

**PROJECT DESCRIPTION**

THE PROJECT CONSISTS IN PART OF PLACING TWIN STRUCTURES TO CARRY PROPOSED SR 823 OVER THE CSXT RAILROAD. THE TWO STRUCTURES, AS PLANNED, ARE THREE-SPAN STRUCTURES USING SPILL-THROUGH SLOPES AT THE ABUTMENTS.

**HISTORIC RECORDS**

HISTORIC BORING RECORDS FOR THE AREA WERE REQUESTED FROM THE ODOT OFFICE OF GEOTECHNICAL ENGINEERING AND THE DISTRICT, HOWEVER, NO SUCH RECORDS EXISTED.

**GEOLOGY**

BEDROCK IS OF THE MISSISSIPPIAN LOGAN FORMATION. GENERALLY, THIS FORMATION CONSISTS OF PRIMARILY SANDSTONE OR SANDY SILTSTONE WITH OCCASIONAL AREAS OF INTERBEDDED SHALE. HOWEVER, THE LITHOLOGY OF THE SANDSTONES VARIES BOTH Laterally and vertically. WITHIN THIS AREA THE LOGAN FORMATION TYPICALLY CONSISTS OF THICK, MASSIVE SANDSTONE UNITS.

**RECONNAISSANCE**

SEVERAL SITE RECONNAISSANCE VISITS WERE MADE BETWEEN AUGUST 2004 AND SEPTEMBER 2006. THE SURROUNDING AREA IS DESCRIBED AS RURAL RESIDENTIAL. THE PROJECT AREA IS LOCATED IN THE LITTLE SCIOTO RIVER VALLEY AND IS BOUNDED ON EITHER END BY STEEP SLOPES. THE STEEP SLOPES ARE COVERED WITH TREES AND BRUSH WHILE THE RELATIVELY LEVEL VALLEY BOTTOM IS A RESIDENTIAL AREA.

**SUBSURFACE EXPLORATION**

THE FIELD EXPLORATION CONSISTED OF DRILLING A TOTAL OF SIX BORINGS FOR THE PROPOSED STRUCTURE. STRUCTURE BORINGS TR-39 THROUGH TR-42 WERE DRILLED FOR A PREVIOUS DESIGN CONFIGURATION. THESE BORINGS WERE DRILLED BETWEEN FEBRUARY 2 AND 22, 2005. BORINGS B-37 AND B-38 WERE DRILLED FOR THE ABUTMENTS OF THE CURRENTLY PROPOSED STRUCTURE. THESE BORINGS WERE DRILLED BETWEEN MAY 3 AND 8, 2007 WITH AN ATV-MOUNTED ROTARY DRILL RIG, USING 3 1/4 -INCH I.D. HOLLOW STEM AUGERS TO ADVANCE THE HOLES THROUGH SOIL. DISTURBED SOIL SAMPLES WERE OBTAINED IN ACCORDANCE WITH THE STANDARD PENETRATION TEST (AASHTO T206) AT 1.5 TO 5.0-FOOT INTERVALS FOR THE FULL DEPTH OF THE SOIL PORTION OF THE BORINGS. UNDISTURBED SOIL SAMPLES WERE OBTAINED AT THE DEPTHS SHOWN ON THE LOGS AND IN THE PROFILE, IN ACCORDANCE WITH AASHTO T207. WHERE BEDROCK WAS ENCOUNTERED, THE BORINGS WERE ADVANCED AND THE ROCK WAS SAMPLED USING A TYPE NO SERIES CORE BARREL, WATER METHOD.

**EXPLORATION FINDINGS**

BORINGS DRILLED SOUTH OF THE RAILROAD TRACKS GENERALLY ENCOUNTERED 4 TO 9 INCHES OF TOPSOIL AT THE EXISTING GROUND SURFACE. BELOW THE SURFACE MATERIAL, BORINGS GENERALLY ENCOUNTERED COHESIVE SOILS RANGING FROM CLAY (A-7-6) TO SILT AND CLAY (A-6A) TO A DEPTH OF 20 FEET BELOW THE GROUND SURFACE. BELOW THIS LAYER, COHESIVE SILT (A-4B) WAS GENERALLY ENCOUNTERED TO A DEPTH OF 68 FEET BELOW THE GROUND SURFACE. BELOW THIS LAYER, BORINGS GENERALLY ENCOUNTERED SOILS RANGING FROM SILT AND CLAY (A-6A) TO GRAVEL WITH SAND (A-1-B) TO A DEPTH OF 84 TO 92 FEET BELOW THE GROUND SURFACE, AT THE TOP OF ROCK.

BORINGS DRILLED NORTH OF THE RAILROAD TRACKS GENERALLY ENCOUNTERED 4 TO 9 INCHES OF TOPSOIL AT THE EXISTING GROUND SURFACE. BELOW THE SURFACE MATERIAL, BORINGS GENERALLY ENCOUNTERED COHESIVE SOILS RANGING FROM CLAY (A-7-6) TO SILT AND CLAY (A-6A) TO A DEPTH OF 32 FEET BELOW THE GROUND SURFACE. BELOW THIS LAYER, COHESIVE SILT (A-4B) WAS GENERALLY ENCOUNTERED TO A DEPTH OF 46.5 FEET BELOW THE GROUND SURFACE. BELOW THIS LAYER, BORINGS GENERALLY ENCOUNTERED SOILS RANGING FROM SILT AND CLAY (A-6A) TO SANDY SILT (A-4A) TO A DEPTH OF 85 TO 95 FEET BELOW THE GROUND SURFACE, AT THE TOP OF ROCK.

IN THE AREA OF THE PROPOSED STRUCTURE, BEDROCK WAS CONFIRMED BY CORING IN ALL BORINGS. THE BEDROCK CONSISTED OF MEDIUM HARD, MODERATELY TO SLIGHTLY WEATHERED SANDSTONE. THE AMOUNT OF ROCK RECOVERED IN EACH CORE RUN VARIED BETWEEN 80 AND 100 PERCENT, WITH AN AVERAGE OF 95 PERCENT. THE ROCK QUALITY DESIGNATION (ROD) OF THE BEDROCK RANGED BETWEEN 50 AND 100 PERCENT WITH AN AVERAGE OF 80 PERCENT INDICATING "GOOD" QUALITY ROCK.

SEEPAGE WAS ENCOUNTERED IN ALL BORINGS DRILLED AT THIS SITE. WHERE SEEPAGE WAS ENCOUNTERED, IT WAS FIRST OBSERVED AT DEPTHS RANGING FROM 17 TO 30 FEET BELOW THE GROUND SURFACE. WATER WAS USED DURING ROCK CORING AND MASKED ANY SEEPAGE ZONES THAT MIGHT EXIST IN THE ROCK. A MEASURABLE WATER LEVEL IN THE BORINGS PRIOR TO ROCK CORING WAS ONLY ENCOUNTERED IN BORINGS B-37, B-38, TR-38, TR-41, AND TR-42. IN THESE BORINGS, WATER LEVELS PRIOR TO CORING ROCK WERE OBSERVED FROM APPROXIMATE DEPTHS OF 20.2 TO 60.5 FEET BELOW THE GROUND SURFACE.

**LEGEND**

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
GRAVEL AND/OR STONE FRAGS. WITH SAND	A-1-b	0	1
FINE SAND	A-3	0	3
COARSE AND FINE SAND	A-3a	0	1
SANDY SILT	A-4a	5	8
SILT	A-4b	16	25
SILT AND CLAY	A-6a	20	20
SILTY CLAY	A-6b	7	17
CLAY	A-7-6	4	22
	TOTAL	52	97
WEATHERED SANDSTONE	VISUAL		
SANDSTONE	VISUAL		

- BORING LOCATION - PLAN VIEW
- DRIVE SAMPLE AND/OR CORE BORING LOCATION PLOTTED TO VERTICAL SCALE ONLY
- INDICATES FREE WATER ELEVATION
- INDICATES STATIC WATER ELEVATION
- INDICATES THE TOP OF ROCK ELEVATION

FIGURES BESIDE THE BORING IN PROFILE INDICATE THE NUMBER OF BLOWS FOR STANDARD PENETRATION TEST  
 X = NUMBER OF BLOWS FOR FIRST 6 INCHES  
 Y = NUMBER OF BLOWS FOR SECOND 6 INCHES  
 Z = NUMBER OF BLOWS FOR THIRD 6 INCHES

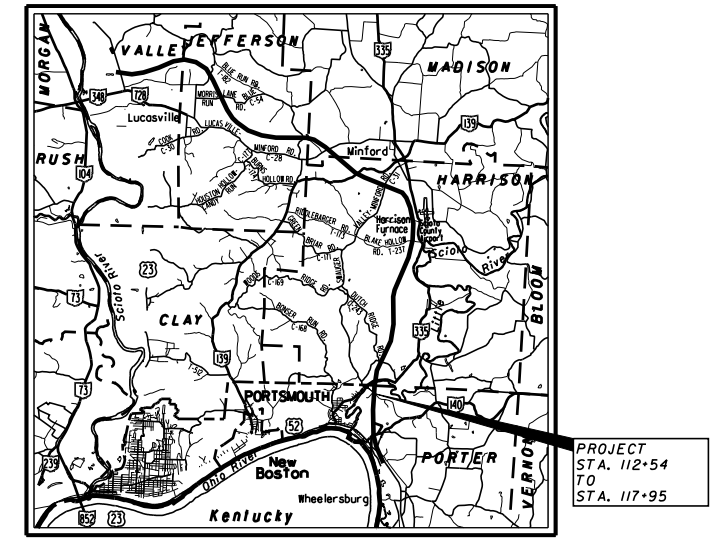
50 (n) INDICATES NUMBER OF BLOWS (50) TO DRIVE A SPLIT-BARREL SAMPLER A DEPTH OF (n) INCHES OTHER THAN THE NORMAL 6 INCH INCREMENT.

**SPECIFICATIONS**

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED NOVEMBER 1995.

**AVAILABLE INFORMATION**

ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.



**PARTICLE SIZE DEFINITIONS**

12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm
Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt / Clay
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE	

- RECON. - AMJ AND SJR 06/04 to 06/06
- DRILLING - DW 02/02/05 TO 02/18/05, 05/03/09 TO 05/08/07
- DRAWN - RLS & AMJ 8/09
- REVIEWED - AEN 8/19/09

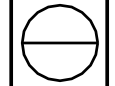
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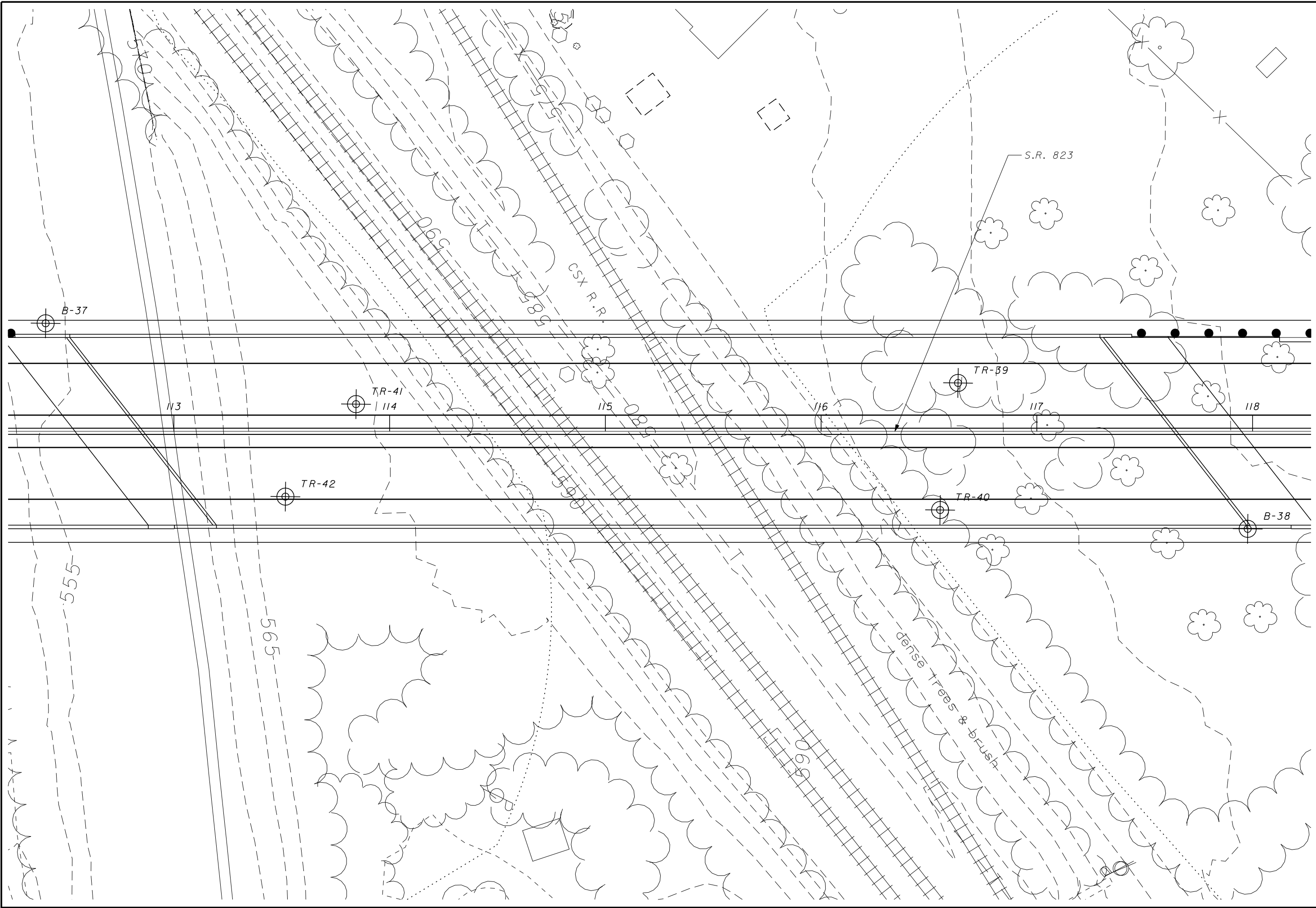


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STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. SCI-823-0214  
 SR823 OVER CSXT RR

SCI-823-0.00





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**STRUCTURE FOUNDATION INVESTIGATION**  
**BRIDGE NO. SCI-823-0214**  
**SR823 OVER CSX RR**

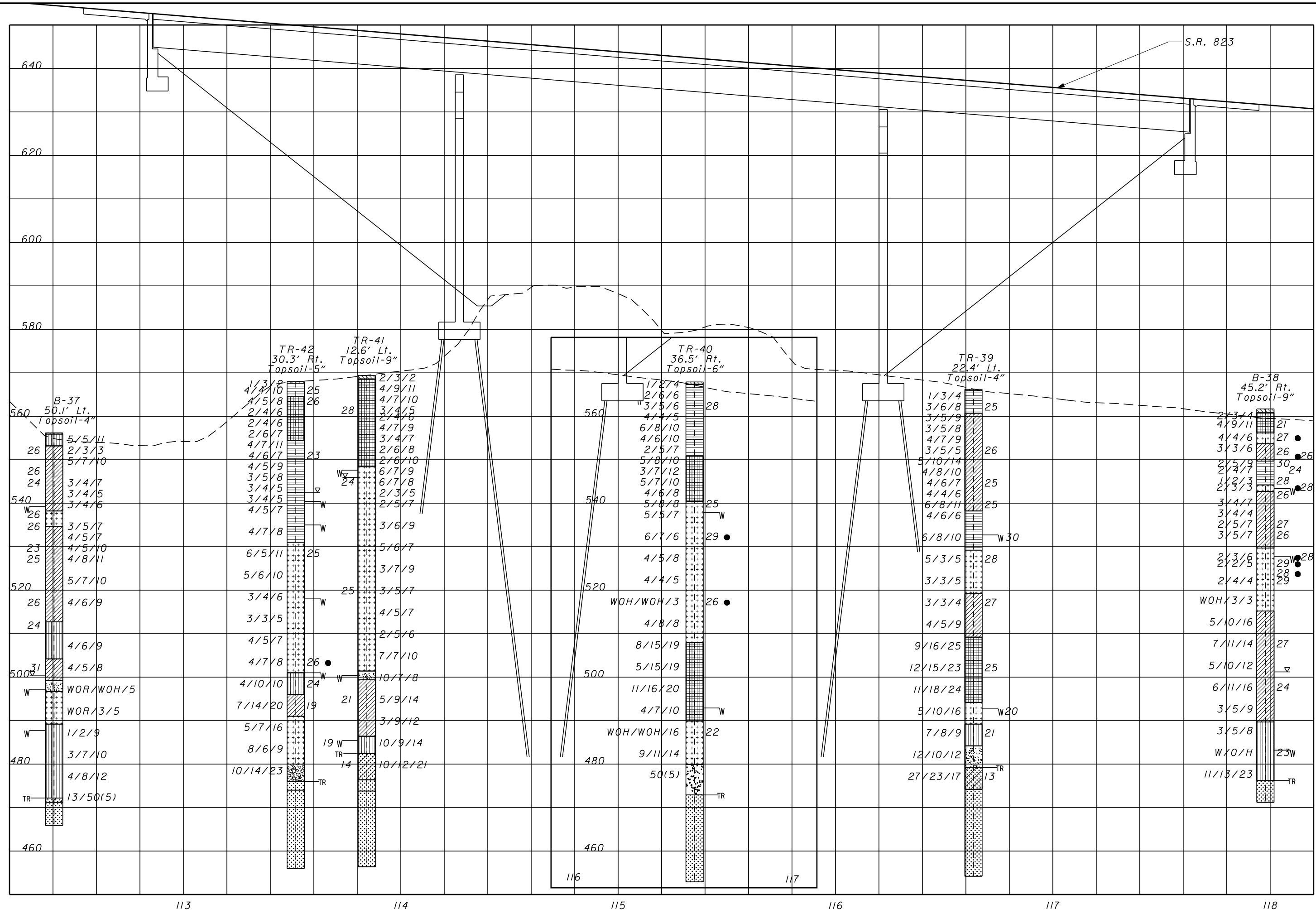
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**STRUCTURE FOUNDATION INVESTIGATION**  
**BRIDGE NO. SCI-823-0214**  
**SR823 OVER CSX RR**

**SCI-823-0.00**



Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03										
LOG OF: Boring B-37		Location: Sta. 112+40.5, 50.1 ft. LT of SR 823 CL		Date Drilled: 5/7/07 to 5/8/07										
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 17.0', 59.0', 68.5' Water level at completion: 55.9' (prior to coring) 32.9' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)		
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○	
DESCRIPTION							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay		
0.3	555.9													
		5 11 13		1		Topsail - 4" Medium dense brown SANDY SILT (A-4a), little gravel, trace clay; damp.								
3.0	553.2				1.0	Stiff to very stiff brown SILT AND CLAY (A-6a), trace fine to coarse sand; moist.	0	2	-	5	55	38		
5		2 3 3	18	2		@ 7.5'-9.5', torvane = 0.58-0. 80 tsf.								
		5 7 10	8	3	3.5									
					3.25		0	1	-	2	32	65		
10					1.5		0	0	-	1	52	47		
		3 4 7	18	4	2.0	@ 15.5', varved.								
15		3 4 5	18	5	1.5									
		3 4 8	18	6	1.75	Stiff brown SILT (A-4b), "and" clay, trace fine sand; torvane = 0.30-0.40 tsf; moist.	0	0	-	1	61	38		
18.0	538.2				1.75	Stiff to very stiff brown SILT AND CLAY (A-6a), trace fine sand; moist.	0	0	-	1	56	43		
20					2.0									
21.5	534.7	3 5 7	18	7	1.75	@ 28.5'-30.0', brownish gray, contains silt and fine sand seams.	0	0	-	2	44	54		
25		4 5 7	18	8	2.0									
		4 5 10	18	9	3.0	Stiff to very stiff brownish gray SILT AND CLAY (A-6a), trace fine sand; contains silt and fine sand seams; moist.	0	0	-	1	36	63		
30		4 8 11	18	10	3.0	@ 37.0', gray.								
35		5 7 10	18	11	2.75									
40		4 6 9	18	12	1.75	Stiff to very stiff gray SANDY SILT (A-4a), "and" clay; moist. @ 43.5'-45.5', torvane = 0.15-0.45 tsf.	0	0	-	3	47	50		
43.5	512.7				2.5	@ 47.0', contains trace organics.								
45					1.25	Stiff gray SILT AND CLAY (A-6a), trace fine sand; moist.	0	0	-	3	58	39		
50		4 6 9	18	13										
52.0	504.2					Very loose brown FINE SAND (A-3), trace silty clay; moist to wet.								
55		4 5 8	18	14										
57.0	499.2													
59.5	496.7	WOR 5 18		15A 18B										

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03										
LOG OF: Boring B-37		Location: Sta. 112+40.5, 50.1 ft. LT of SR 823 CL		Date Drilled: 5/7/07 to 5/8/07										
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 17.0', 59.0', 68.5' Water level at completion: 55.9' (prior to coring) 32.9' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)		
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○	
DESCRIPTION							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay		
60	496.2					Stiff gray SILT (A-4b), trace to little fine sand, trace clay; moist. @ 62.0', trace to little clay, moist to wet.								
		WOR 3 5	18	16	1.5									
65														
67.0	489.2					Stiff to very stiff brown SANDY SILT (A-4a), trace to little clay; moist to wet.								
70		1 2 9	18	17	-	@ 72.0', little gravel.								
75		3 7 10	18	18	2.0	@ 77.0', wet.								
80		4 8 12	18	19	-	@ 82.0', little to some fine to coarse sand, little to some gravel, wet.								
84.0	472.2	13 50/5	11	20A 20B		Severely weathered SANDSTONE.								
85.0	471.2					Medium hard gray SANDSTONE; fine grained, moderately to highly weathered, broken. @ 86.6', highly fractured.								
		Core 63"	Rec 63"	RQD 52%	R-1									
90.3	465.9					Bottom of Boring - 90.3'								
95														
100														
105														
110														
115														
120														

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 BRIDGE NO. SCI-823-0214  
 SR823 OVER CSX RR

SCI-823-0.00

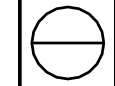
Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03														
LOG OF: Boring TR-42		Location: Sta. 113+51.7, 30.3 ft. RT of SR 823 CL		Date Drilled: 2/18/05 to 2/22/05														
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 27.6', 33'-37', 50'-58', 67'-72', 84'-92' Water level at completion: 25.5' (start of shift 2/22/05) 25.5' (Prior to coring) 25.3' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)						
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○					
DESCRIPTION																		
0	568.0																	
0.4	567.6	3	13	1	1.75	Topsoil - 5"												
		4	10	2	2.0	Stiff dark brown SILT AND CLAY (A-6b), trace fine sand; damp to moist. @ 1.5', brown.	0	1	3	51	45							
3.5	564.5				3.5	Very stiff brown CLAY (A-7 6), trace fine to coarse sand; damp to moist.	0	0	1	44	55							
5		4	8	3	3.5	@ 6.5', varved.												
		2	4	4	3.5													
10		2	4	5	3.75													
		2	6	6	3.25													
13.5	554.5	4	7	7	4.0	Very stiff to hard brown SILTY CLAY (A-6b), trace fine sand; damp to moist.												
15		4	6	8	4.5+		0	0	1	35	64							
20		4	5	9	4.5+													
		3	5	10	3.5													
25		3	4	11	2.75													
		3	4	12	3.0	@ 27.6', thin sandy silt seam; wet.												
30		4	5	13	3.0													
		4	5	14	2.0													
35		4	7	15	4.5+	Very stiff to hard gray SILT (A-4b), "and" clay, trace fine to coarse sand; moist.	0	0	0	53	47							
37.0	531.0																	
40		5	11	16	3.5													
		5	6	17	2.5	@ 49.0', stiff to very stiff; wet.												
45		3	4	18	1.5													
50		3	5	19	3.25													
55		4																
60																		

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03														
LOG OF: Boring TR-42		Location: Sta. 113+51.7, 30.3 ft. RT of SR 823 CL		Date Drilled: 2/18/05 to 2/22/05														
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 27.6', 33'-37', 50'-58', 67'-72', 84'-92' Water level at completion: 25.5' (start of shift 2/22/05) 25.5' (Prior to coring) 25.3' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)						
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○					
DESCRIPTION																		
60	508.0																	
		7	18			Very stiff to hard gray SILT (A-4b), some to "and" clay, trace fine to coarse sand; wet.												
65		4	7	20	2.0		0	0	0	74	26							
67.0	501.0					Medium dense brown SANDY SILT (A-4a), trace gravel, trace clay; wet.												
70		4	10	21			3	11	50	33	Non-Plastic							
72.0	496.0					Very stiff brownish gray SILT AND CLAY (A-6a), trace fine sand; moist to wet.												
75		7	14	22	2.25		0	0	8	57	35							
77.0	491.0					Medium dense to dense brownish gray SILT (A-4b), "and" clay, trace gravel; moist to wet.												
80		5	7	23														
85		8	6	24		@ 84.0', wet.												
88.0	480.0					Dense brown GRAVEL WITH SAND (A-1-b), trace silt; wet.												
90		10	14	25														
92.0	476.0					Medium hard gray SANDSTONE; very fine to fine grained, moderately to highly weathered, argillaceous, micaceous, thickly bedded to massive, highly fractured.												
94.0	474.0	Core 60"	Rec 48"	RQD 75%	R1	Hard gray SANDSTONE; very fine to fine grained, slightly weathered, argillaceous, micaceous, massive, moderately to highly fractured. @ 94.1', 94.6', 95.1', 96.1', 97.4', 97.8', 100.8', 101.4', fractured. @ 104.0', high angle fracture. @ 102.2', 105.8', 108.9' clay filled fractures.												
95		Core 60"	Rec 58"	RQD 88%	R2													
100		Core 60"	Rec 55"	RQD 60%	R3	@ 104.3'-104.5', high angle fracture. @ 104.5'-105.1', broken.												
105		Core 60"	Rec 59"	RQD 85%	R4													
110																		
112.0	456.0					Bottom of Boring - 112.0'												
115																		
120																		

DRAWN  
CHECKED

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BRIDGE NO. SCI-823-0214  
SR823 OVER CSX RR

SCI-823-0.00



Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring TR-41		Location: Sta. 113+84.4, 12.6 ft. LT of SR 823 CL		Date Drilled: 2/15/05 to 2/16/05									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION					STANDARD PENETRATION (N)	
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % -
0	569.4	2	15	1	2.0	Topsoil - 9"							
0.8	568.6	3	15	2	4.0	Very stiff brown CLAY (A-7-6), "and" silt, trace fine sand; moist.							
4		9	18										
5		4	18	3	2.5								
		7	18										
		3	18	4	2.25								
		4	18										
10		2	18	5	2.5								
		4	18										
		7	18	6	3.5								
15		3	18	7	3.25								
		4	18										
		2	18	8	3.5								
		6	18										
20		2	18	9	4.0								
		6	18										
21.0	548.4	6	18	10	3.75	Very stiff brown SILT (A-4b), "and" clay, trace fine sand; moist.							
		7	18										
25		6	18	11	2.5								
		7	18										
		2	18	12	2.5								
		3	18										
30	539.4	2	18	13	2.5	Stiff to very stiff gray SILT (A-4b), some to "and" clay, trace fine sand, moist.							
		5	18										
35		3	18	14	2.25								
		6	18										
40		5	18	15	2.5	@ 39.5', becomes gray.							
		6	18										
45		3	18	16	1.5								
		7	18										
50		3	18	17	2.0								
		5	18										
55		4	18	18	2.5								
		5	18										
60		2	18	19	1.75								
		5	18										

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring TR-41		Location: Sta. 113+84.4, 12.6 ft. LT of SR 823 CL		Date Drilled: 2/15/05 to 2/16/05									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION					STANDARD PENETRATION (N)	
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % -
60	509.4	6	18		2.0	Stiff to very stiff gray SILT (A-4b), some to "and" clay, trace fine sand, moist.							
65		7	18	20	2.0	@ 64.0'-65.5', trace organics.							
		7	18										
68.0	501.4	10	18	21		Loose to medium dense brownish gray FINE SAND (A-3), little silty clay; wet.							
70.0	499.4	10	18	21		Stiff to very stiff gray SILT AND CLAY (A-6a), trace fine to coarse sand; damp to moist.							
		7	18										
75		5	18	22	3.0								
		9	18										
80		3	18	23	1.5								
		9	18										
83.0	486.4	10	18	24		Loose to medium dense gray SANDY SILT (A-4a), little clay, trace gravel; wet.							
85		10	18	24									
87.0	482.4	10	18	24		Severely weathered brown SANDSTONE.							
		10	18										
90		10	18	25									
		12	18										
93.0	476.4	10	18	25		Medium hard to hard brown and gray SANDSTONE; very fine to fine grained, moderately to highly weathered, argillaceous, micaceous, thinly to thickly bedded, highly fractured, with typically low angle rust stained fractures.							
95		Core 60"	Rec 48"	RQD 50%	R-1	@ 95.1'-95.5', broken zone.							
95.6	473.8	Core 60"	Rec 48"	RQD 50%	R-1	@ 93.0'-93.7', lost recovery.							
100		Core 60"	Rec 60"	RQD 85%	R-2	Medium hard to hard gray SANDSTONE; very fine to fine grained, slightly to moderately weathered, argillaceous, micaceous, thinly to thickly bedded, moderately fractured, with typically low angle clay filled fractures.							
105		Core 60"	Rec 54"	RQD 67%	R-3	@ 103.0'-103.5', lost recovery.							
		Core 60"	Rec 60"	RQD 90%	R-4	@ 103.5'-104.0', 106.7'- 107.7', broken zones.							
110		Core 60"	Rec 60"	RQD 90%	R-4								
113.0	456.4					Bottom of Boring - 113.0'							
115													
120													

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. SCI-823-0214  
SR823 OVER CSX RR

SCI-823-0.00



Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03										
LOG OF: Boring TR-40		Location: Sta. 116+55.2, 36.5 ft. RT of SR 823 CL		Date Drilled: 02/04/05 to 02/09/05										
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION					STANDARD PENETRATION (N)		
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ●	PL - LL
0	567.9	1	4	18	1	Topsail - 6"								
0.5	567.4	2	6	16	2	Stiff to very stiff brown SILTY CLAY (A-6b), trace fine sand; damp to moist.								
5		3	5	18	3		0	0	1	48	51			
10		4	4	16	4									
15		2	5	18	7	@ 10.0', very stiff.								
17.0	550.9	5	8	18	8	Hard brown CLAY (A-7-6), some to "and" silt, trace fine sand; damp to moist.								
20		3	7	12	9									
25		4	6	18	11									
27.5	540.4	5	8	18	12	Stiff to very stiff brown SILT (A-4b), some to "and" clay, trace fine to coarse sand; moist to wet.	0	0	2	56	42			
30		5	5	15	13									
35		6	7	17	14		0	2	2	74	22			
40		4	4	18	15									
45		4	4	18	16									
50		WOH	WOH	3	17	@ 50.0', trace gravel.	1	1	4	56	38			
55		4	8	18	18									
60														

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03										
LOG OF: Boring TR-40		Location: Sta. 116+55.2, 36.5 ft. RT of SR 823 CL		Date Drilled: 02/04/05 to 02/09/05										
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION					STANDARD PENETRATION (N)		
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ●	PL - LL
60.0	507.9	15	19	18	19	Very stiff to hard gray CLAY (A-7-6), some silt, trace fine sand; damp to moist.								
65		5	15	19	20									
70		11	16	20	21									
75		4	7	10	22									
78.0	489.9					Medium dense gray and brown SILT (A-4b), some fine to coarse sand, little clay, trace gravel; wet.								
80		WOH	WOH	16	23		1	2	25	58	14	Non-Plastic		
85		9	11	14	24									
88.0	479.9					Very dense gray COARSE AND FINE SAND (A-3a), little silty clay, trace fine gravel; wet.								
90		50/5	5	5	25									
95.0	472.9					Medium hard to hard gray SANDSTONE; very fine to fine grained, slightly to moderately weathered, argillaceous, arenaceous, thickly bedded to massive, slightly to moderately fractured.								
100						@ 95.5', 95.8', 99.6', low angle clay filled fractures.								
105						@ 100.8', 102.7', 103.0', low angle clay filled fractures.								
110						@ 106.7', 112.5', low angle clay filled fractures.								
115.0	452.9					Bottom of Boring - 115.0'								
120														

DRAWN  
 CHECKED  
 STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. SCI-823-0214  
 SR823 OVER CSX RR

SCI-823-0.00

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring TR-39		Location: Sta. 116+63.5, 22.4 ft. LT of SR 823 CL		Date Drilled: 02/02/05 to 02/03/05									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION					STANDARD PENETRATION (N)	
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ●
0.3	566.2					Topsoil - 4"							
2.25		3 4 16		1	2.25	Very stiff brown SILTY CLAY (A-6b); damp. @ 0.0'-1.5', contains organics.							
3.5		3 6 18		2	3.5		0	0	1	47	52		
5.5	560.7					Very stiff to hard brown SILT AND CLAY (A-6a), trace fine to coarse sand; damp.							
2.25		3 5 18		3	2.25								
3.25		3 5 18		4	3.25								
2.75		4 7 16		5	2.75								
2.75		3 5 18		6	2.75		0	0	1	53	46		
4.0		5 10 14 16		7	4.0								
3.75		4 8 10 15		8	3.75								
3.25		4 6 7 18		9	3.25		0	0	1	59	40		
3.0		4 4 6 16		10	3.0								
3.0		6 8 11 18		11	3.0		0	0	1	46	53		
3.25	538.2	4 6 6 18		12	3.25	Very stiff brown SILTY CLAY (A-6b), trace fine sand; wet.							
2.25		6 8 10 18		13	2.25		0	0	1	80	19		
2.25	529.2					Loose gray SILT (A-4b), trace fine sand; wet.							
2.25		3 5 15		14	2.25		0	0	1	81	18	Non-Plastic	
0.5		3 3 5 16		15	0.5								
0.5	519.2					Medium stiff to stiff gray SILT AND CLAY (A-6a); damp to wet.							
0.5		3 3 4 18		16	0.5		0	0	1	57	42		
1.0		4 5 9 18		17	1.0								
4.5+	509.2					Hard brownish gray CLAY (A-7-6), trace to little fine sand; damp to moist.							
4.5+		9 16 25 18		18	4.5+								

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring TR-39		Location: Sta. 116+63.5, 22.4 ft. LT of SR 823 CL		Date Drilled: 02/02/05 to 02/03/05									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION					STANDARD PENETRATION (N)	
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ●
60	506.2					Hard brownish gray CLAY (A-7-6), trace fine sand; moist.							
4.5+		12 15 23		19	4.5+		0	0	3	32	65		
2.5		11 18 24		20	2.5								
3.5	494.2					Very stiff gray SILT (A-4b), trace fine sand; slightly organic; damp.							
3.5		5 10 16		21	3.5		0	0	9	60	31		
3.5	489.2					Medium dense brown SANDY SILT (A-4a), trace gravel; slightly organic; wet.							
3.5		7 8 9		22	3.5		0	3	38	48	11	Non-Plastic	
3.5	484.2					Medium dense gray FINE SAND (A-3), trace gravel, trace silt; moist.							
3.5		12 10 12		23	3.5								
3.5	479.2					Severely weathered brown and gray SANDSTONE, argillaceous.							
3.5		27 23 17		24	3.5		41	11	13	27	8		Non-Plastic
3.5	474.2					Medium hard to hard gray SANDSTONE; very fine to fine grained, moderately weathered, argillaceous, thinly bedded to massive, slightly fractured, contains few argillaceous laminations. @ 92.0'-92.2', 92.3'-92.5', filled fractures.							
3.5		Core 60"	Rec 60"	RQD 90%	R-1								
3.5		Core 60"	Rec 56"	RQD 93%	R-2	@ 97.7', 97.8', low angle fractures.							
3.5		Core 60"	Rec 60"	RQD 100%	R-3	@ 100.7'-101.1', highly weathered and broken. @ 101.7'-101.9', decomposed shale layer.							
3.5		Core 60"	Rec 60"	RQD 100%	R-4	@ 111.0'-111.3', calcareous layer. @ 111.3'-112.0', fine to medium grained clean sandstone.							
3.5	454.2					Bottom of Boring - 112.0'							

DRAWN  
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 STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. SCI-823-0214  
 SR823 OVER CSX RR

SCI-823-0.00



Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03										
LOG OF: Boring B-38		Location: Sta. 117+97.8, 45.2 ft. RT of SR 823 CL		Date Drilled: 05/03/07 to 05/04/07										
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 18.3', 33.9', 78.5' Water level at completion: 60.5' (at end of day 5/03/07) 43.7' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)		
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○	
DESCRIPTION							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Blows per foot - ○	
0	561.7													
0.8	560.9	2	3	1	2.0	Topsoil - 9"								
		4	17			Very stiff brown CLAY (A-7-6), trace fine sand; damp to moist.								
		9	11	2	3.5		0	0	1	40	59			
5.5	556.2	4	6	3	1.25	Stiff brown SILT (A-4b), trace fine sand; moist.	0	0	1	52	47			
		3	6											
8.0	553.7	3	3	4A	1.0	Stiff brown SILT AND CLAY (A-6a), trace fine sand; moist.	0	0	8	35	57			
10		6	18	4B	2.0	@ 10.0'-12.0', torvane = 0.5 tsf	0	0	9	41	50			
12.0	549.7	2	5	5	0.5	Medium stiff brown SILTY CLAY (A-6b), trace fine sand; contains thin fine sand seams; moist.	0	0	2	28	70			
15		2	4	6	3.0	@ 13.5'-15.0', very stiff.	0	0	2	39	59			
17.5	544.2	1	2	7	1.0									
19.0	542.7	2	3	8	0.75	Medium stiff brown SILT (A-4b), trace fine sand; contains thin fine sand seams; moist.	0	0	1	54	45			
20		3	3	ST-2	1.0-1.5	Stiff to very stiff brown SILT AND CLAY (A-6a), trace fine sand; contains thin fine sand seams; moist.	0	0	1	50	49			
		4	7	9	1.0	@ 19.0', torvane = 0.30 tsf								
		3	4	10	1.0	@ 21.0', torvane = 0.38 tsf								
25		3	4											
		2	5	11	2.5		1	3	3	39	54			
30		3	5	12	1.75									
32.0	529.7					Soft to medium stiff gray SILT (A-4b), little to some clay, trace fine sand; contains thin fine sand seams; moist to wet.	0	0	1	69	30			
35		2	3	13	0.5		0	0	0	78	22			
		2	5	14	0.25-0.5		0	0	2	73	25			
				ST-3	0.5-0.75	@ 37.0'-39.0', torvane = 0.14 tsf.								
40		2	4	15	0.25-0.5									
45		WOH	3	16	0.25-0.5									
48.5	515.2					Very stiff gray SILT AND CLAY (A-6a), trace fine sand; moist.								
50		5	10	17	3.0	@ 52.0', brownish-gray.								
55		7	11	18	3.0		0	0	1	30	69			
60		5	10	19	2.0									

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03										
LOG OF: Boring B-38		Location: Sta. 117+97.8, 45.2 ft. RT of SR 823 CL		Date Drilled: 05/03/07 to 05/04/07										
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 18.3', 33.9', 78.5' Water level at completion: 60.5' (at end of day 5/03/07) 43.7' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)		
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○	
DESCRIPTION							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Blows per foot - ○	
60	501.7					Stiff to very stiff gray SILT AND CLAY (A-6a), trace fine sand; moist.								
		6	11	20	2.0		0	0	4	32	64			
65														
		3	5	21	1.75									
70														
72.0	489.7					Medium dense to dense gray SANDY SILT (A-4a), little clay; moist to wet.								
75		3	5	22										
80		W	O	23		@ 80.0', 10.0' sand heave accumulated overnight; washed out.	0	2	42	45	11	Non-Plastic		
85		11	13	24A										
85.5	476.2			24B		Medium hard gray SANDSTONE; fine to medium grained, slightly to moderately weathered, moderately to highly fractured.								
						@ 85.6'-85.9', iron stained fractures.								
90		Core	60'	Rec	60'									
90.5	471.2			RQD	85%									
95														
100														
105														
110														
115														
120						Bottom of Boring - 90.5'								

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 BRIDGE NO. SCI-823-0214  
 SR823 OVER CSX RR

SCI-823-0.00