

PROJECT DESCRIPTION

THE PROJECT CONSISTS OF PLACING A STRUCTURE FOR SR 823 RAMP B OVER FAIRGROUND ROAD. THE STRUCTURE AS PLANNED IS A SINGLE 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

GENERALIZED GEOLOGICAL REFERENCES REPORT THAT THE SITE LIES ON THE EAST SIDE OF THE FLOOD PLAIN OF THE TEAYS STAGE, PORTSMOUTH RIVER, WHICH IS CURRENTLY THE EAST SIDE OF THE SCIOTO RIVER VALLEY. THIS AREA IS UNGLACIATED, HOWEVER THE SCIOTO RIVER VALLEY IS FILLED WITH ILLINOIAN AND WISCONSIN GLACIAL OUTWASH TO DEPTHS OF UP TO 90 FEET.

THE AREA OF THESE STRUCTURES IS CHARACTERIZED BY GENTLY TO MODERATELY SLOPING TOPOGRAPHY RISING FROM OF THE FLOODPLAIN OF THE SCIOTO RIVER. THE PROJECT AREA IS LOCATED IN THE SHAWNEE-MISSISSIPPIAN PLATEAU OF THE UNGLACIATED PORTION OF THE APPALACHIAN PLATEAU PHYSIOGRAPHIC REGION. THE SHAWNEE-MISSISSIPPIAN PLATEAU IS CHARACTERIZED BY DEVONIAN AGED TO PENNSYLVANIAN AGED ROCKS AND CONTAINS RESIDUAL, COLLUVIAL, ALLUVIAL, AND LACUSTRINE SOILS.

RECONNAISSANCE

SEVERAL SITE RECONNAISSANCE VISITS WERE MADE BETWEEN JUNE 2004 AND SEPTEMBER 2007. THE SURROUNDING AREA IS UTILIZED FOR AGRICULTURAL PURPOSES AND COMMERCIAL STORAGE. GROUND COVER IN THE PROJECT AREA CONSISTS OF GRASS, BRUSH, AND OCCASIONAL SMALL TREES.

SUBSURFACE EXPLORATION

THE SUBSURFACE EXPLORATION CONSISTED OF DRILLING FIVE BORINGS. BORINGS TR-57, TR-58, AND B-1113 WERE DRILLED ON MARCH 16 AND 17, AND SEPTEMBER 28, 2005 FOR A PRELIMINARY BRIDGE CONFIGURATION. BORINGS B-45 AND B-47 WERE DRILLED FOR THE CURRENTLY PROPOSED BRIDGE ON JUNE 14 AND 18, 2007. THE BORINGS WERE DRILLED WITH BOTH TRUCK AND ATV MOUNTED ROTARY DRILL RIGS, 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

TEST BORINGS DISCLOSED PREDOMINANTLY STIFF TO VERY STIFF, COHESIVE SOILS RANGING FROM A-4A TO A-7-6 FROM THE GROUND SURFACE TO DEPTHS OF 8 TO 13 FEET. BENEATH THE COHESIVE LAYER, BORINGS GENERALLY ENCOUNTERED VERY LOOSE TO MEDIUM DENSE COHESIONLESS SOILS RANGING FROM A-3A TO A-1B TO THE TOP OF BEDROCK.

BORINGS DRILLED NEAR THE STRUCTURE ENCOUNTERED BEDROCK CONSISTING OF SOFT TO MEDIUM HARD GRAY SHALE AND MEDIUM HARD GRAY, ARGILLACEOUS SANDSTONE OF THE CUYAHOGA FORMATION.

IN BORINGS WHERE SEEPAGE WAS OBSERVED, IT WAS FIRST OBSERVED AT DEPTHS RANGING FROM 10.5 TO 16.0 FEET BELOW THE GROUND SURFACE. SEEPAGE WAS NOT OBSERVED IN BORING TR-56. NO GROUNDWATER WAS OBSERVED IN THE BORINGS PRIOR TO BEGINNING ROCK CORING OPERATIONS

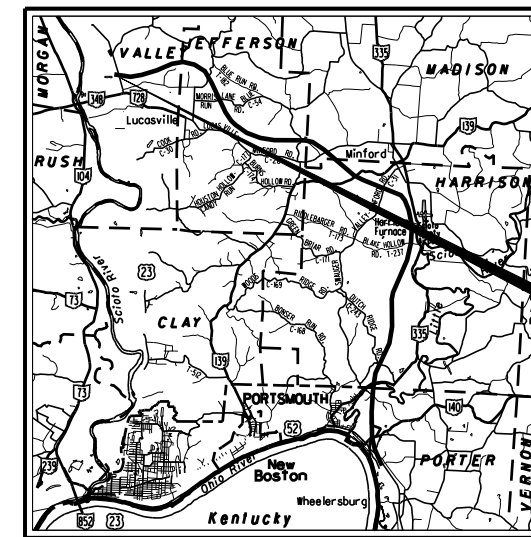
SPECIFICATIONS

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	1	1
	Gravel with Sand and Silt	A-2-4	1	-
	Gravel with Sand, Silt, and Clay	A-2-6	5	4
	Coarse and Fine Sand	A-3a	1	1
	Sandy Silt	A-4a	2	1
	Silt	A-4b	5	1
	Silt and Clay	A-6a	3	1
	Silty Clay	A-6b	5	6
	Clay	A-7-6	1	-
	TOTAL		24	15
	Sandstone	VISUAL		
	Shale	VISUAL		
	Weathered Shale	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			
	TOP OF ROCK			
	WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT			
	FIGURES BESIDE THE BORING IN PROFILE INDICATE THE NUMBER OF BLOWS FOR STANDARD PENETRATION TEST			
X/Y/Z	X = NUMBER OF BLOWS FOR SECOND 6 INCHES Y = NUMBER OF BLOWS FOR THIRD 6 INCHES Z = NUMBER OF BLOWS FOR FOURTH 6 INCHES, IF APPLICABLE			
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

LATITUDE: N 38°50'25" LONGITUDE: W 82°50'50"

SCALE IN MILES

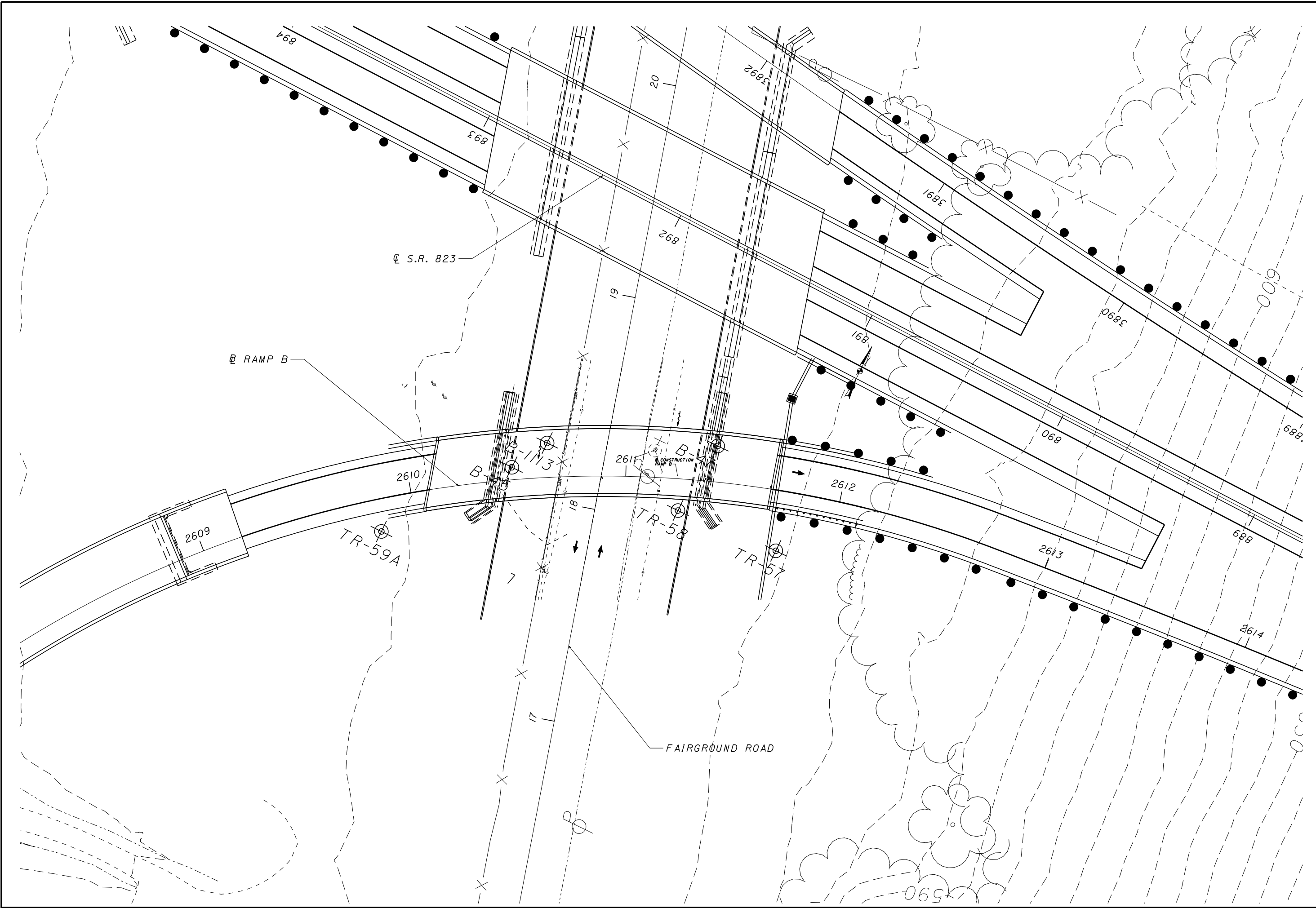


PARTICLE SIZE DEFINITIONS

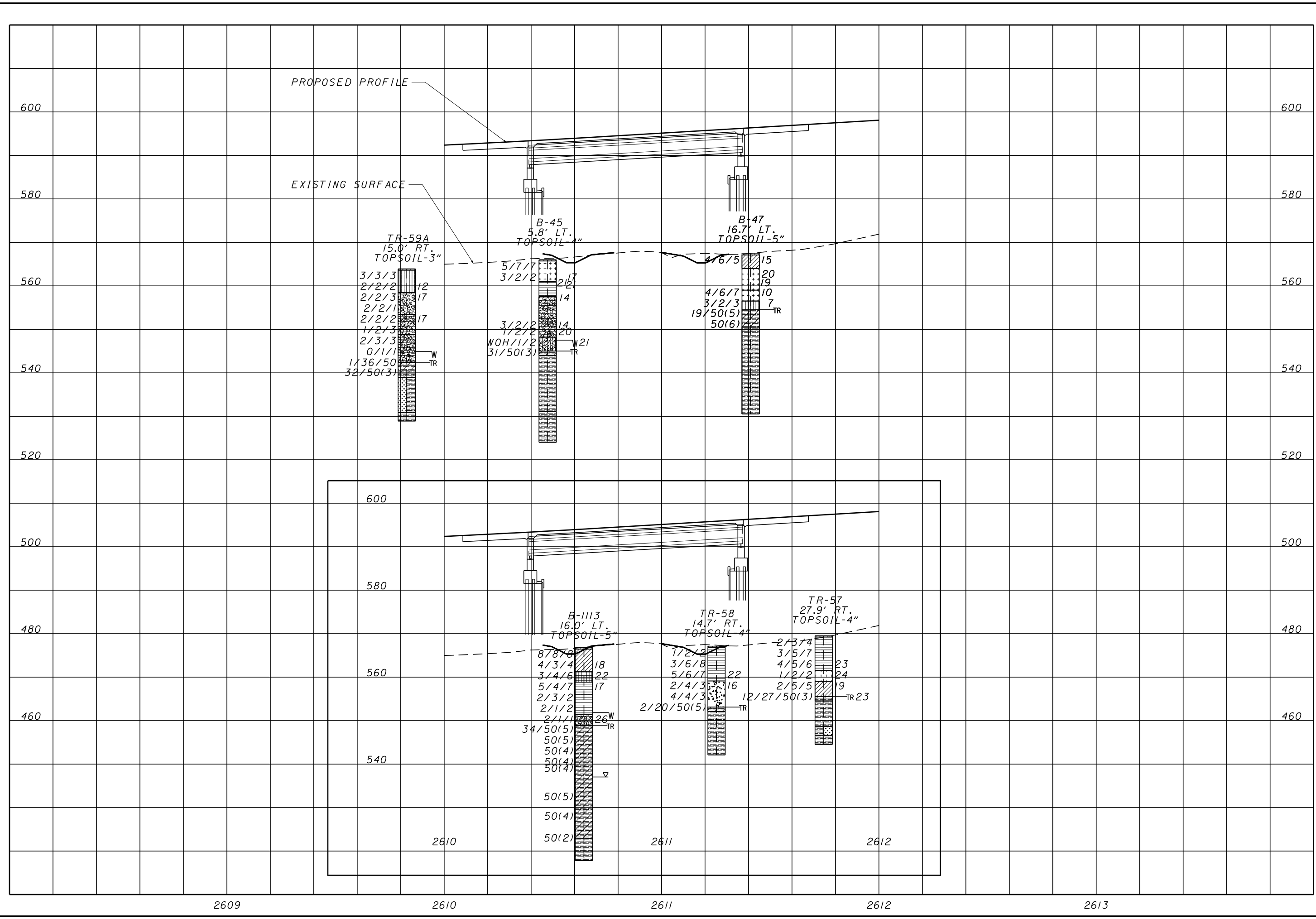
12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm	
Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE		

RECON. - AMJ & SJR 09/05 to 09/06
 DRILLING - DW 08/19 TO 08/19/04 & 06/13 TO 06/14/06
 DRAWN - RLS & AMJ 3/09 TO 4/09
 REVIEWED - AEN 4/20/09





 HORIZONTAL SCALE IN FEET
DRAWN: _____ CHECKED: _____
STRUCTURE FOUNDATION INVESTIGATION BRIDGE NO. SCI-823-1593 RAMP B OVER FAIRGROUND ROAD
SCI-823-10.13
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PROPOSED PROFILE

EXISTING SURFACE

TR-59A
15.0' RT.
TOPSOIL-3"
3/3/3
2/2/2
2/2/3
2/2/1
2/2/2
1/2/3
2/3/3
0/1/1
1/36/50
32/50(3)
W
TR

B-45
5.8' LT.
TOPSOIL-4"
5/7/7
3/2/2
17
2/2
14
3/2/2
17/2/2
WOH/1/2
31/50(3)
W21
TR

B-47
16.7' LT.
TOPSOIL-5"
4/6/5
15
20
19
10
7
TR
4/6/7
3/2/3
19/50(5)
50(6)

600

580

560

540

B-1113
16.0' LT.
TOPSOIL-5"
8/8/8
4/3/4
3/4/6
5/4/7
2/3/2
2/1/2
2/1/1
34/50(5)
50(5)
50(4)
50(4)
50(4)
50(5)
50(4)
50(2)

TR-58
14.7' RT.
TOPSOIL-4"
1/2/2
3/6/8
5/6/7
2/4/3
4/4/3
2/20/50(5)
TR

TR-57
27.9' RT.
TOPSOIL-4"
2/3/4
3/5/7
4/5/6
1/2/2
2/5/5
12/27/50(3)
TR 23

2610

2611

2612

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring B-45		Location: Sta. 2610+47.6, 5.8 ft. LT of US 23 Ramp B BL		Date Drilled: 6/14/07									
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, % - ● PL ——— LL
0.3	565.7					Topsail with gravel fill - 4"							
		5	18			Stiff dark brown SILT (A-4b), little fine sand, trace coarse sand, some clay; damp to moist.							
		7	18			@ 3.0', brown, trace gravel.							
		3	15										
5.0	561.0	2	15		1.0	Stiff brown SILTY CLAY (A-6b), little to some fine sand, trace coarse sand; moist.	0	5	18	51	26		
					1.25		0	3	20	49	28		
							0	3	21	77			
8.5	557.5				P-2	Loose to medium dense brown GRAVEL WITH SAND, SILT, AND CLAY (A-2-6), some silty clay; damp to moist.	30	21	18	17	14		
10					P-3								
15		3	18										
		2	17			@ 16.0', moist to wet.	13	43	23	8	13		
		1	17				30	26	17	13	14		
18.0	548.0	1	8			Loose brown GRAVEL WITH SAND AND SILT (A-2-4), some silty clay; moist to wet.	46	20	7	17	10		
20													
21.0	545.0	31	8			Severely weathered to decomposed gray SHALE.							
22.0	544.0	50/3	8		R-1	Soft to medium hard gray SHALE; highly weathered, thinly laminated, moderately fractured, with typical low angle clay-filled fractures; contains sandstone beds.							
		Core 18"	Rec 18"			@ 23.8'-24.0', high angle iron stained fracture.							
						@ 27.2', qu=2,651 psi.							
25		Core 60"	Rec 60"		R-2								
						@ 31.9'-33.0', 33.5'-34.9', decomposed.							
30													
34.6	531.1				R-3	Medium hard blue SHALE; moderately weathered, carbonaceous, thinly laminated, slightly fractured.							
		Core 120"	Rec 120"			@ 37.5', qu=3,757 psi.							
40		Core 42"	Rec 42"		R-4	@ 36.2'-36.8', high angle fracture.							
42.0	524.0					Bottom of Boring - 42.0'							

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03									
LOG OF: Boring B-1113		Location: Sta. 2610+64.3, 16.0 ft. LT of US 23 Ramp B BL		Date Drilled: 9/28/05									
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, % - ● PL ——— LL
0	566.8					Topsail - 5"							
		8	13			Very stiff dark brown SILT AND CLAY (A-6a), little fine to coarse sand, trace gravel; contains roots; damp.							
		4	15				1	3	11	52	33		
5.5	561.3	3	16			Very stiff to hard brown and gray CLAY (A-7-6), "and" silt, little fine to coarse sand; moist.	0	1	12	47	40		
8.0	558.8	4	18			Stiff brown and gray SILTY CLAY (A-6b), "and" fine to coarse sand, little gravel; moist.	15	15	28	23	19		
10		2	17										
		2	16										
15.5	551.3	2	18			Very loose brown GRAVEL WITH SAND, SILT, AND CLAY (A-2-6); wet.	18	37	25	8	12		
18.0	548.8	34	11			Severely weathered gray SHALE, micaceous.							
20		50/5	5										
		50/4	4										
25		50/4	4										
		50/4	4										
30													
		Core 48"	Rec 33"		R-1								
		50/5	5										
35		50/4	4										
		50/4	4										
40													
44.0	522.8	50/2	2			Medium hard black SHALE; slightly to moderately weathered, carbonaceous, thinly laminated, slightly fractured.							
45		Core 60"	Rec 56"		R-2	@ 45.1', 47.2', 48.9', decomposed fractures.							
49.0	517.8					Bottom of Boring - 49.0'							

STRUCTURE FOUNDATION INVESTIGATION
 BRIDGE NO. SCI-823-1593
 RAMP B OVER FAIRGROUND ROAD

SCI-823-10.13



DRAWN
 CHECKED

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03												
LOG OF: Boring B-47		Location: Sta. 2611+41.0, 16.7 ft. LT of US 23 Ramp B BL		Date Drilled: 06/18/07 to 06/19/07												
Depth (ft)	Elev. (ft)	Blows per ft	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: None Water level at completion: 8.3' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)				
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ● PL ——— LL			
DESCRIPTION																
0.4	567.5			1	4.5+		0	1	3	56	40					
Topsoil - 5" Hard brown SILT AND CLAY (A-6a), trace fine to coarse sand, dry to damp.																
3.5	564.0			P-1	4.5+		0	0	4	69	27					
Medium stiff brown SILT (A-4b), some clay, trace fine sand; moist.																
5				P-2	1.25		0	1	14	63	22					
Medium dense brown SILT (A-4b), trace to little fine to coarse sand; moist.																
8.5	559.0			2			0	6	4	90						
Loose brown SANDY SILT (A-4a), little to some fine to coarse sand, some gravel; moist.																
11.0	556.5			3			33	9	11	47						
Severely weathered light gray SHALE.																
13.0	554.5			4												
15				5												
17.0	550.5															
Soft to medium hard gray SHALE; highly weathered to decomposed, thinly laminated, highly fractured, contains occasional thin sandstone beds; sphalerite.																
20		Core 60"	Rec 60"	RQD 95%	R-1											
@ 20.4', qu=1,971 psi.																
25		Core 24"	Rec 24"	RQD 93%	R-2											
@ 26.8', qu=3,110 psi.																
30		Core 120"	Rec 120"	RQD 71%	R-3											
@ 36.7'-36.9', slickenside fracture.																
37.0	530.5															
Bottom of Boring - 37.0'																

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03												
LOG OF: Boring TR-57		Location: Sta. 2611+74.8, 27.9 ft. RT of US 23 Ramp B BL		Date Drilled: 3/16/04												
Depth (ft)	Elev. (ft)	Blows per ft	Recovery (in)	Sample No. Drive Press / Core	Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: None Water level at completion: 3.5' (includes drilling water)	GRADATION					STANDARD PENETRATION (N)				
							% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	Natural Moisture Content, % - ● PL ——— LL			
DESCRIPTION																
0.3	569.5			1	4.0		0	0	1	64	35					
Topsoil - 4" Very stiff to hard brown SILTY CLAY (A-6b), trace fine sand; damp to moist.																
5				2	4.5		0	0	10	67	23					
Stiff brown SILT (A-4b), some clay, little fine to coarse sand; moist.																
8.0	561.5			3	3.5		23	15	19	28	17					
Stiff brown SILT AND CLAY (A-6a), some fine to coarse sand, some gravel; damp.																
10.5	559.0			4	1.0		0	0	10	67	23					
Severely weathered gray SHALE.																
14.0	555.5			5	-		0	2	3	64	31					
Soft to medium hard gray SHALE; highly weathered to decomposed, argillaceous, laminated to thinly bedded, moderately to highly fractured. @ 15.8'-16.3', 19.1'-19.5', clay seams.																
15.0	554.5			6												
20		Core 120"	Rec 120"	RQD 90%	R-1											
Hard gray SANDSTONE interbedded with SHALE; slightly weathered, laminated. @ 22.7-22.9', high angle fracture.																
20.9	548.6															
Hard gray SHALE; moderately weathered, argillaceous, laminated, slightly fractured.																
22.9	548.6															
28.5	544.5															
Bottom of Boring - 25.0'																

DRAWN: _____ CHECKED: _____
 STRUCTURE FOUNDATION INVESTIGATION
 BRIDGE NO. SCI-823-1593
 RAMP B OVER FAIRGROUND ROAD
 SCI-823-10.13
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Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03				
LOG OF: Boring TR-58		Location: Sta. 2611+25.3, 14.7 ft. RT of US 23 Ramp B BL		Date Drilled: 3/16/05				
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS:	GRADATION	STANDARD PENETRATION (N)
						DESCRIPTION		
0.3	568.8	1	16	1	-	Water seepage at: None Water level at completion: None (prior to coring) 4.0' (includes drilling water)	% Aggregate	10 20 30 40
5	568.8	2	16	2	4.25	Topsail - 4" Soft brown SILTY CLAY (A-6b), trace fine sand; damp to moist. @ 0.0'-2.5', contains roots. @ 3.5', very stiff to hard.	% C. Sand	0 0 - 6 65 29
5	568.8	3	15	3	3.5		% M. Sand	7 34 - 40 19
8.0	559.1	4	16	4	4	Loose dark brown COARSE AND FINE SAND (A-3a), trace to little clay, trace gravel; damp.	% F. Sand	
10	559.1	5	15	5	5	Severely weathered brownish gray SHALE. Soft to medium hard gray SHALE; highly weathered to decomposed, thinly bedded, slightly fractured. @ 15.0'-16.7', broken with clay seams and high angle fractures. @ 17.5'-17.8', 19.5'-20.1', clay seams with high angle fractures. @ 20.9'-21.0', clay seam. @ 24.2', 24.4', very thin clay seams.	% Silt	
14.0	553.1	6	16	6	6		% Clay	
15.0	552.1	20	50/5	16	6	Bottom of Boring - 25.0'	Natural Moisture Content, % - ● PL ——— LL	
20	552.1	Core 120"	Rec 120"	RQD 82%	R-1		Blows per foot - ○	

Client: TranSystems, Inc.		Project: SCI-823-0.00		Job No. 0121-3070.03				
LOG OF: Boring TR-59A		Location: Sta. 2609+82.8, 15.0 ft. RT of US 23 Ramp B BL		Date Drilled: 3/14/05				
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.	Hand Penetrometer (tsf)	WATER OBSERVATIONS:	GRADATION	STANDARD PENETRATION (N)
						DESCRIPTION		
0.3	563.9	3	14	1	-	Water seepage at: 19.0'-21.5' Water level at completion: None (prior to coring) 17.0' (includes drilling water)	% Aggregate	10 20 30 40
5	563.8	2	12	2	-	Topsail - 3" Medium stiff dark gray SANDY SILT (A-4a), some clay, trace gravel; damp to moist. @ 3.5', brown.	% C. Sand	7 13 - 26 32 22
5.5	568.4	3	15	3	3		% M. Sand	15 36 - 37 12
10	563.4	4	13	4	4	Very loose to loose brown GRAVEL WITH SAND (A-1-b), little clay; moist.	% F. Sand	14 25 - 31 9 21
10.5	563.4	5	16	5	5	Loose brown GRAVEL WITH SAND, SILT, AND CLAY (A-2-6); damp to moist.	% Silt	
15	563.4	6	15	6	6		% Clay	
20	563.4	8	14	8	8	@ 19.0'-21.5', very loose; wet.	Natural Moisture Content, % - ● PL ——— LL	
21.5	542.4	9	12	9	9	Severely weathered gray SHALE.	Blows per foot - ○	
22.5	538.9	10	9	10	10			
30	538.9	Core 120"	Rec 119"	RQD 65%	R-1	Medium hard to hard gray SANDSTONE interbedded with SHALE; very fine to fine grained, highly weathered to decomposed, laminated to thinly bedded, slightly fractured. @ 25.4'-25.7', 28.5', 29.6', clay seams. @ 25.9', 28.5-28.7', 27.8', high angle fractures. @ 28.6'-29.6', moderately weathered SHALE.	Non-Plastic	
33.0	530.9							
35.5	528.9					@ 31.4'-31.7', clay seams with high angle fractures. Hard black SHALE; carbonaceous, moderately weathered, laminated, slightly fractured. @ 33.8'-34.0', broken, high angle fracture.	Bottom of Boring - 35.0'	

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