PROJECT DESCRIPTION

THE PROJECT CONSISTS IN PART OF PLACING TWIN STRUCTURES FOR THE PROPOSED SR 823 OVER THE LITTLE SCIOTO RIVER AND SR 335. THE LEFT STRUCTURE WILL BE COMPRISED OF FOUR SPANS WHILE THE RIGHT STRUCTURE WILL CONSIST OF FIVE SPANS. THE TWIN STRUCTURES AS PLANNED, USE SPILL THROUGH SLOPES AT THE REAR ABUTMENT WHILE A RETAINING WALL WILL BE REQUIRED AT THE FORWARD ABUTMENT OF THE LEFT STRUCTURE TO RETAIN FILL MATERIAL AND CONTAIN THE ABUTMENT.

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 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 SUBSURFACE EXPLORATION CONSISTED OF DRILLING A TOTAL OF THIRTEEN BORINGS FOR THE PROPOSED STRUCTURE. STRUCTURE BORINGS TR-30 THROUGH TR-35 AND TR-35A WERE DRILLED FOR PRELIMINARY DESIGN CONFIGURATION WHILE BORINGS B-39 THROUGH B-44 WERE DRILLED FOR THE FINAL DESIGN CONFIGURATION. THESE BORINGS WERE DRILLED BETWEEN FEBRUARY 24, 2005 AND MAY 21, 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 NQ SERIES CORE BARREL, WATER METHOD.

EXPLORATION FINDINGS

THE TEST BORINGS DISCLOSED PRDOMINANTLY COHESIVE DEPOSITS THAT CONSISTED MAINLY SOFT TO MEDIUM STIFF SILT AND CLAY (A-6A), SILTY CLAY (A-6B), CLAY (A-7-6), AND VERY STIFF SILT (A-4B), WHILE THE GRANULAR SOIL DEPOSITS CONSISTED OF MAINLY MEDIUM DENSE TO DENSE SANDY SILT (A-4A) AND FINE SAND (A-3). NATURAL SOIL DEPOSITS EXTENDED TO AN APPROXIMATE DEPTH RANGING BETWEEN 2.0 AND 81.0 FEET BELOW THE GROUND SURFACE WHERE BEDROCK WAS ENCOUNTERED.

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 RECOVERY OF 99 PERCENT. THE ROCK QUALITY DESIGNATION (ROD) OF THE BEDROCK RANGED BETWEEN 25 AND 100 PERCENT WITH AN AVERAGE OF 87 PERCENT, INDICATING GOOD QUALITY ROCK. AT THE REAR ABUTMENT, THE BEDROCK SURFACE IS RELATIVELY LEVEL, WHILE THE BEDROCK SURFACE SLOPES STEEPLY TOWARDS THE LITTLE SCIOTO RIVER AT THE FOWARD ABUTMENT.

BORINGS B-39 THROUGH B-41, TR-32 THROUGH TR-35, AND TR-35, DRILLED FOR THE REAR ABUTMENT, PIER 1, PIER 2, AND PIER 3 ENCOUNTERED SEEPAGE. WHERE SEEPAGE WAS ENCOUNTERED, IT WAS FIRST OBSERVED AT DEPTHS RANGING FROM 4.0 TO 34.7 FEET BELOW THE GROUND SURFACE. WATER WAS USED DURING ROCK CORING, WHICH MASKED ANY SEEPAGE ZONES THAT MIGHT EXIST IN THE ROCK. A MEASURABLE WATER LEVEL IN THE BORINGS PRIOR TO ROCK CORING WAS ENCOUNTERED IN BORINGS B-39, B-41, AND TR-32 THROUGH TR-35, AND TR-35A. IN THESE BORINGS, WATER LEVELS PRIOR TO CORING ROCK WERE OBSERVED FROM APPROXIMATE DEPTHS OF 7.0 AND 67.8 FEET BELOW THE GROUND SURFACE.

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.

LEGEND

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
FINE SAND	A-3	0	4
COARSE AND FINE SAND	A-3a	1	1
GRAVEL AND/OR STONE FRAGS. WITH SAND	A-2-4	3	1
SANDY SILT	A-4a	6	11
SILT	A-4b	37	22
SILT AND CLAY	A-6a	4	3
SILTY CLAY	A-6b	2	3
CLAY	A-7-6	6	15
	TOTAL	59	60
SHALE	VISUAL		
WEATHERED SANDSTONE	VISUAL		
SANDSTONE	VISUAL		

BORING LOCATION - PLAN VIEW

DRIVE SAMPLE AND/OR CORE BORING LOCATION PLOTTED TO VERTICAL SCALE ONLY

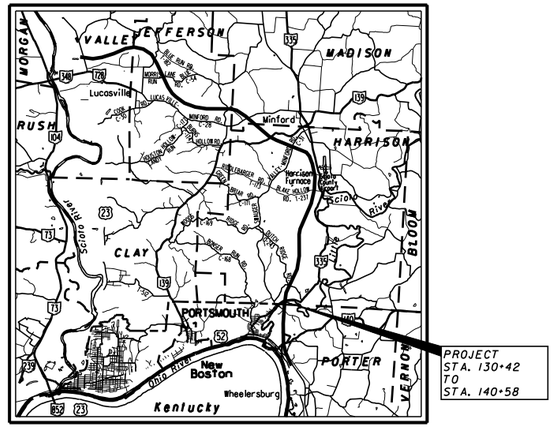
W —— INDICATES FREE WATER ELEVATION

▽—— INDICATES STATIC WATER ELEVATION

——TR INDICATES THE TOP OF ROCK ELEVATION

X/Y/Z — 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.



LOCATION MAP

SCALE IN MILES
0 2 4 6 8

N

D_{50} VALUES			
BORING NO.	SAMPLE NO.	ELEVATION	D_{50} VALUE
B-39	S-2	504.5' - 503.0'	0.0095 mm
	S-3	499.5'-498.0'	0.0092mm
	ST-2	498.0' - 496.5'	0.0118 mm
	S-4	494.5' - 493.0'	0.0427mm
	ST-4	487.0' - 485.5'	0.0243 mm
	S-8	482.0'- 480.5'	0.0461mm
B-40	S-2	525.5' - 524.0'	0.007 mm
	S-3	520.5' - 519.0'	0.0111 mm
	S-4	515.5'- 514.0'	0.0224 mm
	S-6	510.5'-509.0'	0.0178 mm
	ST-4	509.0'-507.5'	0.0172 mm
	S-8	503.0'-501.5'	0.0277 mm
	S-11	490.5'-489.0'	0.0422 mm

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 AND RB 05/09/07 TO 05/21/07, 03/08/05 TO 03/10/05, 02/23/05 TO 02/24/05, AND 01/12/06

DRAWN - RLS & AMJ 8/09

REVIEWED - AEN 8/19/09

DLZ
6121 HUNTLEY ROAD • COLUMBUS, OHIO 43229

PID NO. 77366

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

1 / 15

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℄ S.R. 823

TR-33

TR-34

TR-35A

B-39

131

132

133

134

135

MATCHLINE STA. 136+00

500

495

510

505

515

550

545

540

535

530

520

HORIZONTAL SCALE IN FEET

0 10 20 40

DRAWN

CHECKED

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

PROPOSED PROFILE

EXISTING SURFACE

TR-35A
14.1' Rt.
3/4/6 27
6/6/8
23
2/2/3 29
27 28
2/4/5
12/3/4
3/5/6
WOH/1/1 W 29
28
5/9/13
4/6/9 25
5/9/11
5/10/14
5/9/13
4/7/7
4/5/6 42
34 19
3/4/4 W
WOH/3/5
5/50(5) TR

TR-34
2.0' Lt.
Topsoil-7"
1/2/2
4/5/7 25
4/5/8
3/6/8
3/6/9
2/3/4
2/5/7 25
2/5/7
2/4/6
3/6/8
4/6/8 31
3/6/9
2/1/2 W
0/1/2 23
10/12/50(4) 13 TR

B-39
34.2' Rt.
Topsoil-5"
2/2/2
2/2/2 28
WOH/2/2
2/3/2 26
28
WOH 28
WOH/WOH/3 W
2/2/2 W
1/3/5 19 W
2/1/2
1/2/2 27
2/3/3
50(2) TR

TR-33
60.6' Lt.
Topsoil-5"
WOH/WOH/1 30
1/WOH/1 26
WOH/WOH/WOH 27 W
WOH/WOH/1 32
WOH/WOH/1 33
WOH/1/2 34
WOH/WOH/1 29
WOH/2/2 28
2/9/7 22
2/2/2
1/2/3
2/4/6
50(1) TR

600 580 560 540 520 500 480 460 440 420

131 132 133 134 135 136

DRAWN | CHECKED

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

MATCHLINE STA. 136+00

TR-32

TR-31

TR-29

TR-30

B-40

B-41

B-42

B-43

B-44

℄ S.R. 823

S.R. 335

Little Scioto

137

138

139

140

141

12

13

14

15

530 525 520 515 545 550 560 565 555 540 570 580 585 590 595 605 610 615 620 625 630

HORIZONTAL SCALE IN FEET

0 10 20 40

DRAWN

CHECKED

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

4 / 15

S.R. 823

PROPOSED PROFILE

EXISTING SURFACE

TR-29
84.5' Lt.
Topsoil-5"
TR

TR-30
52.3' Lt.
Topsoil-5"
TR

TR-31
106.5' Lt.
Topsoil-6"
TR

S.R. 823

B-41
37.2' Rt.
Topsoil-4"

TR-32
10.4' Lt.
Topsoil-4"
1/2/3
1/1/1
2/2/4
3/3/4
4/12/8
14/5/7
5/5/5
3/3/3
WOH/3/3
3/4/3
17/4/6
2/2/4
1/1/1
2/8/13
W
24
25
17
22
21
22
26
20
16
24W
25
25
TR

2/2/3
24 1/2/3
2/2/3
24 2/4/5
3/2/4
24 1/3/4
6/9/13
16 5/5/6
7/7/8
5/8/8
6/8/9
W 3/7/8
WOH/WO.
TR 9/15/50

B-40
33.6' Lt
Topsoil-5"
2/4/5
3/3/3
2/2/4
1/2/2
2/3/3
3/4/4
4/8/9
7/9/9
3/5/6
5/6/8
3/3/4
50(3)
23
24
25
25
22
15
W
15
W
TR
137

B-43
43.0' Rt.
Topsoil-5"
7/7/11
26/18/20
33/24/31
10/16/38
10
7
TR

B-42
32.7' Lt.
Topsoil-6"
4/20/27
32/50(5)
TR
11
139

B-44
37.8' Rt.
Topsoil-4"
3/2/4
4/4/8
5/7/14
6/11/13
8/13/22
13/18/21
11/17/27
26/21/27
9/11/18
50(5)
15
12
11
11
TR
140

136 137 138 139 140 141

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

DRAWN | CHECKED

SCI-823-0.00

5 / 15

DLZ OHIO INC. * 6121 HUNTLEY ROAD, COLUMBUS, OHIO 43229 * (614)888-0040

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-34 | Location: Sta. 133+61.1, 2.0 ft. LT of SR 823 CL | Date Drilled: 2/24/05 to 3/2/05

WATER OBSERVATIONS: Water seepage at: 30.0'-38.0'; Water level at completion: 20.0' (Prior to coring), 6.0' (Includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION % Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ⊢ LL Blows per foot - ○
0	516.4													10 20 30 40
0.6	515.8	1 2 2	16	1		2.5	Topsoil - 7" / 2-3' soil removed before drilling Very stiff brown SILT AND CLAY (A-6a); damp.							
2.0	514.4	4 5 7	18	2		4.0	Very stiff to hard brown CLAY (A-7-6), trace fine to coarse sand; varved; damp to moist.	0	0	–	1	21	78	
5		4 5 8	18	3		4.5	@ 6.0', contains occasional very thin gray seams with desiccation cracking.							
		3 6 8	18	4		4.5+								
10		3 6 9	18	5		4.5+	@ 10.0', gray.							
		2 3 4	18	6		2.25								
15		2 5 7	18	7		3.25		0	0	–	1	22	77	
		2 5 7	18	8		2.25	@ 17.5'-19.0', slightly organic.							
20		2 4 6	0	9		–								
		3 6 8	18	10		3.75								
25							@ 25.0', grayish brown; moist.							
		4 6 8	18	11		2.25		0	1	–	4	56	39	
		3 6 9	0	12		–								
30.0	486.4	2 1 2	0	13			Very loose gray SILT (A-4b), some fine sand, trace clay; wet.							
35		0 1 2	18	14				0	0	–	31	60	9	Non-Plastic ●
38.0	478.4						Medium dense gray GRAVEL WITH SAND AND SILT (A-2-4), trace clay; moist.							
40		10 12 50/4	14	15				23	26	–	19	27	5	● Non-Plastic 50+
42.0	474.4	Core 12"	Rec 12"	RQD 75%	R-1		Soft to medium hard gray SANDSTONE; very fine to fine grained, slightly to moderately weathered, argillaceous, micaceous, thinly to thickly bedded, moderately to highly fractured.							
45		Core 60"	Rec 60"	RQD 70%	R-2		@ 43.3', qu = 9,993 psi. @ 44.5'-45.4', 46.6'-48.0', very fine grained, fissile after desiccation. @ 42.2',43.6',44.7',47.1',47.2' 47.6', low angle clay filled fractures.							
48.0	468.4						@ 44.2'-44.4',45.0'- 45.1',46.7', high angle clay filled fractures.							
50		Core 60"	Rec 60"	RQD 100%	R-3		Hard gray SANDSTONE; very fine to fine grained, slightly weathered, argillaceous, micaceous, massive, unfractured to slightly fractured.							
55		Core 60"	Rec 60"	RQD 97%	R-4		@ 53.4'-54.3', very fine grained. @ 53.5', low angle clay filled fractures.							
60		Core 48"	Rec 48"	RQD 100%	R-5		@ 59.1'-59.5', red iron staining.							

DLZ OHIO INC. * 6121 HUNTLEY ROAD, COLUMBUS, OHIO 43229 * (614)888-0040

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-34 | Location: Sta. 133+61.1, 2.0 ft. LT of SR 823 CL | Date Drilled: 2/24/05 to 3/2/05

WATER OBSERVATIONS: Water seepage at: 30.0'-38.0'; Water level at completion: 20.0' (Prior to coring), 6.0' (Includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION % Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N) Natural Moisture Content % PL ⊢● LL Blows per foot - ○
60	456.4													10 20 30 40
62.0	454.4						Hard gray SANDSTONE; very fine to fine grained, slightly weathered, argillaceous, micaceous, massive, unfractured. Bottom of Boring - 62.0'							
65														
70														
75														
80														
85														
90														

DRAWN | CHECKED

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

DLZ OHIO INC. * 6121 HUNTLEY ROAD, COLUMBUS, OHIO 43229 * (614)888-0040

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring B-39 | Location: Sta. 134+39.9, 34.2 ft. RT of SR 823 CL | Date Drilled: 5/9/07

WATER OBSERVATIONS:
Water seepage at: 16.0', 19.5', 23.5'
Water level at completion: 32.4' (prior to coring)
12.9' (includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION % Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
0	508.0													
0.4	507.6						Topsoil - 5"							
		2 2 2	18	1		1.25	Stiff brown SILTY CLAY (A-6b), trace fine sand; moist.							
		2 2 2	18	2		1.25		0	0	–	2	67	31	
5														
5.5	502.5						Medium stiff brown SILT AND CLAY (A-6a), trace fine sand; moist.							
		WOH 2 2	18	3		1.0								
		2 3 2	18	4		0.75		0	0	–	8	55	37	
10.0	498.0				ST-1	1.0-1.25	Stiff brown SILT (A-4b), some clay, little fine sand; moist.	0	0	–	11	57	32	
13.0	495.0						Very soft to soft brown SANDY SILT (A-4a), little to some clay; moist to wet.							
		WOH WOH WOH	18	5		-		0	0	–	39	40	21	
15														
		WOH WOH 3	18	6		-								
18.0	490.0						Medium stiff to stiff mottled brown and gray SILTY CLAY (A-6b), trace fine sand; moist.							
19.5	488.5	2 2 2	18	7A 7B		1.0								
20							Loose gray SILT (A-4b), little clay, some to "and" fine to coarse sand; moist to wet. @ 19.5'-20.5', brown.							
		1 3 5	18	8				0	2	–	20	58	20	Non-Plastic
		2 1 2	16	9										
25														
		1 2 2	18	10			@ 26.0', attempted to press Shelby Tube, no recovery.	0	0	–	37	53	10	Non-Plastic
		2 3 3	14	11			@ 28.5', attempted to press Shelby Tube, no recovery.							
30														
33.7	474.3	50/2	1	12		-	Medium hard gray SANDSTONE; fine grained, moderately to highly weathered, arenaceous, highly fractured.							
35		Core 67"	Rec 67"		R-1	RQD 58%								
							@ 38.8', slightly weathered, slightly arenaceous, slightly to moderately fractured.							
40		Core 60"	Rec 59"		R-2	RQD 98%								
45														
		Core 120"	Rec 120"		R-3	RQD 99%	@ 48.0'-48.6', 49.6'-50.2', fine to medium grained.							
50														
54.3	453.7						Bottom of Boring - 54.3'							
55														
60														

STANDARD PENETRATION (N)
Natural Moisture Content, % - ●
PL ⊢ LL
Blows per foot - ○
10 20 30 40

DRAWN | CHECKED

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

DLZ OHIO INC. * 6121 HUNTLEY ROAD, COLUMBUS, OHIO 43229 * (614)888-0040

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-33 | Location: Sta. 134+67.6, 60.6 ft. LT of SR 823 CL | Date Drilled: 2/23/05 to 2/24/05

WATER OBSERVATIONS: Water seepage at: 5.5'-34.0'
Water level at completion: 15.0' (Prior to coring)

Depth (ft)	Elev. (ft)	Sample No.	Blows per 6"	Recovery (in)	Drive	Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ⊢ LL Blows per foot - ○ 10 20 30 40
0	502.7														
0.4	502.3							Topsoil - 5"							
			WOH WOH 1	12	1		0.25	Very soft to soft brown SILT (A-4b), little fine sand; wet.	0	0	–	18	62	20	
3.0	499.7														
			1 WOH 1	16	2		0.25	Very soft to soft brown SANDY SILT (A-4a), little to some clay; wet.	0	1	–	32	47	20	
5.5	497.2														
			WOH WOH WOH 3		3		0.25	Very soft to soft brown SILT (A-4b), trace to little fine sand; wet.	0	0	–	17	60	23	
								@ 8.5'-10.0', very loose.							
			WOH WOH 1	18	4				0	0	–	16	66	18	Non-Plastic
			WOH WOH 1	18	5		0.25		0	0	–	14	59	27	
			WOH 1 2	18	6		0.5		0	0	–	4	73	23	
								@ 16.0'-20.0', some fine sand.							
			WOH WOH 1	18	7		0.25		0	0	–	32	51	17	
								@ 18.5'-20.0', very loose to loose.							
			WOH 2 2	18	8				0	0	–	36	50	14	Non-Plastic
21.0	481.7							Medium dense gray COARSE AND FINE SAND (A-3a), some silt, trace gravel, trace clay; wet.	8	10	–	54	22	6	Non-Plastic
			2 9 7	18	9										
23.5	479.2							Loose gray FINE SAND (A-3), little to some silt; wet.							
			2 2 2	18	10										
			1 2 3	18	11										
28.5	474.2							Loose gray SANDY SILT (A-4a); moist to wet.							
			2 4 6		12										
34.1	468.6		50/1	0	13			Medium hard to hard gray SANDSTONE; very fine grained, slightly to moderately weathered, argillaceous, micaceous, thinly to thickly bedded.							
36.1	466.6		Core 42"	Rec 42"	RQD 100%	R-1		@ 34.6', high angle fracture. @ 34.7'-36.1', contains moderate argillaceous laminations.							
40			Core 60"	Rec 60"	RQD 93%	R-2		Hard gray SANDSTONE; very fine grained, slighty weathered, argillaceous, micaceous, thinly to thickly bedded. @ 38.3', qu = 11,676 psi. @ 41.6'-42.4', contains few to moderate argillaceous laminations. @ 41.9', clay seam. @ 42.4', low angle fracture.							
45			Core 60"	Rec 60"	RQD 100%	R-3									
50			Core 60"	Rec 60"	RQD 100%	R-4									
54.1	448.6		Core 18"	Rec 18"	RQD 100%	R-5		@ 53.3', iron staining. Bottom of Boring - 54.1'							
60															

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Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-32 | Location: Sta. 136+60.6, 10.4 ft. LT of SR 823 CL | Date Drilled: 3/10/05

WATER OBSERVATIONS: Water seepage at: 4.0'-11.0', 26.5'-38.0'
Water level at completion: 7.0' (Prior to coring)
3.0' (Including drilling water)

Depth (ft)	Elev. (ft)	Sample No.	Blows per 6"	Recovery (in)	Drive	Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ⊢ LL Blows per foot - ○ 10 20 30 40
0	515.1														
0.3	514.8							Topsoil - 4" / 2.6' soil removed before drilling							
			1 2 3	18	1		–	Soft to medium stiff brown SILT (A-4b), little to some fine sand; moist to wet. @ 0.0'-1.5', organic odor.							
			1 1 1	16	2		–								
5			2 2 4	15	3		–		0	0	–	26	58	16	
			3 3 4	17	4		–		0	0	–	15	69	16	
10			4 12 8	18	5		–	@ 10.0'-12.5', medium dense, trace coarse sand.	1	5	–	24	58	12	Non-Plastic
12.5	502.6														
			4 5 7	16	6		1.5	Stiff gray SILT AND CLAY (A-6a), little fine to coarse sand; moist.	0	3	–	15	49	33	
15.0	500.1														
			5 5 5	16	7		–	Medium stiff to stiff gray SILT (A-4b), trace to little fine to coarse sand, trace gravel; moist to wet.	0	1	–	8	66	25	
			3 3 3	17	8		–		0	1	–	11	63	25	
20			WOH 3 3	15	9		–		0	0	–	8	67	25	
			3 4 3	18	10		–	@ 22.5'-29.0', gray and brown, little to some fine to coarse sand.	2	2	–	18	55	23	
25			1 4 6	18	11			@ 25.0'-30.0', loose.	7	9	–	14	58	12	Non-Plastic
			2 2 4	18	12				0	1	–	33	55	11	Non-Plastic
30			1 1 1	17	13			Loose gray SILT (A-4b), some fine to coarse sand; moist to wet.	0	1	–	31	56	12	Non-Plastic
33.0	482.1							Medium dense gray SANDY SILT (A-4a), trace gravel; wet.							
35			2 8 13	18	14				3	3	–	51	36	7	Non-Plastic
39.0	476.1							Medium hard to hard gray SANDSTONE; very fine to fine grained, slightly to moderately weathered, argillaceous, micaceous, thinly to thickly bedded, slightly fractured. @ 39.0'-40.5', highly weathered to decomposed.							
40			Core 120"	Rec 120"	RQD 100%	R-1		@ 43.2', qu = 9,344 psi. @ 39.6',42.0',43.1', low angle fractures.							
50			Core 120"	Rec 120"	RQD 100%	R-2									
59.0	456.1							Bottom of Boring - 59.0'							
60															

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

DRAWN | CHECKED

SCI-823-0.00

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Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring B-41 | Location: Sta. 136+99.7, 37.2 ft. RT of SR 823 CL | Date Drilled: 5/10/07

WATER OBSERVATIONS:
Water seepage at: 28.5'-35.0'
Water level at completion: 29.2' (prior to coring)
20.3' (includes drilling water)
22.1' (after 16 hours)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay
0.3	518.6						Topsoil - 4"						
		2 2 3	15	1		1.25	Medium stiff to stiff brown SILT (A-4b), little to some clay, trace to little fine to coarse sand, trace gravel; damp to moist.						
		1 2 3	16	2		1.5		0	0	–	4	62	34
5							@ 6.0'-15.0', mottled brown and gray.						
		2 2 3	18	3		1.0							
		2 4 5	18	4		1.0		0	0	–	15	68	17
10							@ 10.5', moist, trace clay.						
		3 2 4	18	5		0.75							
		1 3 4	18	6		0.75		0	1	–	18	63	18
15							@ 16.0'-17.5', very stiff.						
		6 9 13	18	7		2.5	@ 16.0'-16.3',18.5'-19.0', reddish brown.						
							@ 16.3'-17.5', 19.0'-20.0', gray to light gray.						
		5 5 6	17	8		1.0	@ 18.5'-20.0', some fine to coarse sand.	2	10	–	19	51	18
20													
20.5	498.4						Medium dense brown and gray mottled SANDY SILT (A-4a), some fine to coarse sand, little gravel, trace to little clay; contains rust stains and rock fragments; moist.						
		7 7 8	11	9									
23.5	495.4	5 8 8	18	10		4.5+	Hard gray SILT (A-4b), some fine to coarse sand, little clay; damp.						
25													
26.0	492.9	6 8 9	17	11			Medium dense brown and gray SANDY SILT (A-4a), little gravel, trace clay; contains rock fragments; damp.						
		3 7 8	16	12									
30.0	488.9						Medium stiff gray SILT (A-4b), little fine sand, little gravel; contains rock fragments; damp to moist.						
		WOH WOH 2	20	13		0.75							
35													
		9 15 50/2	14	14		–	@ 38.5'-40.0', hard.						
40.0	478.9						Medium hard gray SANDSTONE; fine grained, moderately to highly weathered, argillaceous, highly fractured to broken, contains argillaceous low angle fractures.						
		Core 48"	Rec 48"	RQD 69%	R-1								
42.9	476.0						Soft to medium hard gray SHALE interbedded with SANDSTONE; very fine to fine grained, highly weathered, broken.						
45													
46.4	472.5						Medium hard gray SANDSTONE; fine to medium grained, slightly to moderately weathered, micaceous, slightly to moderately fractured, contains typical low angle fractures.						
		Core 120"	Rec 116"	RQD 74%	R-2								
50													
55													
		Core 72"	Rec 72"	RQD 100%	R-3								
60.0	458.9						Bottom of Boring - 60.0'						

GRADATION

STANDARD PENETRATION (N)
Natural Moisture Content, % - ●
PL ⊢ LL
Blows per foot - ○
10 20 30 40

50+

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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

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Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring B-40 | Location: Sta. 136+89.0, 33.6 ft. LT of SR 823 CL | Date Drilled: 05/11/07 to 05/14/07

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	WATER OBSERVATIONS / DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
0	529.0						WATER OBSERVATIONS: Water seepage at: 34.7'-35.0', 43.5'-45.0'; Water level at completion: 29.8' (includes drilling water)							Natural Moisture Content, % - ● PL — LL; Blows per foot - ○ 10 20 30 40
0.4	528.6						Topsoil - 5"							
		2 4 5	16	1		3.25	Very stiff brown SANDY SILT (A-4a), little clay, little gravel; damp to moist.							
3.0	526.0						Very stiff brown SILTY CLAY (A-6b), trace fine to coarse sand; moist.	0	1	–	2	54	43	
		3 3 3	16	2		3.0	@ 5.0', 6" recovery in Shelby Tube.							
5					ST-1									
7.5	521.5						Very stiff brown SILT AND CLAY (A-6a), trace fine to coarse sand; moist.	0	1	–	2	65	32	
		2 2 4	15	3		2.5	@ 10.0', 4" recovery in Shelby Tube.							
10					ST-2									
12.0	517.0						Very loose to loose brown and gray SILT (A-4b), little to some clay, little fine sand; moist to wet.	0	0	–	16	64	20	Non-Plastic
		1 2 2	18	4										
	514.0						Stiff to very stiff gray SILT (A-4b), little to some clay, trace fine sand; moist.							
			24	5	ST-3	1.0	@ 15.0', no recovery in Shelby Tube, pushed split spoon.							
		2 3 3	18	6		1.5		0	0	–	8	70	22	
20							@ 20.0', 24" recovery in Shelby Tube.							
					ST-4	1.0-2.0	@ 21.0'-30.0', contains rock fragments.	0	1	–	3	77	19	
		3 4 4	10	7		2.75								
25							@ 26.0'-27.5', hard, some fine to coarse sand, damp.							
		4 8 9	14	8		4.5+	@ 26.0'-30.0', brown.	2	15	–	11	55	17	
		7 9 9	13	9		2.25								
30.0	499.0						Hard gray SANDY SILT (A-4a), some fine to coarse sand, little clay, trace to little gravel; contains rock fragments; damp to moist.							
		3 5 6	18	10		4.5+								
35														
		5 6 8	18	11		4.5+		7	20	–	12	47	13	
40														
42.5	486.5						Loose gray and brown FINE SAND (A-3), little silt; wet.							
		3 3 4	17	12										
48.5	480.5													
49.0	480.0	50/3	3	13			Severely weathered gray SANDSTONE.							50/3
50		Core 60"	Rec 60"	RQD 86%	R-1		Medium hard light gray SANDSTONE; fine to medium grained, moderately to highly weathered, highly fractured. @ 49.6'-49.7', high angle fracture. @ 53.0'-53.6', 54.8'-56.1', argillaceous, dark gray.							
55		Core 60"	Rec 60"	RQD 91%	R-2									
59.0	470.0						Medium hard to hard light gray SANDSTONE; fine grained. Medium hard to hard light gray SANDSTONE; fine grained, slightly weathered, slightly to moderately fractured. @ 61.5'-61.8', argillaceous zone. @ 64.7'-65.2', 65.9'-66.4', dark gray argillaceous zone. @ 65.6'-65.7', high angle fracture.							
60														
65		Core 120"	Rec 120"	RQD 94%	R-3									
69.0	460.0						Bottom of Boring - 69.0'							
70														
75														
80														
85														
90														

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Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring B-40 | Location: Sta. 136+89.0, 33.6 ft. LT of SR 823 CL | Date Drilled: 05/11/07 to 05/14/07

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	WATER OBSERVATIONS / DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
60	469.0						WATER OBSERVATIONS: Water seepage at: 34.7'-35.0', 43.5'-45.0'; Water level at completion: 29.8' (includes drilling water)							Natural Moisture Content, % - ● PL — LL; Blows per foot - ○ 10 20 30 40
		Core 120"	Rec 120"	RQD 94%	R-3		grained. Medium hard to hard light gray SANDSTONE; fine grained, slightly weathered, slightly to moderately fractured. @ 61.5'-61.8', argillaceous zone. @ 64.7'-65.2', 65.9'-66.4', dark gray argillaceous zone. @ 65.6'-65.7', high angle fracture.							
69.0	460.0						Bottom of Boring - 69.0'							
70														
75														
80														
85														
90														

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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

DLZ OHIO INC. * 6121 HUNTLEY ROAD, COLUMBUS, OHIO 43229 * (614)888-0040

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-30 | Location: Sta. 139+35.0, 52.3 ft. LT of SR 823 CL | Date Drilled: 3/8/05

WATER OBSERVATIONS: Water seepage at: None
Water level at completion: 12.2' (Includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION % Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ⊢ LL Blows per foot - ○ 10 20 30 40
0	637.1						Topsoil - 5" / 3.2' soil removed before drilling							
0.4	636.7						Soft to medium hard gray and brown SANDSTONE; very fine to fine grained, highly weathered to decomposed, argillaceous, thinly to thickly bedded, moderatly fractured.							
5		Core 120"	Rec 120"	RQD 62%	R-1		@ 1.0'-1.3',5.0'-5.1', broken zones. @ 3.6'-3.9', clay filled zone. @ 5.8'-6.4', qu = 5,441 psi. @ 3.9'-4.7', high angle clay filled fracture.							
7.5	629.6						Medium hard gray very fine grained SANDSTONE; very fine to fine grained, slightly to moderately weathered, argillaceous, micaceous, thinly to thickly bedded, slightly fractured.							
10														
15		Core 120"	Rec 120"	RQD 100%	R-2		@ 11.9',15.9',16.8',18.8' low angle clay filled fractures.							
20.0	617.1						Bottom of Boring - 20.0'							
25														
30														

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Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-31 | Location: Sta. 138+68.7, 108.5 ft. LT of SR 823 CL | Date Drilled: 3/8/05

WATER OBSERVATIONS: Water seepage at: None
Water level at completion: 5.3' (Includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	GRADATION % Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ⊢ LL Blows per foot - ○ 10 20 30 40
0	621.4						Topsoil - 6" / 4.0' soil removed before drilling							
0.5	620.9						Soft to medium hard brown SANDSTONE; very fine to fine grained, highly weathered to decomposed, argillaceous, thinly to thickly bedded, highly fractured, with typically low angle clay filled fractures.							
5		Core 120"	Rec 110"	RQD 50%	R-1		@ 0.0'-0.9', lost recovery. @ 0.9'-2.0', broken zones. @ 5.1'-5.4',6.8'-7.0',7.7'-7.9' high angle clay filled fractures. @ 6.3'-6.7', qu = 1,254 psi. @ 7.9'-9.8', iron staining.							
7.9	613.5						Medium hard to hard gray SANDSTONE; very fine to fine grained, slightly to moderately weathered, argillaceous, micaceous, thinly to thickly bedded, unfractured to slightly fractured.							
10														
15		Core 120"	Rec 116"	RQD 96%	R-2		@ 10.4'-10.5', broken zone. @ 11.0'-11.4',11.9'- 12.1',15.2', rust stained zones. @ 11.2', low angle rust stained fracture. @ 19.6'-20.0', lost recovery.							
20.0	601.4						Bottom of Boring - 20.0'							
25														
30														

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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

DLZ OHIO INC. * 6121 HUNTLEY ROAD, COLUMBUS, OHIO 43229 * (614)888-0040

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring B-42 | Location: Sta. 138+99.0, 32.7 ft. LT of SR 823 CL | Date Drilled: 05/22/07

WATER OBSERVATIONS: Water seepage at: None; Water level at completion: 12.6' (includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
0	608.1													
0.5	607.6						Topsoil - 6"							
		4 20 27	18	1A 1B			Dense brown SANDY SILT (A-4a), little gravel, trace sitly clay; damp.	39	11	–	6	34	10	Natural Moisture Content, % - ● PL ⊢ LL; Blows per foot - ○ 10 20 30 40; Non-Plastic
2.0	606.1						Severely weathered brown SANDSTONE, very fine to fine grained.							
		32 50/5	10	2										50+
4.5	603.6						Medium hard brown SANDSTONE; very fine to fine grained, highly weathered, argillaceous, slightly micaceous, massive, highly fractured to broken, contains iron stained, argillaceous fractures. @ 5.0'-5.2', high angle fracture. @ 5.7'-5.9', possible lost recovery.							
5		Core 36"	Rec 33"	RQD 25%	R-1									
		Core 60"	Rec 60"	RQD 70%	R-2		@ 8.9'-9.2', 9.5'-9.8', highly weathered to decomposed, broken. @ 11.7'-11.9', argillaceous, broken zone.							
12.2	595.9						Soft to medium hard brown SANDSTONE; very fine to fine grained, highly weathered, argillaceous, massive, highly fractured to broken, contains iron staining, contains few to moderate argillaceous laminations. @ 14.3'-14.5', 14.7'-15.3', 16.8'-17.0', 17.8'-18.0', 18.8'-19.0', 20.0'-20.3', 20.6'-20.9', iron stained high angle fractures.							
15		Core 60"	Rec 60"	RQD 71%	R-3									
20		Core 60"	Rec 60"	RQD 86%	R-4		@ 21.1', gray.							
25		Core 60"	Rec 56"	RQD 39%	R-5		@ 23.5', high angle fracture brown, decomposed, broken.							
25.6	582.5						Medium hard brownish gray SANDSTONE; very fine to fine grained, moderately to highly weathered, micaceous, argillaceous, moderately to highly fractured, contains few argillaceous laminations. @ 26.4'-26.6', iron stained high angle fracture.							
30		Core 60"	Rec 60"	RQD 78%	R-6		Medium hard gray SANDSTONE; very fine to fine grained, moderately to slightly weathered, micaceous, argillaceous, moderately to slightly fractured. @ 26.6', gray, contains argillaceous low angle fractures.							
35		Core 60"	Rec 60"	RQD 100%	R-7									
40		Core 60"	Rec 60"	RQD 100%	R-8									
44.5	563.6	Core 24"	Rec 24"	RQD 100%	R-9		Bottom of Boring - 44.5'							
45														
50														
55														
60														

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Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring B-43 | Location: Sta. 139+00.9, 43.0 ft. RT of SR 823 CL | Date Drilled: 05/17/07 to 05/18/07

WATER OBSERVATIONS: Water seepage at: None; Water level at completion: 28.0' (includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
0	573.4													
0.4	573.0						Topsoil - 5"							
		7 7 11	18	1			Medium dense to dense brown GRAVEL WITH SAND AND SILT (A-2-4), trace to little clay; contains sandstone fragments; dry to damp.							
5		26 18 20	16	2				54	8	–	5	22	11	Natural Moisture Content, % - ● PL ⊢ LL; Blows per foot - ○ 10 20 30 40; Non-Plastic
		33 24 31	15	3			@ 6.0'-7.5', very dense.	60	8	–	5	21	6	Non-Plastic
8.0	565.4						Severely weathered brownish gray SANDSTONE.							55
10		10 16 38	15	4										58
10.5	562.9						Medium hard brown SANDSTONE; very fine to fine grained, highly weathered, micaceous, massive, highly fractured. @ 11.6', thin clay filled fracture. @ 12.0'-13.4', iron stained low angle fractures.							
		Core 18"	Rec 18"	RQD 91%	R-1									
15		Core 60"	Rec 60"	RQD 96%	R-2		@ 14.5', brownish-gray, moderately to highly fractured.							
20		Core 60"	Rec 60"	RQD 85%	R-3		@ 17.4'-17.5', iron stained high angle fracture. @ 17.6', gray, contains pyritic halos. @ 21.2'-22.6', iron stained zone.							
25		Core 60"	Rec 60"	RQD 96%	R-4		@ 23.4'-23.5', clay filled high angle fracture.							
25.5	547.9						Medium hard to hard gray SANDSTONE; very fine to fine grained, slightly weathered, micaceous, fossiliferous, massive, moderately fractured. @ 27.3', slightly to moderately fractured.							
30		Core 60"	Rec 60"	RQD 94%	R-5		@ 29.1', iron stained low angle fracture. Medium hard to hard gray SANDSTONE; very fine to fine grained, slightly weathered, micaceous, fossiliferous, massive, moderately fractured.							
35		Core 60"	Rec 60"	RQD 93%	R-6		@ 35.8'-35.9', 36.0'-36.1', iron stained high angle fractures. @ 37.2', thin clay filled low angle fracture.							
40		Core 42"	Rec 42"	RQD 95%	R-7									
40.5	532.9						Bottom of Boring - 40.5'							
45														
50														
55														
60														

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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

DLZ OHIO INC. * 6121 HUNTLEY ROAD, COLUMBUS, OHIO 43229 * (614)888-0040

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-29 | Location: Sta. 140+26.7, 84.5 ft. LT of SR 823 CL | Date Drilled: 3/8/05

WATER OBSERVATIONS: Water seepage at: None; Water level at completion: 48.7' (after 48 hrs.)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ⊢ LL Blows per foot - ○ 10 20 30 40
0	667.6						Topsoil - 5" / 3.0' soil removed before drilling							
0.4	667.2						Soft gray SANDSTONE; very fine to fine grained, decomposed, argillaceous, thinly bedded, very broken. @ 1.9'-9.5', lost recovery due to decomposed rock.							
5		Core 120"	Rec 30"	RQD 0%	R-1									
9.5	658.1						Soft to medium hard brown and gray SANDSTONE; very fine to fine grained, highly weathered to decomposed, argillaceous, thinly to thickly bedded, highly fractured, with typically low angle clay filled fractures.							
10		Core 36"	Rec 36"	RQD 64%	R-2		@ 15.4' to 15.5', high angle rust stained fracture.							
15.5	652.1						Medium hard brown and gray SANDSTONE; very fine to fine grained, moderately to highly weathered, argillaceous, micaceous, thinly to thickly bedded, moderately fractured, contains few to moderate argillaceous laminations.							
20		Core 120"	Rec 120"	RQD 92%	R-3		@ 21.0',22.0',22.3', low angle clay filled fractures. @ 27.5'-28.1', high angle rust stained fracture.							
25							@ 28.2', low angle rust stained fracture.							
26.5	641.1						Medium hard to hard gray SANDSTONE; very fine to fine grained, slightly to moderately weathered, argillaceous, micaceous, massive, unfractured to slightly fractured.							
30		Core 120"	Rec 120"	RQD 92%	R-4									
35		Core 120"	Rec 120"	RQD 100%	R-5		@ 34.0'-52.0', pyritic. @ 31.1',34.6',35.3', low angle clay filled fractures.							
40														
45		Core 120"	Rec 120"	RQD 100%	R-6									
50							@ 53.9'-54.4',58.2'-59.5', high angle rust stained fractures.							
55		Core 120"	Rec 120"	RQD 82%	R-7		@ 56.2',56.9', low angle rust stained fractures.							
59.6	608.0													

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Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ⊢ LL Blows per foot - ○ 10 20 30 40
60	607.6						Hard gray SANDSTONE; very fine to fine grained, slightly weathered, argillaceous, micaceous, massive, unfractured to slightly fractured. @ 61.8'-62.4', qu = 13,956 psi.							
65		Core 120"	Rec 120"	RQD 100%	R-8									
70														
71.4	596.2						Medium hard to hard gray SANDSTONE; very fine to fine grained, slightly weathered, argillaceous, micaceous, massive, slightly fractured, contains few argillaceous laminations.							
75		Core 120"	Rec 120"	RQD 100%	R-9									
80							@ 80.9', contains few to moderate argillaceous laminations.							
85.0	582.6	Core 24"	Rec 24"	RQD 100%	R10		Bottom of Boring - 85.0'							
90														

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

DRAWN | CHECKED

SCI-823-0.00

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Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring B-44 | Location: Sta. 140+14.9, 37.8 ft RT of SR 823 CL | Date Drilled: 05/21/07 to 05/22/07

WATER OBSERVATIONS: Water seepage at: None; Water level at completion: 10.5' (includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
0.3	602.0 / 601.7						Topsoil - 4"							
		3 2 4	12	1		–	Very stiff brown SANDY SILT (A-4a), little to some clay, trace gravel; contains sandstone fragments; dry to damp.							
5		4 4 8	18	2		–		9	8	–	12	45	26	
		5 7 14	15	3		–								
10		6 11 13	18	4		–								
		8 13 22	18	5										
13.5	588.5													
15		13 18 21	18	6			Medium dense to dense brown SILT (A-4b), some fine to coarse sand, little clay, trace gravel; damp.	3	19	–	12	51	15	
		11 17 27	18	7										
20		26 21 27	18	8										
		9 11 18	16	9										
23.5	578.5													
24.0	578.0	50/5	5	10			Severely weathered brown SANDSTONE.							50+
25		Core 30"	Rec 30"	RQD 43%	R-1		Medium hard brown SANDSTONE; very fine to fine grained, highly weathered, argillaceous, massive, highly fractured to broken, contains iron stained low angle fractures. @ 25.8'-26.1', high angle fracture. @ 26.1', moderately to highly fractured.							
28.0	574.0	Core 60"	Rec 60"	RQD 95%	R-2		Medium hard gray SANDSTONE; very fine to fine grained, moderately weathered, micaceous, slightly argillaceous, moderately to highly fractured.							
30														
32.3		Core 60"	Rec 60"	RQD 76%	R-3		@ 32.3'-32.6', argillaceous, broken zone. @ 32.7'-33.7', brown, iron stained zone. @ 32.5', slightly to moderately fractured.							
35														
		Core 60"	Rec 59"	RQD 98%	R-4									
40														
		Core 60"	Rec 60"	RQD 92%	R-5		@ 43.7'-44.0', broken.							
45														
		Core 60"	Rec 60"	RQD 95%	R-6									
50														
		Core 60"	Rec 60"	RQD 100%	R-7									
55														
56.3		Core 60"	Rec 59"	RQD 98%	R-8		@ 56.3'-56.8', high angle fracture.							
60														

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LOG OF: Boring B-44 | Location: Sta. 140+14.9, 37.8 ft RT of SR 823 CL | Date Drilled: 05/21/07 to 05/22/07

WATER OBSERVATIONS: Water seepage at: None; Water level at completion: 10.5' (includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
60	542.0						Medium hard gray SANDSTONE; very fine to fine grained, slightly to moderately weathered, micaceous, slightly argillaceous, massive, moderately to highly fractured.							
		Core 30"	Rec 30"	RQD 100%	R-9									
64.0	538.0						Bottom of Boring - 64.0'							
65														
70														
75														
80														
85														
90														

STANDARD PENETRATION (N): Natural Moisture Content, % - ●; PL ⊢—⊣ LL; Blows per foot - ○; 10 20 30 40

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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0248
SR823 OVER LITTLE SCIOTO RIVER AND SR 335

SCI-823-0.00

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-35A | Location: Sta. 131+29.4, 14.1 ft. RT of SR 823 CL | Date Drilled: 1/12/06

WATER OBSERVATIONS: Water seepage at: 24.5'-25.0', 68.5'-79.0'
Water level at completion: 67.8' (prior to coring)
13.4' (includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
0.3	554.3						Limestone gravel (driveway) - 3"							
		3 4 6	12	1		3.0	Very stiff yellowish brown CLAY (A-7-6), some silt, trace fine sand; damp to moist.	0	0	–	2	32	66	
5.0	549.6	6 6 8	13	2		2.25								
					P-1	1.0	Stiff brown SILT (A-4b), little fine sand, little to some clay; contains thin clay seams; moist.	0	0	–	4	63	33	
		2 2 3	18	3		1.5		0	0	–	1	71	28	
11.0	543.6						Medium stiff brown SILT AND CLAY (A-6a), trace fine to coarse sand; moist.	0	1	–	1	51	47	
12.4	542.2				P-2A	0.75								
					P-2B	0.75	Medium stiff to stiff brown SILT (A-4b), some clay, trace fine to coarse sand; moist to wet.	0	2	–	2	66	30	
		2 4 5	18	4		1.25								
		12 3 4	18	5		1.00								
20.5	534.1						Stiff gray CLAY (A-7-6), little to some silt, trace fine sand; damp.							
		3 5 6	18	6		1.5								
23.5	531.1	WOH 1 1	18	7			Very loose gray SILT (A-4b); moist to wet.	0	0	–	0	75	25	Non-Plastic
					P-3			0	0	–	1	77	22	Non-Plastic
30	524.6						Loose gray SILT (A-4b); moist to wet.							
32.0	522.6						Very stiff to hard grayish brown CLAY (A-7-6), trace fine sand; damp to moist.							
		5 9 13	18	8		4.5+								
		4 6 9	18	9		4.5+		0	0	–	1	20	79	
		5 9 11	18	10		3.0								
		5 10 14	18	11		4.5+								
		5 9 13	18	12		4.5+								
		4 7 7	18	13		2.75								

Client: TranSystems, Inc. | Project: SCI-823-0.00 | Job No. 0121-3070.03

LOG OF: Boring TR-35A | Location: Sta. 131+29.4, 14.1 ft. RT of SR 823 CL | Date Drilled: 1/12/06

WATER OBSERVATIONS: Water seepage at: 24.5'-25.0', 68.5'-79.0'
Water level at completion: 67.8' (prior to coring)
13.4' (includes drilling water)

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive	Sample No. Press / Core	Hand Penetrometer (tsf)	DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	STANDARD PENETRATION (N)
60	494.6						Very stiff to hard grayish brown CLAY (A-7-6), trace fine sand; damp to moist.							
62.0	492.6						Stiff mottled dark brown and black ORGANIC SILT (A-4b), trace fine to coarse sand, trace gravel; moist.							
		4 5 6	18	14		1.5		1	2	–	2	66	29	Non-Plastic
65.5	489.1				P-4A	1.0	Medium stiff to stiff dark brown CLAY (A-7-6), trace fine to coarse sand; moist.	0	6	–	3	64	27	
66.9	487.7				P-4B	1.75	Stiff gray SILT (A-4b), little to some fine to coarse sand; damp to moist.	0	1	–	20	63	16	Non-Plastic
		3 4 4	18	15										
72.0	482.6						Loose gray FINE SAND (A-3), trace silty clay; moist to wet.							
		WOH 3 5	18	16										
77.0	477.6						Loose to medium dense brown COARSE AND FINE SAND (A-3a), trace to little silty clay, trace gravel; moist.							
		5 50/5	10	17a 17b			@ 79.5', some silt, trace clay.							50+
81.0	473.6						Medium hard gray SANDSTONE; very fine to fine grained, highly weathered, argillaceous, micaceous, medium to thickly bedded, moderately fractured.							
		Core 60"	Rec 60"	RQD 71%	R-1		@ 81.7', 82.6', 83.7', low angle fractures. @ 84.1'-84.7',84.3'-84.5', high angle fractures. @ 85.1', qu = 341 psi.							
86.0	468.6						Bottom of Boring - 86.0'							

STRUCTURE FOUNDATION INVESTIGATION
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