

PROJECT DESCRIPTION

THIS PROJECT CONSISTS IN PART OF CONSTRUCTING A BRIDGE FOR PROPOSED US 52 RAMP A OVER OHIO RIVER ROAD (CR 503). THE STRUCTURE AS PLANNED, IS A TWO-SPAN STRUCTURE 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 AUGUST 2004 AND SEPTEMBER 2006. THE PROJECT AREA IS JUST NORTH OF THE OHIO RIVER AND IS WITHIN THE RIGHT OF WAY FOR BOTH OHIO RIVER ROAD (CR 503) AND US 52. 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.

SUBSURFACE EXPLORATION

THE FIELD EXPLORATION CONSISTED OF DRILLING A TOTAL OF SIX STRUCTURE BORINGS FOR THE PROPOSED BRIDGE AND MSE WALLS. BORINGS B-33 THROUGH B-36 WERE DRILLED FOR THE CURRENTLY PROPOSED STRUCTURE, AS INDICATED ON THE STRUCTURE SITE PLAN. THESE BORINGS WERE DRILLED BETWEEN JANUARY 26 AND FEBRUARY 1, 2007. BORINGS TR-62 AND TR-76 WERE DRILLED FOR A PREVIOUS DESIGN CONFIGURATION. THESE BORINGS WERE DRILLED BETWEEN MARCH 18 AND 30, 2005 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

ALL BORINGS, EXCEPT BORING TR-62, ENCOUNTERED 2 TO 5 INCHES OF TOPSOIL UNDERLAIN BY NATURAL SOILS. BORING TR-62 ENCOUNTERED 3 INCHES OF AGGREGATE BASE AT THE GROUND SURFACE. BORINGS B-33, B-34, TR-62, AND TR-76 ENCOUNTERED NATURAL COHESIVE SOIL DEPOSITS BELOW THE SURFACE MATERIAL, WHILE BORINGS B-35 AND B-36 ENCOUNTERED NATURAL GRANULAR SOIL DEPOSITS. THE NATURAL COHESIVE DEPOSITS CONSISTED OF HARD SILT AND CLAY (A-6A), STIFF TO HARD SANDY SILT (A-4A), AND VERY STIFF SILT (A-4B), WHILE THE GRANULAR SOIL DEPOSITS CONSISTED MAINLY OF MEDIUM DENSE TO VERY DENSE SANDY SILT (A-4A), AND VERY DENSE GRAVEL WITH SAND AND SILT (A-2-4). THE NATIVE SOIL DEPOSITS EXTENDED TO DEPTHS RANGING BETWEEN APPROXIMATELY 3.0 AND 13.0 FEET BELOW THE GROUND SURFACE, WHERE BEDROCK WAS ENCOUNTERED.

IN THE AREA OF THE PROPOSED STRUCTURE, BEDROCK WAS ENCOUNTERED IN ALL BORINGS. THE BEDROCK CONSISTED OF SOFT TO HARD, SLIGHTLY TO HIGHLY WEATHERED, ARGILLACEOUS SANDSTONE. SEVERELY WEATHERED, ARGILLACEOUS SANDSTONE WAS ENCOUNTERED IN BORINGS B-33, B-34, B-35, AND TR-62 ABOVE THE COMPETENT SANDSTONE. THE AMOUNT OF ROCK RECOVERED IN EACH CORE RUN VARIED BETWEEN 92 AND 100 PERCENT. THE ROCK QUALITY DESIGNATION (RQD) OF THE BEDROCK RANGED BETWEEN 60 AND 86 PERCENT WITH AN AVERAGE OF 73 PERCENT INDICATING FAIR TO GOOD ROCK.

SEEPAGE WAS NOT OBSERVED IN ANY OF THE BORINGS DRILLED FOR THIS STRUCTURE. THERE WERE NO MEASURABLE WATER LEVELS IN THE BORINGS PRIOR TO ROCK CORING.

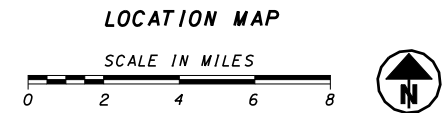
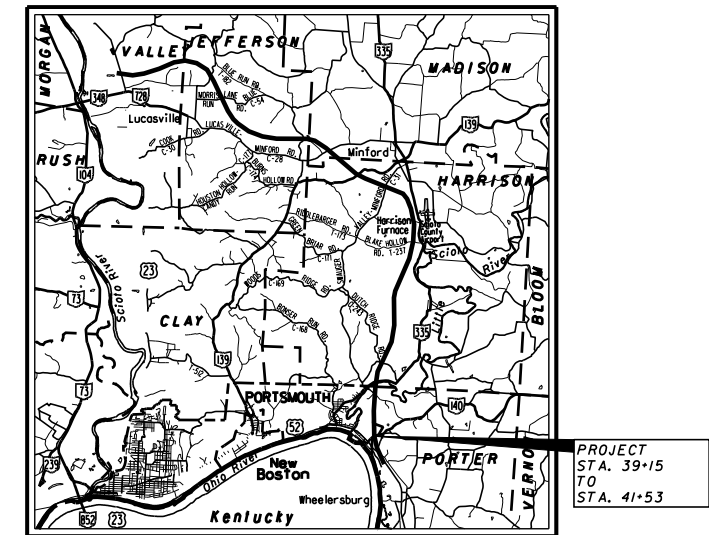
SPECIFICATIONS

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.

DESCRIPTION		ODOT CLASS	CLASSIFIED MECH./VISUAL	
	Gravel with Sand (A-1-b)	A-1-b	1	6
	Gravel with Sand and Silt (A-2-4)	A-2-4	4	4
	Coarse and Fine Sand (A-3a)	A-3a	2	6
	Sandy Silt (A-4a)	A-4a	10	20
	Silt (A-4b)	A-4b	5	9
	Silt and Clay (A-6a)	A-6a	4	32
	Silty Clay (A-6b)	A-6b	3	2
	TOTAL		29	79
	Sandstone	VISUAL		
	Weathered Sandstone	VISUAL		
	Shale	VISUAL		
	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 = NUMBER OF BLOWS FOR FIRST 6 INCHES Y = NUMBER OF BLOWS FOR SECOND 6 INCHES Z = NUMBER OF BLOWS FOR THIRD 6 INCHES			
X/Y/Z				
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.			



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, 01/26/07-2/1/07
 DRAWN - RJH & AMJ 8/09
 REVIEWED - AEN 8/21/09

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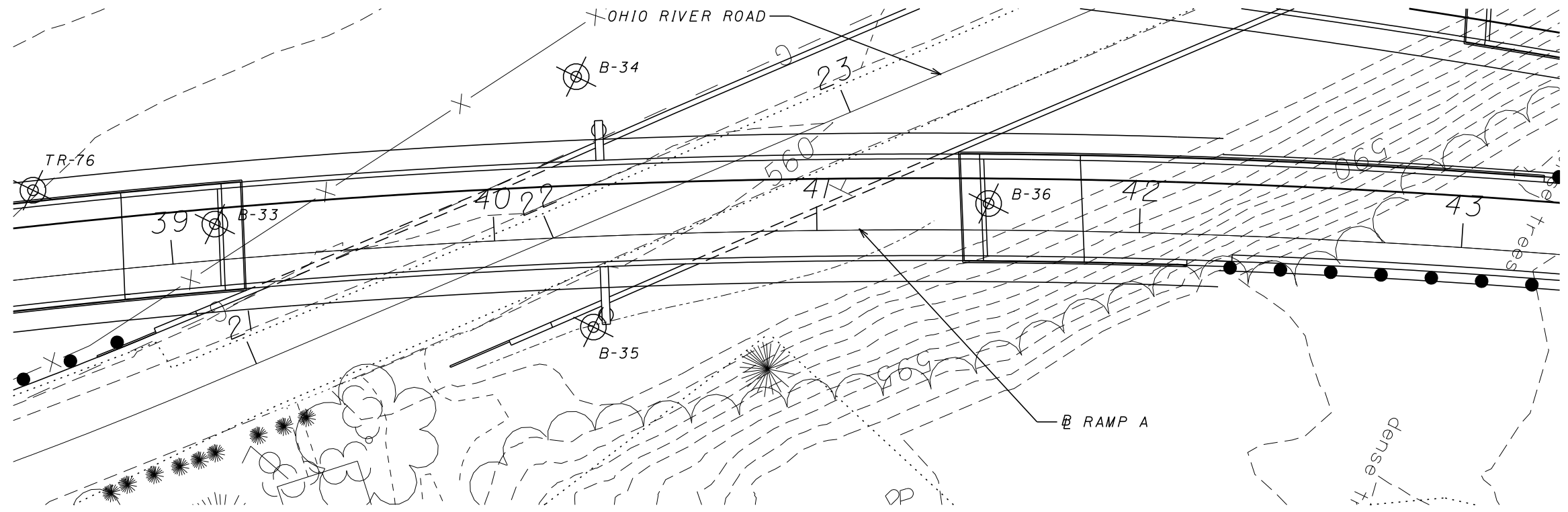
DLZ
600 HARTLEY ROAD - COLUMBUS, OHIO 43229

PID NO. **77366**

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0074
US 52 RAMP A OVER OHIO RIVER ROAD

SCI-823-0.00

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 HORIZONTAL
 SCALE IN FEET

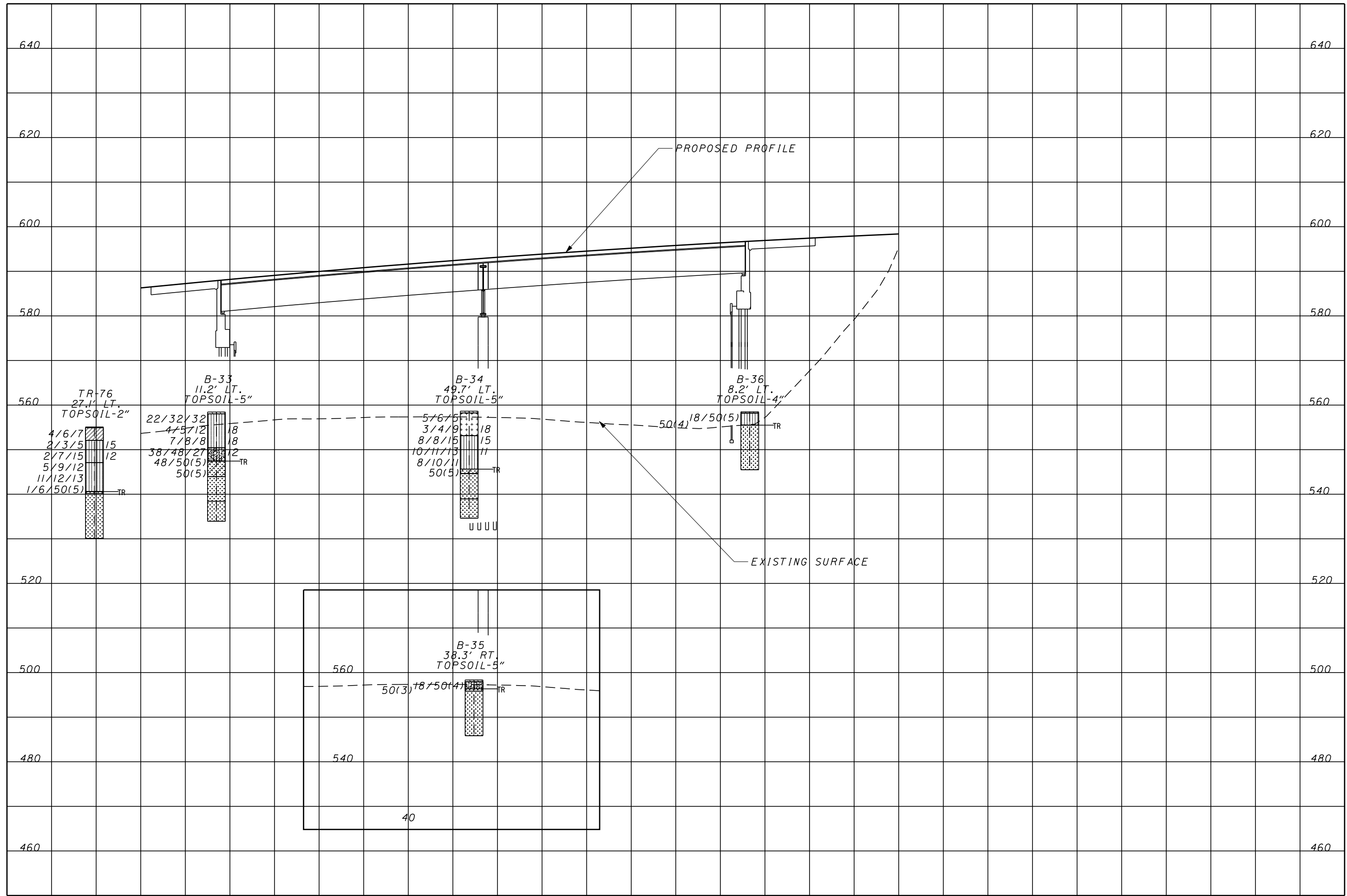
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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. SCI-823-0074
US 52 RAMP A TO NB SR 823 OVER CR 503

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STRUCTURE FOUNDATION INVESTIGATION
 BRIDGE NO. SCI-823-0074
 US 52 RAMP A TO NB SR 823 OVER CR 503

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Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring B-34		Location: Sta. 40+27.4, 49.7 ft. LT of US 52 Ramp A BL		Date Drilled: 01/26/07									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: None Water level at completion: None (prior to coring) 8.8' (inside hollowstem augers, includes drilling water)	GRADATION					STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○	
						DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt		% Clay
0	558.6												
0.4	558.2	5	18	1	3.0	Topsoil - 5" Very stiff brown SILT (A-4b), some fine to coarse sand, little clay, trace gravel; damp to moist.							
5	553.1	3	18	2	2.0		6	12	12	54	16		
5.5		8	18	3	2.5	Very stiff brown SANDY SILT (A-4a), little gravel, trace clay; contains sandstone fragments; damp to moist.							
10		10	18	4	-		13	23	21	36	7		
13.0	545.6	8	18	5	-								
14.0	544.6	50/5	3	6		Severely weathered brownish gray SANDSTONE.							
15						Soft to medium hard brown and gray SANDSTONE; very fine to medium fine grained, highly weathered, argillaceous, laminated, highly fractured, contains clay seams, iron stained.							
19.7	538.9	Core 120"	Rec 120"	RQD 65%	R1	Medium hard to hard gray SANDSTONE; fine grained, slightly weathered, argillaceous, micaceous, laminated to thinly bedded, slightly fractured. @ 20.0'-20.1', clay seam. @ 20.1'-20.7', qu = 5,450 psi, Er = 326,649 psi.							
24.0	534.6					Bottom of Boring - 24.0'							

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring B-35		Location: Sta. 40+29.1, 28.3 ft. RT of US 52 Ramp A BL		Date Drilled: 02/01/07									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: None Water level at completion: None (prior to coring) 1.8' (inside hollowstem augers, includes drilling water)	GRADATION					STANDARD PENETRATION (N) Natural Moisture Content, % - ● PL ——— LL Blows per foot - ○	
						DESCRIPTION	% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt		% Clay
0	558.6												
0.4	558.0					Topsoil - 5"							
2.0	556.4	18	10	1		Very dense gray GRAVEL WITH SAND AND SILT (A-2-4); contains sandstone fragments; damp.							
2.5	555.9	50/3	1	2		Severely weathered gray SANDSTONE. Medium hard to hard gray SANDSTONE; fine grained, slightly to moderately weathered, argillaceous, micaceous, thinly bedded, slightly to moderately fractured. @ 7.5'-8.2', contains clay seams. @ 8.4'-8.9', qu = 10,892 psi, Er = 1,616,616 psi. @ 10.2'-10.4', clay seam.							
12.5	545.9					Bottom of Boring - 12.5'							

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 STRUCTURE FOUNDATION INVESTIGATION
 BRIDGE NO. SCI-823-0074
 US 52 RAMP A TO NB SR 823 OVER CR 503

Client: TranSystems, Inc.				Project: SCI-823-0.00				Job No. 0121-3070.03									
LOG OF: Boring B-36				Location: Sta. 41+53.2, 8.2 ft. LT of US 52 Ramp A BL				Date Drilled: 01/31/07									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.		Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: None Water level at completion: None (prior to coring) 1.2 (inside hollowstem augers, includes drilling water)	GRADATION					STANDARD PENETRATION (N)				
				Drive	Press / Core			% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	PL	LL		
0.0	558.5																
		18			1		Topsoil - 4"										
		50/5	4				Very dense gray SANDY SILT (A-4s), little clay; contains sandstone fragments; dry.										
3.0	555.5	50/4	2		2												
				Core 120"	Rec 110"	RQD 86%	Medium hard to hard gray SANDSTONE; fine grained, slightly weathered, argillaceous, micaceous, thinly bedded, slightly to moderately fractured, iron staining. @ 3.0'-4.1', lost recovery. @ 6.7-7.5', high angle fracture. @ 8.6'-8.7', clay seam. @ 9.6'-10.0', qu = 908 psi.										
13.0	545.5						Bottom of Boring - 13.0'										

STRUCTURE FOUNDATION INVESTIGATION
 BRIDGE NO. SCI-823-0074
 US 52 RAMP A TO NB SR 823 OVER CR 503

SCI-823-0.00



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