

**PROJECT DESCRIPTION**

THIS PROJECT CONSISTS IN PART OF CONSTRUCTING A BRIDGE FOR PROPOSED US 52 RAMP B OVER OHIO RIVER ROAD (CR 503) AND US 52. THE STRUCTURE AS PLANNED, IS A FIVE-SPAN STRUCTURE (ALTERNATIVE 4) USING MSE WALLS TO HOLD BACK THE ROADWAY EMBANKMENTS AND CONTAIN 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. BEDROCK OF THE PENNSYLVANIAN BREATHITT FORMATION CAN BE FOUND AT THE TOP OF THE SLOPES ROUGHLY ABOVE ELEVATION 770 IN THIS AREA.

**RECONNAISSANCE**

SEVERAL SITE RECONNAISSANCE VISITS WERE MADE BETWEEN JUNE 2004 AND SEPTEMBER 2006. THE PROJECT AREA IS JUST NORTH OF THE OHIO RIVER AND IS WITHIN THE OHIO RIVER ROAD (CR 503) AND US 52 THE RIGHT OF WAY. THE ROCK CUT AT OHIO RIVER ROAD IS GENERALLY STABLE, WITH OCCASIONAL SMALL ROCK FALL EVENTS. THE GROUND COVER IN THE AREA IS MOWED GRASS WITH SMALL TREES AND BRUSH NEAR THE CULVERT INLETS AND ALONG THE SOUTH SIDE OF EASTBOUND US 52.

**SUBSURFACE EXPLORATION**

THE FIELD EXPLORATION CONSISTED OF DRILLING A TOTAL OF ELEVEN STRUCTURE BORINGS FOR THE PROPOSED BRIDGE AND MSE WALLS. BORINGS B-48 THROUGH B-53 WERE DRILLED FOR THE CURRENTLY PROPOSED STRUCTURE, AS INDICATED ON THE STRUCTURE SITE PLAN. THESE BORINGS WERE DRILLED BETWEEN MAY 15 AND MAY 24, 2007. BORINGS TR-62, TR-64, TR-66, TR-71A AND TR-73A WERE DRILLED FOR A PREVIOUS DESIGN CONFIGURATION. BORINGS TR-62, TR-64 AND TR-66 WERE DRILLED BETWEEN MARCH 18 AND 30, 2005 AND BORINGS TR-71A AND TR-73A WERE DRILLED BETWEEN JULY 27 AND 31, 2006 USING 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**

AT THE GROUND SURFACE, BORINGS B-48, B-51, B-52, TR-64, TR-70A, TR-71A AND TR-73A ENCOUNTERED APPROXIMATELY 1 TO 10 INCHES OF TOPSOIL AND THE REMAINDER OF THE BORINGS, EXCEPT BORING B-53, ENCOUNTERED APPROXIMATELY 10 TO 12 INCHES OF ASPHALT PAVEMENT AND/OR 4 TO 6 INCHES OF AGGREGATE BASE. IN BORING B-53, FILL MATERIAL WAS ENCOUNTERED BETWEEN THE GROUND SURFACE AND A DEPTH OF 3.5 FEET.

BELOW THE TOPSOIL, ASPHALT PAVEMENT, AGGREGATE BASE OR FILL MATERIAL, THE BORINGS GENERALLY ENCOUNTERED NATURAL COHESIVE SOILS INTERBEDDED WITH GRANULAR SOILS, EXCEPT BORINGS B-48 THROUGH B-50, WHERE 6.0 TO 7.2 FEET OF POSSIBLE FILL CONSISTING OF PRIMARILY OF SANDY SILT (A-4A) AND SILT (A-4B) WERE ENCOUNTERED. GENERALLY, THE NATURAL COHESIVE SOILS CONSISTED OF STIFF TO VERY STIFF SANDY SILT (A-4A), SOFT TO VERY STIFF SILT (A-4B), AND STIFF TO VERY STIFF SILT AND CLAY (A-6A) WHILE THE NATURAL GRANULAR SOILS CONSISTED OF MEDIUM DENSE GRAVEL WITH SAND AND SILT (A-2-4) AND MEDIUM DENSE TO VERY DENSE COARSE AND FINE SAND (A-3A). OCCASIONALLY, MEDIUM DENSE GRAVEL WITH SAND (A-1-B) AND GRAVEL WITH SAND, SILT AND CLAY (A-2-6) WERE ALSO ENCOUNTERED. THE NATIVE SOIL EXTENDED TO DEPTHS RANGING BETWEEN APPROXIMATELY 3.5 AND 17.0 FEET BELOW THE GROUND SURFACE, WHERE BEDROCK WAS ENCOUNTERED. NOTE THAT BEDROCK WAS ENCOUNTERED BELOW FILLS AT A DEPTH OF 3.5 FEET IN BORING B-53.

IN THE AREA OF THE PROPOSED STRUCTURE, BEDROCK WAS ENCOUNTERED IN ALL BORINGS. SEVERELY WEATHERED, ARGILLACEOUS SANDSTONE WAS ENCOUNTERED IN ALL BORINGS ABOVE THE COMPETENT SANDSTONE. THE BEDROCK GENERALLY CONSISTED OF SOFT TO HARD, SLIGHTLY TO HIGHLY WEATHERED, ARGILLACEOUS SANDSTONE. THE AMOUNT OF ROCK RECOVERED IN EACH CORE RUN VARIED BETWEEN 87 AND 100 PERCENT. THE ROCK QUALITY DESIGNATION (ROD) OF THE BEDROCK RANGED BETWEEN 0 AND 100 PERCENT WITH AN AVERAGE OF 56 PERCENT, INDICATING FAIR ROCK QUALITY. GENERALLY, THE ROD VALUES WERE LOWER IN THE UPPER PORTION OF THE BEDROCK AND INCREASED AT GREATER DEPTHS.

SEEPAGE WAS OBSERVED IN BORINGS B-48 THROUGH B-51, TR-66, TR-70A, TR-71A, AND TR-73A. THERE WERE NO MEASURABLE WATER LEVELS IN ANY OF THE BORINGS PRIOR TO ROCK CORING EXCEPT BORING TR-66, WHERE GROUNDWATER WAS ENCOUNTERED AT A DEPTH OF 14.0 FEET.

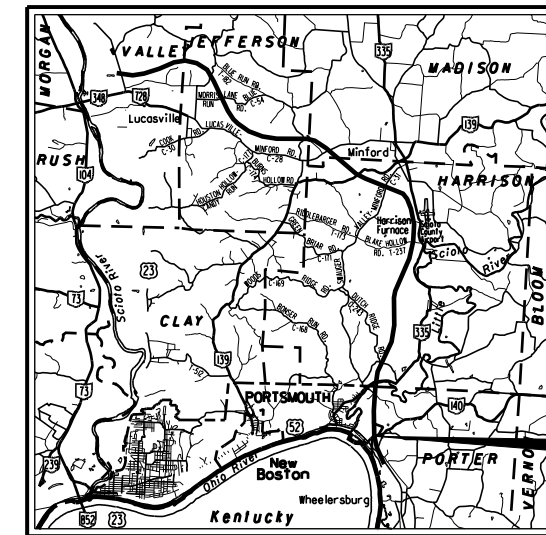
LEGEND		ODOT CLASS	CLASSIFIED MECH./VISUAL	
	Gravel with Sand (A-1-b)	A-1-b	2	2
	Gravel with Sand and Silt (A-2-4)	A-2-4	3	6
	Coarse and Fine Sand (A-3a)	A-3a	1	4
	Sandy Silt (A-4a)	A-4a	5	9
	Silt (A-4b)	A-4b	8	8
	Silt and Clay (A-6a)	A-6a	5	2
	TOTAL		24	31
	Sandstone	VISUAL		
	Weathered Sandstone	VISUAL		
	Weathered Siltstone	VISUAL		
	Topsoil	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/Y/Z	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.



LOCATION MAP

SCALE IN MILES

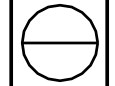


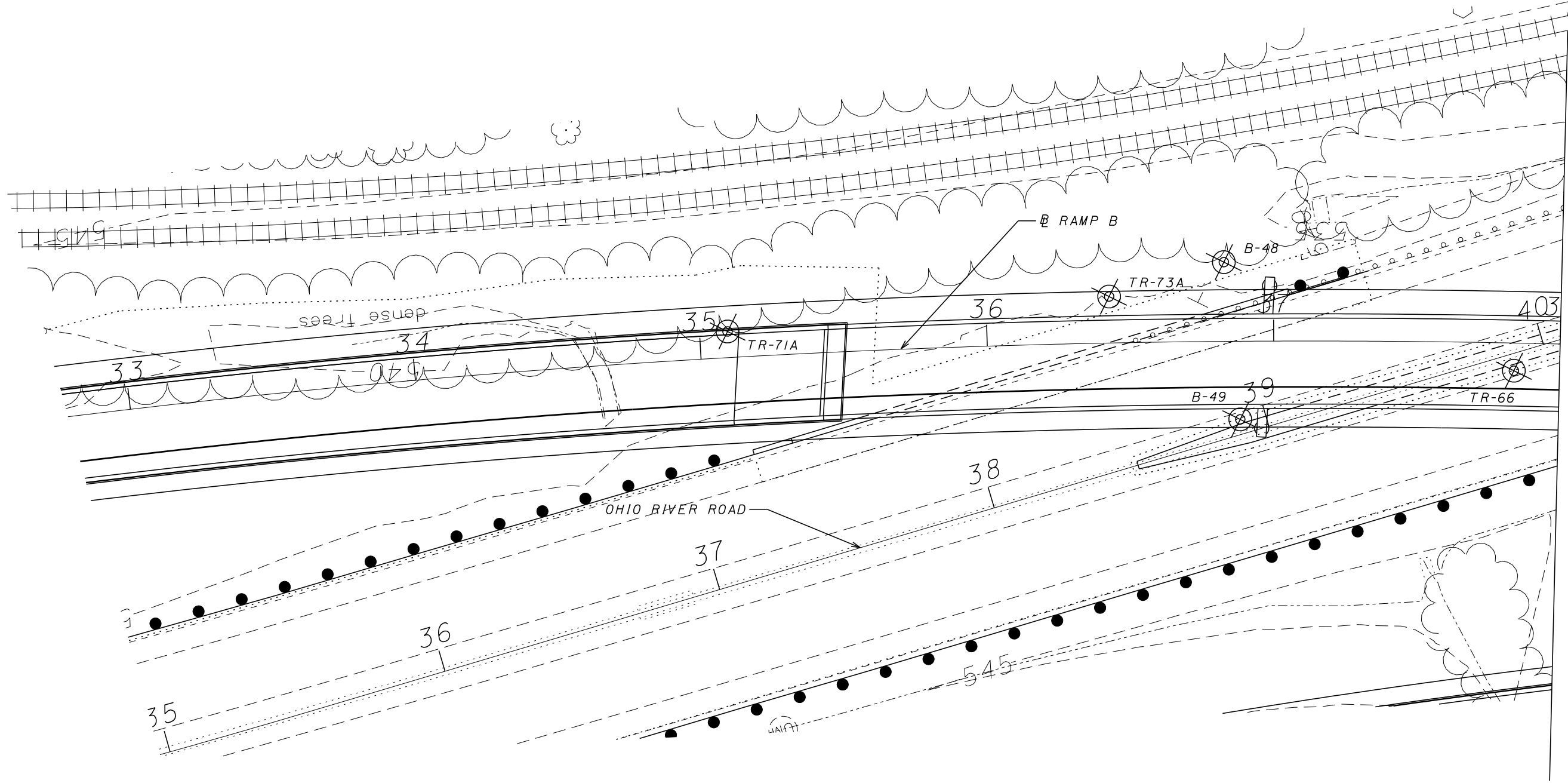
**PARTICLE SIZE DEFINITIONS**

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 03/18-30/05, 07/27-31/06, 05/15-24/07
- DRAWN - RJH & AMJ 8/09
- REVIEWED - AEN 8/21/09

8/21/2009 3:25:41 PM M:\proj\012\03070.03\Portsmouth Bridge Drawings\Phase 3\SCI-823-0067\Title.dgn





0 10 20 40  
HORIZONTAL  
SCALE IN FEET

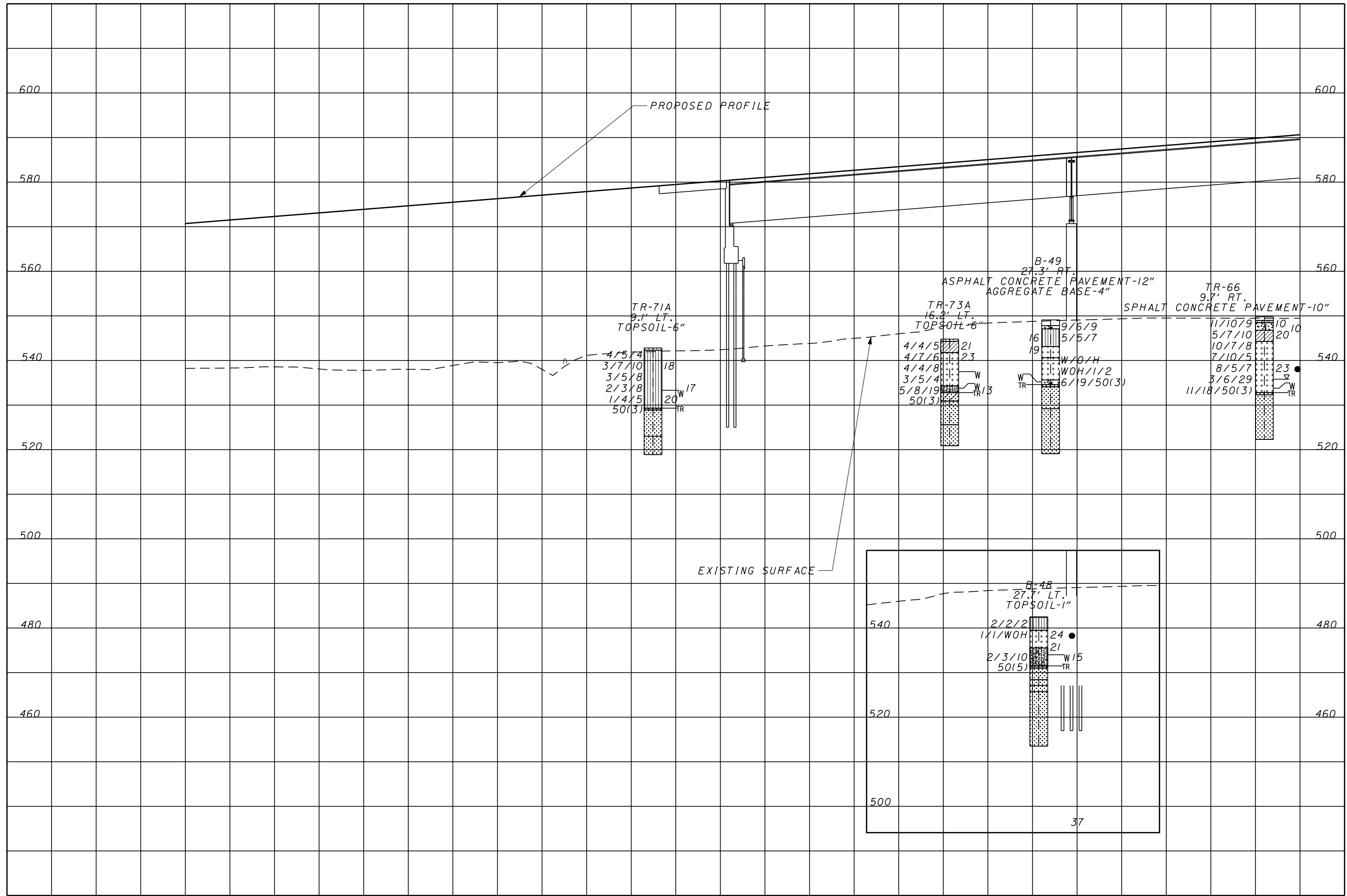
DRAWN  
CHECKED

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. SCI-823-0067L  
US 52 RAMP B TO SOUTHBOUND SR 823

SCI-823-0.00

2 / 10



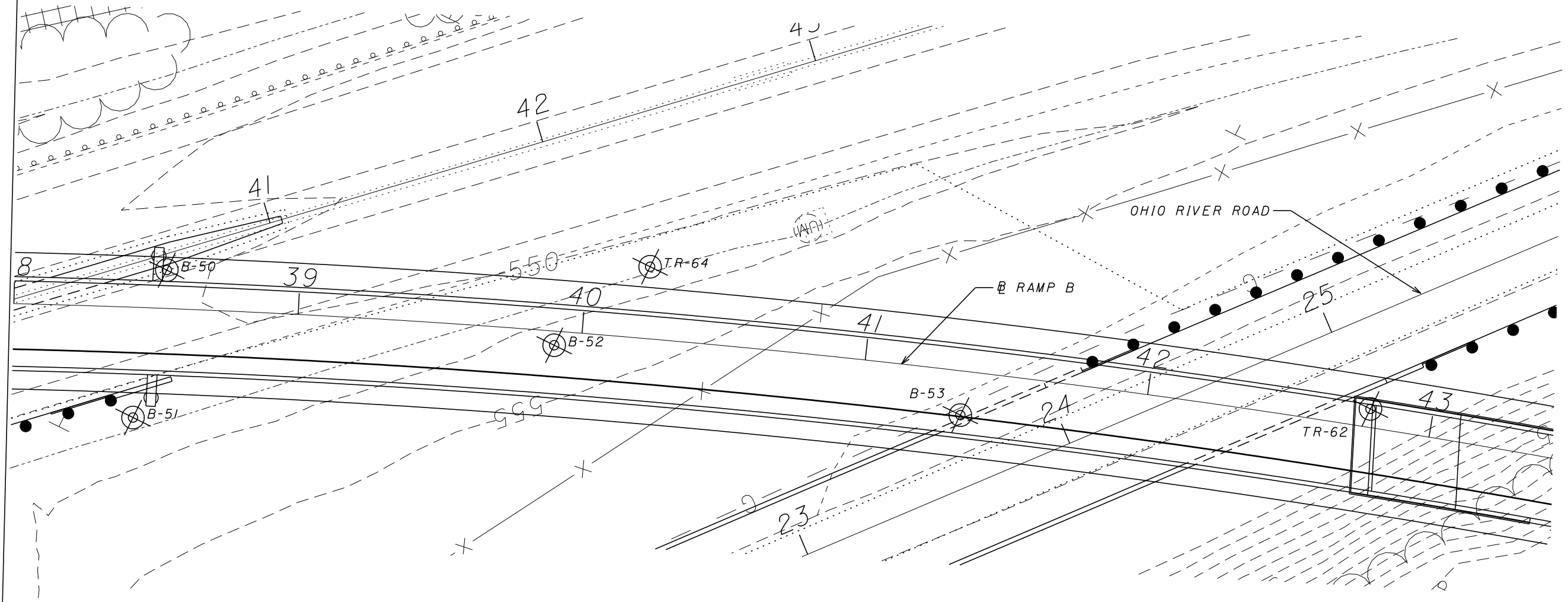


STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. SCI-823-0067  
 US 52 RAMP B TO SOUTHBOUND SR 823

SCI-823-0.00



DRAWN  
 CHECKED



0 10 20 40  
 HORIZONTAL  
 SCALE IN FEET

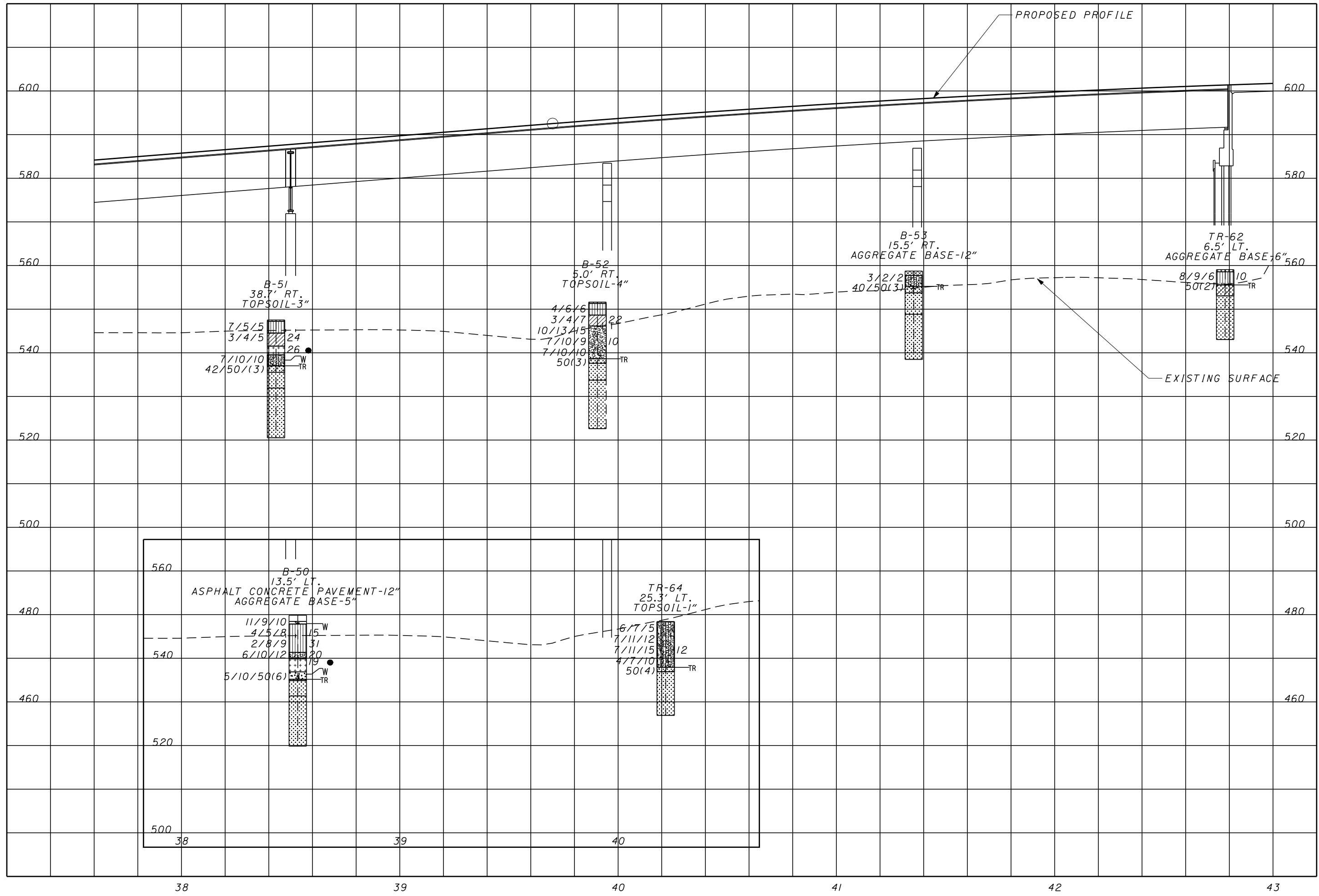
DRAWN  
 CHECKED

**STRUCTURE FOUNDATION INVESTIGATION**  
**BRIDGE NO. SCI-823-0067L**  
**US 52 RAMP B TO SOUTHBOUND SR 823**

SCI-823-0.00

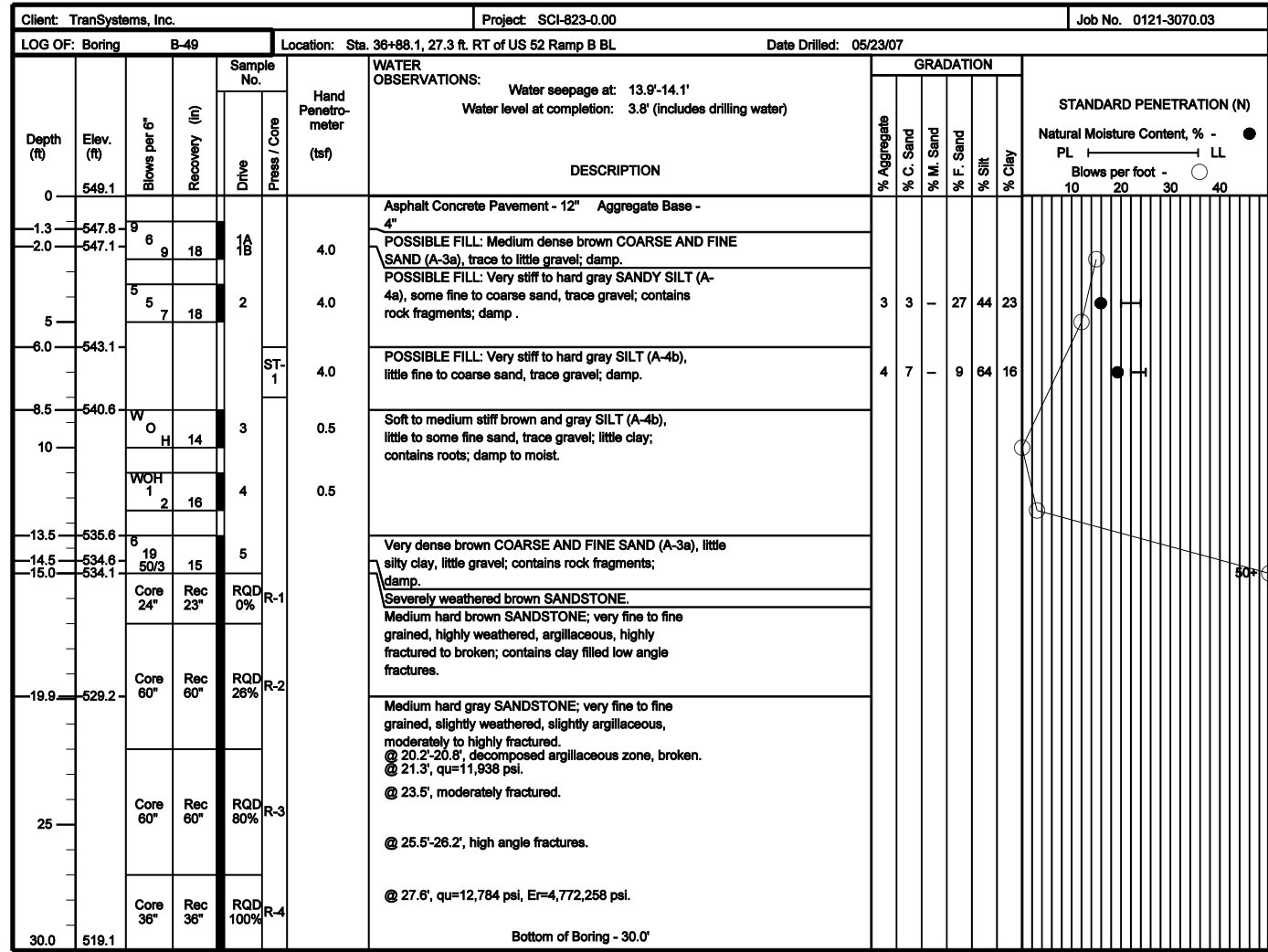
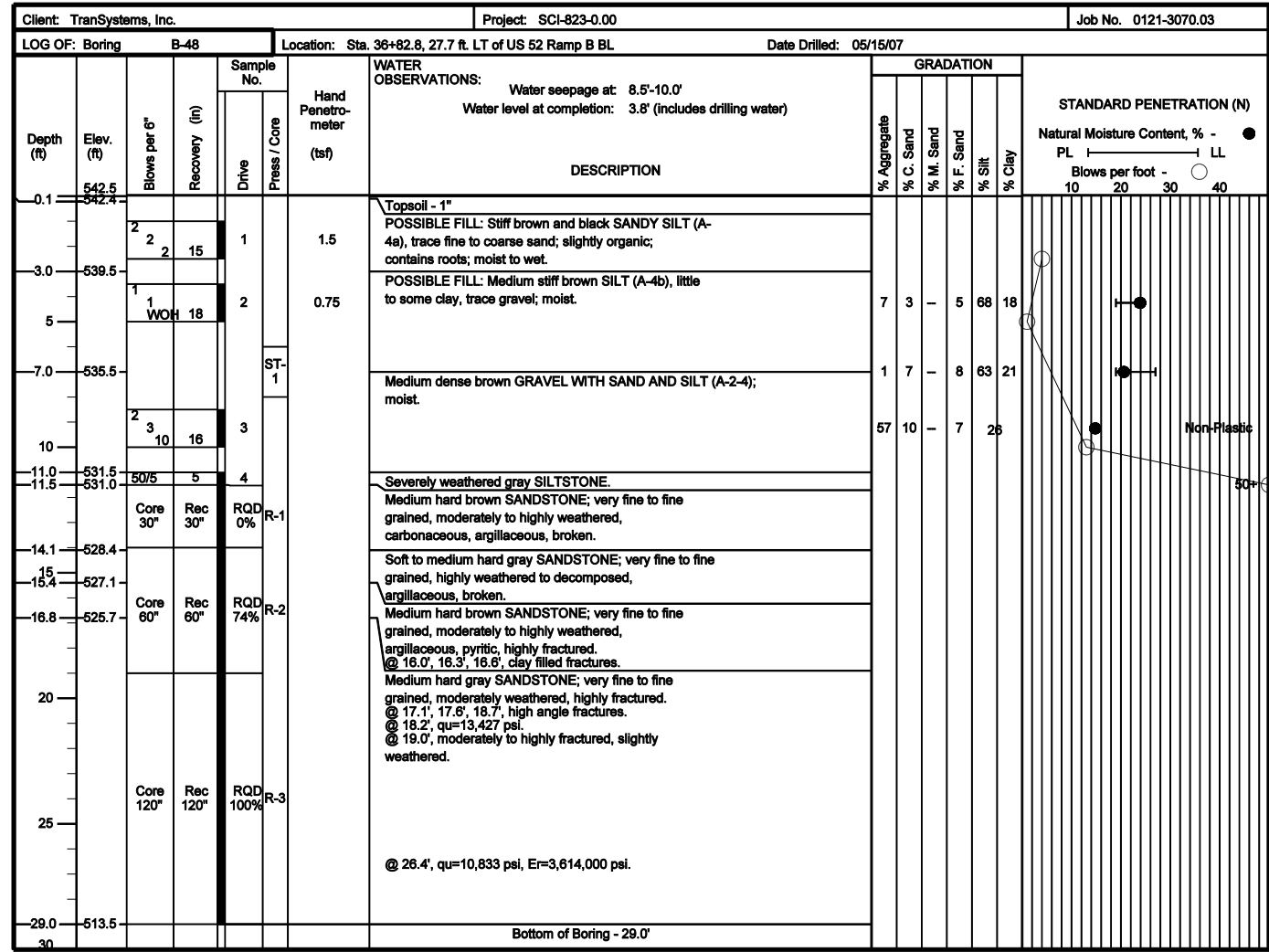
4 / 10





DRAWN  
 CHECKED  
**STRUCTURE FOUNDATION INVESTIGATION**  
**BRIDGE NO. SCI-823-0067L**  
**US 52 RAMP B TO SOUTHBOUND SR 823**

**SCI-823-0.00**  
 5 / 9



DRAWN  
CHECKED

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. SCI-823-0067L  
US 52 RAMP B TO SOUTHBOUND SR 823

SCI-823-0.00



Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring B-50		Location: Sta. 38+53.3, 13.5 ft. LT of US 52 Ramp B BL		Date Drilled: 05/23/07									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 1.9'-2.0', 13.5'-14.7' Water level at completion: 8.1' (includes drilling water)	GRADATION					STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○	
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt		% Clay
0	549.9												
-1.4	548.5	11	9		1								
-2.0	547.9	10	18										
		4	5		2								
5		8	18										
		2	8		3								
		9	18										
-8.5	541.4	6	10		4								
-10.0	539.9		12										
					ST-1								
-13.0	536.9												
-14.7	535.2	5	10										
-15.0	534.9	50/6	18										
		Core 24"	Rec 22"		RQD 0%	R-1							
-18.5	531.4												
20		Core 60"	Rec 60"		RQD 15%	R-2							
25		Core 60"	Rec 60"		RQD 93%	R-3							
		Core 36"	Rec 35"		RQD 97%	R-4							
30.0	519.9												

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring B-51		Location: Sta. 38+43.3, 38.7 ft. RT of US 52 Ramp B BL		Date Drilled: 05/16/07									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 9.2' Water level at completion: 7.5' (includes drilling water)	GRADATION					STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○	
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt		% Clay
0.0	547.5												
	547.2	7	5		1								
		5	16										
-3.0	544.5	3	4		2								
5		5	18										
-6.0	541.5												
					ST-1								
-8.0	539.5												
-10.0	537.0	7	10		3								
-10.5	537.0	10	18										
-12.0	535.5	42	50/3		4								
		Core 30"	Rec 30"		RQD 0%	R-1							
15													
-15.8	531.9												
		Core 60"	Rec 60"		RQD 81%	R-2							
20													
25		Core 90"	Rec 90"		RQD 96%	R-3							
-27.0	520.5												
30													

DRAWN  
CHECKED

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. SCI-823-0067L  
US 52 RAMP B TO SOUTHBOUND SR 823

SCI-823-0.00



Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03													
LOG OF: Boring B-52		Location: Sta. 39+90.5, 5.0 ft. RT of US 52 Ramp B BL		Date Drilled: 05/16/07													
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: None Water level at completion: 5.5' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)					
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - PL ——— LL ● Blows per foot - ○				
0.0	551.3																
0.3		4	12	1	4.5+												
3.0	548.6	3	7	2	4.25												
5.5	546.1	10	13	3													
10.0		7	10	4													
13.0	538.6	7	10	5													
14.0	537.6	50/3	3	6													
15.0																	
17.9	533.7																
20.0																	
25.0																	
29.0	522.6																
30.0																	

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03													
LOG OF: Boring TR-62		Location: Sta. 42+78.1, 6.5 ft. LT of US 52 Ramp B BL		Date Drilled: 3/18/05													
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: None Water level at completion: 1.9' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)					
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - PL ——— LL ● Blows per foot - ○				
0.0	559.1																
0.5	558.6	8	9	1	3.5												
3.5	555.6	50/2	2	2													
5.0																	
6.0	553.1																
10.0																	
15.0																	
16.0	543.1																
20.0																	
25.0																	
30.0																	

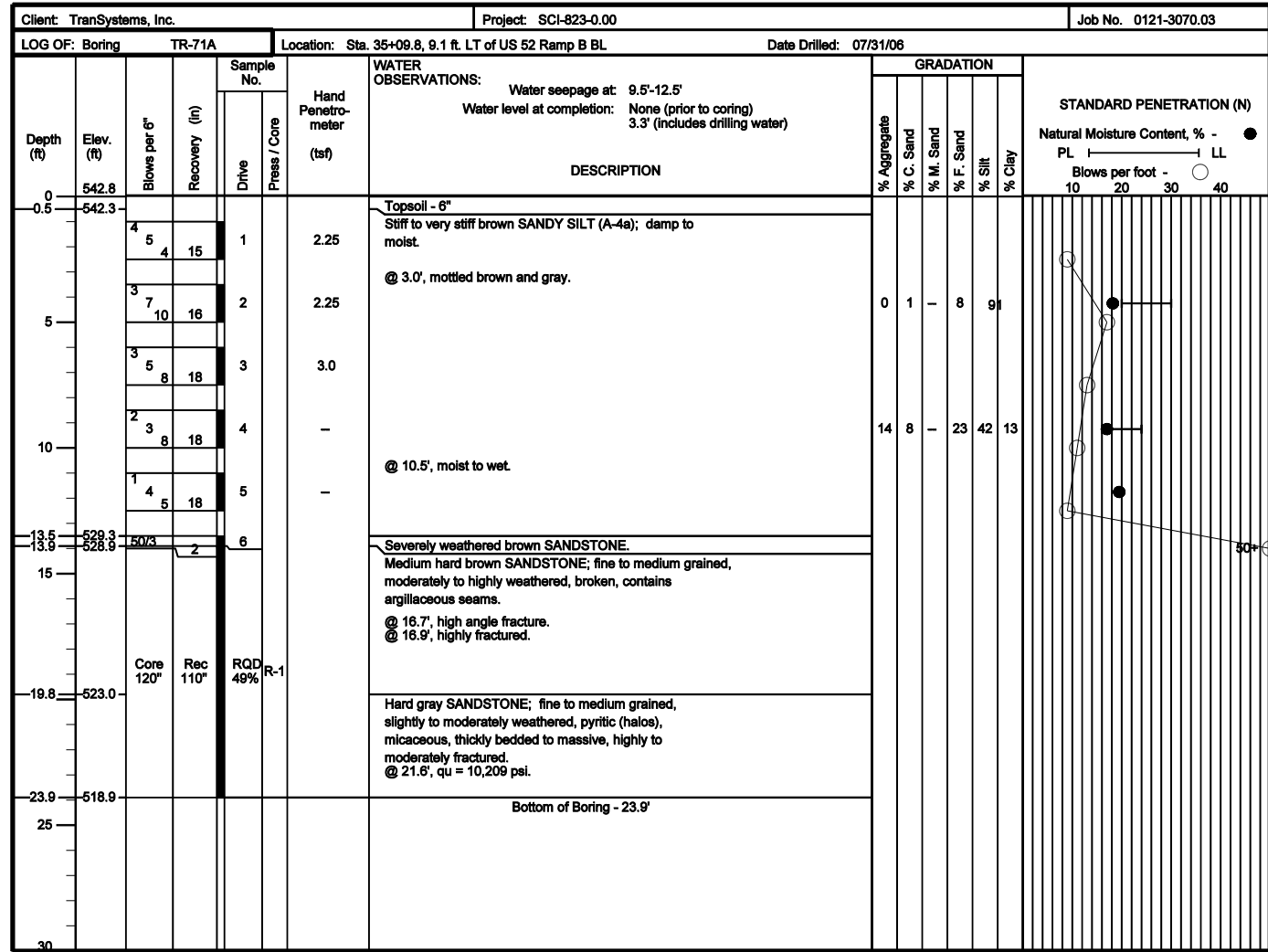
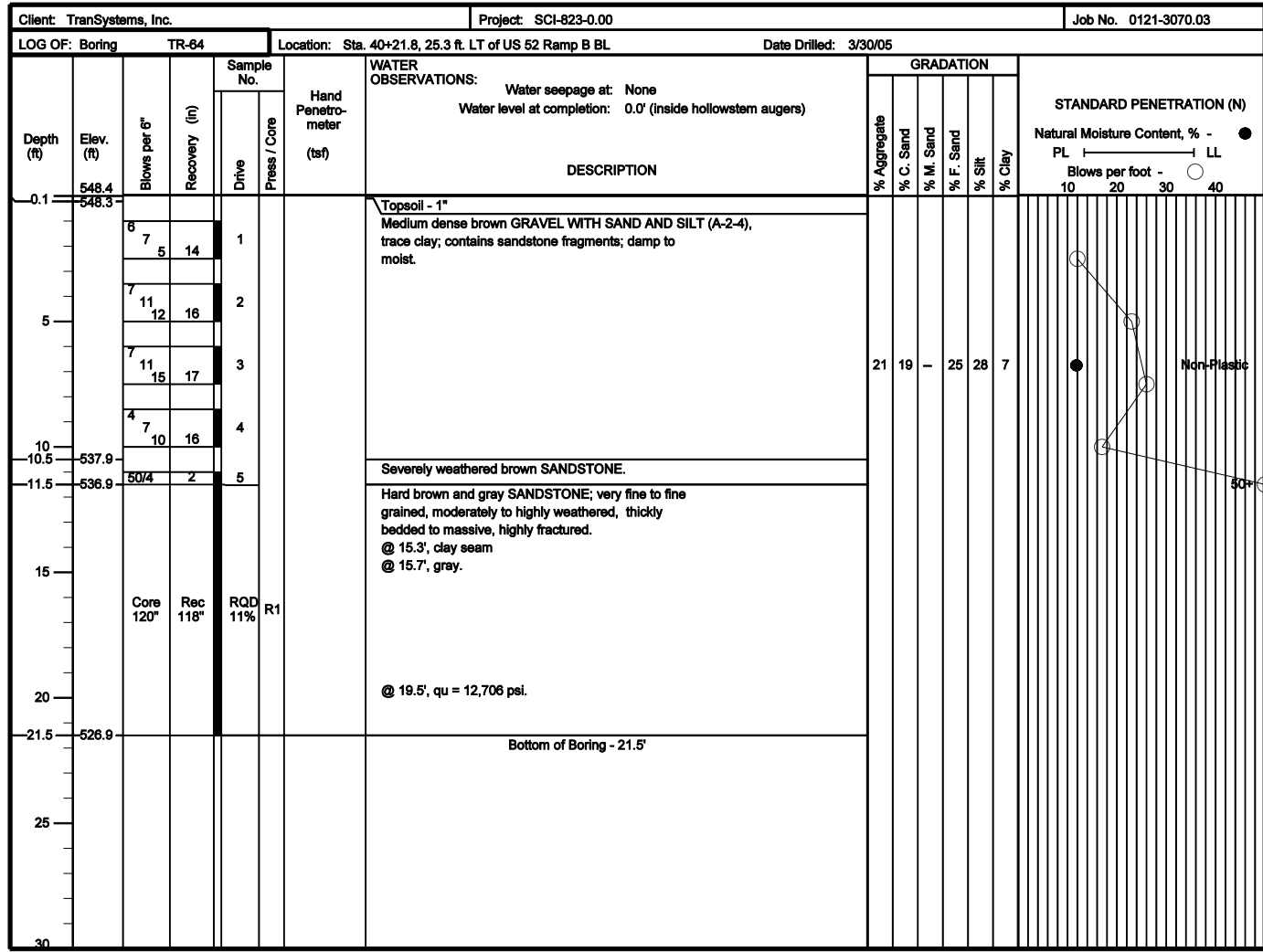
DRAWN  
CHECKED

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. SCI-823-0067L  
US 52 RAMP B TO SOUTHBOUND SR 823

SCI-823-0.00

8 / 10

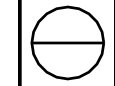




DRAWN  
CHECKED

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. SCI-823-0067L  
US 52 RAMP B TO SOUTHBOUND SR 823

SCI-823-0.00



Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03										
LOG OF: Boring TR-73A			Location: Sta. 36+42.9, 16.2 ft. LT of US 52 Ramp B BL		Date Drilled: 07/27/06									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetro-meter (tsf)	WATER OBSERVATIONS: Water seepage at: 7.3'-7.4', 11.0'-12.0' Water level at completion: None (prior to coring) 1.6' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)		
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - PL ——— LL Blows per foot -	
0	544.8													
0.5	544.3	4		1		Topsail - 6"								
		4				Stiff to very stiff brown SILT AND CLAY (A-6a), trace fine to coarse sand, trace gravel; damp to moist.	1	1	4	61	33			
3.0	541.8	4		2	2.0	Stiff brown SILT (A-4b), some clay, trace fine to coarse sand, trace gravel; moist.	1	1	7	67	24			
5		7												
		6												
		4		3	1.5									
		8												
		4		4	1.5									
		4												
10		3												
10.5	534.3	5				Medium dense brown GRAVEL WITH SAND AND SILT (A-2-4); damp to moist.	28	15	27	22	8			
12.0	532.8	8		5A		Severely weathered brown SANDSTONE.								
		19		5B										
13.9	530.9	50/3		6		Medium hard brown SANDSTONE; fine grained, highly weathered, micaceous, thickly bedded, broken, contains clay filled seams. @ 16.3'-17.9', argillaceous.								
15														
19.2	525.6					Hard gray SANDSTONE; fine grained, slightly weathered, thickly bedded to massive, slightly fractured. @ 19.2'-19.6', qu = 11,260 psi.								
20														
23.9	520.9					Bottom of Boring - 23.9'								
25														
30														

DRAWN  
CHECKED

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. SCI-823-0067L  
US 52 RAMP B TO SOUTHBOUND SR 823

SCI-823-0.00

