO10191 N 1465989.223600 E 2177196.256900 Z 967.473 TBRDG
"ZEJ57"
BENT 4 RIGHT SIDE
SVXO10199 N 1466002.837400 E 2177236.299200 Z 967.159 TBRDG
"ZEJ57"

[redacted]

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Existing Bridge Plans
BY: JCR DATE: 11/30/2009

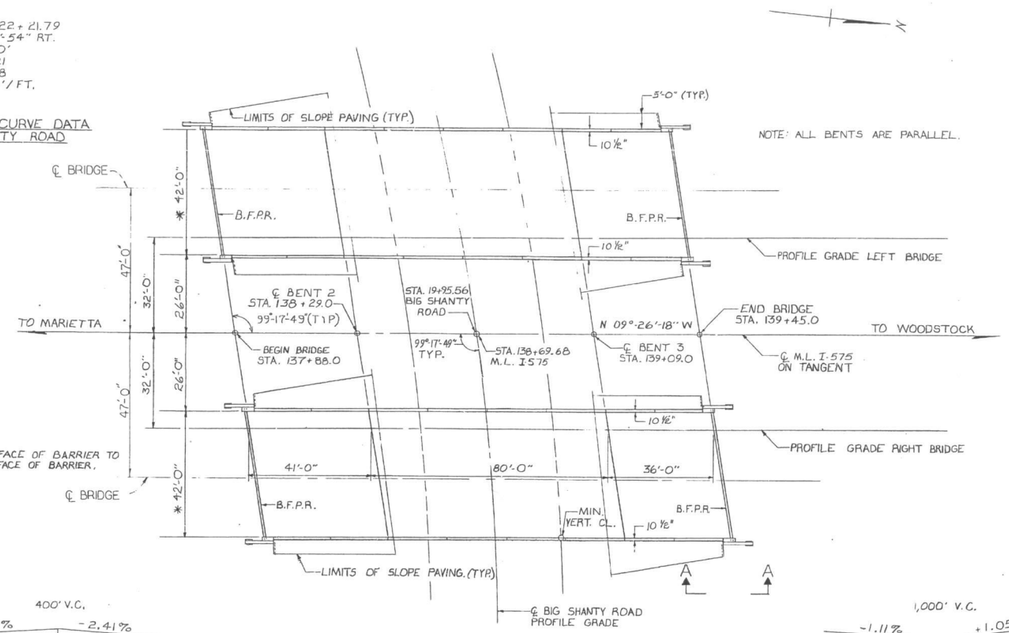
SHEET NO.
SHEET REV.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.		SHEET NO.	TOTAL SHEETS
3	GA.	I-575-1(2)00		195	437

Rev. 11-30-77

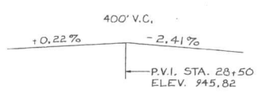
P.I. STA. 22+21.79
Δ = 31°-15'-54" RT.
D = 6°-00'
T = 267.21
L = 521.08
S.E. = 0.08'/FT.
+ = 195

HORIZONTAL CURVE DATA ON BIG SHANTY ROAD

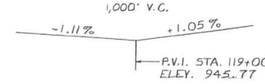


PLAN

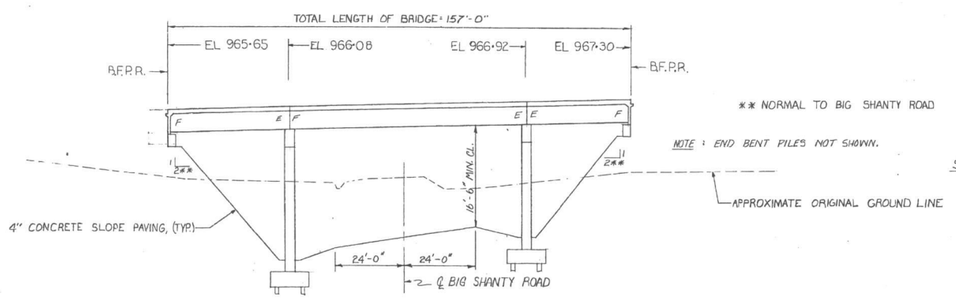
SECTION A-A



VERTICAL CURVE DATA ON BIG SHANTY ROAD



VERTICAL CURVE DATA ON M.L. I-575

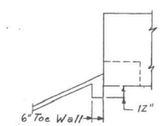


ELEVATION

LONGITUDINAL SECTION TAKEN ALONG PROFILE GRADE LINE OF RIGHT BRIDGE.

UTILITIES

NONE



SECTION A-A
(NO SCALE)

EACH BRIDGE CONSISTS OF :

1 - 41'-0" NON-COMPOSITE W BEAM SPAN ---------- SPECIAL DESIGN
1 - 36'-0" NON-COMPOSITE W BEAM SPAN ---------- SPECIAL DESIGN
1 - 80'-0" COMPOSITE W BEAM SPAN ---------- SPECIAL DESIGN
2 - STEEL H PILE END BENTS ---------- SPECIAL DESIGN
2 - CONCRETE INTERMEDIATE BENTS WITH PILE FOOTINGS ---------- SPECIAL DESIGN
CONCRETE BARRIER ---------- SPECIAL DESIGN
BAR BENDING DETAILS ---------- GA. STD. NO. 5901
END POST AND END POST GUARDRAIL ATTACHMENT DETAIL ------ GA. STD. NO. 3053(2-1-75)
L = 4'-0", H = 2'-8", W = 1'-1"
TYPICAL FILL DETAIL AT END OF BRIDGE ---------- GA. STD. NO. 5037(9-1-70)

GENERAL NOTES

SPECIFICATIONS - GEORGIA STANDARD DATED 1972.

WAITING PERIOD - NO WORK SHALL BE STARTED ON BENTS 1 AND 4 UNTIL THE COMPLETED END FILLS HAVE BEEN IN PLACE FOR AN ESTIMATED PERIOD OF 120 DAYS.

CHAMFER - ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4 INCH UNLESS OTHERWISE NOTED.

PROTECTIVE SURFACE TREATMENT - PER SECTION 500.13C WILL BE REQUIRED AT THIS SITE.

REINFORCEMENT - ALL REINFORCEMENT SHALL BE PLACED AND TIED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED, EXCEPT AS SHOWN ON THE PLANS.

DRIVING DATA PILES - ONE REQUIRED AT EACH BENT.

PLAN DRIVING OBJECTIVE - SEE SUBSTRUCTURE DETAILS.

PAINT - SYSTEM NO. 11 SHALL BE USED ON SUPERSTRUCTURE DETAILS.

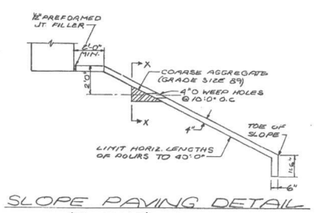
⚠ PROTECTIVE PLATFORMS ARE REQUIRED [illegible] SPECIAL PROVISION.

SUMMARY

4 LT	4 RT	
115	115	CU YD [illegible]
555	555	[illegible]
LUMP	---	[illegible]
---	LUMP	[illegible]
126	126	[illegible]
LUMP	---	[illegible] STEEL [illegible]
---	LUMP	[illegible]
21691	[illegible]	[illegible]
LUMP	---	SUPERSTR REINF [illegible]
---	LUMP	SUPERSTR REINF [illegible]
1,444	1,398	LIN FT PILING IN [illegible]
1	1	EACH LOAD TEST, [illegible]
LUMP		[illegible]
---		[illegible]

DESIGN DATA

SPECIFICATIONS - A.A.S.H.T.O., 1973; INT. 1974, INT. 1975, INT. 1[illegible]
TYPICAL HS20-44 AND/OR MILITARY LOADING - IMPACT ALLOWED
FUTURE PAVING ALLOWANCE = 15 LBS. PER SQ. FT.
fc = 3,000 PSI FOR ALL CONCRETE
REINFORCEMENT - GRADE 40



SLOPE PAVING DETAIL
(NO SCALE)

BRIDGE NO. 4 LEFT AND 4 RIGHT

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

PLAN AND ELEVATION
M.L. I-575 OVER BIG SHANTY ROAD
COBB - CHEROKEE CO'S I-575-1(2)[illegible]
SCALE: 1" = 10'-0" VERTICAL
1" = 20'-0" HORIZONTAL MAY, 1976

REVISIONS	DATE
ADDED PROT. PLATFORMS	11/30/77

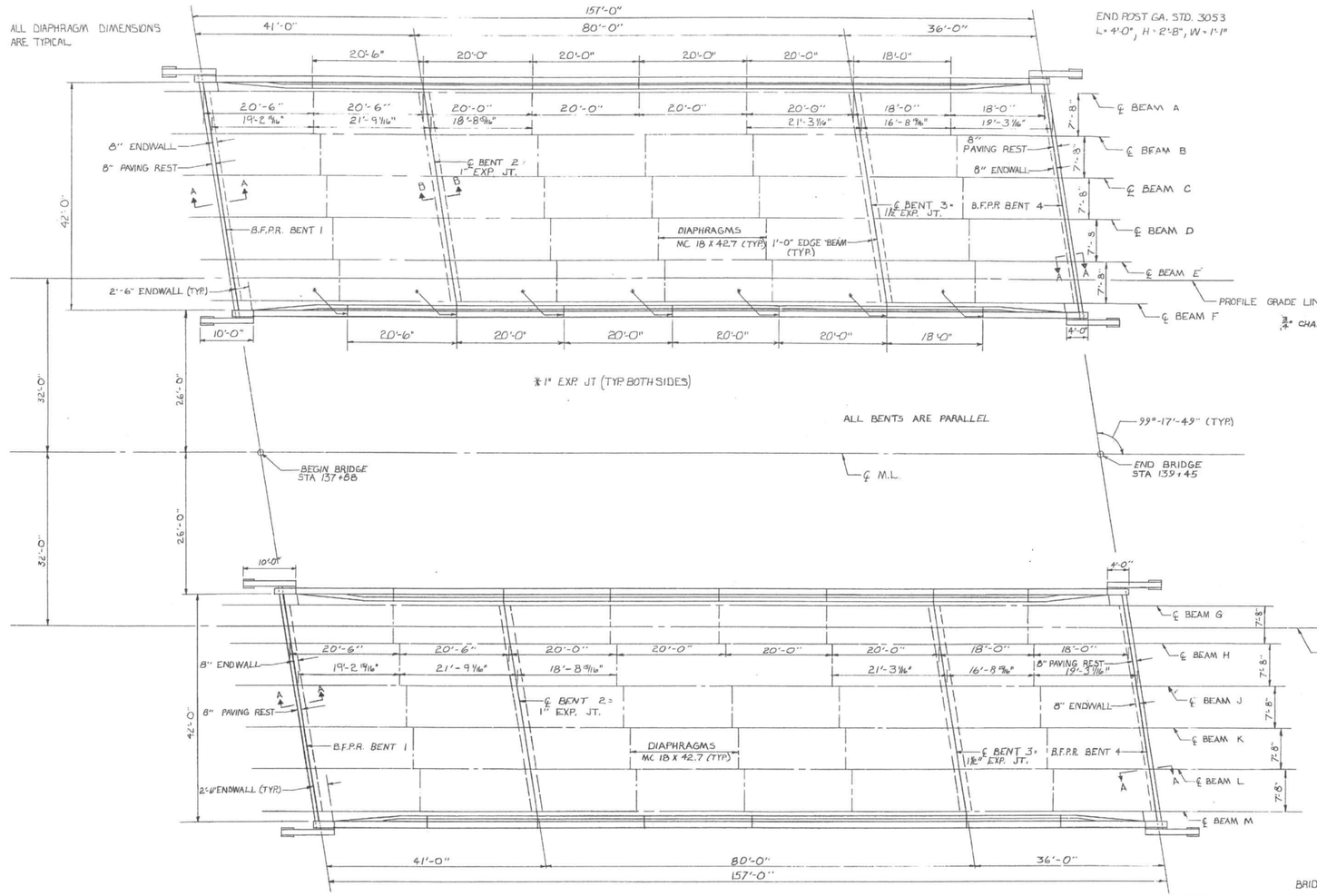
BRIDGE SHEET 1 OF 7

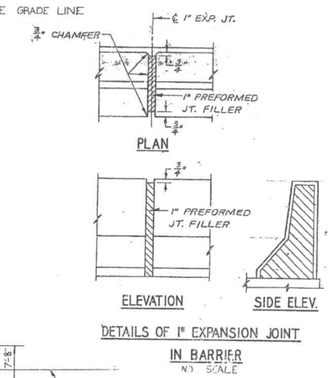
DESIGNED: P.E.B.
DRAWN: B.W.F.
TRACED:
CHECKED: B.D.M.
REVIEWED: L.R.P.
APPROVED:

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	GA.	I-575-1(2)00		196	437

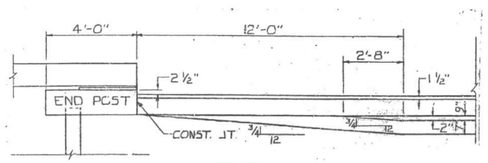
ALL DIAPHRAGM DIMENSIONS ARE TYPICAL

END POST GA. STD. 3053
L = 4'-0", H = 2'-8", W = 1'-1"

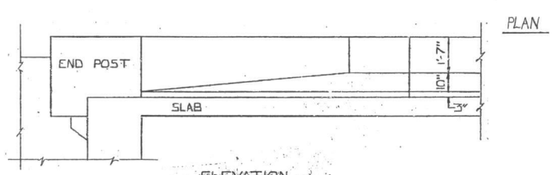




DETAILS OF 1" EXPANSION JOINT IN BARRIER
NO SCALE



PLAN
BARRIER TAPER DETAIL
NO SCALE



PLAN

ELEVATION
BARRIER TAPER DETAIL
NO SCALE

BRIDGE NO. 4LT. AND 4RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

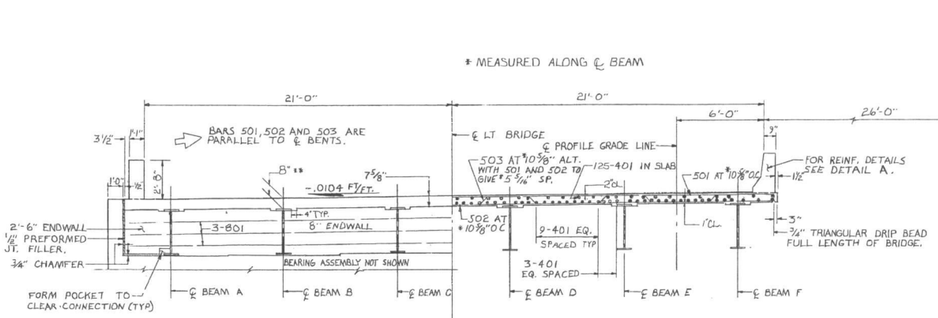
SUPERSTRUCTURE DETAILS SHEET 1
M.L. I-575 OVER
BIG SHANTY ROAD
COBB-CHEROKEE CO'S I-575-1(2)00 C.T. 1
SCALE: 1" = 10'-0" APRIL 1976

DATE	REVISIONS	BY

BRIDGE SHEET 2 OF 7

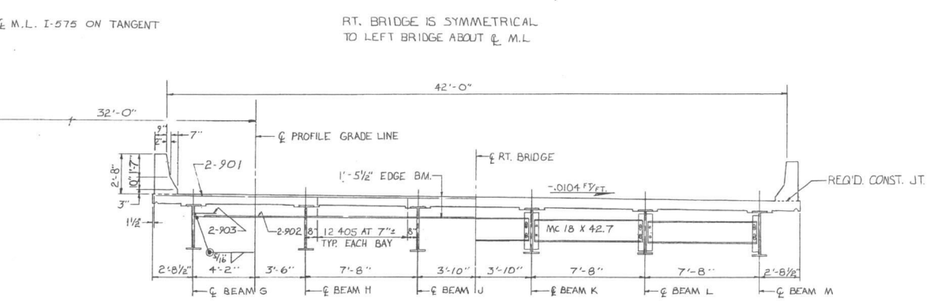
DESIGNED F.E.C. DRAWN R.W.F. TRACED CHECKED F.E.C. REVIEWED L.R.P. APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	GA.	I-575-1(2)00	197	437	



SECTION AT END BENT
SCALE: ¼"=1'-0"

SECTION AT MIDSPAN
SCALE: ¼"=1'-0"



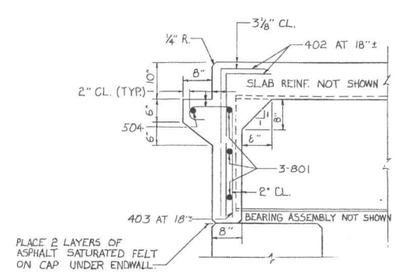
SECTION AT EDGE BEAM
SCALE: ¼"=1'-0"

SECTION AT DIAPHRAGMS
SCALE: ¼"=1'-0"

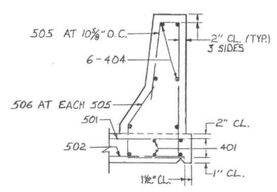
** AT ℄ BRNG ONLY. VARY ELSEWHERE TO COMPENSATE FOR DL DEFLECTION & VERTICAL CURVE.

NOTE: 404 & 505 BARS MUST BE BENT AS TO CONFORM TO THE SHAPE OF THE BARRIER IN THE 12' LENGTH OF TRANSITION.

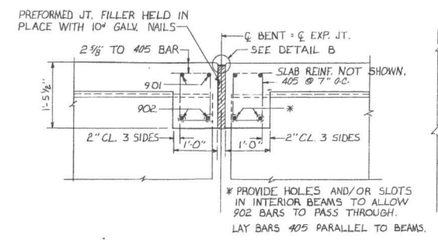
NOTE 501, 503, AND TOP 401 TO BE EPOXY COATED



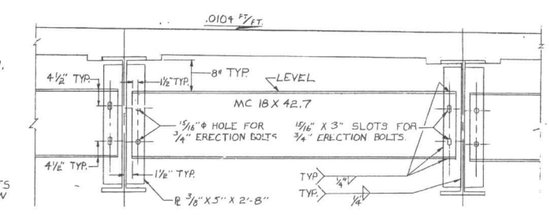
SECTION A-A
SCALE: ¾"=1'-0"



DETAIL A
SCALE: ¾"=1'-0"



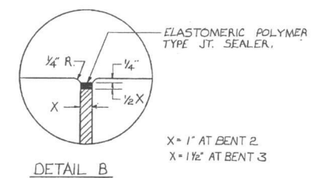
SECTION B-B
SCALE: ¾"=1'-0"



TYPICAL DIAPHRAGM DETAIL
SCALE: ¾" 1'-0"

NOTE: DIAPHRAGMS AND CONNECTION PLATES SHALL BE ASTM A-36 STEEL.

DIAPHRAGMS SHALL BE LEVELED AND WELDED AFTER CONCRETE SLAB HAS BEEN POURED.



X = 1" AT BENT 2.
X = 1½" AT BENT 3

DETAIL B
NO SCALE

QUANTITIES

BRIDGE ITEM	2 LEFT SPAN 1	2 LEFT SPAN 2	2 LEFT SPAN 3	2 LEFT TOTAL	2 RIGHT SPAN 1	2 RIGHT SPAN 2	2 RIGHT SPAN 3	2 RIGHT TOTAL
CU. YDS. CLASS AA CONC.	58·80	102·90	52·60	214·30	58·80	102·90	52·60	214·30
LBS. BAR REINF. STEEL	7,250	12,535	6,541	26,326	7,250	12,535	6,541	26,326
LBS. STRUCTURAL STEEL	35,760	114,000	31,790	181,550	35,760	114,000	31,790	181,550
LBS. BAR REINF. STEEL EPOXY COAT.	5445	10,657	4737	20,839	5445	10,657	4737	20,839

BRIDGE NO 4LT. AND 4RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

SUPERSTRUCTURE DETAILS - SHEET 2
M.L. I-575 OVER
BIG SHANTY ROAD
COBB-CHEROKEE CO'S I-575-1(2)00 CT. 1
SCALE AS SHOWN APRIL, 1976

DATE | REVISIONS | BY

BRIDGE SHEET 3 OF 7

DESIGNED F.E.C. | TRACED | REVIEWED L.R.P.
DRAWN R.W.F. | CHECKED F.E.C. | APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	GA.	I-575-1(2)00	198		437

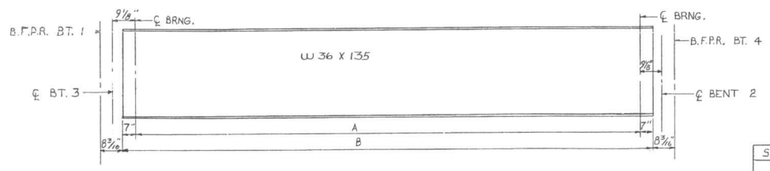
DEAD LOAD DEFLECTIONS	SPAN 1		SPAN 3	
	INT. BMS	EXT. BMS.	INT. BMS	EXT. BMS
DEFLECTION DUE TO WEIGHT OF BEAM	1/16"	1/16"	1/16"	1/16"
DEFLECTION DUE TO WEIGHT OF SLAB, COPING AND BARRIER	1/4"	1/4"	1/8"	1/8"
TOTAL *	5/16"	1/4"	3/16"	1/8"

NO CAMBER REQUIRED ON SPANS 1 AND 3.

NOTE: W BEAM SECTIONS AND COVER PLATES ARE MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESS AND SHALL MEET THE CHARPY V-NOTCH TEST REQUIREMENTS AS SPECIFIED BY SPECIAL PROVISION MODIFYING SECTION 851 OF THE STANDARD SPECIFICATIONS.

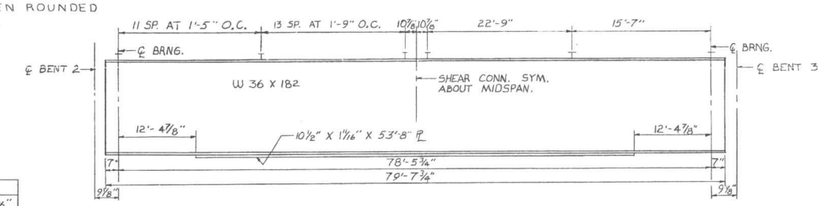
* TOTALS DO NOT NEGESSARILY EQUAL THE SUM OF THE PARTS BECAUSE ALL VALUES HAVE BEEN ROUNDED TO THE NEAREST 1/16".

DEAD LOAD DEFLECTIONS SPAN 2	INT. BMS.	EXT BMS.
DEFLECTION DUE TO WEIGHT OF BEAM	7/16"	7/16"
DEFLECTION DUE TO WEIGHT OF SLAB AND COPING	1 3/4"	1 3/8"
DEFLECTION DUE TO WEIGHT OF BARRIER	1/4"	1/4"
TOTAL *	2 7/16"	2 1/6"
CAMBER	2 1/2"	2 1/2"

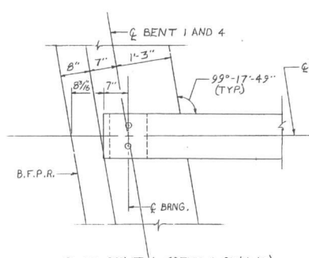


ELEVATION - SPANS 1 AND 3
NO SCALE

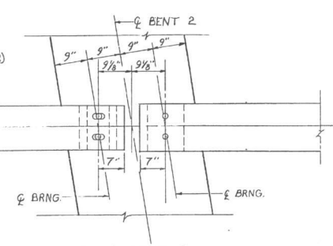
SPAN	A	B
1	38'-11 1/16"	40'-1 11/16"
3	33'-11 11/16"	35'-1 11/16"



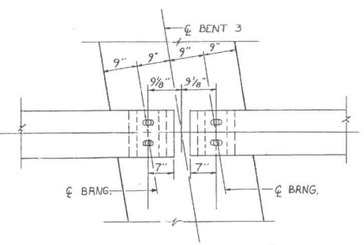
ELEVATION - SPAN 2
NO SCALE



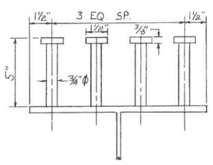
PLAN BENT 1 (BENT 4 SIMILAR)
SCALE: 3/4"=1'-0"



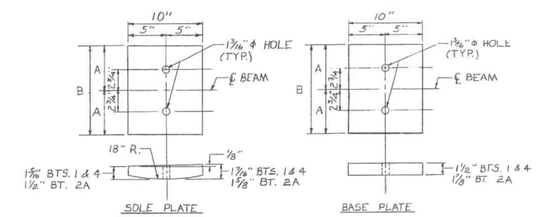
PLAN BENT 2
SCALE: 3/4"=1'-0"



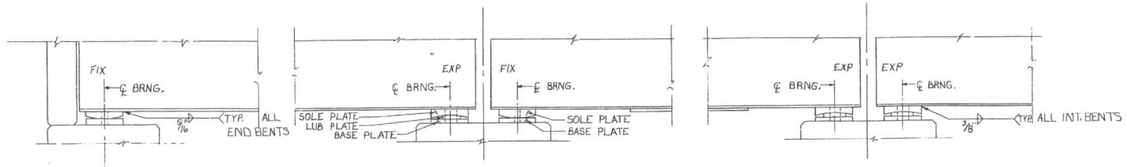
PLAN BENT 3
SCALE: 3/4"=1'-0"



SHEAR CONNECTOR DETAIL
SCALE: 3"=1'-0"



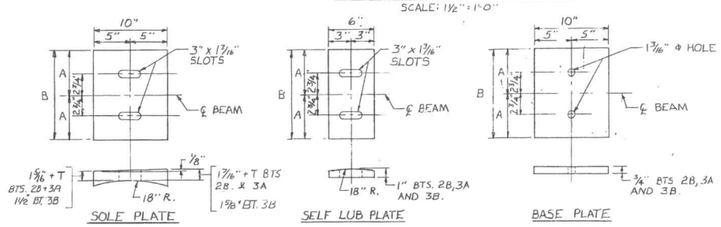
BEARING DETAILS - FIXED ENDS
SCALE: 1 1/2"=1'-0"



ELEVATION BENT 1 (BENT 4 SIMILAR)
SCALE: 3/4"=1'-0"

ELEVATION - BENT 2
SCALE: 3/4"=1'-0"

ELEVATION - BENT 3
SCALE: 3/4"=1'-0"



BEARING DETAILS - EXPANSION ENDS
SCALE: 1 1/2"=1'-0"

NOTES: STRUCTURAL STEEL SHAPES SHALL BE A.S.T.M. A-36 UNLESS OTHERWISE NOTED.

SELF-LUBRICATING PLATES SHALL BE CAST BRONZE.

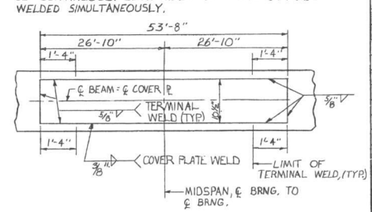
USE 2-1" Φ SWEDGED ANCHOR BOLTS WITH 3" x 3" x 1/4" CUT WASHERS AND A.S.R. HEX NUTS AT FIXED ENDS.

USE 2-1" Φ SWEDGED ANCHOR BOLTS WITH 3" x 5" x 1/4" CUT WASHERS AND A.S.R. HEX NUTS AT EXPANSION ENDS.

CUT SLOTS AND HOLES FOR EDGE BEAM BARS IN INTERIOR BEAMS ONLY.

ANCHOR BOLTS SHALL BE SET 10" INTO CONCRETE.

COVER PLATE WELDS AND TERMINAL WELDS SHALL BE CONTINUOUS. BOTH SIDES OF PLATE SHALL BE WELDED SIMULTANEOUSLY.



COVER PLATE WELDING DETAILS
NO SCALE

"T" DIMENSIONS (INCHES)				
BRIDGE	4 LEFT		4 RIGHT	
BEAM	2 BK	3 AH	2 BK	3 AH
A	1"	1 5/16"	—	—
B	1"	1 3/16"	—	—
C	1 1/16"	1 1/4"	—	—
D	15/16"	1 1/4"	—	—
E	1"	1 5/16"	—	—
F	1 1/16"	1 1/4"	—	—
G	—	—	1"	1 5/16"
H	—	—	1"	1 3/16"
J	—	—	15/16"	1 1/4"
K	—	—	1"	1 5/16"
L	—	—	1"	1 3/16"
M	—	—	15/16"	1 1/4"

BENT	A	B
1	6"	12"
2B	6"	12"
2A	6 1/16"	12 1/8"
3B	6 1/16"	12 1/8"
3A	6"	12"
4	6"	12"

BRIDGE NO 4LT. AND 4RT.

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

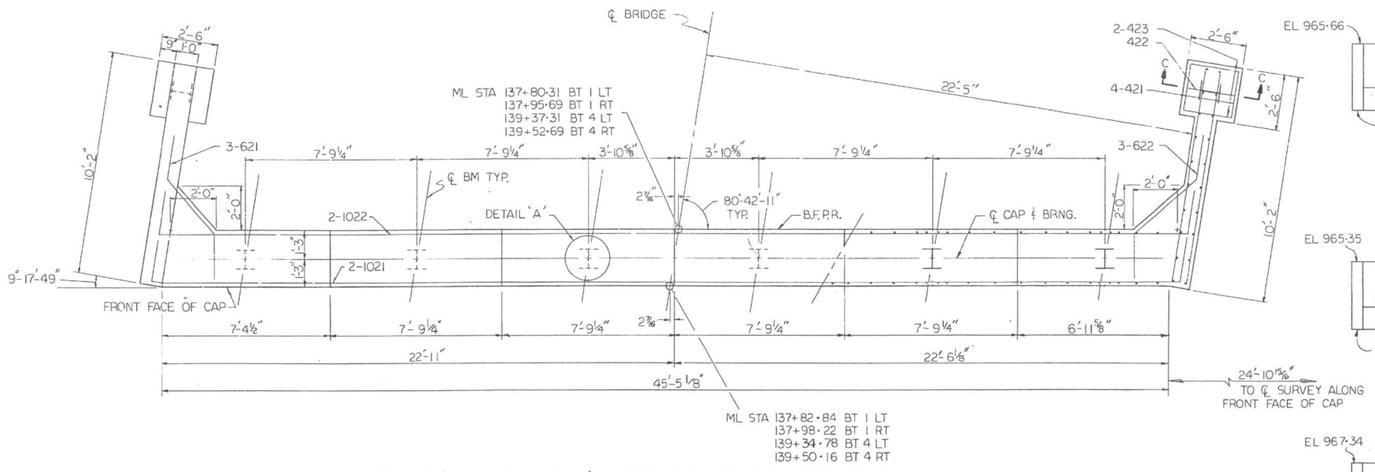
SUPERSTRUCTURE DETAILS - SHEET 3
ML I-575 OVER
BIG SHANTY ROAD
COBB-CHEROKEE CO'S. I-575-1(2)00 C.T. 1
SCALE AS SHOWN MAY, 1976

BRIDGE SHEET 4 OF 7

REVISIONS | DATE | BY

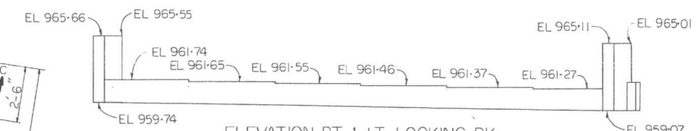
DESIGNED F.E.C. DRAWN R.W.F. TRACED CHECKED FEC REVIEWED L.R.P. APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	GA.	I-575-1(2)00	199		437



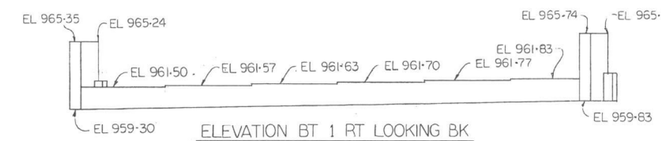
PLAN BT. 4 LT. (LOOKING AHEAD) ; BTS 1 LT, 1 RT, 4 RT SIMILAR

SCALE : ⅜" = 1'-0"



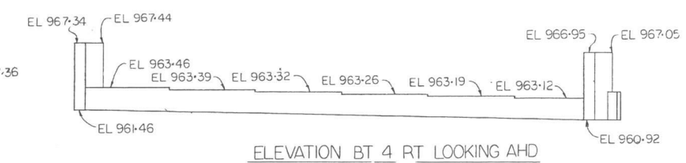
ELEVATION BT 1 LT LOOKING BK

SCALE: NONE



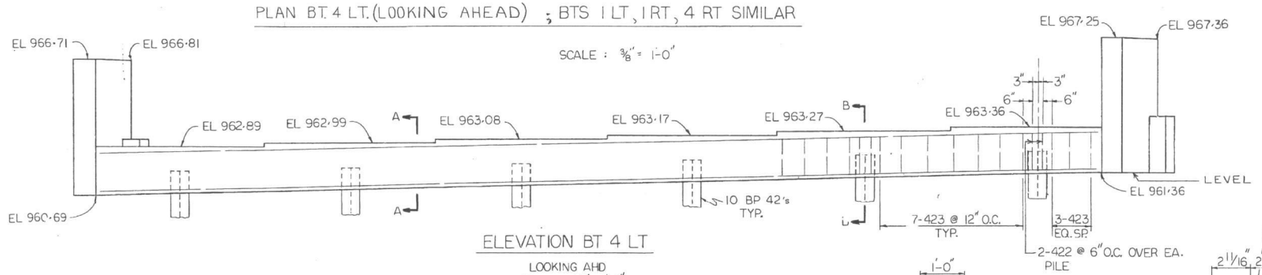
ELEVATION BT 1 RT LOOKING BK

SCALE: NONE



ELEVATION BT 4 RT LOOKING AHD

SCALE: NONE



ELEVATION BT 4 LT

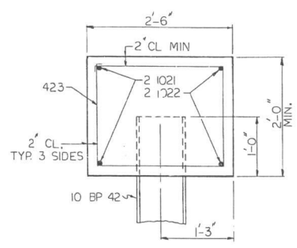
LOOKING AHD

SCALE: ⅜" = 1'-0"

PLAN DRIVING OBJECTIVE

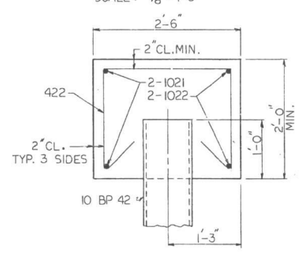
DRIVE ALL PILES TO A DRIVING RESISTANCE OF 47 TONS AFTER THE FOLLOWING MIN. TIP ELEVATIONS ARE REACHED:

BR.	BT.	MIN. TIP ELEV.
LT	1	928
LT	4	918
RT	1	925
RT	4	928



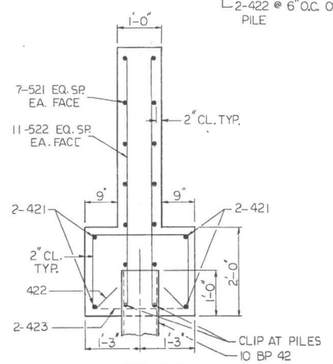
SECTION A-A

SCALE: 1" = 1'-0"



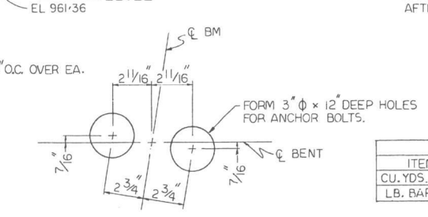
SECTION B-B

SCALE: 1" = 1'-0"



SECTION C-C

SCALE: ¾" = 1'-0"



DETAIL 'A'

SCALE: 3" = 1'-0"

QUANTITIES				
ITEM / BENT	1 LT	1 RT	4 LT	4 RT
CU. YDS. CLASS A CONCRETE	14.13	14.13	14.19	14.18
LB. BAR REINF. STEEL	1801	1801	1801	1801

BRIDGE 4LT, 4RT

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

END BENT DETAILS

M.L. I-575 OVER BIG SHANTY RD.

COBB - CHEROKEE CO's I-575-1(2)00 CT 1

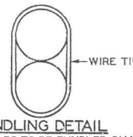
SCALE AS NOTED DEC 1976

BRIDGE SHEET 5 OF 7

DATE | REVISIONS | BY

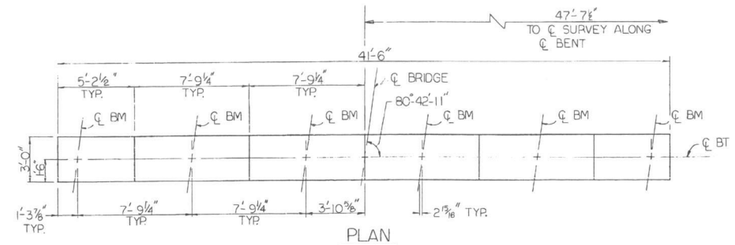
DESIGNED FEC | TRACED | REVIEWED LRP
DRAWN DSC | CHECKED FEC | APPROVED

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	GA.	I-575-1(2)00	200		437



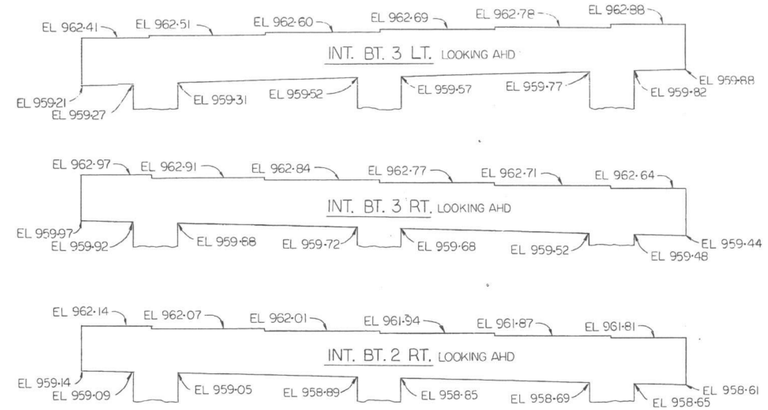
BUNDLING DETAIL

NOTE: BARS TO BE BUNDLED SHALL BE BUNDLED VERTICALLY.



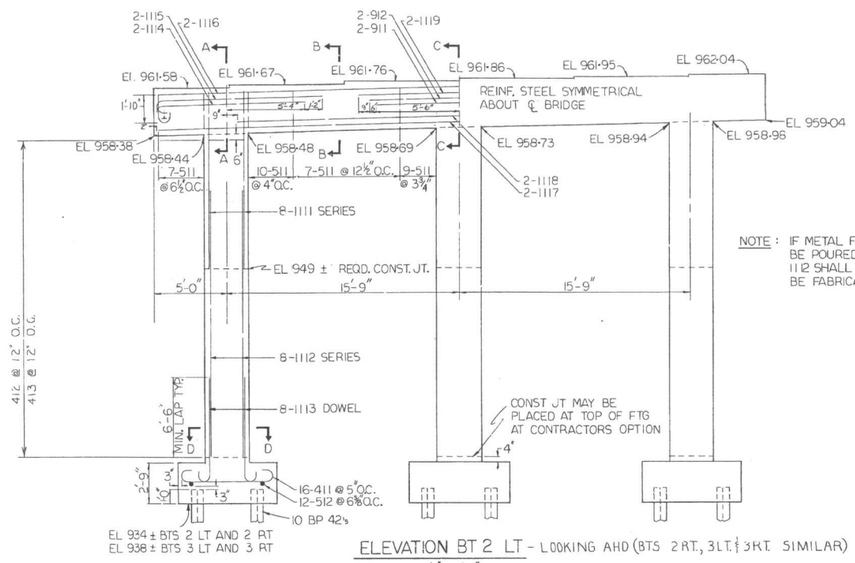
PLAN

LOOKING AHD
SCALE: ¼" = 1'-0"



ELEVATIONS

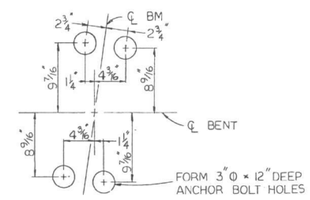
SCALE: NONE



ELEVATION BT 2 LT - LOOKING AHD (BTS 2 RT, 3 LT & 3 RT SIMILAR)

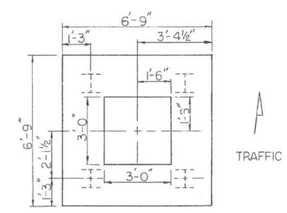
SCALE: ¼" = 1'-0"

NOTE: IF METAL FORMS ARE USED, COLUMNS MAY BE POURED IN ONE LIFT. IN THIS EVENT BARS 1112 SHALL BE OMITTED AND BARS 1111 SHALL BE FABRICATED FULL LENGTH.



ANCHOR BOLT HOLE LAYOUT

SCALE: 1½" = 1'-0"



FOOTING PLAN BTS 2,3

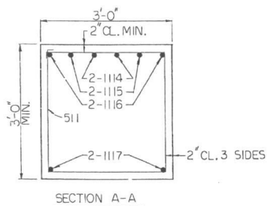
SCALE: ⅜" = 1'-0"

PLAN DRIVING OBJECTIVE

DRIVE ALL PILES TO A DRIVING RESISTANCE OF 45 TONS AFTER THE FOLLOWING MIN TIP ELEVATIONS ARE REACHED:

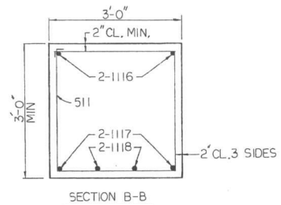
BR	BT	FTG	MIN TIP EL.
LT	2	ALL	928
LT	3	LT, MIDDLE	916
LT	3	RT	921
RT	2	LT	926
RT	2	RT, MIDDLE	923
RT	3	ALL	922

BRIDGE NO. 4 LT, RT



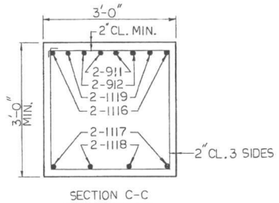
SECTION A-A

SCALE: ¾" = 1'-0"



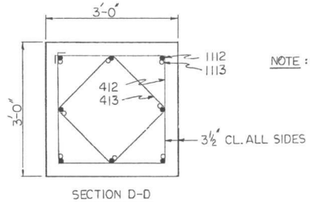
SECTION B-B

SCALE: ¾" = 1'-0"



SECTION C-C

SCALE: ¾" = 1'-0"



SECTION D-D

SCALE: ¾" = 1'-0"

NOTE: DO NOT PLACE DOWEL BARS IN CORNERS.

QUANTITIES				
ITEM / BENT	2 LT	2 RT	3 LT	3 RT
CU. YDS. CLASS A CONCRETE	50.14	50.29	46.97	47.14
LB. BAR REINF. STEEL	9319	9319	8770	8770

BRIDGE SHEET 6 OF 7

GEORGIA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION - BRIDGE DESIGN

INTERMEDIATE BENTS 2,3

M.L. I-575 OVER BIG SHANTY ROAD

COBB-CHEROKEE CO's. I 575-1(2)00 CT. 1

SCALE AS NOTED DEC 1976

DATE | REVISIONS | BY

DESIGNED FEC | TRACED | REVIEWED LRP
DRAWN DSC | CHECKED FEC | APPROVED

LOCATION	NO. OF LOC.	MARK	LENGTH FT. IN.	NO. BARS REQ'D	TYPE	AG	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	J FT. IN.	K FT. IN.	N	Q
SPAN 1	2						4									
	**	4018	40- 6	125	1											
		4047	4- 9	62	3		3- 3	1- 6								
		4043	4- 3	31	21	2	1- 0	2- 9								90
		4044	17-10	6	1											
		4048	17- 1	6	1											
		4049	20- 0	17	1											
		405	4- 3	60	25	4	4 8 1/8	1- 0 7/8								
	*	501	44- 0	46	1											
		502	44- 0	46	1											
	*	503	45- 8	45	42		4 5/8	3- 6	3- 6	4- 4 3/8	4- 4 1/4	44- 0 7/8	0- 0	0- 0	6	45
		504	44-11	1	1											
		505	4-10	89	23		0- 5	2- 2	2- 2 1/2							84
		506	5- 0	59	46		1- 9 5/8	1- 2	7 5/8	1- 2	9 1/2					
		506A		6	46		1- 9 5/8	VARIES	7 5/8	1- 2	9 1/2					
		506B		24	46		1- 9 5/8	VARIES	7 5/8	VARIES	VARIES					
		801	44-11	3	1											
		901	44- 0	2	1											
		902	38-10	2	1											
		903	4- 0	4	1											
SPAN 2	2															
	**	4018	40- 6	250	1											
		4040	19- 5	48	1											
		405	4- 3	120												
	*	501	44- 0	89												
		502	44- 0	89												
	*	503	45- 8	88												
		505	4-10	182												
		506	5- 0	182												
		901	44- 0	4												
		902	38-10	4												
		903	4- 0	8												
SPAN 3	2															
	**	4016	35- 6	125	1											
		4042	4- 9	62												
		403	4- 3	31												
		4049	17- 6	12	1											
		4046	15- 4	6	1											
		4046	14- 7	6	1											
		405	4- 3	60												
	*	501	44- 0	40												
		502	44- 0	40												
	*	503	45- 8	39												
		504	44-11	1												
		505	4-10	77												
		506	5- 0	47												
		506A		6	46		1- 9 5/8	VARIES	7 5/8	1- 2	9 1/2					
		506B		24	46		1- 9 5/8	VARIES	7 5/8	VARIES	VARIES					
		801	44-11	3												
		901	44- 0	2												
		902	38-10	2												
		903	4- 0	4												
END BENTS	4															
		421	2- 2	8	1											
		422	6- 3	14	32	5	5 2- 2	1- 8	1- 8							
		423	8- 5	45	25	4	4 2- 2	1- 8								
		524	9-10	28	1											
		525	VARY													

LOCATION	NO. OF LOC.	MARK	LENGTH FT. IN.	NO. BARS REQ'D	TYPE	AG	B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	J FT. IN.	K FT. IN.	N	Q
		621	7- 3	3	7		3- 3	2- 0	2- 0						22	45
		627	7- 9	3	8		3- 9	2- 0	2- 0						41	22
		1021	50- 5	2	6		45-11	6	2- 0	2- 0					81	4
		1022	50- 5	2	8		46- 5 1/8	2- 0	2- 0						81	8
BT 2	2															
		411	7- 3	48	10	2	2 6- 3									
		412	10- 5	69	25	4	4 2- 5	2- 5								
		413	7- 7	69	25	4	4 1- 8 1/2	1- 8 1/2								
		511	11- 8	66	25	4	4 2- 8	2- 8								
		512	7- 5	36	10	2	2 6- 3									
		911	11- 0	2	1											
		912	12- 0	2	1											
		11118	12- 1	24	1											
		11124	18- 6	24	1											
		1113	9- 6	24	9	2	8- 4									
		1114	11- 4	4	9	2	10- 2									
		1115	12- 6	4	9	2	11- 4									
		1116	47- 2	2	32	2	2 41- 2	1-10	1-10							
		1117	41- 2	2	1											
		1118	30- 0	2	1											
		1119	13- 6	2	1											
BT 3	2															
		411	7- 3	48												
		412	10- 5	57												
		413	7- 7	57												
		511	11- 8	66												
		512	7- 5	36												
		911	11- 0	2												
		912	12- 0	2												
		11118	12-11	24	1											
		11128	14- 6	24	1											
		1113	9- 6	24												
		1114	11- 4	4												
		1115	12- 6	4												
		1116	47- 2	2												
		1117	41- 2	2												
		1118	39- 0	2												
		1119	13- 6	2												

SEE GA. STD. 3901 FOR BAR BENDING DETAILS

FED. ROAD DIV. No.	STATE	FED. AID PROJ. No.	STATE AID PROJ. No.		SHEET No.	TOTAL SHEETS
3	GA.	I-575-1(2)00			201	437

* EPOXY COATING ON THESE BARS
** EPOXY COATING ON PORTION OF TOTAL NO OF THESE BARS
IE, 44 SPAN 1, 88 SPAN 2, 44 SPAN 3

BRIDGE NO 4 LT & RT

STATE HIGHWAY DEPARTMENT OF GEORGIA
BRIDGE DIVISION

BAR REINFORCEMENT DETAILS
M.L. I-575 OVER BIG SHANTY RD.
COBB CO. I-575-1(2)00 CT.1
NO SCALE FEB 1977

DATE | REVISIONS | BY

DESIGNED FEC | TRACED | REVIEWED
DRAWN DSC | CHECKED | APPROVED

BRIDGE SHEET 7 OF 7

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bridge Maintenance Reports
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

BRIDGE INVENTORY DATA LISTING GEOF A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0115-0 **Cobb** SUFF. RATING 92.15

Location & Geography

*		Structure I.D.No:	067-0115-0
	200	Bridge Information	06
*	6A	Feature Int:	CR 171 BIG SHANTY ROAD
*	6B	Critical Bridge:	0
*	7A	Route Number Carried:	SR00417
*	7B	Facility Carried:	I-575 (NBL)
*	9	Location:	3 MI E OF KENNESAW
	2	DOT District:	7
	207	Year Photo:	2009
*	91	Inspection Frequency:	24 Date: 03/11/2009
	92A	Fract Crit Insp Freq:	00 Date: 02/01/1901
	92B	Underwater Insp Freq:	00 Date: 02/01/1901
	92C	Other Spc. Insp Freq:	00 Date: 02/01/1901
*	4	Place Code:	00000
*	5	Inventory Route (O/U):	1
		Type:	1
		Designation:	1
		Number:	00575
		Direction:	0
*	16	Latitude:	34-01.7522 MMS Prefix: SR
*	17	Longitude:	84-33.637 MMS Suffix: 00 MP: 2.23
	98	Border Bridge:	000 %Shared: 00
	99	ID Number:	000000000000000
*	100	STRAHNET:	1
	12	Base Highway Network:	1
	13A	LRS Inventory Route:	671041700
	13B	Sub Inventory Route:	0
*	101	Parallel Structure:	R
*	102	Direction of Traffic:	1
*	264	Road Inventory Mile Post:	019.14
*	208	Inspection Area:	09 Initials: JMC
		Engineer's Initial:	sgm

* Location I.D. No.: 067-00417D-002.28N

*	104	Highway System:	1
*	26	Functional Classification:	11
*	204	Federal Route Type:	I No.: 00057
	105	Federal Lands Highway:	0
*	110	Truck Route:	1
	206	School Bus Route:	0
	217	Benchmark Elevation:	0000.00
	218	Datum:	0
*	19	Bypass Length:	01
*	20	Toll:	3
*	21	Maintenance:	01
*	22	Owner:	01
*	31	Design Load:	6
	37	Historical Significance:	5
	205	Congressional District:	11
	27	Year Constructed:	1980
	106	Year Reconstructed:	0000
	33	Bridge Median:	1
	34	Skew:	20
	35	Structure Flared:	0
	38	Navigation Control:	N
	213	Special Steel Design:	0
	267	Type of Paint:	5
*	42	Type of Service on:	1
			1
	214	Movable Bridge:	0
	203	Type Bridge:	Z-O-M-O
	259	Pile Encasement:	3
*	43	Structure Type Main:	3 02
	45	No. Spans Main:	003
	44	Structure Type Appr:	0 00
	46	No. Spans Appr:	0000
	226	Bridge Curve Horz:	0 Vert: 0
	111	Pier Protection:	0
	107	Deck Structure Type:	1
	108	Wearing Surface Type:	1
		M	0
		F	0

Signs & Attachments

	225	Expansion Joint Type:	15
	242	Deck Drains:	0
	243	Parapet Location:	0
		Height:	0.00
		Width:	0.00
	238	Curb:	0.00 0
	239	Handrail:	9 9
*	240	Median Barrier Rail:	0
	241	Bridge Median Height:	0.00
		Width:	0.00
*	230	Guardrail Loc Dir Rear:	6
		Fwrd:	0
		Oppo Dir Rear:	0
		Fwrd:	0
	244	Approach Slab:	3
	224	Retaining Wall:	0
	233	Posted Speed Limit:	65
	236	Warning Sign:	0
	234	Delineator:	1
	235	Hazard Boards:	0
	237	Utilities Gas:	00
		W	00
		Ele	00
		Telephone:	00
		S	00
	247	Lighting Street:	0
		Naviagtion:	0
		Aerial:	0
*	248	County Continuity No.:	01

BRIDGE INVENTORY DATA LISTING GEOF A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0115-0 **Cobb** SUFF. RATING 92.15

Programming Data

201 Project No.: I-575-1 (2) 00 CT.1
202 Plans Available: 4
249 Prop. Proj. No. 0000000000000000
250 Approval Status: 0000
251 P.I. No.: 0000000
252 Contract Date: 02/01/1901
260 Seismic No.: 00000
75 Type Work: 00 0
94 Bridge Imp. Cost: $ 0
95 Roadway Imp. Cost: $ 0
96 Total Imp Cost: $ 0
76 Imp. Length: 000000
97 Imp. Year: 0000
114 Future ADT: 117060 Year: 2027

Hydraulic Data

215 Waterway Data
Highwater Elev.: 0000.0 Year: 1900
Avg. Streambed Elev.: 0000.0 Freq.: 00
Drainage Area: 00000
Area Of Opening: 000000
113 Scour Critical: N
216 Water Depth: 00.0 Br. Height: 00.0
222 Slope Protection: 4
221 Spur Dikes Rear: 0 Fwrd: 0
219 Fender System: 0
220 Dolphin: 0
223 Culvert Cover: 000
Type: 0
No. Barrels: 0
Width: 0.00 Height: 0.00
Length: 0 Apron: 0
* 265 U/W Insp. Area: 0 Diver: ZZZ

* Location I.D. No.: 067-00417D-002.28N

Measurements

* 29 ADT: 078040 Year: 2007
109 % Trucks: 0
* 28 Lanes On: 02 Under: 02
210 No. Tracks On: 00 Under: 00
* 48 Max. Span Length: 0080
* 49 Structure Length: 157
51 Br. Rwdy. Width: 40.50
52 Deck Width: 43.70
* 47 Tot. Horz. Cl: 40.50
50 Curb/Sdewlk Width: 0.00/0.00
32 Approach Rdwy Width: 038
* 229 Shoulder Width:
Rear Lt: 4.00 Type: 2 Rt: 10.00
Fwrd Lt: 4.00 Type: 2 Rt: 10.00
Pavement Width:
Rear: 24.00 Type: 2
Fwrd: 24.00 Type: 2
Intersection Rear: 0 Fwrd: 0
36 Safety Features Br. Rail: 1
Transition: 1
App. G. Rail: 1
App. Rail End: 1
53 Minimum Cl.Over: 99 ' 99 "
Under: H 16 ' 11 "
* 228 Min. Vertical Cl
Act. Odm Dir: 99 ' 99 "
Oppo. Dir: 99 ' 99 "
Posted Odm. Dir: 00 ' 00 "
Oppo. Dir: 00 ' 00 "
55 Lateral Undercl. Rt: H 12.00
56 Lateral Undercl. Lt: 0.00
* 10 Max Min Vert Cl: 99 ' 99 " Dir: 0
39 Nav Vert Cl: 000 Horz: 0000
116 Nav Vert Cl Closed: 000
245 Deck Thickness Main: 7.60
Deck Thick Approach: 0.00
246 Overlay Thickness: 0.00
212 Year Last Painted: Sup: 1998 Sub: 0000

Ratings

65 Inventory Rating Method: 1
63 Inventory Rating Method: 1
66 Inventory Type: 2 Rating: 45
64 Operating Type: 2 Rating: 76
231 Calculated Loads
H-Modified: 21 0
HS-Modified: 30 0
Type 3: 33 0
Type 3s2: 40 0
Timber: 37 0
Piggyback: 40 0
261 H Inventory Rating: 33
262 H Operating Rating: 55
67 Structural Evaluation: 7
58 Deck Condition: 7
59 Superstructure Condition: 8
* 227 Collision Damage: 0
60A Substructure Condition: 7
60B Scour Condition: N
60C Underwater Condition: N
71 Waterway Adequacy: N
61 Channel Protection Cond: N
68 Deck Geometry: 7
69 UnderClr. Horz/Vert: 7
72 Appr. Alignment: 8
62 Culvert: N

Posting Data

70 Bridge Posting Required: 5
41 Struct Open, Posted, Cl: A
* 103 Temporary Structure: 0
232 Posted Loads H-Modified: 00
HS-Modified: 00
Type 3: 00
Type3s2: 00
Timber: 00
Piggyback: 00
253 Notification Date 02/01/1901
253 Fed Notify Date: 02/01/1901 0

GEORGIA DEPARTMENT OF TRANSPORTATION

Bridge Inspection Report

District: 7 **Inspection Date:** 3/11/2009 **Inspection Area:** 09

Bridge Inspector: Jerry Cooper **Over:** CR 171 BIG SHANTY ROAD **Bridge Status:** 06

Location ID: 067-00417D-002.28N **County:** Cobb

Structure ID: 067-0115-0 **Road Name:** I-575 (NBL)

EVALUATION & DEFICIENCIES

SubStructure: **Year Painted:** 0000

Concrete caps at both abutments.
Minor cracks in both abutment caps.
Bents 2, and 3 have a concrete caps and 3 concrete columns.
Bent #2 = H-42 Calculated 2004 by Central Office (Load Factor)

SuperStructure: **Year Painted:** 1998

3 span steel beam (6 beams per span) .
Span #1 = H-33 Calculated 2004 by Central Office (Load Factor).

Deck:

7 5/8" concrete slab.
Very minor cracking noted in the deck surface.
Deck: H-32 Calculated 2004 by Central Office (Load Factor).

General:

Built in 1980 project # I-575-1 (2) 00 ct.1
Calculations for this structure were determined by the Central Office. - February, 2004.
Metal S.I.P. deck forms.
Square end cover plates - welded
Hand tools and ladder used.

Condition Rating

Component	Material	Rating
Substructure	Concrete	7
Superstructure	Steel	8
Deck	Concrete	7

Temp Shored: **No**

Truck Type	Gross/H-Mod	HSMod	Tand	3-S-2	Log	Piggy
Calculated Posting	21	30	33	40	37	40
Posting Required	No	No	No	No	No	No
Existing Posting	00	00	00	00	00	00

Not a School Bus Route.

Structure Does Not Require Posting

GEORGIA DEPARTMENT OF TRANSPORTATION

Deficiency Report

District: 7 **Inspection Date:** 3/11/2009 **Inspection Area:** 09

Bridge Inspector: Jerry Cooper **Over:** CR 171 BIG SHANTY ROAD

Location ID: 067-00417D-002.28N **County:** Cobb

Structure ID: 067-0115-0 **Asst. District Engineer:** Shun Pringle

EVALUATION & DEFICIENCIES

I-575 (NBL) Over CR 171 BIG SHANTY ROAD-------3 MI E OF KENNESAW

Item	Units	Work	P	Date Reported	Location	Date Completed	Complete
800	LIN. FT.	162	B	5/23/2001		12/14/2001	205.00
845	HOURS	20	B	3/9/2005		8/17/2005	161.00

Comments:

BRIDGE INVENTORY DATA LISTING GEOF A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0115-0 **Cobb** SUFF. RATING 92.15

Location & Geography

* Structure I.D.No: 067-0115-0
* 6A Feature Int: SR 417 NBL (I-575)
* 6B Critical Bridge: 0
* 7A Route Number Carried: CR00171
* 7B Facility Carried: BIG SHANTY ROAD
* 9 Location: 3 MI E OF KENNESAW
* 91 Inspection Frequency: 00 Date: 02/01/1901
* 4 Place Code: 00000
* 5 Inventory Route (O/U): 2
Type: 4
Designation: 1
Number: 00171
Direction: 0
* 16 Latitude: 34-01.7522 HMMS Prefix:
* 17 Longitud 84-33.637 HMMS Suffix: MP:
* 100 STRAHNET: 0
12 Base Highway Network: 1
13A LRS Inventory Route: 672017100
13B Sub Inventory Route: 0
* 101 Parallel Structure: R
* 102 Direction of Traffic: 2
* 104 Highway System: 0
* 26 Functional Classification: 19
* 204 Federal Route Type: 0 No.:
105 Federal Lands Highway: 0
* 110 Truck Route: 0
* 19 Bypass Length: 01
* 20 Toll: 3
* 21 Maintenance: 01
* 22 Owner: 01
27 Year Constructed: 1980
* 42 Type of Service on: 1 Under: 1
* 43 Structure Type Main: 3 02
* 208 Inspection Area: 09 Initials: JMC
* Location I.D. No.: 067-00171X-000.62W
* XReference I.D. No 067-00417D-002.28N

Signs & Attachments

* 240 Median Barrier Rail: 0
* 230 Guardrail Loc Dir Rear: 0
Fwrd: 0
Oppo Dir Rear: 0
Fwrd: 0

Measurements

* 29 ADT: 001710 Year: 1998
* 28 Lanes On: 02 Under: 02
* 48 Max. Span Length: 0080
* 49 Structure Length: 157
* 47 Tot. Horz. Cl: 58.00
* 229 Shoulder Width:
Rear Lt: 12.00 Type: 8 Rt: 12.00
Fwrd Lt: 12.00 Type: 1 Rt: 12.00
Pavement Width:
Rear: 24.00 Type: 2
Fwrd: 24.00 Type: 2
Intersection Rear: 0 Fwrd: 0

* 228 Min. Vertical Cl
Act. Odm Dir: 16 ' 11 "
Oppo. Dir: 99 ' 99 "
Posted Odm. Dir: 00 ' 00 "
Oppo. Dir: 00 ' 00 "
* 10 Max Min Vert Cl: 17 ' 08 " Dir: 3

Ratings

* 227 Collision Damage: 0

Posting Data

* 103 Temporary Structure: 0
* 248 County Continuity No.: 01

Hydraulic Data

* 265 U/W Insp. Are 0 Diver: ZZZ

GEORGIA DEPARTMEN OF TRANSPORTATION

Bridge Component Report

District: 7
Bridge Inspector: Jerry Cooper
Location ID: 067-00417D-002.28N
Structure ID: 067-0115-0

Inspection Date: 3/11/2009
Over: CR 171 BIG SHANTY ROAD
County: Cobb
Road Name: I-575 (NBL)

Inspection Area: 09

SubStructure Data

Bent#	Type	Foundation	Col	#Cols	Piling	#Piles	Sway	CAP	Remarks
1	A			0		0		C	Only cap exposed
2	B		C	3		0		C	
3	B		C	3		0		C	
4	A			0		0		C	Only cap exposed

SuperStructure Data

Span#	Beam Type	Spacing	Length	#Beams	Remarks
1	Steel Beams	7.70	41.00	6	W36 X 135
2	Steel Beams	7.70	80.00	6	W36 X 182
3	Steel Beams	7.70	36.00	6	W36 X 135

Bearing Data

Span#	Rear Type Bearing	FWD Type Bearing	Remarks
1	02 - Fixed Plate	01 - Sliding Plate	
2	02 - Fixed Plate	01 - Sliding Plate	
3	01 - Sliding Plate	02 - Fixed Plate	

BRIDGE INVENTORY DATA LISTING GEOI 'A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0116-0 **Cobb** SUFF. RATING 92.15

Location & Geography

*		Structure I.D.No:	067-0116-0
	200	Bridge Information	06
*	6A	Feature Int:	CR 171 BIG SHANTY ROAD
*	6B	Critical Bridge:	0
*	7A	Route Number Carried:	SR00417
*	7B	Facility Carried:	I-575 (SBL)
*	9	Location:	3 MI E OF KENNESAW
	2	DOT District:	7
	207	Year Photo:	2009
*	91	Inspection Frequency:	24 Date: 03/11/2009
	92A	Fract Crit Insp Freq:	00 Date: 02/01/1901
	92B	Underwater Insp Freq:	00 Date: 02/01/1901
	92C	Other Spc. Insp Freq:	00 Date: 02/01/1901
*	4	Place Code:	00000
*	5	Inventory Route (O/U):	1
		Type:	1
		Designation:	1
		Number:	00575
		Direction:	0
*	16	Latitude:	34-01.7470 MMS Prefix: SR
*	17	Longitude:	84-33.6548 MMS Suffix: 00 MP: 2.24
	98	Border Bridge:	000 %Shared: 00
	99	ID Number:	000000000000000
*	100	STRAHNET:	1
	12	Base Highway Network:	1
	13A	LRS Inventory Route:	671041700
	13B	Sub Inventory Route:	0
*	101	Parallel Structure:	L
*	102	Direction of Traffic:	1
*	264	Road Inventory Mile Post:	019.15
*	208	Inspection Area:	09 Initials: JMC
		Engineer's Initial:	sgm

* Location I.D. No.: 067-00417D-002.29N

*	104	Highway System:	1
*	26	Functional Classification:	11
*	204	Federal Route Type:	I No.: 00057
	105	Federal Lands Highway:	0
*	110	Truck Route:	1
	206	School Bus Route:	0
	217	Benchmark Elevation:	0000.00
	218	Datum:	0
*	19	Bypass Length:	01
*	20	Toll:	3
*	21	Maintenance:	01
*	22	Owner:	01
*	31	Design Load:	6
	37	Historical Significance:	5
	205	Congressional District:	11
	27	Year Constructed:	1980
	106	Year Reconstructed:	0000
	33	Bridge Median:	1
	34	Skew:	20
	35	Structure Flared:	0
	38	Navigation Control:	N
	213	Special Steel Design:	0
	267	Type of Paint:	5
*	42	Type of Service on:	1
			1
	214	Movable Bridge:	0
	203	Type Bridge:	Z-O-M-O
	259	Pile Encasement:	3
*	43	Structure Type Main:	3 02
	45	No. Spans Main:	003
	44	Structure Type Appr:	0 00
	46	No. Spans Appr:	0000
	226	Bridge Curve Horz:	0 Vert: 0
	111	Pier Protection:	0
	107	Deck Structure Type:	1
	108	Wearing Surface Type:	1
		M	0
		F	0

Signs & Attachments

	225	Expansion Joint Type:	15
	242	Deck Drains:	0
	243	Parapet Location:	0
		Height:	0.00
		Width:	0.00
	238	Curb:	0.00 0
	239	Handrail:	9 9
*	240	Median Barrier Rail:	0
	241	Bridge Median Height:	0.00
		Width:	0.00
*	230	Guardrail Loc Dir Rear:	6
		Fwrd:	6
		Oppo Dir Rear:	0
		Fwrd:	0
	244	Approach Slab:	3
	224	Retaining Wall:	0
	233	Posted Speed Limit:	65
	236	Warning Sign:	0
	234	Delineator:	1
	235	Hazard Boards:	0
	237	Utilities Gas:	00
		W	00
		Ele	00
		Telephone:	00
		S	00
	247	Lighting Street:	0
		Naviagtion:	0
		Aerial:	0
*	248	County Continuity No.:	01

BRIDGE INVENTORY DATA LISTING GEOI ˜A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0116-0 **Cobb** SUFF. RATING 92.15

Programming Data

201 Project No.: I-575-1 (2) 00 CT.1
202 Plans Available: 4
249 Prop. Proj. No. 0000000000000000
250 Approval Status: 0000
251 P.I. No.: 0000000
252 Contract Date: 02/01/1901
260 Seismic No.: 00000
75 Type Work: 00 0
94 Bridge Imp. Cost: $ 0
95 Roadway Imp. Cost: $ 0
96 Total Imp Cost: $ 0
76 Imp. Length: 000000
97 Imp. Year: 0000
114 Future ADT: 117060 Year: 2027

Hydraulic Data

215 Waterway Data
Highwater Elev.: 0000.0 Year: 1900
Avg. Streambed Elev.: 0000.0 Freq.: 00
Drainage Area: 00000
Area Of Opening: 000000
113 Scour Critical: N
216 Water Depth: 00.0 Br. Height: 00.0
222 Slope Protection: 4
221 Spur Dikes Rear: 0 Fwrd: 0
219 Fender System: 0
220 Dolphin: 0
223 Culvert Cover: 000
Type: 0
No. Barrels: 0
Width: 0.00 Height: 0.00
Length: 0 Apron: 0
* 265 U/W Insp. Area: 0 Diver: ZZZ

* Location I.D. No.: 067-00417D-002.29N

Measurements

* 29 ADT: 078040 Year: 2007
109 % Trucks: 0
* 28 Lanes On: 02 Under: 02
210 No. Tracks On: 00 Under: 00
* 48 Max. Span Length: 0080
* 49 Structure Length: 157
51 Br. Rwdy. Width: 40.50
52 Deck Width: 43.70
* 47 Tot. Horz. Cl: 40.50
50 Curb/Sdewlk Width: 0.00/0.00
32 Approach Rdwy Width: 038
* 229 Shoulder Width:
Rear Lt: 4.00 Type: 2 Rt: 10.00
Fwrd Lt: 4.00 Type: 2 Rt: 10.00
Pavement Width:
Rear: 24.00 Type: 2
Fwrd: 24.00 Type: 2
Intersection Rear: 0 Fwrd: 0
36 Safety Features Br. Rail: 1
Transition: 1
App. G. Rail: 1
App. Rail End: 1
53 Minimum Cl.Over: 99 ' 99 "
Under: H 17 ' 05 "
* 228 Min. Vertical Cl
Act. Odm Dir: 99 ' 99 "
Oppo. Dir: 99 ' 99 "
Posted Odm. Dir: 00 ' 00 "
Oppo. Dir: 00 ' 00 "
55 Lateral Undercl. Rt: H 12.00
56 Lateral Undercl. Lt: 0.00
* 10 Max Min Vert Cl: 99 ' 99 " Dir: 0
39 Nav Vert Cl: 000 Horz: 0000
116 Nav Vert Cl Closed: 000
245 Deck Thickness Main: 7.60
Deck Thick Approach: 0.00
246 Overlay Thickness: 0.00
212 Year Last Painted: Sup: 1998 Sub: 0000

Ratings

65 Inventory Rating Method: 1
63 Inventory Rating Method: 1
66 Inventory Type: 2 Rating: 45
64 Operating Type: 2 Rating: 76
231 Calculated Loads
H-Modified: 21 0
HS-Modified: 30 0
Type 3: 33 0
Type 3s2: 40 0
Timber: 37 0
Piggyback: 40 0
261 H Inventory Rating: 33
262 H Operating Rating: 55
67 Structural Evaluation: 7
58 Deck Condition: 7
59 Superstructure Condition: 8
* 227 Collision Damage: 0
60A Substructure Condition: 7
60B Scour Condition: N
60C Underwater Condition: N
71 Waterway Adequacy: N
61 Channel Protection Cond: N
68 Deck Geometry: 7
69 UnderClr. Horz/Vert: 7
72 Appr. Alignment: 8
62 Culvert: N

Posting Data

70 Bridge Posting Required: 5
41 Struct Open, Posted, Cl: A
* 103 Temporary Structure: 0
232 Posted Loads H-Modified: 00
HS-Modified: 00
Type 3: 00
Type3s2: 00
Timber: 00
Piggyback: 00
253 Notification Date 02/01/1901
253 Fed Notify Date: 02/01/1901 0

GEORGIA DEPARTMENT OF TRANSPORTATION

Bridge Inspection Report

District: 7 **Inspection Date:** 3/11/2009 **Inspection Area:** 09

Bridge Inspector: Jerry Cooper **Over:** CR 171 BIG SHANTY ROAD **Bridge Status:** 06

Location ID: 067-00417D-002.29N **County:** Cobb

Structure ID: 067-0116-0 **Road Name:** I-575 (SBL)

EVALUATION & DEFICIENCIES

SubStructure: **Year Painted:** 0000

Concrete caps at both abutments.
Minor cracking in both abutment caps.
Bents 2, and 3 have concrete caps and 3 concrete columns.
Bent #2 = H-42 Calculated 2004 by Central Office (Load Factor)

SuperStructure: **Year Painted:** 1998

3 span steel beam - (6 beams per span).
Span #1 = H-33 Calculated 2004 by Central Office (Load Factor).

Deck:

7 5/8" concrete slab.
Deck: H-32 Calculated 2004 by Central Office (Load Factor).
Very minor cracking noted in the deck surface.
Approach slabs are low at both abutments but have been overlaid.

General:

Built in 1980 project # I-575-1 (2) 00 ct.1
Metal S.I.P.. deck forms.
Square end cover plate ends welded.
Calculations for this structure were determined by the Central Office. - February, 2004.
Hand tools and ladder used.

Condition Rating

Component	Material	Rating
Substructure	Concrete	7
Superstructure	Steel	8
Deck	Concrete	7

Temp Shored: **No**

Truck Type	Gross/H-Mod	HSMod	Tand	3-S-2	Log	Piggy
Calculated Posting	21	30	33	40	37	40
Posting Required	No	No	No	No	No	No
Existing Posting	00	00	00	00	00	00

Not a School Bus Route.

Structure Does Not Require Posting

GEORGIA DEPARTMENT OF TRANSPORTATION

Deficiency Report

District: 7 **Inspection Date:** 3/11/2009 **Inspection Area:** 09

Bridge Inspector: Jerry Cooper **Over:** CR 171 BIG SHANTY ROAD

Location ID: 067-00417D-002.29N **County:** Cobb

Structure ID: 067-0116-0 **Asst. District Engineer:** Shun Pringle

EVALUATION & DEFICIENCIES

I-575 (SBL) Over CR 171 BIG SHANTY ROAD-------3 MI E OF KENNESAW

Item	Units	Work	P	Date Reported	Location	Date Completed	Complete
800	LIN. FT.	162	B	5/23/2001		12/14/2001	205.00
845	HOURS	20	B	3/9/2005		8/16/2005	160.00

Comments:

BRIDGE INVENTORY DATA LISTING GEOI A DEPARTMENT OF TRANSPORTATION

Structure ID: 067-0116-0 **Cobb** SUFF. RATING 92.15

Location & Geography

* Structure I.D.No: 067-0116-0
* 6A Feature Int: SR 417 SBL (I-575)
* 6B Critical Bridge: 0
* 7A Route Number Carried: CR00171
* 7B Facility Carried: BIG SHANTY ROAD
* 9 Location: 3 MI E OF KENNESAW
* 91 Inspection Frequency: 00 Date: 02/01/1901
* 4 Place Code: 00000
* 5 Inventory Route (O/U): 2
Type: 4
Designation: 1
Number: 00171
Direction: 0
* 16 Latitude: 34-01.7470 HMMS Prefix:
* 17 Longitud 84-33.6548 HMMS Suffix: MP:
* 100 STRAHNET: 0
12 Base Highway Network: 1
13A LRS Inventory Route: 672017100
13B Sub Inventory Route: 0
* 101 Parallel Structure: L
* 102 Direction of Traffic: 2
* 104 Highway System: 0
* 26 Functional Classification: 19
* 204 Federal Route Type: 0 No.:
105 Federal Lands Highway: 0
* 110 Truck Route: 0
* 19 Bypass Length: 01
* 20 Toll: 3
* 21 Maintenance: 01
* 22 Owner: 01
27 Year Constructed: 1980
* 42 Type of Service on: 1 Under: 1
* 43 Structure Type Main: 3 02
* 208 Inspection Area: 09 Initials: JMC
* Location I.D. No.: 067-00171X-000.65W
* XReference I.D. No 067-00417D-002.29N

Signs & Attachments

* 240 Median Barrier Rail: 0
* 230 Guardrail Loc Dir Rear: 0
Fwrd: 0
Oppo Dir Rear: 0
Fwrd: 0

Measurements

* 29 ADT: 001710 Year: 1998
* 28 Lanes On: 02 Under: 02
* 48 Max. Span Length: 0080
* 49 Structure Length: 157
* 47 Tot. Horz. Cl: 58.00
* 229 Shoulder Width:
Rear Lt: 12.00 Type: 8 Rt: 12.00
Fwrd Lt: 12.00 Type: 1 Rt: 12.00
Pavement Width:
Rear: 24.00 Type: 2
Fwrd: 24.00 Type: 2
Intersection Rear: 0 Fwrd: 0

* 228 Min. Vertical Cl
Act. Odm Dir: 17 ' 05 "
Oppo. Dir: 99 ' 99 "
Posted Odm. Dir: 00 ' 00 "
Oppo. Dir: 00 ' 00 "
* 10 Max Min Vert Cl: 17 ' 11 " Dir: 3

Ratings

* 227 Collision Damage: 0

Posting Data

* 103 Temporary Structure: 0
* 248 County Continuity No.: 01

Hydraulic Data

* 265 U/W Insp. Are 0 Diver: ZZZ

GEORGIA DEPARTMEN JF TRANSPORTATION

Bridge Component Report

District: 7
Bridge Inspector: Jerry Cooper
Location ID: 067-00417D-002.29N
Structure ID: 067-0116-0

Inspection Date: 3/11/2009
Over: CR 171 BIG SHANTY ROAD
County: Cobb
Road Name: I-575 (SBL)

Inspection Area: 09

SubStructure Data

Bent#	Type	Foundation	Col	#Cols	Piling	#Piles	Sway	CAP	Remarks
1	A			0		0		C	ONLY CAP EXPOSED
2	B		C	3		0		C	
3	B		C	3		0		C	
4	A			0		0		C	ONLY CAP EXPOSED

SuperStructure Data

Span#	Beam Type	Spacing	Length	#Beams	Remarks
1	Steel Beams	7.70	41.00	6	W36 X 135
2	Steel Beams	7.70	80.00	6	W36 X 182
3	Steel Beams	7.70	36.00	6	W36 X 135

Bearing Data

Span#	Rear Type Bearing	FWD Type Bearing	Remarks
1	02 - Fixed Plate	01 - Sliding Plate	
2	02 - Fixed Plate	01 - Sliding Plate	
3	01 - Sliding Plate	02 - Fixed Plate	

CALCULATION SHEET

PROJECT: I-75 / I-575 NORTHWEST CORRIDOR
JOB NUMBER NH000-0575-01(028)
CALC NO. BR#37

SUBJECT: Bridge Foundation Investigation
BY: JCR DATE: 11/30/2009

SHEET NO.
SHEET REV.

BRIDGE AND RETAINING WALL FOUNDATION INVESTIGATION REPORT
I-575 over SR CR 171 (Big Shanty Road)
Northwest Corridor Project
GDOT Project No. CSNHS-0008-00(256), PI No. 0008256
Cobb County, Georgia

WILLMER ENGINEERING INC.
Project No. ATL-171-3099C

Document No.: ATL-171-3099**C**
Revision: 1
Issue Date: August 22, 2008
Document Status: Issued For Use

Prepared For

GEORGIA TRANSPORTATION PARTNERS
Atlanta, Georgia

Prepared By

WILLMER ENGINEERING INC.
3772 Pleasantdale Road
Suite 165
Atlanta, Georgia 30340-4270

770.939.0089

WILLMER ENGINEERING INC. | WE

August 22, 2008

VIA COURIER

Pete M. McMahon, PE
Georgia Transportation Partners
c/o PBS&J, Inc.
5665 New Northside Drive, Suite 400
Atlanta, Georgia 30328

SUBJECT: **Bridge and Retaining Wall Foundation Investigation Report**
I-575 over CR 171 (Big Shanty Road)
Northwest Corridor Project
GDOT Project No. CSNHS-0008-00(256), PI No. 0008256
Cobb County, Georgia
Willmer Project No. ATL-171-3099C

Dear Mr. McMahon:

Willmer Engineering Inc. (Willmer) is pleased to provide this Bridge and Retaining Wall Foundation Investigation (BFI and WFI) report for the proposed widening of I-575 bridge over CR 171 (Big Shanty Road) in Cobb County, Georgia. The BFI and WFI were performed in general accordance with our contract with Georgia Transportation Partners (GTP), dated May 12, 2007. The objective of this investigation was to gather sufficient geotechnical information to support the costing plans to be developed by GTP. Additional borings will be performed in the design/build phase of the project to provide additional information as required. This report was prepared in general accordance with Georgia Department of Transportation (GDOT) guidance documents for bridge and retaining wall foundation investigation. This report was revised to incorporate GTP comments dated December 18, 2007, and GDOT comments dated July 18, 2008.

The attached summary presents the site and subsurface conditions along the proposed bridge and retaining wall alignments, and our geotechnical recommendations related to foundation design and construction.

We appreciate the opportunity to be of service to you on this project and look forward to a continuing relationship. Please contact us if you have any questions concerning this report or require further assistance.

Sincerely,

WILLMER ENGINEERING INC.

Murthy S. Kotha
Project Engineer

Sujit K. Bhowmik, PhD, PE
Chief Engineer

James L. Willmer, PE
Executive Vice President/Principal Consultant

MSK/SKB/JLW:ks
I:\Word Processing\Projects\171-GEO\171-3099 Northwest Corridor Project (Bechtel)\Reports\3099 C - Big Shanty Road\171-3099C REVISED BFI - RWI Report - I-575 over CR 171 (Big Shanty Road) 8-22-08.doc

Geotechnical Engineering ✧ Environmental Services and Engineering ✧ Construction Services

3772 Pleasantdale Road
Suite 165
Atlanta, GA 30340-4270

P: 770.939.0089
F: 770.939.4299

www.willmerengineering.com

Attachments: **Bridge and Retaining Wall Foundation Investigations**

Figures

Figure 1 Project Location Map
Figure 2A Boring Location Plan (Bridge)
Figure 2B Boring Location Plan (Wall Nos. 2 and 3)
Figure 2C Boring Location Plan (Wall Nos. 4 and 5)
Figure 3 Generalized Subsurface Profile Section A-A' (Lt. Bridge)
Figure 4 Generalized Subsurface Profile Section B-B' (Lt. Bridge)
Figure 5 Generalized Subsurface Profile Section C-C' (Rt. Bridge)
Figure 6 Generalized Subsurface Profile Section D-D' (Rt. Bridge)
Figure 7 Generalized Subsurface Profile Section E-E' (Wall Nos. 2 & 3)
Figure 8 Generalized Subsurface Profile Section F-F' (Wall Nos. 4 & 5)

Appendix I

Boring Record Legend
Unified Soil Classification System Reference Sheet
Engineering Description of Rock Hardness
Boring Records: BB-1 through BB-4, and W-1 through W-9 (New Borings)
Laboratory Test Results

Appendix II

Boring Records: B-1 through B-12 (Borings from Existing GDOT BFI Report)

Revision History:

Revision	Issue Date	Document Status
A	December 5, 2007	Issued for Review
0	January 7, 2008	Issued for Use
1	August 22, 2008	Issued for Use

BRIDGE FOUNDATION INVESTIGATION	
Willmer Project Number	ATL-171-3099C
GDOT Project Number	CSNHS-0008-00(256)
Project P.I. Number	0008256
Location	I-575 Bridge over CR 171 (Big Shanty Road), Cobb County, Georgia (see Figure 1)
GENERAL INFORMATION	
Project Description	The existing I-575 bridges over CR 171 (Big Shanty Road) are planned to be replaced with two new parallel bridges as part of the proposed I-575 widening over Big Shanty Road. The bridges will be single span, 115 feet long reinforced concrete structures. New high occupancy vehicle (HOV) ramps from I-575 down to Big Shanty Road will be constructed between the two bridges. The existing bridges have three spans and are supported on H-pile bents at the end bents and H-pile footings at the intermediate bents. The BFI report for the existing bridges was obtained from GDOT, and it includes twelve borings performed by GDOT in 1976. Subsurface information from those twelve borings was used along with four new borings performed as part of the present study.
Geologic Information	The project alignment is geologically sited within the Piedmont Physiographic Province of Georgia, and is underlain by Metamorphosed Maffic Rock Formations which include amphibolite, mica schist, hornblende gneiss and biotite gneiss.
Subsurface Features	Subsurface information for this project was obtained from four borings (BB-1 through BB-4) performed by Willmer as part of the present study (see Appendix I) and twelve borings (B-1 through B-12) performed by GDOT in 1976 as part of the BFI for the existing bridges (see Appendix II). The subsurface profile is generally comprised of fill and residuum underlain by partially weathered rock and parent bedrock. It should be noted that the available logs for borings B-1 through B-12 do not differentiate between fill and residuum in the soil description. The fill material consists of loose to medium dense silty sand. The residual soils consist of loose to dense silty sand and/or very soft to firm sandy silt. During the present field investigation ground water was encountered at all boring locations between elevations 925 and 935 feet, and during the field investigation by GDOT in 1976, ground water was encountered between elevations 949 and 951 feet.

PWR AND AUGER REFUSAL ELEVATIONS (feet)				
Bridge	**Bent No.**	**Reference Boring No.**	**Top of PWR**	**Auger Refusal**
Left	1	BB-1	910	906
		B-2	912	*
		B-3	928	913
	2	BB-2	915	914
		B-4	912	905
		B-5	919	*
Right	1	B-8	922	*
		B-8A	920	*
		B-9	919	912
		BB-3	918	910
	2	B-10	908	*
		B-11	907	*
		BB-4	905	904

* Boring was not extended to auger refusal.

MAXIMUM PILE DESIGN LOADS			
Pile Type	**Load Transfer (%)**		**Design Load**
	Friction	**End Bearing**	
H-Piles	20	80	10 BP 42 = 55 Tons
			12 BP 53 = 70 Tons
			14 BP 73 = 96 Tons
			14 BP 89 = 117 Tons

FOUNDATION RECOMMENDATIONS			
Bridge	**Bent No.**	**Pile Footing (Type)**	**Pile Bent (Type)**
Left	1		H
	2		H
Right	1		H
	2		H

PILE TIP ELEVATIONS (feet)				
Bridge	Bent No.	Reference Boring No.	H-Pile	
			Minimum Tip	Estimated Tip
Left	1-Left	BB-1	915±	910±
	1-Center	B-2	918±	915±
	1-Right	B-3	925±	925±
	2-Left	BB-2	914±	914±
	2-Center	B-4	911±	909±
	2-Right	B-5	915±	909±
Right	1-Left	B-8	925±	918±
	1-Center	B-9	918±	918±
	1-Right	BB-3	915±	915±
	2-Left	B-10	920±	910±
	2-Center	B-11	919±	910±
	2-Right	BB-4	904±	904±

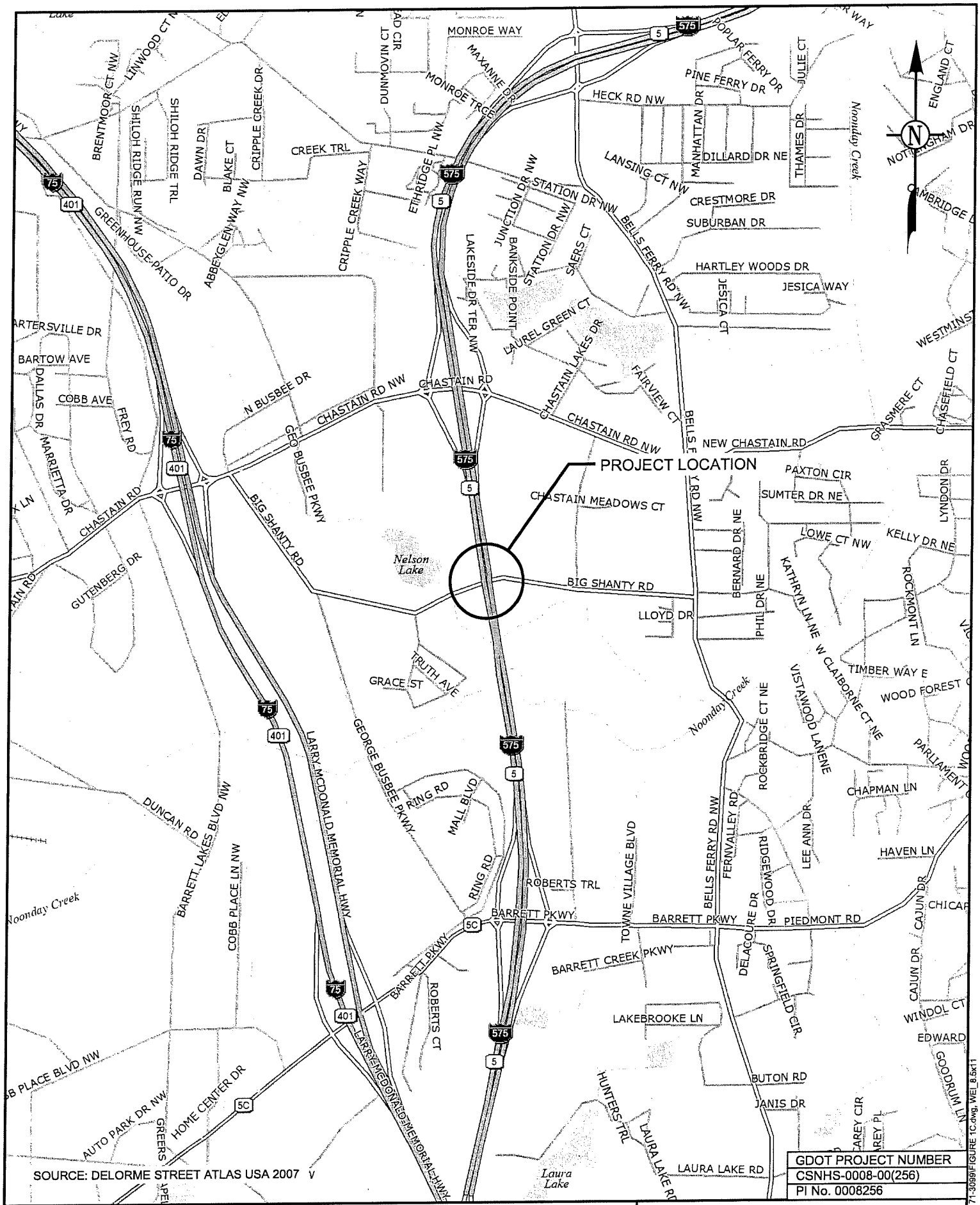
NOTES	
Elevations	All elevations referenced in this report are based on Control Points No. 508 (5/8" rebar, EL. 944.63 feet), No. 252 (60D Traverse, EL. 967.18 feet), No. 148 (1/2" rebar, EL. 956.41 feet) and No. 9203 (1/2" rebar, EL. 965.23 feet) established by the surveyors.
PDO	Driving resistance after Minimum Tip Elevations are achieved.
Points	Pile points are recommended for piles driven at all bents to insure adequate penetration into dense/very dense soils and PWR. The use of points should be at the direction of the project Geotechnical Engineer.
Down-drag Protection	To avoid inducing down-drag loads onto the piles from potential settlement of the loose to very loose silty sand and soft to very soft sandy silt layers during construction of the MSE wall, we recommend that the piles at both bents be protected from down-drag by using Jackets or other approved measures.
Waiting Period	None required (see MSE wall recommendations)
Special Problems	None.
As-built Information	As-built information should be forwarded to the Geotechnical Engineering Bureau upon completion of the foundation system.

RETAINING WALL INVESTIGATION	
Location and Description	Four retaining walls are proposed for the bridge abutments and new HOV ramps from I-575 down to CR 171 (Big Shanty Road). Wall Nos. 2 and 3 extend from Station 130+00 along the two sides of the proposed HOV ramp to the bridge abutment (approximate Station 137+75) and then wrap around to form the abutment and wing walls (see Figure 2B). Wall Nos. 4 and 5 extend from Station 146+00 along the two sides of the proposed HOV ramp to the bridge abutment (approximate station 139+55) and then wrap around to form the abutment and wing walls (see Figure 2C). The total length of each of Wall Nos. 2 and 3 is 930 feet, and the total length of each of Wall Nos. 4 and 5 is 810 feet. The maximum height of Wall Nos. 2 and 3 is about 28 feet with bottom elevations ranging from 950 to 939 feet and top elevations ranging from 957 to 967 feet. The maximum height of Wall Nos. 4 and 5 is about 29 feet with bottom elevations ranging from 967 to 941 feet and top elevations ranging from 973 to 970 feet. It is our understanding that MSE walls are planned for the abutment and wing walls. The type of wall to be used for the HOV ramps will be decided based on ease of construction and construction cost.
Subsurface Features	The subsurface profile (see Figures 7 and 8 and boring logs for W-1 through W-9) along the proposed walls is comprised of fill and residuum underlain by partially weathered rock (PWR). The fill consists of loose to medium dense silty sand and/or soft to stiff sandy silt. Fill material was not encountered at borings W-3, W-8 and W-9. The residual soils consist of very loose to dense silty sand and/or soft to stiff sandy silt underlain by partially weathered rock. Ground water was encountered at borings W-4, W-5 and W-7 between elevations 925 and 934 feet. It should be noted that the borings were performed during an extended dry period, and ground water may be encountered at a higher elevation during construction.

Soil Parameters	The following soil design parameters are recommended for use for the proposed retaining walls: Soil Unit Weight γ = 125 pcf Cohesion c = 0 psf Angle of Internal Friction ϕ = 28 degrees Coefficient of Sliding Friction μ = 0.40 (MSE wall) Coefficient of Sliding Friction μ = 0.30 (Cantilever Retaining wall) The above design parameters assume the backfill material behind the retaining wall (or MSE wall reinforced fill) to consist of silty sand compacted to the specified density, and the subgrade prepared as recommended below.
Recommendations	(i) Soft to very soft sandy silt and loose to very loose silty sand were encountered at or near the retaining wall bottom elevation at a number of locations. Any soft/loose soils from beneath the wall should be over-excavated to a minimum depth of three feet below the wall bottom and replaced with compacted wall backfill material. The exact depth and extent of over-excavation should be determined by the project Geotechnical Engineer. (ii) A maximum allowable bearing pressure of 2,000 psf is recommended for all retaining walls. (iii) It should be noted that the borings for this study were performed during an extended dry period, and ground water may be encountered at or near the wall bottom elevation at some locations. If ground water is encountered, underdrains will be required. The need for any underdrains should be evaluated during construction by the project Geotechnical Engineer. (continued)

Recommendations (continued)	(iv) At the location of maximum wall height, the design bearing pressure for the MSE walls will exceed the above recommended maximum allowable bearing pressure. Therefore, we recommend that the MSE walls be constructed in two stages to minimize differential settlement along the walls. In the first stage, the wall should be constructed to half of its final height. A minimum 45-day waiting period should be allowed after the first stage before beginning the second stage of construction. Settlement of the MSE walls should be monitored upon completion of the first stage of construction. The length of the waiting period may be increased or decreased based on the settlement monitoring data, at the discretion of the project Geotechnical Engineer. After the waiting period, the MSE wall should be constructed to the final height. (v) The backfill materials and drainage measures for the retaining walls should conform to GDOT standard specifications.
Prepared By	Murthy S. Kotha / Sujit K. Bhowmik, PhD, PE
Senior Review By	James L. Willmer, PE

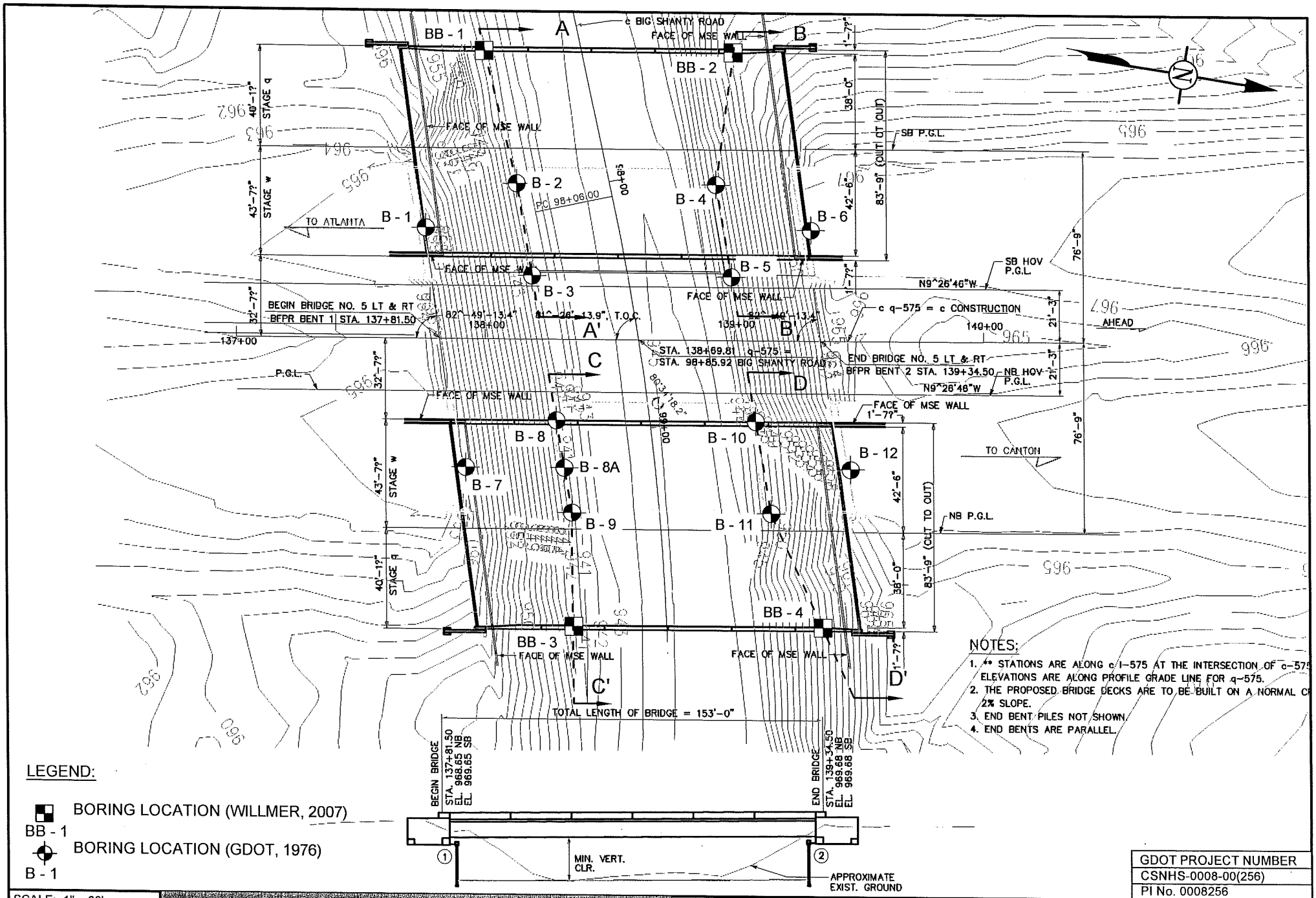
FIGURES



GDOT PROJECT NUMBER
CSNHS-0008-00(256)
PI No. 0008256

SCALE: 1" = 2000'	WILLMER ENGINEERING INC. WE	GEOTECHNICAL ENGINEERING CONSTRUCTION SERVICES ENVIRONMENTAL SERVICES AND ENGINEERING 3772 PLEASANTDALE ROAD - SUITE 165 ATLANTA, GA 30340-4270
DATE: 11/29/2007		FIGURE 1 PROJECT LOCATION MAP I-575 OVER CR 171 (BIG SHANTY ROAD) NORTHWEST CORRIDOR PROJECT COBB COUNTY, GEORGIA WILLMER PROJECT No. ATL-171-3099C
DRAWN BY: MDB		
REVIEWED BY: MK		

I:\AutoCAD\171-GEO\171-3099\FIGURE 1C.dwg, WEI_8.5x11



NOTES:

1. ** STATIONS ARE ALONG c I-575 AT THE INTERSECTION OF c-575
ELEVATIONS ARE ALONG PROFILE GRADE LINE FOR q-575.
2. THE PROPOSED BRIDGE DECKS ARE TO BE BUILT ON A NORMAL C
2% SLOPE.
3. END BENT PILES NOT SHOWN.
4. END BENTS ARE PARALLEL.

LEGEND:

BORING LOCATION (WILLMER, 2007)
BB - 1

BORING LOCATION (GDOT, 1976)
B - 1

GDOT PROJECT NUMBER
CSNHS-0008-00(256)
PI No. 0008256

SCALE: 1" = 60'	
DATE: 8/13/2008	
DRAWN BY: CBS	
REVIEWED BY: MK	

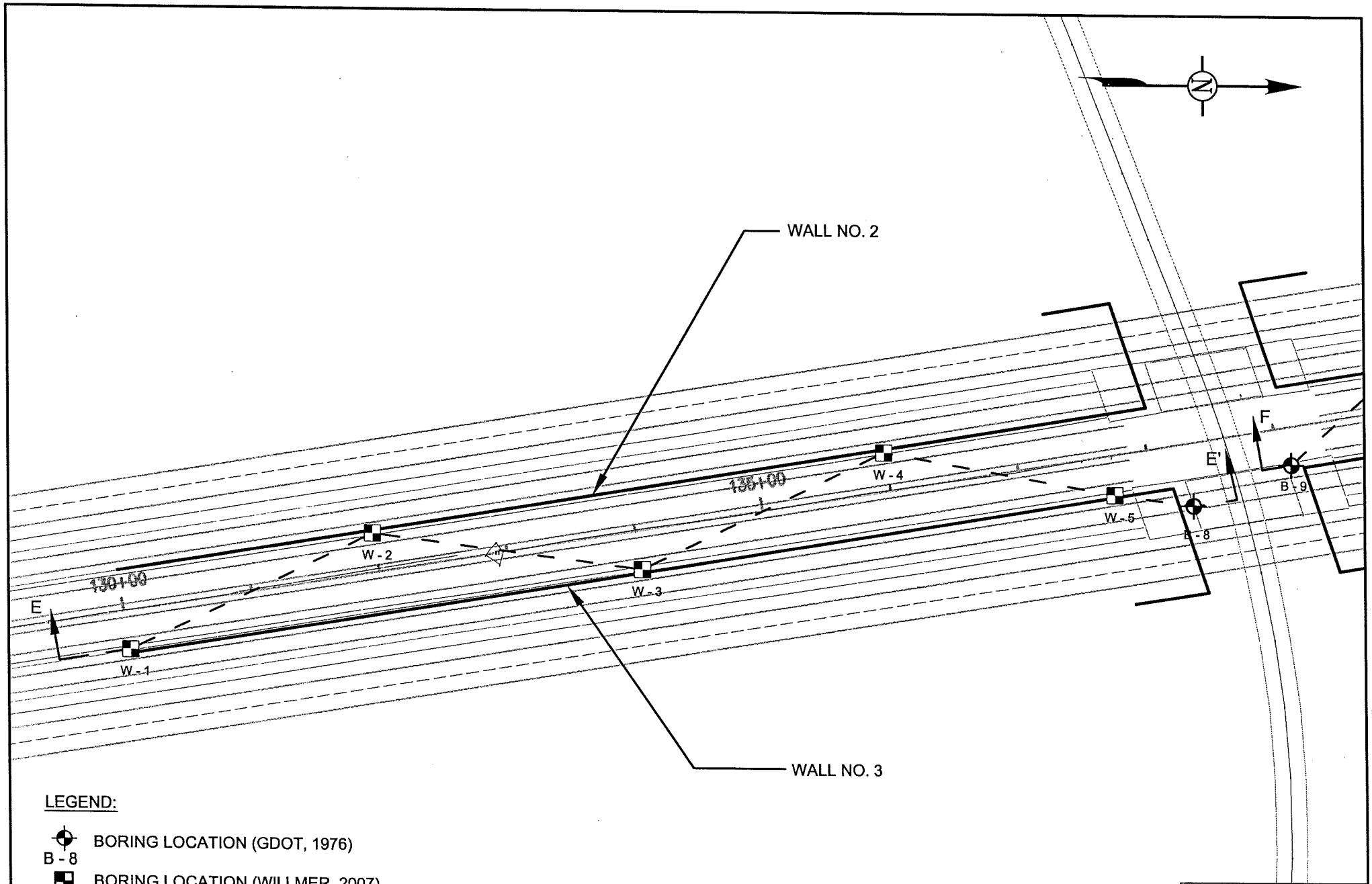
WILLMER ENGINEERING INC.

WE

GEOTECHNICAL ENGINEERING ¤ CONSTRUCTION SERVICES
ENVIRONMENTAL SERVICES AND ENGINEERING
3772 PLEASANTDALE ROAD - SUITE 165
ATLANTA, GA 30340-4270

FIGURE 2A
BORING LOCATION PLAN (BRIDGE)
I-575 OVER CR 171 (BIG SHANTY ROAD)
NORTHWEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-171-3099C

I:\AutoCAD\171-GEO\171-3099\Revised Bridge plans\2004 Versions\Geo_BigShanty_PE.dwg, WEL_11x8.5



LEGEND:

B - 8 BORING LOCATION (GDOT, 1976)

W - 1 BORING LOCATION (WILLMER, 2007)

GDOT PROJECT NUMBER
CSNHS-0008-00(256)
PI No. 0008256

SCALE: 1" = 100'	WILLMER ENGINEERING INC. WE	GEOTECHNICAL ENGINEERING ▪ CONSTRUCTION SERVICES ENVIRONMENTAL SERVICES AND ENGINEERING 3772 PLEASANTDALE ROAD - SUITE 165 ATLANTA, GA 30340-4270
DATE: 12/4/2007		
DRAWN BY: MDB		
REVIEWED BY: MK		

FIGURE 2B
BORING LOCATION PLAN (WALL Nos. 2 & 3)
I-575 OVER CR 171 (BIG SHANTY ROAD)
NORTHWEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-171-3099C

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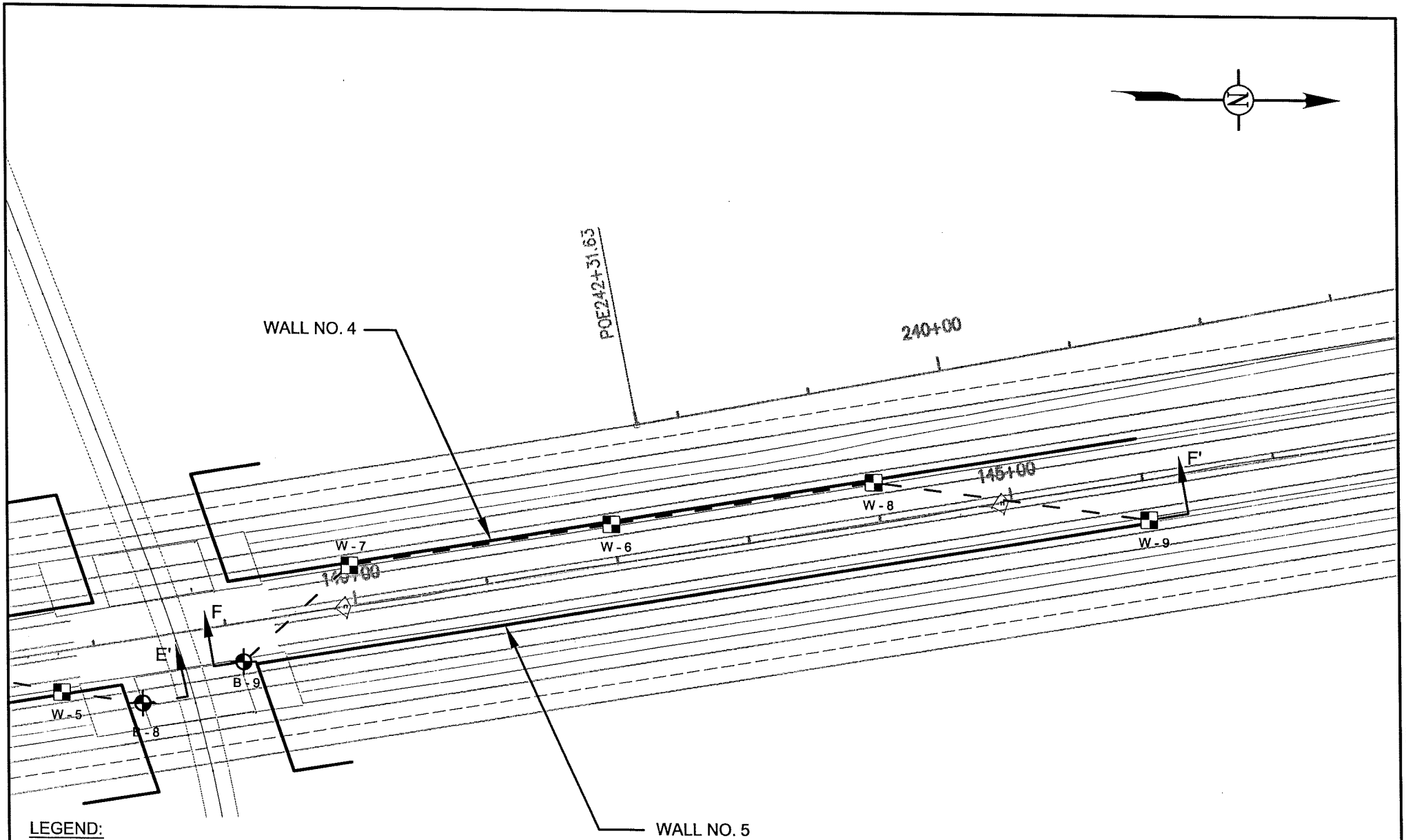


LEGEND:

B - 9 BORING LOCATION (GDOT, 1976)

W - 9 BORING LOCATION (WILLMER, 2007)

GDOT PROJECT NUMBER
CSNHS-0008-00(256)
PI No. 0008256

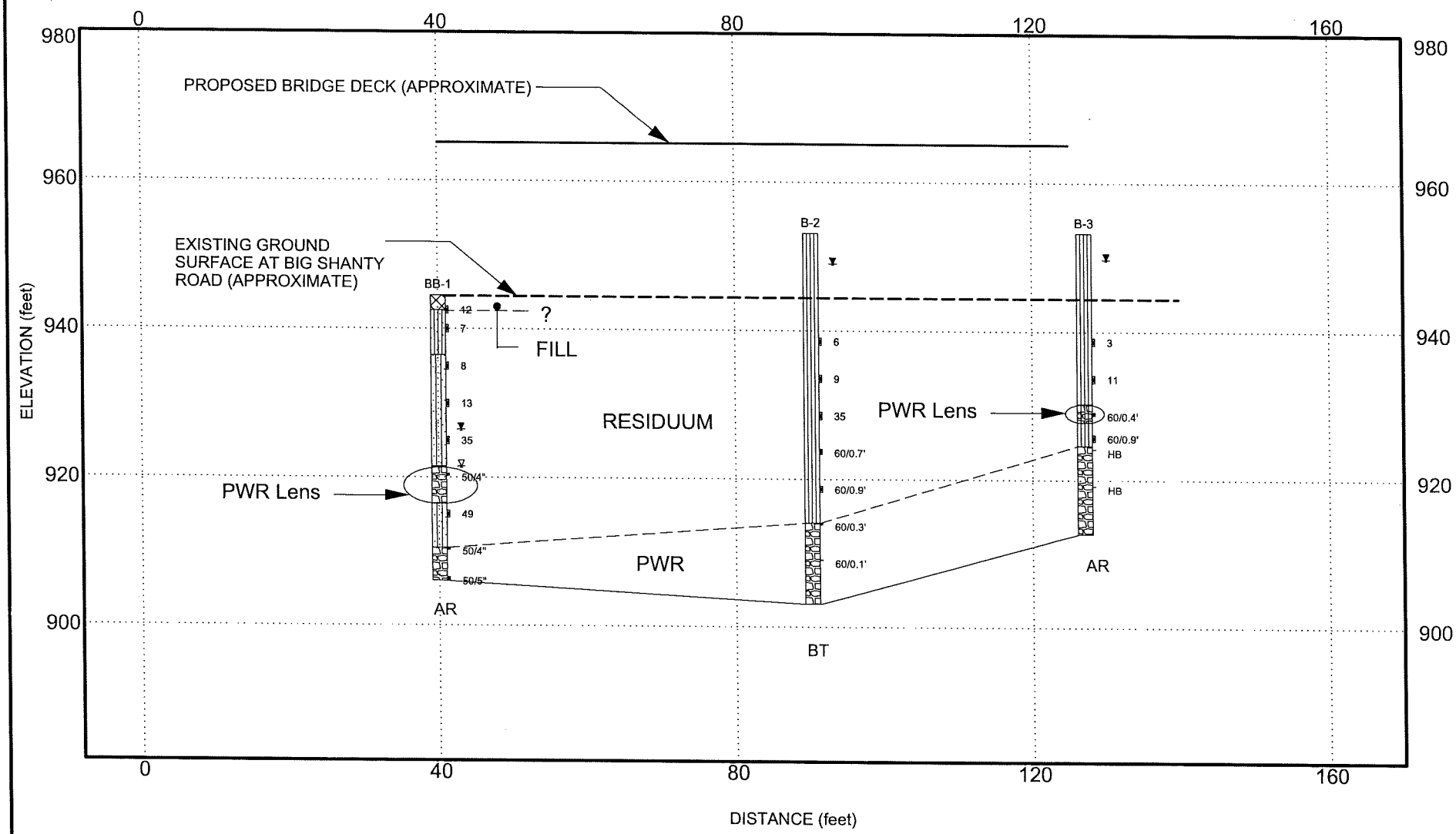
SCALE: 1" = 100'	
DATE: 12/4/2007	
DRAWN BY: MDB	
REVIEWED BY: MK	

WILLMER ENGINEERING INC. WE

GEOTECHNICAL ENGINEERING ▪ CONSTRUCTION SERVICES
ENVIRONMENTAL SERVICES AND ENGINEERING
3772 PLEASANTDALE ROAD - SUITE 165
ATLANTA, GA 30340-4270

FIGURE 2C
BORING LOCATION PLAN (WALL Nos. 4 & 5)
I-575 OVER CR 171 (BIG SHANTY ROAD)
NORTHWEST CORRIDOR PROJECT
COBB COUNTY, GEORGIA
WILLMER PROJECT No. ATL-171-3099C

I:\AutoCAD\171-GEO\171-3099\Files 11-27-07\COPY_MAIN.dwg, WEI_11x8.5 (3)



LEGEND:
- Groundwater Table @ 24 hours
- Groundwater Table @ Time of Boring
AR - Auger Refusal
BT - Boring Terminated
PWR - Partially Weathered Rock
HB - Hammer Bounce

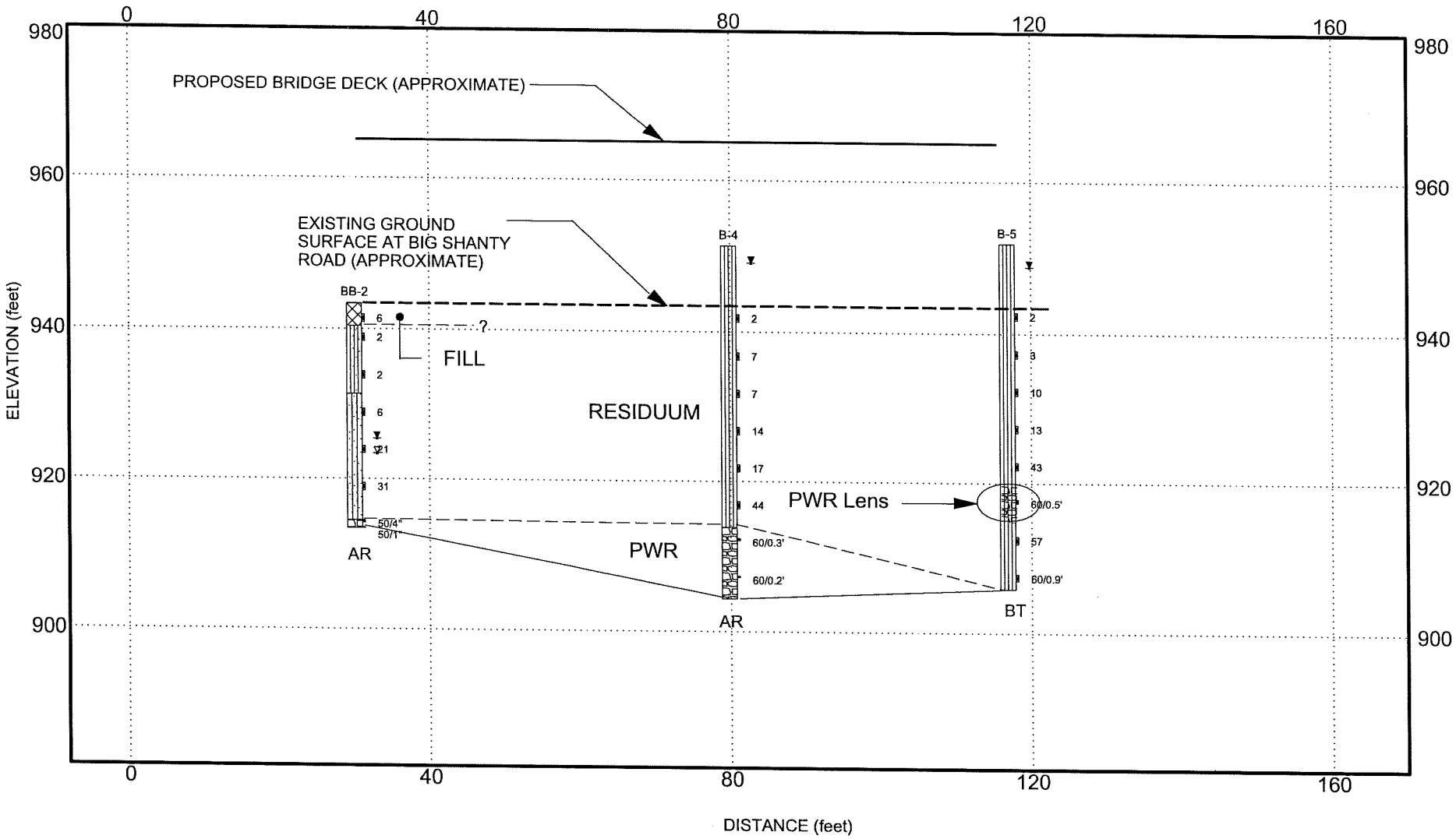
SCALE : 1 inch = 20 feet (vertical)
1 inch = 20 feet (horizontal)

NOTE: Borings B-2 and B-3 were performed by GDOT in 1976.

GENERALIZED SUBSURFACE PROFILE SECTION A-A' (LT. BRIDGE)

I-575 over CR 171 (Big Shanty Road)
GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256
Cobb County, Georgia

PROJECT #	DATE	FIGURE
171-3099C	Nov 29, 2007	3



LEGEND:
- Groundwater Table @ 24 hours
- Groundwater Table @ Time of Boring
AR - Auger Refusal
BT - Boring Terminated
PWR - Partially Weathered Rock

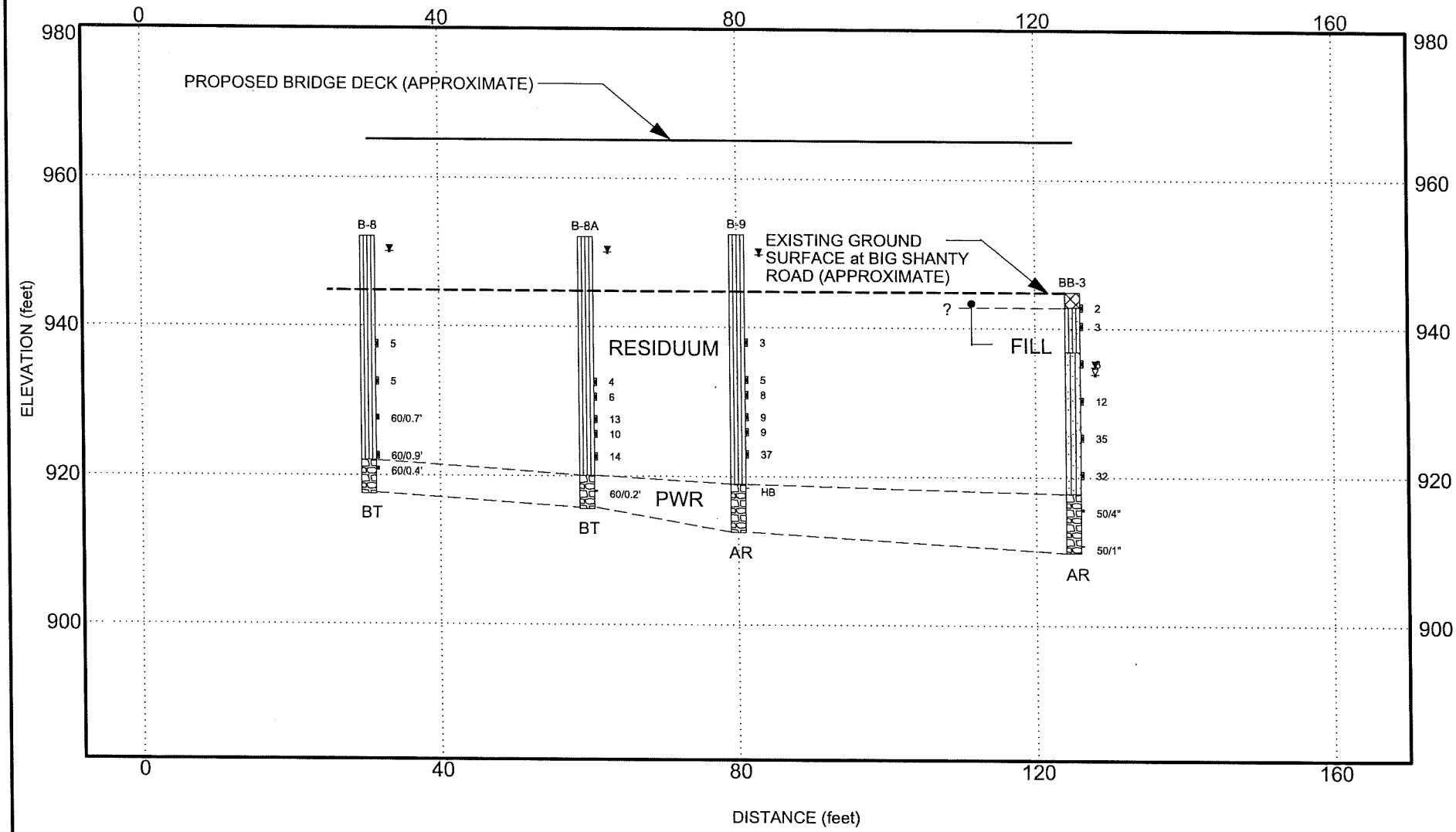
SCALE : 1 inch = 20 feet (vertical)
1 inch = 20 feet (horizontal)

NOTE: Borings B-4 and B-5 were performed by GDOT in 1976.

GENERALIZED SUBSURFACE PROFILE SECTION B-B' (LT. BRIDGE)

I-575 over CR 171 (Big Shanty Road)
GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256
Cobb County, Georgia

PROJECT #	DATE	FIGURE
171-3099C	Nov 29, 2007	4



LEGEND:
- ▼ - Groundwater Table @ 24 hours
- ▽ - Groundwater Table @ Time of Boring
- AR - Auger Refusal
- BT - Boring Terminated
- PWR - Partially Weathered Rock
- HB - Hammer Bounce

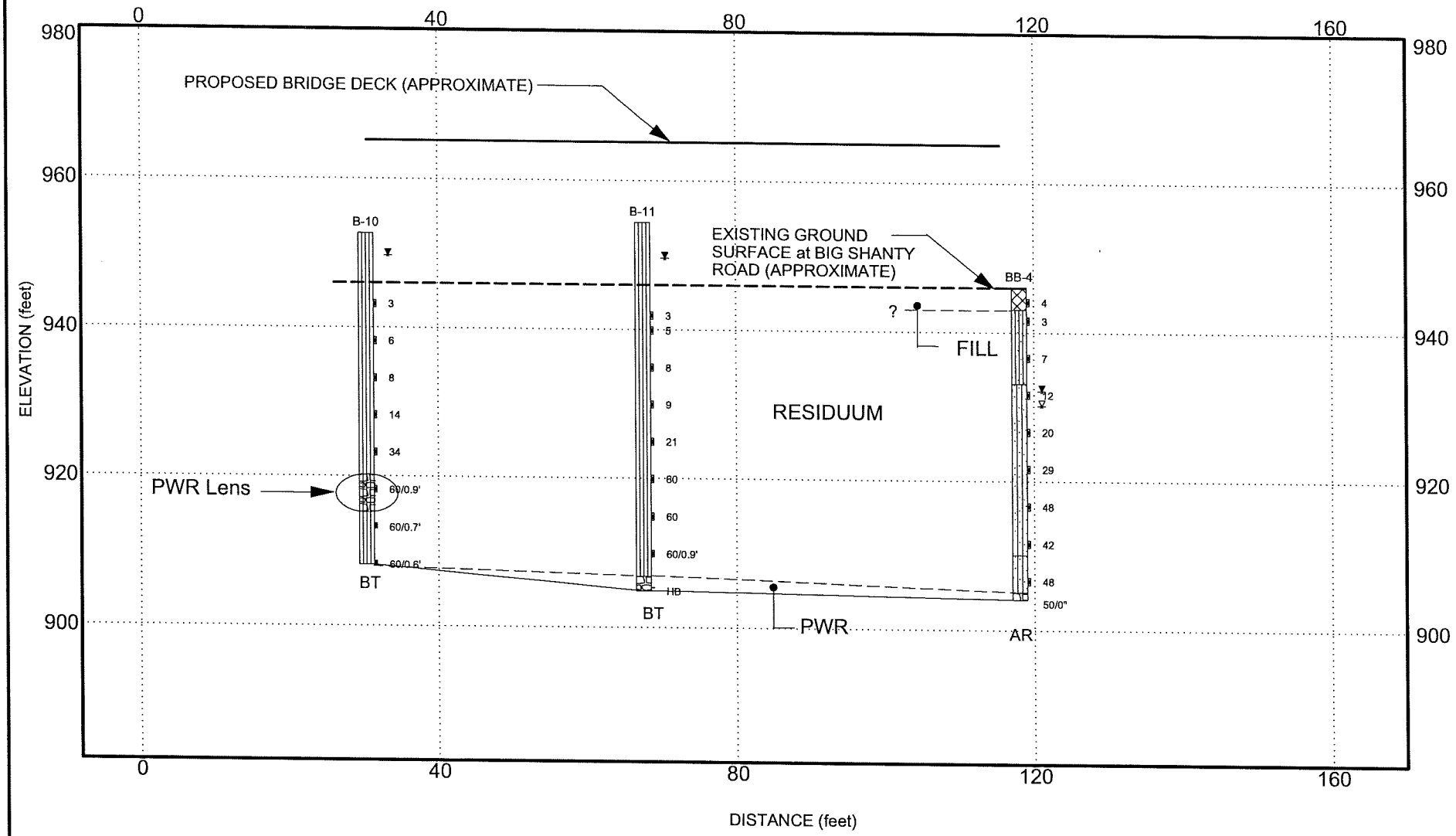
SCALE : 1 inch = 20 feet (vertical)
1 inch = 20 feet (horizontal)

NOTE: Borings B-8, B-8A and B-9 were performed by GDOT in 1976.

GENERALIZED SUBSURFACE PROFILE SECTION C-C' (RT. BRIDGE)

I-575 over CR 171 (Big Shanty Road)
GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256
Cobb County, Georgia

PROJECT #	DATE	FIGURE
171-3099C	Nov 29, 2007	5



LEGEND:
- Groundwater Table @ 24 hours
- Groundwater Table @ Time of Boring
AR - Auger Refusal
BT - Boring Terminated
PWR - Partially Weathered Rock
HB - Hammer Bounce

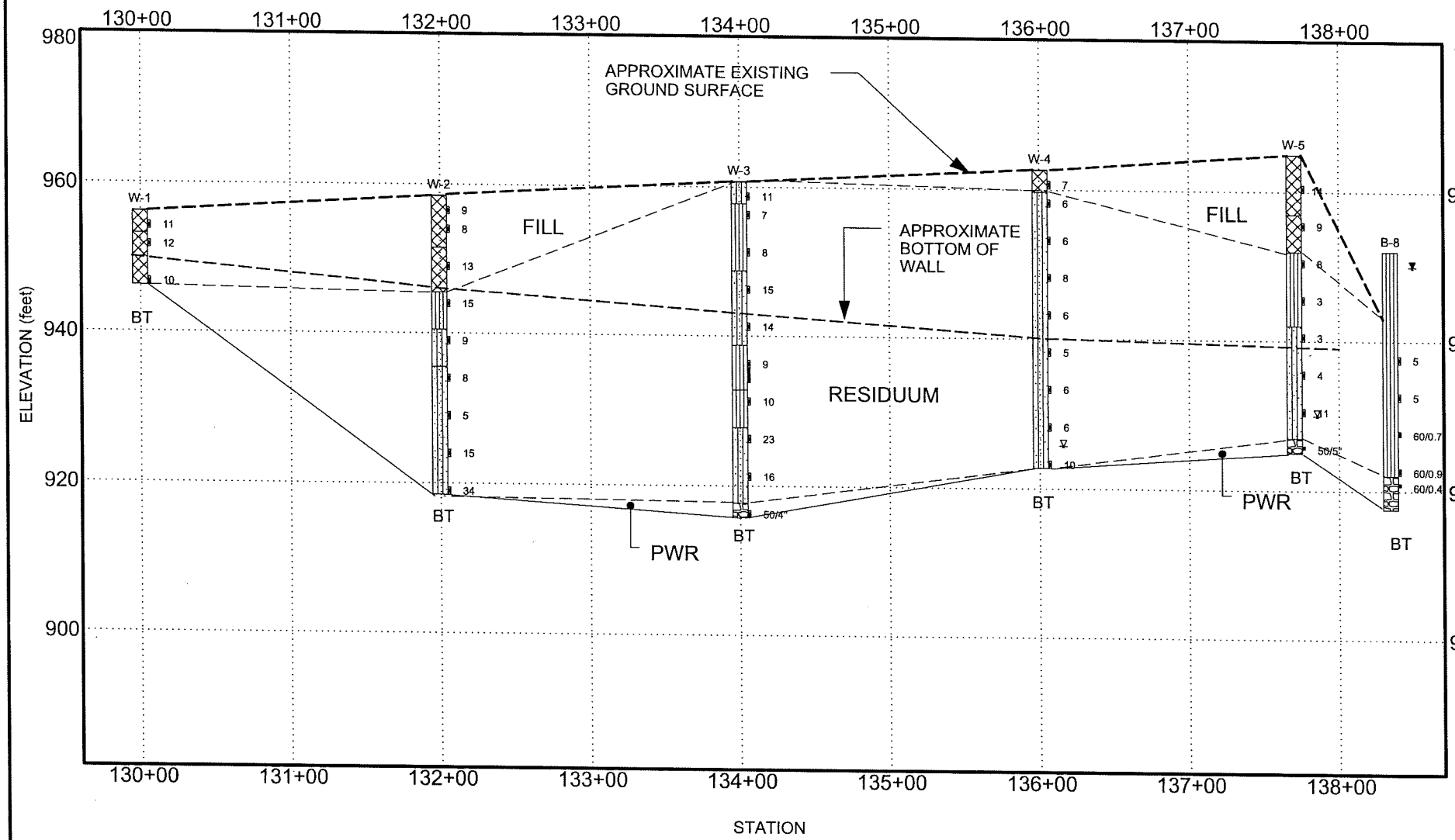
SCALE : 1 inch = 20 feet (vertical)
1 inch = 20 feet (horizontal)

NOTE: Borings B-10 and B-11 were performed by GDOT in 1976.

GENERALIZED SUBSURFACE PROFILE SECTION D-D' (RT. BRIDGE)

I-575 over CR 171 (Big Shanty Road)
GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256
Cobb County, Georgia

PROJECT #	DATE	FIGURE
171-3099C	Nov 29, 2007	6



LEGEND:
- ▼ - Groundwater Table @ 24 hours
- ▽ - Groundwater Table @ Time of Boring
- BT - Boring Terminated
- PWR - Partially Weathered Rock

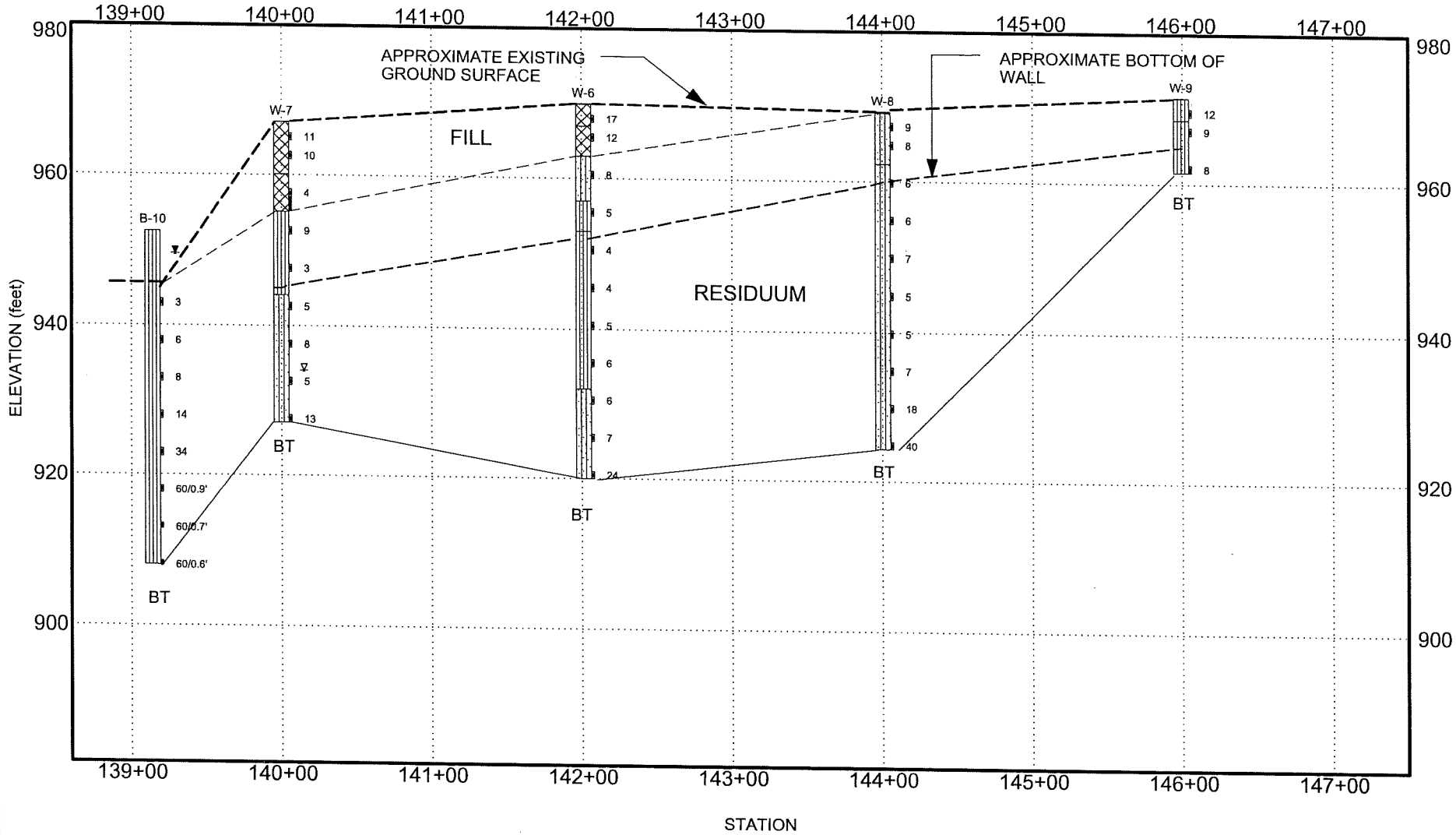
SCALE : 1 inch = 20 feet (vertical)
1 inch = 100 feet (horizontal)

NOTE: Boring B-8 was performed by GDOT in 1976.

GENERALIZED SUBSURFACE PROFILE
SECTION E-E' (Wall Nos. 2 and 3)

I-575 over CR 171 (Big Shanty Road)
GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256
Cobb County, Georgia

PROJECT #	DATE	FIGURE
171-3099C	Dec 02, 2007	7



LEGEND:
- Groundwater Table @ 24 hours
- Groundwater Table @ Time of Boring
BT - Boring Terminated

SCALE : 1 inch = 20 feet (vertical)
1 inch = 100 feet (horizontal)

NOTE: Boring B-10 was performed by GDOT in 1976.

GENERALIZED SUBSURFACE PROFILE
SECTION F-F' (WALL Nos. 4 and 5)

I-575 over Big Shanty Road
GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256
Cobb County, Georgia

PROJECT #	DATE	FIGURE
171-3099C	Nov 26, 2007	8

APPENDIX I

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BORING RECORD LEGEND

SM, CL, etc: - GROUP SYMBOL based on Unified Soil Classification System.
(Refer to ASTM D-2488 and Table 1 of D-2487)

N-VALUE: BLOWS PER FOOT- Standard Penetration Resistance (SPT) blow count , the sum of the second and third 6-inch increments of the SPT test.
(Refer to ASTM D-1586)

CONSISTENCY / RELATIVE DENSITY Correlated with SPT Blow Count, N:

SILTS AND CLAYS

N (blows per foot)	Consistency
0 - 2	Very Soft
3 - 4	Soft
5 - 8	Firm
9 - 15	Stiff
16 - 30	Very Stiff
31 - 50	Hard
> 50	Very Hard

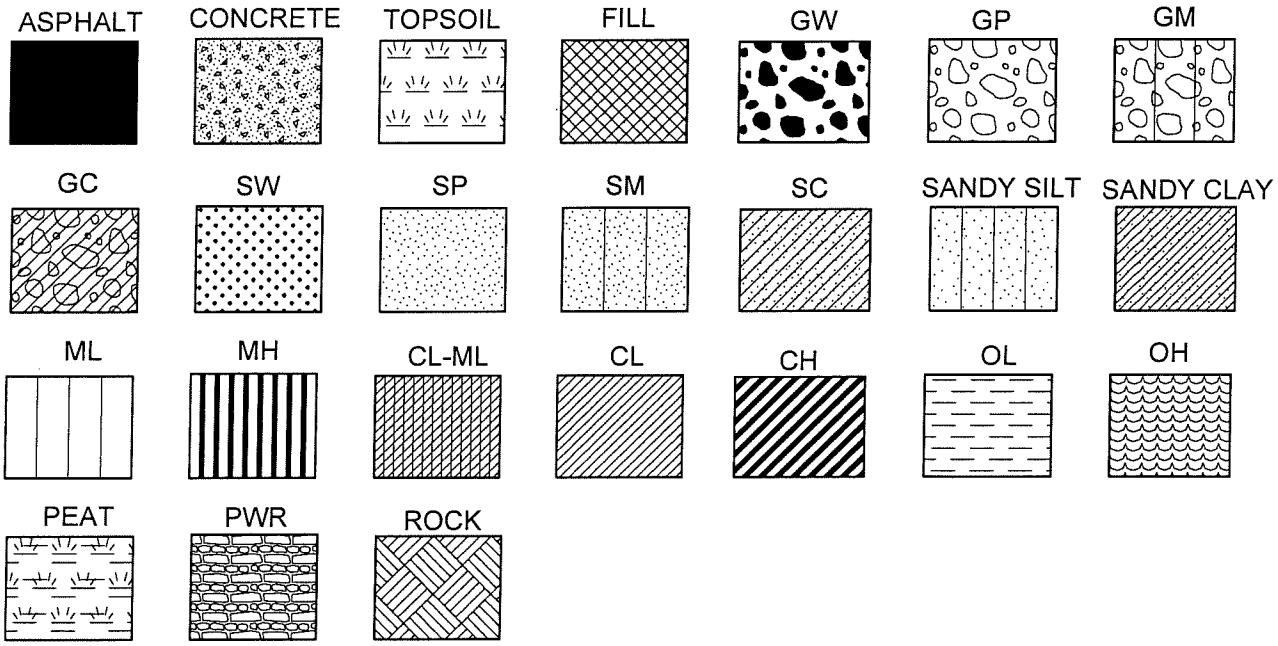
SANDS

N (blows per foot)	Relative Density
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
> 50	Very Dense

NOTES:

Groundwater Measurements:

- ▼ Water level at time of backfilling
- ▽ Water level at time of boring
- Caved level at 24 hours



WILLMER ENGINEERING INC. | WE

Willmer Engineering Inc.
3772 Pleasantdale Road, Suite 165
Atlanta, Georgia 30340

UNIFIED SOIL CLASSIFICATION SYSTEM REFERENCE SHEET

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN #200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED #4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES	(GW)	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			(GP)	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES	(GM)	SILTY GRAVELS and GRAVEL-SAND-SILT MIXTURES
			(GC)	CLAYEY GRAVELS and GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING #4 SIEVE	CLEAN SAND LITTLE OR NO FINES	(SW)	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			(SP)	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES	(SM)	SILTY SANDS and SAND-SILT MIXTURES
			(SC)	CLAYEY SANDS and SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		(ML)	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR VERY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			(CL)	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			(OL)	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		(MH)	INORGANIC ELASTIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
			(CH)	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			(OH)	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			(PT)	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

WILLMER ENGINEERING INC. | WE

ENGINEERING DESCRIPTION OF ROCK HARDNESS

Hardness	Description
Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick. can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 inch deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1 inch maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1 inch or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.
Partially Weathered Rock	For engineering purposes, partially weathered rock (PWR) is locally defined as residual soils exhibiting Standard Penetration Test N-values in excess of 50 blows for 6 inches of penetration.

WILLMER ENGINEERING INC. | WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. BB-1**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Bent - 1, LT Bridge**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **944.48** Station: **138+00, 115' Lt. of CL**

Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **9** Overburden (ft): **38.5** Rock (ft): -- Total Depth (ft): **38.5**

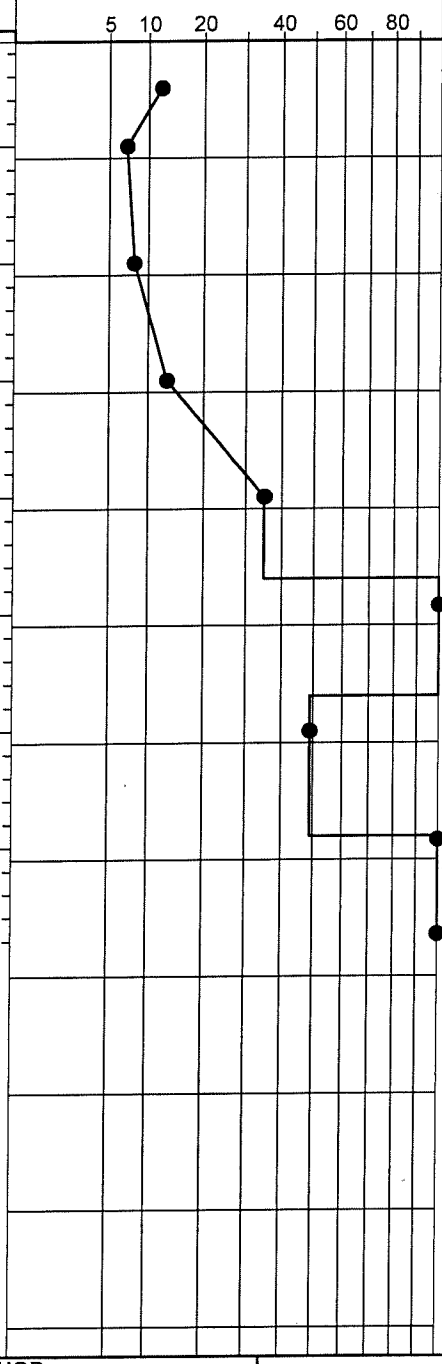
Logged By: **MK** Date Drilled: **9/28/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
		SS			FILL : Medium dense reddish brown silty medium to fine **SAND** with gravel	FILL	944.5	12
		SS			RESIDUUM : Firm gray and brown medium to fine sandy **SILT** (micaceous)	ML	940	7
5		SS						
10		SS			Loose to dense gray, brown and black silty medium to fine **SAND** (slightly micaceous)	SM	935	8
15		SS					930	13
20		SS					925	35
25		SS			PARTIALLY WEATHERED ROCK : Sampled as very dense brown, white and tan silty coarse to fine **SAND** with rock fragments	PWR	920	50/4"
30		SS			RESIDUUM : Dense brown, white and tan silty coarse to fine **SAND**	SM	915	49
35		SS			PARTIALLY WEATHERED ROCK : Sampled as very dense black and tan silty coarse to fine **SAND** with rock fragments	PWR	910	50/4"
		SS						50/5"

Auger refusal encountered @ 38.5 feet below existing ground surface.

Groundwater was encountered @ 23 feet below existing ground surface @ time of boring completion and @ 18 feet below existing ground surface @ 24 hours after boring completion.

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	BB-1
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC. | WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. BB-2**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Bent - 2, LT Bridge**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **943.61** Station: **139+00, 115' Lt. of CL**

Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **8** Overburden (ft): **30** Rock (ft): -- Total Depth (ft): **30.0**

Logged By: **MK** Date Drilled: **9/28/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
		SS			TOPSOIL = 1 inch	FILL	943.6		
		SS			FILL : Loose reddish brown silty medium to fine **SAND** with graded aggregate base	ML	940		6
5		SS			RESIDUUM : Very soft reddish brown and tan medium to fine sandy **SILT** (slightly micaceous)		935		2
10		SS					930		2
15		SS			Loose to dense gray, white and tan silty medium to fine **SAND** (slightly micaceous)	SM	925		6
20		SS					920		21
25		SS					915		31
30		SS SS			PARTIALLY WEATHERED ROCK : Sampled as very dense brown, white and tan silty medium to fine **SAND** with rock fragments	PWR			50/4" 50/1"

Auger refusal encountered @ 30 feet below existing ground surface.

Groundwater was encountered @ 20 feet below existing ground surface @ time of boring completion and @ 18 feet below existing ground surface @ 24 hours after boring completion.

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	BB-2
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

SPTN 171-3099C.GPJ 11/29/07

WILLMER ENGINEERING INC. | WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. BB-3**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Bent - 1, RT Bridge**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **945.03** Station: **138+32, 115' Rt. of CL**

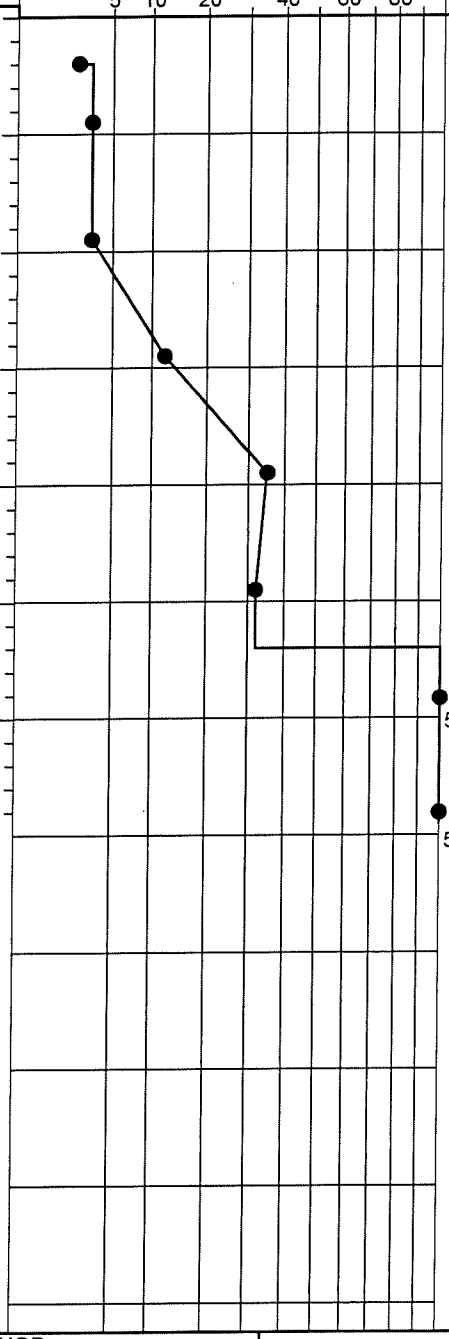
Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **8** Overburden (ft): **35** Rock (ft): -- Total Depth (ft): **35.0**

Logged By: **MK** Date Drilled: **9/28/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
		SS			FILL : Very loose reddish brown silty medium to fine **SAND** with gravel	FILL	945.0	2
					RESIDUUM : Soft reddish brown medium to fine sandy **SILT** (micaceous)	ML		
5		SS					940	3
					Very loose to dense gray, brown and white silty medium to fine **SAND** (slightly micaceous)	SM		
10		SS					935	3
15		SS					930	12
20		SS					925	35
25		SS					920	32
					PARTIALLY WEATHERED ROCK : Sampled as very dense black, white and tan silty coarse to fine **SAND** with rock fragments	PWR		
30		SS					915	50/4"
35		SS						50/1"

STANDARD PENETRATION TEST DATA (blows/foot)



Auger refusal encountered @ 35 feet below existing ground surface.

Groundwater was encountered @ 11 feet below existing ground surface @ time of boring completion and @ 10 feet below existing ground surface @ 24 hours after boring completion.

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	BB-3
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

SPTN 171-3099C.GPJ 11/29/07

WILLMER ENGINEERING INC. | WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. BB-4**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Bent - 2, RT Bridge**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **946.11** Station: **139+35, 115' Rt. of CL**

Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

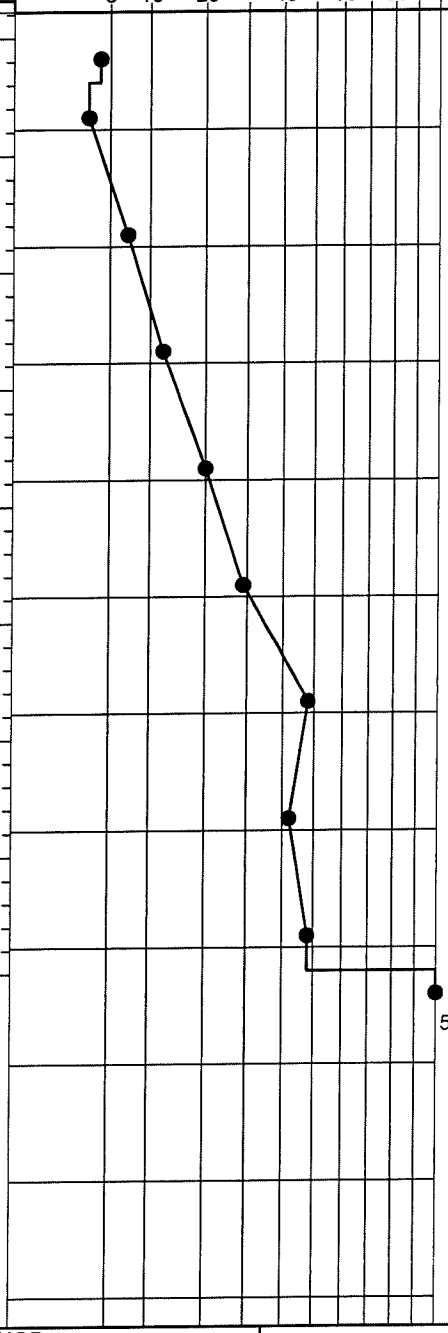
Core Boxes: -- Samples: **10** Overburden (ft): **42** Rock (ft): -- Total Depth (ft): **42.0**

Logged By: **MK** Date Drilled: **9/28/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
		SS			TOPSOIL = 2 inches (FILL)	946.1	
		SS			FILL : Loose reddish brown and tan silty medium to fine **SAND** and graded aggregate base (ML)	945	4
5		SS			RESIDUUM : Soft and firm brown, white and tan medium to fine sandy **SILT**	940	3
10		SS				935	7
15		SS			Medium dense to dense black, brown, white and tan silty medium to fine **SAND** (slightly micaceous) (SM)	930	12
20		SS				925	20
25		SS				920	29
30		SS				915	48
35		SS				910	42
40		SS			Dense brown, white and tan silty medium to fine **SAND** with rock fragments(slightly micaceous) (SM)	905	48
		SS			PARTIALLY WEATHERED ROCK : Sampled as very dense brown, white and tan silty medium to fine **SAND** with rock fragments (PWR)		50/0"

Auger refusal encountered @ 42 feet below existing ground surface.

Groundwater was encountered @ 16 feet below existing ground surface @ time of boring completion and @ 14 feet below existing ground surface @ 24 hours after boring completion.



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	BB-4
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC. WE

Project: I-575 over CR 171 (Big Shanty Road)	**HOLE No. W-1**
Location: Cobb County, Georgia	Sheet 1 of 1
Project Number: 171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256	Location: Wall No. 3

Azimuth: -- Angle from Horizontal: 90 Surface Elevation (ft): 956.23 Station: 130+00, 30' Rt. of CL

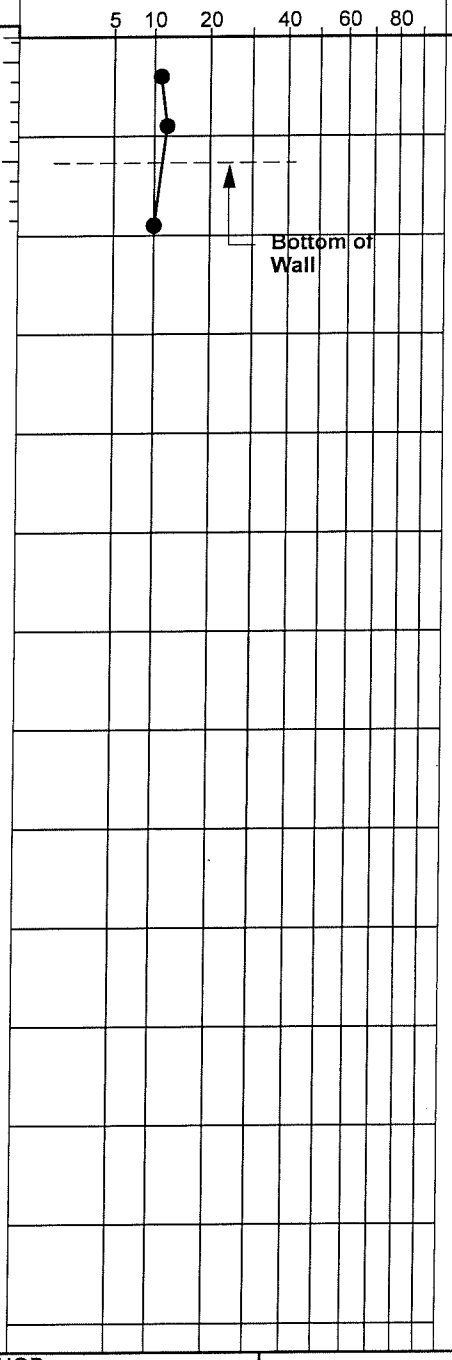
Drilling Equipment: CME 550 Drilling Method: HSA Auto Hammer

Core Boxes: -- Samples: 3 Overburden (ft): -- Rock (ft): -- Total Depth (ft): 10.0

Logged By: MK Date Drilled: 10/3/07

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
					TOPSOIL = 1 inch FILL	956.2	
		SS			FILL : Medium dense reddish brown and tan silty medium to fine **SAND** FILL	955	11
5		SS			Stiff reddish brown medium to fine sandy **SILT**	950	12
10		SS					10
					Boring terminated @ 10 feet below existing ground surface.		
					Groundwater was not encountered @ time of boring completion.		

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	W-1
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC. | WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. W-2**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Wall No. 2**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **958.49** Station: **132+00, 30' Lt. of CL**

Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

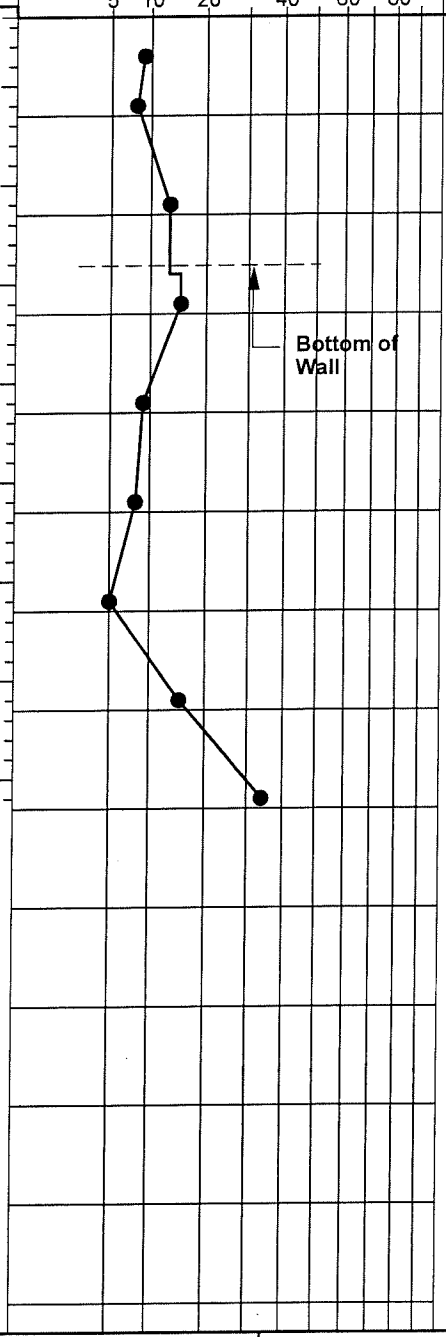
Core Boxes: -- Samples: **9** Overburden (ft): -- Rock (ft): -- Total Depth (ft): **40.0**

Logged By: **MK** Date Drilled: **10/3/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
					TOPSOIL = 1 inch	FILL	958.5	
		SS			FILL : Loose reddish brown and tan silty medium to fine **SAND**		955	9
5		SS						8
					Stiff reddish brown medium to fine sandy **SILT**	FILL	950	
10		SS						13
					RESIDUUM : Stiff reddish-brown and tan medium to fine sandy **SILT**	ML	945	
15		SS						15
					Loose tan, brown and gray silty medium to fine **SAND** (micaceous)	SM	940	
20		SS						9
					Loose to dense brown, white and tan silty medium to fine **SAND** (micaceous)	SM	935	
25		SS						8
30		SS					930	5
35		SS					925	15
40		SS					920	34

Boring terminated @ 40 feet below existing ground surface.

Groundwater was not encountered @ time of boring completion.



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	**W-2**
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

SPTN 171-3099C.GPJ 12/4/07

WILLMER ENGINEERING INC. | WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. W-3**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Wall No. 3**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **960.76** Station: **134+00, 30' Rt. of CL**

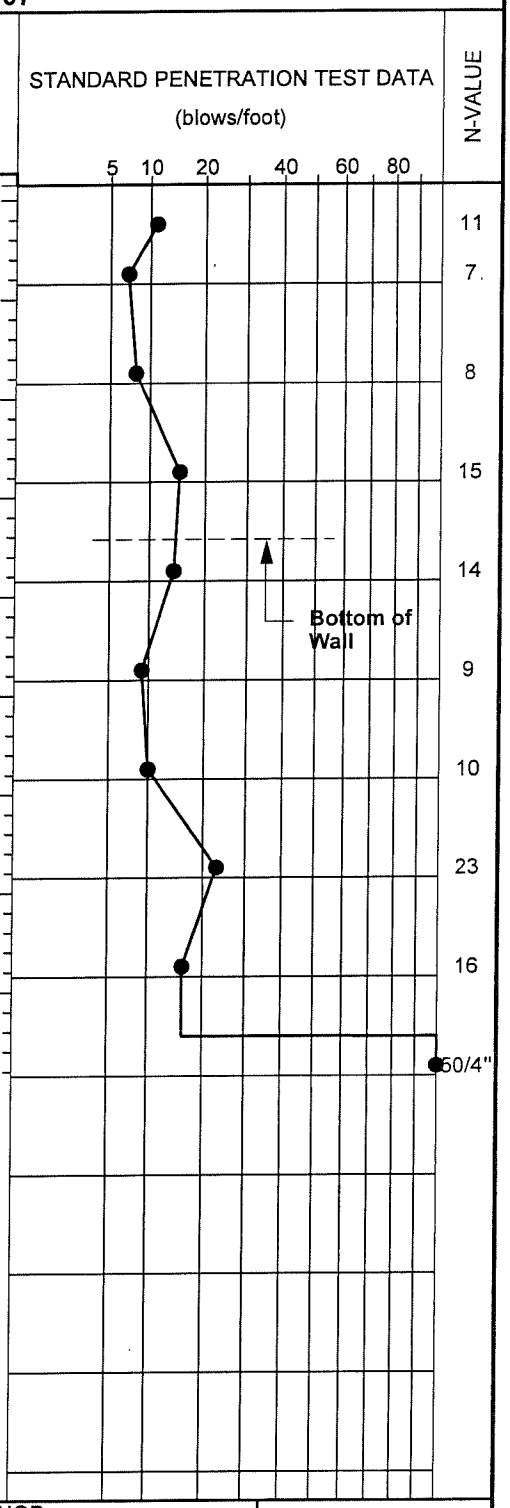
Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **11** Overburden (ft): -- Rock (ft): -- Total Depth (ft): **45.0**

Logged By: **MK** Date Drilled: **10/3/07**

VERTICAL DEPTH (ft)	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
	SS			TOPSOIL = 1 inch	SM	960.8	
	SS			RESIDUUM : Medium dense reddish brown and tan silty medium to fine **SAND**	ML	960	11
5	SS			Firm reddish brown and tan medium to fine sandy **SILT** (slightly micaceous)		955	7
10	SS					950	8
	SS			Medium dense brown, white and tan silty medium to fine **SAND**	SM	945	15
15	SS						
20	SS					940	14
	SS			Stiff brown, white and tan medium to fine sandy **SILT**	ML		
25	ST					935	9
	SS			Stiff gray, orange and brown medium to fine sandy **SILT** (slightly micaceous)	ML	930	10
30							
	SS			Medium dense gray, black and tan silty medium to fine **SAND** (slightly micaceous)	SM	925	23
35							
40	SS					920	16
	SS			PARTIALLY WEATHERED ROCK: Sampled as very dense gray, white and black silty medium to fine **SAND** with rock fragments	PWR		50/4"
45				Boring terminated @ 45 feet below existing ground surface.			

Groundwater was not encountered @ time of boring completion.



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	W-3
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

WILLMER ENGINEERING INC. WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. W-4**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Wall No. 2**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **962.73** Station: **136+00, 30' Lt. of CL**

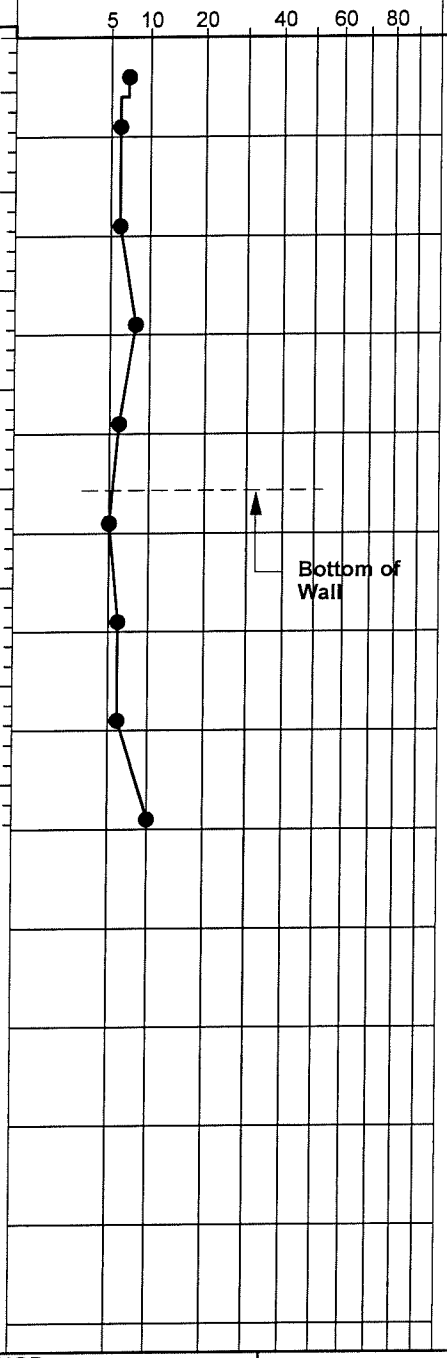
Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **9** Overburden (ft): -- Rock (ft): -- Total Depth (ft): **40.0**

Logged By: **MK** Date Drilled: **10/3/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
		SS			TOPSOIL - 1 inch (FILL)	962.7	7
		SS			FILL : Loose reddish brown and tan silty medium to fine **SAND** (slightly micaceous) (SM)	960	6
5		SS			RESIDUUM : Loose red, brown, white and tan silty medium to fine **SAND** (micaceous)	955	6
10		SS				950	8
15		SS				945	6
20		SS				940	5
25		SS				935	6
30		SS				930	6
35		SS				925	10
40		SS					

STANDARD PENETRATION TEST DATA (blows/foot)



Boring terminated @ 40 feet below existing ground surface.

Groundwater was encountered @ 37 feet below existing ground surface @ time of boring completion.

Bore hole caved in to 24 feet below existing ground surface @ 24 hours after boring completion.

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	**W-4**
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

SPTN 171-3099C.GPJ 12/4/07

WILLMER ENGINEERING INC. WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. W-5**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Wall No. 3**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **964.98** Station: **137+70, 30' Rt. of CL**

Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **8** Overburden (ft): -- Rock (ft): -- Total Depth (ft): **40.0**

Logged By: **MK** Date Drilled: **10/3/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)	N-VALUE
5		SS			FILL : Medium dense reddish brown silty coarse to fine **SAND** with organic odor and rock fragments	FILL	960	14
10		SS			Loose reddish brown and gray clayey medium to fine **SAND** with organic odor	FILL	955	9
15		SS			RESIDUUM : Firm and soft gray, red and tan medium to fine sandy **SILT** (micaceous)	ML	950	8
20		SS					945	3
25		SS			Very loose and medium dense gray, orange-brown and black silty medium to fine **SAND** (slightly micaceous)	SM	940	3
30		SS					935	4
35		SS					930	11
40		SS			PARTIALLY WEATHERED ROCK : Sampled as very dense black, orange-brown and gray silty medium to fine **SAND**	PWR	925	50/5"

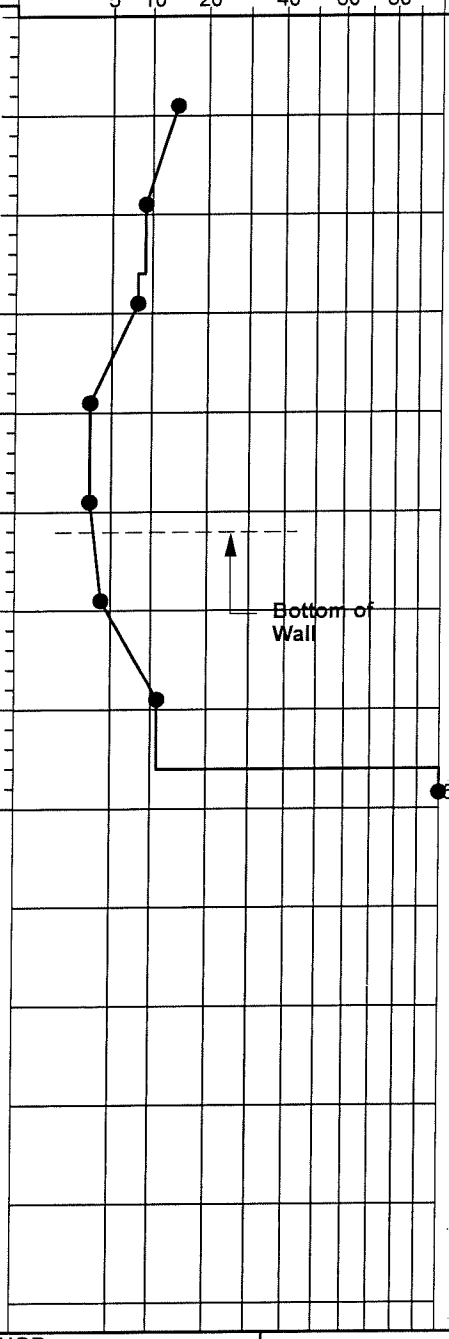
965.0

Boring terminated @ 40 feet below existing ground surface.

Groundwater was encountered @ 35 feet below existing ground surface @ time of boring completion.

Bore hole caved in to 24 feet below existing ground surface @ 24 hours after boring completion.

STANDARD PENETRATION TEST DATA (blows/foot)



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	W-5
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

SPTN 171-3099C.GPJ 12/4/07

WILLMER ENGINEERING INC. | WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. W-6**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Wall No. 4**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **969.98** Station: **142+00, 30' Lt. of CL**

Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **11** Overburden (ft): -- Rock (ft): -- Total Depth (ft): **50.0**

Logged By: **MK** Date Drilled: **10/2/07**

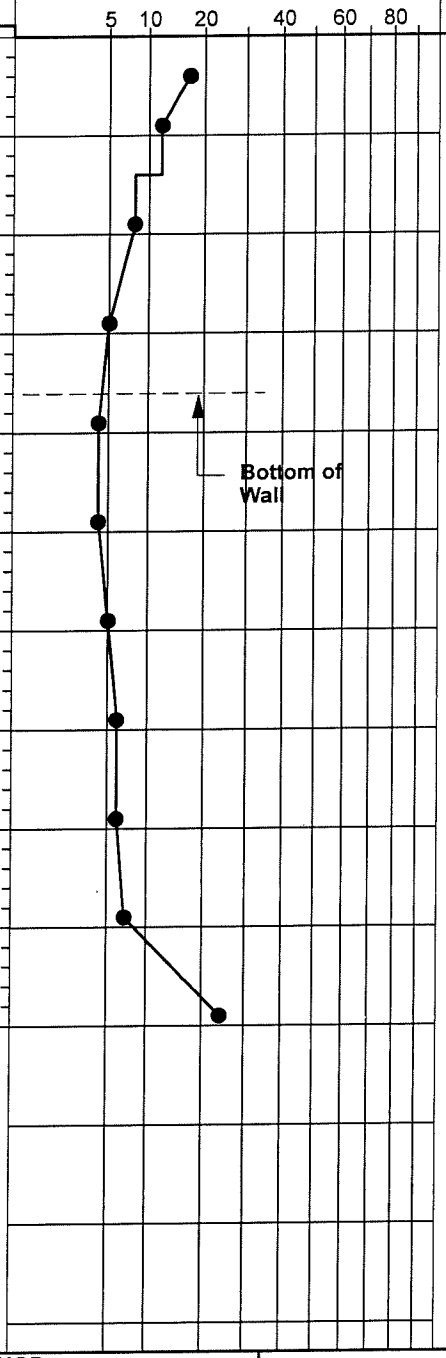
VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION		ELEVATION (feet)
		SS			TOPSOIL = 1 inch	FILL	970.0
		SS			FILL : Medium dense brown and tan silty medium to fine **SAND**	FILL	
5		SS			Medium dense reddish brown and tan silty medium to fine **SAND** with clay		965
10		SS			RESIDUUM : Loose reddish brown and tan silty medium to fine **SAND**	SM	960
15		SS			Firm purple-brown and orange medium to fine sandy **SILT**	ML	955
20		SS			Soft black, brown and tan medium to fine sandy **SILT** (slightly micaceous)	ML	950
25		SS					945
30		SS					940
35		SS					935
40		SS			Loose to medium dense gray, brown and tan silty medium to fine **SAND** (micaceous)	SM	930
45		SS					925
50		SS					920

Boring terminated @ 50 feet below existing ground surface.

Groundwater was not encountered @ time of boring completion.

Bore hole caved in to 33 feet below existing ground surface @ time of boring completion.

STANDARD PENETRATION TEST DATA (blows/foot)



N-VALUE: 17, 12, 8, 5, 4, 4, 5, 6, 6, 7, 24

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
NQ - Rock Core, 1-7/8"
NX - Rock Core, 2-1/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core

Hole No. **W-6**

SPTN 171-3099C.GPJ 12/4/07

WILLMER ENGINEERING INC. WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. W-7**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Wall No. 4**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **967.10** Station: **140+00, 30' Lt. of CL**

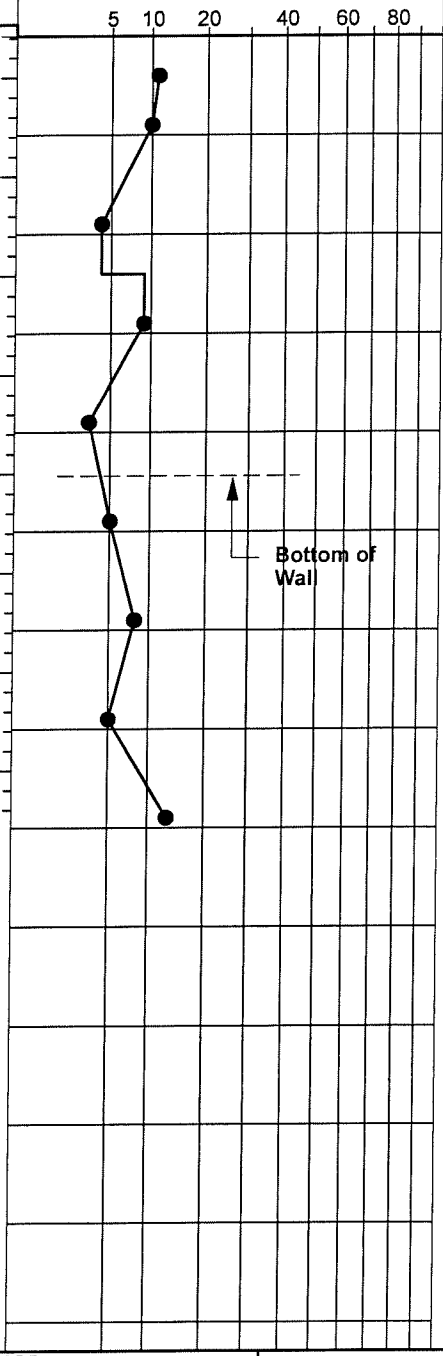
Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **10** Overburden (ft): -- Rock (ft): -- Total Depth (ft): **40.0**

Logged By: **MK** Date Drilled: **10/2/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
					TOPSOIL= 1 inch — FILL	967.1	
		SS			FILL : Stiff reddish brown medium to fine sandy **SILT**	965	11
5		SS					10
					Soft brown and tan medium to fine sandy **SILT** — FILL	960	
		SS					4
10		ST					
					RESIDUUM: Stiff to soft brown and gray medium to fine sandy **SILT** (micaceous) — ML	955	
15		SS					9
						950	
20		SS					3
						945	
					Loose and medium dense brown brown, black and tan silty medium to fine **SAND** (micaceous) — SM		
25		SS					5
						940	
30		SS					8
						935	
35		SS					5
						930	
40		SS					13

STANDARD PENETRATION TEST DATA (blows/foot)



Boring terminated @ 40 feet below existing ground surface.

Groundwater was encountered @ 33 feet below existing ground surface @ time of boring completion.

Bore hole caved in to 24 feet below existing ground surface @ 24 hours after boring completion.

SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	W-7
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

SPTN 171-3099C.GPJ 12/4/07

WILLMER ENGINEERING INC. WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. W-8**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Wall No. 4**

Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **969.34** Station: **144+00, 30' Lt. of CL**

Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **5** Overburden (ft): -- Rock (ft): -- Total Depth (ft): **45.0**

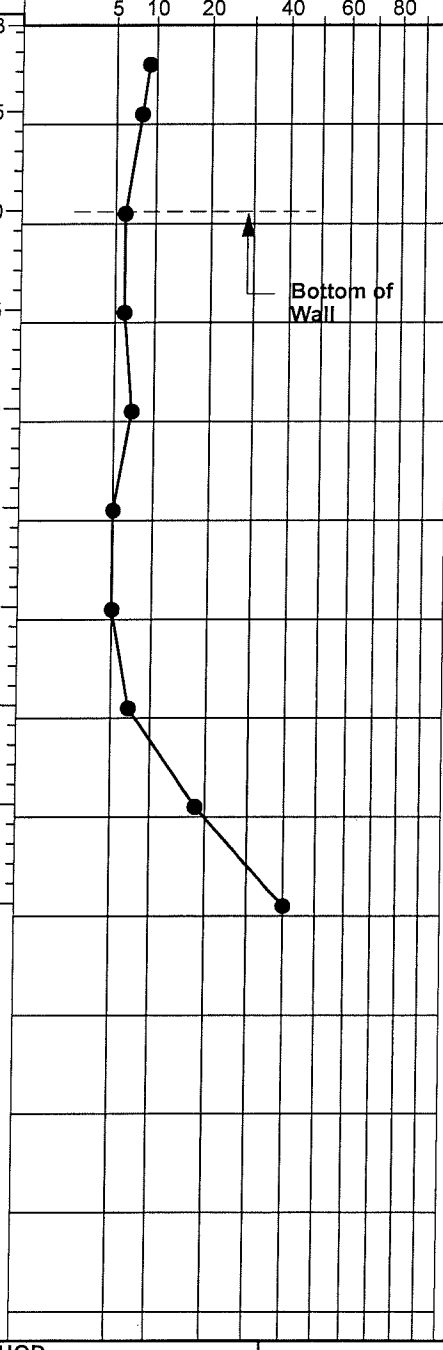
Logged By: **MK** Date Drilled: **10/2/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	N-VALUE
					TOPSOIL = 2 inches — ML	969.3	
		SS			RESDIDUUM : Stiff to firm brown coarse to fine sandy **SILT** (micaceous)		9
5		SS				965	8
					Loose to dense purple, brown and tan silty medium to fine **SAND** (micaceous) — SM		
10		SS				960	6
15		SS				955	6
20		SS				950	7
25		SS				945	5
30		SS				940	5
35		SS				935	7
40		SS				930	18
45		SS				925	40

Boring terminated @ 45 feet below existing ground surface.

Groundwater was not encountered @ time of boring completion.

Bore hole caved in to 30 feet below existing ground surface @ time of boring completion.



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	**W-8**
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

SPTN 171-3099C.GPJ 12/4/07

WILLMER ENGINEERING INC. WE

Project: **I-575 over CR 171 (Big Shanty Road)**	**HOLE No. W-9**
Location: **Cobb County, Georgia**	Sheet 1 of 1
Project Number: **171-3099C; GDOT Proj. # : CSNHS-0008-00(256); PI # : 0008256**	Location: **Wall No. 5**

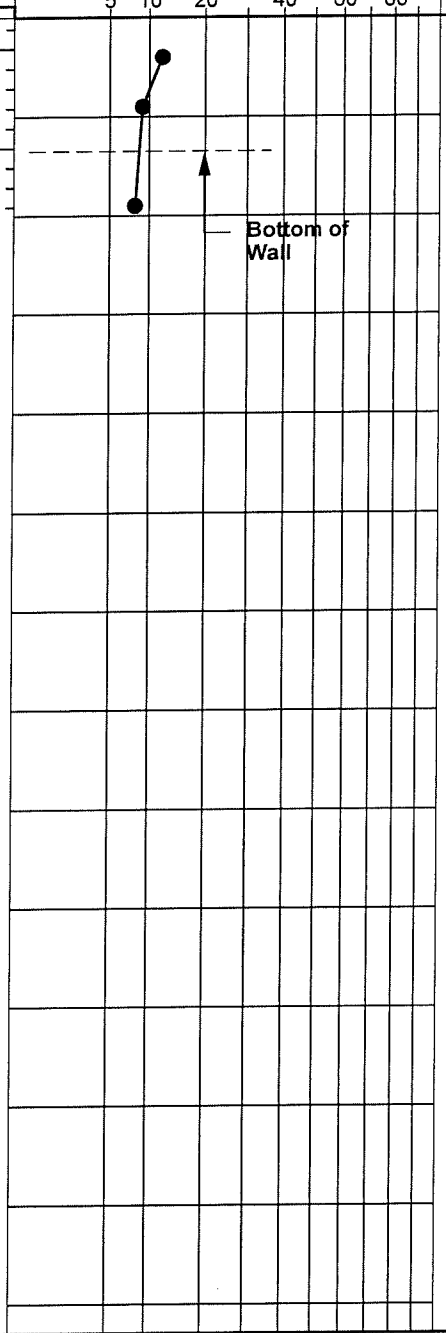
Azimuth: -- Angle from Horizontal: **90** Surface Elevation (ft): **971.57** Station: **146+00, 28' Rt. of CL**

Drilling Equipment: **CME 550** Drilling Method: **HSA Auto Hammer**

Core Boxes: -- Samples: **3** Overburden (ft): -- Rock (ft): -- Total Depth (ft): **10.0**

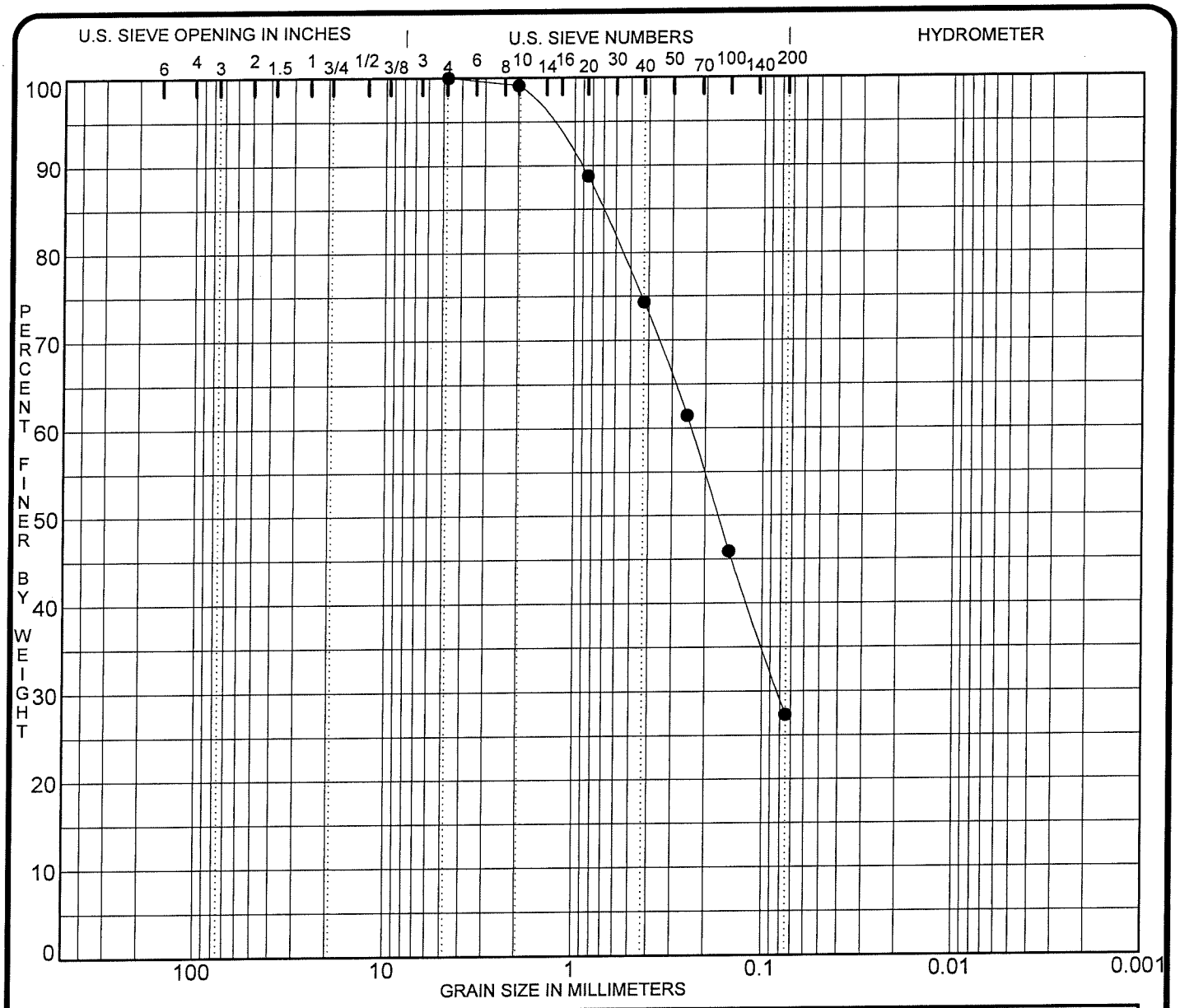
Logged By: **MK** Date Drilled: **10/2/07**

VERTICAL DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE	REC%	RQD %	MATERIAL DESCRIPTION	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/foot)	N-VALUE
					TOPSOIL = 1 inch ML	971.6		
		SS			RESIDUUM : Stiff brown and tan medium to fine sandy **SILT** ML	970		12
5		SS			Firm reddish brown and tan medium to fine sandy **SILT** (micaceous)	965		9
10		SS						8
					Boring terminated @ 10 feet below existing ground surface.		Bottom of Wall	
					Groundwater was not encountered @ time of boring completion.			



SAMPLER TYPE		DRILLING METHOD		Hole No.
SS - Split Spoon	NX - Rock Core, 2-1/8"	HSA - Hollow Stem Auger	RW - Rotary Wash	W-9
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core	
NQ - Rock Core, 1-7/8"	CT - Continuous Tube	DC - Driving Casing		

SPTN 171-3099C.GPJ 12/4/07



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Soil Description	MC%	LL	PL	PI	Cc	Cu
●	**W-2 S-5 (18.5-20 ft)**	**Tan, brown and gray silty medium to fine SAND (micaceous)**						

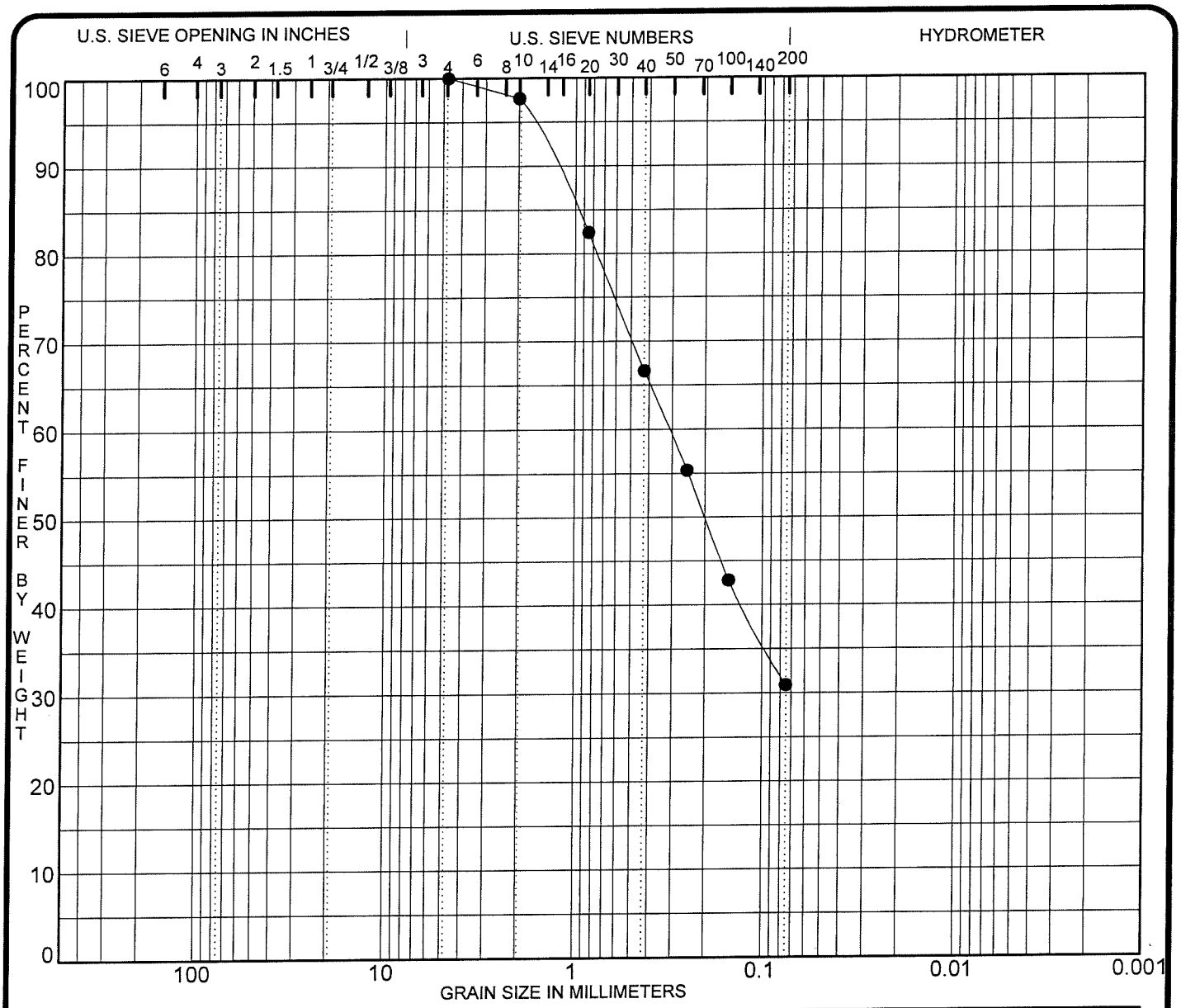
	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**W-2 S-5 (18.5-20 ft)**	**4.75**	**0.24**	**0.083**		**0.0**	**72.7**	**27.3**	

PROJECT **I-575/CR 171 (Big Shanty Rd), Cobb County,GA**
GDOT Proj. # CSNHS-0008-00(256); PI # 0008256

JOB NO. **171-3099 C**
DATE **12/2/07**

WILLMER ENGINEERING INC. WE

GRADATION CURVE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Soil Description	MC%	LL	PL	PI	Cc	Cu
●	**W-4 S-3 (8.5-10 ft)**	**Tan and brown silty medium to fine SAND (micaceous)**						

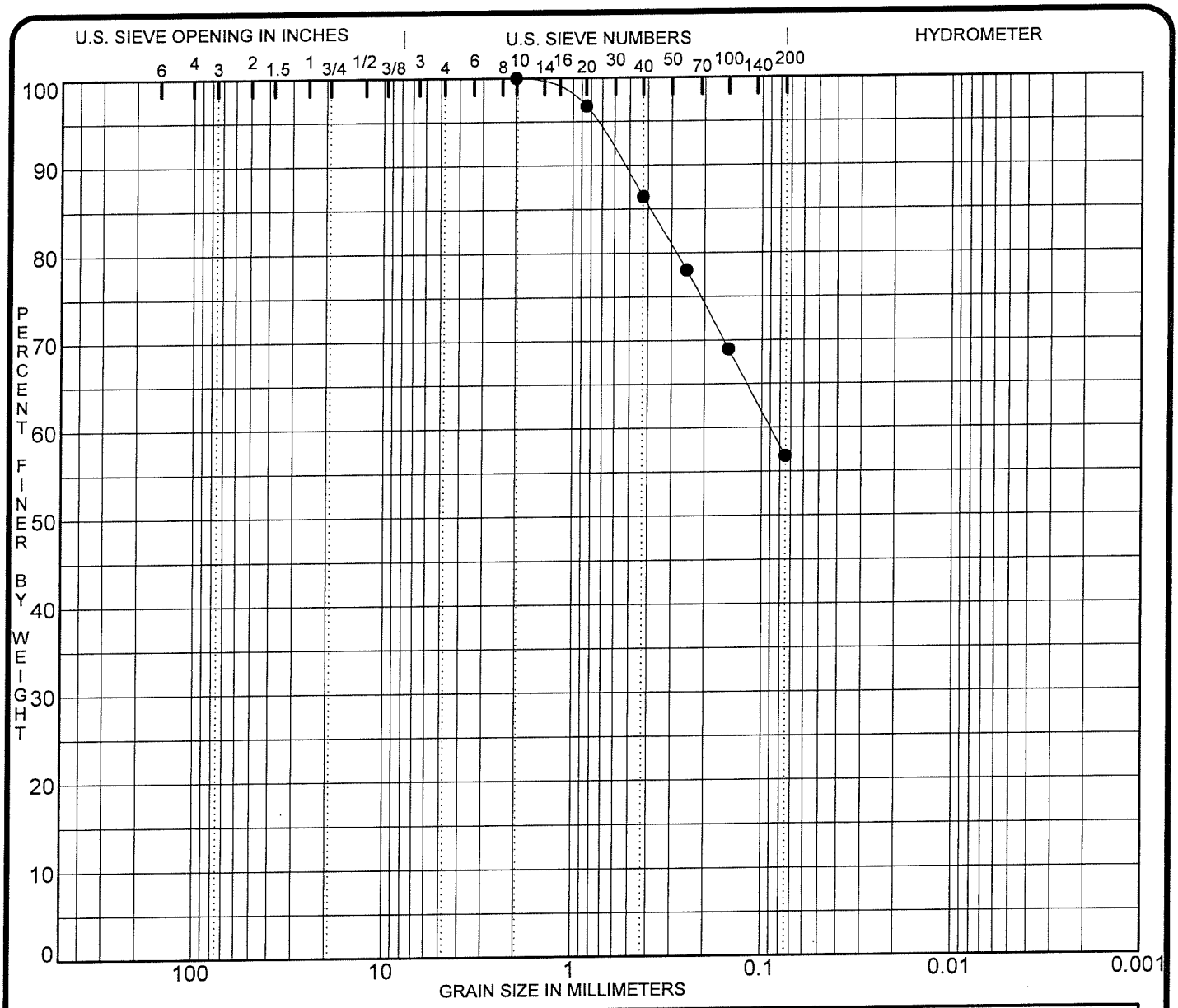
	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**W-4 S-3 (8.5-10 ft)**	**4.75**	**0.31**			**0.0**	**69.1**	**30.9**	

PROJECT **I-575/CR 171 (Big Shanty Rd), Cobb County,GA**
GDOT Proj. # CSNHS-0008-00(256); PI # 0008256

JOB NO. **171-3099 C**
DATE **12/2/07**

WILLMER ENGINEERING INC. WE

GRADATION CURVE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Soil Description	MC%	LL	PL	PI	Cc	Cu
●	**W-5 S-5 (18.5-20 ft)**	**Tan and gray medium to fine sandy SILT (micaceous)**						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**W-5 S-5 (18.5-20 ft)**	**2.00**	**0.09**			**0.0**	**43.3**	**56.7**	

PROJECT **I-575/CR 171 (Big Shanty Rd), Cobb County,GA**
GDOT Proj. # CSNHS-0008-00(256); PI # 0008256

JOB NO. **171-3099 C**
DATE **12/2/07**

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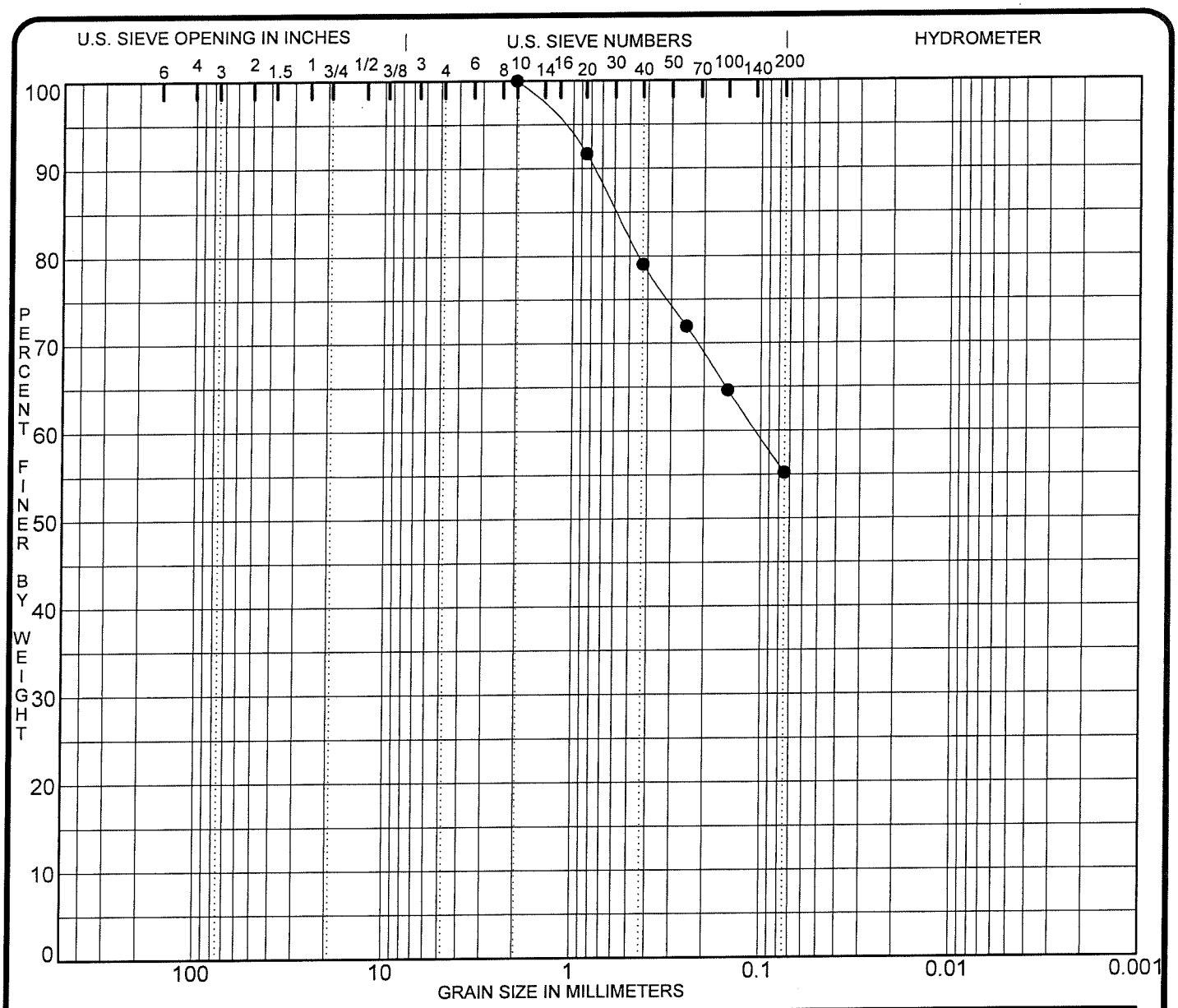
GRADATION CURVE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Soil Description	MC%	LL	PL	PI	Cc	Cu
●	**W-6 S-6 (23.5-25 ft)**	**Black, tan and brown medium to fine sandy SILT (micaceous)**						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**W-6 S-6 (23.5-25 ft)**	**2.00**	**0.11**			**0.0**	**44.8**	**55.2**	

PROJECT **I-575/CR 171 (Big Shanty Rd), Cobb County,GA**
GDOT Proj. # CSNHS-0008-00(256); PI # 0008256

JOB NO. **171-3099 C**
DATE **12/2/07**

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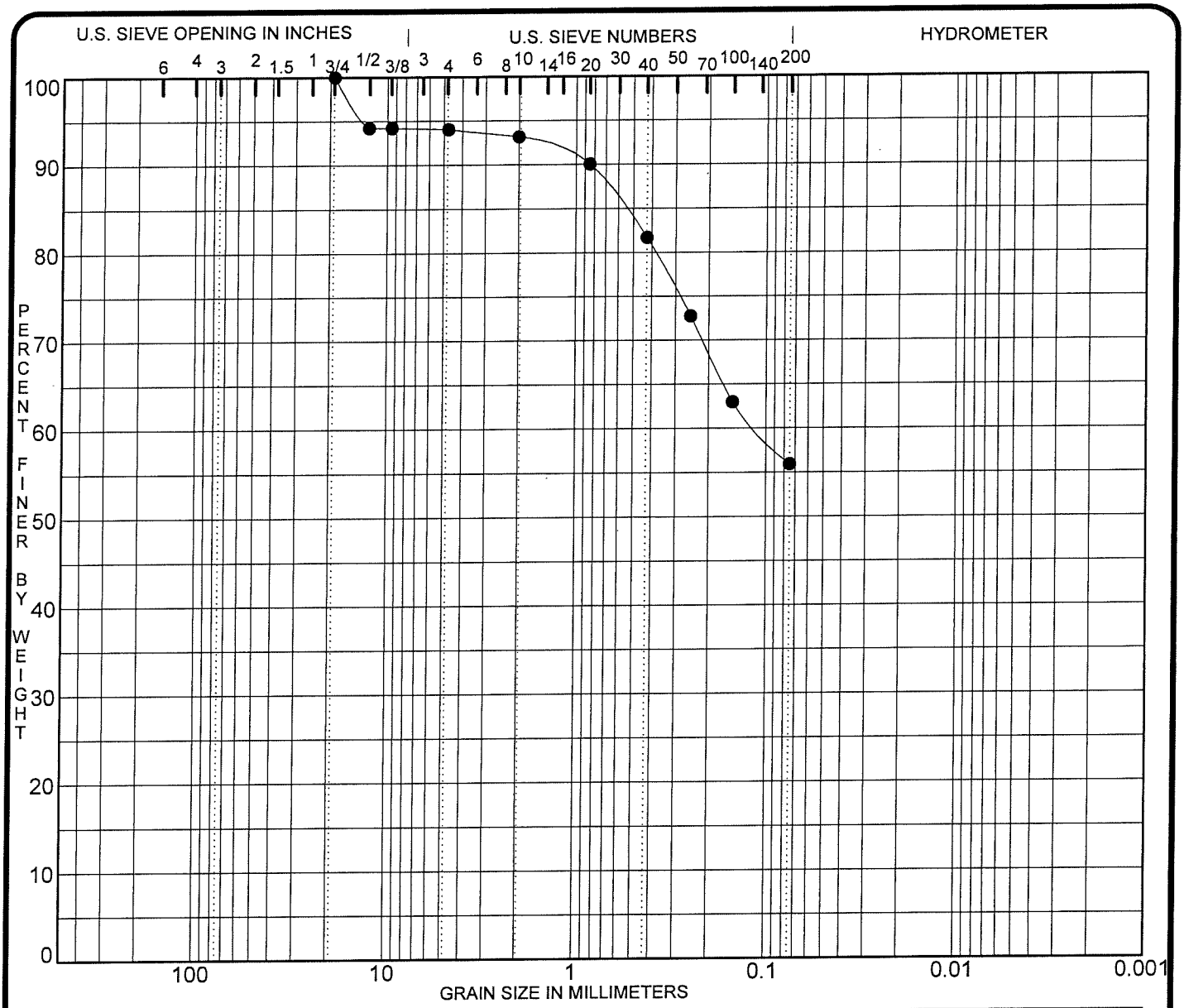
GRADATION CURVE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Soil Description	MC%	LL	PL	PI	Cc	Cu
●	**W-7 S-5 (13.5-15 ft)**	**Gray and brown medium to fine sandy SILT (micaceous)**						

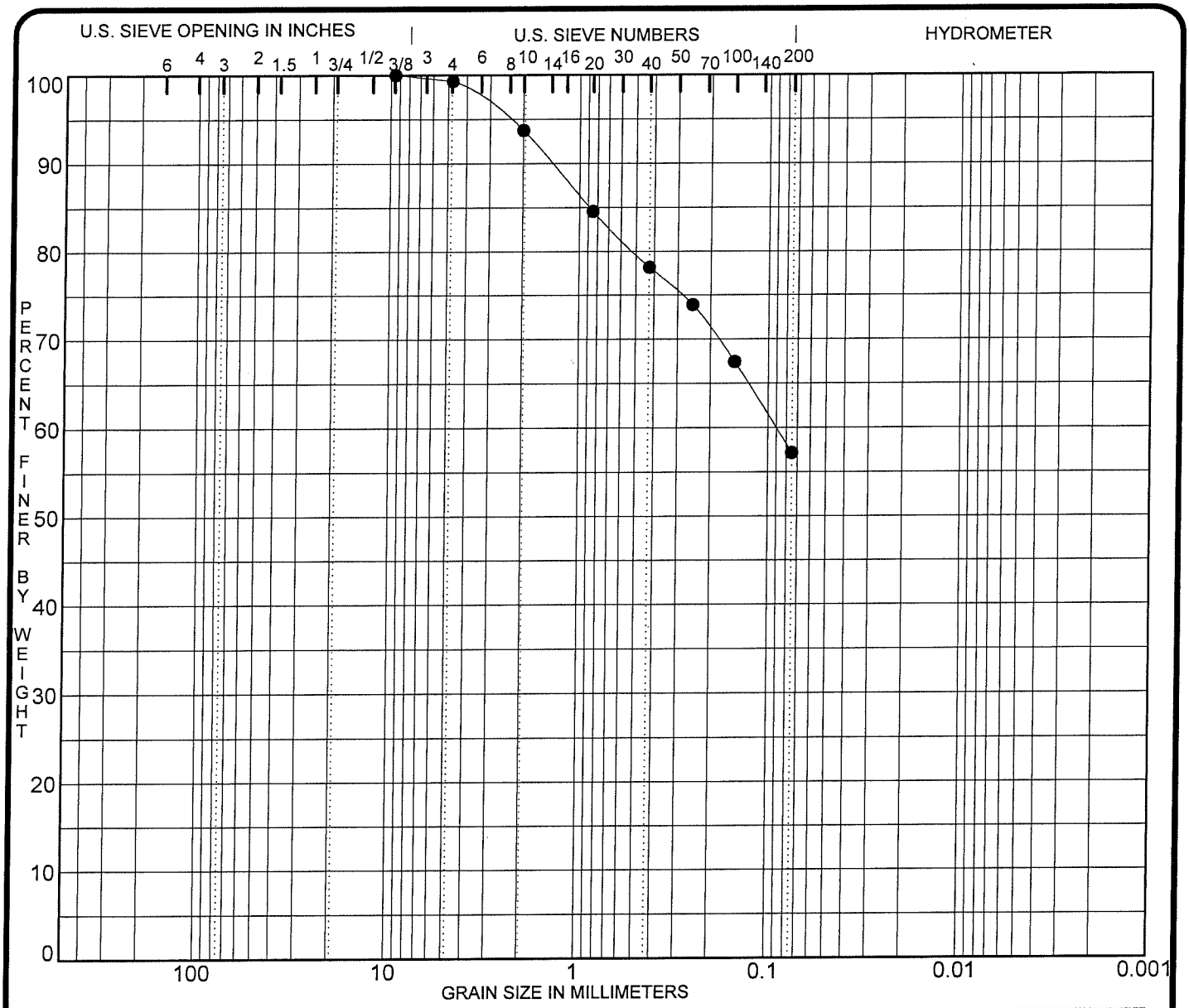
	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**W-7 S-5 13.5-15 ft)**	**19.00**	**0.11**			**6.0**	**38.1**	**55.9**	

PROJECT **I-575/CR 171 (Big Shanty Rd), Cobb County,GA**
GDOT Proj. # CSNHS-0008-00(256); PI # 0008256

JOB NO. **171-3099 C**
DATE **12/2/07**

WILLMER ENGINEERING INC. WE

GRADATION CURVE



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Soil Description	MC%	LL	PL	PI	Cc	Cu
● W-8 S-2 (3.5-5 ft)	Brown coarse to fine sandy SILT (micaceous)						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● W-8 S-2 (3.5-5 ft)	9.50	0.09			0.7	42.2	57.2	

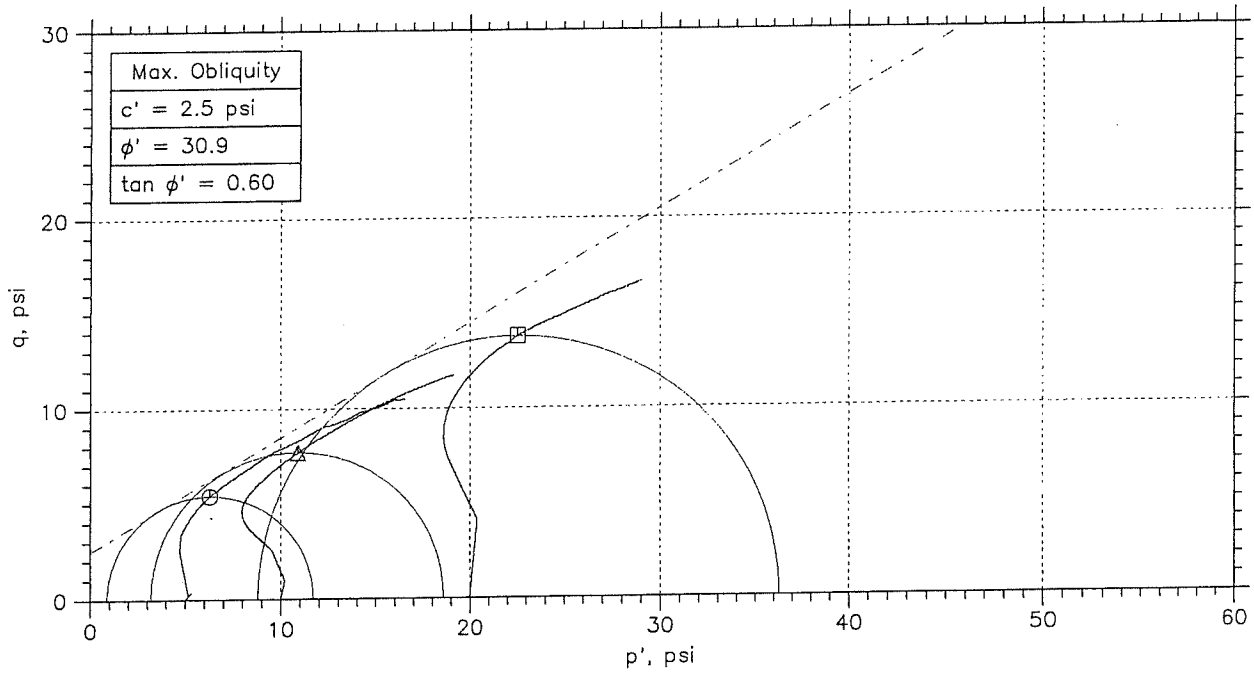
PROJECT I-575/CR 171 (Big Shanty Rd), Cobb County,GA
GDOT Proj. # CSNHS-0008-00(256); PI # 0008256

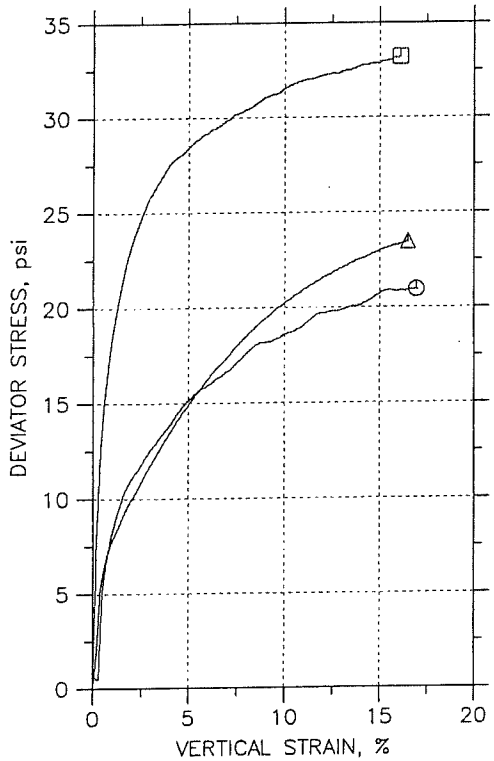
JOB NO. 171-3099 C
DATE 12/2/07

WILLMER ENGINEERING INC. WE

GRADATION CURVE

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767





Symbol		⊙	△	⊡	
Sample No.		ST-1	ST-1	ST-1	
Test No.		8085.1	8085.2	8085.3	
Depth		10-12 ft.	10-12 ft.	10-12 ft.	
Initial	Diameter, in	2.857	2.857	2.855	
	Height, in	6	6.007	6	
	Water Content, %	35.9	33.0	24.7	
	Dry Density, pcf	84.74	85.64	96.03	
	Saturation, %	99.9	93.9	90.7	
	Void Ratio	0.952	0.932	0.723	
Before Shear	Water Content, %	36.8	35.0	26.2	
	Dry Density, pcf	83.78	85.8	97.63	
	Saturation*, %	100.0	100.0	100.0	
	Void Ratio	0.975	0.928	0.694	
	Back Press., psi	152.	128.	118.	
Ver. Eff. Cons. Stress, psi		5.004	10.	19.99	
Shear Strength, psi		10.47	11.72	16.6	
Strain at Failure, %		16.9	16.5	16.1	
Strain Rate, %/min		0.1	0.1	0.1	
B-Value		0.95	0.96	0.96	
Estimated Specific Gravity		2.65	2.65	2.65	
Liquid Limit		---	---	---	
Plastic Limit		---	---	---	

MACTEC

Project: I-575 over Big Shanty Rd.

Location: Wall No.4 ST 140+00 30' L

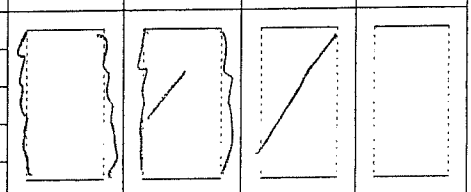
Project No.:

Boring No.: W-7

Sample Type: Shelby Tube

Description: Red Brown & Brown Sandy ~~Clayey~~ Silt

Remarks:

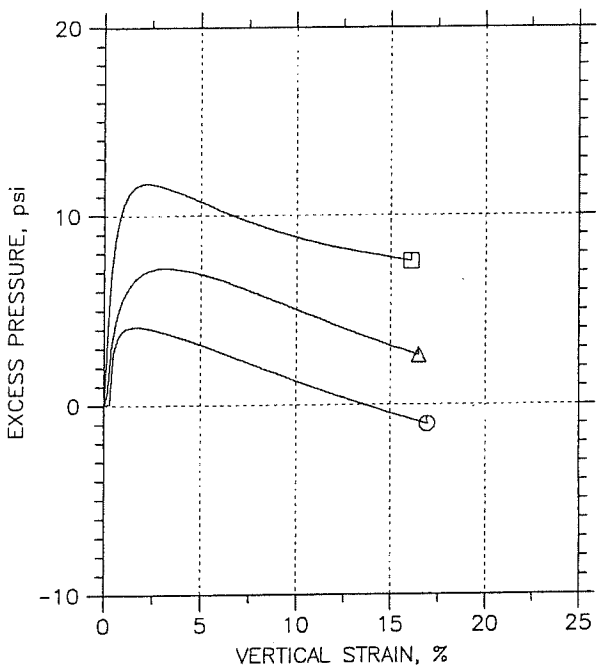


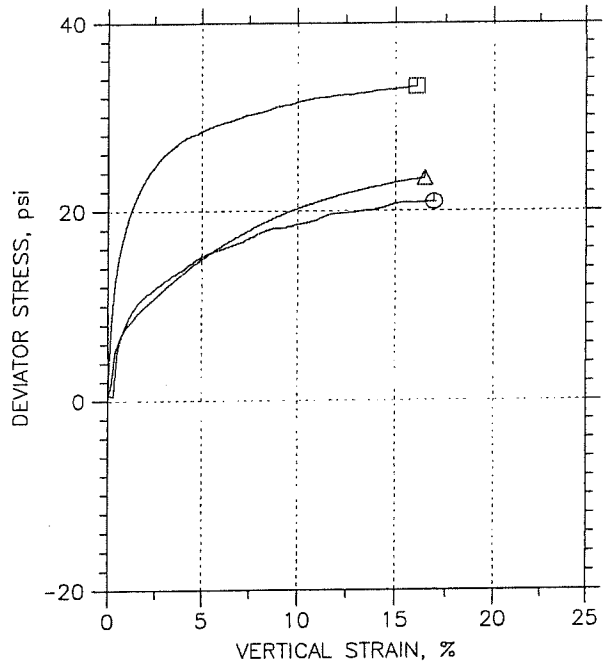
Phase calculations based on start and end of test.

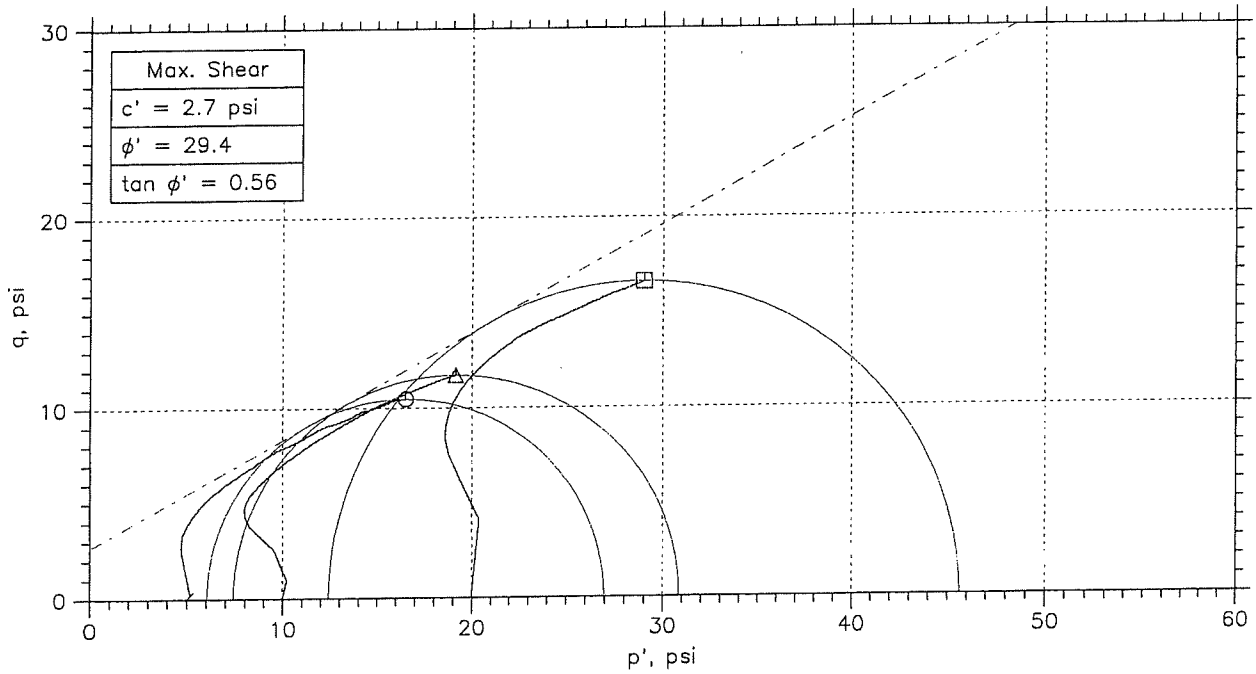
Mon, 05-NOV-2007 08:23:18

* Saturation is set to 100% for phase calculations.

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







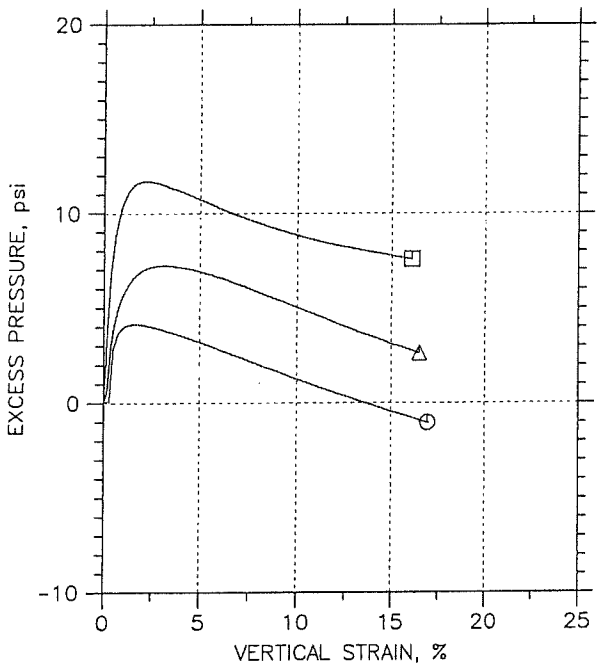
	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	ST-1	8085.1	10-12 ft.	HJ	10/31/07	JW		8085.1_2547.dat
△	ST-1	8085.2	10-12 ft.	HJ	10/31/07	JW		8085.2a_2546.dat
⊡	ST-1	8085.3	10-12 ft.	HJ	10/31/07	JW		8085.3a_2545.dat

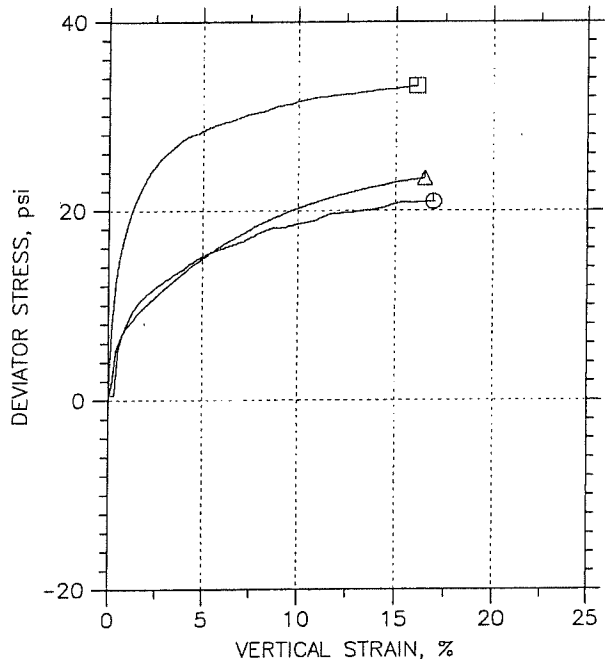
MACTEC

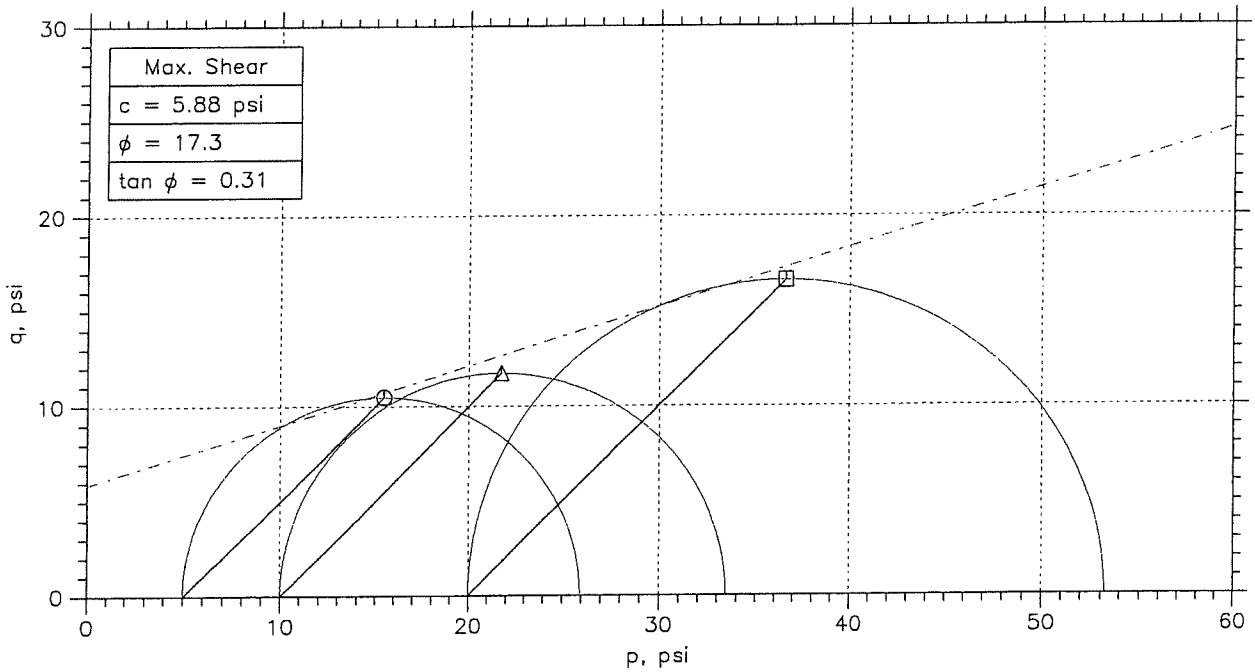
Project: I-575 over Big Shanty Rd	Location: Wall No.4 ST 140+00 30	Project No.:
Boring No.: W-7	Sample Type: Shelby Tube	
Description: Red Brown & Brown Sandy ~~Clayey~~ Silt		
Remarks:		

Mon, 05-NOV-2007 08:23:10

CONSOLIDATED UNDRAINED TRIAXIAL TEST by ASTM D4767







	Sample No.	Test No.	Depth	Tested By	Test Date	Checked By	Check Date	Test File
⊙	ST-1	8085.1	10-12 ft.	HJ	10/31/07	JW		8085.1_2547.dat
△	ST-1	8085.2	10-12 ft.	HJ	10/31/07	JW		8085.2a_2546.dat
⊡	ST-1	8085.3	10-12 ft.	HJ	10/31/07	JW		8085.3a_2545.dat

MACTEC

Project: I-575 over Big Shanty Rd	Location: Wall No.4 ST 140+00 30	Project No.:
Boring No.: W-7	Sample Type: Shelby Tube	
Description: Red Brown & Brown Sandy [redacted] Silt		
Remarks:		

Mon, 05-NOV-2007 08:22:31

APPENDIX II

DOT 496

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/18/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-1

BENT NO. 1 FOOTING GROUND ELEV. 954.6

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ϕ	BC	LL	PI	% 200	% CLAY	e
	Gr. El. 7														
950	Loose Mltc. Micas. Clayey Sandy Silt	1s	8												
Swt.	Very Loose Mltc Micas. Sandy Silt	2s	3												
940	Loose Same	3s	10												
	Medium Dense Mltc. Micas. Sandy Silt	4s	15												
930		5s	11												
	Very Dense N Same	6s	60=3'												
920	V. Dse. Weathered Rock	7s	HB												
	Very Dense Mltc. Micas. Sandy Silt		60=1'												
910	V. Dse. Weathered Rock	9s	HB												
	End Drilling														

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 or 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 a part of the plans and specifications of the contract of the job.

DOT 680

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/18/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-2

BENT NO. 1 FOOTING GROUND ELEV. 953.1

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ø	BC	LL	PI	% 200	% CLAY	e
	Gr. El. ?														
950															
Swt.	Very Loose to Loose Mltc. Micas. Clayey Sandy Silt														
940		1s	6												
	Loose Mltc. Micas. Sandy Silt	2s	9												
930															
	Dense Same	3s	35												
		4s	60=7'												
920															
		5s	60=9'												
	Very Dense Mltc. Micas. Sandy Silt	6s	60=.3'												
910			60=.1'												
	End Drilling														

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 or relies on this information [illegible] in his construction operations [illegible] that it is inaccurate.

The [illegible] report is not [illegible] specifications [illegible]

GOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/18/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-3

BENT NO. 1 FOOTING GROUND ELEV. 953.2

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ø	BC	LL	PI	% 200	% CLAY	e
	Gr. El. 7														
950															
Jwt.	Very Loose to Loose Mltc. Micas. Clayey Sandy Silt														
940															
	Very Loose Mltc. Micas. Sandy Silt	1s	3												
		2s	11												
930	Medium Dense Same														
	Very Dense Mltc. Micas. Sandy Silt	3s	60=4'												
		4s	60=.9'												
		5s	HB												
920															
	V. Dse. Weathered Rock	6s	HB												
910	Practical Refusal														

The Department of Transportation in making this boring has made every reasonable effort to secure accurate, complete and detailed information. However, the Department of Transportation does not guarantee that the information shown is correct or complete, nor does it assume responsibility for any conclusions or interpretations made by others based on the information shown.

This information is available for inspection and may be considered as a part of the plans and specifications of Contract on file.

DOT 400

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/18/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-4

BENT NO. 2 FOOTING GROUND ELEV. 951.7

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	Ø	BC	LL	PI	% 200	% CLAY	e
	Gr. El. 7														
950															
Swt.	Loose to Medium Dense Mltc. Micas Sandy Silt														
940	Very Loose Same	1s	2												
	Loose Mltc. Micas Sandy Silt	2s	7												
930		3s	7												
	Medium Dense Same	4s	14												
920		5s	17												
	Dse. Mltc. Micas. Sdy. Silt	6s	44												
910	V. Dse. Same	7s	60=3"												
	V. dse. weathered rock	8s	60=2"												
	Prodical Refusal														

DOT 400

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/17/76

LOCATION J-575 over CR 171 (Big Shanty Road) BORING NO. B-5

BENT NO. 2 FOOTING GROUND ELEV. 951.80

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	∅	BC	LL	PI	% 200	% CLAY	e
	Gr. El.														
Gwt															
950	Lse. to Med. Dense Mltc. Micas. Sandy Silt														
		1s	2												
940	Very Loose Same	2s	3												
930	Loose Mltc. Micas. Sandy Silt	3s	10												
	Medium Dense Same	4s	13												
920	Dse. Mltc. Micas. Sdy. Silt	5s	43												
		6s	60=5"												
	Very Dense Same	7s	57												
910		8s	60=9"												
	End Drilling														

DOT 400

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/18/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-6

BENT NO. 2 FOOTING GROUND ELEV. 952.2

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ø	BC	LL	PI	% 200	% CLAY	B
	Gr.El.														
Swt. 950	Very Loose Mltc. Micas. Sandy Silt	1u													
		2s	2												
		3u													
		4s	5												
940		5u													
		6s	5												
	Loose Same														
		7s	8												
930															
		8s	6												
		9s	18												
920	Medium Dense Mltc. Micas. Sandy Silt														
		10s	62												
		11s	60=.2												
910	Very Dense Same														
		12s	60=.6												
	V.Dse.Weathered Rock	13s	HB												
	End Drilling														

DOT 400

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/19/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-7

BENT NO. 1 FOOTING GROUND ELEV. 954.6

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ϕ	BC	LL	PI	% 200	% CLAY	e
	Gr. El. 7														
950	Med. Dse. Mltc. Micas. Clayey Sandy Silt	1s	11												
Swt.	Very Loose Mltc. Micas. Sandy Silt	2s	2												
940		3s	7												
	Loose Same	4s	10												
930	Medium Dense Mltc. Micas. Sandy Silt	5s	11												
	Dense Same	6s	27												
920	Very Dense Mltc. Micas. Sandy Silt	7s	60=6												
	v dense weathered rock	8s	60=3												
	Practical Refusal														

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 in Contract on the job.

DOT 400

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/19/76

LOCATION I-575 over CR 171 (Big Shanty Road BORING NO. B-8

BENT NO. 1 FOOTING GROUND ELEV. 952.05

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	Ø	BC	LL	PI	% 200	% CLAY	*
	Gr. El.														
950															
Swt.	V. Lse to Loose Mltc. Micas. Cy. Sandy Silt														
940		1s	5												
	Loose Mltc. Micas. Sandy Silt	2s	5												
930		3s	60=7'												
	Very Dense Some	4s	60=9'												
		5s	60=4'												
920	v.dense weathered rock														
	Very Dense Rock														
	End Drilling														

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.

DOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

CSNHS-0008-00 (256)

PROJECT PI No. 0008256 COUNTY Cobb DATE 5/19/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-8A

BENT NO. 1 FOOTING GROUND ELEV. 952.1

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	Ø	BC	LL	PI	% 200	% CLAY	e
	Gr. El.														
950															
Surf.															
	Very Loose to Loose Mltc. Micas Clayey Sandy Silt														
940															
930	V.Lse.Mltc.Micas.Sdy.Silt	1s	4												
	Loose Same	2s	6												
	Med.Dse.Mltc.Micas.Sdy.Silt	3s	13												
	Loose Same	4s	10												
920	Med.Dse.Mltc.Micas.Sdy.Silt	5s	14												
	Very Dse. Same	6s	60=2"												
	v.dense weathered rock														
	End Drilling														

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 [illegible] inaccurate.

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

DOT 400

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/19/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-9

BENT NO. 1 FOOTING -- GROUND ELEV. 952.45

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ϕ	BC	LL	PI	% 200	% CLAY	e
	Gr. El.														
950															
Swt	Very Loose to Loose Mltc. Micas. Clayey Sandy Silt														
940															
	Very Loose Mltc. Micas. Sandy Silt	1s	3												
		2s	5												
930	Loose Same	3s	8												
		4s	9												
		5s	9												
	Dense Mltc. Micas. Sandy Silt	6s	37												
920															
	V.Dse. Weathered Rock	7s	HB												
910	Practical Refusal														

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.

DOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/17/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-10

BENT NO. 2 FOOTING GROUND ELEV. 952.7

PROPOSED FOOTING ELEV. PARTY CHIEF Pullion

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ϕ	BC	LL	PI	% 200	% CLAY	*
	Gr. El. 7														
950															
3wt	Very Loose to Medium Dense Mltc. Micas. Sandy Silt														
	Very Loose Same	1s	3												
940															
	Loose Mltc. Micas. Sandy Silt	2s	6												
		3s	8												
930															
		4s	14												
	Medium Dense Same														
	Dse. Mltc Micas. Sdy. Silt	5s	34												
920															
		6s	60=.9'												
	Very Dense Same	7s	60=.7'												
910															
		8s	60=.5'												
	End Drilling														

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.

DOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/12/76

LOCATION I-575 over CR 171 (Big Shanty Road) BORING NO. B-11

BENT NO. 2 FOOTING GROUND ELEV. 954.40

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ϕ	BC	LL	PI	% 200	% CLAY	e
	Gr. El.														
950	V.Loose to Med. Dse. Mltc. Micas. Clayey Sdy Silt														
	Very Loose Mltc. Micas. Sandy Silt	1s	3												
940		2s	5												
	Loose Same	3s	8												
930		4s	9												
	Medium Dense Mltc. Micas. Sandy Silt	5s	21												
920		6s	60												
	Very Dense Same	7s	60												
910		8s	60=9"												
	V.Dse Weathered Rock	9s	HB												
	End Drilling														

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 [illegible] in his bidding on [illegible] and finds that [illegible] investigation report is not [illegible] for the class and [illegible] in the job.

DOT 490

DEPARTMENT OF TRANSPORTATION

OFFICE OF MATERIALS AND TEST, FOREST PARK, GEORGIA
SOILS ENGINEERING AND GEOLOGY BRANCH

BRIDGE SUBSURFACE INVESTIGATION

PROJECT CSNHS-0008-00 (256) PI No. 0008256 COUNTY Cobb DATE 5/12/76

LOCATION J-575 over CR 171 (Big Shanty Road) BORING NO. B-12

BENT NO. 2 FOOTING GROUND ELEV. 955.05

PROPOSED FOOTING ELEV. PARTY CHIEF Pulliam

ELEV.	BORING LOG	SAMPLE	BLOW	UNIFIED	W	γ	Gs	C.	ϕ	BC	LL	PI	% 200	% CLAY	e
	Gr. El. 7														
Gwt 950	Med. Dse. Brown Gray Micas. Clayey Sdy. Silt	1s	16												
	Very Loose Mltc. Micas. Sandy Silt	2s	3												
940		3s	3												
	Loose Same	4s	6												
930	Medium Dense Mltc. Micas. Sandy Silt	5s	17												
	Dense Same	6s	31												
920		7s	60=.9'												
	Very Dense Mltc. Micas. Sandy Silt	8s	60=5'												
910		9s	60												
		10s	60=2'												
	End Drilling														

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 or relies on this information in his bidding or in his construction operations and finds that it is inaccurate.

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