



**CUY-90-14.90**

**PID 77332/85531**

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**APPENDIX GE-02**

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**Boring Logs  
(Reference Document)**

State of Ohio  
Department of Transportation  
Jolene M. Molitoris, Director

**Innerbelt Bridge  
Construction Contract Group 1 (CCG1)**

Revision Date: June 4, 2010



- Addendum No. 5 - Included Supplemental  
Boring Logs



## **BORING LOG BINDER**

Submitted under Separate Cover  
with Soil Plan and Profile Sheets

**CUY-90-14.90, PID# 77332  
CLEVELAND, CUYAHOGA COUNTY, OHIO**

**Submitted to**

**MICHAEL BAKER JR., INC.  
CLEVELAND, OHIO**

**Submitted by**

**BBC&M ENGINEERING, INC.  
CLEVELAND, OHIO**

**May 2010**



**BORING LOG BINDER INDEX**

Original Boring ID	SGE Boring ID	Company (Abbreviated)	Type of Information (Boring Log, CPT Log, Profile, Lab Test Sheet)	Sheet Size (8.5" x 11" or 11" x 17")	Page in Boring Log Binder (PDF Version)	Location of Boring in Soil Plan and Profile Sheet Set	
						Boring Marker (Plan View)	Boring Log (Profile View)
B-039-1-10	B-039-1-10	B&P	Boring Log	8.5" x 11"	1	56	57
B-044-1-10	B-044-1-10	B&P	Boring Log	8.5" x 11"	7	59	60
B-047-2-10	B-047-2-10	B&P	Boring Log	8.5" x 11"	13	64	65, 100
B-069-1-10	B-069-1-10	B&P	Boring Log	8.5" x 11"	21	73	73A
B-069-2-10	B-069-2-10	B&P	Boring Log	8.5" x 11"	25	73	73A
B-074-1-10	B-074-1-10	B&P	Boring Log	8.5" x 11"	29	75	76
B-001-0-09	B-001-0-09	B&P	Boring Log	8.5" x 11"	34	47	48
B-002-0-09	B-002-0-09	B&P	Boring Log	8.5" x 11"	35	47	47
B-003-0-09	B-003-0-09	B&P	Boring Log	8.5" x 11"	36	47	48
B-004-0-09	B-004-0-09	B&P	Boring Log	8.5" x 11"	37	47	47
B-005-0-09	B-005-0-09	B&P	Boring Log	8.5" x 11"	38	47	47
B-006-0-09	B-006-0-09	B&P	Boring Log	8.5" x 11"	39	47	48
B-007-0-09	B-007-0-09	B&P	Boring Log	8.5" x 11"	40	47	47
B-008-0-09	B-008-0-09	B&P	Boring Log	8.5" x 11"	41	47	48
B-009-0-09	B-009-0-09	B&P	Boring Log	8.5" x 11"	42	47	47
B-010-0-09	B-010-0-09	B&P	Boring Log	8.5" x 11"	43	47	47
B-011-0-09	B-011-0-09	B&P	Boring Log	8.5" x 11"	44	47	48
B-012-0-09	B-012-0-09	B&P	Boring Log	8.5" x 11"	45	47	47
B-012-1-09	B-012-1-09	B&P	Boring Log	8.5" x 11"	46	47	48
B-012-2-09	B-012-2-09	B&P	Boring Log	8.5" x 11"	47	49	50
B-013-0-09	B-013-0-09	B&P	Boring Log	8.5" x 11"	48	49	49
B-014-0-09	B-014-0-09	B&P	Boring Log	8.5" x 11"	49	49	50
B-015-0-09	B-015-0-09	B&P	Boring Log	8.5" x 11"	50	49	49
B-016-0-09	B-016-0-09	B&P	Boring Log	8.5" x 11"	51	49	81
B-017-0-09	B-017-0-09	B&P	Boring Log	8.5" x 11"	53	49	49
B-018-0-09	B-018-0-09	B&P	Boring Log	8.5" x 11"	56	49	82
B-019-0-09	B-019-0-09	B&P	Boring Log	8.5" x 11"	60	51	83
B-019-1-09	B-019-1-09	B&P	Boring Log	8.5" x 11"	62	51	83
B-020-0-09	B-020-0-09	B&P	Boring Log	8.5" x 11"	64	51	52, 83
B-021-0-09	B-021-0-09	B&P	Boring Log	8.5" x 11"	67	51	52
B-022-0-09	B-022-0-09	B&P	Boring Log	8.5" x 11"	70	51	52, 84
B-022-1-09	B-022-1-09	B&P	-----	-----	-----	51	N/A - NO LOG
B-023-0-09	B-023-0-09	B&P	Boring Log	8.5" x 11"	77	51	52
B-023-1-09	B-023-1-09	B&P	Boring Log	8.5" x 11"	82	51	116
B-023-2-09	B-023-2-09	B&P	Boring Log	8.5" x 11"	84	51	54, 116
B-024-0-09	B-024-0-09	B&P	Boring Log	8.5" x 11"	88	51	55

**BORING LOG BINDER INDEX**

Original Boring ID	SGE Boring ID	Company (Abbreviated)	Type of Information (Boring Log, CPT Log, Profile, Lab Test Sheet)	Sheet Size (8.5" x 11" or 11" x 17")	Page in Boring Log Binder (PDF Version)	Location of Boring in Soil Plan and Profile Sheet Set	
						Boring Marker (Plan View)	Boring Log (Profile View)
B-025-0-09	B-025-0-09	B&P	Boring Log	8.5" x 11"	89	51	52
B-027-0-09	B-027-0-09	B&P	Boring Log	8.5" x 11"	94	51	54
B-027-1-09	B-027-1-09	B&P	Boring Log	8.5" x 11"	97	51	54
B-028-0-09	B-028-0-09	B&P	Boring Log	8.5" x 11"	98	51	54
B-029-0-09	B-029-0-09	B&P	Boring Log	8.5" x 11"	103	51	55
B-030-0-09	B-030-0-09	B&P	Boring Log	8.5" x 11"	104	51	54
B-031-0-09	B-031-0-09	B&P	Boring Log	8.5" x 11"	105	51	52
B-032-0-09	B-032-0-09	B&P	Boring Log	8.5" x 11"	113	51	54, 55
B-033-0-09	B-033-0-09	B&P	Boring Log	8.5" x 11"	118	51	54
B-034-0-09	B-034-0-09	B&P	Boring Log	8.5" x 11"	119	51	55, 86
B-035-0-09	B-035-0-09	BBCM	Boring Log	8.5" x 11"	120	56	57, 88
B-036-0-09	B-036-0-09	BBCM	Boring Log	8.5" x 11"	127	56	112
B-037-0-09	B-037-0-09	BBCM	Boring Log	8.5" x 11"	130	56	112
B-037-1-09	B-037-1-09	BBCM	Boring Log	8.5" x 11"	133	56	57, 90
B-037-2-09	B-037-2-09	BBCM	Boring Log	8.5" x 11"	139	56	113
B-038-0-09	B-038-0-09	BBCM	Boring Log	8.5" x 11"	141	56	112
B-038-1-09	B-038-1-09	BBCM	Boring Log	8.5" x 11"	144	56	113
B-039-0-09	B-039-0-09	B&P	Boring Log	8.5" x 11"	146	56	94
B-040-0-09	B-040-0-09	B&P	Boring Log	8.5" x 11"	152	56	57
B-041-0-09	B-041-0-09	B&P	Boring Log	8.5" x 11"	159	59	60
B-042-0-09	B-042-0-09	B&P	Boring Log	8.5" x 11"	166	59	60
B-043-0-09	B-043-0-09	B&P	Boring Log	8.5" x 11"	173	59	60
B-044-0-09	B-044-0-09	B&P	Boring Log	8.5" x 11"	180	59	60
B-045-0-09	B-045-0-09	B&P	Boring Log	8.5" x 11"	186	64	65
B-047-0-09	B-047-0-09	B&P	Boring Log	8.5" x 11"	193	64	67, 98
B-047-1-09	B-047-1-09	B&P	Boring Log	8.5" x 11"	198	64	65, 98
B-048-0-09	B-048-0-09	B&P	Boring Log	8.5" x 11"	204	64	65, 67
B-050-0-09	B-050-0-09	B&P	Boring Log	8.5" x 11"	209	64	67
B-051-0-09	B-051-0-09	B&P	Boring Log	8.5" x 11"	214	64	65
B-052-0-09	B-052-0-09	B&P	Boring Log	8.5" x 11"	219	64	67
B-053-0-09	B-053-0-09	B&P	Boring Log	8.5" x 11"	224	64	68
B-054-0-09	B-054-0-09	B&P	Boring Log	8.5" x 11"	225	64	72, 102
B-055-0-09	B-055-0-09	B&P	Boring Log	8.5" x 11"	230	64	65, 71, 102
B-056-0-09	B-056-0-09	B&P	Boring Log	8.5" x 11"	235	64	72
B-058-0-09	B-058-0-09	B&P	Boring Log	8.5" x 11"	240	64	71
B-059-0-09	B-059-0-09	B&P	Boring Log	8.5" x 11"	245	64	65

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						Boring Marker (Plan View)	Boring Log (Profile View)
B-060-0-09	B-060-0-09	B&P	Boring Log	8.5" x 11"	250	69	70, 71, 103
B-061-0-09	B-061-0-09	B&P	Boring Log	8.5" x 11"	252	69	72, 103
B-062-0-09	B-062-0-09	B&P	Boring Log	8.5" x 11"	255	69	103
B-063-0-09	B-063-0-09	B&P	Boring Log	8.5" x 11"	257	69	70
B-064-0-09	B-064-0-09	B&P	Boring Log	8.5" x 11"	259	69	71
B-067-0-09	B-067-0-09	B&P	Boring Log	8.5" x 11"	260	69	74
B-068-0-09	B-068-0-09	B&P	Boring Log	8.5" x 11"	262	69	74
B-069-0-09	B-069-0-09	B&P	Boring Log	8.5" x 11"	264	69	74, 115
B-070-0-09	B-070-0-09	B&P	Boring Log	8.5" x 11"	266	59, 75	76
B-070-1-09	B-070-1-09	B&P	Boring Log	8.5" x 11"	268	59, 75	76
B-070-2-09	B-070-2-09	B&P	Boring Log	8.5" x 11"	270	75	N/A - Binder Only
B-070-3-09	B-070-3-09	B&P	Boring Log	8.5" x 11"	271	75	N/A - Binder Only
B-071-0-09	B-071-0-09	B&P	Boring Log	8.5" x 11"	272	75	76
B-072-0-09	B-072-0-09	B&P	Boring Log	8.5" x 11"	274	75	76
B-073-0-09	B-073-0-09	B&P	Boring Log	8.5" x 11"	275	75	76
B-073-1-09	B-073-1-09	B&P	Boring Log	8.5" x 11"	277	75	76
B-074-0-09	B-074-0-09	B&P	Boring Log	8.5" x 11"	279	75	76
B-075-0-09	B-075-0-09	B&P	Boring Log	8.5" x 11"	281	78	79
B-076-0-09	B-076-0-09	B&P	Boring Log	8.5" x 11"	282	78	79
B-076-1-09	B-076-1-09	B&P	Boring Log	8.5" x 11"	283	78	79
B-076-2-09	B-076-2-09	B&P	Boring Log	8.5" x 11"	284	78	79
B-076-3-09	B-076-3-09	B&P	Boring Log	8.5" x 11"	286	78	79
B-077-0-09	B-077-0-09	B&P	Boring Log	8.5" x 11"	288	78	80
B-05-01	B-001-0-06	BBCM	Boring Log	8.5" x 11"	289	56	57
B-05-02	B-002-0-06	BBCM	Boring Log	8.5" x 11"	294	56	110
B-05-03	B-003-0-06	BBCM	Boring Log	8.5" x 11"	298	56	104
B-05-04	B-004-0-06	BBCM	Boring Log	8.5" x 11"	302	56	108
B-05-07	B-007-0-06	BBCM	Boring Log	8.5" x 11"	306	51	88
B-05-08	B-008-0-06	BBCM	Boring Log	8.5" x 11"	311	51	52, 86
B-05-11	B-011-0-06	BBCM	Boring Log	8.5" x 11"	317	56	88
B-05-12	B-012-0-06	BBCM	Boring Log	8.5" x 11"	322	56	90
B-05-13	B-013-0-06	BBCM	Boring Log	8.5" x 11"	327	56	94
B-05-14	B-014-0-06	BBCM	Boring Log	8.5" x 11"	332	56	94
B-05-15	B-015-0-06	BBCM	Boring Log	8.5" x 11"	337	56	57, 96
B-05-16	B-016-0-06	BBCM	Boring Log	8.5" x 11"	342	56	57, 92
B-105A	B-105-A-06	BBCM	Boring Log	8.5" x 11"	346	56	92, 106
B-108A	B-108-A-06	BBCM	Boring Log	8.5" x 11"	350	56	110

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						Boring Marker (Plan View)	Boring Log (Profile View)
B-2	B-002-0-00	DLZ	Boring Log	8.5" x 11"	354	56	94
B-3	B-003-0-00	DLZ	Boring Log	8.5" x 11"	360	56	96
B-4	B-004-0-00	DLZ	Boring Log	8.5" x 11"	364	59	N/A - Binder Only
B-204	B-204-0-98	BBCM	-----	-----	-----	56	N/A - NO LOG
B-303	B-303-0-98	BBCM	-----	-----	-----	56	N/A - NO LOG
B-201	B-201-0-96	BBCM	Boring Log	8.5" x 11"	369	56	N/A - Binder Only
B-202	B-202-0-96	BBCM	Boring Log	8.5" x 11"	369	56	N/A - Binder Only
B-203	B-203-0-96	BBCM	Boring Log	8.5" x 11"	369	56	N/A - Binder Only
B-1	B-001-0-96	BBCM	Boring Log	8.5" x 11"	370	64	N/A - Binder Only
B-2	B-002-0-96	BBCM	Boring Log	8.5" x 11"	370	64	N/A - Binder Only
B-101	B-101-0-94	BBCM	Boring Log	8.5" x 11"	371	56	104
B-102	B-102-0-94	BBCM	Boring Log	8.5" x 11"	376	56	104
B-103	B-103-0-94	BBCM	Boring Log	8.5" x 11"	381	56	N/A - Binder Only
			S-6, CU Test	8.5" x 11"	385	-----	-----
B-104	B-104-0-94	BBCM	Boring Log	8.5" x 11"	386	56	N/A - Binder Only
			S-8, CU Test	8.5" x 11"	390	-----	-----
			S-28, CU Test	8.5" x 11"	391	-----	-----
B-105	B-105-0-94	BBCM	Boring Log	8.5" x 11"	392	56	N/A - Binder Only
			S-10, CU Test	8.5" x 11"	396	-----	-----
			S-24, CU Test	8.5" x 11"	397	-----	-----
B-106	B-106-0-94	BBCM	Boring Log	8.5" x 11"	398	56	N/A - Binder Only
B-107	B-107-0-94	BBCM	Boring Log	8.5" x 11"	402	56	110
B-108	B-108-0-94	BBCM	Boring Log	8.5" x 11"	407	56	N/A - Binder Only
			S-8, Direct Shear Test	8.5" x 11"	411	-----	-----
			S-8, CD Test	8.5" x 11"	412	-----	-----
			S-10, Consolidation Test	8.5" x 11"	413	-----	-----
B-109	B-109-0-94	BBCM	Boring Log	8.5" x 11"	414	56	92, 110
B-110	B-110-0-94	BBCM	Boring Log	8.5" x 11"	418	56	92
B-10	B-010-0-92	ODOT	Reproduced Boring Log	8.5" x 11"	422	56	N/A - Binder Only
			Original Boring Log	8.5" x 11"	427		
			S-2P, Direct Shear Test (pg 1)	8.5" x 11"	431	-----	-----
			S-2P, Direct Shear Test (pg 2)	8.5" x 11"	432	-----	-----
			S-4P, CU Test	8.5" x 11"	433	-----	-----
			S-7P, CU Test	8.5" x 11"	434	-----	-----
			S-11P, CU Test	8.5" x 11"	435	-----	-----
B-1	B-001-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	436	56	N/A - Binder Only
			Original Boring Log	8.5" x 11"	441		
B-2	B-002-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	445	56	108
			Original Boring Log	8.5" x 11"	450		

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						Boring Marker (Plan View)	Boring Log (Profile View)
B-3	B-003-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	454	56	106
			Original Boring Log	8.5" x 11"	459		
B-4	B-004-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	463	56	N/A - Binder Only
			Original Boring Log	8.5" x 11"	468		
B-5	B-005-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	472	56	108
			Original Boring Log	8.5" x 11"	477		
B-6	B-006-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	481	56	N/A - Binder Only
			Original Boring Log	8.5" x 11"	486		
B-7	B-007-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	489	56	N/A - Binder Only
			Original Boring Log	8.5" x 11"	494		
B-8	B-008-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	497	56	92, 108
			Original Boring Log	8.5" x 11"	502		
B-9	B-009-0-90	ODOT	Reproduced Boring Log	8.5" x 11"	506	56	N/A - Binder Only
			Original Boring Log	8.5" x 11"	511		
B-4	B-004-0-86	LEWIN	Boring Log	8.5" x 11"	515	69	N/A - Binder Only
B-5	B-005-0-86	LEWIN	Boring Log	8.5" x 11"	516	64	N/A - Binder Only
B-8	B-008-0-86	R & R	Boring Log	11" x 17"	517	51	N/A - Binder Only
B-10	B-010-0-64	ODOT	Reproduced Boring Log	8.5" x 11"	519	49	49, 82
			Original Boring Log	11" x 17"	523		
B-84	B-084-0-64	ODOT	Reproduced Boring Log	8.5" x 11"	524	49	81
			Original Boring Log	11" x 17"	528		
B-90	B-090-0-64	ODOT	Reproduced Boring Log	8.5" x 11"	529	49	N/A - Binder Only
			Original Boring Log	11" x 17"	534		
B-6	B-006-0-63	ODOT	Reproduced Boring Log	8.5" x 11"	535	51	N/A - Binder Only
			Original Boring Log	11" x 17"	546		
B-13	B-013-0-63	ODOT	Reproduced Boring Log	8.5" x 11"	538	51	N/A - Binder Only
			Original Boring Log	11" x 17"	547		
B-23	B-023-0-63	ODOT	Reproduced Boring Log	8.5" x 11"	543	51	N/A - Binder Only
			Original Boring Log	11" x 17"	546		
B-103	B-103-0-58	ODOT	Boring Log	8.5" x 11"	548	69	71
			Profile	11" x 17"	559, 564, 638, 639		
B-106	B-106-0-58	ODOT	Boring Log	8.5" x 11"	550	69	N/A - Binder Only
			Profile	11" x 17"	559, 638, 639		
B-106A	B-106-A-58	ODOT	Boring Log	8.5" x 11"	553	69	N/A - Binder Only
			Profile	11" x 17"	559, 639		
B-111	B-111-0-58	ODOT	Boring Log	8.5" x 11"	557	73	N/A - Binder Only
			Profile	11" x 17"	559, 639		

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						Boring Marker (Plan View)	Boring Log (Profile View)
B-114	B-114-0-58	ODOT	Boring Log	8.5" x 11"	560	73	N/A - Binder Only
			Profile	11" x 17"	563		
B-121	B-121-0-58	ODOT	Boring Log	8.5" x 11"	564	78	N/A - Binder Only
			Profile	11" x 17"	567, 638		
BE-1	B-001-E-56	HNTB	Profile	11" x 17"	568	64	N/A - Binder Only
BE-2	B-002-E-56	HNTB	Profile	11" x 17"	568	64	N/A - Binder Only
BE-3	B-003-E-56	HNTB	Profile	11" x 17"	568	64	N/A - Binder Only
BE-4	B-004-E-56	HNTB	Profile	11" x 17"	568	64	N/A - Binder Only
BE-5	B-005-E-56	HNTB	Profile	11" x 17"	568	64	N/A - Binder Only
BE-6	B-006-E-56	HNTB	Profile	11" x 17"	568	64	N/A - Binder Only
BE-7	B-007-E-56	HNTB	Profile	11" x 17"	568	64	71
BE-8	B-008-E-56	HNTB	Profile	11" x 17"	568	64	N/A - Binder Only
BE-9	B-009-E-56	HNTB	Profile	11" x 17"	568	64	N/A - Binder Only
BE-10	B-010-E-56	HNTB	Profile	11" x 17"	568	69	N/A - Binder Only
BE-11	B-011-E-56	HNTB	Profile	11" x 17"	568	69	N/A - Binder Only
B-1	B-001-0-55	NYC & ST LRR	Profile	11" x 17"	569	56	112
B-2	B-002-0-55	NYC & ST LRR	Profile	11" x 17"	569	56	92, 112
B-3	B-003-0-55	NYC & ST LRR	Profile	11" x 17"	569	56	94
B-4	B-004-0-55	NYC & ST LRR	Profile	11" x 17"	569	56	N/A - Binder Only
Boring-1	B-001-1-55	HNTB	Profile	11" x 17"	570	56	N/A - Binder Only
Boring-2	B-002-1-55	HNTB	Profile	11" x 17"	570	56	N/A - Binder Only
BW-1	B-001-W-55	HNTB	Profile	11" x 17"	570	56	N/A - Binder Only
BW-2	B-002-W-55	HNTB	Profile	11" x 17"	570	56	106
BW-3	B-003-W-55	HNTB	Profile	11" x 17"	570	56	N/A - Binder Only
BW-4	B-004-W-55	HNTB	Profile	11" x 17"	570	51	N/A - Binder Only
BW-5	B-005-W-55	HNTB	Profile	11" x 17"	570	51	N/A - Binder Only
BW-6	B-006-W-55	HNTB	Profile	11" x 17"	570	51	86
A	B-00A-0-54	HNTB	Profile	11" x 17"	571	59	N/A - Binder Only
B	B-00B-0-54	HNTB	Profile	11" x 17"	571	59	N/A - Binder Only
C	B-00C-0-54	HNTB	Profile	11" x 17"	571	64	N/A - Binder Only
1	B-001-0-54	HNTB	Profile	11" x 17"	572	56	N/A - Binder Only
2	B-002-0-54	HNTB	Profile	11" x 17"	572	56	N/A - Binder Only
3	B-003-0-54	HNTB	Profile	11" x 17"	572	56	N/A - Binder Only
4	B-004-0-54	HNTB	Profile	11" x 17"	572	56	N/A - Binder Only
5	B-005-0-54	HNTB	Profile	11" x 17"	572	56	N/A - Binder Only
6	B-006-0-54	HNTB	Profile	11" x 17"	572	56	N/A - Binder Only

**BORING LOG BINDER INDEX**

Original Boring ID	SGE Boring ID	Company (Abbreviated)	Type of Information (Boring Log, CPT Log, Profile, Lab Test Sheet)	Sheet Size (8.5" x 11" or 11" x 17")	Page in Boring Log Binder (PDF Version)	Location of Boring in Soil Plan and Profile Sheet Set	
						Boring Marker (Plan View)	Boring Log (Profile View)
7	B-007-0-54	HNTB	Profile	11" x 17"	572	56	N/A - Binder Only
8	B-008-0-54	HNTB	Profile	11" x 17"	572	56	N/A - Binder Only
9	B-009-0-54	HNTB	Profile	11" x 17"	572	59	N/A - Binder Only
10	B-010-0-54	HNTB	Profile	11" x 17"	572	59	N/A - Binder Only
11	B-011-0-54	HNTB	Profile	11" x 17"	573	59	N/A - Binder Only
12	B-012-0-54	HNTB	Profile	11" x 17"	573	59	N/A - Binder Only
13	B-013-0-54	HNTB	Profile	11" x 17"	573	59	N/A - Binder Only
14	B-014-0-54	HNTB	Profile	11" x 17"	573	59	N/A - Binder Only
15	B-015-0-54	HNTB	Profile	11" x 17"	573	59	N/A - Binder Only
16	B-016-0-54	HNTB	Profile	11" x 17"	573	59	N/A - Binder Only
17	B-017-0-54	HNTB	Profile	11" x 17"	573	64	N/A - Binder Only
18	B-018-0-54	HNTB	Profile	11" x 17"	573	64	N/A - Binder Only
19	B-019-0-54	HNTB	Profile	11" x 17"	573	64	N/A - Binder Only
20	B-020-0-54	HNTB	Profile	11" x 17"	573	64	N/A - Binder Only
C-049-0-09	C-049-0-09	ODOT	CPT Log	8.5" x 11"	574	64	N/A - Binder Only
C-057-0-09	C-057-0-09	ODOT	CPT Log	8.5" x 11"	577	64	N/A - Binder Only
C-05-01	C-001-0-06	OU	CPT Log	8.5" x 11"	582	56	N/A - Binder Only
C-05-02	C-002-0-06	OU	CPT Log	8.5" x 11"	583	56	N/A - Binder Only
C-05-03	C-003-0-06	OU	CPT Log	8.5" x 11"	584	56	N/A - Binder Only
C-05-04	C-004-0-06	OU	CPT Log	8.5" x 11"	585	56	N/A - Binder Only
C-05-05	C-005-0-06	OU	CPT Log	8.5" x 11"	586	51	N/A - Binder Only
C-05-06	C-006-0-06	OU	CPT Log	8.5" x 11"	587	51	N/A - Binder Only
C-05-07	C-007-0-06	OU	CPT Log	8.5" x 11"	588	51	N/A - Binder Only
C-05-08	C-008-0-06	OU	CPT Log	8.5" x 11"	589	51	N/A - Binder Only
C-05-09	C-009-0-06	OU	CPT Log	8.5" x 11"	590	51	N/A - Binder Only
C-05-10	C-010-0-06	OU	CPT Log	8.5" x 11"	591	51	N/A - Binder Only
C-05-11	C-011-0-06	OU	CPT Log	8.5" x 11"	592	56	N/A - Binder Only
C-05-12	C-012-0-06	OU	CPT Log	8.5" x 11"	593	56	N/A - Binder Only
C-05-13	C-013-0-06	OU	CPT Log	8.5" x 11"	594	56	N/A - Binder Only
C-05-14	C-014-0-06	OU	CPT Log	8.5" x 11"	595	56	N/A - Binder Only
C-05-15	C-015-0-06	OU	CPT Log	8.5" x 11"	596	56	N/A - Binder Only
P-1	P-001-0-94	BBCM	Boring Log	8.5" x 11"	597	56	N/A - Binder Only
P-2	P-002-0-94	BBCM	Boring Log	8.5" x 11"	601	56	106
P-3	P-003-0-94	BBCM	Boring Log	8.5" x 11"	605	56	N/A - Binder Only
			S-21B, Direct Shear Test	8.5" x 11"	608	-----	-----

**BORING LOG BINDER INDEX**

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						Boring Marker (Plan View)	Boring Log (Profile View)
P-4	P-004-0-94	BBCM	Boring Log	8.5" x 11"	609	56	N/A - Binder Only
			S-29, CU Test	8.5" x 11"	612	-----	-----
			S-29, Consolidation Test	8.5" x 11"	613	-----	-----
P-5	P-005-0-94	BBCM	Boring Log	8.5" x 11"	614	56	N/A - Binder Only
RB-1	R-001-0-06	BBCM	Boring Log	8.5" x 11"	618	47	48
RB-2	R-002-0-06	BBCM	Boring Log	8.5" x 11"	619	49	50
RB-3	R-003-0-06	BBCM	Boring Log	8.5" x 11"	620	49	50
RB-4	R-004-0-06	BBCM	Boring Log	8.5" x 11"	621	49	49
RB-5	R-005-0-06	BBCM	Boring Log	8.5" x 11"	622	73	N/A - Binder Only
RB-6	R-006-0-06	BBCM	Boring Log	8.5" x 11"	623	73	N/A - Binder Only
RB-7	R-007-0-06	BBCM	Boring Log	8.5" x 11"	624	59, 75	76
RB-8	R-008-0-06	BBCM	Boring Log	8.5" x 11"	625	75	76
RB-9	R-009-0-06	BBCM	Boring Log	8.5" x 11"	626	75	76
RB-10	R-010-0-06	BBCM	Boring Log	8.5" x 11"	627	78	N/A - Binder Only
RB-11	R-011-0-06	BBCM	Boring Log	8.5" x 11"	628	78	79
RB-12	R-012-0-06	BBCM	Boring Log	8.5" x 11"	629	78	79, 80
RB-13	R-013-0-06	BBCM	Boring Log	8.5" x 11"	630	78	79
RB-14	R-014-0-06	BBCM	Boring Log	8.5" x 11"	631	75	77
RB-15	R-015-0-06	BBCM	Boring Log	8.5" x 11"	632	64	77
RB-16	R-016-0-06	BBCM	Boring Log	8.5" x 11"	633	78	80
RB-17	R-017-0-06	BBCM	Boring Log	8.5" x 11"	634	73	N/A - Binder Only
RB-18	R-018-0-06	BBCM	Boring Log	8.5" x 11"	635	73	N/A - Binder Only
RB-22	R-022-0-06	BBCM	Boring Log	8.5" x 11"	636	73	N/A - Binder Only
RB-23	R-023-0-06	BBCM	Boring Log	8.5" x 11"	637	73	N/A - Binder Only
R-201	R-201-0-58	ODOT	Profile	11" x 17"	567, 638	69	N/A - Binder Only
R-202	R-202-0-58	ODOT	Profile	11" x 17"	567, 638	69	N/A - Binder Only
R-204	R-204-0-58	ODOT	Profile	11" x 17"	559, 639	73	N/A - Binder Only
SB-1	S-001-0-06	BBCM	Boring Log	8.5" x 11"	640	49	49
SB-2	S-002-0-06	BBCM	Boring Log	8.5" x 11"	643	49	50
SB-3	S-003-0-06	BBCM	Boring Log	8.5" x 11"	646	49	49
SB-4	S-004-0-06	BBCM	Boring Log	8.5" x 11"	649	49	50
SB-5	S-005-0-06	BBCM	Boring Log	8.5" x 11"	652	49	50
SB-6	S-006-0-06	BBCM	Boring Log	8.5" x 11"	655	49	49
SB-7	S-007-0-06	BBCM	Boring Log	8.5" x 11"	658	49	50
SB-8	S-008-0-06	BBCM	Boring Log	8.5" x 11"	661	49	49
SB-9	S-009-0-06	BBCM	Boring Log	8.5" x 11"	664	51	52



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SB-10	S-010-0-06	BBCM	Boring Log	8.5" x 11"	667	51	84
SB-11	S-011-0-06	BBCM	Boring Log	8.5" x 11"	670	51	52
SB-12	S-012-0-06	BBCM	Boring Log	8.5" x 11"	673	51	52
SB-13	S-013-0-06	BBCM	Boring Log	8.5" x 11"	676	69	70, 72
SB-14	S-014-0-06	BBCM	Boring Log	8.5" x 11"	679	69	70
SB-15	S-015-0-06	BBCM	Boring Log	8.5" x 11"	682	69	70
SB-16	S-016-0-06	BBCM	Boring Log	8.5" x 11"	685	69	74
SB-17	S-017-0-06	BBCM	Boring Log	8.5" x 11"	688	69	74
SB-18	S-018-0-06	BBCM	Boring Log	8.5" x 11"	691	69	74
SB-19	S-019-0-06	BBCM	Boring Log	8.5" x 11"	694	73	114
SB-20	S-020-0-06	BBCM	Boring Log	8.5" x 11"	697	73	74, 114
SB-21	S-021-0-06	BBCM	Boring Log	8.5" x 11"	700	73	N/A - Binder Only
SB-22	S-022-0-06	BBCM	Boring Log	8.5" x 11"	703	73	N/A - Binder Only
SB-23	S-023-0-06	BBCM	Boring Log	8.5" x 11"	706	73	N/A - Binder Only
SB-27	S-027-0-06	BBCM	Boring Log	8.5" x 11"	709	75	76
SB-28	S-028-0-06	BBCM	Boring Log	8.5" x 11"	712	75	76
SB-29	S-029-0-06	BBCM	Boring Log	8.5" x 11"	715	78	76, 79
T-9	T-009-0-23	CUT	Profile	11" x 17"	718	78	N/A - Binder Only
T-9-1/2	T-009-1-23	CUT	Profile	11" x 17"	718	78	N/A - Binder Only
T-11	T-011-0-23	CUT	Profile	11" x 17"	718	78	N/A - Binder Only
T-12	T-012-0-23	CUT	Profile	11" x 17"	718	78	N/A - Binder Only
T-13-1/2	T-013-1-23	CUT	Profile	11" x 17"	718	75	N/A - Binder Only
T-14	T-014-0-23	CUT	Profile	11" x 17"	718	75	N/A - Binder Only
T-16-1/2	T-016-1-23	CUT	Profile	11" x 17"	719	75	N/A - Binder Only
T-17	T-017-0-23	CUT	Profile	11" x 17"	719	75	N/A - Binder Only
T-18	T-018-0-23	CUT	Profile	11" x 17"	719	64	N/A - Binder Only
T-18-1/2	T-018-1-23	CUT	Profile	11" x 17"	719	64	N/A - Binder Only
T-19	T-019-0-23	CUT	Profile	11" x 17"	719	64	N/A - Binder Only
VB-2	V-002-0-06	BBCM	Boring Log	8.5" x 11"	720	56	96
VB-3	V-003-0-06	BBCM	Boring Log	8.5" x 11"	724	56	N/A - Binder Only
VB-4	V-004-0-06	BBCM	Boring Log	8.5" x 11"	727	59	60
VB-5	V-005-0-06	BBCM	Boring Log	8.5" x 11"	730	59	60
VB-7	V-007-0-06	BBCM	Boring Log	8.5" x 11"	733	59	62
VB-8	V-008-0-06	BBCM	Boring Log	8.5" x 11"	737	59	62
VB-9	V-009-0-06	BBCM	Boring Log	8.5" x 11"	740	59	62
VB-10	V-010-0-06	BBCM	Boring Log	8.5" x 11"	744	59	62

**BORING LOG BINDER INDEX**

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						Boring Marker (Plan View)	Boring Log (Profile View)
VB-11	V-011-0-06	BBCM	Boring Log	8.5" x 11"	748	64	65
VB-11A	V-011-A-06	BBCM	Boring Log	8.5" x 11"	749	64	67
VB-12	V-012-0-06	BBCM	Boring Log	8.5" x 11"	752	64	98
VB-13	V-013-0-06	BBCM	Boring Log	8.5" x 11"	755	64	77, 100
VB-14	V-014-0-06	BBCM	Boring Log	8.5" x 11"	758	64	65
VB-15	V-015-0-06	BBCM	Boring Log	8.5" x 11"	761	64	65
VB-16	V-016-0-06	BBCM	Boring Log	8.5" x 11"	764	64	102
VB-17	V-017-0-06	BBCM	Boring Log	8.5" x 11"	767	64	65, 71
VB-18	V-018-0-06	BBCM	Boring Log	8.5" x 11"	770	64	72
WB-1	W-001-0-06	BBCM	Boring Log	8.5" x 11"	773	51	53
WB-2	W-002-0-06	BBCM	Boring Log	8.5" x 11"	774	51	53
WB-3	W-003-0-06	BBCM	Boring Log	8.5" x 11"	775	51	54
WB-4	W-004-0-06	BBCM	Boring Log	8.5" x 11"	776	51	54
WB-5	W-005-0-06	BBCM	Boring Log	8.5" x 11"	777	69	74
WB-6	W-006-0-06	BBCM	Boring Log	8.5" x 11"	778	69	115
WB-7	W-007-0-06	BBCM	Boring Log	8.5" x 11"	779	73	74
WB-8	W-008-0-06	BBCM	Boring Log	8.5" x 11"	780	69	72











PID: 77332		BR ID:		PROJECT: CUY-90-14.90		STATION / OFFSET: 137+86, 42.5 LT		START: 4/14/10		END: 4/19/10		PG 6 OF 6		B-039-1-10								
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS		SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
			421.3								GR	CS	FS	SI	CL	LL	PL	PI				
SHALE, GRAY, HIGHLY WEATHERED, VERY WEAK. Encountered methane gas @ 155.5' (continued)			419.8	159	50/2"	-	100	SS-34	n/a	-	-	-	-	-	-	-	-	-	-	-	Rock (V)	
SHALE, GRAY TO DARK GRAY, SLIGHTLY WEATHERED, MODERATELY STRONG TO STRONG, VERY THICK BEDDED, BEDDING DISCONTINUITIES AND LOW ANGLE AT 171.0', 176.4', AND 177.3'; LIMESTONE LAMINA AT 171.0' AND 184.0'; INTACT, TIGHT TO NARROW, VERY ROUGH TO SLIGHTLY ROUGH; RQD 95.8%, REC 100%.				160																		
168.4' - 169.0' Qu = 6234 psi @ 1.4% Strain, E = 9.0 X 10 <sup>5</sup> psi				161																		
				162																		
				163																		
				164																		
				165	92		100	NQ-1														CORE
				166																		
				167																		
				168																		
				169																		
173.5' - 173.9' Qu = 1830 psi @ 1.5% Strain, E = 2.1 X 10 <sup>5</sup> psi				170																		
				171																		
				172																		
				173																		
				174																		
				175	96		100	NQ-2														CORE
				176																		
				177																		
				178																		
				179																		
				180																		
@180.0'; SLIGHTLY PYRITIC.				181																		
				182																		
				183																		
				184																		
				185	100		100	NQ-3														CORE
				186																		
				187																		
				188																		
				189																		
				190																		
				EOB																		

NOTES: GW ENCOUNTERED DURING DRILLING AT 3.0', AFTER DRILLING: 2.5'. 15 HOURS AFTER DRILLING: 2.5'. WATER USED AS CIRCULATING FLUID FROM 33.5' TO 190.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE POWDER; PUMPED 1 BAG CEMENT



PROJECT: <u>CUY-90-14.90</u>	DRILLING FIRM / OPERATOR: <u>OTB / D. HEPNER</u>	DRILL RIG: <u>SIMCO 2800 HSHT</u>	STATION / OFFSET: <u>155+14, 9.8 RT</u>	EXPLORATION ID <u>B-044-1-10</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / WESTERVILLER</u>	HAMMER: <u>SIMCO AUTO</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA / NQ</u>	CALIBRATION DATE: <u>10/22/09</u>	ELEVATION: <u>586.4 (MSL)</u> EOB: <u>190.0 ft.</u>	PAGE 1 OF 6
START: <u>4/9/10</u> END: <u>4/14/10</u>	SAMPLING METHOD: <u>SPT / ST / NQ</u>	ENERGY RATIO (%): <u>83.4</u>	COORD: <u>665849.687 N, 2191091.013 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
ASPHALT, 6.0"	586.4																		
AGGREGATE BASE, 5.0"	585.9 585.5	1	5																
LOOSE TO MEDIUM DENSE, BLACK, <b>COARSE AND FINE SAND</b> , (CINDERS) LITTLE GRAVEL, LITTLE SILT, MOSTLY CINDERS, WET (FILL)	583.4	2	5 4	13	72	SS-1	n/a	-	-	-	-	-	-	-	-	-	29	A-3a (V)	
LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME SILT, TRACE GRAVEL, CONTAINS WOOD AND FEW CINDERS, MOIST (FILL) <b>Strong petroleum odor @ 6.0'</b>		3																	
		4	5 4	10	67	SS-2	n/a	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
		5																	
		6	42 50/2"	-	6	SS-3	n/a	-	-	-	-	-	-	-	-	-		A-3a (V)	
SOFT TO STIFF, GRAY, <b>SILTY CLAY</b> , LITTLE SAND, SLIGHTLY ORGANIC, CONTAINS DESSICATED ROOTS, MOIST	579.4	7																	
		8																	
		9	WOH 2	6	83	SS-4	0.3- 0.8	-	-	-	-	-	-	-	-	-	29	A-6b (V)	
		10																	
		11																	
		12																	
		13																	
UC = 1077 psf @ 12% strain		14																	
		15			95	ST-5	0.9- 1.3	0	1	11	51	37	37	19	18	33		A-6b (11)	
		16																	
	569.4	17																	
SOFT TO MEDIUM STIFF, GRAY, <b>ORGANIC CLAY</b> , TRACE SAND, CONTAINS DESSICATED VEGETATION, WET		18																	
		19	WOH WOH	1	100	SS-6	0.4- 0.8	-	-	-	-	-	-	-	-	-	70	A-8b (V)	
		20																	
		21																	
		22																	
LOOSE, GRAY, <b>SILT</b> , INTERLAYERED WITH SILTY CLAY, TRACE FINE SAND, WET	564.4	23																	
		24	WOH 2	6	89	SS-7	0.7- 0.8	-	-	-	-	-	-	-	-	-	23	A-4b (V)	
		25																	
		26																	
	559.9	27																	
MEDIUM STIFF TO VERY STIFF, GRAY, <b>SILT AND CLAY</b> , TRACE SAND, TRACE GRAVEL, FEW SILT LENSES, DAMP TO MOIST UC = 6620 psf @ 4.7% strain		28																	
		29			99	ST-8	2.3- 2.8	1	0	1	52	46	31	18	13	22		A-6a (9)	









PID: 77332		BR ID:		PROJECT: CUY-90-14.90		STATION / OFFSET: 155+14, 9.8 RT		START: 4/9/10		END: 4/14/10		PG 6 OF 6		B-044-1-10									
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED			
										GR	CS	FS	SI	CL	LL	PL	PI						
GREY HIGHLY WEATHERED SHALE Encountered methane gas at 159'			427.9																				
			427.4		159	35	-	100	SS-34	n/a	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)		
SHALE, GRAY TO DARK GRAY, SLIGHTLY TO MODERATELY WEATHERED, SLIGHTLY TO MODERATELY STRONG, VERY THICK BEDDED, BEDDING DISCONTINUITIES AND HIGH ANGLE AT 164.9' TO 165.4' AND 188.3' TO 188.7'; LOW ANGLE 161.5', 167.8', 171.8', 173.7', 176.6', 185.5', 185.8', AND 186.0'; LIMESTONE LAMINA AT 165.4' TO 165.5'; INTACT, NARROW TO TIGHT, SLIGHTLY ROUGH TO VERY ROUGH.; RQD 93.8%, REC 98.1%. Weak zone 162.5 to 170; slightly fractured 160.0' to 163.6' 164.4' - 164.9' Qu = 4597 psi @ 2.0% Strain, E = 6.0 X 10 <sup>5</sup> psi  166.8' - 167.4' Qu = 6278 psi @ 1.8% Strain, E = 5.2 X 10 <sup>5</sup> psi			426.4	TR	160																		
					161																		
171.8' - 172.3' Qu = 7656 psi @ 1.8% Strain, E = 6.9 X 10 <sup>5</sup> psi					162																		
					163																		
					164																		
					165	87	94	NQ-1															
					166																		
					167																		
					168																		
					169																		
					170																		
					171																		
					172																		
					173																		
					174																		
					175	98	100	NQ-2															
					176																		
					177																		
					178																		
					179																		
					180																		
					181																		
					182																		
					183																		
					184																		
					185	92	100	NQ-3															
					186																		
					187																		
					188																		
					189																		
			396.4	EOB	190																		

NOTES: GW ENCOUNTERED DURING DRILLING AT 6.0', AT COMPLETION: 6.4'. WATER USED AS CIRCULATING FLUID FROM 43.5' TO 190.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: Poured 1 BAG BENTONITE PELLETS; PUMPED 1 BAG BENTONITE POWDER; PUMPED 2 BAG CEMENT

PROJECT: <u>CUY-90-14.90</u>	DRILLING FIRM / OPERATOR: <u>OTB / D. HEPNER</u>	DRILL RIG: <u>SIMCO 2800 HSHT</u>	STATION / OFFSET: <u>160+75, 56.2 LT</u>	EXPLORATION ID <u>B-047-2-10</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / WESTERVILLER</u>	HAMMER: <u>SIMCO AUTO</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA / NQ</u>	CALIBRATION DATE: <u>10/22/09</u>	ELEVATION: <u>666.5 (MSL)</u> EOB: <u>248.5 ft.</u>	PAGE 1 OF 8
START: <u>4/5/10</u> END: <u>4/8/10</u>	SAMPLING METHOD: <u>SPT / NQ</u>	ENERGY RATIO (%): <u>83.4</u>	COORD: <u>666324.253 N, 2191401.822 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
<b>CONCRETE, 8.0"</b>	666.5																		
MEDIUM DENSE, BROWN, DARK BROWN AND DARK GRAY, <b>COARSE AND FINE SAND</b> , LITTLE TO TRACE GRAVEL, LITTLE TO TRACE SILT, MOIST Contains Brick Fragments <b>(FILL)</b>	665.8	1 2 3 4 5	5 8 4	17	28	SS-1	n/a	-	-	-	-	-	-	-	-	-	6	A-3a (V)	
VERY LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE GRAVEL, TRACE SILT, TRACE CLAY, DRY Contains Brick Fragments <b>(FILL)</b>	661.0	6 7 8 9 10	1 2 1	4	67	SS-2	n/a	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
STIFF TO VERY STIFF, BROWN, <b>SILT AND CLAY</b> , TRACE FINE SAND, CONTAINS FEW SILT LENSES, DAMP	654.5	11 12 13																	
MEDIUM DENSE, BROWN, <b>FINE SAND</b> , TRACE COARSE SAND, TRACE SILT, TRACE CLAY, DAMP	652.5	14 15	1 5 9	19	89	SS-3	1.6 - 2.5/ n/a	-	-	-	-	-	-	-	-	-	21 16	A-6a (V) A-3 (V)	
STIFF, BROWN, <b>SILT</b> , SOME CLAY, LITTLE SAND, WET	650.0	16 17 18 19 20																	
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, DRY	644.5	21 22 23 24 25	4 2 4	8	100	SS-4	1.0 - 1.8	0	2	11	60	27	27	19	8	25	A-4b (8)		
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, DRY	644.5	26 27 28 29	5 5 8	18	100	SS-5	n/a	-	-	-	-	-	-	-	-	5	A-3a (V)		
MEDIUM DENSE, GRAY-BROWN, <b>SANDY SILT</b> , TRACE CLAY, MOIST	639.5	30 31 32 33	4 7 7	19	83	SS-6	n/a	0	10	48	35	7	NP	NP	NP	16	A-4a (1)		















PID: 77332		BR ID:		PROJECT: CUY-90-14.90		STATION / OFFSET: 160+75, 56.2 LT		START: 4/5/10		END: 4/8/10		PG 8 OF 8		B-047-2-10						
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
										GR	CS	FS	SI	CL	LL	PL	PI			
VERY DENSE, GRAY, SILT, TRACE TO SOME SAND, LITTLE CLAY, DAMP (continued)			443.7	223	18 27 38	90	100	SS-45	n/a	-	-	-	-	-	-	-	-	14	A-4b (V)	
			224																	
			225																	
			226																	
			227																	
			228																	
			229																	
			230																	
			231																	
			232																	
VERY DENSE, DARK GRAY, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, SILT, AND CLAY, (SHALE FRAGMENTS), DAMP			435.0	233	28 34 52	120	83	SS-47	n/a	-	-	-	-	-	-	-	-	17	A-2-6 (V)	
			234																	
			235																	
SHALE, GRAY, SLIGHTLY WEATHERED, SLIGHTLY STRONG, VERY THICK BEDDED, MANY DIAGONAL FRACTURES FROM 238.5' TO 244.6' LOW ANGLE: 239.9', 241.8', AND 244.5'. HIGH ANGLE: 238.6' T O 239.0', 239.3' TO 239.6', 240.0' TO 240.4', 204.4' TO 240.9'. 240.9' TO 241.8', 242.2' TO 242.4'. THIN BANDS (1/8" OR LESS) OF LIMESTONE AT 242.6', 242.7', 246.5'. NARROW, SLIGHTLY ROUGH; RQD 93.8%, REC 99.6%.  Quilt = 2460 psi @ 0.7% strain - 245.7' to 246.1'			429.5	236	84	100	NX-1													CORE
			237																	
			238																	
			239																	
			240																	
			241																	
			242																	
			243																	
			244																	
			245																	
246																				
247																				
248																				
			418.0	EOB																

NOTES: GW NOT NOTED DURING DRILLING. AT COMPLETION: 4.7'. 15 HOURS AFTER DRILLING: 15.5'. WATER USED AS CIRCULATING FLUID FROM 48.5' TO 248.5'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-14.90</u>	DRILLING FIRM / OPERATOR: <u>OTB / D. HEPNER</u>	DRILL RIG: <u>SIMCO 2800 HSHT</u>	STATION / OFFSET: <u>524+47, 115.0 RT</u>	EXPLORATION ID <u>B-069-1-10</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / WESTERVILLER</u>	HAMMER: <u>SIMCO AUTO</u>	ALIGNMENT: <u>TEMPORARY I-90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/22/09</u>	ELEVATION: <u>662.0 (MSL)</u> EOB: <u>100.0 ft.</u>	PAGE 1 OF 4
START: <u>4/23/10</u> END: <u>4/27/10</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>83.4</u>	COORD: <u>667587.535 N, 2193939.024 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
<b>TOPSOIL, 2.4"</b>	661.8	1	4														<><><>	
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE FINE GRAVEL, SOME SILT, DRY (FILL)		2	4	11	78	SS-1	n/a	-	-	-	-	-	-	-	5	A-3a (V)	<><><>	
	659.0	3															<><><>	
VERY LOOSE TO LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE GRAVEL, TRACE CLAY, MOIST		4	3	7	100	SS-2	n/a	7	19	58	9	7	NP	NP	NP	11	A-3a (0)	<><><>
		5	2														<><><>	
		6	1														<><><>	
		7	2	4	72	SS-3	n/a	-	-	-	-	-	-	-	8	A-3a (V)	<><><>	
		8															<><><>	
	652.0	9	1	7	72	SS-4	n/a	-	-	-	-	-	-	-	11	A-3a (V)	<><><>	
MEDIUM DENSE TO DENSE, BROWN TO GRAY-BROWN, <b>COARSE AND FINE SAND</b> , TRACE TO LITTLE SILT, TRACE GRAVEL, TRACE CLAY, MOIST TO WET		10	2	3													<><><>	
		11	3														<><><>	
		12	4	14	78	SS-5	n/a	9	17	60	9	5	NP	NP	NP	12	A-3a (0)	<><><>
		13															<><><>	
13.5' changes to wet		14	6	8	24	SS-6	n/a	-	-	-	-	-	-	-	24	A-3a (V)	<><><>	
		15															<><><>	
		16	5														<><><>	
		17	9	26	89	SS-7	n/a	-	-	-	-	-	-	-	22	A-3a (V)	<><><>	
		18															<><><>	
		19	2	4	14	SS-8	n/a	-	-	-	-	-	-	-	25	A-3a (V)	<><><>	
		20		6													<><><>	
		21															<><><>	
		22															<><><>	
		23															<><><>	
		24	7	13	39	SS-9	n/a	0	2	83	12	3	NP	NP	NP	23	A-3a (0)	<><><>
		25		15													<><><>	
		26															<><><>	
		27															<><><>	
		28															<><><>	
		29	3	5	19	SS-10	n/a	-	-	-	-	-	-	-	21	A-3a (V)	<><><>	

PID: 77332		BR ID:		PROJECT: CUY-90-14.90		STATION / OFFSET: 524+47, 115.0 RT		START: 4/23/10		END: 4/27/10		PG 2 OF 4		B-069-1-10						
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
										GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM DENSE TO DENSE, BROWN TO GRAY-BROWN, <b>COARSE AND FINE SAND</b> , TRACE TO LITTLE SILT, TRACE GRAVEL, TRACE CLAY, MOIST TO WET (continued)			632.0	31																
			629.0	32																
DENSE TO MEDIUM DENSE, GRAY-BROWN, <b>SILT</b> , "AND" TO LITTLE SAND, TRACE TO LITTLE CLAY, TRACE GRAVEL, WET TO DAMP			629.0	33																
				34	8	10	31	94	SS-11	n/a	1	0	40	51	8	NP	NP	NP	25	A-4b (5)
DENSE TO MEDIUM DENSE, GRAY-BROWN, <b>SILT</b> , "AND" TO LITTLE SAND, TRACE TO LITTLE CLAY, TRACE GRAVEL, WET TO DAMP			629.0	35																
				36																
DENSE TO MEDIUM DENSE, GRAY-BROWN, <b>SILT</b> , "AND" TO LITTLE SAND, TRACE TO LITTLE CLAY, TRACE GRAVEL, WET TO DAMP			629.0	37																
				38																
DENSE TO MEDIUM DENSE, GRAY-BROWN, <b>SILT</b> , "AND" TO LITTLE SAND, TRACE TO LITTLE CLAY, TRACE GRAVEL, WET TO DAMP			629.0	39	8	5	18	89	SS-12	n/a	0	0	15	72	13	21	20	1	20	A-4b (8)
				40																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	41																
				42																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	43																
				44	2	2	3	7	100	SS-13	1.0- 1.3	-	-	-	-	-	-	-	-	21
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	45																
				46																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	47																
				48																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	49				100	ST-14	1.0- 1.8	1	1	1	66	31	26	18	8	23	A-4b (8)
				50																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	51																
				52																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	53																
				54	3	4	6	14	89	SS-15	2.1- 2.8	0	0	1	72	27	26	20	6	21
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	55																
				56																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	57																
				58																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	59	3	5	17	94	SS-16	2.2- 2.5	-	-	-	-	-	-	-	-	20	A-4b (V)
				60																
STIFF TO VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST			620.0	61																
				62																

UC = 2044 psf @ 4.4% strain





MATERIAL DESCRIPTION AND NOTES	ELEV.	567.7	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
									GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM STIFF TO VERY STIFF, GRAY, SANDY SILT, "AND" CLAY, TRACE GRAVEL, MOIST (continued)			95			88	ST-23	0.8-1.3	1	2	3	45	49	28	18	10	23	A-4a (8)	<V>
			96																<V>
			97																<V>
			98																<V>
			99		5	8	24	100	SS-24	1.8-3.3	-	-	-	-	-	-	-	22	A-4a (V)
	562.0		100																EOB



NOTES: GROUNDWATER ENCOUNTERED DURING DRILLING AT 12.5'. WATER USED AS CIRCULATING FLUID FROM 50.0' TP 98.5'. CAVE DEPTH 12.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG CEMENT; PLACED SOIL CUTTINGS







PID: 77332		BR ID:		PROJECT: CUY-90-14.90		STATION / OFFSET: 524+97.48, 128.83 RT		START: 4/22/10		END: 4/23/10		PG 4 OF 4		B-069-2-10							
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
			569.3							GR	CS	FS	SI	CL	LL	PL	PI				
MEDIUM STIFF TO STIFF, GRAY, SANDY SILT, "AND" CLAY, TRACE GRAVEL, WET TO MOIST (continued)			567.5	95	5	14	94	SS-23	1.3	-	-	-	-	-	-	-	-	-	21	A-4a (V)	<V>
SOFT, GRAY, SILT AND CLAY, TRACE SAND, MOIST				96																	<V>
				97																	<V>
				98																	<V>
				99																	<V>
			563.5	100	WOH WOH 2	3	100	SS-24	0.3- 0.5	0	1	2	24	73	39	22	17	33	A-6b (11)	<V>	
				EOB																	<V>



NOTES: GROUNDWATER ENCOUNTERED DURING DRILLING AT 12.5'. WATER USED AS CIRCULATING FLUID FROM 40.0' TO 100.0'. CAVE DEPTH 6.6'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: CUY-90-14.90	DRILLING FIRM / OPERATOR: OTB / D. HEPNER	DRILL RIG: SIMCO 2800 HSHT	STATION / OFFSET: 23+36.43, 23.74 RT	EXPLORATION ID: B-074-1-10
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: B&P / WESTERVILLER	HAMMER: SIMCO AUTO	ALIGNMENT: E. 9TH	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/22/09	ELEVATION: 670.1 (MSL) EOB: 150.0 ft.	PAGE: 1 OF 5
START: 4/20/10 END: 4/21/10	SAMPLING METHOD: SPT	ENERGY RATIO (%): 83.4	COORD: 665827.802 N, 2192754.416 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
LOOSE, BROWN AND BLACK, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , TRACE SILT, CONTAINS CINDERS, DAMP (FILL)	670.1	1																
		2																
		3																
		4	2	2	6	56	SS-1	n/a	-	-	-	-	-	-	-	-	12	A-1-b (V)
LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , INTERBEDDED WITH VERY STIFF SILTY CLAY, TRACE FINE GRAVEL, FEW SILT LENSES, DAMP  at 8.5' Hand Pentrometer reading indicates Relative Consistency of 3.0" Silty Clay layer only.	665.1	5																
		6																
		7																
		8																
		9	3	3	8	89	SS-2	2.60	-	-	-	-	-	-	-	-	14	A-3a (V)
MEDIUM DENSE TO DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DRY TO DAMP  at 18.5' Hand Pentrometer reading indicates Relative Consistency of 2.0" Silty Clay layer only.  at 27.0' becomes dense	657.6	10																
		11																
		12																
		13																
		14	4	8	22	100	SS-3	n/a	6	18	63	11	2	NP	NP	NP	3	A-3a (0)
		15																
		16																
		17																
		18																
		19	4	5	14	89	SS-4	2.60	-	-	-	-	-	-	-	-	2	A-3a (V)
	20		5															
	21																	
	22																	
	23																	
	24	7	9	25	89	SS-5	n/a	-	-	-	-	-	-	-	-	4	A-3a (V)	
	25		9															
	26																	
	27																	
	28																	
	29	5	15	43	89	SS-6	n/a	-	-	-	-	-	-	-	-	3	A-3a (V)	

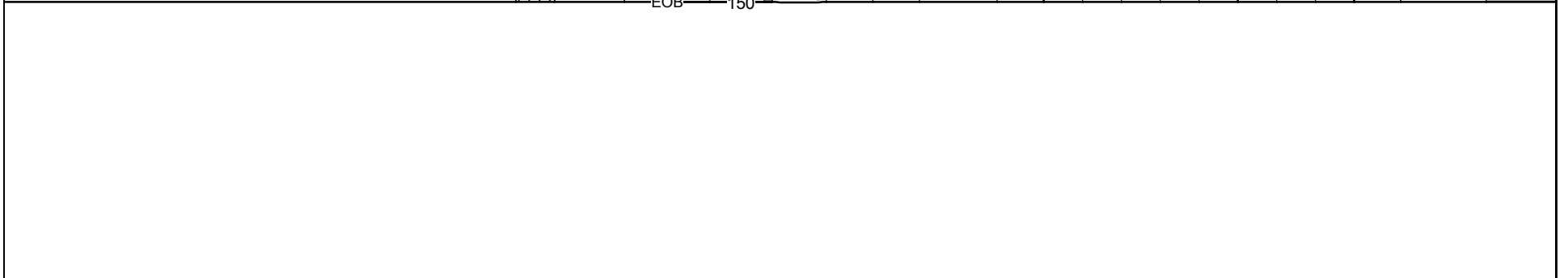








MATERIAL DESCRIPTION AND NOTES	ELEV. 543.7	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
VERY STIFF, GRAY - BROWN, SILT, "AND" CLAY, TRACE SAND, MOIST (continued)	542.1	127																
VERY STIFF, GRAY - BROWN, SILT AND CLAY, FEW SILT LENSES, MOIST		128																
		129	6 11 15	36	83	SS-26	2.8- 3.3	-	-	-	-	-	-	-	-	23	A-6a (V)	
		130																
		131																
		132																
	133																	
	134	6 11 14	35	100	SS-27	2.0- 3.0	0	0	0	39	61	30	18	12	24	A-6a (9)		
	135																	
	136																	
	137																	
	138																	
	139	8 11 14	35	100	SS-28	2.3- 3.0	-	-	-	-	-	-	-	-	25	A-6a (V)		
	140																	
	141																	
	142																	
	143																	
	144	7 12 15	38	89	SS-29	3.0- 3.5	-	-	-	-	-	-	-	-	24	A-6a (V)		
	145																	
	146																	
	147																	
	148																	
	149	7 10 13	32	89	SS-30	2.4- 3.1	-	-	-	-	-	-	-	-	24	A-6a (V)		
	520.1	150																



NOTES: GW ENCOUNTERED DURING DRILLING AT 42.5'. AFTER DRILLING: 23.9'. 15.0 HOURS AFTER DRILLING: 40.1'. WATER USED AS CIRCULATING FLUID FROM 48.5' TP 148.5'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE PELLETS; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY- IR-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P. WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>91+36.33, 569.85 LT</u>	EXPLORATION ID <u>B-001-0-09</u>
TYPE: <u>ROADWAY</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R. WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>I-90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>2.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>653.1 (MSL)</u> EOB: <u>10.0 ft.</u>	PAGE 1 OF 1
START: <u>5/23/09</u> END: <u>5/23/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>659699.278 N, 2189150.928 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL	
								GR	CS	FS	SI	CL	LL	PL	PI				
Asphalt 4.0"	653.1																		
Concrete 8.0"	652.8																		
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, LITTLE GRAVEL, TRACE CLAY, DAMP	652.1	1																	
		2	9	12	14	39	89	SS-1	-	13	16	51	15	5	NP	NP	NP	9	A-3a (0)
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, DAMP		3	9	10	9	28	94	SS-2	-	0	34	55	8	3	NP	NP	NP	5	A-3a (0)
Same as above, moist		4																	
		5	9	9	8	25	100	SS-3	-	-	-	-	-	-	-	-	-	15	A-3a (V)
		6																	
		7																	
		8																	
MEDIUM DENSE, GRAY, <b>SANDY SILT</b> , TRACE CLAY, WET	644.6	8																	
		9	5	4	5	13	100	SS-4	-	-	-	-	-	-	-	-	-	29	A-4a (V)
	643.1	10																	
		EOB																	

NOTES: GW ENCOUNTERED AT 8.5'. DRY ON COMPLETION (CAVE @ 7.5')

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 92+15, 16.0 LT	EXPLORATION ID: B-002-0-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R.WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 706.1 (MSL) EOB: 25.0 ft.	PAGE: 1 OF 1
START: 5/22/09 END: 5/22/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 659812.061 N, 2189699.157 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6.0" Asphalt	706.1																	
12.0" Concrete	705.6	1															< V < L 1 1 1 1 1 1	
	704.6	2	6	16	83	SS-1	-	-	-	-	-	-	-	-	10	A-3a (V)		
		3	5															
		4	6	31	78	SS-2	-	22	23	28	21	6	NP	NP	NP	-	A-3a (0)	
		5	15															
		6	3															
		7	10	36	72	SS-3	-	-	-	-	-	-	-	-	12	A-3a (V)		
		8	14															
@8.5'; VERY DENSE		9	10	54	89	SS-4	-	-	-	-	-	-	-	-	13	A-3a (V)		
		10	16															
		11	20															
VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, DAMP		12	17	57	100	SS-5	-	16	33	29	15	7	NP	NP	NP	8	A-3a (0)	
		13	18															
		14	20	66	89	SS-6	-	-	-	-	-	-	-	-	12	A-3a (V)		
		15	24															
@16.0'; SAME, W/ RED BRICK FRAGMENTS		16	17	61	94	SS-7	-	-	-	-	-	-	-	-	9	A-3a (V)		
		17	20															
		18	21															
		19	14	51	94	SS-8	-	-	-	-	-	-	-	-	9	A-3a (V)		
		20	16															
		21	18															
		22	14	60	89	SS-9	-	-	-	-	-	-	-	-	8	A-3a (V)		
		23	19															
		24	21															
	681.1	24	16	55	83	SS-10	-	-	-	-	-	-	-	-	10	A-3a (V)		
		25	19															
		25	18															

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

PROJECT: <u>CUY- IR-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P. WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>93+16.96, 311.73 LT</u>	EXPLORATION ID <u>B-003-0-09</u>
TYPE: <u>ROADWAY</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R. WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>I-90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>2.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>664.6 (MSL)</u> EOB: <u>10.0 ft.</u>	PAGE 1 OF 1
START: <u>5/28/09</u> END: <u>5/28/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>659895.556 N, 2189397.352 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL
								GR	CS	FS	SI	CL	LL	PL	PI			
Asphalt 6.0"	664.6																	
Concrete 12.0"	664.1																	
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, TRACE SILT, TRACE CLAY, DAMP	663.1	1																
	661.6	2	10 12 13	37	72	SS-1	-	14	26	46	10	4	NP	NP	NP	6	A-3a (0)	
COBBLE @ 3.0'		3																
		4	50	-	0	SS-2	-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
DENSE TO MEDIUM DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, DAMP		5	10 12 13	37	72	SS-3	-	42	17	26	11	4	NP	NP	NP	8	A-1-b (0)	
		6																
		7																
		8																
		9	11 9 8	25	78	SS-4	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
	654.6	10																
		EOB																

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NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

PROJECT: <u>CUY- IR-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P. WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>93+47.13, 24.68 RT</u>	EXPLORATION ID <u>B-004-0-09</u>
TYPE: <u>ROADWAY</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R. WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>I-90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>2.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>706.3 (MSL)</u> EOB: <u>10.0 ft.</u>	PAGE 1 OF 1
START: <u>5/22/09</u> END: <u>5/22/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>659946.515 N, 2189731.249 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL	
								GR	CS	FS	SI	CL	LL	PL	PI				
Asphalt 6.0"	706.3																		
Concrete 12.0"	705.8																		
MEDIUM DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, DAMP	704.8	1																	
	703.3	2	9	8	9	25	72	SS-1	-	24	26	29	14	7	NP	NP	NP	9	A-1-b (0)
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, DAMP		3																	
		4	12	22	18	60	83	SS-2	-	21	20	34	17	8	NP	NP	NP	8	A-3a (0)
		5	16	17	22	58	89	SS-3	-	-	-	-	-	-	-	-	-	10	A-3a (V)
		6																	
		7																	
		8																	
		9	13	20	22	63	83	SS-4	-	-	-	-	-	-	-	-	-	8	A-3a (V)
	696.3	10																	
			EOB																

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NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 94+12, 18.0 LT	EXPLORATION ID: B-005-0-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R. WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 705.8 (MSL) EOB: 25.0 ft.	PAGE: 1 OF 1
START: 5/22/09 END: 5/22/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660008.937 N, 2189685.026 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6.0" Asphalt	705.8																	
12.0" Concrete	705.3																	
VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, MOIST	704.3	1																
		2	15	15	51	100	SS-1	-	-	-	-	-	-	-	-	8	A-3a (V)	
		3		19														
		4	17	21	64	100	SS-2	-	-	-	-	-	-	-	-	8	A-3a (V)	
		5		22														
		6	14	23	61	100	SS-3	-	-	-	-	-	-	-	-	9	A-3a (V)	
		7		18														
		8																
VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, MOIST		9	14	16	51	100	SS-4	-	13	23	39	18	7	NP	NP	NP	11	A-3a (0)
		10		18														
@11.0'; DENSE		11	14	17	48	100	SS-5	-	-	-	-	-	-	-	-	-	10	A-3a (V)
		12		15														
@13.5'; VERY DENSE		13																
		14	18	26	76	94	SS-6	-	-	-	-	-	-	-	-	-	10	A-3a (V)
		15		25														
		16	25	30	88	100	SS-7	-	8	17	53	17	5	NP	NP	NP	8	A-3a (0)
VERY DENSE TO DENSE, BROWN AND BLACK, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP		17		29														
		18																
		19	8	16	45	89	SS-8	-	-	-	-	-	-	-	-	-	9	A-3a (V)
		20		14														
		21																
		22	20	19	51	94	SS-9	-	-	-	-	-	-	-	-	-	10	A-3a (V)
		23		15														
		24	8	12	37	89	SS-10	-	-	-	-	-	-	-	-	-	9	A-3a (V)
	680.8	25		13														

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS



PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 94+59, 208.0 LT	EXPLORATION ID: B-006-0-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R.WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 673.1 (MSL) EOB: 25.0 ft.	PAGE: 1 OF 1
START: 5/28/09 END: 5/28/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660043.710 N, 2189491.980 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6.0" Asphalt.	673.1																	
12.0" Concrete.	672.6																	
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP	671.6	1																
Same, Medium Dense to 18.5'		2	13 15	45	94	SS-1	-	-	-	-	-	-	-	-	-	6	A-3a (V)	
		3																
		4	5 4	12	72	SS-2	-	4	15	63	14	4	NP	NP	NP	9	A-3a (0)	
		5																
		6	5															
		7	5 4	13	78	SS-3	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
		8																
		9	5 6	16	72	SS-4	-	-	-	-	-	-	-	-	-	4	A-3a (V)	
		10																
		11	5															
	12	7 7	21	83	SS-5	-	-	-	-	-	-	-	-	-	5	A-3a (V)		
	13																	
	14	4 7	21	78	SS-6	-	-	-	-	-	-	-	-	-	4	A-3a (V)		
	15																	
Moist		16	5 6	18	72	SS-7	-	-	-	-	-	-	-	-	14	A-3a (V)		
		17																
		18																
LOOSE TO DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME SILT, TRACE CLAY, WET		19	2 3	7	100	SS-8	-	0	0	67	30	3	NP	NP	NP	27	A-3a (0)	
		20																
		21																
		22	11 12	42	100	SS-9	-	-	-	-	-	-	-	-	23	A-3a (V)		
		23																
		24	18 12	34	100	SS-10	-	-	-	-	-	-	-	-	22	A-3a (V)		
	648.1	25																

NOTES: DRY ON COMPLETION.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 96+11, 20.0 LT	EXPLORATION ID: B-007-0-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R. WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 704.7 (MSL) EOB: 25.0 ft.	PAGE: 1 OF 1
START: 5/20/09 END: 5/20/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660207.137 N, 2189670.706 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6.0" Asphalt.	704.7																	
12.0" Concrete.	704.2																	
VERY DENSE TO DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP	703.2	1																
		2	10 16 18	51	100	SS-1	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
		3																
		4	4 16 9	37	100	SS-2	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
		5																
		6	38 50/3"	-	100	SS-3	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
		7																
		8																
		9	5 13 19	48	89	SS-4	-	8	19	41	25	7	NP	NP	NP	8	A-3a (0)	
		10																
DENSE TO VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME SILT, TRACE GRAVEL, TRACE CLAY, DAMP		11	17 21 30	76	94	SS-5	-	-	-	-	-	-	-	-	8	A-3a (V)		
		12																
		13																
		14	22 50/4"	-	80	SS-6	-	-	-	-	-	-	-	-	6	A-3a (V)		
		15																
		16	17 21 27	72	100	SS-7	-	-	-	-	-	-	-	-	8	A-3a (V)		
		17																
		18																
		19	19 24 33	85	100	SS-8	-	22	26	29	15	8	NP	NP	NP	5	A-3a (0)	
		20																
Same w/ red brick fragments.		21	36 25 33	86	100	SS-9	-	-	-	-	-	-	-	-	8	A-3a (V)		
		22																
		23																
		24	8 14 20	51	100	SS-10	-	-	-	-	-	-	-	-	10	A-3a (V)		
Same w/ red brick fragments.		25																
	679.7	EOB																

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

PROJECT: <u>CUY-90-15.42</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P. WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>96+42, 147.0 LT</u>	EXPLORATION ID <u>B-008-0-09</u>
TYPE: <u>NOISE WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>I90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>682.4 (MSL)</u> EOB: <u>25.0 ft.</u>	PAGE 1 OF 1
START: <u>5/28/09</u> END: <u>5/28/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>660229.846 N, 2189541.580 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6.0" Asphalt.	682.4																	
12.0" Concrete.	681.9	1															< \ / >	
MEDIUM DENSE TO DENSE, BROWN AND BLACK, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, DAMP	680.9	2	7	8	24	89	SS	-	-	-	-	-	-	-	-	-	11	A-3a (V)
		3																< \ / >
		4	36	50/5"	-	118	SS	-	17	24	30	19	10	NP	NP	NP	8	A-3a (0)
		5																< \ / >
		6	8															< \ / >
		7	9	5	21	56	SS	-	-	-	-	-	-	-	-	-	9	A-3a (V)
		8																< \ / >
		9	10	13	40	72	SS	-	-	-	-	-	-	-	-	-	8	A-3a (V)
		10																< \ / >
		11	4	6	18	78	SS	-	-	-	-	-	-	-	-	-	7	A-3a (V)
		12																< \ / >
		13																< \ / >
		14	5	4	12	72	SS	-	-	-	-	-	-	-	-	-	6	A-3a (V)
		15																< \ / >
	16	6	6	21	78	SS	-	-	-	-	-	-	-	-	-	6	A-3a (V)	
	17																< \ / >	
	18																< \ / >	
MEDIUM DENSE TO DENSE, BROWN, <b>SANDY SILT</b> , TRACE GRAVEL, TRACE CLAY, MOIST TO WET	663.9	19	7	7	21	72	SS	-	1	14	47	32	6	NP	NP	NP	10	A-4a (1)
		20																< \ / >
		21																< \ / >
		22	10	8	21	72	SS	-	-	-	-	-	-	-	-	-	10	A-4a (V)
		23																< \ / >
		24	11	12	39	78	SS	-	-	-	-	-	-	-	-	-	21	A-4a (V)
	657.4	25	14														< \ / >	
		EOB																

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

PROJECT: CUY- IR-90-15.24	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 97+47.62, 24.36 RT	EXPLORATION ID B-009-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: B&P / R. WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I-90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 2.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 704.2 (MSL) EOB: 10.0 ft.	PAGE 1 OF 1
START: 5/22/09 END: 5/22/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660346.216 N, 2189706.105 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL
								GR	CS	FS	SI	CL	LL	PL	PI			
Asphalt 3.0" Concrete 12.0"	704.2 704.0																	
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME GRAVEL, LITTLE SILT, TRACE CLAY, DAMP	703.0	1																
		2	11 12 13	37	89	SS-1	-	21	27	35	12	5	NP	NP	NP	10	A-3a (0)	
DENSE TO MEDIUM DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, DAMP Contains few decayed wood chips	701.2	3																
		4	11 15 15	45	100	SS-2	-	21	37	26	11	5	NP	NP	NP	10	A-1-b (0)	
		5	12 14 16	45	100	SS-3	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
		6																
		7																
		8																
		9	8 10 8	27	94	SS-4	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	
	694.2	10																
		EOB																

NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 NONROADWAY.GPJ

PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 98+12, 18.0 LT	EXPLORATION ID: B-010-0-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R.WEBB	HAMMER: DIETRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 704.0 (MSL) EOB: 25.0 ft.	PAGE: 1 OF 1
START: 5/19/09 END: 5/19/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660407.803 N, 2189659.419 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6.0" Asphalt.	704.0																	
12.0" Concrete.	703.5																	
	702.5	1																
DENSE TO MEDIUM DENSE, BROWN AND BLACK TO RUSTY BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, DAMP TO MOIST		2	10	46	100	SS-1	-	-	-	-	-	-	-	-	8	A-3a (V)		
		3	15															
		4	16															
		5	8	43	89	SS-2	-	9	27	35	21	8	NP	NP	NP	19	A-3a (0)	
		6	13															
		7	16															
		8	11	67	100	SS-3	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
		9	17															
		10	28															
		11	8	46	100	SS-4	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
MEDIUM DENSE TO LOOSE, RUSTY BROWN TO BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, MOIST TO DAMP		12	16															
		13	15															
		14	18	67	100	SS-5	-	-	-	-	-	-	-	-	11	A-3a (V)		
		15	22															
		16	23															
		17	11	74	100	SS-6	-	8	18	39	26	9	NP	NP	NP	13	A-3a (0)	
		18	22															
		19	28															
		20	15	54	100	SS-7	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
		21	21															
Same w/ red brick fragments.		22	12	46	100	SS-8	-	-	-	-	-	-	-	-	11	A-3a (V)		
		23	15															
		24	11	34	100	SS-9	-	-	-	-	-	-	-	-	11	A-3a (V)		
		25	12															
	679.0	24	14	31	100	SS-10	-	-	-	-	-	-	-	-	20	A-3a (V)		
		25	11															
			10															

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 NONROADWAY.GPJ

PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 98+52, 116.0 LT	EXPLORATION ID: B-011-0-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R.WEBB	HAMMER: DIETRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 691.9 (MSL) EOB: 25.0 ft.	PAGE: 1 OF 1
START: 5/27/09 END: 5/27/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660441.249 N, 2189559.694 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6.0" Asphalt.	691.5																<><><>	
12.0" Concrete.	690.5																<><><>	
VERY DENSE, BROWN AND BLACK TO RUSTY BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, DAMP		1															<><><>	
		2	10	45	100	SS-1	-	-	-	-	-	-	-	-	9	A-1-b (V)	<><><>	
		3	13														<><><>	
		4	9	43	94	SS-2	-	-	-	-	-	-	-	-	7	A-1-b (V)	<><><>	
		5	17														<><><>	
		6	7														<><><>	
		7	12	34	89	SS-3	-	32	24	25	13	6	NP	NP	NP	11	A-1-b (0)	<><><>
		8															<><><>	
		9	10	36	83	SS-4	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	<><><>
		10	10	14													<><><>	
VERY DENSE, RUSTY BROWN TO BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, TRACE SILT, TRACE CLAY, DAMP		11	7														<><><>	
		12	10	27	100	SS-5	-	-	-	-	-	-	-	-	10	A-1-b (V)	<><><>	
		13															<><><>	
		14	5	21	89	SS-6	-	-	-	-	-	-	-	-	12	A-1-b (V)	<><><>	
		15	6	8													<><><>	
		16	3														<><><>	
		17	4	13	67	SS-7	-	32	27	31	7	3	NP	NP	NP	10	A-1-b (0)	<><><>
		18															<><><>	
		19	3	9	56	SS-8	-	-	-	-	-	-	-	-	8	A-1-b (V)	<><><>	
		20	3	3													<><><>	
	21															<><><>		
	22	3	9	78	SS-9	-	-	-	-	-	-	-	-	7	A-1-b (V)	<><><>		
	23	2	4													<><><>		
	24	2	6	67	SS-10	-	-	-	-	-	-	-	-	7	A-1-b (V)	<><><>		
		25	2	2												<><><>		

EOB

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 NONROADWAY.GPJ

PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 100+08, 17.0 LT	EXPLORATION ID: B-012-0-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R.WEBB	HAMMER: DIETRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 704.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 5/20/09 END: 5/20/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660605.703 N, 2189648.737 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
6.0" Asphalt.	704.0																		
12.0" Concrete.	703.5	1															<<<<<<		
MEDIUM DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, LITTLE CLAY, DAMP	702.5	2	9	27	100	SS-1	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<	
		3	9															<<<<<<	
@3.5'; DENSE		4	11	31	72	SS-2	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<	
		5	6	15														<<<<<<	
DENSE TO VERY DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, DAMP		6	17	45	100	SS-3	-	38	23	21	13	5	NP	NP	NP	9	A-1-b (0)	<<<<<<	
		7	14	16														<<<<<<	
		8																<<<<<<	
		9	5	15	49	94	SS-4	-	-	-	-	-	-	-	-	9	A-1-b (V)	<<<<<<	
		10	15	18														<<<<<<	
		11	10	28	116	100	SS-5	-	-	-	-	-	-	-	-	11	A-1-b (V)	<<<<<<	
		12	28	50														<<<<<<	
DENSE TO VERY DENSE, BROWN AND GRAY, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, MOIST TO DAMP		13																<<<<<<	
		14	9	9	30	100	SS-6	-	34	23	25	13	5	NP	NP	NP	-	A-1-b (0)	<<<<<<
		15	9	11														<<<<<<	
		16	13	17	61	94	SS-7	-	-	-	-	-	-	-	-	7	A-1-b (V)	<<<<<<	
		17	17	24														<<<<<<	
		18																<<<<<<	
		19	16	19	63	100	SS-8	-	-	-	-	-	-	-	-	9	A-1-b (V)	<<<<<<	
		20	19	23														<<<<<<	
		21																<<<<<<	
		22	15	20	64	94	SS-9	-	-	-	-	-	-	-	-	1	A-1-b (V)	<<<<<<	
		23	20	23														<<<<<<	
@23.5'; MEDIUM DENSE Same as above, Contains few wood fragments		24	11	11	28	83	SS-10	-	-	-	-	-	-	-	-	13	A-1-b (V)	<<<<<<	
	679.0	25	11	8														<<<<<<	

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 NONROADWAY.GPJ

PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 100+28, 93.0 LT	EXPLORATION ID: B-012-1-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R.WEBB	HAMMER: DIETRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 697.9 (MSL) EOB: 25.0 ft.	PAGE: 1 OF 1
START: 5/27/09 END: 5/27/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660621.087 N, 2189571.731 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
4.0" Asphalt.	697.6	1															<<<<<<	
12.0" Concrete.	696.6	2															<<<<<<	
DENSE TO VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, DAMP TO MOIST  Same, w/ few brick fragments 3.5' - 6.5'		3	14	33	94	SS-1	-	-	-	-	-	-	-	-	7	A-3a (V)	<<<<<<	
		4	12	43	100	SS-2	-	-	-	-	-	-	-	-	9	A-3a (V)	<<<<<<	
		5	10	51	100	SS-3	-	-	-	-	-	-	-	-	10	A-3a (V)	<<<<<<	
		6	17	80	100	SS-4	-	19	21	40	14	6	NP	NP	NP	8	A-3a (0)	<<<<<<
VERY DENSE TO DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, DAMP TO MOIST  Same, w/ concrete fragments, cinders, and asphalt		7	10	51	100	SS-3	-	-	-	-	-	-	-	-	10	A-3a (V)	<<<<<<	
		8	17	80	100	SS-4	-	19	21	40	14	6	NP	NP	NP	8	A-3a (0)	<<<<<<
		9	17	57	94	SS-5	-	-	-	-	-	-	-	-	9	A-3a (V)	<<<<<<	
		10	17	57	94	SS-5	-	-	-	-	-	-	-	-	9	A-3a (V)	<<<<<<	
Same, w/ concrete and brick fragments		11	9	33	89	SS-6	-	-	-	-	-	-	-	-	10	A-3a (V)	<<<<<<	
		12	10	30	89	SS-7	-	-	-	-	-	-	-	-	10	A-3a (V)	<<<<<<	
		13	10	30	89	SS-7	-	-	-	-	-	-	-	-	10	A-3a (V)	<<<<<<	
		14	10	30	89	SS-7	-	-	-	-	-	-	-	-	10	A-3a (V)	<<<<<<	
DENSE TO MEDIUM DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, MOIST TO DAMP	679.4	15	9	34	94	SS-8	-	33	21	27	13	6	NP	NP	NP	10	A-1-b (0)	<<<<<<
		16	5	15	72	SS-9	-	-	-	-	-	-	-	-	7	A-1-b (V)	<<<<<<	
		17	5	15	72	SS-9	-	-	-	-	-	-	-	-	7	A-1-b (V)	<<<<<<	
		18	4	12	67	SS-10	-	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<	
	672.9	19	4	12	67	SS-10	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<		
	672.9	20	4	12	67	SS-10	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<		
	672.9	21	4	12	67	SS-10	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<		
	672.9	22	4	12	67	SS-10	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<		
	672.9	23	4	12	67	SS-10	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<		
	672.9	24	4	12	67	SS-10	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<		
	672.9	25	4	12	67	SS-10	-	-	-	-	-	-	-	8	A-1-b (V)	<<<<<<		
	672.9	EOB															<<<<<<	

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:02 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 NONROADWAY.GPJ

PROJECT: CUY-90-15.42	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 103+06, 71.0 LT	EXPLORATION ID: B-012-2-09
TYPE: NOISE WALL	SAMPLING FIRM / LOGGER: B&P / R.WEBB	HAMMER: DIETRICH AUTOMATIC	ALIGNMENT: I90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 703.3 (MSL) EOB: 25.0 ft.	PAGE: 1 OF 1
START: 5/27/09 END: 5/27/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 660906.102 N, 2189588.344 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
6.0" Asphalt.	702.8																	
12.0" Concrete.	701.8																	
DENSE TO VERY DENSE, BROWN, SILT, AND SAND, TRACE GRAVEL, TRACE CLAY, DAMP Contains brick fragments from 1.50' to 21.0'.		1																
		2	14	49	83	SS-1	-	-	-	-	-	-	-	-	8	A-4b (V)		
		3	15															
		4	18															
		5	14	58	89	SS-2	-	-	-	-	-	-	-	-	8	A-4b (V)		
		6	17															
		7	22															
		8	14	52	78	SS-3	-	2	4	34	51	9	NP	NP	NP	17	A-4b(5) (V)	
		9	16															
		10	19															
VERY DENSE TO DENSE, BROWN, SILT, AND SAND, TRACE CLAY, TRACE GRAVEL, MOIST TO DAMP		9	12	39	89	SS-4	-	-	-	-	-	-	-	-	11	A-4b (V)		
		10	14															
		11	14	66	100	SS-5	-	-	-	-	-	-	-	-	10	A-4b (V)		
		12	19															
		13	25															
		14	14	98	72	SS-6	-	-	-	-	-	-	-	-	10	A-4b (V)		
		15	16															
		16	50															
		17	14	45	94	SS-7	-	-	-	-	-	-	-	-	8	A-4b (V)		
		18	16															
Same w/ wood fragments 18.5' - 21.0'		19	13	39	89	SS-8	-	-	-	-	-	-	-	10	A-4b (V)			
		20	13															
		21	13															
		22	13	45	100	SS-9	-	19	25	31	18	7	NP	NP	NP	10	A-3a (0)	
DENSE TO VERY DENSE, BROWN AND BLACK, COARSE AND FINE SAND, LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, FEW CINDERS, MOIST Few wood fragments to 22.5'	682.3																	
		23	9															
		24	13	60	94	SS-10	-	-	-	-	-	-	-	-	13	A-3a (V)		
	678.3	EOB	25	11	29	11												

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

PROJECT: <u>CUY- IR-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P. WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>102+95.27, 23.44 RT</u>	EXPLORATION ID <u>B-013-0-09</u>
TYPE: <u>ROADWAY</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R. WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>I-90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>2.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>702.1 (MSL)</u> EOB: <u>10.0 ft.</u>	PAGE 1 OF 1
START: <u>5/19/09</u> END: <u>5/19/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>660893.461 N, 2189682.226 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL
								GR	CS	FS	SI	CL	LL	PL	PI			
Asphalt 6.0"	702.1																	
Concrete 11.0"	701.6																	
	700.7	1																
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, LITTLE GRAVEL, TRACE CLAY, DAMP		2	14 14 17	46	89	SS-1	-	13	19	46	15	7	NP	NP	NP	6	A-3a (0)	
VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME SILT, TRACE GRAVEL, TRACE CLAY, DAMP		3	17 19 23	63	100	SS-2	-	8	8	51	26	7	NP	NP	NP	8	A-3a (0)	
		4																
		5	22 24 19	64	100	SS-3	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
		6																
		7																
		8																
		9	18 10 9	28	100	SS-4a	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
VERY STIFF, BROWN, <b>SILT AND CLAY</b> , TRACE FINE TO COARSE SAND, MOIST	692.5																	
	692.1	EOB																
		10																

NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

PROJECT: <u>CUY-90-15.42</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P. WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>106+17, 61.0 LT</u>	EXPLORATION ID <u>B-014-0-09</u>
TYPE: <u>NOISE WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>I90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>702.8 (MSL)</u> EOB: <u>25.0 ft.</u>	PAGE 1 OF 1
START: <u>5/19/09</u> END: <u>5/19/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>661220.540 N, 2189615.788 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
9.0" Asphalt	702.8																	
9.0" Aggregate Base	701.3	1																
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, MOIST TO WET Contains red brick fragments 1.5' to 16.0'		2	20 15 18	49	656	SS-1	-	-	-	-	-	-	-	-	22	A-3a (V)		
DENSE TO VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, MOIST TO WET		3																
		4	12 14 16	45	89	SS-2	-	7	18	51	16	8	NP	NP	NP	9	A-3a (0)	
		5																
		6	12 15 16	46	100	SS-3	-	-	-	-	-	-	NP	NP	NP	26	A-3a (V)	
		7																
		8																
		9	16 18 24	63	89	SS-4	-	-	-	-	-	-	-	-	18	A-3a (V)		
		10																
		11	8 7 12	28	94	SS-5	-	-	-	-	-	-	-	-	-	A-3a (V)		
		12																
@13.5'; MEDIUM DENSE		13																
		14	50	-	28	SS-6	-	-	-	-	-	-	-	-	20	A-3a (V)		
		15																
	686.8	16	25 23 17	60	94	SS-7	-	25	25	27	14	9	NP	NP	NP	12	A-1-b (0)	
VERY DENSE TO DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, MOIST TO WET Contains red brick fragments 16.0' to 22.5'		17																
		18																
		19	18 17 16	49	100	SS-8	-	-	-	-	-	-	-	-	16	A-1-b (V)		
		20																
@21.0'; VERY DENSE Same w/ wood fragments, 21.0' to 22.5'		21	17 23 21	66	94	SS-9	-	-	-	-	-	-	-	-	19	A-1-b (V)		
		22																
		23																
@23.5'; MEDIUM DENSE		24	14 10 7	25	100	SS-10	-	-	-	-	-	-	-	-	19	A-1-b (V)		
	677.8	25																

EOB

NOTES: GW NOT ENCOUNTERED. DRY ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS; SOIL CUTTINGS

PROJECT: <u>CUY- IR-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P. WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>106+83.98, 22.61 RT</u>	EXPLORATION ID <u>B-015-0-09</u>
TYPE: <u>ROADWAY</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R. WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>I-90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>2.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>699.8 (MSL)</u> EOB: <u>10.0 ft.</u>	PAGE 1 OF 1
START: <u>5/19/09</u> END: <u>5/19/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>661279.044 N, 2189705.471 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL
								GR	CS	FS	SI	CL	LL	PL	PI			
Asphalt 6.0"	699.8																	
Concrete 12.0"	699.3																	
VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, LITTLE GRAVEL, TRACE CLAY, DAMP	698.3	1																
	696.8	2	15 16 18	51	100	SS-1	-	14	23	40	16	7	NP	NP	NP	6	A-3a (0)	
VERY DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, DAMP	696.8	3																
		4	19 21 24	67	89	SS-2	-	38	17	27	13	5	NP	NP	NP	8	A-1-b (0)	
Same as above with cinders.		5																
	693.8	6	19 25 28	79	100	SS-3	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
DENSE, BROWN AND DARK GRAY, <b>COARSE AND FINE SAND</b> , LITTLE SILT, LITTLE CLAY, FEW BRICK FRAGMENTS AND CINDERS, DAMP	693.8	7																
		8																
		9																
	689.8	10	14 16 17	49	100	SS-4	-	-	-	-	-	-	-	-	-	11	A-3a (V)	
		EOB																

NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B57 ORV</u>	STATION / OFFSET: <u>110+84, 94.0 LT</u>	EXPLORATION ID <u>B-016-0-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>676.2 (MSL)</u> EOB: <u>55.0 ft.</u>	PAGE 1 OF 2
START: <u>7/8/09</u> END: <u>7/8/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>661688.010 N, 2189636.089 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
DENSE TO LOOSE, BROWN WITH BLACK, <b>COARSE AND FINE SAND</b> , LITTLE TO SOME SILT, LITTLE TO TRACE GRAVEL, TRACE CLAY, DAMP TO MOIST (Fill)	676.2	1	10															
		2	13	9	33	100	SS-1	-	14	34	28	18	6	NP	NP	NP	8	A-3a (0)
Few brick fragments and cinders 1.0' to 4.5'	671.2	4	3															
		5	2	3	7	83	SS-2	-	-	-	-	-	-	-	-	-	9	A-3a (V)
LOOSE TO DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME SILT, TRACE GRAVEL, TRACE CLAY, WET		6	2															
		7	2	3	7	67	SS-3	-	-	-	-	-	-	-	-	-	8	A-3a (V)
Medium Dense 13.5 to 22.5		9	3															
		10	1	3	6	67	SS-4	-	-	-	-	-	-	-	-	-	11	A-3a (V)
Dense at 23.5' to 25.0'		11	3															
		12	3	2	7	83	SS-5	-	-	-	-	-	-	-	-	-	11	A-3a (V)
		14	3															
		15	4	4	12	83	SS-6	-	-	-	-	-	-	-	-	-	12	A-3a (V)
		16	4															
		17	5	4	13	89	SS-7	-	8	29	36	26	1	NP	NP	NP	11	A-3a (0)
		19	3															
		20	5	10	22	100	SS-8	-	-	-	-	-	-	-	-	-	12	A-3a (V)
		21	6															
		22	4	4	12	100	SS-9	-	-	-	-	-	-	-	-	-	13	A-3a (V)
VERY LOOSE, BLACK TO BROWN, <b>SANDY SILT</b> , TRACE CLAY, TRACE GRAVEL, SLIGHTLY ORGANIC, WET	651.2	24	9															
		25	11	12	34	100	SS-10	-	-	-	-	-	-	-	-	-	12	A-3a (V)
3.1% Organics (LOI) 28.5' to 30.0'		26																
		27																
		28																
		29	1															
			1	1	3	100	SS-11	-	2	22	33	33	10	NP	NP	NP	42	A-4a (2)

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (G)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
VERY LOOSE, BLACK TO BROWN, <b>SANDY SILT</b> , TRACE CLAY, TRACE GRAVEL, SLIGHTLY ORGANIC, WET <i>(continued)</i>	646.2	31																	
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT / CLAY, WET  (Trace organics @ 33.5')	644.7	32																	
	640.2	33																	
		34	5	8	25	100	SS-12	-	0	1	82	-	17	-	NP	NP	NP	23	A-3a (0)
		35		9															
VERY DENSE, GRAY, <b>SILT</b> , TRACE CLAY, MOIST	640.2	36																	
		37																	
		38																	
		39	22	19	60	100	SS-13	-	0	0	25	69	6	NP	NP	NP	17	A-4b (8)	
		40		21															
		41																	
		42																	
		43																	
		44	22	40	-	106	SS-14	-	-	-	-	-	-	-	-	-	-	16	A-4b (V)
		45		50/5"															
		46																	
		47																	
		48																	
		49	22	38	100	100	SS-15	-	0	0	17	74	9	NP	NP	NP	16	A-4b (8)	
		50		29															
		51																	
		52																	
	622.9	53																	
STIFF, GRAY, <b>SILTY CLAY</b> , LITTLE SAND, MOIST	621.2	54	9	11	36	100	SS-16	1.00	-	-	-	-	-	-	-	-	-	16	A-6b (V)
		55		13															

NOTES: GROUNDWATER ENCOUNTERED AT 28.0', NONE NOTED UPON COMPLETION, BORING CAVED @ 25.5'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1.5 BAGS BENTONITE GROUT; PUMPED .5 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B57 ORV</u>	STATION / OFFSET: <u>112+58, 81.0 LT</u>	EXPLORATION ID <u>B-017-0-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>669.5 (MSL)</u> EOB: <u>80.0 ft.</u>	PAGE 1 OF 3
START: <u>7/9/09</u> END: <u>7/9/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>661859.113 N, 2189668.982 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV. 669.5	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
LOOSE TO MEDIUM DENSE, BROWN WITH BLACK, <b>COARSE AND FINE SAND</b> , SOME SILT, LITTLE CLAY, TRACE GRAVEL, MOIST Few coal fragments 1.0' to 2.0'  Few brick fragments, trace organics at 6.0'  (Fill)	669.5	1	4																
		2	5	5	15	67	SS-1	-	8	25	32	23	12	NP	NP	NP	14	A-3a (0)	
		3																	
		4	3	2	3	7	83	SS-2	-	-	-	-	-	-	-	-	-	10	A-3a (V)
		5																	
		6	5	3	2	7	67	SS-3	-	-	-	-	-	-	-	-	-	17	A-3a (V)
		7																	
		8																	
		9	6	5	9	21	67	SS-4	-	-	-	-	-	-	-	-	-	10	A-3a (V)
		10																	
		11	3	2	5	10	67	SS-5	-	-	-	-	-	-	-	-	-	7	A-3a (V)
		12																	
		13																	
LOOSE TO MEDIUM DENSE, BROWN, <b>GRAVEL AND/OR            STONE FRAGMENTS WITH SAND</b> , TRACE SILT, TRACE CLAY, DAMP TO MOIST	656.0	14	4	3	4	10	89	SS-6	-	12	39	38	7	4	NP	NP	NP	6	A-1-b (0)
	15																		
	16	6	7	9	24	100	SS-7	-	-	-	-	-	-	-	-	-	13	A-1-b (V)	
MEDIUM DENSE TO DENSE, BROWN, <b>SANDY SILT</b> , TRACE CLAY, TRACE GRAVEL, TRACE ORGANICS, WET	652.0	17																	
	18	7	5	5	15	89	SS-8	-	1	1	56	37	5	NP	NP	NP	20	A-4a (1)	
	19																		
	20																		
	21	4	7	6	19	100	SS-9	-	-	-	-	-	-	-	-	-	26	A-4a (V)	
	22																		
	23																		
	24	4	5	6	16	100	SS-10	-	-	-	-	-	-	-	-	-	21	A-4a (V)	
	25																		
	26																		
	27																		
28																			
29	11	14	18	48	100	SS-11	-	-	-	-	-	-	-	-	-	22	A-4a (V)		





MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED		
								GR	CS	FS	SI	CL	LL	PL	PI					
VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, MOIST <i>(continued)</i>	607.4	63																		
		64	11 15 16	46	100	SS-18	3.0- 4.0	0	0	2	58	40	30	17	13	23	A-6a (9)			
		65																		
		66																		
		67																		
HARD, GRAY, SILT, SOME CLAY, TRACE SAND, TRACE GRAVEL, DAMP	596.0	68																		
		69	8 11 14	37	100	SS-19	3.0- 3.5	-	-	-	-	-	-	-	-	19	A-6a (V)			
		70																		
		71																		
		72																		
		73																		
		74	17 20 21	61	100	SS-20	4.5+	1	2	6	58	33	26	17	9	18	A-4b (8)			
		75																		
		76																		
		77																		
EOB	589.5	78																		
		79	8 15 13	42	100	SS-21	4.5+	-	-	-	-	-	-	-	-	17	A-4b (V)			
		80																		

NOTES: GROUNDWATER ENCOUNTERED AT 21.0', NONE NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED .5 BAG CEMENT; PLACED SOIL CUTTINGS





PID: 77332		BR ID:		PROJECT: CUY-90-15.24		STATION / OFFSET: 114+11, 61.0 LT		START: 6/23/09		END: 6/24/09		PG 3 OF 4		B-018-0-09						
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
										GR	CS	FS	SI	CL	LL	PL	PI			
STIFF TO HARD, GRAY MOTTLED WITH BROWN, <b>SILT AND CLAY</b> , TRACE SAND, DAMP TO WET (continued)			596.7	63	4	8	30	100	SS-18	4.5+	-	-	-	-	-	-	-	-	22	A-6a (V)
				64																
				65																
				66																
MEDIUM STIFF, GRAY, <b>SILTY CLAY</b> , TRACE SAND, MOIST			590.4	67	5	9	31	100	SS-19	0.5- 1.0	-	-	-	-	-	-	-	-	25	A-6b (V)
				68																
				69																
				70																
				71																
				72																
				73																
				74																
				75																
				76																
VERY STIFF TO HARD, GRAY, <b>SILT AND CLAY</b> , TRACE SAND, MOIST			575.4	77	4	6	19	100	SS-20	-	0	1	1	40	58	39	18	21	28	A-6b (12)
				78																
				79																
				80																
				81																
				82																
				83																
				84																
				85																
				86																
DENSE, GRAY, <b>SILT</b> , SOME CLAY, TRACE FINE SAND, MOIST			567.4	87	5	7	24	100	SS-22	2.25- 3.5	-	-	-	-	-	-	-	-	22	A-6a (V)
				88																
				89																
				90																
				91																
				92																
				93																
				94																
				95																
				96																

PID: 77332	BR ID:	PROJECT: CUY-90-15.24	STATION / OFFSET: 114+11, 61.0 LT	START: 6/23/09	END: 6/24/09	PG 4 OF 4	B-018-0-09												
MATERIAL DESCRIPTION AND NOTES		ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
		564.6		GR	CS	FS	SI	CL	LL	PL	PI								
		563.9	EOB	12	43	100	SS-24	-	0	0	1	65	34	28	18	10	20	A-4b (8)	

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NOTES: GROUNDWATER ENCOUNTERED AT 11.0', NONE NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED .5 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>115+02, 122.0 LT</u>	EXPLORATION ID <u>B-019-0-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>658.6 (MSL)</u> EOB: <u>40.0 ft.</u>	PAGE 1 OF 2
START: <u>6/23/09</u> END: <u>6/23/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>662105.952 N, 2189656.827 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
8.0" CONCRETE	658.6																	
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP TO MOIST	657.9	1	5															
		2	7 8	22	67	SS-1	-	9	33	45	11	2	NP	NP	NP	5	A-3a (0)	
		3																
		4	5															
		5	7 7	21	67	SS-2	-	-	-	-	-	-	-	-	-	5	A-3a (V)	
		6																
		7	5 7 8	22	78	SS-3	-	-	-	-	-	-	-	-	-	6	A-3a (V)	
		8																
		9	4 6 6	18	83	SS-4	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
	647.6	10																
MEDIUM DENSE, BROWN, <b>FINE SAND</b> , WET	646.1	11	8															
		12	6 7	19	72	SS-5	-	-	-	-	-	-	-	-	-	22	A-3 (V)	
MEDIUM DENSE TO VERY DENSE, BROWN CHANGING TO GRAY AND BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, WET		13																
		14	4 5 8	19	100	SS-6	-	0	3	86	9	2	NP	NP	NP	23	A-3a (0)	
		15																
		16	8															
		17	12 14	39	100	SS-7	-	-	-	-	-	-	-	-	-	25	A-3a (V)	
		18																
		19	4 11 18	43	100	SS-8	-	-	-	-	-	-	-	-	-	19	A-3a (V)	
		20																
		21																
		22	12 18 21	58	100	SS-9	-	-	-	-	-	-	-	-	-	20	A-3a (V)	
		23																
		24	12 15 23	57	100	SS-10	-	0	3	85	9	3	NP	NP	NP	20	A-3a (0)	
		25																
		26																
	631.6	27																
DENSE, GRAY, <b>SILT</b> , LITTLE FINE SAND, TRACE CLAY, WET		28																
		29	6 11 19	45	100	SS-11	-	0	0	19	71	10	NP	NP	NP	18	A-4b (8)	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
DENSE, GRAY, SILT, LITTLE FINE SAND, TRACE CLAY, WET (continued)	628.6	31																	
		32																	
		33																	
		34		11	42	72	SS-12	-	-	-	-	-	-	-	-	18	A-4b (V)		
		35		13 15															
VERY STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST	622.6	36																	
		37																	
		38																	
		39		5	30	100	SS-13	2.50	0	0	2	68	30	29	18	11	24	A-6a (8)	
		40		8 12															
	618.6	EOB																	



NOTES: GROUNDWATER ENCOUNTERED AT 13.0', NONE NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .5 BAG BENTONITE GROUT; PUMPED .3 BAG CEMENT; PLACED SOIL CUTTINGS





STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:06 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 NONROADWAY.GPJ

PID: 77332		BR ID: _____		PROJECT: CUY-90-15.42		STATION / OFFSET: 114+99, 52.0 RT		START: 5/22/09		END: 5/22/09		PG 2 OF 2		B-019-1-09						
MATERIAL DESCRIPTION AND NOTES			ELEV. 666.5	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
										GR	CS	FS	SI	CL	LL	PL	PI			
DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, DAMP (continued)			663.0	31																
LOOSE, BROWN, COARSE AND FINE SAND, LITTLE SILT, TRACE CLAY, DAMP					32															
DENSE TO MEDIUM DENSE 38.5 to 48.5 Trace Gravel in SS12			648.0	33																
				34	4	3	7	100	SS-11	-	0	2	71	20	7	NP	NP	NP	7	A-3a (0)
			648.0	35																
				36																
			648.0	37																
				38																
			648.0	39	6															
				40	9	11	30	94	SS-12	-	-	-	-	-	-	-	-	-	4	A-3a (V)
			648.0	41																
				42																
			648.0	43																
				44	11	9	25	100	SS-13	-	-	-	-	-	-	-	-	-	6	A-3a (V)
MEDIUM DENSE, BROWN, FINE SAND, TRACE COARSE SAND, TRACE SILT, TRACE CLAY, WET			646.5	45																
				46																
			646.5	47																
				48																
			646.5	49	7															
				50	9	10	28	100	SS-14	-	0	10	81	7	2	NP	NP	NP	21	A-3 (0)
				EOB																

NOTES: GW ENCOUNTERED @ 48'. DRY ON COMPLETION.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 2 BAG BENTONITE CHIPS; SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>115+51, 70.0 LT</u>	EXPLORATION ID: <u>B-020-0-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>659.3 (MSL)</u> EOB: <u>90.0 ft.</u>	PAGE: <u>1 OF 3</u>
START: <u>5/25/09</u> END: <u>5/26/09</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>662148.373 N, 2189714.389 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
4.0" TOPSOIL	659.3																	
MEDIUM DENSE TO LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP TO MOIST	659.0	1	5															
		2	4	5	13	67	SS-1	-	2	16	69	12	1	NP	NP	NP	5	A-3a (0)
		3																
		4	5	3	7	17	SS-2	-	-	-	-	-	-	-	-	-	8	A-3a (V)
		5		2														
		6	6															
		7	8	8	24	72	SS-3	-	-	-	-	-	-	-	-	-	11	A-3a (V)
		8																
		9	5	8	25	83	SS-4	-	-	-	-	-	-	-	-	-	9	A-3a (V)
		10		9														
		11																
MEDIUM DENSE TO DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE TO SOME SILT, TRACE CLAY, WET		12	4	5	7	18	SS-5	-	-	-	-	-	-	-	-	-	25	A-3a (V)
		13																
		14	6	7	9	24	SS-6	-	-	-	-	-	-	-	-	-	22	A-3a (V)
		15																
		16	5	7	8	22	SS-7	-	0	3	71	16	10	NP	NP	NP	22	A-3a (0)
		17																
		18																
		19	6	7	9	24	SS-8	-	-	-	-	-	-	-	-	-	26	A-3a (V)
		20																
		21																
		22	8	12	12	36	SS-9	-	-	-	-	-	-	-	-	-	22	A-3a (V)
		23																
		24	6	7	10	25	SS-10	-	0	0	72	23	5	NP	NP	NP	19	A-3a (0)
		25																
		26																
	632.3	27																
VERY DENSE TO DENSE, BROWN CHANGING TO GRAY AND BROWN, <b>SILT</b> , LITTLE TO SOME CLAY, TRACE FINE SAND, WET		28																
		29	17	18	19	55	SS-11	4.25	-	-	-	-	-	-	-	-	17	A-4b (V)



MATERIAL DESCRIPTION AND NOTES	ELEV. 597.2	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
SOFT TO HARD, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, MOIST TO WET (continued)																			
			63																
			64	4	5	16	100	SS-18	0.50- 3.0	-	-	-	-	-	-	-	-	25	A-6a (V)
			65		6														
			66																
			67																
			68																
			69	3	5	15	100	SS-19	0.0- 0.25	1	0	1	55	43	32	17	15	25	A-6a (10)
			70		5														
			71																
		72																	
		73																	
		74	3	4	16	100	SS-20	0.50- 0.75	-	-	-	-	-	-	-	-	29	A-6a (V)	
		75		7															
		76																	
		77																	
		78																	
		79	7	9	33	100	SS-21	-	1	0	1	66	32	29	18	11	21	A-6a (8)	
		80		13															
		81																	
		82																	
		83																	
		84	7	9	34	100	SS-22	3.00	-	-	-	-	-	-	-	-	21	A-6a (V)	
		85		14															
		86																	
		87																	
		88																	
		89	7	9	31	100	SS-23	4.5+	0	0	1	59	40	29	18	11	21	A-6a (8)	
	569.3	EOB		12															

NOTES: GROUNDWATER ENCOUNTERED AT 11.0', NONE NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .5 BAG BENTONITE GROUT; PLACED .5 BAG CEMENT





MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
STIFF TO HARD, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST (continued)	597.5	63																	
		64	5																
		65	7	21	83	SS-18	4.5+	0	0	1	56	43	30	18	12	24	A-6a (9)		
		66																	
		67																	
STIFF TO MEDIUM STIFF, BROWN MOTTLED WITH GRAY, SILTY CLAY, TRACE FINE SAND, MOIST	591.1	68																	
		69	6																
		70	5	18	100	SS-19	1.0-1.5	-	-	-	-	-	-	-	-	31	A-6b (V)		
		71																	
		72																	
		73																	
		74	5	18	100	SS-20	0.5-1.0	1	0	1	40	58	39	19	20	28	A-6b (12)		
		75	5	7															
		76																	
		77																	
STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST	576.1	78																	
		79	5																
		80	6	21	100	SS-21	0.5-0.75	-	-	-	-	-	-	-	-	26	A-6b (V)		
		81																	
		82																	
		83																	
		84	10																
		85	13	42	100	SS-22	1.5-2.5	-	-	-	-	-	-	-	-	21	A-6a (V)		
		86																	
		87																	
EOB	569.6	88																	
		89	14																
		90	16	51	100	SS-23	1.5-1.75	0	0	2	58	40	30	17	13	23	A-6a (9)		

NOTES: GROUNDWATER ENCOUNTERED AT 11.5', NOT NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED .5 BAG CEMENT; PLACED SOIL CUTTINGS















MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
<b>SHALE</b> , GRAY TO NDARK GRAY, SLIGHTLY WEATHERED, WEAK, FINE GRAINED, THINLY LAMINATED, CARBONACEOUS, SHEAR SLICKENSIDED @ 178.4'; DIAGONAL JOINTS @ 179.0' AND 181.3' SLIGHTLY FRACTURED, NARROW, SLIGHTLY ROUGH; CLAY FILLED @ 186.0, 192.5 AND 197.8; RQD 95.2%, REC 99.5%. <i>(continued)</i>  Qu = 1930 psi @ 199.2' to 199.5' SDI = 96.8% @ 193.0' to 195.0'	464.7																		
	191																		
	192																		
	193																		
	194																		
	195																		
	196			95		99	NQ-3												CORE
	197																		
	198																		
	199																		
	200																		
201	454.4	EOB																	



NOTES: GROUNDWATER ENCOUNTERED AT 9.5'. NOT NOTED ON COMPLETION. 3.25"HSA 0.0' TO 28.5', TRI CONE OR DRAG BIT (MUD ROTARY) 28.5' TO 176.0', NQ CORE 176.0' TO 201.0'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1.5 BAGS BENTONITE GROUT; PUMPED .75 BAG CEMENT; PLACED SOIL CUTTINGS











MATERIAL DESCRIPTION AND NOTES	ELEV. 534.6	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
STIFF TO HARD, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, MOIST (continued)		127																
		128																
		129	8	10	32	87	SS-32	2.0- 2.5	-	-	-	-	-	-	-	-	22	A-6a (V)
		130		13														
		131																
		132																
		133																
		134	6	10	31	100	SS-33	2.0- 2.5	3	2	4	31	60	33	19	14	21	A-6a (10)
		135		12														
		136																
		137																
		138																
		139	6	9	30	100	SS-34	1.8- 2.1	-	-	-	-	-	-	-	-	22	A-6a (V)
	521.0	140		12														
		EOB																

NOTES: GROUNDWATER ENCOUNTERED DURING DRILLING AT 15.5' WITH SLIGHT SEEPAGE AT 13.0'. AT COMPLETION 10.9'. WATER USED AS CIRCULATING FLUID FROM 40.0' TO 140.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED BENTONITE GROUT; PUMPED CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>120+09.67, 256.12 LT</u>	EXPLORATION ID: <u>B-023-1-09</u>
TYPE: <u>EMBANKMENT</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>639.5 (MSL)</u> EOB: <u>50.0 ft.</u>	PAGE: <u>1 OF 2</u>
START: <u>7/28/09</u> END: <u>7/28/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>662639.270 N, 2189590.409 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6" ASPHALT	639.5																	
6" BRICK	639.0	1	10														<L> <L>	
DENSE TO LOOSE, GRAY AND BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, WET contains wood fragments (Fill)	638.5	2	12 13	37	100	SS-1	-	-	-	-	-	-	-	-	15	A-3a (V)		
		3																
		4	3 4	5	13	72	SS-2	-	9	23	44	15	9	NP	NP	NP	15	A-3a (0)
		5																
		6	1															
		7	1 3		6	72	SS-3	-	-	-	-	-	-	-	-	23	A-3a (V)	
	631.5	8																
MEDIUM DENSE TO VERY DENSE, GRAY, <b>SILT</b> , LITTLE SAND, LITTLE CLAY, WET		9	3 5	8	19	83	SS-4	-	0	0	14	73	13	NP	NP	NP	19	A-4b (8)
		10																
		11	14															
		12	18 23		61	83	SS-5	-	0	0	15	73	12	NP	NP	NP	21	A-4b (8)
		13																
		14	5 9	17	39	83	SS-6	-	-	-	-	-	-	-	-	25	A-4b (V)	
		15																
		16	17 19	25	66	78	SS-7	-	-	-	-	-	-	-	-	19	A-4b (V)	
	621.0	18																
VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE SAND, MOIST		19	6 7	9	24	100	SS-8	2.5- 3.0	0	0	1	71	28	26	20	6	22	A-4b (8)
		20																
		21																
	617.5	22																
STIFF TO VERY STIFF, GRAY, <b>SILT AND CLAY</b> , TRACE FINE SAND, TRACE GRAVEL, WET TO DAMP		23																
		24	3 5	6	16	100	SS-9	1.0- 1.5	-	-	-	-	-	-	-	29	A-6a (V)	
		25																
		26																
		27																
		28																
		29	6 10	11	31	100	SS-10	2.5- 3.0	-	-	-	-	-	-	-	20	A-6a (V)	

MATERIAL DESCRIPTION AND NOTES	ELEV. 609.5	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, TRACE GRAVEL, WET TO DAMP (continued)		31																
		32																
		33																
		34	8	10	33	100	SS-11	3.0-3.5	0	0	1	50	49	31	18	13	18	A-6a (9)
		35		12														
		36																
		37																
		38																
		39	7	10	36	100	SS-12	3.0-3.5	-	-	-	-	-	-	-	-	19	A-6a (V)
		40		14														
	41																	
	42																	
	43																	
	44	7	10	30	100	SS-13	1.5-2.0	-	-	-	-	-	-	-	-	23	A-6a (V)	
	45		10															
	46																	
	47																	
	48																	
	49	9	11	34	100	SS-14a	2.00	1	2	7	38	52	31	18	13	20	A-6a (9)	
	50		12			SS-14b	-	-	-	-	-	-	-	-	-	8	A-4a (V)	
VERY STIFF, GRAY, SANDY SILT, LITTLE GRAVEL, LITTLE CLAY, MOIST	590.0 589.5	EOB																

NOTES: GROUNDWATER ENCOUNTERED DURING DRILLING AT 18.0'. NONE NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp; P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>121+09.76, 221.81 LT</u>	EXPLORATION ID: <u>B-023-2-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>649.7 (MSL)</u> EOB: <u>125.0 ft.</u>	PAGE: <u>1 OF 4</u>
START: <u>7/29/09</u> END: <u>7/30/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>662737.489 N, 2189643.713 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
4" Concrete 4" Base	649.7 649.4 649.1	1	6														<L> <L> <L>	
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, TRACE GRAVEL, DAMP TO MOIST (Fill)		2	7 8	22	83	SS-1	-	1	12	71	10	6	NP	NP	NP	6	A-3a (0)	
		3																
		4	4															
		5	5 7	18	72	SS-2	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
	644.2	6																
MEDIUM DENSE TO DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, WET		7	3 9	18	72	SS-3	-	-	-	-	-	-	-	-	-	25	A-3a (V)	
		8																
		9	6 9 9	27	100	SS-4	-	-	-	-	-	-	-	-	-	25	A-3a (V)	
		10																
		11																
		12	5 7 8	22	100	SS-5	-	1	0	78	17	4	NP	NP	NP	25	A-3a (0)	
		13																
		14	7 11 13	36	100	SS-6	-	-	-	-	-	-	-	-	-	22	A-3a (V)	
	634.2	15																
VERY DENSE, GRAY, <b>SILT</b> , AND FINE SAND, TRACE CLAY, WET		16	8															
		17	16 25	61	100	SS-7	-	0	0	40	53	7	NP	NP	NP	20	A-4b (5)	
		18																
		19	12 16 22	57	100	SS-8	-	-	-	-	-	-	-	-	-	20	A-4b (V)	
		20																
		21																
		22	17 21	57	100	SS-9	-	-	-	-	-	-	-	-	-	18	A-4b (V)	
		23																
		24	15 17 22	58	100	SS-10	-	-	-	-	-	-	-	-	-	17	A-4b (V)	
		25																
		26																
		27																
		28																
VERY DENSE, GRAY, <b>SILT</b> , LITTLE CLAY, TRACE FINE SAND, WET		29	13 14 17	46	100	SS-11	-	0	0	4	84	12	NP	NP	NP	18	A-4b (8)	







MATERIAL DESCRIPTION AND NOTES	ELEV. 555.5	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED		
								GR	CS	FS	SI	CL	LL	PL	PI					
STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, MOIST (continued)		95	13 16	43	100	SS-24	2.0	0	0	1	47	52	33	19	14	22	A-6a (10)			
		96																		
		97																		
		98																		
		99	9	13 15	42	100	SS-25	1.5- 2.0	-	-	-	-	-	-	-	-	23	A-6a (V)		
		100																		
		101																		
		102																		
		103																		
		104	11	13 15	42	100	SS-26	2.5- 2.75	0	0	1	60	39	28	17	11	21	A-6a (8)		
		105																		
		106																		
		107																		
	108																			
	109	12	15 24	58	100	SS-27	2.0- 2.5	-	-	-	-	-	-	-	-	14	A-6a (V)			
	110																			
	111																			
	112																			
	113																			
	114	25	27 28	82	100	SS-28	3.5- 4.0	-	-	-	-	-	-	-	-	17	A-6a (V)			
	115																			
	116																			
	117																			
	118																			
	119	9	12 16	42	100	SS-29	-	1	3	9	36	51	31	18	13	17	A-6a (9)			
	120																			
	121																			
	122																			
	123																			
	124	13	15 16	46	100	SS-30	-	-	-	-	-	-	-	-	-	17	A-6a (V)			
	125																			

524.7 EOB

NOTES: GROUNDWATER ENCOUNTERED DURING DRILLING AT 7.0', NONE NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED BAG BENTONITE GROUT; POURED BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: CUY- IR-90-15.24	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 121+29.8, 319.9 RT	EXPLORATION ID: B-024-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: B&P / R. WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I-90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 2.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 676.0 (MSL) EOB: 10.0 ft.	PAGE: 1 OF 1
START: 5/22/09 END: 5/22/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 662648.792 N, 2190178.475 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL
								GR	CS	FS	SI	CL	LL	PL	PI			
3.0" Berm Material	676.0																	
MEDIUM DENSE, BROWN W/ IRON STAINING, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE TO TRACE SILT, TRACE CLAY, DAMP	675.8	1	12															
		2	6	5	16	61	SS-1	-	25	28	29	12	6	NP	NP	NP	9	A-1-b (0)
		3	8	6	21	83	SS-2	-	31	34	24	7	4	NP	NP	NP	7	A-1-b (0)
		4																
		5	3	6	4	15	SS-3	-	-	-	-	-	-	-	-	-	7	A-1-b (V)
		6																
		7																
		8																
Same as above, loose		9	3	2	2	6	SS-4	-	-	-	-	-	-	-	-	-	11	A-1-b (V)
	666.0	10																
		EOB																

NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / MINCHAK</u>	DRILL RIG: <u>DIEDRICH D50</u>	STATION / OFFSET: <u>121+21.32, 46.79 LT</u>	EXPLORATION ID: <u>B-025-0-09</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / WESTERVILLER</u>	HAMMER: <u>DIEDRICH AUTO HAMMER</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA / TRI CONE</u>	CALIBRATION DATE: <u>9/13/07</u>	ELEVATION: <u>676.5 (MSL)</u> EOB: <u>140.0 ft.</u>	PAGE: <u>1 OF 5</u>
START: <u>8/11/09</u> END: <u>8/11/09</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>84.66</u>	COORD: <u>662714.485 N, 2189817.629 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
2.4" TOPSOIL LOOSE TO MEDIUM DENSE, DARK BROWN AND BROWN, COARSE AND FINE SAND, SOME GRAVEL, LITTLE SILT, TRACE CLAY, MOIST Contains brick fragments 1-2.5' (Fill)	676.5	1	4																
		2	4	5	13	53	SS-1	-	22	25	31	15	7	NP	NP	NP	11	A-3a (0)	
		3																	
		4	6	7	8	21	67	SS-2	-	-	-	-	-	-	-	-	-	10	A-3a (V)
		5																	
STIFF TO VERY STIFF, BROWN, SILT, SOME CLAY, LITTLE FINE SAND, TRACE COARSE SAND, MOIST	670.5	6	3																
	669.0	7	4	6	14	67	SS-3	1.7 -2.6	0	1	15	60	24	24	17	7	19	A-4b (8)	
DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, DAMP	662.6	8																	
		9	10	12	34	67	SS-4	-	30	33	19	13	5	NP	NP	NP	4	A-1-b (0)	
		10																	
		11	7	12	12	34	67	SS-5	-	-	-	-	-	-	-	-	-	4	A-1-b (V)
		12																	
MEDIUM DENSE, BROWN, SILT, TRACE FINE SAND	661.0	13																	
	662.6	14	7	7	20	93	SS-6	-	-	-	-	-	-	-	-	-	4	A-1-b (V)	
MEDIUM DENSE TO DENSE, BROWN, COARSE AND FINE SAND, TRACE SILT, TRACE CLAY, TRACE GRAVEL, DAMP	661.0	15																19	A-4b (V)
		16	5	10	12	31	60	SS-7	-	2	40	44	10	4	NP	NP	NP	4	A-3a (0)
		17																	
		18																	
		19	8	10	10	28	53	SS-8	-	-	-	-	-	-	-	-	-	4	A-3a (V)
		20																	
		21																	
		22	7	8	9	24	67	SS-9	-	-	-	-	-	-	-	-	-	6	A-3a (V)
		23																	
		24	4	7	8	21	67	SS-10	-	-	-	-	-	-	-	-	-	8	A-3a (V)
		25																	
		26																	
27	8	8	10	25	87	SS-11	-	-	-	-	-	-	-	-	-	5	A-3a (V)		
28																			
29	6	7	7	20	80	SS-12	-	0	2	86	8	4	NP	NP	NP	7	A-3a (0)		







MATERIAL DESCRIPTION AND NOTES	ELEV. 550.2	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
STIFF TO VERY STIFF, GRAY, SILT, AND CLAY, TRACE FINE SAND, MOIST (continued)		127																
		128																
		129	11 12 14	37	100	SS-32	1.8- 3.3	-	-	-	-	-	-	-	-	23	A-4b (V)	
		130																
		131																
		132																
		133																
		134	8 13 16	41	100	SS-33	2.3- 4.0	-	-	-	-	-	-	-	-	16	A-4b (V)	
		135																
		136																
		137																
		138																
		139	7 11 14	35	100	SS-34	2.4- 3.0	-	-	-	-	-	-	-	-	20	A-4b (V)	
		536.5	EOB															

NOTES: GROUNDWATER ENCOUNTERED DURING DRILLING AT 32.0'. AT COMPLETION 35.0'. WATER AS CIRCULATING FLUID 50.0' TO 140.0'. 3.25" HSA 0.0' TO 50.0'. ROTARY 50.0' TO 140.0'. ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS







MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (G)	HOLE SEALED		
								GR	CS	FS	SI	CL	LL	PL	PI					
STIFF TO VERY STIFF, GRAY, SILT, SOME CLAY, TRACE FINE SAND, MOIST (continued)	615.5	63																		
		64	4	6	22	100	SS-18	2.75-3.5	0	0	2	72	26	26	18	8	20	A-4b (8)		
		65																		
		66																		
		67																		
		68																		
		69	6	8	25	100	SS-19	1.5-2.0	-	-	-	-	-	-	-	-	23	A-4b (V)		
		70																		
		71																		
		72	605.6																	
VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, MOIST	602.6	73																		
		74	7	10	36	100	SS-20	3.0-4.0	0	1	0	60	39	30	18	12	20	A-6a (9)		
		75																		

NOTES: GROUNDWATER ENCOUNTERED AT 42.0', NOT NOTED ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED .5 BAG CEMENT

PROJECT: CUY- IR-90-15.24	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 122+54.42, 374.99 LT	EXPLORATION ID: B-027-1-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: B&P / R. WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I-90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 2.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 678.8 (MSL) EOB: 15.0 ft.	PAGE: 1 OF 1
START: 5/21/09 END: 5/21/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 662922.768 N, 2189527.758 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL		
								GR	CS	FS	SI	CL	LL	PL	PI					
3.0" Berm Material	678.8																			
LOOSE TO MEDIUM DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE TO TRACE SILT, TRACE CLAY, DAMP  Same as above, few black cinders	678.5	1	4	3	9	72	SS-1	-	33	22	29	12	4	NP	NP	NP	9	A-1-b (0)		
		2																		
		3																		
		4	3	2	2	6	78	SS-2	-	-	-	-	-	-	NP	NP	NP	8	A-1-b (V)	
		5																		
		6	5	5	3	12	67	SS-3	-	-	-	-	-	-	-	-	-	10	A-1-b (V)	
		7																		
		8																		
		9	4	3	2	7	72	SS-4	-	31	35	23	7	4	NP	NP	NP	10	A-1-b (0)	
		10																		
	11	3	2	3	7	67	SS-5	-	-	-	-	-	-	-	-	-	10	A-1-b (V)		
	12																			
	13																			
Same as above, moist		14	4	3	3	9	SS-6	-	-	-	-	-	-	-	-	-	15	A-1-b (V)		
	663.8	15																		

NOTES: GW NOT ENCOUNTERED.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS









MATERIAL DESCRIPTION AND NOTES	ELEV. 551.1	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, MOIST (continued)		127																
		128																
		129	5 8 10	25	100	SS-32	1.8- 2.1	-	-	-	-	-	-	-	-	23	A-6a (V)	
	130																	
	131																	
	132																	
	133																	
	134	8 13 16	41	100	SS-33	1.5- 2.3	1	0	1	49	49	29	18	11	20	A-6a (8)		
	135																	
	136																	
	137																	
	138																	
@138.5'; VISUAL - LITTLE SAND		139	9 11 17	40	100	SS-34	2.6- 2.9	-	-	-	-	-	-	-	19	A-6a (V)		
	537.4	140																

NOTES: GROUNDWATER ENCOUNTERED AT 32.5' DURING DRILLING, NONE NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE GROUT; POURED 1 BAG CEMENT; SOIL CUTTINGS



PROJECT: CUY- IR-90-15.24	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 122+57.81, 114.71 RT	EXPLORATION ID: B-029-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: B&P / R. WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I-90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 2.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 678.8 (MSL) EOB: 10.0 ft.	PAGE: 1 OF 1
START: 5/22/09 END: 5/22/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 662811.419 N, 2190004.641 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL		
								GR	CS	FS	SI	CL	LL	PL	PI					
4.0" Berm Material	678.8																			
LOOSE TO VERY LOOSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, FEW BRICK FRAGMENTS, GRASS AND ROOTS, DAMP	678.5	1	4	3	1	6	61	SS-1	-	26	26	29	14	5	NP	NP	NP	6	A-1-b (0)	
		2	2	1	1	3	28	SS-2	-	19	31	30	15	5	NP	NP	NP	8	A-1-b (0)	
		3	1	1	1	3	28	SS-3	-	-	-	-	-	-	-	-	-	-	8	A-1-b (V)
		4	1	1	1	3	28	SS-3	-	-	-	-	-	-	-	-	-	-	8	A-1-b (V)
Same as above, Medium Dense	668.8	9	4	5	4	13	61	SS-4	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
		10																		
		EOB																		

NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>123+18, 427.0 LT</u>	EXPLORATION ID <u>B-030-0-09</u>
TYPE: <u>ROADWAY / RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTO HAMMER</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>678.8 (MSL)</u> EOB: <u>20.0 ft.</u>	PAGE 1 OF 1
START: <u>7/27/09</u> END: <u>7/27/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>663003.339 N, 2189494.656 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
SOFT, BROWN, <b>ELASTIC SILT AND CLAY</b> , SOME SAND, TRACE GRAVEL, SLIGHTLY ORGANIC, DAMP LLo/LL = 63/73 = 86.3% (Fill) 2% Organics @ 1.0' (LOI)	678.8	1	3															
		2	1	4	7	83	SS-1	-	9	18	20	46	7	73	73	NP	53	A-5 (5)
		3																
VERY LOOSE TO LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME GRAVEL, LITTLE SILT, TRACE CLAY, DAMP (Fill) Contains brick fragments.	675.8	4	1	1	3	72	SS-2	-	21	21	41	11	6	NP	NP	NP	10	A-3a (0)
		5																
		6	1	2	6	72	SS-3	-	-	-	-	-	-	-	-	-	-	7
LOOSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , TRACE SILT, TRACE CLAY, DAMP (Probable Fill)	670.8	7	2	2														
		8																
MEDIUM DENSE, BROWN, <b>FINE SAND</b> , SOME COARSE SAND, TRACE GRAVEL, TRACE SILT, TRACE CLAY, DRY	668.8	9	2	3	7	78	SS-4	-	47	30	16	5	2	NP	NP	NP	7	A-1-b (0)
		10																
		11	8	7	5	18	89	SS-5	-	-	-	-	-	-	-	-	-	8
@18.5'; LOOSE, AND COARSE SAND, DAMP	658.8	12	5	7	22	83	SS-6	-	10	34	47	6	3	NP	NP	NP	4	A-3 (0)
		13																
		14	8	8	6	21	89	SS-7	-	-	-	-	-	-	-	-	-	4
		15																
		16	3	3	9	78	SS-8	-	4	43	43	7	3	NP	NP	NP	5	A-3 (0)
		17																
		18																
		19																
		20																

NOTES: NO GROUNDWATER ENCOUNTERED. JASON WISE ADVISED TO STOP DRILLING AT 20.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / D.HEPNER</u>	DRILL RIG: <u>SIMCO 2800 HSHT</u>	STATION / OFFSET: <u>123+36, 17.0 RT</u>	EXPLORATION ID <u>B-031-0-09</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>OTB / B.WESTERVILLER</u>	HAMMER: <u>DIEDRICH AUTO HAMMER</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA / TRI CONE / NQ</u>	CALIBRATION DATE: <u>9/1/07</u>	ELEVATION: <u>678.5 (MSL)</u> EOB: <u>235.0 ft.</u>	PAGE 1 OF 8
START: <u>7/6/09</u> END: <u>7/9/09</u>	SAMPLING METHOD: <u>SPT / NQ</u>	ENERGY RATIO (%): <u>83.64</u>	COORD: <u>662909.782 N, 2189928.569 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
6.0" ASPHALT LOOSE TO MEDIUM DENSE, BLACK AND BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, MOIST TO DAMP Contains brick and paper fragments. (Fill)	678.5																		
	678.0	1	5																
		2	3	5	11	80	SS-1	-	28	27	24	14	7	NP	NP	NP	7	A-1-b (0)	
		3																	
		4	2	2	6	80	SS-2	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	
		5																	
		6	7	9	8	24	80	SS-3	-	-	-	-	-	-	-	-	5	A-1-b (V)	
HARD, BROWN, SILT AND CLAY, TRACE SAND, DAMP	670.5	8																	
		9	4	9	11	28	100	SS-4	4.5+	0	1	0	56	43	32	20	12	17	A-6a (9)
		10																	
MEDIUM DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, TRACE SILT, TRACE CLAY, DAMP TO MOIST	668.0	11	5	7	8	21	100	SS-5	-	32	47	14	5	2	NP	NP	NP	4	A-1-b (0)
		12																	
		13																	
		14	6	8	9	24	87	SS-6	-	-	-	-	-	-	-	-	-	4	A-1-b (V)
		15																	
		16	6	8	7	21	93	SS-7	-	-	-	-	-	-	-	-	-	7	A-1-b (V)
		17																	
DENSE, BROWN, SILT, LITTLE CLAY, TRACE FINE SAND, WET	660.5	18																	
DENSE, BROWN, COARSE AND FINE SAND, DAMP	659.2	19	3	10	13	32	100	SS-8	-	-	-	-	-	-	-	-	-	19	A-4b (V)
		20							-	-	-	-	-	-	-	-	-	4	A-3a (V)
		21																	
MEDIUM DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, TRACE SILT, TRACE CLAY, DAMP TO WET	655.5	22	7	12	12	33	87	SS-9	-	-	-	-	-	-	-	-	-	4	A-3a (V)
		23																	
		24	5	7	8	21	100	SS-10	-	4	46	44	4	2	NP	NP	NP	5	A-1-b (0)
		25																	
		26	5	7	8	21	100	SS-11	-	-	-	-	-	-	-	-	-	4	A-1-b (V)
		27																	
		28																	
	29	4	7	8	21	100	SS-12	-	-	-	-	-	-	-	-	-	4	A-1-b (V)	



PID: 77332		BR ID:		PROJECT: CUY-90-15.24		STATION / OFFSET: 123+36, 17.0 RT		START: 7/6/09		END: 7/9/09		PG 3 OF 8		B-031-0-09													
MATERIAL DESCRIPTION AND NOTES			ELEV. 616.4	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED							
										GR	CS	FS	SI	CL	LL	PL	PI										
MEDIUM DENSE TO VERY LOOSE, GRAY, SILT, LITTLE CLAY, TRACE FINE SAND, DAMP (continued)			613.5	63	4	5	18	73	SS-19	-	-	-	-	-	-	-	-	20	A-4b (V)								
STIFF TO HARD, GRAY, SILT AND CLAY, MOIST				64																	65	66	67	68	69	70	71
contains dessicated roots at 68.5'			588.5	69	1	2	4	100	SS-20	0.50	-	-	-	-	-	-	-	27	A-6a (V)								
				70																	71	72	73	74	75	76	77
			588.5	74	3	6	21	100	SS-21	1.6- 2.3	0	0	0	49	51	32	19	13	20	A-6a (9)							
				75																		76	77	78	79	80	81
			588.5	79	7	11	31	80	SS-22	3.8- 4.5+	-	-	-	-	-	-	-	20	A-6a (V)								
				80																	81	82	83	84	85	86	87
@88.5'; SAME WITH TRACE SAND, TRACE GRAVEL			588.5	84	4	8	22	87	SS-23	1.5- 3.0	-	-	-	-	-	-	-	25	A-6a (V)								
				85																	86	87	88	89	90	91	92
MEDIUM STIFF TO VERY SOFT, GRAY, SILTY CLAY, TRACE GRAVEL, MOIST			588.5	89	2	5	18	100	SS-24	1.5- 3.0	1	0	1	52	46	30	19	11	21	A-6a (8)							
				90																		91	92	93	94		
			588.5	94	1					0.6-																	
				95																							











MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
<p><b>SHALE</b>, LIGHT AND DARK GRAY INTERBEDDED, MODERATELY TO SLIGHTLY WEATHERED, WEAK TO SLIGHTLY STRONG, THINLY LAMINATED, PYRITIC, DIAGONAL JOINTS AT 211.4', 213.7', 226.5', 230.0' SLIGHTLY FRACTURED TO INTACT, TIGHT, SLIGHTLY ROUGH, JOINT AT 217.1', HIGH ANGLE JOINT 210.9' TO 211.3', MUD FILLED AT 212.0' AT 230.7'. HIGHLY FRACTURED ZONE FROM 217.1' TP 217.6' AND 210.0' TO 211.3'; RQD 91.7%, REC 97.42%. <i>(continued)</i></p> <p>Qu = 2790 psi @ 229.7' to 230.0' SDI = 82.7% @ 229.0' to 231.0'</p>	455.7																	
	223																	
	224																	
	225																	
	226																	
	227																	
	228																	
	229																	
	230			99		99	NQ-3										CORE	
	231																	
	232																	
	233																	
234																		
235	443.5	EOB																



NOTES: GROUNDWATER ENCOUNTERED AT 32.5', NOT NOTED UPON COMPLETION. USED WATER AS CIRCULATING FLUID FROM 48.5' TO 235.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1.75 BAG BENTONITE GROUT; PUMPED .75 BAG CEMENT









STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:10 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B30'S.GPJ

PID: 77332		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 124+46, 72.0 LT		START: 7/20/09		END: 7/27/09		PG 5 OF 5		B-032-0-09												
MATERIAL DESCRIPTION AND NOTES				ELEV. 551.8	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED					
											GR	CS	FS	SI	CL	LL	PL	PI								
MEDIUM STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, MOIST (continued)				538.1	127																					
					128																					
					129	7	11	37	100	SS-32	1.9- 2.1	0	0	1	54	45	30	17	13	20	A-6a (9)					
					130		15																			
SAME, TRACE GRAVEL @ 139.5'				538.1	131																					
					132																					
					133																					
					134	7	9	31	100	SS-33	1.3- 2.1	-	-	-	-	-	-	-	-	22	A-6a (V)					
SAME, TRACE GRAVEL @ 139.5'				538.1	135																					
					136																					
					137																					
					138																					
SAME, TRACE GRAVEL @ 139.5'				538.1	139	7	11	41	94	SS-34	1.8- 2.0	-	-	-	-	-	-	-	21	A-6a (V)						
					139		18																			
					140																					
					EOB																					

NOTES: GW ENCOUNTER AT 36.0'. NOT NOTED UPON COMPLETION. USED WATER AS CIRCULATING FLUID FROM 55.0' TO 140.0'. 3.25" HSA 0.0' TO 55.0'. ROTARY 55.0' TO 140.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: CUY- IR-90-15.24	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 124+71.75, 143.58 LT	EXPLORATION ID: B-033-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: B&P / R. WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I-90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 2.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 678.0 (MSL) EOB: 12.5 ft.	PAGE: 1 OF 1
START: 5/21/09 END: 5/21/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 663086.264 N, 2189811.699 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL	
								GR	CS	FS	SI	CL	LL	PL	PI				
3.0" Berm Material	678.0																		
MEDIUM DENSE TO LOOSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , TRACE SILT, TRACE CLAY, DAMP	677.8	1	6	8	24	78	SS-1	-	20	32	33	10	5	NP	NP	NP	5	A-1-b (0)	
		2																	
		3																	
		4	26	4	3	10	67	SS-2	-	47	25	19	7	2	NP	NP	NP	9	A-1-b (0)
MEDIUM DENSE, BROWN, <b>FINE SAND</b> , TRACE GRAVEL, TRACE COARSE SAND, TRACE SILT & CLAY, DAMP	672.0	6	4	8	7	22	72	SS-3	-	-	-	-	-	-	-	-	5	A-3 (V)	
		7																	
		8																	
		9	6	7	5	18	78	SS-4	-	1	6	84	7	2	NP	NP	NP	7	A-3 (0)
		10																	
		11																	
		12	5	5	8	19	83	SS-5	-	-	-	-	-	-	-	-	-	5	A-3 (V)
		665.5																	

EOB
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NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS



PROJECT: <u>CUY- IR-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P. WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>126+56.81, 140.03 LT</u>	EXPLORATION ID <u>B-034-0-09</u>
TYPE: <u>ROADWAY</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R. WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>I-90 WB</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>2.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>676.5 (MSL)</u> EOB: <u>10.0 ft.</u>	PAGE 1 OF 1
START: <u>5/22/09</u> END: <u>5/22/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>663266.216 N, 2189874.277 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL
								GR	CS	FS	SI	CL	LL	PL	PI			
4.0" Berm Material	676.5																	
DENSE TO MEDIUM DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, FEW BRICK FRAGMENTS, DAMP TO MOIST  Same as above w/ few glass fragments	676.1	1	10	34	83	SS-1	-	35	27	24	10	4	NP	NP	NP	7	A-1-b (0)	
		2	15	8														
		3	7	8	30	89	SS-2	-	31	25	27	12	5	NP	NP	NP	0	A-1-b (0)
		4																
		5	11	8	25	56	SS-3	-	-	-	-	-	-	-	-	-	13	A-1-b (V)
		6																
		7																
		8																
		9	4	6	19	11	SS-4	-	-	-	-	-	-	-	-	-	-	A-1-b (V)
		666.5	10	7														
		EOB																

NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-035-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-7/8" Spade Bit  
2" O.D. Split-barrel Sampler, NQ Rock Core Barrel  
3" O.D. Shelby Tube Sampler

LOCATION: Sta. 128+85  
62.3' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663456.3; E 2190021.9

COMPLETION DEPTH: 252.0'  
 ELEVATION: 674.6  
 DATE: 7/2/09 - 7/13/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class	
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC
674.4	0						ASPHALT - 1-3/4 INCHES											
674.1			3/8/2	14		60	GRANITE PAVEMENT STONES - 4 INCHES	1										8 A-3 (Vis.)
673.7			1/1/1	3		60	CONCRETE - 10 INCHES	2										10 A-3 (Vis.)
	5		1/1/1	3		100	Medium-dense becoming very-loose brown FINE SAND, little coarse sand, trace silt, trace clay, trace fine gravel, damp.	3	4	19	70	5	2	NP	NP	NP		7 A-3(0)
	10		1/1/1	3		47		4										7 A-3 (Vis.)
	15		1/1/2	4		67		5										8 A-3 (Vis.)
659.1	15		1/1/1	3		67		6										6 A-3 (Vis.)
			2/2/3	7		67	Loose brown FINE SAND, "and" coarse sand, trace silt, trace clay, trace fine gravel, damp.	7										9 A-3 (Vis.)
	20		2/2/3	7		93		8										5 A-3 (Vis.)
	25		3/3/2	7		100		9	4	39	53	2	2	NP	NP	NP		4 A-3(0)
			2/3/3	9		100		10										3 A-3 (Vis.)
			2/2/3	7		93		11										4 A-3 (Vis.)
645.1	30		2/2/2	6		100		12A										11 A-3 (Vis.)
642.6						100	Loose brown COARSE AND FINE SAND, little silt, trace clay, wet.	12B										28 A-3a (Vis.)
	35		2/4/4	11		100	Medium-dense brown COARSE AND FINE SAND, trace silt, trace clay, trace fine gravel, moist.	13	1	13	71	9	6	NP	NP	NP		22 A-3a(0)
635.6	40		2/4/6	14		100		14A										26 A-3a (Vis.)
632.6						100	Medium-dense gray COARSE AND FINE SAND, trace to little silt, trace clay, trace fine gravel, moist.	14B										27 A-3a (Vis.)
	45		11/17/17	48		87	Dense to very-dense brownish gray SANDY SILT, trace clay, damp.	15	0	1	48	42	9	NP	NP	NP		18 A-4a(3)

PLATE 1

WATER LEVEL: 33.5  
 WATER NOTE: Encountered  
 DATE: 7/2/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-035-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-7/8" Spade Bit  
2" O.D. Split-barrel Sampler, NQ Rock Core Barrel  
3" O.D. Shelby Tube Sampler

LOCATION: Sta. 128+85  
62.3' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663456.3; E 2190021.9

COMPLETION DEPTH: 252.0'  
 ELEVATION: 674.6  
 DATE: 7/2/09 - 7/13/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class		
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC	
	45						Dense to very-dense brownish gray SANDY SILT, trace clay, damp.												
	50	█	17/25/24	69		73		16											20 A-4a (Vis.)
620.6		█	5/10/10	28		100	54.0	17A											19 A-4a (Vis.)
618.6	55					80	56.0	17B	0	0	6	77	17	20	19	1	21		A-4b(8)
	60	█	3/5/8	18	2.0-2.5	93		18											21 A-4b (Vis.)
	65	█	2/3/4	10	1.8-2.3	100		19	0	0	2	58	40	28	19	9	26		A-4b(8)
	70	█	4/8/11	27	1.5-2.3	87		20											22 A-4b (Vis.)
602.6		█	6/10/14	34	3.8-4.5+	80	72.0	21											22 A-4b (Vis.)
	75																		
	80	█	6/10/12	31	3.0-4.5+	93		22	0	0	0	57	43	28	20	8	20		A-4b(8)
592.6		█	5/7/8	21	1.7-2.0	80	82.0	23											28 A-6a (Vis.)
	85																		
	90	█	4/7/8	21	2.0-2.3	100		24	1	1	3	35	60	34	21	13	24		A-6a(9)

WATER LEVEL: ▽ 33.5  
 WATER NOTE: Encountered  
 DATE: 7/2/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

PLATE 2

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-035-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-7/8" Spade Bit  
2" O.D. Split-barrel Sampler, NQ Rock Core Barrel  
3" O.D. Shelby Tube Sampler

LOCATION: Sta. 128+85  
62.3' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663456.3; E 2190021.9

COMPLETION DEPTH: 252.0'  
 ELEVATION: 674.6  
 DATE: 7/2/09 - 7/13/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class			
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC		
581.6	90						Stiff to very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains many silt lenses, damp.													
	95		4/6/9	21	1.8-3.0	100	Stiff to very-stiff gray SANDY SILT, trace fine to coarse sand, trace fine gravel, contains few hard zones, damp.	25											24 A-4a (Vis.)	
		P			1.5-4.2	90		26	4	3	7	47	39	24	17	7	18		A-4a(8)	
		P			1.5-4.5+	95		27	0	1	3	48	48	28	19	9	23		A-4a(8)	
574.6	100						Medium-stiff to stiff gray SILTY CLAY, trace fine to coarse sand, contains few soft zones, damp.													
			2/5/5	14	0.5-0.8	100		28												30 A-6b (Vis.)
		P			0.5-1.3	90		29	0	1	1	26	72	39	22	17	30		A-6b(11)	
		P			0.3-0.7	100		30	0	1	1	28	70	38	21	17	30		A-6b(11)	
		P			0.5-0.7	100													28 A-6b (Vis.)	
565.1	110						Medium-stiff to stiff gray SILT AND CLAY, trace fine to coarse sand, damp to moist.													
		P			0.5-1.5	100		32	0	1	1	41	57	34	19	15	25		A-6a(10)	
			5/6/8	20	1.3-2.0	80													21 A-6a (Vis.)	
557.6	115						Stiff to very-stiff gray SILT AND CLAY, trace fine to coarse sand, contains many silt lenses, damp to moist.													
			7/9/14	33	2.5-3.7	87		33												22 A-6a (Vis.)
			4/5/7	17	1.0-2.0	47		34	0	1	1	47	51	30	19	11	21		A-6a(8)	
			4/7/11	26	1.0-2.5	87													23 A-6a (Vis.)	
542.6	130						Very-stiff to hard gray SANDY SILT, "and" clay, trace fine gravel, damp.													
			10/16/23	55	3.8-4.5+	93		35	3	4	7	36	50	28	18	10	17		A-4a(8)	
	135																			

WATER LEVEL: 33.5  
 WATER NOTE: Encountered  
 DATE: 7/2/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

PLATE 3

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-035-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-7/8" Spade Bit  
2" O.D. Split-barrel Sampler, NQ Rock Core Barrel  
3" O.D. Shelby Tube Sampler

LOCATION: Sta. 128+85  
62.3' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663456.3; E 2190021.9

COMPLETION DEPTH: 252.0'  
 ELEVATION: 674.6  
 DATE: 7/2/09 - 7/13/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class		
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC	
	135						Very-stiff to hard gray SANDY SILT, "and" clay, trace fine gravel, damp.												
	140	7/10/13	33	2.5-3.0	100			38										22	A-4a (Vis.)
532.6	142.0						Medium-stiff to stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains few silt lenses, damp.												
	145	6/8/11	27	0.8-1.5	100			39	2	3	5	27	63	32	20	12	22		A-6a(9)
	150	6/9/11	28	1.3-1.7	100			40										24	A-6a (Vis.)
	155	6/8/9	24	1.2-1.7	87			41	2	2	3	29	64	34	20	14	23		A-6a(10)
	160	7/8/10	26	1.2-1.8	100			42										23	A-6a (Vis.)
	165	5/8/11	27	1.3-1.8	93			43	2	1	3	31	63	34	21	13	23		A-6a(9)
	170	5/8/10	26	1.3-1.7	87			44										23	A-6a (Vis.)
	175	8/10/12	31	1.8-2.0	93			45										24	A-6a (Vis.)
497.6	177.0						Stiff to very-stiff gray SILT AND CLAY, trace fine sand, trace fine gravel, contains few silt lenses, damp.												
	180	6/9/11	28	1.8-2.5	87			46	1	0	1	32	66	36	22	14	23		A-6a(10)

PLATE 4

WATER LEVEL: 33.5  
 WATER NOTE: Encountered  
 DATE: 7/2/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-035-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-7/8" Spade Bit  
2" O.D. Split-barrel Sampler, NQ Rock Core Barrel  
3" O.D. Shelby Tube Sampler

LOCATION: Sta. 128+85  
62.3' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663456.3; E 2190021.9

COMPLETION DEPTH: 252.0'  
 ELEVATION: 674.6  
 DATE: 7/2/09 - 7/13/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class		
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC	
	180						Stiff to very-stiff gray SILT AND CLAY, trace fine sand, trace fine gravel, contains few silt lenses, damp.												
	185	6/9/11	28	1.5-2.5	87			47										25	A-6a (Vis.)
	190	6/12/12	34	1.0-3.5	80			48										26	A-6a (Vis.)
483.6	191.0						Hard gray SILT AND CLAY, little fine to coarse sand, trace fine gravel, contains many silt lenses, damp.												
	195	15/30/47	109	4.5+	87			49	6	6	8	30	50	29	18	11	14		A-6a(8)
	200	22/39/50	126	4.5+	100			50										15	A-6a (Vis.)
472.6	202.0						Very-stiff to hard gray SILT AND CLAY, trace fine sand, contains many silt lenses, damp.												
	205	20/22/26	68	3.2-4.5+	100			51	0	0	1	31	68	33	22	11	23		A-6a(8)
	210	9/13/17	43	2.0-3.8	93			52										22	A-6a (Vis.)
462.6	212.0						Hard gray SANDY SILT, some fine to coarse sand, little fine gravel, contains many shale fragments, damp.												
	215	16/23/27	71	4.5+	73			53	19	17	10	34	20	24	19	5	13		A-4a(4)
455.7	218.9						SHALE, gray, moderately to severely weathered, very weak to slightly strong, RQD = 0%, Core Loss = 100% (no recovery due to a plugged rock core barrel).	54										10	A-4a (Vis.)
	220	31/50-4"R		4.0-4.5+	50														
	225																		

PLATE 5

WATER LEVEL: ▽ 33.5 ▽ ▽  
 WATER NOTE: Encountered  
 DATE: 7/2/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

**C-R-S :** CUY-90-14.52  
**PID No. :** 77332  
**Bridge No. :**

**LOG OF BORING NO. B-035-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-7/8" Spade Bit  
2" O.D. Split-barrel Sampler, NQ Rock Core Barrel  
3" O.D. Shelby Tube Sampler

LOCATION: Sta. 128+85  
62.3' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663456.3; E 2190021.9

COMPLETION DEPTH: 252.0'  
 ELEVATION: 674.6  
 DATE: 7/2/09 - 7/13/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics							ODOT Class		
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL		PI	WC
447.6	225						SHALE, gray to dark gray, slightly to moderately weathered, weak to slightly strong, laminated to very thin bedded, moderately fractured to fractured, narrow to open, slightly rough, contains few brown seams, RQD = 81%, Core Loss = 0%.	55										Visual
	230		RQD 70%			99												Visual
	235		RQD 87%			100												Visual
	240		RQD 82%			100												Visual
	245																	
	250																	
422.6	252.0						SEE NEXT PAGE FOR NOTES											
	255																	
	260																	
	265																	
	270																	

WATER LEVEL: ▽ 33.5      ▽      ▽  
 WATER NOTE: Encountered  
 DATE: 7/2/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

**C-R-S :** CUY-90-14.52  
**PID No. :** 77332  
**Bridge No. :**

**LOG OF BORING NO. B-035-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-7/8" Spade Bit  
2" O.D. Split-barrel Sampler, NQ Rock Core Barrel  
3" O.D. Shelby Tube Sampler

LOCATION: Sta. 128+85  
62.3' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663456.3; E 2190021.9

COMPLETION DEPTH: 252.0'  
 ELEVATION: 674.6  
 DATE: 7/2/09 - 7/13/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics							ODOT Class			
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL		PI	WC	
	270						<p><u>NOTES:</u></p> <ul style="list-style-type: none"> <li>- Encountered water at 33.5' during drilling.</li> <li>- Used 3-1/4" I.D. Hollow-stem augers from 0.0' to 55.0'.</li> <li>- At 55.0', augers were removed and 4" O.D. casing was placed down to 55.0'.</li> <li>- From 55.0' to 219.3', used 3-1/8" Tricone Roller Bit with water (washbore).</li> <li>- No sample recovery from Shelby tube attempts at 105' to 107', 107' to 109' and 109.5' to 111.5'. SPT samples (Samples 30 through 32) were obtained after the unsuccessful Shelby tube attempts; therefore, the blowcounts for Samples 30 through 32 may not be accurate due to sample disturbance, and are thereby not shown.</li> <li>- Rock core barrel became plugged upon the start of coring operations. Problem not discovered until reaching a depth of 225' and solution not ascertained until reaching a depth of 227'. No rock core samples were recovered from 220' to 227'.</li> <li>-Vibrating wire piezometers set at depths of 220' and 100'.</li> </ul> <p><u>ROCK CORE TEST RESULTS</u> (performed by ODOT)</p> <ul style="list-style-type: none"> <li>- Q<sub>u</sub> = 2120 psi at 230.0'</li> <li>- Q<sub>u</sub> = 1140 psi at 235.55'</li> <li>- Q<sub>u</sub> = 2260 psi at 246.55'</li> <li>-SDI (I<sub>d2</sub>) from Sample 55 (water) = 90.3%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 55 (mineral) = 90.1%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 55 (polymer) = 93.1%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 56 (water) = 85.2%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 56 (mineral) = 87.7%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 56 (polymer) = 92.0%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 57 (water) = 85.3%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 57 (mineral) = 80.9%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 57 (polymer) = 86.4%, Type II</li> </ul>												
	275																		
	280																		
	285																		
	290																		
	295																		
	300																		
	305																		
	310																		
	315																		

PLATE 7

WATER LEVEL: ▽ 33.5 ▽ ▽  
 WATER NOTE: Encountered  
 DATE: 7/2/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50



**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-036-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 130+00  
342.6' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663656.8; E 2189794.4

COMPLETION DEPTH: 90.0'  
 ELEVATION: 642.7  
 DATE: 7/1/09 - 7/2/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics							ODOT Class				
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL		PI	WC		
	0																			
			3/3/4	10		60	FILL: Very-loose to loose dark brown COARSE AND FINE SAND, trace to little silt, trace clay, trace fine gravel, contains many cinders, and few brick and glass fragments, damp.	1										16	A-3a (Vis.)	
	5		2/2/1	4		60		2										13	A-3a (Vis.)	
634.7			5/5/2	10		80		3										12	A-3a (Vis.)	
	10		2/2/3	7		93	POSSIBLE FILL: Loose brown FINE SAND, some coarse sand, trace fine gravel, trace silt, trace clay, damp.	4											9	A-3 (Vis.)
629.7			3/3/2	7		100		5										5	A-3 (Vis.)	
	15		1/2/1	4		93	Very-loose to loose brown COARSE AND FINE SAND, little to some silt, trace clay, moist to wet.	6										23	A-3a (Vis.)	
626.2			1/2/5	10		100		7A										29	A-3a (Vis.)	
	20		2/3/5	11		80	Loose to medium-dense gray SILT, little clay, little fine sand, slightly organic, moist.	7B										24	A-4b (Vis.)	
			2/4/4	11		80		8	0	0	17	66	17	NP	NP	NP	24	A-4b(8)		
619.7			2/4/4	11		80		9										20	A-4b (Vis.)	
	25		4/6/10	23		60	Medium-dense gray SILT, little clay, trace fine sand.	10										17	A-4b (Vis.)	
			3/6/10	23		53		11	0	0	6	76	18	NP	NP	NP	17	A-4b(8)		
	30		6/8/9	24		80		12										19	A-4b (Vis.)	
610.7			2/3/4	10	2.5-3.8	100	Very-stiff to hard gray SILT, "and" clay, trace fine sand, contains few stiff zones, damp.	13										22	A-4b (Vis.)	

WATER LEVEL: ▽ 32.0  
 WATER NOTE: In Augers Prior to Washbore  
 DATE: 7/1/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

PLATE 8



**C-R-S :** CUY-90-14.52  
**PID No. :** 77332  
**Bridge No. :**

**LOG OF BORING NO. B-036-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 130+00  
342.6' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663656.8; E 2189794.4

COMPLETION DEPTH: 90.0'  
 ELEVATION: 642.7  
 DATE: 7/1/09 - 7/2/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class		
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC	
	70						Medium-stiff to stiff gray SILTY CLAY, trace fine to coarse sand, contains few silt lenses, moist.												
	75	█	2/4/5	13	0.5-1.0	100		21											30 A-6b (Vis.)
	80	█	3/4/6	14	0.8-1.5	93		22											26 A-6b (Vis.)
	85	█	4/5/7	17	1.2-2.0	73		23											23 A-6b (Vis.)
556.7							86.0												
							Very-stiff to hard SILT, "and" clay, trace fine sand, damp to moist.												
552.7	90	█	5/9/11	28	2.5-4.3	80	90.0	24	0	0	2	60	38	26	17	9	23		A-4b(8)
	95																		
	100																		
	105																		

NOTES:  
 - Encountered seepage at 13.5'.  
 - Used 3-1/4" I.D. Hollow-stem Augers from 0.0' to 30.0'.  
 - From 30.0' to 90.0', used 3-1/8" Tricone Roller Bit with water (washbore), with augers left in hole to act as casing.

WATER LEVEL: ▽ 32.0 ▽ ▽  
 WATER NOTE: In Augers Prior to Washbore  
 DATE: 7/1/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-037-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 131+65  
301.7' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663799; E 2189886.5

COMPLETION DEPTH: 90.0'  
 ELEVATION: 629.3  
 DATE: 6/29/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class	
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC
628.9	0						ASPHALT - 5 INCHES											
628.3			4/4/3	10		87	CONCRETE - 7 INCHES	1										7 A-3 (Vis.)
			1/1/1	3		73	Loose becoming very-loose brown FINE SAND, some coarse sand, trace fine gravel, trace silt, dry to wet.	2										8 A-3 (Vis.)
	5		1/1/1	3		67		3										9 A-3 (Vis.)
			1/1/1	3		60		4										8 A-3 (Vis.)
	10		1/1/1	3		100		5A										26 A-3 (Vis.)
617.2			1/1/1	3		100		5B										32 A-4b (Vis.)
616.3			2/2/1	4		73	Very-loose brown SILT, some fine sand, little clay, contains few fine sand seams, wet.	6										20 A-3a (Vis.)
	15		1/1/1	3		60	Very-loose brown COARSE AND FINE SAND, trace clay, trace silt, wet.	7	0	5	83	4	8	NP	NP	NP		22 A-3a(0)
610.8			1/3/3	9	2.0-2.5	80	Very-stiff gray SANDY SILT, some clay, contains few black seams and silt lenses, slightly organic, damp.	8										22 A-4a (Vis.)
608.8	20		1/2/2	6	0.5-0.8	80	Medium-stiff to stiff gray SILT, "and" clay, trace fine sand, contains few black seams, slightly organic, moist.	9	0	0	1	62	37	27	21	6	27	A-4b(8)
			2/2/4	9	1.0-1.8	100		10										24 A-4b (Vis.)
603.8	25		2/4/5	13	2.5-3.5	100	Very-stiff gray SILT, "and" clay, trace fine sand, moist.	11										23 A-4b (Vis.)
			3/4/6	14	2.5-4.0	100		12	0	0	1	54	45	27	19	8	22	A-4b(8)
	30		3/5/8	18	2.0-2.5	87		13										23 A-4b (Vis.)
	35																	

WATER LEVEL: ▽ 11.2      ▽ 14.0      ▽  
 WATER NOTE: Encountered      In Augers Prior to Washbore  
 DATE: 6/29/09      6/29/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

PLATE 11

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-037-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 131+65  
301.7' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663799; E 2189886.5

COMPLETION DEPTH: 90.0'  
 ELEVATION: 629.3  
 DATE: 6/29/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class			
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC		
587.3	35-40	4/6/8	20	2.5-4.0	100	100	Very-stiff gray SILT, "and" clay, trace fine sand, moist.	14											23	A-4b (Vis.)
	42.0																			
	45	3/3/6	13	1.0-2.3	87	87	Stiff to very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains few silt lenses, moist.	15	1	0	2	41	56	32	21	11	26		A-6a(8)	
	50	3/5/6	16	1.5-2.5	100	100		16											21	A-6a (Vis.)
572.3	55	3/4/6	14	1.0-2.5	100	100		17	1	1	1	24	73	38	23	15	29		A-6a(10)	
	60	2/3/5	11	0.5-0.8	100	100	Medium-stiff gray SILT AND CLAY, trace fine to coarse sand, moist.	18											31	A-6a (Vis.)
	65	3/3/6	13	0.7-1.0	100	100		19	0	1	2	42	55	33	20	13	25		A-6a(9)	
	70	3/5/7	17	0.7-1.0	100	100		20											32	A-6a (Vis.)

WATER LEVEL: 11.2  
 WATER NOTE: Encountered  
 DATE: 6/29/09

14.0  
In Augers Prior to Washbore  
6/29/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

PLATE 12

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-037-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 131+65  
301.7' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663799; E 2189886.5

COMPLETION DEPTH: 90.0'  
 ELEVATION: 629.3  
 DATE: 6/29/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics							ODOT Class			
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL		PI	WC	
557.3	70						72.0												
	75	█	7/9/12	30	3.3-4.5+	80	+++++ Very-stiff to hard gray SILT, "and" clay, damp to moist.	21											23 A-4b (Vis.)
	80	█	6/11/13	34	3.5-4.5+	100	+++++ +++++	22	0	0	0	53	47	29	20	9	21		A-4b(8)
	85	█	8/12/13	35	3.8-4.0	73	+++++ +++++	23											21 A-4b (Vis.)
539.3	90	█	5/6/8	20	2.0-3.5	100	+++++ 90.0	24											23 A-4b (Vis.)

NOTES:  
 - Encountered water at 11.2' during drilling.  
 - Used 3-1/4" I.D. Hollow-stem Augers from 0.0' to 30.0'.  
 - From 30.0' to 90.0', used 3-1/8" Tricone Roller Bit with water (washbore), with augers left in hole to act as casing.

WATER LEVEL: ▽ 11.2  
 WATER NOTE: Encountered  
 DATE: 6/29/09

WATER LEVEL: ▽ 14.0  
 WATER NOTE: In Augers Prior to Washbore  
 DATE: 6/29/09

WATER LEVEL: ▽  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

PLATE 13

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-037-1-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler

LOCATION: Sta. 131+34  
55.5' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663689.7; E 2190109.4

COMPLETION DEPTH: 215.5'  
 ELEVATION: 645.5  
 DATE: 7/14/09 - 7/17/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class						
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC					
645.1	0						ASPHALT - 5 INCHES	1A															
644.7			6/6/6	17		100	CONCRETE - 7 INCHES	1B															
644.2			1/1/1	3		100	FILL: Medium dense dark brown COARSE AND FINE SAND, little fine to coarse gravel, trace silt, contains many cinders, dry to damp.	2												10	A-1-b (Vis.)		
	5		1/2/2	6		60	Medium-dense becoming very-loose to loose brown and orange GRAVEL WITH SAND, trace clay, trace silt, damp.	3													9	A-1-b (Vis.)	
	10		3/3/3	8		93		4													6	A-1-b (Vis.)	
			2/1/2	4		87		5													6	A-1-b (Vis.)	
630.5	15		2/2/3	7		80		6	22	55	17	1	5	NP	NP	NP					6	A-1-b(0)	
			6/6/7	18		100	Loose to medium-dense brown COARSE AND FINE SAND, little fine gravel, trace to little silt, trace clay, damp to moist.	7														6	A-3a (Vis.)
	20		2/2/2	6		100		8														14	A-3a (Vis.)
			3/6/7	18		80		9														6	A-3a (Vis.)
622.5			1/1/2	4		100	Very-loose brown FINE SAND, trace fine gravel, trace silt, trace clay, wet.	10A														24	A-3 (Vis.)
621.2	25		2/3/4	10		100	Very-loose brown SILT, little to some clay, little fine to coarse sand, contains many silty clay seams and pockets, wet.	10B														28	A-4b (Vis.)
619.5			2/4/5	13		73	Loose to medium-dense brown COARSE AND FINE SAND, trace silt, trace clay, trace fine gravel, contains few silt seams, wet.	11														24	A-3a (Vis.)
	30		2/4/5	13		100		12														21	A-3a (Vis.)
			3/3/4	10		67		13	1	26	60	7	6	NP	NP	NP					16	A-3a(0)	
	35		3/5/6	15		67		14														26	A-3a (Vis.)
603.5	40		2/1/2	4		60	Very-loose gray SILT, little clay, little fine to coarse sand, trace fine gravel, wet.	15														22	A-4b (Vis.)
	45																						

WATER LEVEL: 23.0  
 WATER NOTE: Encountered  
 DATE: 7/14/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800

PLATE 14

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-037-1-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler

LOCATION: Sta. 131+34  
55.5' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663689.7; E 2190109.4

COMPLETION DEPTH: 215.5'  
 ELEVATION: 645.5  
 DATE: 7/14/09 - 7/17/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class			
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC		
599.0	45						++++ 46.5													
			4/4/7	15	3.0-4.5	100	Very-stiff to hard gray SANDY SILT, some to "and" clay, contains many silt lenses, moist.	16											21	A-4a (Vis.)
593.5	50						52.0													
			2/3/4	10	1.0-2.0	80	Stiff gray SANDY SILT, "and" clay, contains many silt lenses, moist.	17	0	0	1	47	52	30	20	10	27		A-4a(8)	
588.5	55						57.0													
			1/2/4	8	0.5-1.0	100	Medium-stiff to stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains few silt seams and lenses, contains few very-stiff zones, moist.	18											29	A-6a (Vis.)
			P		0.8-2.3	90		19	1	1	3	42	53	30	18	12	25		A-6a(9)	
581.5	60						64.0													
			P		1.2-1.7	90		20	1	2	4	35	58	34	19	15	27		A-6a(10)	
579.5	65						66.0													
			P		0.8-1.4	95	Medium-stiff to stiff gray SILTY CLAY, trace fine to coarse sand, trace fine gravel, contains few silt seams and lenses, moist.	21	4	4	5	28	59	36	20	16	29		A-6b(10)	
577.5	70						68.0													
			P		0.3-1.0	100		22	1	1	2	32	64	35	20	15	30		A-6a(10)	
			P		0.3-0.5	100	Soft to medium-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains few silt seams and lenses, moist to wet.	23	0	0	1	27	72	37	21	16	33		A-6b(10)	
573.5	75						72.0													
			P		0.5-0.9	85		24	1	1	1	30	67	38	20	18	29		A-6b(11)	
			P		0.6-1.0	95	Soft to medium-stiff gray SILTY CLAY, trace fine to coarse sand, trace fine gravel, contains few silt lenses, moist to wet.	25	1	1	1	41	56	32	19	13	28		A-6a(9)	
							88.0													
			2/4/5	13	1.2-2.0	100	Medium-stiff to stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains many silt lenses, moist.	26											23	A-6a (Vis.)
			2/4/6	14	1.5-2.0	100		27	0	1	1	51	47	30	19	11	23		A-6a(8)	
557.5	85						++++ 88.0													
			3/5/7	17	2.2-3.5	100	++++ ++++ ++++	28											22	A-4b (Vis.)

PLATE 15

WATER LEVEL: 23.0  
 WATER NOTE: Encountered  
 DATE: 7/14/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800



**C-R-S :** CUY-90-14.52  
**PID No. :** 77332  
**Bridge No. :**

**LOG OF BORING NO. B-037-1-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler

LOCATION: Sta. 131+34  
55.5' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663689.7; E 2190109.4

COMPLETION DEPTH: 215.5'  
 ELEVATION: 645.5  
 DATE: 7/14/09 - 7/17/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class		
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC	
	90						++++ Very-stiff gray SILT, "and" clay, trace fine sand, damp to moist.												
	95	4/7/10	24	2.0-4.0	93	93	++++ Very-stiff gray SILT, "and" clay, trace fine sand, damp to moist.	29	0	0	1	54	45	28	19	9	22	A-4b(8)	
	100	5/10/11	29	2.5-4.0	87	87	++++ Very-stiff gray SILT, "and" clay, trace fine sand, damp to moist.	30									22	A-4b (Vis.)	
543.5	102.0						++++ Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, damp to moist.												
	105	5/8/12	28	2.0-4.0	93	93	++++ Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, damp to moist.	31	1	1	2	41	55	30	19	11	21	A-6a(8)	
538.5	107.0						++++ Very-stiff to hard gray SANDY SILT, some clay, trace fine gravel, contains many silt lenses, damp.												
	110	12/19/25	62		0	0	++++ Very-stiff to hard gray SANDY SILT, some clay, trace fine gravel, contains many silt lenses, damp.												
	115	8/13/18	43	2.5-4.5+	80	80	++++ Very-stiff to hard gray SANDY SILT, some clay, trace fine gravel, contains many silt lenses, damp.	32									16	A-4a (Vis.)	
527.5	118.0						++++ Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains many silt lenses, damp to moist.												
	120	4/9/13	31	2.3-3.2	93	93	++++ Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains many silt lenses, damp to moist.	33									21	A-6a (Vis.)	
	125	5/9/14	32	3.0-3.5	100	100	++++ Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains many silt lenses, damp to moist.	34	1	2	3	31	63	33	19	14	21	A-6a(10)	
	130	4/8/11	27	2.0-2.5	93	93	++++ Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains many silt lenses, damp to moist.	35									22	A-6a (Vis.)	
	135	4/7/10	24	2.0-2.3	100	100	++++ Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains many silt lenses, damp to moist.	36									22	A-6a (Vis.)	

WATER LEVEL: 23.0  
 WATER NOTE: Encountered  
 DATE: 7/14/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-037-1-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler

LOCATION: Sta. 131+34  
55.5' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663689.7; E 2190109.4

COMPLETION DEPTH: 215.5'  
 ELEVATION: 645.5  
 DATE: 7/14/09 - 7/17/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class			
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC		
	135																			
	140	█	4/8/9	24	2.0-2.3	100	Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains many silt lenses, damp to moist.	37	2	2	3	30	63	32	19	13	23		A-6a(9)	
	145	█	3/7/9	22	2.0-2.2	100		38												23 A-6a (Vis.)
498.5	147.0																			
	150	█	6/10/11	29	0.7-1.5	100	Medium-stiff to stiff gray SILT AND CLAY, trace fine to coarse sand, moist.	39	0	1	1	32	66	34	21	13	26		A-6a(9)	
	155	█	6/11/15	36	1.5	20		40												26 A-6a (Vis.)
490.5	155.0		P		2.0-4.5+	90	Very-stiff to hard gray SILT AND CLAY, trace fine sand, trace fine gravel, damp.	41	0	0	0	42	58	30	18	12	21		A-6a(9)	
	160	█	P		2.0-4.5+	90		42	1	0	1	21	77	37	22	15	25		A-6a(10)	
	160																			
	165	█	23/26/30	78	4.5+	100	Very-dense gray SANDY SILT, trace to little clay, trace fine gravel, moist.	43A												16 A-4a (Vis.)
481.0	165					60		43B												10 A-6a (Vis.)
	170	█	17/33/45	109	4.0-4.5+	87	Hard gray SILT AND CLAY, trace to little fine to coarse sand, trace fine to coarse gravel, contains few shale fragments and silt lenses, damp.	44												16 A-6a (Vis.)
	175	█	14/41/40	113	4.0-4.5+	80		45												14 A-6a (Vis.)
469.5	176.0																			
	180	█	8/11/15	36	2.3-4.25	100	Very-stiff to hard gray SANDY SILT, trace fine sand, trace fine to coarse gravel, contains few silt lenses, damp to moist.	46	6	0	1	35	58	31	21	10	22		A-4a(8)	

WATER LEVEL: ▽ 23.0 ▽  
 WATER NOTE: Encountered  
 DATE: 7/14/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800

PLATE 17

**C-R-S :** CUY-90-14.52  
**PID No. :** 77332  
**Bridge No. :**

**LOG OF BORING NO. B-037-1-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler

LOCATION: Sta. 131+34  
55.5' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663689.7; E 2190109.4

COMPLETION DEPTH: 215.5'  
 ELEVATION: 645.5  
 DATE: 7/14/09 - 7/17/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class			
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC		
463.5	180																			
			7/11/14	35	2.0-2.3	67	Very-stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, contains few silt lenses, moist.	47	2	1	1	29	67	33	20	13	24		A-6a(9)	
458.0	185																			
455.0	190		16/33/36	97	4.0-4.5+	60	Hard dark gray SILT AND CLAY, some fine to coarse gravel, some fine to coarse sand, contains many shale fragments, moist.	48	33	17	8	17	25	29	18	11	11		A-6a(2)	
453.3			RQD 48%			90		50												Visual
			90-3"R			100		49												Visual
447.9	195																			
			RQD 89%			100	SHALES, gray, severely weathered, very weak to slightly strong, laminated, fissile, highly fractured, open, very to slightly rough, contains many clayey silt pockets, RQD = 0%, Core Loss = 36%.													
	200																			
			RQD 85%			100	SHALES, gray, moderately to highly weathered, weak to slightly strong, laminated to thinly laminated, fractured, narrow to open, slightly rough, vertical fracture from 194.2' to 195.5', contains few clayey silt pockets, and few diagonal fractures, RQD = 69%, Core Loss = 0%.	51												Visual
	205						SHALES, gray to dark gray with few very light gray seams, moderately to slightly weathered, weak to slightly strong, laminated to thinly laminated, fractured to moderately fractured, narrow to open, slightly rough, few brown seams (possible siltstone), RQD = 89%, Core Loss = 0%.													
	210																			
430.0	215																			
							SEE NEXT PAGE FOR NOTES													
	220																			
	225																			

WATER LEVEL: ▽ 23.0  
 WATER NOTE: Encountered  
 DATE: 7/14/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800

**C-R-S :** CUY-90-14.52  
**PID No. :** 77332  
**Bridge No. :**

**LOG OF BORING NO. B-037-1-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler

LOCATION: Sta. 131+34  
55.5' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663689.7; E 2190109.4

COMPLETION DEPTH: 215.5'  
 ELEVATION: 645.5  
 DATE: 7/14/09 - 7/17/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class	
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC
	225						<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>- Encountered seepage at 21' during drilling.</li> <li>- Encountered water at 23' during drilling.</li> <li>- Used 3-1/4" I.D. Hollow-stem Augers from 0.0' to 52.0'.</li> <li>- At 52.0', removed augers and placed 4" O.D. casing to a depth of 52.0'.</li> <li>- Used 3-7/8" Tricone Roller Bit with water (washbore) from 52.0' to 193.5'.</li> <li>- No sample recovery from Shelby tube attempt at 68' to 70'. SPT sample (Sample 23) was obtained after the unsuccessful Shelby tube attempt; therefore, the blowcounts for Sample 23 may not be accurate due to sample disturbance, and are thereby not shown.</li> <li>- During installation of rock coring equipment, a cobble previously encountered near 150' to 155', knocked the rock core barrels slightly askew and the barrels were forced out of previously bored hole. Coring through soil to form a "new" hole from 165' to 190.5' (at which depth coreable rock was encountered) with rock core barrel was required.</li> <li>- Sample 49 was taken in original hole.</li> <li>- Vibrating wire piezometers were installed at depths of 70' and 185'.</li> </ul> <p><b>ROCK CORE TEST RESULTS (performed by ODOT)</b></p> <ul style="list-style-type: none"> <li>- Q<sub>u</sub> = 1530 psi at 192.7'</li> <li>- Q<sub>u</sub> = 1570 psi at 203.3'</li> <li>- Q<sub>u</sub> = 1730 psi at 206.5'</li> <li>-SDI (I<sub>d2</sub>) from Sample 50 (water) = 81.0%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 50 (mineral) = 86.1%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 50 (polymer) = 87.6%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 51 (water) = 84.9%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 51 (mineral) = 85.7%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 51 (polymer) = 88.4%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 52 (water) = 85.2%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 52 (mineral) = 85.5%, Type II</li> <li>-SDI (I<sub>d2</sub>) from Sample 52 (polymer) = 88.0%, Type II</li> </ul>											
	230																	
	235																	
	240																	
	245																	
	250																	
	255																	
	260																	
	265																	
	270																	

PLATE 19

WATER LEVEL: ▽ 23.0 ▽  
 WATER NOTE: Encountered  
 DATE: 7/14/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-037-2-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger  
2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler

LOCATION: Sta. 131+57  
267.2' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663781; E 2189916.8

COMPLETION DEPTH: 50.0'  
 ELEVATION: 631.7  
 DATE: 9/9/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class		
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC	
631.2	0						ASPHALT - 6 INCHES												
630.6							SANDSTONE BRICK - 7 INCHES												
630.2			2/2/1	4		67	GRANULAR BASE - 5 INCHES	1										10	A-3a (Vis.)
	5		2/1/2	4		67	Very-loose brown COARSE AND FINE SAND, trace to little fine gravel, trace to little silt, trace clay, contains few clayey silt pockets, damp to moist.	2	12	24	46	9	9	NP	NP	NP		8	A-3a(0)
			1/1/1	3		87		3										13	A-3a (Vis.)
621.7	10		1/1/1	3		67		4	3	10	68	11	8	NP	NP	NP		12	A-3a(0)
619.8			1/4/6	14		100	Medium-dense brown COARSE AND FINE SAND, little to some silt, trace to little clay, trace fine gravel, wet.	5A										22	A-3a (Vis.)
618.7						100	Medium-dense brown SILT, little clay, trace fine to coarse sand, trace fine gravel, moist to wet.	5B										21	A-4b (Vis.)
	15		3/5/8	18		100	Medium-dense gray SILT, little clay, trace fine sand, damp to moist.	6										18	A-4b (Vis.)
			5/8/8	22		87		7	0	0	4	79	17	NP	NP	NP		18	A-4b(8)
611.2	20		11/10/9	27		93		8										20	A-4b (Vis.)
			1/2/3	7	1.5-3.2	100	Stiff to very-stiff gray SILT, "and" clay, trace fine sand, moist.	9	0	0	1	63	36	27	20	7		22	A-4b(8)
608.7						100	Medium-stiff to stiff gray SILT AND CLAY, moist.	10	0	0	0	54	46	31	18	13		28	A-6a(9)
606.7	25		1/1/2	4	0.5-1.0	100		11	0	0	2	60	38	29	19	10		26	A-4b(8)
			P		0.7-2.0	90	Medium-stiff to stiff gray SILT, some to "and" clay, trace fine sand, contains few very-stiff zones, moist.	12	0	0	4	63	33	26	19	7		24	A-4b(8)
	30		1/2/2	6	1.0-2.5	100		13										24	A-4b (Vis.)
600.7						100	Hard gray SILT, "and" clay, trace fine sand, damp to moist.	14										19	A-4b (Vis.)
	35		4/7/9	22	4.5+	100													

PLATE 1

WATER LEVEL: ▽ "Dry" ▽  
 WATER NOTE: In Augers Prior to Piezometer Installation  
 DATE: 9/9/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800



**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-038-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 132+80  
305.8' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663909.1; E 2189920

COMPLETION DEPTH: 90.0'  
 ELEVATION: 614.7  
 DATE: 6/30/09 - 7/1/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class		
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC	
610.5	0		6/6/5	16		80	FILL: Medium-dense dark brown COARSE AND FINE SAND, trace fine gravel, trace silt, trace clay, contains many cinders, damp to moist.	1										14	A-3a (Vis.)
			7/7/6	18		100	Loose to medium-dense brown FINE SAND, some coarse sand, trace fine gravel, trace silt, trace clay, damp.	2A										16	A-3a (Vis.)
	5		3/2/4	9		88		2B										11	A-3 (Vis.)
			3/4/3	10		67	Very-loose to loose brown FINE SAND, little coarse sand, trace fine gravel, trace silt, trace clay, contains few silt and silty clay lenses and seams, damp to wet.	3										11	A-3 (Vis.)
604.2	10		2/2/2	6		60		4										9	A-3 (Vis.)
			2/2/3	7		73	Very-loose brown COARSE AND FINE SAND, little silt, wet.	5										11	A-3 (Vis.)
	15		2/2/3	7		93		6										11	A-3 (Vis.)
			2/2/3	7		100	Medium-dense gray SILT, little clay, little fine sand, moist to wet.	7										22	A-3 (Vis.)
			2/1/1	3		100		8										31	A-3 (Vis.)
594.2	20		SH-12"/2			67	Medium-stiff to stiff gray SILT, "and" clay, trace fine sand, slightly organic, moist to wet.	9										27	A-3a (Vis.)
591.7			3/3/6	13		80		10	0	0	12	72	16	NP	NP	NP	27	A-4b(8)	
588.7	25		2/2/3	7	0.7-1.3	100	Stiff to very-stiff gray SILT AND CLAY, trace fine to coarse sand, contains few silt and fine sand lenses and black (slightly organic) pockets, damp to moist.	11										27	A-4b (Vis.)
			1/2/3	7	0.5-1.3	100		12	0	0	1	54	45	31	21	10	30	A-4b(8)	
582.7	30		2/3/5	11	1.5-2.5	100		13									25	A-6a (Vis.)	

WATER LEVEL: ▽ 19.0      ▽ "Dry"      ▽  
 WATER NOTE: Encountered      In Augers Prior to Washbore  
 DATE: 6/30/09      6/30/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

PLATE 20

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-038-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 132+80  
305.8' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663909.1; E 2189920

COMPLETION DEPTH: 90.0'  
 ELEVATION: 614.7  
 DATE: 6/30/09 - 7/1/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class					
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC				
577.7	35																					
			1/3/3	9	0.5-1.5	100	Medium-stiff to stiff gray SILT AND CLAY, trace fine to coarse sand, trace fine gravel, damp.	14												26	A-6a (Vis.)	
572.7	40																					
			2/2/2	6	0.0-0.5	100	Very-soft to soft gray SILTY CLAY, trace fine to coarse sand, moist.	15	0	1	3	30	66	37	21	16	29			A-6b(10)		
	45																					
			2/3/3	9	0.0-0.5	100		16												32	A-6b (Vis.)	
	50																					
			2/3/4	10	0.2-0.5	100		17													31	A-6b (Vis.)
	55																					
557.7																						
			2/3/4	10	0.5-0.8	100	Medium-stiff gray SILT AND CLAY, trace fine sand, trace fine gravel, moist.	18	1	1	2	44	52	31	17	14	28				A-6a(10)	
	60																					
			2/3/4	10	0.5-1.0	100		19													26	A-6a (Vis.)
	65																					
547.7																						
			2/2/3	7	0.0-0.5	87	Very-soft to soft gray SILT AND CLAY, trace fine sand, trace fine gravel, moist.	20	1	0	2	45	52	31	17	14	27				A-6a(10)	
	70																					

WATER LEVEL: 19.0 "Dry"  
 WATER NOTE: Encountered In Augers Prior to Washbore  
 DATE: 6/30/09 6/30/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

PLATE 21



**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-038-0-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger; 3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 132+80  
305.8' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663909.1; E 2189920

COMPLETION DEPTH: 90.0'  
 ELEVATION: 614.7  
 DATE: 6/30/09 - 7/1/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class							
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC						
542.7	70																							
	75	█	5/7/9	23	1.8-2.5	73	Stiff to very-stiff gray SILT AND CLAY, trace fine sand, moist.	21												23	A-6a (Vis.)			
	80	█	6/7/11	26	2.0-2.8	87		22	0	0	1	49	50	32	19	13	22				A-6a(9)			
532.7	82.0																							
	85	█	5/7/8	21	2.0	87	Very-stiff gray SILTY CLAY, trace to little fine to coarse sand, trace fine gravel, damp to moist.	23	1	2	3	24	70	39	23	16	26					A-6b(10)		
524.7	90	█	4/6/8	20	2.0	87		24															22	A-6b (Vis.)
	95						NOTES: - Encountered water at 19.0' during drilling. - Used 3-1/4" I.D. Hollow-stem Augers from 0.0' to 40.0'. - From 40.0' to 90.0', used 3-1/8" Tricone Roller Bit with water (washbore), with augers left in hole to act as casing.																	
	100																							
	105																							

WATER LEVEL: ▽ 19.0      ▽ "Dry"      ▽  
 WATER NOTE: Encountered      In Augers Prior to Washbore  
 DATE: 6/30/09      6/30/09

Drill Rod Energy Ratio : 0.85  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB ATV D50

**C-R-S : CUY-90-14.52**  
**PID No. : 77332**  
**Bridge No. :**

**LOG OF BORING NO. B-038-1-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger  
2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler

LOCATION: Sta. 132+84  
259.3' Lt of Proposed W.B. I-90 Centerline  
 COORDINATES: N 663897.6; E 2189965.3

COMPLETION DEPTH: 60.0'  
 ELEVATION: 615.0  
 DATE: 9/8/09

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics										ODOT Class							
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI	WC									
	0																									
			8/7/6	18		87	FILL: Medium-dense dark brown to black COARSE AND FINE SAND, trace fine gravel, trace silt, contains many cinders, brick, coal and asphalt fragments, dry to damp.	1														16	A-3a (Vis.)			
609.5	5		3/3/7	14		80		2															19	A-3a (Vis.)		
			6/7/5	17		87	Medium-dense becoming loose brown COARSE AND FINE SAND, little fine gravel, trace silt, trace clay, contains few silt lenses, damp.	3	17	30	37	8	8	NP	NP	NP					8		A-3a(0)			
604.5	10		3/2/2	6		87		4																14	A-3a (Vis.)	
602.0			1/3/2	7		73	Loose brown GRAVEL WITH SAND, trace clay, trace silt, damp.	5	26	31	34	3	5	NP	NP	NP					9		A-1-b(0)			
	15		2/3/2	7		100	Very-loose to loose brown with some orange COARSE AND FINE SAND, some silt, trace clay, damp becoming moist to wet.	6																15	A-3a (Vis.)	
			2/2/3	7		87		7																	19	A-3a (Vis.)
595.8			1/1/1	3		100		8A	0	0	65	28	7	NP	NP	NP					26		A-3a(0)			
	20		1/3/2	7		80	Very-loose to loose brown and gray SILT, little clay, little fine sand, contains few black slightly organic seams, wet.	8B														27		A-4b (Vis.)		
592.0			1/3/2	7		80		9	0	0	14	67	19	NP	NP	NP					23		A-4b(8)			
	25		3/3/4	10	2.1-3.5	100	Stiff to very-stiff gray SILT, "and" clay, trace fine sand, contains few black slightly organic seams, wet.	10																	23	A-4b (Vis.)
587.0			2/2/2	6	1.0-2.3	80		11	0	0	3	63	34	28	20	8					26		A-4b(8)			
	30		2/3/4	10	2.0-3.0	80	Stiff to very-stiff gray SILT, "and" clay, moist to wet.	12																25	A-4b (Vis.)	
	35		2/4/6	14	2.3-3.0	73		13	0	0	0	57	43	28	18	10					22		A-4b(8)			

WATER LEVEL: 18.0  
 WATER NOTE: Encountered  
 DATE: 9/8/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800

PLATE 3

C-R-S : **CUY-90-14.52**  
 PID No. : **77332**  
 Bridge No. :

**LOG OF BORING NO. B-038-1-09**  
**CUY-90-14.52 WEST ABUTMENT**  
**CLEVELAND, OHIO**



TYPE: **3-1/4" I.D. Hollow-stem Auger**  
**2" O.D. Split-barrel Sampler, 3" O.D. Shelby Tube Sampler**

LOCATION: **Sta. 132+84**  
**259.3' Lt of Proposed W.B. I-90 Centerline**  
 COORDINATES: **N 663897.6; E 2189965.3**

COMPLETION DEPTH: **60.0'**  
 ELEVATION: **615.0**  
 DATE: **9/8/09**

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD-%	N <sub>60</sub>	Hand Pen. (tsf)	Sample Rec-%	Description	Samp. No.	Physical Characteristics								ODOT Class			
									% Agg.	% CS	% FS	% Silt	% Clay	LL	PL	PI		WC		
573.5	35-40		2/3/4	10	1.0-2.3	80	++++ Stiff to very-stiff gray SILT, "and" clay, moist to wet. ++++	14										24	A-4b (Vis.)	
569.5	45		1/1/2	4	0.5-0.7	73	++++ Medium-stiff gray SILTY CLAY, trace fine to coarse sand, trace fine gravel, contains few silt seams, moist. ++++	15	1	1	1	27	70	38	22	16	30		A-6b(10)	
			1/2/3	7	0.5-0.9	100		16	0	1	1	24	74	39	20	19	30		A-6b(12)	
567.5			1/2/4	8	0.5-2.0	100	++++ Medium-stiff to stiff gray SILT AND CLAY, trace fine to coarse sand, moist. ++++	17	0	1	2	41	56	31	17	14	25		A-6a(10)	
564.5	50		P		2.0-2.8	100	++++ Very-stiff gray SILT, "and" clay, trace fine sand, moist. ++++	18	0	0	2	54	44	30	20	10	23		A-4b(8)	
			2/3/5	11	2.0-3.2	100		19											23	A-6a (Vis.)
555.0	55		3/4/6	14	2.0-3.2	100	++++ Very-stiff gray SILT AND CLAY, trace fine sand, contains few silt seams and lenses, moist. ++++	20	0	0	3	52	45	29	18	11	21		A-6a(8)	
			3/4/6	14	2.0-3.0	100		21											24	A-6a (Vis.)
			3/4/6	14	2.3-3.0	100		22												23
	60																			

NOTES:  
 - Encountered water at 18.0' during drilling.  
 - Vibrating wire piezometer was installed at a depth of 25'.

WATER LEVEL: 18.0  
 WATER NOTE: Encountered  
 DATE: 9/8/09

Drill Rod Energy Ratio : 0.84  
 Last Calibration Date : 09/13/07  
 Drill Rig Number : OTB TRUCK 2800

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / HEPNER</u>	DRILL RIG: <u>SIMCO 2800 HS(HT)</u>	STATION / OFFSET: <u>137+50.65, 70.97 LT</u>	EXPLORATION ID <u>B-039-0-09</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>OTB / KLG</u>	HAMMER: <u>CME AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25 HSA / TRI CONE / NQ</u>	CALIBRATION DATE: <u>9/13/07</u>	ELEVATION: <u>579.6 (MSL)</u> EOB: <u>174.0 ft.</u>	PAGE 1 OF 6
START: <u>6/8/09</u> END: <u>6/10/09</u>	SAMPLING METHOD: <u>SPT / NQ</u>	ENERGY RATIO (%): <u>83.64</u>	COORD: <u>664278.121 N, 2190295.336 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM DENSE, GRAY AND BROWN, <b>UNCONTROLLED FILL</b> , SAND, CINDERS AND SLAG, WET	579.6	1	5															
MEDIUM DENSE TO LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , AND CLAY, LITTLE SILT, TRACE GRAVEL, MOIST TO WET	578.6	2	5 6	15	89	SS-1	-	-	-	-	-	-	-	-	29	A-3a (V)		
		3																
		4	3 4	13	67	SS-2	-	6	33	37	18	6	NP	NP	NP	14	A-3a (0)	
		5	5															
		6	1															
		7	2 2	6	100	SS-3	-	-	-	-	-	-	-	-	20	A-3a (V)		
	571.1	8																
SOFT TO MEDIUM STIFF, BROWN, <b>SANDY SILT</b> , LITTLE CLAY, WET		9	1 1	-	100	SS-4	-	0	0	37	47	16	23	17	6	24	A-4a (6)	
		10																
		11	1															
		12	1 1	3	100	SS-5	-	-	-	-	-	-	-	-	27	A-4a (V)		
		13																
		14	1 1	6	100	SS-6	-	-	-	-	-	-	-	-	31	A-4a (V)		
		15	3															
	563.6	16	1															
VERY LOOSE TO LOOSE, GRAY, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, WET		17	1 1	3	78	SS-7	-	0	1	78	15	6	NP	NP	NP	30	A-3a (0)	
		18																
		19	2 3	7	89	SS-8	-	-	-	-	-	-	-	-	25	A-3a (V)		
		20	2															
		21	1															
		22	1 2	4	56	SS-9	-	-	-	-	-	-	-	-	20	A-3a (V)		
		23																
		24	2 3	8	100	SS-10	-	5	26	53	14	2	NP	NP	NP	20	A-3a (0)	
		25	3															
		26	2															
		27	3 4	10	28	SS-11	-	-	-	-	-	-	-	-	14	A-3a (V)		
		28																
		29	2 3	7	44	SS-12	-	-	-	-	-	-	-	-	24	A-3a (V)		











MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
160.8' <b>SHALE</b> , GRAY, SLIGHTLY TO UNWEATHERED, VERY WEAK TO WEAK, FINE GRAINED, THINLY LAMINATED, CARBONACEOUS, HIGH ANGLE JOINT AT 150.1' TO 150.6', 161.1' TO 161.5' TIGHT, SLIGHTLY ROUGH; DIAGONAL JOINT AT 172.1' TIGHT, SLIGHTLY ROUGH; BEDDING (LIMESTONE LAMINA) 168.0', TIGHT, SLIGHTLY ROUGH; FRACTURED CHANGING TO SLIGHTLY FRACTURED WITH DEPTH; RQD 86.9%, REC 96.54%. <i>(continued)</i>  Qu = 1310 psi @ 170.4' to 170.6' SDI = 79.8% @ 170.0' to 172.0'	421.1	159	100		100	NQ-2										CORE		
	160																	
	161																	
	162																	
	163																	
	164																	
	165																	
	166																	
	167																	
	168																	
	169																	
	170																	
	171																	
	172																	
173																		
	405.6	174	100		100	NQ-3									CORE			
		EOB																

NOTES: HSA TO 35.0', TRI CONE ROTARY 35.0' TO 149.0', NQ CORE 149.0' TO 174.0'. WATER ADDED TO BORING BEGINNING AT 8.5' - GW ENCOUNTER UNDETERMINED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 2 BAGS CEMENT

PROJECT: CUY-90-15.24	DRILLING FIRM / OPERATOR: OTB / JOHN M	DRILL RIG: SIMCO 2800 HS(HT)	STATION / OFFSET: 141+62.96, 51.35 LT	EXPLORATION ID: B-040-0-09
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: OTB / BRANDON	HAMMER: CME AUTOMATIC	ALIGNMENT: IR 90	
PID: 77332 BR ID:	DRILLING METHOD: TRI CONE / NQ	CALIBRATION DATE: 9/13/07	ELEVATION: 583.8 (MSL) EOB: 202.0 ft.	PAGE: 1 OF 7
START: 6/10/09 END: 6/17/09	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 83.64	COORD: 664661.641 N, 2190447.995 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
4" ASPHALT	583.8																		
DENSE, BLACK, UNCONTROLLED FILL, CINDERS AND SLAG, MOIST Contains cinders and slag. (Fill)	583.5	1	14																
		2	17	43	100	SS-1	-	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	
	580.8	3	14																
LOOSE, BROWN, COARSE AND FINE SAND, MOIST	579.8	4	5														9	A-3a (V)	
STIFF, BLACK, ORGANIC SILT, (VISUAL), MOIST	577.8	5	3	7	100	SS-2a	1.2	-	-	-	-	-	-	-	-	-	22	A-8a (V)	
		6	2			SS-2b	1.5												
MEDIUM STIFF, BROWN, SILT AND CLAY, SOME SAND, MOIST	577.8	7	3	7	100	SS-3	-	0	1	26	43	30	30	17	13	25	A-6a (9)		
		8	2																
	573.8	9	2	8	100	SS-4	-	-	-	-	-	-	-	-	-	19	A-6a (V)		
VERY LOOSE, BROWN, SANDY SILT, LITTLE CLAY, WET		10	2	4															
		11	1																
		12	1	4	100	SS-5	-	0	6	55	24	15	NP	NP	NP	22	A-4a (1)		
		13	2																
		14	1	3	100	SS-6	-	-	-	-	-	-	-	-	-	22	A-4a (V)		
		15	1	1															
		16	1																
		17	WOH	-	100	SS-7	-	-	-	-	-	-	-	-	-	23	A-4a (V)		
		18	1																
		19	1	-	100	SS-8	-	-	-	-	-	-	-	-	-	24	A-4a (V)		
		20	1																
		21	1																
		22	WOH	-	100	SS-9	-	-	-	-	-	-	-	-	-	26	A-4a (V)		
		23	1																
		24	WOH	-	100	SS-10	-	-	-	-	-	-	-	-	-	25	A-4a (V)		
		25	1																
		26	1																
SAME AS ABOVE w/ TRACE CLAY		27	WOH	-	100	SS-11	-	0	1	63	29	7	NP	NP	NP	30	A-4a (0)		
	555.3	28	1																
		29	1	3	67	SS-12	-	-	-	-	-	-	-	-	-	-	A-1-b (V)		



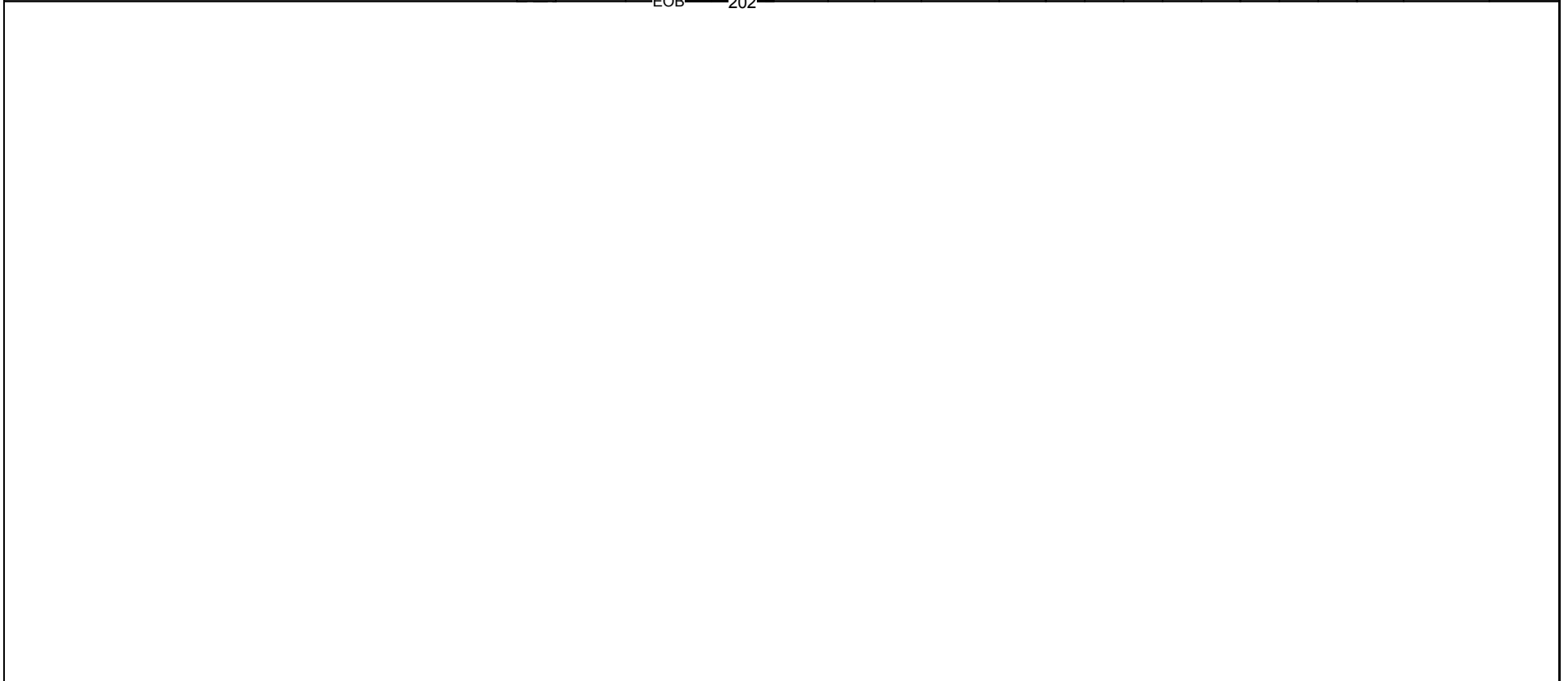








MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
<p><b>SHALE</b>, DARK GRAY, SLIGHTLY TO UNWEATHERED, STRONG, FINE GRAINED, THINLY LAMINATED, CARBONACEOUS, DIAGONAL JOINT AT 192.0' TO 194.1', 196.7' TO 197.3', 203.3' TO 200.6', INTACT, TIGHT, SLIGHTLY ROUGH; RQD 99.2%, REC 100%. <i>(continued)</i></p> <p>SDI = 90.2% @ 198.0' to 199.0'</p> <p>Encountered Methane Gas at approximately 200'</p>	393.2																		
	191																		
	192																		
	193																		
	194																		
	195			100		100	NQ-3												CORE
	196																		
	197																		
	198																		
	199																		
	200																		
201			100		100	NQ-4												CORE	
202	381.8	EOB																	



NOTES: 42' OF 4" DIAMETER CASING, 174.5' OF 3" DIAMETER CASING, TRI CONE ROTARY TO 175.0', NQ CORE 175.0' TO 202.0'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 2 BAGS CEMENT













STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:13 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B038 TO B045.GPJ

PID: 77332		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 144+48.79, 14.64 LT		START: 6/23/09		END: 6/26/09		PG 6 OF 7		B-041-0-09						
MATERIAL DESCRIPTION AND NOTES			ELEV. 425.4	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
										GR	CS	FS	SI	CL	LL	PL	PI			
HARD TO VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, DAMP TO MOIST (continued)			425.4	159	7	32	100	SS-38	2.00	-	-	-	-	-	-	-	-	21	A-6a (V)	
				160	10															
				161	13															
				162																
			425.4	163	7	39	100	SS-39	2.70	-	-	-	-	-	-	-	-	20	A-6a (V)	
				164	12															
				165	16															
				166																
SAND and GRAVEL interlayer noted by drillers			413.4	169	9	46	100	SS-40	2.90	0	0	1	43	56	35	20	15	20	A-6a (10)	
				170	13															
				171	20															
				172																
VERY STIFF, GRAY, SILT AND CLAY, MOIST TO DAMP			411.4	174	6	31	100	SS-41	2.30	-	-	-	-	-	-	-	-	25	A-6a (V)	
				175	10															
				176	12															
				177																
			397.9	179	7	40	100	SS-42	2.50	-	-	-	-	-	-	-	-	21	A-6a (V)	
				180	12															
				181	17															
				182																
GRAY WEATHERED SHALE			397.9	184	11	54	100	SS-43	2.00	-	-	-	-	-	-	-	-	19	A-6a (V)	
				185	17															
				186	22															
				187																
Qu = 2130 psi @ 189.1' to 189.4' SDI = 88.5% @ 189.0' to 191.9'			394.9	189	60/3"	-	80	SS-44	-	-	-	-	-	-	-	-	-	-	Rock (V)	
				188																
				189																
				190																

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:13 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B039 TO B045.GPJ

PID: 77332		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 144+48.79, 14.64 LT		START: 6/23/09		END: 6/26/09		PG 7 OF 7		B-041-0-09											
MATERIAL DESCRIPTION AND NOTES				ELEV. 393.3	DEPTHS		SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED			
												GR	CS	FS	SI	CL	LL	PL	PI						
<p><b>SHALE</b>, GRAY TO DARK GRAY, SLIGHTLY TO UNWEATHERED, SLIGHTLY TO MODERATELY STRONG, FINE GRAINED, THINLY LAMINATED, CARBONACEOUS, MUD FILLED FRACTURES AT 192.2 AND 196.2, NARROW, SLIGHTLY ROUGH; BEDDING (LIMESTONE LAMINA) AT 193.4 AND 205.5'; TIGHT, SLIGHTLY ROUGH, HIGH ANGLE FRACTURE AT 207.75' TO 208.1', TIGHT, SLIGHTLY ROUGH, INTACT; RQD 99.5%, REC 100%. <i>(continued)</i></p> <p>Qu = 2190 psi @ 196.8' to 197.1' SDI = 94.6% @ 195.1' to 198.0'</p> <p>Encountered Methane Gas below approximately 204'</p> <p>Qu = 3260 psi @ 208.3' to 208.6' SDI = 96.4% @ 206.0' to 208.0'</p> <p>Qu = 3790 psi @ 209.6' to 210.0'</p>				191	100	100	NQ-1													CORE					
				192																					
				193																					
				194																					
				195																					
				196																					
				197																					
				198																					
				199				100		100	NQ-2												CORE		
				200																					
				201																					
				202																					
				203																					
				204																					
				205																					
				206																					
				207																					
				208																					
				209				99		100	NQ-3												CORE		
210																									
211																									
212																									
213																									
214																									
				369.9	EOB																				

NOTES: 55' OF 4" DIAMETER CASING, 189' OF 3" DIAMETER CASING, TRI CONE ROTARY TO 189.0', NQ CORE 189.0' TO 214.0'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 2 BAGS CEMENT

PROJECT: CUY-90-15.24	DRILLING FIRM / OPERATOR: OTB / HEPNER	DRILL RIG: SIMCO 2800 HS(HT)	STATION / OFFSET: 147+64.19, 75.87 LT	EXPLORATION ID: B-042-0-09
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: B&P / WESTERVILLER	HAMMER: CME AUTOMATIC	ALIGNMENT: IR 90	
PID: 77332 BR ID:	DRILLING METHOD: TRI CONE / NQ	CALIBRATION DATE: 9/13/07	ELEVATION: 584.4 (MSL) EOB: 209.0 ft.	PAGE 1 OF 7
START: 6/11/09 END: 6/16/09	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 83.64	COORD: 665238.725 N, 2190639.131 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
LOOSE, LIGHT BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, DAMP (Fill)	584.4	1																
	581.9	2	32 52	-	67	SS-1	-	39	27	16	10	8	NP	NP	NP	6	A-1-b (0)	
LOOSE, BLACK, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, DAMP Composed of Cinders and Slag. (Fill)	578.9	3																
		4	11 11 17	39	83	SS-2	-	-	-	-	-	-	-	-	-	29	A-1-b (V)	
	572.9	5																
LOOSE, BLACK TO BROWN, SANDY SILT, TRACE GRAVEL, TRACE CLAY, SLIGHTLY ORGANIC, WET 2.1% Organics @ 6.0' (LOI)		6	4															
		7	3 1	6	100	SS-3	-	7	11	40	36	6	NP	NP	NP	22	A-4a (1)	
		8																
		9	2															
1.0% Organics @ 8.5' (LOI)		10	3 2	7	100	SS-4	-	-	-	-	-	-	-	-	-	18	A-4a (V)	
		11																
	572.9	12	1 2 3	7	89	SS-5a SS-5b	-	-	-	-	-	-	-	-	-	20	A-4a (V)	
MEDIUM STIFF TO STIFF, GRAY, CLAY, AND SILT, TRACE FINE SAND, MODERATELY ORGANIC, WET		13																
		14	2 3 3	8	100	SS-6	1.0- 1.2	-	-	-	-	-	-	-	-	40	A-7-6 (V)	
		15																
		16	2															
4.6% Organics @ 16.0' (LOI)		17	2 2 3	7	100	SS-7a SS-7b	0.7- 1.0	0	0	1	46	53	53	29	24	35	A-7-6 (16)	
MEDIUM STIFF, GRAY, ELASTIC CLAY, AND SILT, TRACE GRAVEL, TRACE FINE SAND, MODERATELY ORGANIC, WET	567.1	18																
		19	1 2 3	7	100	SS-8	-	1	0	5	57	37	57	35	22	58	A-7-5 (16)	
	564.4	20																
MEDIUM STIFF TO STIFF, GRAY, CLAY, AND SILT, TRACE FINE SAND, SLIGHTLY ORGANIC, WET		21																
		22	1 1 1	3	100	SS-9	0.5- 0.7	0	0	3	59	38	44	27	17	42	A-7-6 (12)	
		23																
		24	1 1 2	4	100	SS-10	0.70	-	-	-	-	-	-	-	-	37	A-7-6 (V)	
		25																
		26																
		27	1 1 1	3	100	SS-11	1.0- 1.2	-	-	-	-	-	-	-	-	26	A-7-6 (V)	
	556.4	28																
VERY LOOSE, GRAY, SILT, LITTLE CLAY, TRACE SAND, WET		29	1 1 1	-	100	SS-12	-	0	1	4	82	13	NP	NP	NP	29	A-4b (8)	













MATERIAL DESCRIPTION AND NOTES	ELEV. 393.8	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
<p><b>SHALE</b>, GRAY TO DARK GRAY, SLIGHTLY WEATHERED, SLIGHTLY TO MODERATELY STRONG, THINLY LAMINATED TO LAMINATED, PYRITIC BEGINING AT 199.0', DIAGONAL JOINTS AT 184.42', 192.7'(HIGH ANGLE), 194.0', 197.1', 199.2', 202.2', 203.9', 207.1' AND 208.5' TIGHT, SLIGHTLY ROUGH WITH A BEDDING JOINT (ON PYRITE) AT 204.83', SLIGHTLY FRACTURED; RQD 94%, REC 99.67%. <i>(continued)</i>                      Qu = 4020 psi @ 191.4' to 191.7' SDI = 98.5% @ 191.4' to 194.0"                      Qu = 1240 psi @ 192.4' to 192.7'</p> <p>Methane gas noted @ 199.0'</p> <p>Qu = 4100 psi @ 200.1' to 200.3' SDI = 97.3% @ 201.5' to 203.7'</p>		191																
		192																
		193																
		194	93		96	NQ-2												CORE
		195																
		196																
		197																
		198																
		199																
		200																
		201																
		202																
		203																
		204	93		96	NQ-3												CORE
		205																
		206																
		207																
		208																
	375.4	209																
		EOB																

NOTES: HSA TO 50.0', TRI CONE ROTARY TO 183.8', NQ CORE 183.8' TO 209.0' - GW ENCOUNTERED AT 6.8' DURING DRILLING.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 2 BAGS CEMENT















MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
<p><b>SHALE</b>, GRAY TO DARK GRAY, MODERATELY TO SLIGHTLY WEATHERED, SLIGHTLY TO MODERATELY STRONG, THINLY LAMINATED, DIAGONAL JOINT THROUGH OUT, HIGH ANGEL FRACTURE AT 184.6', TIGHT, SLIGHTLY ROUGH, SLIGHTLY TO MODERATELY FRACTURED. LOW ANGLE, NARROW, MUD FILLED FRACTURE AT 178.4'. SHEAR AT 193.5' AND 195.0'- SLICKENSIDED. CONTAINS FEW LIMESTONE LAMINA.; RQD 88.1%, REC 100%. <i>(continued)</i></p> <p>Qu = 3950 psi @ 196.0' to 196.3' SDI = 97.3% @ 195.0' to 198.0'</p> <p>Encountered Methane Gas at 200'</p>	393.7	191																
	192																	
	193																	
	194																	
	195	99		100	NQ-5											CORE		
	196																	
	197																	
	198																	
	199																	
	200	384.3	EOB															

NOTES: HSA TO 48.0', TRI CONE ROTARY TO 165.0', NQ CORE 165.0' TO 200.0' - GW ENCOUNTERED AT 5.5' DURING DRILLING, 5.0' AT COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 2 BAGS CEMENT

PROJECT: CUY-90-15.24	DRILLING FIRM / OPERATOR: OTB / MINCHAK	DRILL RIG: DIEDRICH D50	STATION / OFFSET: 153+64.23, 17.81 LT	EXPLORATION ID: B-044-0-09
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: B&P / WESTERVILLER	HAMMER: DIEDRICH AUTO HAMMER	ALIGNMENT: IR 90	
PID: 77332 BR ID:	DRILLING METHOD: 3.25 HSA / TRI CONE / NQ	CALIBRATION DATE: 9/13/07	ELEVATION: 580.6 (MSL) EOB: 184.0 ft.	PAGE 1 OF 6
START: 7/10/09 END: 7/21/09	SAMPLING METHOD: SPT / NQ	ENERGY RATIO (%): 84.66	COORD: 665741.812 N, 2190983.271 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
<b>TOPSOIL</b> LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE GRAVEL, TRACE SILT, TRACE CLAY, DAMP Concrete fragments 0.2' to 3.8' (Fill)	580.6	1	3																
		2	4	10	20	SS-1	-	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
	576.8	3																	
MEDIUM STIFF TO SOFT, GRAY, <b>SILT AND CLAY</b> , AND SAND, TRACE GRAVEL, TRACE ORGANICS, DAMP Slight groundwater seepage at 3.8'		4	3	7	40	SS-2a SS-2b	-	-	-	-	-	-	-	-	-	-	13	A-3a (V)	
		5	2	3													14	A-6a (V)	
	573.1	6																	
		7	2	3	7	40	SS-3	-	10	26	24	23	17	38	27	11	13	A-6a (1)	
MEDIUM STIFF TO SOFT, GRAY MOTTLED WITH DARK BROWN, <b>ORGANIC CLAY</b> , AND SILT, TRACE SAND, WET		8																	
		9	1	1	3	87	SS-4	0.5-0.6	-	-	-	-	-	-	-	-	50	A-8b (V)	
		10																	
		11	1	1	3	100	SS-5	0.2-0.4	-	-	-	-	-	-	-	-	134	A-8b (V)	
		12																	
		13																	
		14	1	1	-	100	SS-6	0.2-0.4	-	-	-	-	-	-	-	-	140	A-8b (V)	
		15																	
@ 16.0': 18.9% Organics (LOI) LLo/LL = 31/54 = 57.4%		16																	
		17	WOH 1	-	100	SS-7	0.2-0.4	0	0	6	57	37	54	35	19	106	A-8b (14)		
		18																	
		19	WOH 1	3	100	SS-8	0.2-0.4	-	-	-	-	-	-	-	-	-	45	A-8b (V)	
		20	1	1				0.4-0.6	-	-	-	-	-	-	-	-	46	A-8b (V)	
		21																	
		22	WOH 1	3	100	SS-9	0.5-0.8	-	-	-	-	-	-	-	-	-	61	A-8b (V)	
		23																	
@ 23.5': 8.9% Organics (LOI) LLo/LL = 31/42 = 73.8%		24	1	1	4	100	SS-10	0.5-0.8	0	1	2	64	33	42	32	10	65	A-8b (8)	
		25		2															
	555.1	26																	
VERY LOOSE, GRAY, <b>COARSE AND FINE SAND</b> , SOME SILT, TRACE CLAY, TRACE ORGANICS, WET		27	1	1	4	100	SS-11	0.4-0.6	-	-	-	-	-	-	-	-	37	A-3a (V)	
		28																	
		29	WOH 1	4	100	SS-12	0.4-0.6	-	-	-	-	-	-	-	-	-	29	A-3a (V)	











MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED			
								GR	CS	FS	SI	CL	LL	PL	PI						
	422.1		50/2"	-	60	SS-38	-	-	-	-	-	-	-	-	-	-	-	9	Rock (V)		
<p><b>SHALE</b>, BLACK TO GRAY, UNWEATHERED TO SLIGHTLY WEATHERED, SLIGHTLY TO MODERATELY STRONG, THINLY LAMINATED, DIAGONAL JOINT AT 161.2' AND 168.7', INTACT, TIGHT, SLIGHTLY ROUGH. MUD FILLED JOINT AT 163.8' AND HIGHLY WEATHERED ZONE AT 174.4'; RQD 95.7%, REC 99.7%.                      Qu = 3380 psi @ 159.6' to 159.9' SDI = 93.9% @ 159.5' to 162.0'</p> <p>Qu = 6700 psi @ 164.1' to 164.4' SDI = 97.1% @ 164.5.0' to 167.0'</p> <p>Qu = 5830 psi @ 170.8' to 171.1' SDI = 96.6% @ 170.7' to 174.8'</p> <p>SDI = 96.4% @ 176.0 to 178.0'</p>	421.6	159																			
	160																				
	161																				
	162	82			100	NQ-1														CORE	
	163																				
	164																				
	165																				
	166																				
	167																				
	168																				
	169	100				100	NQ-2														CORE
	170																				
	171																				
	172																				
	173																				
174																					
175																					
176																					
177																					
178																					
179	97				99	NQ-3															CORE
180																					
181																					
182																					
183																					
	396.6	EOB																			

NOTES: HSA TO 48.5', TRICONE ROTARY TO 159.0', NQ CORE 159.0' TO 184.0' - GW ENCOUNTERED AT 31.0'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / MINCHAK</u>	DRILL RIG: <u>DIEDRICH D50</u>	STATION / OFFSET: <u>156+86.56, 98.82 RT</u>	EXPLORATION ID <u>B-045-0-09</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / WESTERVILLER</u>	HAMMER: <u>DIEDRICH AUTO HAMMER</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25 HSA / TRI CONE / NQ</u>	CALIBRATION DATE: <u>9/13/07</u>	ELEVATION: <u>604.7 (MSL)</u> EOB: <u>210.0 ft.</u>	PAGE 1 OF 7
START: <u>7/15/09</u> END: <u>7/22/09</u>	SAMPLING METHOD: <u>SPT / NQ</u>	ENERGY RATIO (%): <u>84.66</u>	COORD: <u>665932.023 N, 2191264.417 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV. 604.7	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED		
								GR	CS	FS	SI	CL	LL	PL	PI					
MEDIUM DENSE, BLACK AND BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, MOIST TO WET (Grab Sample) Contains Cinders, Slag, Few Concrete Fragments (Fill)	604.7	1	50/4"	-	0	SS-1	-	-	-	-	-	-	-	-	-	-	6	A-1-b (V)		
		2																		
		3																		
		4	6	10	8	25	47	SS-2	-	29	21	27	16	7	NP	NP	NP	14	A-1-b (0)	
		5																		
MEDIUM DENSE TO LOOSE, BROWN TO DARK GREY, <b>SANDY SILT</b> , LITTLE CLAY, TRACE GRAVEL, WET Contains Cinders, Few Roots. Strong Petroleum Odor noted @ 9.5' to 13.0' (Fill)	599.2	6	3	6	9	21	73	SS-3	-	-	-	-	-	-	-	-	16	A-4a (V)		
		7																		
		8																		
		9	4	3	7	14	80	SS-4	-	6	12	36	35	11	NP	NP	NP	19	A-4a (2)	
		10																		
		11	2	2	3	7	80	SS-5	-	-	-	-	-	-	-	-	-	20	A-4a (V)	
		12																		
MEDIUM STIFF TO HARD, GRAY, <b>SILT</b> , SOME CLAY, TRACE GRAVEL, MOIST	591.7	13																		
		14	2	4	5	13	87	SS-6	2.0-4.3	1	0	0	66	33	30	21	9	22	A-4b (8)	
		15																		
		16	2	2	3	7	100	SS-7	0.8-1.3	-	-	-	-	-	-	-	-	23	A-4b (V)	
		17																		
		18																		
		19	2	2	5	10	87	SS-8	2.0-2.5	-	-	-	-	-	-	-	-	15	A-4b (V)	
		20																		
		21																		
		22	3	3	5	11	100	SS-9	1.5-2.3	-	-	-	-	-	-	-	-	22	A-4b (V)	
		23																		
		24	3	5	6	16	100	SS-10	2.6-3.8	-	-	-	-	-	-	-	-	18	A-4b (V)	
25																				
26																				
27	3	5	7	17	100	SS-11	3.3-3.8	-	-	-	-	-	-	-	-	18	A-4b (V)			
28																				
29	3	4	5	13	100	SS-12	2.0-3.5	-	-	-	-	-	-	-	-	25	A-4b (V)			





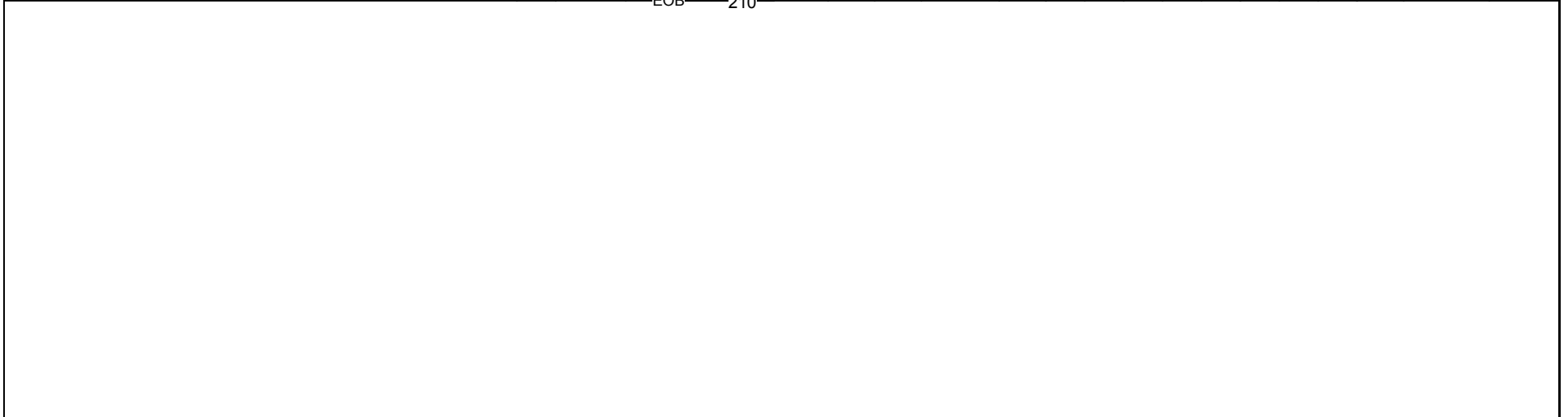








MATERIAL DESCRIPTION AND NOTES	ELEV. 414.1	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
<b>SHALE</b> , BLACK TO GRAY, SLIGHTLY WEATHERED, SLIGHTLY STRONG, THINLY LAMINATED, PYRITIC, DIAGONAL JOINTS AT 191.4, 199.8, 200.2, 201.0', 203.3', INTACT TO SLIGHTLY FRACTURED, TIGHT, SLIGHTLY ROUGH, SHEAR AT 195.8' - SLICKENSIDED, HIGHLY FRACTURED ZONE AT 202.0'; RQD 90.8%, REC 100%. <i>(continued)</i>  SDI = 89.9% @ 201.8' to 205.0' Qu = 3070 psi @ 203.0' to 203.3'  Qu = 2410 psi @ 205.1' to 205.4'		191																
		192																
		193																
		194																
		195	87		100	NQ-2											CORE	
		196																
		197																
		198																
		199																
		200																
		201																
		202																
		203																
		204																
		205	95		100	NQ-3											CORE	
		206																
		207																
		208																
		209																
	394.7	210																



NOTES: HSA TO 28.5', TRICONE ROTARY TO 183.5', NQ CORE 183.5 TO 210.0' - PROBABLE GW SEEPAGE AT 105.5'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:16 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B40'S.GPJ

PID: _____	BR ID: _____	PROJECT: CUY-90-15.24	STATION / OFFSET: 158+42.73, 68.66 LT		START: 9/28/09	END: 9/30/09	PG 2 OF 5	B-047-0-09													
MATERIAL DESCRIPTION AND NOTES		ELEV. 596.9	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED		
									GR	CS	FS	SI	CL	LL	PL	PI					
STIFF TO HARD, GRAY, SILT, LITTLE TO SOME CLAY, TRACE TO LITTLE SAND, WET TO DAMP Trace Gravel @ 23.5' (continued)		+++++	31																		
			32																		
			33																		
			34	7	8	9	24	89	SS-13	4.5+	-	-	-	-	-	-	-	20	A-4b (V)		
			35																		
			36																		
			37																		
			38																		
			39	5	9	11	28	83	SS-14	4.25	0	0	4	74	22	24	21	3	19	A-4b (8)	
			40																		
HARD, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST TO DAMP		+++++	41																		
			42																		
			43																		
			44	8	10	13	32	83	SS-15	4.5+	-	-	-	-	-	-	-	18	A-4b (V)		
			45																		
			46																		
			47																		
			48																		
			49	2	4	6	14	78	SS-16	4.00	0	0	1	59	40	32	20	12	23	A-6a (9)	
			50																		
MEDIUM STIFF, GRAY, SILTY CLAY, TRACE SAND, MOIST		+++++	51																		
			52																		
			53																		
			54	4	8	11	27	89	SS-17	4.00	-	-	-	-	-	-	-	19	A-6a (V)		
			55																		
			56																		
			57																		
			58																		
			59	2	3	4	10	100	SS-18	1.0-1.5	0	1	1	29	69	38	20	18	28	A-6b (11)	
			60																		
61																					

578.4

568.4





STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:16 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B40'S.GPJ

PID: _____		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 158+42.73, 68.66 LT		START: 9/28/09		END: 9/30/09		PG 5 OF 5		B-047-0-09							
MATERIAL DESCRIPTION AND NOTES			ELEV. 500.5	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
										GR	CS	FS	SI	CL	LL	PL	PI				
STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE TO LITTLE SAND,, MOIST TO DAMP (continued)			486.9	127																	
				128																	
				129	6	9	28	100	SS-32	1.75- 2.0	-	-	-	-	-	-	-	-	-	22	A-6a (V)
				130		11															
			486.9	131																	
				132																	
				133																	
				134	8	15	45	100	SS-33	2.0- 2.5	4	8	9	36	43	28	16	12	17	A-6a (9)	
			486.9	135																	
				136																	
				137																	
				138																	
			486.9	139	6	9	28	100	SS-34	1.0- 2.5	-	-	-	-	-	-	-	27	A-6a (V)		
				140		11															
				EOB																	

NOTES: GROUNDWATER ENCOUNTERED AT 23.0' DURING DRILLING. NONE NOTED UPON COMPLETION. USED WATER AS CIRCULATING FLUID FROM 50.0' TO 140.0'. CAVE DEPTH 22.0'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / C.BESSEY</u>	DRILL RIG: <u>DIEDRICH D-50</u>	STATION / OFFSET: <u>158+42.38, 57.59 RT</u>	EXPLORATION ID <u>B-047-1-09</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>BR ID:</u>	DRILLING METHOD: <u>3.25" HSA / TRI CONE</u>	CALIBRATION DATE: <u>9/13/07</u>	ELEVATION: <u>627.9 (MSL)</u> EOB: <u>188.6 ft.</u>	PAGE 1 OF 6
START: <u>9/30/09</u> END: <u>10/7/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>84.66</u>	COORD: <u>666076.091 N, 2191329.506 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED		
								GR	CS	FS	SI	CL	LL	PL	PI					
MEDIUM DENSE TO LOOSE, BLACK, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , TRACE SILT, TRACE CLAY, MOIST TO WET Contains asphalt fragments. (Fill)	627.9	1	10																	
		2	5	4	13	72	SS-1	-	41	29	18	9	3	NP	NP	NP	10	A-1-b (0)		
		3																		
		4	1	3	6	33	SS-2	-	-	-	-	-	-	-	-	-	-	21	A-1-b (V)	
		5																		
		6	6																	
		7	1	6	10	67	SS-3	-	-	-	-	-	-	-	-	-	-	20	A-1-b (V)	
VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE FINE SAND, MOIST	620.4	8																		
		9	3	2	3	7	83	SS-4	2.5-3.0	0	0	5	70	25	24	18	6	21	A-4b (8)	
		10																		
MEDIUM DENSE, BROWN CHANGING TO GRAY, <b>SILT</b> , SOME SAND, TRACE CLAY, WET	617.4	11	12	12	5	24	78	SS-5	-	-	-	-	-	-	-	-	21	A-4b (V)		
		12																		
		13																		
		14	6	6	5	16	83	SS-6	-	0	0	28	63	9	NP	NP	NP	18	A-4b (7)	
		15																		
		16	3	3	5	11	94	SS-7	-	-	-	-	-	-	-	-	-	23	A-4b (V)	
		17																		
		18																		
		19	4	6	7	18	67	SS-8	-	-	-	-	-	-	-	-	-	19	A-4b (V)	
		20																		
VERY STIFF TO HARD, GRAY, <b>SILT</b> , SOME CLAY, TRACE FINE SAND, MOIST	607.4	21	5	5	4	13	83	SS-9	3.50	0	0	2	69	29	27	19	8	22	A-4b (8)	
		22																		
		23																		
		24	4	4	6	14	94	SS-10	3.5-4.0	-	-	-	-	-	-	-	-	20	A-4b (V)	
VERY STIFF TO HARD, GRAY, <b>SILT AND CLAY</b> , TRACE FINE SAND, MOIST	602.4	25																		
		26	3	3	4	10	83	SS-11	2.0-3.0	-	-	-	-	-	-	-	23	A-6a (V)		
		27																		
		28																		
		29	3	4	5	13	100	SS-12	3.00	-	-	-	-	-	-	-	-	26	A-6a (V)	



MATERIAL DESCRIPTION AND NOTES	ELEV. 597.9	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
VERY STIFF TO HARD, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST (continued)		31																	
		32																	
		33																	
		34	3	5	7	17	100	SS-13	2.5-3.0	0	0	2	51	47	34	19	15	23	A-6a (10)
		35																	
		36																	
		37																	
		38																	
		39	4	8	9	24	89	SS-14	4.25-4.5	-	-	-	-	-	-	-	-	20	A-6a (V)
		40																	
	41																		
	42																		
	43																		
	44	3	4	4	11	100	SS-15	1.5-2.0	0	0	0	53	47	32	18	14	24	A-6a (10)	
	45																		
	46																		
	47																		
	48																		
	49	3	4	4	11	100	SS-16	1.0-1.5	-	-	-	-	-	-	-	-	30	A-6a (V)	
	50																		
	51																		
	52																		
	53																		
	54	4	5	7	17	100	SS-17	1.0-1.5	-	-	-	-	-	-	-	-	25	A-6a (V)	
	55																		
	56																		
	57																		
	58																		
	59	3	4	6	14	100	SS-18	1.0-1.5	2	2	4	31	61	35	22	13	24	A-6a (9)	
	60																		
	61																		

584.4

PID: _____	BR ID: _____	PROJECT: CUY-90-15.24	STATION / OFFSET: 158+42.38, 57.59 RT		START: 9/30/09	END: 10/7/09	PG 3 OF 6	B-047-1-09													
MATERIAL DESCRIPTION AND NOTES		ELEV. 565.8	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED		
									GR	CS	FS	SI	CL	LL	PL	PI					
STIFF, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, MOIST TO WET (continued)		565.8	63																		
			64	3	3	11	100	SS-19	1.50	-	-	-	-	-	-	-	-	30	A-6a (V)		
			65																		
			66																		
			67																		
			68																		
			69	3	5	16	100	SS-20	1.0-1.5	0	1	2	42	55	33	20	13	24	A-6a (9)		
			70																		
			71																		
			72																		
73																					
74	5	6	21	100	SS-21	1.0-1.5	-	-	-	-	-	-	-	-	22	A-6a (V)					
75																					
76																					
77																					
78																					
79	4	4	14	100	SS-22	1.0-1.5	-	-	-	-	-	-	-	-	23	A-6a (V)					
80																					
81																					
82																					
83																					
84	7	9	30	94	SS-23	1.0-2.0	0	0	1	48	51	31	20	11	22	A-6a (8)					
85																					
86																					
87																					
88																					
89	6	8	30	100	SS-24	2.0-2.5	-	-	-	-	-	-	-	-	22	A-6a (V)					
90																					
91																					
92																					
93																					
94	6							2.5-													

540.9  
 VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, MOIST





PID: _____		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 158+42.38, 57.59 RT		START: 9/30/09		END: 10/7/09		PG 6 OF 6		B-047-1-09																					
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED															
										GR	CS	FS	SI	CL	LL	PL	PI																		
HARD, GRAY, SANDY SILT, SOME CLAY, LITTLE GRAVEL, DAMP (continued)			469.4		159	19	107	100	SS-38	4.5+	11	10	12	36	31	22	16	6	12	A-4a (6)															
					160	31															45														
					161																														
					162																														
HARD, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, DAMP			463.6		163	22	117	100	SS-39	4.5+	-	-	-	-	-	-	-	-	13	A-4a (V)															
					164	36															47														
					165																														
					166																														
VERY DENSE, GRAY, SILT, SOME CLAY, TRACE FINE SAND, WET			458.8		167	24	99	100	SS-40	4.5+	-	-	-	-	-	-	-	-	13	A-6a (V)															
					169	32															38														
					170																														
					171																														
					172																														
					173																														
					174	17															21	65	100	SS-41	-	0	0	1	70	29	22	19	3	21	A-4b (8)
					175	25																													
HARD, GRAY, SANDY SILT, AND CLAY, DAMP			450.9		176																														
					177																														
					178																														
					179	24	30	109	100	SS-42	4.5+	0	2	7	45	46	27	18	9	13	A-4a (8)														
180	47																																		
GRAY, WEATHERED SHALE			448.3	TR	181																														
					182																														
					183																														
					184	40	50/4"	-	88	SS-43	4.5+	-	-	-	-	-	-	-	-	-	9	Rock (V)													
					185																														
					186																														
					187																														
					188																														
EOB			439.3		50/2"			80	SS-44											Rock (V)															

NOTES: NO GROUNDWATER ENCOUNTERED. NOTED AT 30.0' UPON COMPLETION. USED WATER AS CIRCULATING FLUID FROM 40.0' TO 140.0'. CAVED AT 16.0' AFTER AUGERS REMOVED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS











MATERIAL DESCRIPTION AND NOTES	ELEV. 542.6	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM STIFF TO VERY STIFF, GRAY, SILT AND CLAY, MOIST (continued)		127																
		128																
		129	5 8 10	25	100	SS-33	0.8- 1.2	-	-	-	-	-	-	-	-	-	24	A-6a (V)
		130																
		131																
		132																
		133																
		134	11 11 16	38	100	SS-34	1.8- 2.3	-	-	-	-	-	-	-	-	-	22	A-6a (V)
		135																
		136																
		137																
		138																
		139	6 10 12	31	100	SS-35	1.6- 2.8	-	-	-	-	-	-	-	-	-	24	A-6a (V)
	528.9	140																

NOTES: NO GROUNDWATER NOTED DURING DRILLING. GROUND WATER NOTED AFTER DRILLING AT 25.0'. USED WATER AS CIRCULATING FLUID FROM 55.0' TO 140.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE PELLETS; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: CUY-90-15.24	DRILLING FIRM / OPERATOR: OTB / D.HEPNER	DRILL RIG: SIMCO 2800 HSHT	STATION / OFFSET: 163+28.64, 67.17 LT	EXPLORATION ID: B-050-0-09
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: B&P / WESTERVILLER	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-90	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA / TRI CONE	CALIBRATION DATE: 9/1/07	ELEVATION: 669.3 (MSL) EOB: 140.0 ft.	PAGE 1 OF 5
START: 7/23/09 END: 7/24/09	SAMPLING METHOD: SPT / ST	ENERGY RATIO (%): 83.64	COORD: 666511.503 N, 2191579.780 E	

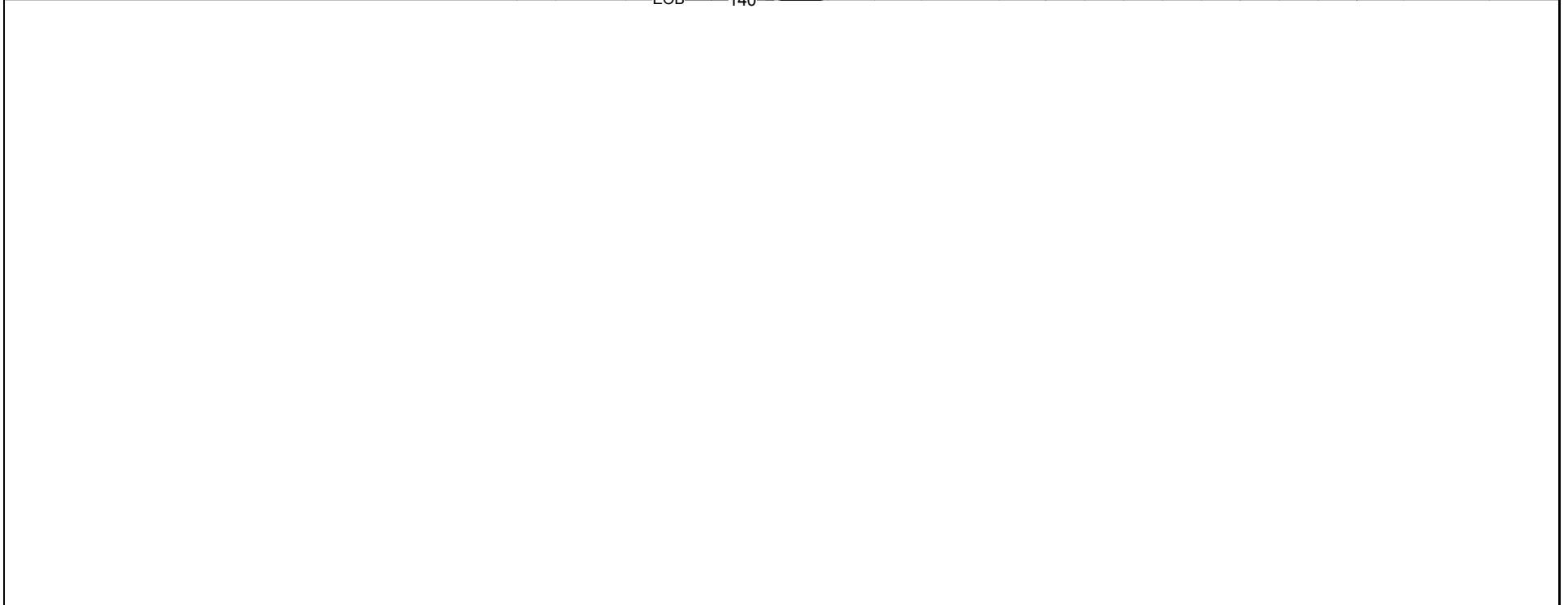
MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
2.4" ASPHALT MEDIUM DENSE TO LOOSE, BLACK AND BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, MOIST Contains Cinders (Fill)  changes to wet  changes to damp	669.3	1	6																
		2	4	5	13	87	SS-1	-	25	27	31	12	5	NP	NP	NP	12	A-1-b (0)	
		3																	
		4	2	2	6	27	SS-2	-	-	-	-	-	-	-	-	-	-	18	A-1-b (V)
		5																	
		6	2																
		7	2	3	7	40	SS-3	-	-	-	-	-	-	-	-	-	-	23	A-1-b (V)
		8																	
		9	1	2	6	33	SS-4	-	47	25	17	7	4	NP	NP	NP	7	A-1-b (0)	
		10																	
Slight water seepage at 10.5' VERY LOOSE, BROWN, SILT, SOME FINE SAND, SOME CLAY, WET	658.8	11	1																
		12	1	1	3	100	SS-5	-	0	0	24	56	20	NP	NP	NP	25	A-4b (8)	
LOOSE TO MEDIUM DENSE, BROWN, FINE SAND, TRACE SILT, TRACE CLAY, TRACE COARSE SAND, DAMP	656.3	13																	
		14	2	3	7	87	SS-6	-	0	3	89	4	4	NP	NP	NP	9	A-3 (0)	
		15																	
		16																	
		17	2	2	7	67	SS-7	-	-	-	-	-	-	-	-	-	-	7	A-3 (V)
		18																	
		19	3	3	8	87	SS-8	-	-	-	-	-	-	-	-	-	-	6	A-3 (V)
		20																	
		21	2	3	11	87	SS-9	-	-	-	-	-	-	-	-	-	-	5	A-3 (V)
		22																	
MEDIUM DENSE, BROWN, COARSE AND FINE SAND, LITTLE SILT, TRACE CLAY, MOIST TO DAMP	643.8	23																	
		24	3	5	14	93	SS-10	-	-	-	-	-	-	-	-	-	6	A-3 (V)	
		25																	
		26	3	4	14	100	SS-11	-	0	0	84	13	3	NP	NP	NP	8	A-3a (0)	
		27																	
		28																	
		29	6	9	25	100	SS-12	-	-	-	-	-	-	-	-	-	-	5	A-3a (V)







MATERIAL DESCRIPTION AND NOTES	ELEV. 542.9	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST (continued)		127																
		128																
		129	5 9 14	32	100	SS-32	1.5- 2.1	0	0	1	46	53	33	20	13	23	A-6a (9)	
		130																
	131																	
	132																	
	133																	
	134	7 11 15	36	100	SS-33	1.5- 1.8	-	-	-	-	-	-	-	-	23	A-6a (V)		
	135																	
	136																	
	137																	
	138																	
	139	7 9 10	26	100	SS-34	1.0- 1.2	-	-	-	-	-	-	-	-	24	A-6a (V)		
	140																	



NOTES: GROUNDWATER ENCOUNTERED AT 32.0'. NOTED AT 15.6' UPON COMPLETION. WATER USED AS CIRCULATING FLUID FROM 40.0' TO 138.5'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT. GDT - 10/23/09 16:36 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B50'S.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / MINCHAK</u>	DRILL RIG: <u>DIEDRICH D50</u>	STATION / OFFSET: <u>163+56.41, 48.4 RT</u>	EXPLORATION ID: <u>B-051-0-09</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / WESTERVILLER</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA / TRI CONE</u>	CALIBRATION DATE: <u>9/13/07</u>	ELEVATION: <u>668.9 (MSL)</u> EOB: <u>140.0 ft.</u>	PAGE: <u>1 OF 5</u>
START: <u>7/28/09</u> END: <u>7/29/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>84.66</u>	COORD: <u>666444.070 N, 2191677.688 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
<b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND, (VISUAL) (Fill)</b> VERY LOOSE TO LOOSE, BROWN AND DARK BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, MOIST (Fill) Contains brick and slag	668.9																		
	667.9	1	4																
		2	4	3	10	87	SS-1	-	19	29	32	14	6	NP	NP	NP	11	A-3a (0)	
		3																	
		4	2	1	4	87	SS-2	-	-	-	-	-	-	-	-	-	16	A-3a (V)	
		5		2															
		6	3	2	6	80	SS-3	-	-	-	-	-	-	-	-	-	11	A-3a (V)	
		7		2															
		8																	
		9	2	2	6	53	SS-4	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
		10		2															
		11	2	2	6	100	SS-5	-	13	28	32	18	9	NP	NP	NP	13	A-3a (0)	
	12		2																
	13																		
	14	1	1	4	100	SS-6	-	-	-	-	-	-	-	-	-	16	A-3a (V)		
	15		2																
	16	2	2	6	100	SS-7	-	24	34	20	15	7	NP	NP	NP	11	A-1-b (0)		
<b>LOOSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, MOIST TO DAMP  @26.0'; SAME, TRACE SILT, TRACE CLAY	652.9																		
		17	2	2	6	100	SS-7	-	24	34	20	15	7	NP	NP	NP	11	A-1-b (0)	
		18																	
		19	2	2	6	100	SS-8	-	-	-	-	-	-	-	-	-	8	A-1-b (V)	
		20		2															
		21	2	2	6	100	SS-9	-	-	-	-	-	-	-	-	-	11	A-1-b (V)	
		22		2															
		23																	
		24	2	2	6	100	SS-10	-	-	-	-	-	-	-	-	-	9	A-1-b (V)	
		25		2															
		26	2	2	7	80	SS-11	-	17	52	18	8	5	NP	NP	NP	8	A-1-b (0)	
		27		3															
	28																		
	29	2	3	8	67	SS-12	-	-	-	-	-	-	-	-	-	8	A-1-b (V)		









STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 16:36 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B50'S.GPJ

PID: 77332		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 163+56.41, 48.4 RT		START: 7/28/09		END: 7/29/09		PG 5 OF 5		B-051-0-09							
MATERIAL DESCRIPTION AND NOTES			ELEV. 542.5	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
										GR	CS	FS	SI	CL	LL	PL	PI				
STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST (continued)			542.5	127																	
				128																	
				129	7	9	31	100	SS-32	2.3- 2.7	0	0	1	47	52	32	19	13	22	A-6a (9)	
				130																	
			528.9	131																	
				132																	
				133																	
				134	7	8	30	100	SS-33	1.8- 2.2	-	-	-	-	-	-	-	-	22	A-6a (V)	
			528.9	135																	
				136																	
				137																	
				138																	
			528.9	139	7	9	28	100	SS-34	1.8- 2.0	-	-	-	-	-	-	-	24	A-6a (V)		
				140																	
				EOB																	

NOTES: GROUNDWATER SLIGHT SEEPAGE AT 32.5'. NONE NOTED UPON COMPLETION. USED WATER AS CIRCULATING FLUID FROM 50.0' TO 140.0'. CAVE DEPTH AT 27.0'.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: CUY-90-15.24	DRILLING FIRM / OPERATOR: OTB / D.HEPNER	DRILL RIG: SIMCO 2800 HSHT	STATION / OFFSET: 165+89.17, 167.41 LT	EXPLORATION ID: B-052-0-09
TYPE: STRUCTURE	SAMPLING FIRM / LOGGER: B&P / WESTERVILLER	HAMMER: CME AUTOMATIC	ALIGNMENT: IR-90	
PID: 77332 BR ID:	DRILLING METHOD: 3.25" HSA / TRI CONE	CALIBRATION DATE: 9/1/07	ELEVATION: 668.8 (MSL) EOB: 140.0 ft.	PAGE 1 OF 5
START: 7/28/09 END: 7/29/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 83.64	COORD: 666761.197 N, 2191720.381 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
2.5" TOPSOIL	668.8																		
LOOSE, BROWN AND DARK BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , TRACE SILT, TRACE CLAY, DAMP (Fill) Contains cinders, porcelain pieces and glass.	668.6	1	3																
		2	3	4	10	93	SS-1	-	26	38	21	10	5	NP	NP	NP	10	A-1-b (0)	
		3																	
		4	2																
		5	2	3	7	53	SS-2	-	-	-	-	-	-	-	-	-	-	9	A-1-b (V)
LOOSE, BROWN, <b>FINE SAND</b> , TRACE SILT, TRACE GRAVEL, TRACE CLAY, DAMP TO MOIST	663.3	6	2																
		7	2	2	6	100	SS-3	-	0	3	90	4	3	NP	NP	NP	7	A-3 (0)	
		8																	
		9	2																
		10	2	3	7	100	SS-4	-	-	-	-	-	-	-	-	-	-	12	A-3 (V)
LOOSE TO MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, DAMP  @21.0'; SAME, TRACE SILT, TRACE CLAY	657.8	11	2																
		12	3	4	10	100	SS-5	-	-	-	-	-	-	-	-	-	5	A-3a (V)	
		13																	
		14	3																
		15	5	6	15	100	SS-6	-	1	6	73	16	4	NP	NP	NP	9	A-3a (0)	
		16																	
		17	4	5	14	87	SS-7	-	-	-	-	-	-	-	-	-	-	5	A-3a (V)
		18																	
		19	5	8	22	100	SS-8	-	-	-	-	-	-	-	-	-	-	6	A-3a (V)
		20																	
DENSE TO MEDIUM DENSE, BROWN, <b>SILT</b> , SOME FINE SAND, TRACE CLAY, MOIST  Slight groundwater seepage at 28.0'	645.8	21	4																
		22	7	10	24	100	SS-9	-	0	0	86	10	4	NP	NP	NP	5	A-3a (0)	
		23																	
		24	7	12	35	80	SS-10	-	0	0	25	65	10	NP	NP	NP	17	A-4b (8)	
		25		13															
Slight groundwater seepage at 28.0'	W	26	4																
		27	8	11	26	87	SS-11	-	-	-	-	-	-	-	-	-	16	A-4b (V)	
		28																	
		29	5	7	21	73	SS-12	-	-	-	-	-	-	-	-	-	24	A-4b (V)	









MATERIAL DESCRIPTION AND NOTES	ELEV. 542.4	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM STIFF TO STIFF, GRAY, SILT AND CLAY, TRACE SAND, MOIST (continued)		127																
		128																
		129	2 5 6	15	100	SS-32	1.2- 1.5	-	-	-	-	-	-	-	25	A-6a (V)		
		130																
	131																	
	132																	
	133																	
	134	3 4 7	15	100	SS-33	1.4- 1.7	-	-	-	-	-	-	-	26	A-6a (V)			
	135																	
	136																	
	137																	
	138																	
	139	3 6 10	22	100	SS-34	1.7- 1.9	0	0	1	49	50	33	20	13	22	A-6a (9)		
	528.8	EOB																

NOTES: GROUNDWATER VERY SLIGHT SEEPAGE AT 28.0', AT COMPLETION 6.5'. USED WATER AS CIRCULATING FLUID FROM 40.0' TO 140.0'. CAVE DEPTH AT 28.0'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: CUY- IR-90-15.24	DRILLING FIRM / OPERATOR: B&P / P. WEBB	DRILL RIG: MOBILE B61 TRUCK	STATION / OFFSET: 166+36.37, 429.74 LT	EXPLORATION ID B-053-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: B&P / R. WEBB	HAMMER: DIEDRICH AUTOMATIC	ALIGNMENT: I-90 WB	
PID: 77332 BR ID:	DRILLING METHOD: 2.25" HSA	CALIBRATION DATE: 10/5/07	ELEVATION: 668.0 (MSL) EOB: 10.0 ft.	PAGE 1 OF 1
START: 5/28/09 END: 5/28/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89.4	COORD: 666999.569 N, 2191599.621 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	BACK FILL
								GR	CS	FS	SI	CL	LL	PL	PI			
3.0" Berm Material	668.0																	
MEDIUM DENSE TO VERY LOOSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT, TRACE CLAY, DRY TO DAMP	667.7	1	10															
		2	9	25	67	SS-1	-	20	12	35	24	9	NP	NP	NP	5	A-2-4 (0)	
Same as above w/ few brick fragments		3	6	8	24	SS-2	-	26	16	31	19	8	NP	NP	NP	12	A-2-4 (0)	
		4																
		5	2	4	10	SS-3	-	-	-	-	-	-	-	-	-	11	A-2-4 (V)	
		6																
		7																
		8																
Same as above, very loose		9	2	1	4	SS-4	-	-	-	-	-	-	-	-	-	8	A-2-4 (V)	
	658.0	10																
		EOB																

NOTES: GW NOT ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / MINCHAK</u>	DRILL RIG: <u>DIEDRICH D50</u>	STATION / OFFSET: <u>166+81.54, 69.79 LT</u>	EXPLORATION ID: <u>B-054-0-09</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / WESTERVILLER</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA / TRI CONE</u>	CALIBRATION DATE: <u>9/13/07</u>	ELEVATION: <u>670.6 (MSL)</u> EOB: <u>140.0 ft.</u>	PAGE: <u>1 OF 5</u>
START: <u>7/30/09</u> END: <u>7/31/09</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>84.66</u>	COORD: <u>666741.755 N, 2191855.359 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
2.4" TOPSOIL	670.6																	
MEDIUM DENSE, BROWN AND BLACK, COARSE AND FINE SAND, SOME GRAVEL, LITTLE SILT, TRACE CLAY, MOIST Contains fragments of brick and slag, asphalt. (Fill)	670.4	1	17															
		2	6	14	33	SS-1	-	28	22	29	13	8	NP	NP	NP	12	A-3a (0)	
	667.6	3																
LOOSE TO MEDIUM DENSE, BROWN, COARSE AND FINE SAND, TRACE SILT, TRACE CLAY, MOIST TO DAMP		4	3	10	47	SS-2	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
		5																
		6	4															
		7	5	14	40	SS-3	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
		8																
		9	3	8	80	SS-4	-	0	0	89	6	5	NP	NP	NP	8	A-3a (0)	
		10																
		11	2															
		12	3	8	80	SS-5	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
	657.6	13																
LOOSE, BROWN, SILT, SOME FINE SAND, TRACE COARSE SAND, TRACE CLAY, WET		14	2	6	80	SS-6	-	0	2	31	58	9	NP	NP	NP	22	A-4b (6)	
	655.1	15																
LOOSE TO MEDIUM DENSE, BROWN, FINE SAND, TRACE SILT, TRACE COARSE SAND, TRACE CLAY, DAMP		16	2															
		17	3	10	80	SS-7	-	0	1	92	6	1	NP	NP	NP	6	A-3 (0)	
		18																
		19	3	13	53	SS-8	-	-	-	-	-	-	-	-	-	6	A-3 (V)	
		20																
		21	4															
		22	5	18	100	SS-9	-	-	-	-	-	-	-	-	-	6	A-3 (V)	
		23																
		24	6															
	645.1	25																
MEDIUM DENSE, BROWN, SANDY SILT, TRACE CLAY, WET		26	6															
	643.6	27	8	23	100	SS-11	-	0	0	44	47	9	NP	NP	NP	18	A-4a (4)	
		28																
MEDIUM DENSE, BROWN, FINE SAND, (VISUAL), WET		29	6	23	73	SS-12	-	-	-	-	-	-	-	-	-	8	A-3 (V)	







MATERIAL DESCRIPTION AND NOTES	ELEV. 544.2	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST (continued)		127																
		128																
		129	9	14	47	67	SS-32	2.9-3.8	-	-	-	-	-	-	-	-	22	A-6a (V)
		130																
		131																
		132																
		133																
		134	9	12	37	100	SS-33	2.4-3.8	0	0	0	56	44	33	18	15	22	A-6a (10)
		135		14														
		136																
		137																
		138																
		139	8	12	40	100	SS-34	3.1-3.3	-	-	-	-	-	-	-	-	24	A-6a (V)
	530.6	140		16														
		EOB																

NOTES: GROUNDWATER ENCOUNTERED AT 29.0'. NOT NOTED UPON COMPLETION. USED WATER AS CIRCULATING FLUID FROM 45.0' TO 140.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS











MATERIAL DESCRIPTION AND NOTES	ELEV. 544.9	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM STIFF TO VERY STIFF, GRAY, SILT AND CLAY, MOIST (continued)	544.9	127																
		128																
		129	5 6 8	20	100	SS-32	1.0- 1.5	0	0	0	61	39	32	18	14	25	A-6a (10)	
		130																
		131																
		132																
		133																
		134	7 11 13	34	100	SS-33	2.3- 2.8	-	-	-	-	-	-	-	23	A-6a (V)		
		135																
		136																
		137																
		138																
		139	8 12 17	41	100	SS-34	2.0- 2.5	0	0	0	54	46	33	20	13	23	A-6a (9)	
	531.2	140																

NOTES: GROUNDWATER VERY SLIGHT SEEPAGE AT 29.3', ENCOUNTERED AT 33.8'. USED WATER AS CIRCULATING FLUID FROM 45.0' TO 140.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / D.HEPNER</u>	DRILL RIG: <u>SIMCO 2800 HSHT</u>	STATION / OFFSET: <u>167+99.43, 63.41 LT</u>	EXPLORATION ID: <u>B-056-0-09</u>
TYPE: <u>STRUCTURE</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / WESTERVILLER</u>	HAMMER: <u>CME AUTOMATIC</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA / TRI CONE</u>	CALIBRATION DATE: <u>9/1/07</u>	ELEVATION: <u>668.4 (MSL)</u> EOB: <u>140.0 ft.</u>	PAGE: <u>1 OF 5</u>
START: <u>7/29/09</u> END: <u>7/31/09</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>83.64</u>	COORD: <u>666806.971 N, 2191956.226 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
MEDIUM DENSE TO LOOSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , (VISUAL), MOIST TO WET Contains brick, cinder and concrete fragments. (Fill)	668.4	1	4																
		2	8	6	20	100	SS-1	-	-	-	-	-	-	-	-	10	A-1-b (V)		
		3																	
		4	1	2	2	6	27	SS-2	-	-	-	-	-	-	-	-	18	A-1-b (V)	
		5																	
		6	1	4	2	8	67	SS-3	-	-	-	-	-	-	-	-	22	A-1-b (V)	
LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, WET	661.9	7	4	2											7	A-3a (V)			
		8																	
		9	2	2	6	87	SS-4	-	0	2	87	7	4	NP	NP	NP	20	A-3a (0)	
VERY LOOSE, BROWN, <b>SILT</b> , (VISUAL), WET	656.6 655.4	11	2	2	4	73	SS-5	-	-	-	-	-	-	-	-	9	A-3a (V)		
		12	2	1												31	A-4b (V)		
LOOSE TO MEDIUM DENSE, BROWN, <b>FINE SAND</b> , SOME TO TRACE COARSE SAND, TRACE SILT, TRACE CLAY, TRACE GRAVEL, DAMP TO WET	655.4	13																	
		14	2	2	3	7	87	SS-6	-	1	32	62	3	2	NP	NP	NP	7	A-3 (0)
		15																	
		16	3	3	3	8	93	SS-7	-	-	-	-	-	-	-	-	7	A-3 (V)	
		17																	
		18	2	3	4	10	100	SS-8	-	-	-	-	-	-	-	-	8	A-3 (V)	
LOOSE TO MEDIUM DENSE, BROWN, <b>SANDY SILT</b> , TRACE CLAY, WET	644.3	19	5	7	8	21	100	SS-9	-	0	2	91	5	2	NP	NP	NP	7	A-3 (0)
		20																	
		21	3	4	3	10	100	SS-10	-	-	-	-	-	-	-	-	22	A-3 (V)	
LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, WET	640.4	22	4	3												31	A-4a (2)		
		23																	
		24	5	7	10	24	100	SS-11	-	-	-	-	-	-	-	20	A-4a (V)		
LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, WET	640.4	25																	
		26	1	1	3	6	100	SS-12	-	0	2	85	10	3	NP	NP	NP	23	A-3a (0)

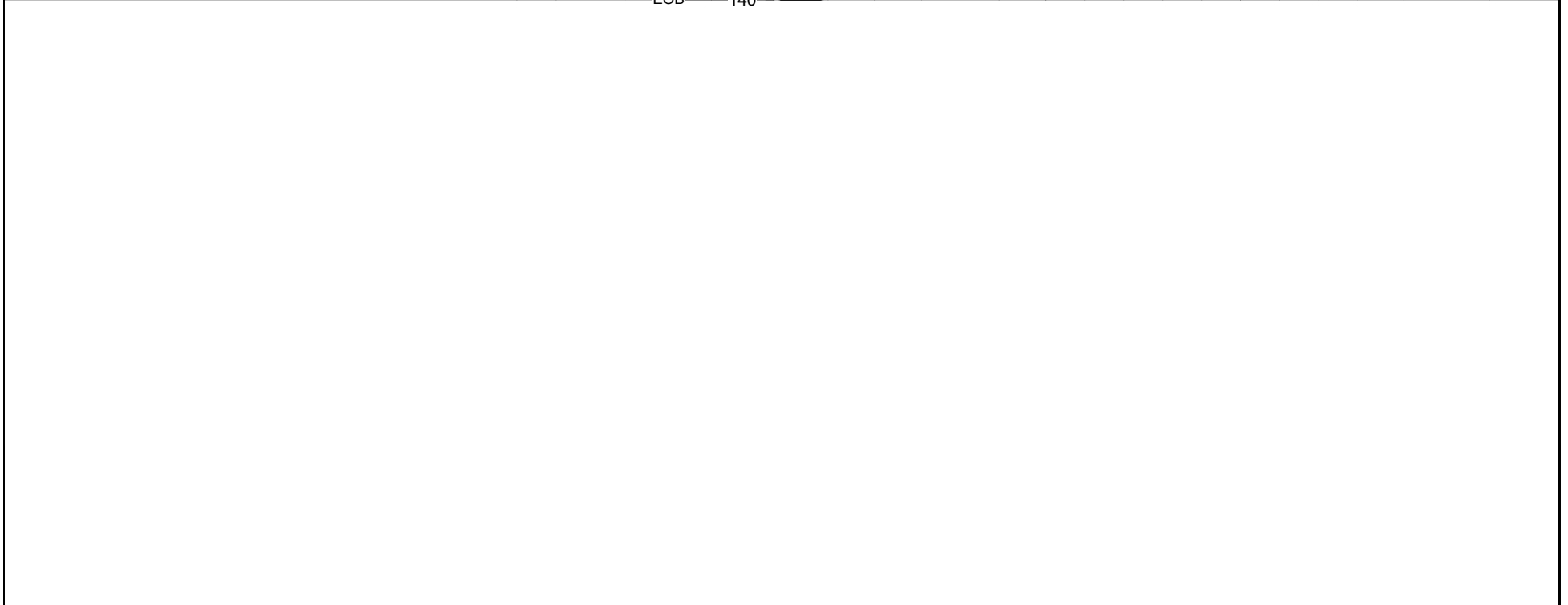








MATERIAL DESCRIPTION AND NOTES	ELEV. 542.0	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST (continued)		127																
		128																
		129	5	9	26	100	SS-33	2.2-3.0	-	-	-	-	-	-	-	-	23	A-6a (V)
		130																
	131																	
	132																	
	133																	
	134	5	9	28	100	SS-34	2.1-2.8	0	0	1	52	47	33	18	15	23	A-6a (10)	
	135																	
	136																	
	137																	
	138																	
	139	5	8	28	100	SS-35	1.6-3.5	-	-	-	-	-	-	-	-	23	A-6a (V)	
	140																	



NOTES: GROUNDWATER ENCOUNTERED DURING DRILLING AT 28.0'. AT COMPLETION 12.0'. USED WATER AS CIRCULATING FLUID FROM 40.0' TO 140.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS

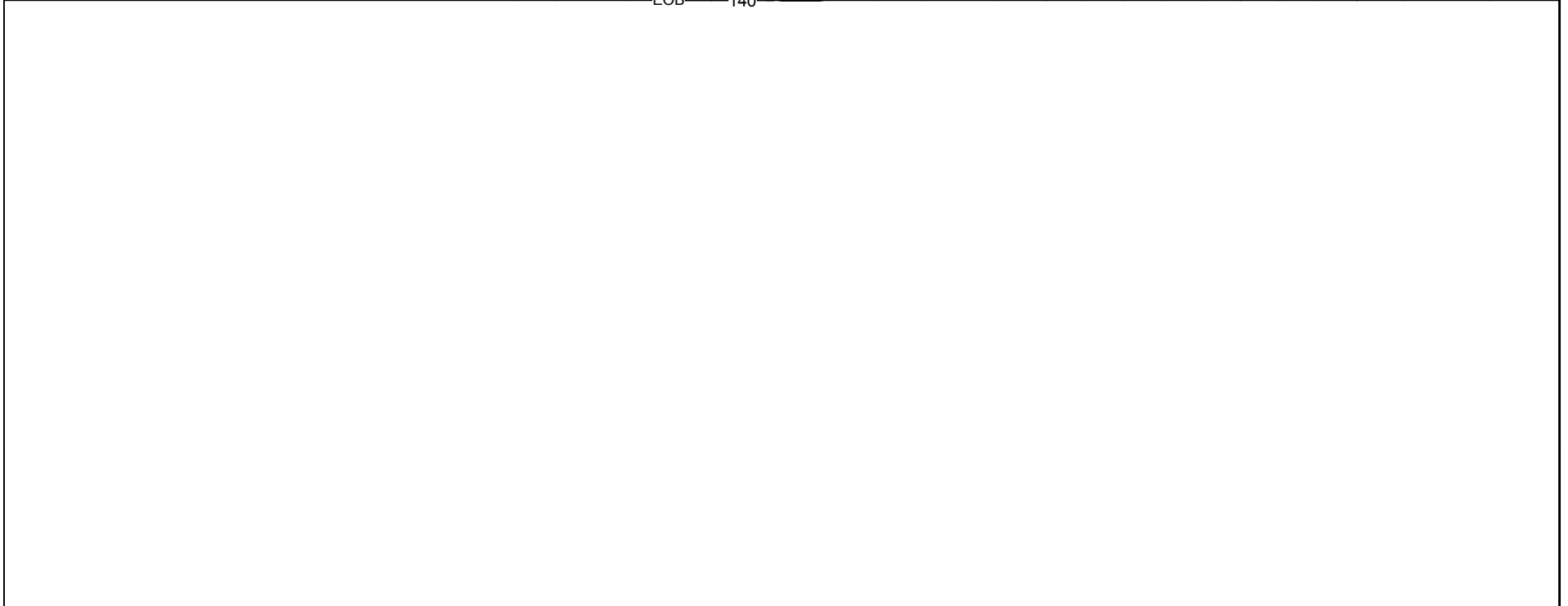








MATERIAL DESCRIPTION AND NOTES	ELEV. 543.4	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST		127																
		128																
		129	4	7	21	100	SS-32	1.0- 1.5	0	0	1	51	48	31	19	12	23	A-6a (9)
		130																
		131																
		132																
		133																
		134	7	9	30	80	SS-33	1.8- 2.3	-	-	-	-	-	-	-	-	24	A-6a (V)
		135																
		136																
		137																
		138																
		139	6	8	25	100	SS-34	1.0- 2.2	-	-	-	-	-	-	-	-	25	A-6a (V)
	529.8	140																



NOTES: GROUNDWATER ENCOUNTERED DURING DRILLING AT 23.5'. AT COMPLETION 20.0'. USED WATER AS CIRCULATING FLUID FROM 45.0' TO 140.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS











MATERIAL DESCRIPTION AND NOTES	ELEV. 543.6	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
STIFF TO VERY STIFF, GRY, SILT, AND CLAY, MOIST (continued)																			
			127																
			128																
			129	5	9	28	93	SS-32	1.8- 2.7	-	-	-	-	-	-	-	-	21	A-4b (V)
			130																
			131																
			132																
			133																
			134	9	13	42	80	SS-33	2.5- 3.5	-	-	-	-	-	-	-	-	23	A-4b (V)
		135																	
		136																	
		137																	
		138																	
		139	7	11	40	100	SS-34	2.8- 3.5	-	-	-	-	-	-	-	-	23	A-4b (V)	
	530.0	EOB																	
		140																	

NOTES: GROUNDWATER ENCOUNTERED AT 25.5'. NOT NOTED UPON COMPLETION. USED WATER AS CIRCULATING FLUID FROM 45.0' TO 140.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED 1 BAG BENTONITE GROUT; PUMPED 1 BAG CEMENT; PLACED SOIL CUTTINGS



MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM DENSE TO DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS</b> , SOME SAND, TRACE SILT, TRACE CLAY, DAMP (continued)	660.1	31																
		32																
		33																
		34	5															
		35	6 8	21	67	SS-12	-	-	-	-	-	-	-	-	9	A-1-a (V)		
	654.1	36																
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, TRACE GRAVEL, WET		37																
		38																
		39	10 13 16	43	83	SS-13	-	1	5	82	9	3	NP	NP	NP	10	A-3a (0)	
		40																
		41																
		42																
		43																
	645.1	44	8															
		45	11 12	34	100	SS-14	-	-	-	-	-	-	-	-	22	A-3a (V)		
		EOB																

NOTES: NO GROUNDWATER ENCOUNTERED DURING DRILLING. GROUNDWATER AT 18.0', 24 HOURS AFTER DRILLING AND HARD RAIN. CAVE DEPTH AT 19.0'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED SOIL CUTTINGS





PID: 77332		BR ID:		PROJECT: CUY-90-15.24		STATION / OFFSET: 171+65.5, 64.3 LT		START: 7/13/09		END: 7/13/09		PG 3 OF 3		B-061-0-09											
MATERIAL DESCRIPTION AND NOTES			ELEV. 600.5	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED					
										GR	CS	FS	SI	CL	LL	PL	PI								
STIFF TO VERY STIFF, GRAY, SILTY CLAY, TRACE FINE SAND, MOIST (continued)					9	33	100	SS-18	2.5-3.0	-	-	-	-	-	-	-	-	23	A-6a (V)						
					13																				
					65																				
					66																				
					67																				
					68																				
					69	6	8	24	100	SS-19	1.0-1.5	0	0	2	60	38	33	20	13		28	A-6a (9)			
					70	8	8																		
					71																				
					72																				
VERY STIFF, GRAY, SILT, SOME TO AND CLAY, MOIST			587.7		7	6	19	100	SS-20	1.0-1.25	-	-	-	-	-	-	-	24	A-6a (V)						
					74	6	7																		
					75	7																			
					76																				
					77																				
					78																				
					79	9	13	42	100	SS-21	2.0-3.0	0	0	0	65	35	29	20	9		22	A-4b (8)			
					80	13	15																		
					81																				
					82																				
			569.7	EOB	9	13	40	100	SS-22	3.0-3.5	-	-	-	-	-	-	-	21	A-4b (V)						
					84	13	14																		
					85																				
					86																				
					87																				
					88																				
					89	10	14	51	100	SS-23	2.5-3.0	0	0	0	58	42	30	20	10		21	A-4b (8)			
					90	14	20																		
					91																				
					92																				
93																									
94	13	16	51	100	SS-24	2.5-3.0	-	-	-	-	-	-	-	-	-	23	A-4b (V)								
95	16	18																							

NOTES: GROUNDWATER ENCOUNTERED AT 16.0' DURING DRILLING. NOT NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE GROUT; PLACED SOIL CUTTINGS



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:25 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 RETAINING WALL.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>171+43, 159.0 LT</u>	EXPLORATION ID: <u>B-062-0-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>667.3 (MSL)</u> EOB: <u>40.0 ft.</u>	PAGE: <u>1 OF 2</u>
START: <u>7/7/09</u> END: <u>7/7/09</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>667077.261 N, 2192203.127 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
8" ASPHALT	666.6																	
MEDIUM DENSE TO LOOSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, TRACE CLAY, MOIST		1	10															
		2	9	24	78	SS-1	-	27	26	23	15	9	NP	NP	NP	7	A-1-b (0)	
		3																
		4	3	2	7	67	SS-2	-	-	-	-	-	-	-	-	7	A-1-b (V)	
		5																
		6	3															
	659.8	7	3	4	10	83	SS-3	-	-	-	-	-	-	-	-	8	A-1-b (V)	
LOOSE, BROWN, COARSE AND FINE SAND, LITTLE SILT, TRACE CLAY, MOIST TO WET		8																
		9	3	3	9	67	SS-4	-	-	-	-	-	-	-	-	6	A-3a (V)	
		10																
		11	2	3	7	83	SS-5	-	0	1	81	11	7	NP	NP	NP	16	A-3a (0)
		12																
		13																
		14	3	3	7	83	SS-6	-	-	-	-	-	-	-	-	16	A-3a (V)	
		15																
		16	3	3	10	72	SS-7	-	-	-	-	-	-	-	-	13	A-3a (V)	
		17																
	648.8	18																
MEDIUM DENSE TO DENSE, BROWN TO GREY, SANDY SILT, TRACE CLAY, TRACE GRAVEL, WET		19	7	8	27	100	SS-8	-	6	22	33	31	8	NP	NP	NP	19	A-4a (1)
		20																
		21																
		22	8	11	36	100	SS-9	-	-	-	-	-	-	-	-	23	A-4a (V)	
		23																
		24	7	10	31	100	SS-10	-	-	-	-	-	-	-	-	24	A-4a (V)	
		25																
	640.3	26																
VERY DENSE, BROWN, COARSE AND FINE SAND, LITTLE SILT, TRACE CLAY, WET		27																
		28																
		29	17	32	-	106	SS-11	-	0	1	83	12	4	NP	NP	NP	19	A-3a (0)

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:25 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 RETAINING WALL.GPJ

PID: 77332		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 171+43, 159.0 LT		START: 7/7/09		END: 7/7/09		PG 2 OF 2		B-062-0-09						
MATERIAL DESCRIPTION AND NOTES			ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
										GR	CS	FS	SI	CL	LL	PL	PI			
VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, WET (continued)			637.3	31																
DENSE TO VERY DENSE, BROWN, <b>SILT</b> , TRACE CLAY, WET 3.0' Sand heave when pulling SPT Sample @ 33.5' to 35.0'			633.8	34	13	63	100	SS-12	-	0	0	39	54	7	NP	NP	NP	20	A-4b (5)	
				35	19															
				36	23															
				37																
				38																
				39	8	33	100	SS-13	-	0	0	31	61	8	NP	NP	NP	23	A-4b (7)	
			627.3	40	10															
				EOB	12															
NOTES: GROUNDWATER ENCOUNTERED AT 18.0', NOT NOTED ON COMPLETION.																				
ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .75 BAG BENTONITE GROUT; PUMPED .5 BAG CEMENT; PLACED SOIL CUTTINGS																				



MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
LOOSE TO MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME TO TRACE GRAVEL, TRACE SILT, TRACE CLAY, DAMP (continued)	651.9	31																
		32																
	648.4	33																
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME SILT, TRACE CLAY, WET		34	7 15 18	49	100	SS-12	-	-	-	-	-	-	-	-	19	A-3a (V)		
		35																
		36																
		37																
		38																
		39	6 10 15	37	100	SS-13	-	0	3	66	24	7	NP	NP	NP	24	A-3a (0)	
		40																
	639.9	41																
VERY DENSE, BROWN, <b>SANDY SILT</b> , TRACE CLAY, WET		42																
		43																
		44	26 24 36	89	100	SS-14	-	0	0	50	44	6	NP	NP	NP	20	A-4a (3)	
		45																
		46																
		47																
		48																
		49	16 19 21	60	100	SS-15	-	-	-	-	-	-	-	-	22	A-4a (V)		
	631.9	50																

NOTES: GROUNDWATER ENCOUNTERED AT 32.0', NOT NOTED ON COMPLETION. 5.0' AFTER 24 HOURS - AFTER HARD RAIN. CAVE DEPTH 6.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1.5 BAGS BENTONITE PELLETS; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>173+70.92, 48.5 RT</u>	EXPLORATION ID: <u>B-064-0-09</u>
TYPE: <u>ROADWAY / EMBANKMENT</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>691.4 (MSL)</u> EOB: <u>30.0 ft.</u>	PAGE: <u>1 OF 1</u>
START: <u>6/30/09</u> END: <u>6/30/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>667003.656 N, 2192504.888 E</u>	

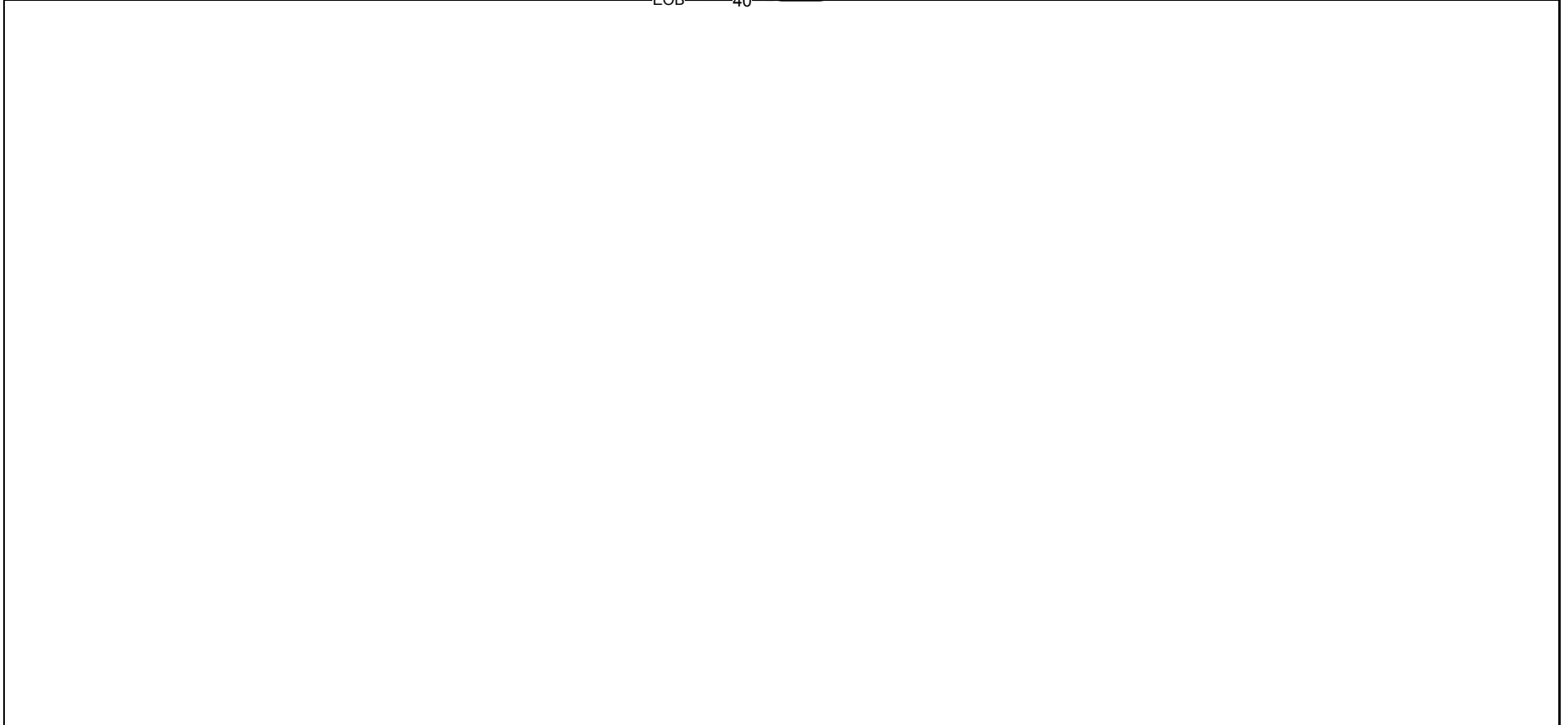
MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
MEDIUM DENSE TO VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE TO LITTLE GRAVEL, TRACE CLAY, MOIST Contains red brick fragments. (Fill)	691.4	1	6	21	67	SS-1	-	-	-	-	-	-	-	-	-	9	A-3a (V)		
		2	6	8															
		3																	
		4	6	5	15	83	SS-2	-	9	15	52	15	9	NP	NP	NP	11	A-3a (0)	
		5		5															
		6	5	5	12	83	SS-3	-	-	-	-	-	-	-	-	-	11	A-3a (V)	
		7		3															
		8																	
		9	8	9	30	83	SS-4	-	12	23	48	11	6	NP	NP	NP	11	A-3a (0)	
		10		11															
		11																	
		12	13	17	54	83	SS-5	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
		13		19															
		14	7	9	27	67	SS-6	-	11	18	51	13	7	NP	NP	NP	12	A-3a (0)	
		15		9															
DENSE TO VERY DENSE, GRAY, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , TRACE SILT, TRACE CLAY, MOIST (Fill)	675.9	16	17	51	83	SS-7	-	5	70	17	5	3	NP	NP	NP	12	A-1-b (0)		
		17	17																
		18																	
		19	10	14	48	100	SS-8	-	-	-	-	-	-	-	-	11	A-1-b (V)		
20		18																	
9" OF ASPHALT AND ASPHALT FRAGMENTS	670.7	670.0	21	50/5"	-	100	SS-9	-	-	-	-	-	-	-	-	1			
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, TRACE SILT, TRACE CLAY, DAMP	665.9	22																	
		23																	
		24	7	6	18	83	SS-10	-	19	24	42	9	6	NP	NP	NP	5	A-3a (0)	
25		6																	
DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE SILT, TRACE CLAY, DAMP	663.4	26	9	48	94	SS-11	-	38	25	20	12	5	NP	NP	NP	4	A-1-b (0)		
		27		15	17														
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , (VISUAL), DAMP	661.4	28																	
		29	5	6	16	72	SS-12	-	-	-	-	-	-	-	-	5	A-3a (V)		

NOTES: NO GROUNDWATER ENCOUNTERED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>178+98, 55.0 LT</u>	EXPLORATION ID: <u>B-067-0-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>680.5 (MSL)</u> EOB: <u>40.0 ft.</u>	PAGE: <u>1 OF 2</u>
START: <u>7/2/09</u> END: <u>7/2/09</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>667306.323 N, 2192946.722 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
6.0" ASPHALT	680.5																		
DENSE TO VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, MOIST	680.0	1	8																
		2	10 12	33	67	SS-1	-	5	13	61	13	8	NP	NP	NP	11	A-3a (0)		
		3																	
		4	11 16 18	51	78	SS-2	-	-	-	-	-	-	-	-	-	10	A-3a (V)		
		5																	
		6	12 14 18	48	100	SS-3	-	-	-	-	-	-	-	-	-	11	A-3a (V)		
		7																	
MEDIUM DENSE TO LOOSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , LITTLE TO TRACE SILT, TRACE CLAY, DAMP	672.5	8																	
		9	9	7	24	100	SS-4	-	7	54	18	14	7	NP	NP	NP	10	A-1-b (0)	
		10																	
		11	5	5	6	16	89	SS-5	-	-	-	-	-	-	-	11	A-1-b (V)		
		12																	
		13																	
		14	4	4	3	10	67	SS-6	-	-	-	-	-	-	-	10	A-1-b (V)		
		15																	
		16	3	3	4	10	67	SS-7	-	44	24	24	5	3	NP	NP	NP	10	A-1-b (0)
		17																	
STIFF, BROWN, <b>SILT</b> , SOME CLAY, TRACE FINE SAND, WET TO MOIST	660.5	18																	
		19	3	3	9	33	SS-8	-	-	-	-	-	-	-	9	A-1-b (V)			
		20																	
		21	4	3	5	12	83	SS-9	1.0- 2.0	-	-	-	-	-	-	32	A-4b (V)		
		22																	
@22.0'; SHELBY TUBE SAMPLED FROM 22.0' TO 24.0', OFFSET 3.0'		23					100	ST-9b	1.0- 1.5	0	0	6	71	23	25	19	6	21	A-4b (8)
		24	5	6	10	24	83	SS-10	-	-	-	-	-	-	-	14	A-4b (V)		
		25																	
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, TRACE GRAVEL, WET	654.5	26																	
		27																	
		28																	
		29	10 17 15	48	83	SS-11	-	2	28	58	9	3	NP	NP	NP	25	A-3a (0)		

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, TRACE GRAVEL, WET <i>(continued)</i>	650.5																	
		31																
		32																
		33	W															
		34		8														
		35		11 13	36	89	SS-12	-	-	-	-	-	-	-	-	22	A-3a (V)	
		36																
		37																
		38																
		39		7														
	640.5	EOB	10 14	36	100	SS-13	-	-	-	-	-	-	-	-	20	A-3a (V)		
		40																



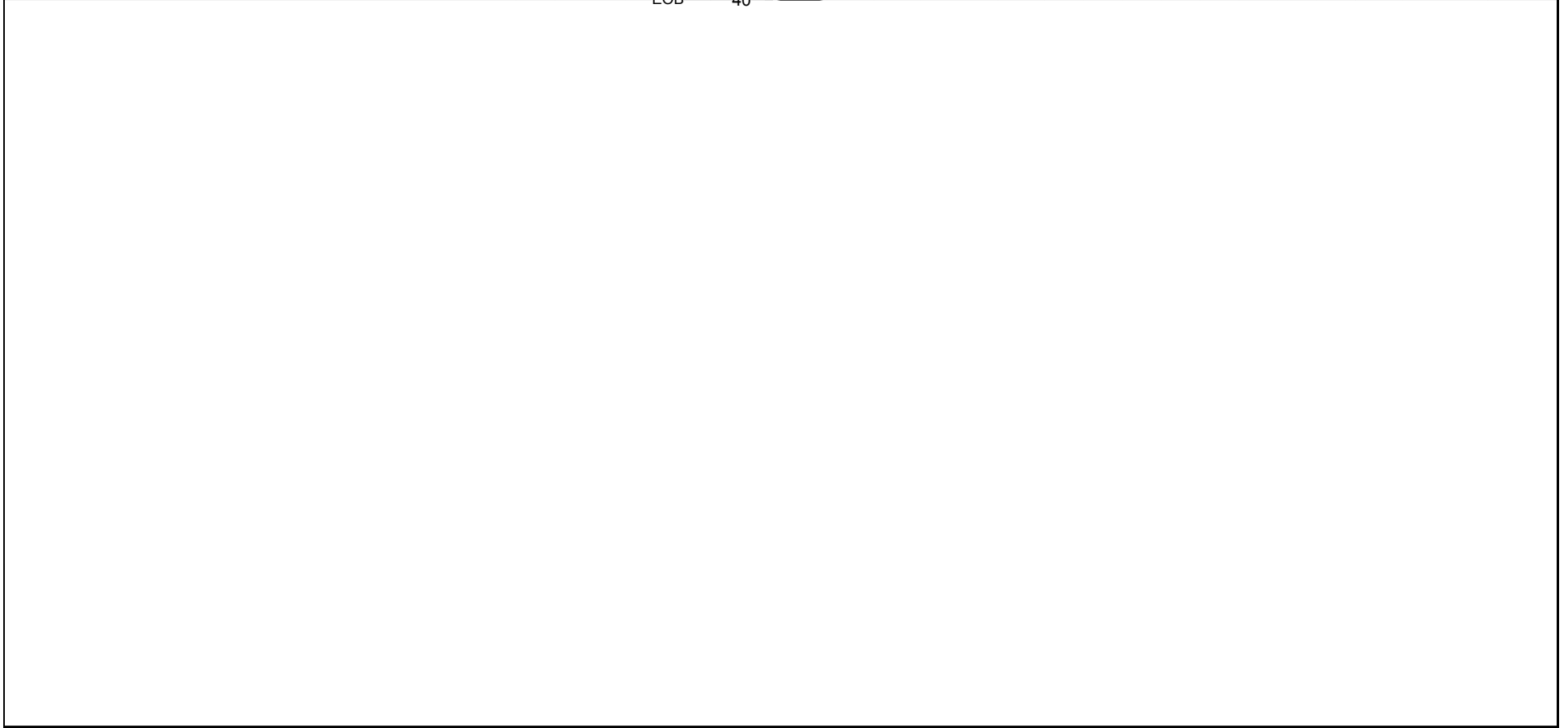
NOTES: GROUNDWATER ENCOUNTERED AT 33.5', NOT NOTED UPON COMPLETION. SHELBY TUBE OFFSET 3.0'.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .5 BAG BENTONITE GROUT; PUMPED .5 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>180+84, 71.0 LT</u>	EXPLORATION ID: <u>B-068-0-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR 90</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>671.3 (MSL)</u> EOB: <u>40.0 ft.</u>	PAGE: <u>1 OF 2</u>
START: <u>7/1/09</u> END: <u>7/1/09</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>667392.253 N, 2193108.722 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI				
5.0" TOPSOIL	670.9	1	9															<L> <L> <L>	
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, DAMP Contains brick fragments (Fill)		2	13 16	43	100	SS-1	-	-	-	-	-	-	-	-	7	A-3a (V)			
		3																	
		4	9 13 14	40	100	SS-2	-	4	8	66	16	6	NP	NP	NP	8	A-3a (0)		
	666.3	5																	
LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , (VISUAL), DAMP		6	3																
		7	3 2	7	78	SS-3	-	-	-	-	-	-	-	-	7	A-3a (V)			
		8																	
		9	3 2	7	78	SS-4	-	-	-	-	-	-	-	-	6	A-3a (V)			
	661.3	10																	
MEDIUM STIFF TO STIFF, BROWN, <b>SILTY CLAY</b> , TRACE SAND, TRACE GRAVEL, MOIST		11																	
Shelby Tube sample collected from 11.0' to 13.0' in offset boring. Only granular (probable A-3a) material recovered.		12	3 3 2	7	67	SS-5	0.5- 1.25	3	3	5	34	55	39	20	19	28	A-6b (12)		
		13																	
		14	4 6 6	18	67	SS-6	1.0- 1.25	-	-	-	-	-	-	-	-	20	A-6b (V)		
	656.3	15																	
MEDIUM DENSE TO VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME TO TRACE SILT, TRACE CLAY, WET		16	4																
		17	6 7	19	83	SS-7	-	0	24	41	30	5	NP	NP	NP	16	A-3a (0)		
		18																	
		19	5 6 10	24	89	SS-8	-	-	-	-	-	-	-	-	13	A-3a (V)			
		20																	
		21																	
		22	14 14 12	39	100	SS-9	-	-	-	-	-	-	-	-	23	A-3a (V)			
		23																	
		24	12 13 14	40	100	SS-10	-	0	3	85	10	2	NP	NP	NP	20	A-3a (0)		
		25																	
		26																	
		27																	
		28																	
		29	10 14 14	42	100	SS-11	-	-	-	-	-	-	-	-	22	A-3a (V)			



MATERIAL DESCRIPTION AND NOTES	ELEV. 641.3	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM DENSE TO VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME TO TRACE SILT, TRACE CLAY, WET <i>(continued)</i>	641.3	31																
		32																
		33																
		34	15 18 19	55	100	SS-12	-	-	-	-	-	-	-	-	-	-	25	A-3a (V)
		35																
		36																
		37																
		38																
		39	7 8 12	30	100	SS-13	-	0	3	75	17	5	NP	NP	NP	32	A-3a (0)	
	631.3	EOB																

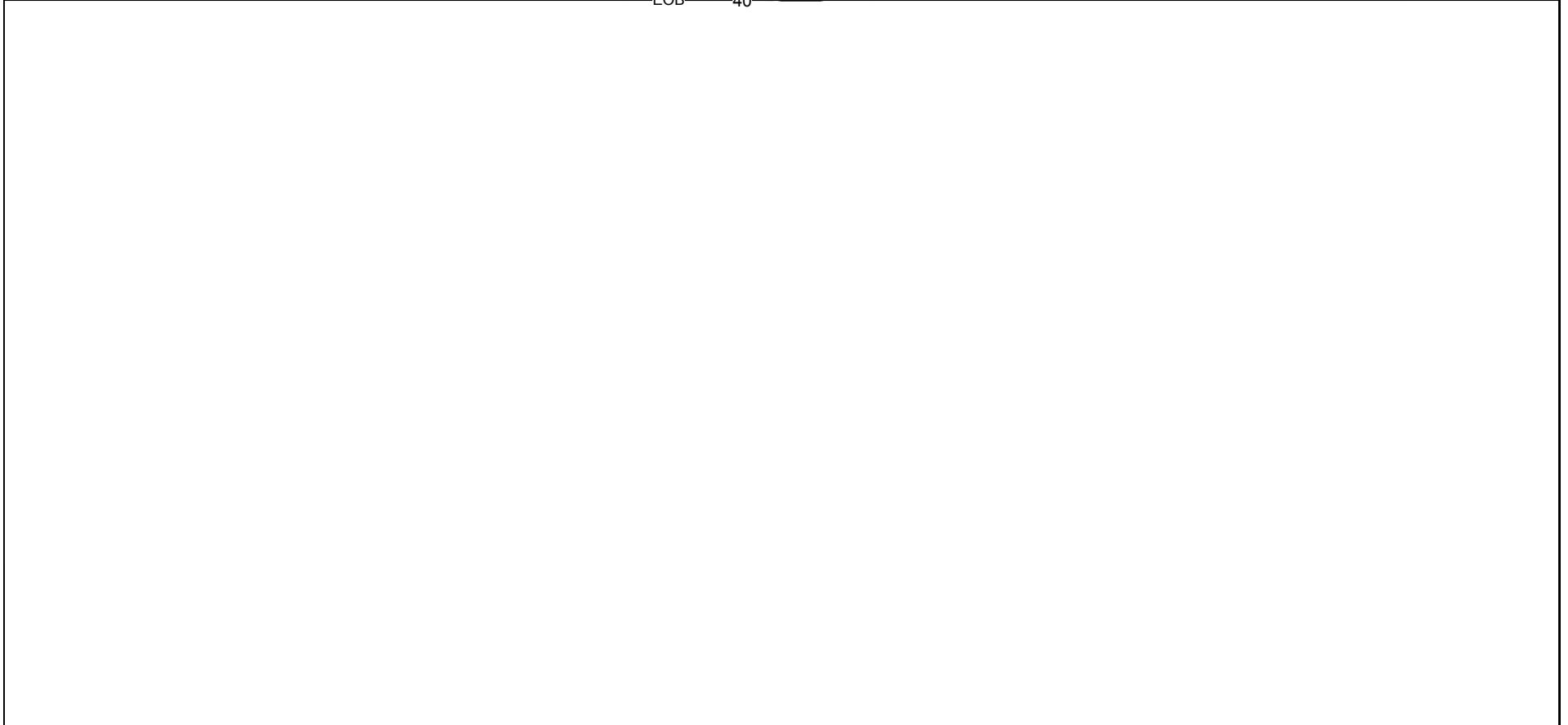


NOTES: GROUNDWATER ENCOUNTERED AT 21.0', NOT NOTED ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .75 BAG BENTONITE GROUT; PUMPED .5 BAG CEMENT; PLACED SOIL CUTTINGS

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>182+19.67, 50.46 LT</u>	EXPLORATION ID <u>B-069-0-09</u>
TYPE: <u>EMBANKMENT</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>IR-90</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>663.6 (MSL)</u> EOB: <u>40.0 ft.</u>	PAGE 1 OF 2
START: <u>7/1/09</u> END: <u>7/1/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>667432.230 N, 2193237.126 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
4" TOPSOIL - SANDY DENSE TO MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE SILT, TRACE CLAY, DAMP	663.6	1	12															< >
	663.3	2	13 12	37	83	SS-1	-	15	24	43	11	7	NP	NP	NP	5	A-3a (0)	< >
		3																< >
(fill)	658.6	4	4	15	67	SS-2	-	-	-	-	-	-	-	-	-	5	A-3a (V)	< >
		5	6															< >
MEDIUM DENSE, BROWN AND GRAY, <b>SILT</b> , LITTLE SAND, TRACE CLAY, WET (fill)	655.6	6	3															< >
		7	6	16	83	SS-3	-	0	0	17	73	10	NP	NP	NP	24	A-4b (8)	< >
		8																< >
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE SILT, TRACE CLAY, TRACE GRAVEL, DAMP TO WET	635.6	9	6	24	83	SS-4	-	1	11	77	8	3	NP	NP	NP	5	A-3a (0)	< >
		10	7															< >
		11	9															< >
		12	9 12	31	83	SS-5	-	-	-	-	-	-	-	-	-	17	A-3a (V)	< >
		13																< >
		14	7															< >
		15	10 12	33	94	SS-6	-	-	-	-	-	-	-	-	-	21	A-3a (V)	< >
		16																< >
		17	10 13 14	40	100	SS-7	-	0	3	86	8	3	NP	NP	NP	20	A-3a (0)	< >
		18																< >
		19	10															< >
		20	13 17	45	100	SS-8	-	-	-	-	-	-	-	-	-	22	A-3a (V)	< >
		21																< >
		22																< >
		23																< >
		24	8															< >
		25	10 16	39	100	SS-9	-	-	-	-	-	-	-	-	-	17	A-3a (V)	< >
		26																< >
		27																< >
		28																< >
DENSE, GRAY, <b>SANDY SILT</b> , TRACE CLAY, WET	635.6	29	10 13 17	45	100	SS-10	-	0	0	61	35	4	NP	NP	NP	23	A-4a (1)	< >

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
DENSE, GRAY, SANDY SILT, TRACE CLAY, WET (continued)	633.6	31																	
		32																	
		33																	
		34	11 13 17	45	100	SS-11	-	0	1	51	41	7	NP	NP	NP	22	A-4a (3)		
DENSE, GRAY, SILT, LITTLE CLAY, TRACE FINE SAND, WET	626.6	35																	
		36																	
		37																	
		38																	
	623.6	39	12 16 16	48	100	SS-12	-	0	0	10	78	12	NP	NP	NP	21	A-4b (8)		
		40																	



NOTES: GROUNDWATER ENCOUNTERED AT 16.0' DURING DRILLING. NOT NOTED UPON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 3 BAG BENTONITE PELLETS; PLACED SOIL CUTTINGS



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:29 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PID: 77332 BR ID: PROJECT: CUY-90-15.24 STATION / OFFSET: 11+89, 63.0 LT START: 7/28/09 END: 7/28/09 PG 2 OF 2 B-070-0-09

MATERIAL DESCRIPTION AND NOTES	ELEV. 576.4	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
HARD TO VERY STIFF, BROWN TO GRAY, SILT, SOME TO AND CLAY, TRACE SAND, DAMP TO MOIST (continued)																		
			31															
			32															
			33															
			34	6	8	25	100	SS-12	3.0-3.5	-	-	-	-	-	-	-	21	A-4b (V)
	571.4	EOB																

NOTES: GW ENCOUNERED AT 14.0'. NOT NOTED ON COMPLETION, CAVE 11.0'. BORING IS A REDRILL (LOCATION MOVED UPHILL FROM PREVIOUS PER ODOT)  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .75 BAG BENTONITE GROUT; PUMPED .5 BAG CEMENT

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/21/09 19:34 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B60'S & 70.GPJ

PROJECT: CUY-90-15.24		DRILLING FIRM / OPERATOR: B&P / P.WEBB		DRILL RIG: MOBILE B61 TRUCK		STATION / OFFSET: 11+60.03, 43.67 LT		EXPLORATION ID												
TYPE: RETAINING WALL		SAMPLING FIRM / LOGGER: B&P / R.WEBB		HAMMER: DIEDRICH AUTOMATIC		ALIGNMENT: EAST 9TH STREET		B-070-1-09												
PID: 77332 BR ID:		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 10/5/07		ELEVATION: 595.6 (MSL) EOB: 40.0 ft.		PAGE												
START: 7/14/09 END: 7/14/09		SAMPLING METHOD: SPT / ST		ENERGY RATIO (%): 89.4		COORD: 665500.603 N, 2191621.479 E		1 OF 2												
MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED		
								GR	CS	FS	SI	CL	LL	PL	PI					
8.0" ASPHALT	595.6																			
MEDIUM DENSE, BROWN AND BLACK, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, DAMP (Fill)	592.1	1	24	27	100	SS-1	-	37	19	25	14	5	NP	NP	NP	8	A-1-b (0)			
LOOSE, BROWN, SANDY SILT, LITTLE CLAY, TRACE GRAVEL, WET	590.6	3	3	9	100	SS-2	-	6	15	34	31	14	NP	NP	NP	19	A-4a (2)			
STIFF TO VERY STIFF, BROWN AND GRAY, SILT AND CLAY, TRACE SAND, MOIST	577.6	4	3	10	100	SS-3	1.5-2.0	0	0	1	62	37	33	21	12	24	A-6a (9)			
		5																		
		6	3				ST-4	1.0-1.25	-	-	-	-	-	-	-	-	25	A-6a (V)		
		7	3	4	10	100	SS-3	1.5-2.0	-	-	-	-	-	-	-	-	25	A-6a (V)		
		8																		
		9				96	ST-4	1.0-1.25	-	-	-	-	-	-	-	-	25	A-6a (V)		
		10																		
		11	3	5	15	100	SS-5	1.5-2.0	-	-	-	-	-	-	-	-	25	A-6a (V)		
		12																		
		13	4	5	18	100	SS-6	1.5-4.0	0	3	7	41	49	31	17	14	27	A-6a (10)		
MEDIUM STIFF TO VERY STIFF, GRAY, CLAY, LITTLE SILT, TRACE SAND, TRACE GRAVEL, MOIST	577.6	14	4	18	100	SS-6	1.5-4.0	0	3	7	41	49	31	17	14	27	A-6a (10)			
		15																		
		16	6	7	22	100	SS-7	1.0-2.0	0	1	3	54	42	30	17	13	24	A-6a (9)		
		17																		
		18																		
		19	3	4	13	100	SS-8	1.5-2.5	-	-	-	-	-	-	-	-	24	A-7-6 (V)		
		20																		
		21	4	2	9	100	SS-9	1.0-1.5	1	1	3	19	76	44	23	21	35	A-7-6 (13)		
MEDIUM STIFF, GRAY, SILTY CLAY, TRACE SAND, MOIST	568.6	22																		
		23																		
		24	3	3	10	100	SS-10	0.5-1.0	-	-	-	-	-	-	-	29	A-7-6 (V)			
		25																		
26																				
27																				
28																				
29	3	3	9	100	SS-11	0.5-1.0	0	1	0	29	70	40	23	17	28	A-6b (11)				

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/21/09 19:34 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24 B60'S & 70.GPJ

PID: 77332		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 11+60.03, 43.67 LT		START: 7/14/09		END: 7/14/09		PG 2 OF 2		B-070-1-09								
MATERIAL DESCRIPTION AND NOTES			ELEV. 565.6	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED		
										GR	CS	FS	SI	CL	LL	PL	PI					
MEDIUM STIFF, GRAY, SILTY CLAY, TRACE SAND, MOIST (continued)			563.6	31															<>			
MEDIUM STIFF TO VERY STIFF, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, MOIST			555.6	32															<>			
				33															<>			
				34	3	4	5	13	100	SS-12	.75- 1.0	-	-	-	-	-	-	-	23	A-6a (V)	<>	
				35																<>		
				36																<>		
				37																<>		
				38																<>		
				39					100	ST-13	1.25- 2.25	1	1	1	47	50	31	18	13	24	A-6a (9)	<>
				40																	<>	
				EOB																		
NOTES: NO GROUNDWATER ENCOUNTERED.																						
ABANDONMENT METHODS, MATERIALS, QUANTITIES: PLACED SOIL CUTTINGS																						

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/21/09 19:36 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B60'S & 70.FPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / C. BESSEY</u>	DRILL RIG: <u>DIEDRICH D50</u>	STATION / OFFSET: <u>12+43.27, 258.39 RT</u>	EXPLORATION ID: <u>B-070-2-09</u>
TYPE: <u>STORM SEWER</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>EAST 9TH STREET</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>9/13/07</u>	ELEVATION: <u>598.2 (MSL)</u> EOB: <u>30.0 ft.</u>	PAGE: <u>1 OF 1</u>
START: <u>9/27/09</u> END: <u>9/27/09</u>	SAMPLING METHOD: <u>SPT / ST</u>	ENERGY RATIO (%): <u>84.66</u>	COORD: <u>665277.829 N, 2191841.805 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
6.0" GRAVEL LOOSE, BROWN AND DARK BROWN, <b>SANDY SILT</b> , LITTLE CLAY, TRACE GRAVEL, DAMP (Fill) Few cinders	598.2																	
	597.7	1																
		2																
		3																
		4	2	2	6	89	SS-1	-	5	13	38	33	11	NP	NP	NP	13	A-4a (2)
VERY LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME SILT, TRACE CLAY, TRACE GRAVEL, WET (Fill)  Contains cinders.	591.7	5																
		6																
		7																
		8																
		9	2	1	4	100	SS-2	-	10	18	37	25	10	NP	NP	NP	19	A-3a (0)
VERY LOOSE, BLACK AND BROWN, <b>SANDY SILT</b> , LITTLE CLAY, TRACE GRAVEL, WET (Probable Fill)  Contains few roots, trace organics and wood fragments @ 13.5' to 15.0'	586.2	10																
		11																
		12																
		13																
		14	1	1	3	100	SS-3	-	1	6	40	37	16	25	24	1	29	A-4a (4)
VERY SOFT TO SOFT, BROWN AND GRAY, <b>SILTY CLAY</b> , TRACE SAND, TRACE GRAVEL, MOIST  Shelby tube sample advanced from 30.0' to 32.0' - No Recovery	576.7	15																
		16																
		17																
		18																
		19	WOH	1	3	100	SS-4	-	1	6	45	35	13	34	33	1	52	A-4a (3)
VERY SOFT TO SOFT, BROWN AND GRAY, <b>SILTY CLAY</b> , TRACE SAND, TRACE GRAVEL, MOIST  Shelby tube sample advanced from 30.0' to 32.0' - No Recovery	568.2	20																
		21																
		22																
		23																
		24	WOH	1	3	100	SS-5	0.0- 0.5	0	2	6	29	63	36	20	16	31	A-6b (10)
	25																	
	26																	
	27																	
	28																	
	29	WOH WOH WOH	0	100		SS-6	0.0- 0.5	1	1	3	22	73	39	22	17	34	A-6b (11)	

EOB

NOTES: GROUNDWATER ENCOUNTERED AT 20.0'. FALSE START (REFUSAL) ON OBSTRUCTION @ 23.5'. OFFSET BORING 20 FEET WEST AND COMPLETED.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/21/09 19:37 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 B60'S & 70.FPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>OTB / C. BESSEY</u>	DRILL RIG: <u>DIEDRICH D50</u>	STATION / OFFSET: <u>11+83.68, 451.63 RT</u>	EXPLORATION ID: <u>B-070-3-09</u>
TYPE: <u>STORM SEWER</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>EAST 9TH STREET</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>9/13/07</u>	ELEVATION: <u>585.0 (MSL)</u> EOB: <u>20.0 ft.</u>	PAGE: <u>1 OF 1</u>
START: <u>9/27/09</u> END: <u>9/27/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>84.66</u>	COORD: <u>665080.131 N, 2191884.326 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
8" GRAVEL	585.0																	
MEDIUM DENSE, GRAY, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, TRACE SILT, TRACE CLAY, WET  (Fill) Few cinders	584.3	1															<L>	
		2															<L>	
		3															<L>	
		4	5	4	13	78	SS-1	-	38	24	24	10	4	NP	NP	NP	25	A-1-b (0)
		5																<L>
	578.5	6																<L>
MEDIUM DENSE, BLACK, SILT, SOME SAND, SOME CLAY, TRACE GRAVEL, WET contains wood fragments - (dimensional lumber) (Fill) Trace organics		7																<L>
		8																<L>
		9	6	5	13	83	SS-2	-	2	5	22	50	21	22	18	4	24	A-4b (7)
		10		4														<L>
		11																<L>
		12																<L>
		13																<L>
Sample composed predominately of one large piece of wood.		14	3	3	8	11	SS-3	-	-	-	-	-	-	-	-	-	-	<L>
MEDIUM DENSE, BLACK, SANDY SILT, LITTLE CLAY, TRACE GRAVEL, WET contains wood fragments - (dimensional lumber) (Fill)	570.5	15																<L>
		16																<L>
		17																<L>
		18																<L>
Trace organics		19	4	4	11	22	SS-4	-	3	4	37	40	16	25	21	4	30	A-4a (4)
	565.0	20		4														<L>
		EOB																<L>

NOTES: GROUNDWATER ENCOUNTERED AT 10.0'. NOT NOTED ON COMPLETION.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED 1 BAG BENTONITE CHIPS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:32 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>13+76, 39.0 RT</u>	EXPLORATION ID: <u>B-071-0-09</u>
TYPE: <u>ROADWAY / CUT</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>EAST 9TH STREET</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>625.5 (MSL)</u> EOB: <u>40.0 ft.</u>	PAGE: <u>1 OF 2</u>
START: <u>7/13/09</u> END: <u>7/13/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>665534.822 N, 2191851.257 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			ODOT CLASS (GI)	HOLE SEALED		
								GR	CS	FS	SI	CL	LL	PL	PI			WC	
<b>3" GRAVEL</b> DENSE TO VERY DENSE, BROWN AND BLACK, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT</b> , LITTLE CLAY, FEW BRICK FRAGMENTS, MOIST  (Fill)  "bad" odor noted from SS-4 in field. Lab noted odor from SS-1 to SS-7.	625.3	1	10																
		2	12 15	40	100	SS-1	-	24	18	26	19	13	26	16	10	11	A-2-4 (0)		
		3																	
		4	7																
		5	13 15	42	100	SS-2	-	-	-	-	-	-	-	-	-	10	A-2-4 (V)		
		6																	
		7	15 18 19	55	100	SS-3	-	-	-	-	-	-	-	-	-	13	A-2-4 (V)		
		8																	
		9	10																
		10	14 22	54	100	SS-4	-	-	-	-	-	-	-	-	-	13	A-2-4 (V)		
DENSE TO VERY DENSE, BLACK TO BROWN WITH BLACK, <b>SANDY SILT</b> , LITTLE TO TRACE GRAVEL, LITTLE CLAY, MOIST TO WET  (Fill)  few concrete fragments in SS-5   few glass fragments	614.5	11																	
		12	13 16 21	55	100	SS-5	-	-	-	-	-	-	-	-	15	A-4a (V)			
		13																	
		14	13 25 27	77	100	SS-6	-	-	-	-	-	-	-	-	11	A-4a (V)			
		15																	
		16																	
		17	23 25 22	70	100	SS-7	-	16	15	22	36	11	NP	NP	NP	15	A-4a (2)		
		18																	
		19	50/3"	-	0	SS-8	-	-	-	-	-	-	-	-	-	-	-	-	
		20																	
21																			
22																			
23																			
24	13																		
25	15 20	52	100	SS-9	-	-	-	-	-	-	-	-	-	17	A-4a (V)				
26																			
27																			
28																			
29																			
few brick fragments			10																
			15 18	49	67	SS-10	-	2	12	39	34	13	NP	NP	NP	17	A-4a (2)		

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:32 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PID: 77332		BR ID: _____		PROJECT: CUY-90-15.24		STATION / OFFSET: 13+76, 39.0 RT		START: 7/13/09		END: 7/13/09		PG 2 OF 2		B-071-0-09						
MATERIAL DESCRIPTION AND NOTES			ELEV. 595.5	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
										GR	CS	FS	SI	CL	LL	PL	PI			
DENSE TO VERY DENSE, BLACK TO BROWN WITH BLACK, <b>SANDY SILT</b> , LITTLE TO TRACE GRAVEL, LITTLE CLAY, MOIST TO WET (continued)			592.0	31																
MEDIUM DENSE, GRAY, <b>SANDY SILT</b> , LITTLE CLAY, WET			587.0	34	5	18	100	SS-11	-	0	4	45	38	13	NP	NP	NP	18	A-4a (3)	
VERY STIFF, GRAY, <b>SILT</b> , SOME CLAY, TRACE FINE SAND, MOIST			585.5	39	6	24	100	SS-12	2.0-2.5	0	0	1	65	34	30	20	10	22	A-4b (8)	
				40		7														
				EOB		9														

NOTES: GW ENCOUNTERED AT 28.5. NOT MEASURED ON COMPLETION.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .75 BAG BENTONITE GROUT; PUMPED .3 BAG CEMENT

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:32 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15-24\CUY-90-15-24 COMMERCIAL RD B070-77.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>15+53, 5.0 LT</u>	EXPLORATION ID: <u>B-072-0-09</u>
TYPE: <u>ROADWAY / CUT</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>EAST 9TH STREET</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>623.5 (MSL)</u> EOB: <u>20.0 ft.</u>	PAGE: <u>1 OF 1</u>
START: <u>7/13/09</u> END: <u>7/13/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>665647.626 N, 2191989.207 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
7" GRAVEL Contains concrete and coal fragments. (Fill)	623.5 622.9																	
VERY DENSE, BLACK, GRAVEL AND/OR STONE FRAGMENTS, WET	621.5	1	50/3"	-	100	SS-1	-	-	-	-	-	-	-	-	-	11	A-1-a (V)	
DENSE, BLACK, COARSE AND FINE SAND, LITTLE GRAVEL, TRACE CLAY, WET Contains concrete and coal fragments. (Fill)		2																
		3																
		4	28	30	92	100	SS-2	-	16	22	31	23	8	NP	NP	NP	15	A-3a (0)
		5																
		6	5															
	616.0	7	9	8	25	100	SS-3	-	-	-	-	-	-	-	-	18	A-3a (V)	
MEDIUM DENSE, BROWN, SANDY SILT, TRACE GRAVEL, DAMP TO MOIST		8																
		9	6	7	19	83	SS-4	-	3	12	39	32	14	NP	NP	NP	11	A-4a (2)
		10																
		11	5	7	21	100	SS-5	-	-	-	-	-	-	-	-	18	A-4a (V)	
	610.5	12																
VERY STIFF, BROWN, SILTY CLAY, TRACE SAND, MOIST		13																
		14	5	7	21	100	SS-6	2.5- 3.0	0	0	4	60	36	38	19	19	20	A-6b (12)
		15																
		16	10	12	39	100	SS-7	3.5- 4.0	-	-	-	-	-	-	-	-	18	A-6b (V)
		17																
		18																
		19	9	11	39	100	SS-8	3.5- 4.0	-	-	-	-	-	-	-	-	23	A-6b (V)
	603.5	20	15															

EOB

NOTES: NO GROUNDWATER ENCOUNTERED  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:32 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PID: 77332 BR ID: PROJECT: CUY-90-15.24 STATION / OFFSET: 18+45, 17.0 LT START: 7/15/09 END: 7/15/09 PG 2 OF 2 B-073-0-09

MATERIAL DESCRIPTION AND NOTES	ELEV. 642.3	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
DENSE, BROWN AND GRAY, COARSE AND FINE SAND, SOME SILT, TRACE CLAY, DAMP TO WET (continued)		31																
		32																
		33																
		34		13 14 16	45	72	SS-11	-	-	-	-	-	-	-	-	11	A-3a (V)	
		35																
		36																
		37																
		38																
		39		12 13 14	40	83	SS-12	-	0	1	65	28	6	NP	NP	NP	9	A-3a (0)
		40																
	41																	
	42																	
	43																	
	44		11 13 14	40	83	SS-13	-	0	0	77	20	3	NP	NP	NP	26	A-3a (0)	
	45																	
	46																	
	47																	
	48	623.8																
DENSE, GRAY, SILT, LITTLE CLAY, TRACE SAND, MOIST	622.3	49	12 15 17	48	67	SS-14	-	0	1	5	79	15	NP	NP	NP	17	A-4b (8)	
		50																

EOB

NOTES: NO GROUNDWATER ENCOUNTERED  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .75 BAG BENTONITE GROUT; SOIL CUTTINGS



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:35 - X\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PID: 77332 BR ID: PROJECT: CUY-90-15.24 STATION / OFFSET: 18+90, 72.0 LT START: 7/15/09 END: 7/15/09 PG 2 OF 2 B-073-1-09

MATERIAL DESCRIPTION AND NOTES	ELEV. 642.7	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
MEDIUM DENSE TO VERY DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE CLAY, TRACE GRAVEL, DAMP (continued)		31																
		32																
		33																
		34	14															
		35	24 29	79	100	SS-11	-	2	28	55	11	4	NP	NP	NP	7	A-3a (0)	
		36																
		37																
		38																
		39	16															
	632.7	40	23 29	77	100	SS-12	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
		EOB																

NOTES: NO GROUNDWATER ENCOUNTERED, ONE FALSE START DUE TO 4' OF CONCRETE RUBBLE- OFFSET BORING 10.0'  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:37 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15-24\CUY-90-15-24 COMMERCIAL RD B070-77.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>21+05, 23.0 RT</u>	EXPLORATION ID: <u>B-074-0-09</u>
TYPE: <u>ROADWAY / CUT</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>EAST 9TH STREET</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>670.9 (MSL)</u> EOB: <u>35.0 ft.</u>	PAGE: <u>1 OF 2</u>
START: <u>7/27/09</u> END: <u>7/27/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>665734.019 N, 2192534.048 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
3" GRAVEL MEDIUM DENSE TO LOOSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, TRACE CLAY, WET TO MOIST (Fill)	670.9	1	1																
		2	6	5	16	83	SS-1	-	7	26	45	17	5	NP	NP	NP	14	A-3a (0)	
		3																	
		4	3	2	7	78	SS-2	-	-	-	-	-	-	-	-	-	-	7	A-3a (V)
		5																	
LOOSE, BLACK TO BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT</b> , TRACE CLAY, MOIST (Fill)	665.4	6	2																
	663.4	7	4	5	13	83	SS-3	-	27	17	28	20	8	NP	NP	NP	15	A-2-4 (0)	
LOOSE TO MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, TRACE CLAY, DAMP (Fill) Few brick fragments 8.5' to 10.0'	665.4	8																	
		9	3	2	7	89	SS-4	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
		10																	
		11	2	5	16	67	SS-5	-	10	29	42	14	5	NP	NP	NP	9	A-3a (0)	
		12																	
MEDIUM DENSE, BROWN, <b>SANDY SILT</b> , LITTLE CLAY, DAMP	657.9	13																	
MEDIUM DENSE TO DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE TO TRACE SILT, TRACE CLAY, DAMP TO WET	655.4	14	3	6	7	19	83	SS-6	3.00	0	7	41	39	13	19	16	3	14	A-4a (3)
		15																	
		16	4	5	7	18	83	SS-7	-	-	-	-	-	-	-	-	-	8	A-3a (V)
		17																	
		18																	
		19	4	5	9	21	89	SS-8	-	-	-	-	-	-	-	-	-	6	A-3a (V)
		20																	
21																			
22																			
23																			
24	8	8	8	24	89	SS-9	-	0	1	88	8	3	NP	NP	NP	6	A-3a (0)		
25																			
26																			
27																			
28																			
29	9	11	12	34	89	SS-10	-	0	13	71	12	4	NP	NP	NP	7	A-3a (0)		





STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:40 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B07077.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>15+75, 42.0 LT</u>	EXPLORATION ID: <u>B-076-0-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>BROADWAY AVE.</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>674.7 (MSL)</u> EOB: <u>20.0 ft.</u>	PAGE: <u>1 OF 1</u>
START: <u>7/17/09</u> END: <u>7/17/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>665736.041 N, 2193743.040 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED	
								GR	CS	FS	SI	CL	LL	PL	PI				
DENSE TO LOOSE, BROWN, <b>SANDY SILT</b> , LITTLE TO TRACE GRAVEL, LITTLE CLAY, TRACE ORGANICS AT 3.5', DAMP TO MOIST (Fill)	674.7	1	7																
		2	13 15	42	100	SS-1	-	17	3	25	41	14	NP	NP	NP	10	A-4a (4)		
		3																	
		4	2 3	7	72	SS-2	-	3	8	43	31	15	NP	NP	NP	15	A-4a (2)		
		5																	
		6	7																
		666.2	7	5 5	15	72	SS-3	-	-	-	-	-	-	-	-	-	15	A-4a (V)	
MEDIUM DENSE, BROWN, <b>FINE SAND</b> , AND COARSE SAND, LITTLE GRAVEL, TRACE SILT, TRACE CLAY, DRY TO WET		9	7 9	28	83	SS-4	-	-	-	-	-	-	-	-	-	6	A-3 (V)		
		10																	
		11	8																
		12	9 8	25	83	SS-5	-	11	36	47	4	2	NP	NP	NP	3	A-3 (0)		
		13																	
		14	6 7	18	100	SS-6	-	-	-	-	-	-	-	-	-	15	A-3 (V)		
		656.7	15	5															
VERY STIFF TO HARD, BROWN AND GRAY, <b>SILT</b> , SOME CLAY, LITTLE FINE SAND, MOIST		16	7																
		17	8 8	24	100	SS-7	-	-	-	-	-	-	-	-	21	A-3 (V)			
		18																	
		654.7	19	8 13	43	89	SS-8	3.0 - 4.0+	0	0	12	62	26	26	19	7	19	A-4b (8)	
		20	16																

EOB

NOTES: NO GROUNDWATER ENCOUNTERED  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .25 BAG BENTONITE PELLETS; SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:40 - X\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>14+25, 39.0 LT</u>	EXPLORATION ID: <u>B-076-1-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>BROADWAY AVE.</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>673.0 (MSL)</u> EOB: <u>30.0 ft.</u>	PAGE: <u>1 OF 1</u>
START: <u>7/17/09</u> END: <u>7/17/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>665671.542 N, 2193875.566 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI	WC		
4" GRAVEL	673.0																	
STIFF, BROWN AND BLACK, <b>SANDY SILT</b> , LITTLE GRAVEL, LITTLE CLAY, TRACE ORGANICS, DAMP (Fill) Contains brick fragments	672.7	1	13															
		2	5	16	72	SS-1	-	16	23	14	31	16	28	23	5	16	A-4a (2)	
	669.5	3																
LOOSE, BROWN AND BLACK, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT</b> , LITTLE CLAY, FEW BRICK FRAGMENTS, DAMP (Fill)	667.0	4	4	7	78	SS-2	-	28	30	9	21	12	NP	NP	NP	13	A-2-4 (0)	
		5	2	3														
MEDIUM DENSE, BROWN, <b>SANDY SILT</b> , SOME CLAY, TRACE GRAVEL, WET TO MOIST	667.0	6	4	19	83	SS-3	-	-	-	-	-	-	-	-	-	19	A-4a (V)	
		7	4	9														
		8																
		9	8	30	78	SS-4	-	-	-	-	-	-	-	-	-	5	A-4a (V)	
		10	9	11														
		11																
		12	6	5	21	89	SS-5	-	9	13	26	31	21	NP	NP	NP	17	A-4a (3)
		13																
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , TRACE GRAVEL, TRACE SILT, TRACE CLAY, DAMP	658.0	14	7	25	83	SS-6	-	-	-	-	-	-	-	-	-	10	A-4a (V)	
		15																
		16	8	34	72	SS-7	-	9	39	41	8	3	NP	NP	NP	5	A-3a (0)	
	655.0	17	12	11														
MEDIUM DENSE, BROWN, <b>SANDY SILT</b> , LITTLE CLAY, TRACE GRAVEL, MOIST	652.0	18																
		19	5	22	78	SS-8	-	5	8	28	43	16	NP	NP	NP	16	A-4a (5)	
		20	6	9														
DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE SILT, TRACE GRAVEL, DAMP TO MOIST	648.0	21																
		22	7	33	100	SS-9	-	-	-	-	-	-	-	-	-	5	A-3a (V)	
		23																
		24	8	31	94	SS-10	-	-	-	-	-	-	-	-	-	9	A-3a (V)	
	648.0	25	10	11														
DENSE, BROWN, <b>SANDY SILT</b> , TRACE CLAY, WET	643.0	26																
		27																
		28																
		29	7	36	89	SS-11	-	0	5	47	40	8	NP	NP	NP	24	A-4a (3)	
	643.0	30	11	13														

EOB

NOTES: NO GROUNDWATER ENCOUNTERED

ABANDONMENT METHODS, MATERIALS, QUANTITIES: POURED .5 BAG BENTONITE PELLETS; SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:41 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>12+60, 55.0 LT</u>	EXPLORATION ID: <u>B-076-2-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>BROADWAY AVE.</u>	
PID: <u>77332</u> BR ID: <u></u>	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>669.8 (MSL)</u> EOB: <u>45.0 ft.</u>	PAGE: <u>1 OF 2</u>
START: <u>7/16/09</u> END: <u>7/16/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>665581.129 N, 2194013.022 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTH	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
4" GRAVEL MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , SOME GRAVEL, LITTLE SILT, TRACE CLAY, DAMP	669.8																	
	669.5	1	5															
		2	7 11	27	78	SS-1	-	23	25	37	10	5	NP	NP	NP	5	A-3a (0)	
		3																
		4	7 8	25	83	SS-2	-	-	-	-	-	-	-	-	-	4	A-3a (V)	
		5																
		6	7															
		7	7 9	24	83	SS-3	-	-	-	-	-	-	-	-	-	4	A-3a (V)	
		8																
		9	6 7	25	72	SS-4	-	-	-	-	-	-	-	-	-	7	A-3a (V)	
		10																
		11	5 6	24	72	SS-5	-	-	-	-	-	-	-	-	-	8	A-3a (V)	
		12																
		13	7															
		14	7 9	27	83	SS-6	-	-	-	-	-	-	-	-	-	5	A-3a (V)	
	15																	
MEDIUM DENSE, BROWN MOTTLED WITH RUST, <b>FINE SAND</b> , SOME COARSE SAND, TRACE SILT, TRACE CLAY, TRACE GRAVEL, DAMP TO MOIST	653.8	16	7															
		17	7 9	24	78	SS-7	-	2	35	55	6	2	NP	NP	NP	4	A-3 (0)	
		18																
		19	7 8	25	78	SS-8	-	-	-	-	-	-	-	-	-	5	A-3 (V)	
		20																
		21	5 6	21	94	SS-9	-	-	-	-	-	-	-	-	-	12	A-3 (V)	
		22																
MEDIUM DENSE, BROWN, <b>SILT</b> , SOME SAND, TRACE CLAY, WET	646.3	23	4															
		24	4 6	15	100	SS-10	-	0	1	25	65	9	NP	NP	NP	30	A-4b (8)	
		25																
		26																
		27																
		28																
		29	3 5	15	100	SS-11	1.50	0	0	12	59	29	24	17	7	25	A-4b (8)	

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:41 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PID: 77332 BR ID: PROJECT: CUY-90-15.24 STATION / OFFSET: 12+60, 55.0 LT START: 7/16/09 END: 7/16/09 PG 2 OF 2 B-076-2-09

MATERIAL DESCRIPTION AND NOTES	ELEV. 639.8	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
STIFF, BROWN, SILT, SOME CLAY, LITTLE FINE SAND, WET (continued)	637.8	31																
VERY DENSE, BROWN, SANDY SILT, TRACE CLAY, WET		32																
	629.3	33																
		34	18 22 25	70	100	SS-12	-	0	1	62	32	5	NP	NP	NP	18	A-4a (0)	
		35																
	624.8	36																
		37																
		38																
HARD, BROWN, SILT, SOME CLAY, TRACE FINE SAND, DAMP	624.8	39	16 17 18	52	100	SS-13	-	-	-	-	-	-	-	-	-	27	A-4a (V)	
		40																
	624.8	41																
		42																
		43																
	624.8	44	14 14 27	61	100	SS-14	4.50	0	0	6	72	22	26	21	5	17	A-4b (8)	
		45																

EOB

NOTES: GROUND WATER ENCOUNTERED AT 23.0', NO GROUND WATER ON COMPLETION, TERMINATED AT 45.0' PER ODOT.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .75 BAG BENTONITE GROUT

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:41 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>10+71, 53.0 LT</u>	EXPLORATION ID: <u>B-076-3-09</u>
TYPE: <u>RETAINING WALL</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>BROADWAY AVE.</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>667.0 (MSL)</u> EOB: <u>55.0 ft.</u>	PAGE: <u>1 OF 2</u>
START: <u>7/16/09</u> END: <u>7/16/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>665488.457 N, 2194176.553 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
<b>3" GRAVEL</b> DENSE TO LOOSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , TRACE CLAY, DAMP	667.0																	
	666.7	1	12															
		2	15 12	40	83	SS-1	-	19	34	35	8	4	NP	NP	NP	4	A-1-b (0)	
		3																
		4	5 7	24	94	SS-2	-	-	-	-	-	-	-	-	-	3	A-1-b (V)	
		5																
		6	6															
		7	8 12	30	94	SS-3	-	-	-	-	-	-	-	-	-	4	A-1-b (V)	
		8																
		9	5 7	24	100	SS-4	-	-	-	-	-	-	-	-	-	5	A-1-b (V)	
		10																
		11	5															
		12	4 4	12	94	SS-5	-	13	44	34	7	2	NP	NP	NP	4	A-1-b (0)	
		13																
	14	2 2	7	100	SS-6	-	-	-	-	-	-	-	-	-	7	A-1-b (V)		
	15																	
	16	5																
LOOSE, BROWN, <b>SANDY SILT</b> , LITTLE CLAY, TRACE GRAVEL, WET	651.0																	
	648.5	17	4 2	9	67	SS-7	-	1	2	53	34	10	NP	NP	NP	23	A-4a (2)	
MEDIUM DENSE, BROWN, <b>FINE SAND</b> , TRACE COARSE SAND, TRACE SILT, TRACE CLAY, TRACE GRAVEL, WET		18																
		19	5 4	18	100	SS-8	-	1	10	79	7	3	NP	NP	NP	15	A-3 (0)	
		20																
		21	5															
		22	5 6	16	94	SS-9	-	-	-	-	-	-	-	-	-	21	A-3 (V)	
		23																
		24	4 5	21	100	SS-10	-	-	-	-	-	-	-	-	-	21	A-3 (V)	
		25																
		26																
		27																
	28																	
DENSE, BROWN, <b>GRAVEL AND/OR STONE FRAGMENTS WITH SAND</b> , TRACE SILT, TRACE CLAY, WET	638.5																	
		29	8 11 14	37	100	SS-11	-	-	-	-	-	-	-	-	-	16	A-1-b (V)	



STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:41 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PID: 77332 BR ID: PROJECT: CUY-90-15.24 STATION / OFFSET: 10+71, 53.0 LT START: 7/16/09 END: 7/16/09 PG 2 OF 2 B-076-3-09

MATERIAL DESCRIPTION AND NOTES	ELEV. 637.0	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			WC	ODOT CLASS (GI)	HOLE SEALED
								GR	CS	FS	SI	CL	LL	PL	PI			
DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, TRACE SILT, TRACE CLAY, WET (continued)	630.0	31																
		32																
		33																
		34	10 12 15	40	100	SS-12	-	45	34	14	4	3	NP	NP	NP	14	A-1-b (0)	
DENSE, GRAY, SILT, LITTLE CLAY, TRACE FINE SAND, TRACE GRAVEL, WET	621.0	35																
		36																
		37																
		38																
		39	12 16 16	48	89	SS-13	-	1	0	2	79	18	NP	NP	NP	19	A-4b (8)	
		40																
STIFF, GRAY, SILT AND CLAY, TRACE FINE SAND, MOIST	612.0	41																
		42																
		43																
		44	12 13 13	39	100	SS-14	-	-	-	-	-	-	-	-	-	18	A-4b (V)	
		45																
		46																
		47																
48																		
49	5 6 7	19	100	SS-15	1.0- 2.0	0	0	1	64	35	33	20	13	24	A-6a (9)			
50																		
51																		
52																		
53																		
54	4 5 6	16	100	SS-15	1.75	-	-	-	-	-	-	-	-	24	A-6a (V)			
55																		

EOB

NOTES: GROUNDWATER ENCOUNTERED AT 20.0'. NOT MEASURED UPON COMPLETION, TERMINATED AT 55.0' PER ODOT.  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: PUMPED .75 BAG BENTONITE GROUT; PUMPED .50 BAG CEMENT; PLACED SOIL CUTTINGS

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT GDT - 10/23/09 15:43 - X:\ACTIVE PROJECTS\ACTIVE SOIL PROJECTS\CUY-90-15.24\CUY-90-15.24 COMMERCIAL RD B070-77.GPJ

PROJECT: <u>CUY-90-15.24</u>	DRILLING FIRM / OPERATOR: <u>B&amp;P / P.WEBB</u>	DRILL RIG: <u>MOBILE B61 TRUCK</u>	STATION / OFFSET: <u>12+66, 3.0 RT</u>	EXPLORATION ID: <u>B-077-0-09</u>
TYPE: <u>ROADWAY / CUT</u>	SAMPLING FIRM / LOGGER: <u>B&amp;P / R.WEBB</u>	HAMMER: <u>DIEDRICH AUTOMATIC</u>	ALIGNMENT: <u>EAST 14TH STREET</u>	
PID: <u>77332</u> BR ID: _____	DRILLING METHOD: <u>3.25" HSA</u>	CALIBRATION DATE: <u>10/5/07</u>	ELEVATION: <u>677.7 (MSL)</u> EOB: <u>10.0 ft.</u>	PAGE: <u>1 OF 1</u>
START: <u>7/16/09</u> END: <u>7/16/09</u>	SAMPLING METHOD: <u>SPT</u>	ENERGY RATIO (%): <u>89.4</u>	COORD: <u>666059.430 N, 2193757.613 E</u>	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N <sub>60</sub>	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG			ODOT CLASS (GI)	HOLE SEALED		
								GR	CS	FS	SI	CL	LL	PL	PI			WC	
8" TOPSOIL	677.7																		
MEDIUM DENSE, BROWN, <b>COARSE AND FINE SAND</b> , LITTLE GRAVEL, LITTLE TO TRACE CLAY, DAMP TO MOIST	677.1	1	5															<><><>	
trace organics at 1.0' to 5.0'		2	4	5	13	83	SS-1	-	11	23	32	17	17	20	14	6	6	A-3a (0)	<><><>
		3																<><><>	
		4	6	5	16	83	SS-2	-	18	30	39	8	5	NP	NP	NP	6	A-3a (0)	<><><>
		5																<><><>	
		6	4	3	10	83	SS-3	-	-	-	-	-	-	-	-	-	9	A-3a (V)	<><><>
		7																<><><>	
		8																<><><>	
		9	3	5	13	83	SS-4	-	-	-	-	-	-	-	-	-	9	A-3a (V)	<><><>
	667.7	10	4															<><><>	
		EOB																<><><>	

NOTES: NO GROUNDWATER ENCOUNTERED  
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: SOIL CUTTINGS



**LOG OF BORING NO. B-05-01**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 233.7'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 130+41.92    ELEVATION: 675.4  
NX Rock Core Barrel    91.59' Rt. of Centerline    DATE: 4/3/06 - 4/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
675.4	0					0.3 ASPHALT - 4 INCHES											
674.3			3/5/4			1.1 CONCRETE - 9 INCHES	1										Est. A-3a
	5		3/2/2			COARSE AND FINE SAND (FILL): Very-loose to loose brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay, contains few clayey silt pockets.	2										Est. A-3a
	10		2/2/2				3										Est. A-3a
	15		2/3/3				4	21	37	29	7	6			9		Est. A-3a
	20		2/3/5				5										Est. A-3a
653.4						22.0											
	25		4/6/7	3.0-4.5+		SILT: Very-stiff to hard brown silt, some clay, trace fine to coarse sand.	6	0	1	3	72	24	27	7	20		A-4b(8)
648.4						27.0											
	30		4/4/6			FINE SAND: Loose to medium-dense gray fine sand, trace coarse sand, trace silt, trace clay.	7										Est. A-3
	35		5/8/9				8	0	8	83	4	5	NP	NP	7		A-3(0)
638.4						37.0											
	40		3/3/4			SILT: Loose to medium-dense brown and gray silt, some fine sand, trace to little clay, contains few fine sand lenses.	9										Est. A-4b
	45		11/13/15				10										Est. A-4b
628.4						47.0											
	50		3/5/9	1.25-4.25		SILT: Medium-stiff to stiff gray silt, some to "and" clay, trace fine sand, contains few very-stiff to hard zones.	11										Est. A-4b

WATER LEVEL: 38.5    21.0    25.5  
WATER NOTE: Encountered    After HSA Removed - Prior to Washbore    Inside Casing - Prior to Washbore  
DATE: 4/3/06    4/3/06    4/4/06

PLATE 2



**LOG OF BORING NO. B-05-01**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 233.7'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 130+41.92    ELEVATION: 675.4  
NX Rock Core Barrel    91.59' Rt. of Centerline    DATE: 4/3/06 - 4/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
	50					++++ SILT: Medium-stiff to stiff gray silt, some to "and" clay, trace fine sand, contains few very-stiff to hard zones.											
	55		6/4/6	0.75-2.0		++++	12										Est. A-4b
			P	1.5-2.5		++++	13	0	0	2	67	31	28	8	22		A-4b(8)
			P	1.25-1.5		++++	14										Est. A-4b
	60		2/4/5	0.75-2.0		++++	15										Est. A-4b
						++++											
	65		3/6/5	1.0-2.5		++++	16										Est. A-4b
			2/3/4	1.0-1.75		++++	17										Est. A-4b
			2/2/4	0.75-1.25		++++	18	0	0	3	57	40	29	8	24		A-4b(8)
605.9			3/6/7	1.5-2.5		++++	19										Est. A-4b
	70		6/9/13	2.75-4.5+		++++	20										Est. A-6a
			4/7/13	4.0-4.5+		++++	21										Est. A-6a
			7/10/14	4.0-4.5+		++++	22										Est. A-6a
	75		6/12/18	4.5+		++++	23										Est. A-6a
						++++											
	80		8/11/14	2.25-4.5+		++++	24										Est. A-6a
						++++											
	85		4/8/11	2.0-3.0		++++	25	0	0	0	48	52	32	11	21		A-6a(8)
						++++											
	90		9/10/14	2.0-3.25		++++	26										Est. A-6a
584.4						++++											
	95		P	1.25-1.5		++++	27										Est. A-6a
			P	1.25		++++	28										Est. A-6a
						++++											
	100		3/4/6	0.5-1.25		++++	29	1	0	1	28	70	38	14	28		A-6a(10)

WATER LEVEL:  $\nabla$  38.5     $\nabla$  21.0     $\nabla$  25.5     $\nabla$  \_\_\_\_\_  
WATER NOTE: Encountered    After HSA Removed - Prior to Washbore    Inside Casing - Prior to Washbore    \_\_\_\_\_  
DATE: 4/3/06    4/3/06    4/4/06    \_\_\_\_\_

PLATE 3



**LOG OF BORING NO. B-05-01**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 233.7'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 130+41.92    ELEVATION: 675.4  
NX Rock Core Barrel    91.59' Rt. of Centerline    DATE: 4/3/06 - 4/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class					
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC			
	100																		
	105	█	4/6/8	1.75-2.5		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few to many fine sand and silt seams, and few medium-stiff zones.	30											Est. A-6a	
	110	█	6/9/13	2.0-2.75			31												Est. A-6a
	115	█	6/8/9	2.25-3.0			32												Est. A-6a
558.4						117.0													
	120	█	5/8/12	1.25-2.5	+++++	SILT: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel.	33	0	0	1	53	46	29	9	23			A-4b(8)	
	125	█	8/11/12	1.75-3.75	+++++		34												Est. A-4b
	130	█	11/13/17	2.25-3.75	+++++		35												Est. A-4b
	135	█	5/8/10	1.75-3.0	+++++		36	1	1	2	54	42	28	9	23				A-4b(8)
538.4						137.0													
	140	█	8/13/21	3.0-3.5	//////	SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt seams, pockets and lenses, and few medium-stiff zones.	37												Est. A-6a
	145	█	7/11/16	2.5-3.75	//////		38												Est. A-6a
	150	█	8/12/16	2.0-3.5	//////		39	1	2	4	33	60	34	13	21			A-6a(9)	

WATER LEVEL: ▽ 38.5    ▽ 21.0    ▽ 25.5    ▽  
WATER NOTE: Encountered    After HSA Removed - Prior to Washbore    Inside Casing - Prior to Washbore  
DATE: 4/3/06    4/3/06    4/4/06

PLATE 4



**LOG OF BORING NO. B-05-01**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 233.7'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 130+41.92    ELEVATION: 675.4  
NX Rock Core Barrel    91.59' Rt. of Centerline    DATE: 4/3/06 - 4/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
150						SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt seams, pockets and lenses, and few medium-stiff zones.													
155		6/9/12	1.75-2.75				40												Est. A-6a
160		6/8/11	1.75-2.5				41												Est. A-6a
165		7/9/12	0.75-2.5				42	1	2	3	33	61	32	13	22				A-6a(9)
170		8/9/13	1.75-2.5				43												Est. A-6a
175		7/11/15	2.0-3.75				44												Est. A-6a
180		5/9/12	1.75-2.75				45	0	0	1	31	68	37	15	24				A-6a(10)
185		4/7/8	0.5-1.75				46												Est. A-6a
190		5/6/7	0.5-1.75				47												Est. A-6a
483.4							192.0												
195		15/16/17				COARSE AND FINE SAND: Dense gray fine to coarse sand, some fine gravel, little silt, little clay.	48	22	31	14	20	13					13	Est. A-3a	
478.4						197.0													
200		15/28/45	2.0-4.25				49											Est. A-4a	

WATER LEVEL: 38.5    21.0    25.5  
WATER NOTE: Encountered    After HSA Removed - Prior to Washbore    Inside Casing - Prior to Washbore  
DATE: 4/3/06    4/3/06    4/4/06

PLATE 5



**LOG OF BORING NO. B-05-01**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 233.7'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 130+41.92    ELEVATION: 675.4  
NX Rock Core Barrel    91.59' Rt. of Centerline    DATE: 4/3/06 - 4/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
468.4	200-205		11/17/20	2.75-4.5+		SANDY SILT: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand, contains few silt pockets and shale fragments.	50	0	1	2	34	63	32	10	26	A-4a(8)
	210		5/7/9	0.75-2.25		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt lenses, and few medium-stiff zones.	51	1	1	2	21	75	35	11	25	A-6a(8)
458.9	215		7/10/25	1.5-2.5			52									Est. A-6a
455.4	220		23/38/50-5"R	4.5+		SANDY SILT: Hard gray silt, some clay, little fine to coarse sand, little fine to coarse gravel, contains shale fragments.	53	19	12	8	33	28	25	7	10	A-4a(5)
451.7	225		50-1.5"R			SHALE: Very-soft gray shale, fragmented.	54									Visual
	230		63%		5.0/0.0	SHALE: Soft to medium-hard dark gray and gray shale, nearly horizontally bedded, few horizontal fractures from 223.7' to 228.7', many horizontal and few vertical fractures from 229.3' to 230.7', contains diagonal fractures from 224.7' to 225.2' with a fracture angle of ranging between 20 and 25 degrees, and at 227.0' with a fracture angle of ranging between 15 and 20 degrees, contains few silty clay seams at 226.7' and 230.2', arenaceous.	55									Visual
441.7	235		67%		4.7/0.3	SHALE: Soft to medium-hard dark gray and gray shale, nearly horizontally bedded, few horizontal fractures from 223.7' to 228.7', many horizontal and few vertical fractures from 229.3' to 230.7', contains diagonal fractures from 224.7' to 225.2' with a fracture angle of ranging between 20 and 25 degrees, and at 227.0' with a fracture angle of ranging between 15 and 20 degrees, contains few silty clay seams at 226.7' and 230.2', arenaceous.	56									Visual
	240					- Qu=1477 psi at 229.0'. <b>NOTES:</b> - Encountered water at 38.5'. - Water added to borehole at 40.0' to facilitate drilling. - Switched to washbore at 57.0'. - Base of inclinometer installed at an approximate depth of 231'. - Two vibrating wire piezometers installed in an offset hole between 5/23/06 and 5/26/06. Transducers were installed at approximate depths of 65' and 95'. The piezometer offset hole was backfilled with grout.										

WATER LEVEL: ▽ 38.5  
 WATER NOTE: Encountered    After HSA Removed - Prior to Washbore    Inside Casing - Prior to Washbore  
 DATE: 4/3/06    4/3/06    4/4/06

PLATE 6



**LOG OF BORING NO. B-05-02**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 178.5'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 132+38.69    ELEVATION: 617.9  
NX Rock Core Barrel    132.15' Rt. of Centerline    DATE: 4/10/06 - 4/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
617.7	0					0.2' TOPSOIL/ROOTMAT - 2 INCHES												
	5	15/23/38				COARSE AND FINE SAND (FILL): Very-dense becoming medium-dense gray becoming brown fine to coarse sand, little silt, little clay, trace fine gravel, contains few slag and wood fragments.	1											Est. A-3a
	10	12/15/13			2		10	31	25	20	14	NP	NP	11				A-3a(0)
	15	7/10/9			3													Est. A-3a
	19.0	3/5/6			4													Est. A-3a
598.9	20					SANDY SILT: Loose gray and brown fine sand, "and" silt, little clay, contains few interbedded silty clay seams.	5											Est. A-4a
594.9	23.0	3/4/4				SILT: Stiff to very-stiff gray mottled with red silt, "and" clay, trace fine sand.	6	0	0	46	39	15	NP	NP	23			Est. A-4a(0)
	25	3/4/3	1.0-2.0		7		0	0	1	54	45	30	9	22				Est. A-4b
590.4	27.5	2/2/3	1.5-2.5		8		0	0	1	54	45	30	9	22				A-4b(8)
	30	2/3/5	1.0-2.25		9		0	0	0	51	49	32	12	21				Est. A-4b
585.4	32.5	2/5/8	3.0-4.0			SILT AND CLAY: Very-stiff to hard gray silt, "and" clay, contains many silt pockets and lenses.	10	0	0	0	51	49	32	12	21			A-6a(9)
580.4	35					SILT: Hard gray silt, "and" clay, trace fine to coarse sand.	11	0	1	2	60	37	28	9	18			A-4b(8)
576.4	37.5	5/7/10	4.5+		12		0	1	2	60	37	28	9	18				A-4b(8)
	40					SILT: Very-stiff to hard gray mottled with red silt, "and" clay, trace fine sand, boulder encountered at 37.5'.	13											Est. A-4b
	41.5	4/11/10	2.0-4.0		14													Est. A-4b
	45					CLAY: Medium-stiff to stiff gray clay, some silt, trace fine sand, contains many interbedded silt seams, and few very-stiff zones.	15	0	0	1	21	78	42	18	28			A-7-6(12)
	48.0	4/4/6	0.5-2.0		16		0	0	1	21	78	42	18	28				Est. A-7-6
569.9		P	0.5-0.75															Est. A-7-6
	50																	Est. A-4b

WATER LEVEL: ▽ "Dry"    ▽    ▽    ▽  
WATER NOTE: Inside HSA - Prior to Washbore  
DATE: 4/10/06

PLATE 7





**LOG OF BORING NO. B-05-02**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 178.5'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 132+38.69    ELEVATION: 617.9  
NX Rock Core Barrel    132.15' Rt. of Centerline    DATE: 4/10/06 - 4/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	50					++++												
	55		3/5/5	1.25-2.25		++++ SILT: Stiff to very-stiff becoming very-stiff to hard gray silt, "and" clay, trace fine sand, contains many interbedded silty clay seams, lenses and pockets.	17	0	0	2	51	47	30	10	24		A-4b(8)	
	60		4/7/8	1.25-3.0		++++	18										Est. A-4b	
	65		6/9/10	2.5-4.25		++++	19	0	0	3	56	41	28	9	22		A-4b(8)	
	70		6/11/14	3.0-4.5+		++++	20										Est. A-4b	
545.4	75		6/9/10	2.5-4.0		72.5 ++++ SANDY SILT: Stiff to very-stiff gray clay, "and" silt, trace fine sand, contains few to many interbedded silt seams, contains few medium-stiff zones.	21											Est. A-4a
	80		4/7/9	0.5-2.5		++++	22	0	0	2	47	51	29	10	24		A-4a(8)	
	85		5/8/11	1.5-3.75		++++	23										Est. A-4a	
530.9	90		4/8/11	1.0-2.0		87.0 ++++ SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains few silt pockets.	24											Est. A-6a
	95		5/7/9	1.25-2.0		++++	25	1	2	3	35	59	34	12	22		A-6a(9)	
	100		5/8/9	0.75-2.0		++++	26										Est. A-6a	

WATER LEVEL: ▽ "Dry"    ▽    ▽    ▽  
WATER NOTE: Inside HSA - Prior to Washbore  
DATE: 4/10/06

PLATE 8



**LOG OF BORING NO. B-05-02**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 178.5'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 132+38.69    ELEVATION: 617.9  
NX Rock Core Barrel    132.15' Rt. of Centerline    DATE: 4/10/06 - 4/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
510.4	100-105	5/9/10	1.0-2.0			SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains few silt pockets.	27										Est. A-6a
	105-110	5/8/10	1.5-2.25			SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel.	28										Est. A-6a
	110-115	5/8/11	1.0-2.5				29	1	2	3	34	60	33	13	22		A-6a(9)
	115-120	7/8/12	2.0-2.5				30										Est. A-6a
	120-125	6/9/10	1.0-2.5				31										Est. A-6a
	125-130	P	1.5-2.0				32						30	11			Est. A-6a
489.9	130-135	P	2.0-2.5				33										Est. A-6a
	135-140	6/9/14	1.75-3.25				34										Est. A-6a
485.4	140-145	7/9/8				SILT: Medium-dense gray silt, trace fine sand, contains few fine sand seams and lenses.	35						NP	NP			Est. A-4b
	145-150	14/14/14				COARSE AND FINE SAND: Medium-dense gray coarse sand, little fine gravel, trace fine sand, trace silt, trace clay, boulder encountered at 137.5'.	36	12	64	5	9	10				16	Est. A-3a
478.9	150-155	30/18/22	2.75-4.5+			SILTY CLAY: Very-stiff to hard gray silty clay, trace fine to coarse sand, trace fine gravel, contains few silt pockets.	37A 37B										Est. A-3a Est. A-6b
470.9	155-160	18/34/40	4.5+				38	2	3	5	32	58	34	16	17		A-6b(10)
	160-165	9/11/14	2.5-3.25				39										Est. A-6a

PLATE 9

WATER LEVEL: ▽ "Dry"    ▽    ▽    ▽  
WATER NOTE: Inside HSA - Prior to Washbore  
DATE: 4/10/06



**LOG OF BORING NO. B-05-02**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 178.5'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 132+38.69    ELEVATION: 617.9  
NX Rock Core Barrel    132.15' Rt. of Centerline    DATE: 4/10/06 - 4/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
	150																	
	155		8/12/13	2.0-3.5		SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains few silt pockets, seams and lenses.	40											Est. A-6a
	160		7/9/11	1.25-2.5			41	2	1	2	27	68	36	14	25			A-6a(10)
453.9	165		10/50-4"R	1.25-2.0		SHALE: Very-soft gray shale, fragmented.	42A 42B											Est. A-6a Visual
449.4	170			0%	4.7/0.3	SHALE: Very-soft to soft gray shale, nearly horizontally bedded, many horizontal and few vertical fractures, contains many interbedded silty clay and few arenaceous siltstone layers.	43						27	8				Visual
	175			0%	4.5/0.5		44											Visual
439.4	180																	
	185																	
	190																	
	195																	
	200																	

**NOTES:**  
- Encountered seepage at 20.0'.  
- Encountered a boulder at 37.5' and 137.5'.  
- Switched to washbore at 41.5'.  
- Base of inclinometer installed at an approximate depth of 176'.  
- Two vibrating wire piezometers installed in an offset hole between 5/18/06 and 5/22/06. Transducers were installed at approximate depths of 46' and 122'. The piezometer offset hole was backfilled with grout.  
- Constant 2' to 3' eruption of water/gas above the ground surface at the CPT location for approximately 2 hours have occasional 10' to 15' spurts. In addition, a constant spurting of water/gas occurred from a nearby 30' open boring cased with 2.25" hollow stem auger.

WATER LEVEL: ▽ "Dry"    ▽    ▽    ▽  
WATER NOTE: Inside HSA - Prior to Washbore  
DATE: 4/10/06

PLATE 10



**LOG OF BORING NO. B-05-03**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NX Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 133+30.45  
380.00' Rt. of Centerline

COMPLETION DEPTH: 172.0'  
ELEVATION: 605.1  
DATE: 4/3/06 - 4/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
604.8	0		7/7/6			0.3' TOPSOIL - 4 INCHES	1										Est. A-1-b
	5		2/2/3			GRAVEL WITH SAND (FILL): Loose to medium-dense dark brown and black fine to coarse sand, some to "and" fine to coarse gravel, little silt, trace to little clay, contains few coal and concrete fragments.	2										Est. A-1-b
597.1	10		1/1/1			COARSE AND FINE SAND: Very-loose to loose brown fine sand, little coarse sand, some silt, little clay.	3										Est. A-3a
591.2	15		2/2/4			SILT: Loose gray silt, "and" fine sand, little clay, contains few silty clay lenses.	4A 4B										Est. A-3a Est. A-4b
587.6	20		2/2/4	1.0-1.75		SILT AND CLAY: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains few interbedded silt seams.	5	0	0	1	53	46	30	11	23		A-6a(8)
582.6	25		1-18" 2	0.0-1.75		SILT: Very-soft to soft gray silt, "and" clay, trace fine sand, contains few silt pockets and seams, and few medium-stiff to stiff zones.	6	1	1	1	56	41	27	7	22		A-4b(8)
574.1	30		SD SD	0.0-0.5		SILT: Very-soft to soft gray silty clay, trace fine to coarse sand, contains few silt seams.	7						24	7			Est. A-4b
	35		P	0.0-0.5		SILT AND CLAY: Medium-stiff to stiff gray silty clay, trace fine to coarse sand, contains few silt seams.	8						35	16			Est. A-6b
569.1	40		P	0.0-0.5		SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, trace fine sand, contains few silt seams.	9						39	15	28		Est. A-6b
567.1	45		4/4/5	0.75-1.75		SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, trace fine sand, contains few silt seams.	10	0	0	2	25	73	39	15	28		A-6a(10)
	50		3/3/3	0.5-0.75		SILTY CLAY: Soft to medium-stiff gray silty clay, trace fine to coarse sand, contains few silt seams.	11	0	1	1	26	72	40	16	29		A-6b(10)
562.6	50		4/6/9	2.25-3.75		SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine sand, contains few silt seams and lenses.	12										Est. A-6a
			4/4/6	1.25-2.25			13										Est. A-6a

WATER LEVEL: 13.0  
WATER NOTE: Encountered  
DATE: 4/4/06

PLATE II



**LOG OF BORING NO. B-05-03**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 172.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+30.45    ELEVATION: 605.1  
NX Rock Core Barrel    380.00' Rt. of Centerline    DATE: 4/3/06 - 4/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
549.1	50-55	█	4/6/6	1.5-2.25		SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine sand, contains few silt seams and lenses.	14	0	0	1	48	51	32	12	23	A-6a(9)	
	56.0																
	60	█	5/8/10	2.0-4.5+		SANDY SILT: Stiff to hard gray clay, "and" silt, trace fine sand, contains few silt seams and pockets.	15										Est. A-4a
	65	█	5/9/11	2.0-3.5			16										Est. A-4a
	70	█	4/4/6	1.5-2.75			17	0	0	1	42	57	30	9	25		A-4a(8)
532.6	72.5																
	75	█	5/9/14	2.5-4.5+		SANDY SILT: Very-stiff to hard gray mottled with red silt, "and" clay, little fine to coarse sand, trace fine gravel, contains few silt seams and lenses.	18	3	7	12	41	37	23	7	15		A-4a(8)
527.6	77.5																
	80	█	5/7/9	2.0-2.5		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, contains few silt seams.	19										Est. A-6a
	85	█	4/6/10	1.25-2.25			20										Est. A-6a
	90	█	4/6/9	1.25-2.75			21	0	1	1	24	74	39	15	27		A-6a(10)
	95	█	7/9/11	2.0-3.25			22										Est. A-6a
	100	█	6/7/9	1.75-3.0			23										Est. A-6a

WATER LEVEL: ▽ 13.0 ▽ ▽ ▽ ▽  
WATER NOTE: Encountered  
DATE: 4/4/06

PLATE 12



**LOG OF BORING NO. B-05-03**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 172.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+30.45    ELEVATION: 605.1  
NX Rock Core Barrel    380.00' Rt. of Centerline    DATE: 4/3/06 - 4/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
502.6	100																	
	105	8/11/13	2.0-2.25			SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel.	24											Est. A-6a
	110	6/9/11	2.0-3.75				25	2	1	2	34	61	36	13	24			A-6a(9)
	115	5/6/8 5/5/7 5/5/6 P P	1.5-2.5 1.25-2.25 0.75-1.5 1.5-2.0 1.25-1.5				26 27 28 29 30											Est. A-6a Est. A-6a A-6a(10) Est. A-6a Est. A-6a
490.1	120																	
481.3	125	5/9/14	0.0-1.25				31A 31B 31C						NP	NP				Est. A-6a Est. A-4b Est. A-3a
480.6	130	9/11/12				SILT: Medium-dense gray silt, trace fine sand, contains many silty clay seams. COARSE AND FINE SAND: Medium-dense gray fine to coarse sand, little silt, little clay, trace fine gravel.	32	6	35	34	11	14			16			Est. A-3a
472.6	135	8/11/14	2.5-4.0			SANDY SILT: Very-stiff to hard gray clay, some silt, contains few interbedded silt seams.	33	0	0	0	35	65	31	9	23			A-4a(8)
467.6	140	14/16/15				COARSE AND FINE SAND: Medium-dense to dense gray fine to coarse sand, little silt, little clay, trace fine gravel.	34											Est. A-3a
	145	11/15/15					35	4	36	37	12	11			19			Est. A-3a
457.6	150	14/16/17				GRAVEL WITH SAND: Dense gray fine to coarse sand, some fine gravel, trace silt, trace clay.	36	26	41	14	10	9			14			Est. A-1-b

PLATE 13

WATER LEVEL: 13.0  
WATER NOTE: Encountered  
DATE: 4/4/06



**LOG OF BORING NO. B-05-03**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 172.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+30.45    ELEVATION: 605.1  
NX Rock Core Barrel    380.00' Rt. of Centerline    DATE: 4/3/06 - 4/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
448.1	150		12/14/19			GRAVEL WITH SAND: Dense gray fine to coarse sand, some fine gravel, trace silt, trace clay.	37									Est. A-1-b
446.2	155		28/50-3"R	4.5+		SILT AND CLAY: Hard gray silt, "and" clay, some fine to coarse sand, some fine gravel, contains many siltstone and shale fragments.	38A									Est. A-6a
443.1	160					SHALE: Very-soft gray shale, similar to hard silty clay.	38B									Visual
	165		27%		4.8/0.2	SHALE: Very-soft to soft gray and dark gray shale, nearly horizontally bedded, many horizontal and few vertical fractures, contains many interbedded silty clay seams from 162.7' to 163.0' and from 168.1' to 168.3'.	39									Visual
433.1	170		35%		4.4/0.6	- Qu=1311 psi at 165.5'.	40									Visual
	175					<b>NOTES:</b> - Encountered seepage at 8.0'. - Encountered water at 13.0'. - Switched to washbore at 37.0'. - Base of inclinometer installed to an approximate depth of 170'. - Two vibrating wire piezometers installed in an offset hole between 5/12/06 and 5/16/06. Transducers were installed at approximate depths of 32' and 112'. The piezometer offset hole was backfilled with grout.										

WATER LEVEL: 13.0  
 WATER NOTE: Encountered  
 DATE: 4/4/06

PLATE 14



**LOG OF BORING NO. B-05-04**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 174.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+51.67    ELEVATION: 600.8  
NX Rock Core Barrel    242.09' Rt. of Centerline    DATE: 3/24/06 - 3/30/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	0		4/5/4			COARSE AND FINE SAND (FILL): Loose to medium-dense brown fine to coarse sand, little fine gravel, some silt, little clay, contains few slag fragments.	1										Est. A-3a	
	5		4/6/5				2											Est. A-3a
	10		6/9/8				3											Est. A-3a
587.3	13.5		6/9/11				4	16	23	27	22	12	NP	NP	12			A-3a(0)
	15		6/8/10				5											Est. A-3a
584.3	16.5		3/3/4			COARSE AND FINE SAND (FILL): Loose gray fine to coarse sand, some to "and" fine to coarse gravel.	6											Est. A-3a
582.8	18.0		5/5/4				7A											Est. A-3a
	20		2/3/2			COARSE AND FINE SAND (POSSIBLE FILL): Loose brown fine to coarse sand, trace silt.	7B											Est. A-3a
	23.0		3/3/3				8	1	8	34	45	12				23		Est. A-4b
577.8	25		2/2/3	1.0-2.0		SILT: Loose brown silt, little clay, some fine sand, trace coarse sand, trace fine gravel.	9											Est. A-4b
	28.0		3/4/5	1.0-1.75			10											Est. A-6b
572.8	30		2/3/3	0.25-1.0		SILTY CLAY: Stiff gray silty clay, trace fine to coarse sand, trace fine gravel, contains few silt lenses and pockets.	11	1	1	4	25	69	40	18	25			A-6b(11)
	35.5		1/2/3	0.25-1.0			12											Est. A-6a
	35		1/2/2	0.5-1.0		SILT AND CLAY: Soft to medium stiff gray clay, some silt, trace fine to coarse sand, contains many silt lenses and pockets.	13											Est. A-6a
565.3	40		2/3/4	0.5-1.25			14	0	1	1	23	75	40	15	30			A-6a(10)
	45		2/3/4	1.5-2.5		SANDY SILT: Stiff to very-stiff gray clay, "and" silt, trace fine sand, contains few silt lenses and seams, and few medium-stiff zones.	15	0	0	2	46	52	31	10	24			A-4a(8)
	50		5/5/6	1.5-2.75			16											Est. A-4a
			3/3/5	1.5-3.0			17										Est. A-4a	
			3/4/6	1.5-3.0			18										Est. A-4a	
			P				19	0	0	2	47	51	30	10	23			A-4a(8)
							20											Est. A-4a

WATER LEVEL: ▽ 18.5    ▽ "Dry"    ▽  
WATER NOTE: Encountered    Inside HSA - Prior to Washbore  
DATE: 3/27/06    3/24/06

PLATE 15





**LOG OF BORING NO. B-05-04**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 174.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+51.67    ELEVATION: 600.8  
NX Rock Core Barrel    242.09' Rt. of Centerline    DATE: 3/24/06 - 3/30/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
547.8	50		P	2.0			21										Est. A-4a
	55		3/4/5	1.75-3.5		SILT: Stiff to very-stiff gray silt, "and" clay, trace fine sand.	22										Est. A-4b
	60		4/4/4	1.25-3.0			23	0	0	2	61	37	28	8	25		A-4b(8)
	65		4/5/6	1.25-2.5			24										Est. A-4b
533.8	70		P	1.75-2.0		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel.	25	2	4	6	33	55	31	12	20		A-6a(9)
	75		P	1.5-1.75			26	2	3	6	31	58	32	13	20		A-6a(9)
			P	1.75-2.0			27										Est. A-6a
523.8			P	1.5-2.0			28										Est. A-6a
	80		4/6/8	1.25-2.0		SILTY CLAY: Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, contains few silt lenses.	29										Est. A-6b
	85		4/6/7	1.5-1.75			30	2	1	3	31	63	35	16	22		A-6b(10)
	90		5/6/8	1.25-2.25			31										Est. A-6b
	95		6/9/12	1.5-3.5			32										Est. A-6b
503.3			5/8/10	1.5-2.5			33										Est. A-6a

PLATE 16

WATER LEVEL: ▽ 18.5    ▽ "Dry"    ▽    ▽  
WATER NOTE: Encountered    Inside HSA - Prior to Washbore    \_\_\_\_\_  
DATE: 3/27/06    3/24/06    \_\_\_\_\_



**LOG OF BORING NO. B-05-04**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 174.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+51.67    ELEVATION: 600.8  
NX Rock Core Barrel    242.09' Rt. of Centerline    DATE: 3/24/06 - 3/30/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	100																	
	105		5/7/9	1.25-2.25		SILT AND CLAY: Very-stiff becoming medium-stiff gray clay, little silt, trace fine to coarse sand, contains few silt pockets.	34											Est. A-6a
	110		3/4/5	0.5-1.25			35	0	1	1	19	79	38	15	31			A-6a(10)
	115		4/5/6	0.5-1.25			36											Est. A-6a
483.8						117.0												
481.8			P			119.0												
	120		11/11/13			SILT: Loose to medium-dense (est.) gray silt, little clay, some fine sand, trace to little fine gravel, contains many silty clay seams.	37											Est. A-4b
			11/11/14				38											Est. A-1-b
						GRAVEL WITH SAND: Medium-dense to dense gray fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay, contains silt seam from 120.3' to 120.5'.	39											Est. A-1-b
	125		16/16/21				40	42	31	11	7	9	20	4	11			A-1-b(0)
473.3						127.5												
	130		10/20/30	3.75-4.5+		SILT AND CLAY: Very-stiff to hard gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt and fine sand lenses.	41	3	3	5	24	65	33	12	19			A-6a(9)
468.3						132.5												
	135		14/13/18			GRAVEL WITH SAND: Dense gray fine to coarse sand, little fine to coarse gravel, trace silt, trace clay.	42											Est. A-1-b
	140		14/17/20				43											Est. A-1-b
	145		12/14/18				44	15	45	22	8	10	NP	NP	16			A-1-b(0)
	150		22/18/18				45											Est. A-1-b

PLATE 17

WATER LEVEL: ▽ 18.5    ▽ "Dry"    ▽  
WATER NOTE: Encountered    Inside HSA - Prior to Washbore  
DATE: 3/27/06    3/24/06

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 174.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+51.67    ELEVATION: 600.8  
NX Rock Core Barrel    242.09' Rt. of Centerline    DATE: 3/24/06 - 3/30/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
448.8	150					152.0												
446.9			24/34/50			153.9	46A											Est. A-4b
	-155						46B											Est. A-1-b
443.3						157.5												
			50-4"R				47											Visual
	-160																	
436.8			50-4"R			164.0	48											Visual
435.7	-165		100%		1.1/0.0	165.1	49											Visual
			64%		3.8/0.1		50											Visual
	-170																	
			50%		5.0/0.0													Visual
426.8						174.0												
	-175																	
	-180																	
	-185																	
	-190																	
	-195																	
	-200																	

**NOTES:**  
- Encountered seepage at 12.0' and 16.5'.  
- Encountered water at 18.5'.  
- Switched to washbore at 41.0'.  
- Base of inclinometer installed at an approximate depth of 172'.  
- Two vibrating wire piezometers installed in an offset hole between 5/16/06 and 5/17/06. Transducers were installed at approximate depths of 59' and 119'. The piezometer offset hole was backfilled with grout.

WATER LEVEL: ▽ 18.5    ▽ "Dry"    ▽  
WATER NOTE: Encountered    Inside HSA - Prior to Washbore  
DATE: 3/27/06    3/24/06

PLATE 18



**LOG OF BORING NO. B-05-07**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 127+43.46  
206.83' Lt. of Centerline

COMPLETION DEPTH: 229.0'  
ELEVATION: 678.9  
DATE: 4/18/06 - 4/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
678.4	0					0.5' GRANULAR BASE - 6 INCHES											
675.4			4/4/4			3.5' COARSE AND FINE SAND (FILL): Loose brown fine to coarse sand, little silt, little clay, contains few clayey silt seams.	1										Est. A-3a
	5		3/3/2			GRAVEL WITH SAND (FILL): Very-loose becoming medium-dense brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay, contains few slag and brick fragments.	2										Est. A-1-b
	10		5/3/3				3										Est. A-1-b
	15		2/2/2				4	34	36	21	9				7		Est. A-1-b
	20		6/8/9				5										Est. A-1-b
656.9						22.0											
	25		5/7/8			FINE SAND: Medium-dense brown fine sand, little coarse sand, trace fine gravel, trace silt, trace clay.	6	1	16	77	6				4		Est. A-3
	30		7/10/12				7	0	17	75	3	5	NP	NP	4		A-3(0)
	35		8/9/11				8										Est. A-3
641.9						37.0											
	40		4/4/5			COARSE AND FINE SAND: Loose becoming very-dense brown and gray fine sand, trace silt, trace clay.	9	0	0	83	10	7	NP	NP	25		A-3a(0)
	45		8/10/8				10								21		Est. A-3a
	50		16/31/25				11										Est. A-3a

PLATE 19

WATER LEVEL: ▽ 38.5 ▽ ▽ ▽ ▽  
WATER NOTE: Encountered  
DATE: 4/18/06



**LOG OF BORING NO. B-05-07**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 229.0'  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 127+43.46    ELEVATION: 678.9  
NQ Rock Core Barrel    206.83' Lt. of Centerline    DATE: 4/18/06 - 4/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
626.9	50					52.0 SANDY SILT: Dense brown and gray fine sand, "and" silt, trace coarse sand, trace clay, contains few silty clay seams.	12	0	1	54	38	7	NP	NP	23	A-4a(0)
621.9	55	8/14/24				57.0 SILT: Medium-dense gray silt, little clay, trace fine to coarse sand, trace fine gravel, contains few silty clay lenses.	13	1	1	1	83	14	NP	NP	20	A-4b(0)
616.9	60	8/12/17				62.0 SILT: Stiff to very-stiff gray mottled with red silt, "and" clay, trace fine to coarse sand, contains few silty clay seams.	14									Est. A-4b
606.9	65	5/8/8		1.5-2.5		70.0 SILT: Very-stiff becoming medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	15	0	1	3	55	41	28	9	17	A-4b(8)
	70	4/8/9		1.5-2.5		72.0 SILT: Very-stiff becoming medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	16									Est. A-4b
	75	6/10/14		2.25-3.0		75.0 SILT: Very-stiff becoming medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	17	0	1	1	50	48	30	10	27	A-4b(8)
	80	7/12/15		2.0-4.0		80.0 SILT: Very-stiff becoming medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	18									Est. A-4b
	85	4/6/8		0.75-1.5		85.0 SILT: Very-stiff becoming medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	19									Est. A-4b
586.9	90	3/5/6		0.5-1.0		92.0 SANDY SILT: Medium-stiff to stiff gray clay, some silt, trace fine to coarse sand, trace fine to coarse gravel, contains few shale fragments.	20	7	1	5	35	52	30	10	24	A-4a(8)
581.9	95	4/6/7		0.5-1.25		97.0 SILTY CLAY: Soft to medium-stiff gray silty clay, trace fine sand.	21									Est. A-6b
	100	5/4/7		0.25-0.75												

WATER LEVEL: 38.5  
WATER NOTE: Encountered  
DATE: 4/18/06

PLATE 20



**LOG OF BORING NO. B-05-07**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 127+43.46  
206.83' Lt. of Centerline

COMPLETION DEPTH: 229.0'  
ELEVATION: 678.9  
DATE: 4/18/06 - 4/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
571.9	100-105		P	0.25-0.5		SILTY CLAY: Soft to medium-stiff gray silty clay, trace fine sand.	22						40	17		Est. A-6b	
	107.0																
	110		3/5/7	0.25-0.75		SILT AND CLAY: Soft to medium-stiff gray clay, "and" silt, trace fine to coarse sand, contains few stiff zones.	23	0	1	2	37	60	35	15	26		A-6a(10)
	115		4/5/7	0.25-1.25			24										Est. A-6a
561.9	120		4/6/9	0.25-0.75		SANDY SILT: Soft to medium-stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains few silt seams, and few stiff zones.	25										Est. A-4a
	125		5/6/9	0.25-1.25			26	1	1	1	42	55	30	10	24		A-4a(8)
551.9	130		6/8/10	2.0-2.75		SANDY SILT: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand, contains many silt seams, lenses and pockets.	27										Est. A-4a
	135		6/12/15	2.5-4.5+			28										Est. A-4a
	140		9/12/15	2.75-3.75			29	0	1	1	46	52	28	9	22		A-4a(8)
537.9	145		P	4.5+		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few hard zones.	30										Est. A-6a
			P	2.5-3.25			31										Est. A-6a
	150		8/15/20	2.75-4.25			32	2	3	5	32	58	33	12	20		A-6a(9)

WATER LEVEL: 38.5  
WATER NOTE: Encountered  
DATE: 4/18/06

PLATE 21



**LOG OF BORING NO. B-05-07**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 127+43.46  
206.83' Lt. of Centerline

COMPLETION DEPTH: 229.0'  
ELEVATION: 678.9  
DATE: 4/18/06 - 4/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	150					SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few hard zones.												
	155	2S	7/13/18 50-5"R	2.0-3.25			33											Est. A-6a
	160		7/10/17	2.25-3.25			34											Est. A-6a
	165		7/11/15	2.25-2.75			35											Est. A-6a
	170		6/9/13	1.75-2.25			36	5	3	4	33	55	33	13	21			A-6a(9)
	175		6/9/14	2.0-2.25			37											Est. A-6a
	180	2S	6/9/12 38	1.75-2.75			38	0	0	1	32	67	33	12	23			A-6a(9)
	185		6/9/13	2.0-2.75			39											Est. A-6a
491.9							187.0											
490.1							188.8											
	190		19/46/63			COARSE AND FINE SAND: Very-dense gray fine to coarse sand, trace fine gravel, trace silt, trace clay.	40A 40B											Est. A-4b Est. A-3a
486.9						192.0												
	195		50-4"R	4.5+		SILT AND CLAY: Very-stiff to hard gray clay, some silt, little fine to coarse sand, trace fine gravel, boulder encountered at 193.6'.	41											Est. A-6a
	200		16/36/47	4.5+			42	3	6	8	24	59	30	11	16		A-6a(8)	

WATER LEVEL: 38.5  
WATER NOTE: Encountered  
DATE: 4/18/06

PLATE 22



**LOG OF BORING NO. B-05-07**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 127+43.46  
206.83' Lt. of Centerline

COMPLETION DEPTH: 229.0'  
ELEVATION: 678.9  
DATE: 4/18/06 - 4/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
	200																
	205		16/32/44	4.5+		SILT AND CLAY: Very-stiff to hard gray clay, some silt, little fine to coarse sand, trace fine gravel, boulder encountered at 193.6'.	43										Est. A-6a
467.9	210		10/13/19	3.0-4.5+			44										Est. A-6a
	215		25/50-5"R	4.5+		SANDY SILT: Hard gray silt, some clay, little fine to coarse sand, trace fine gravel, contains many shale fragments, similar to very-soft shale.	45										Est. A-4a
461.9	220		50-1.5"R			SHALE: Very-soft gray shale.	46										Visual
459.9	225		48%		5.0/0.0	SHALE: Soft dark gray and gray shale interbedded with siltstone, nearly horizontally bedded, many horizontal and few vertical and diagonal fractures, contains few silty clay seams, contain iron oxide stains throughout.	47										Visual
	230		18%		5.0/0.0	- Qu=1113 psi at 224.0'.	48										Visual
449.9	235																
	240																
	245																
	250																

**NOTES:**  
- Encountered water at 38.5'  
- Water added to borehole at 40.0' to prevent heave and facilitate drilling.  
- Switched to washbore at 60.0'.  
- Encountered a boulder at 193.6'.  
- Base of inclinometer installed at an approximate depth of 228'.  
- Two vibrating wire piezometers installed in an offset hole between 5/30/06 and 6/7/06. Transducers were installed at approximate depths of 102' and 220'. The piezometer offset hole was backfilled with grout.  
- Encountered a gas pocket at approximately 219.0'. Water erupted approximately 10' above the ground surface for approximately one minute.

WATER LEVEL: 38.5  
WATER NOTE: Encountered  
DATE: 4/18/06





**LOG OF BORING NO. B-05-08**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 229.0'  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 126+26.08    ELEVATION: 679.9  
NQ Rock Core Barrel    28.31' Lt. of Centerline    DATE: 4/27/06 - 5/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
679.2	0		4/8/8			0.7 TOPSOIL - 8 INCHES												
	5		5/3/4			COARSE AND FINE SAND (FILL): Loose to medium-dense brown and dark brown fine to coarse sand, trace fine gravel, trace silt, trace clay, contains few roots.	1											Est. A-3a
672.4			5/8/7			7.5 GRAVEL WITH SAND (POSSIBLE FILL): Medium-dense becoming very-loose brown and gray fine to coarse sand, some fine to coarse gravel, trace silt, trace clay.	2											Est. A-3a
	10		3/2/2				3	35	32	25	4	4	NP	NP	5			A-1-b(0)
662.9			8/11/10			17.0 FINE SAND: Loose to medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	4											Est. A-1-b
	20		6/7/11				5											Est. A-3
	25		6/8/9				6											Est. A-3
	30		6/7/5				7	1	41	49	4	5	NP	NP	5			A-3(0)
640.6			3/4/5			39.3 SILT: Loose becoming dense gray silt, trace clay, trace fine sand.	8											Est. A-3
	40		10/19/17				9A											Est. A-3
	45						9B											Est. A-4b
							10											Est. A-4b

WATER LEVEL: 38.0  
WATER NOTE: Encountered  
DATE: 4/27/06

PLATE 24







**LOG OF BORING NO. B-05-08**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 126+26.08  
28.31' Lt. of Centerline

COMPLETION DEPTH: 229.0'  
ELEVATION: 679.9  
DATE: 4/27/06 - 5/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
537.9	135					SILT: Stiff to very-stiff gray silt, "and" clay, trace fine sand, contains many interbedded silty clay seams and pockets.	32										Est. A-4b
	140		7/11/16	1.5-2.75													
	142.0					SANDY SILT: Stiff to very-stiff gray silt, "and" clay, little fine to coarse sand, trace fine gravel, contains many silty clay lenses.	33	4	8	11	39	38	25	7	16		A-4a(8)
	145		7/13/19	2.25-3.75													
	150		6/9/13	1.5-1.75			34										Est. A-4a
527.9	152.0																
	155		6/11/13	1.25-2.0		SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel.	35	2	2	3	33	60	32	11	23		A-6a(8)
	160		5/9/12	1.25-2.0			36										Est. A-6a
	165		6/10/16	1.0-1.5			37										Est. A-6a
	170		7/11/16	0.5-1.25			38	2	2	3	32	61	33	12	23		A-6a(9)
	175		6/8/12	0.5-1.75			39										Est. A-6a
	180		6/11/13	1.0-1.75			40	8	1	1	22	68	35	15	23		A-6a(10)

WATER LEVEL: 38.0  
WATER NOTE: Encountered  
DATE: 4/27/06

PLATE 27



**LOG OF BORING NO. B-05-08**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 126+26.08  
28.31' Lt. of Centerline

COMPLETION DEPTH: 229.0'  
ELEVATION: 679.9  
DATE: 4/27/06 - 5/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class	
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC
492.9	180-185	8/12/15	1.25-2.0			SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel.	41									Est. A-6a
487.9	190	11/17/29	1.5-3.25			SANDY SILT: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel.	42	7	1	1	49	42	25	6	22	A-4a(8)
	195	22/36/50-5"R	4.5+			SILT AND CLAY: Hard gray clay, "and" silt, little to some fine to coarse sand, trace fine gravel, contains few cobbles.	43									Est. A-6a
477.9	200	21/42/50-5"R	4.5+				44									Est. A-6a
	205	15/26/32	2.5-3.75			SANDY SILT: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, contains few to many silt lenses, pockets and shale fragments, and few hard zones.	45	0	1	2	21	76	33	10	24	A-4a(8)
465.7	210	9/14/15	1.5-3.25				46									Est. A-4a
	215	26/37/50-5"R	1.75-4.5+			SHALE: Very-soft gray shale.	47A 47B									Est. A-4a Visual
460.9	220	50-2"R				SHALE: Soft dark gray and gray shale, nearly horizontally bedded, many horizontal, few vertical and diagonal fractures, contains a significant diagonal fracture of 70 degrees from 222.1' to 222.3' and few interbedded silty clay seams.	48									Visual
	225	45%			5.0/0.0		49									Visual

WATER LEVEL: ▽ 38.0    ▽    ▽    ▽  
WATER NOTE: Encountered  
DATE: 4/27/06

PLATE 28




**LOG OF BORING NO. B-05-08**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 126+26.08  
28.31' Lt. of Centerline

COMPLETION DEPTH: 229.0'  
ELEVATION: 679.9  
DATE: 4/27/06 - 5/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class	
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC
450.9	225		45%		5.0/0.0	 229.0  <b>NOTES:</b> - Encountered water at 38.0'. - Switched to washbore at 60.0'. - Cobbles encountered at 194.5' and 199.5'. - Base of inclinometer installed at an approximate depth of 228'. - Two vibrating wire piezometers installed in an offset hole between 5/24/06 and 5/30/06. Transducers were installed at approximate depths of 65.5' and 110.5'. The piezometer offset hole was backfilled with grout.	50									Visual

WATER LEVEL: ∇ 38.0 ∇ ∇ ∇  
WATER NOTE: Encountered  
DATE: 4/27/06

PLATE 29



**LOG OF BORING NO. B-05-11**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 230.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 128+63.03    ELEVATION: 675.1  
NQ Rock Core Barrel    147.49' Rt. of Centerline    DATE: 4/11/06 - 4/17/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
674.6	0					0.5' ASPHALT - 6 INCHES											
673.8			4/6/7			1.3' CONCRETE - 9 INCHES	1										Est. A-1-b
	5		6/5/4			GRAVEL WITH SAND (FILL): Loose to medium-dense brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay.	2										Est. A-1-b
	10		3/4/4				3	19	47	24	4	6				5	Est. A-1-b
	15		3/5/4				4										Est. A-1-b
658.1	17.0																
	20		7/11/14			COARSE AND FINE SAND: Medium-dense brown fine sand, little silt, trace clay, trace coarse sand, contains few iron oxide stains.	5										Est. A-3a
	25		6/8/9				6	0	2	79	13	6	NP	NP		8	A-3a(0)
	30		9/9/9				7										Est. A-3a
	35		6/7/8				8	0	2	77	12	9				24	Est. A-3a
638.1	37.0																
	40		9/9/9			SANDY SILT: Medium-dense to dense brown and gray fine sand, "and" silt, little clay.	9										Est. A-4a
	45		9/15/18				10	0	0	46	42	12	NP	NP		22	A-4a(0)
628.1	47.0																
	50		3/5/8				11	0	0	14	62	24	NP	NP		18	A-4b(0)

PLATE 30

WATER LEVEL:                                               
WATER NOTE:                                               
DATE:







**LOG OF BORING NO. B-05-11**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 128+63.03  
147.49' Rt. of Centerline

COMPLETION DEPTH: 230.0'  
ELEVATION: 675.1  
DATE: 4/11/06 - 4/17/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class					
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC			
573.1	100					102.0													
	105	█	5/7/8	1.5-2.25		SILT: Very-stiff to hard gray silt, "and" clay, trace fine sand, contains many fine sand and silt pockets, and few stiff zones.	27											Est. A-4b	
	110	█	8/10/15 5/6/11	3.0-4.25 3.0-4.25			28	0	0	2	61	37	27	7	21			A-4b(8)	
		█	6/12/14	3.5-4.5			29											Est. A-4b	
		█	7/11/14	1.75-3.75			30											Est. A-4b	
		█					31											Est. A-4b	
	120	█	8/13/18	3.25-4.5+			32	0	0	2	59	39	29	9	20			A-4b(8)	
	125	█	8/13/18	4.0-4.5+			33											Est. A-4b	
	130	█	6/11/15	2.5-4.0			34											Est. A-4b	
543.1	135	█	7/11/15	2.0-3.25			132.0												
	140	█	6/10/15	1.75-3.25			SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few interbedded silt seams and pockets, and few medium-stiff zones.	35											Est. A-6a
	145	█	5/10/17	2.0-2.75		36												Est. A-6a	
	150	█	8/11/17	2.0-3.5		37		2	3	7	29	59	32	11	21			A-6a(8)	
							38											Est. A-6a	

WATER LEVEL:                               
WATER NOTE: \_\_\_\_\_  
DATE: \_\_\_\_\_

PLATE 32



**LOG OF BORING NO. B-05-11**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 230.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 128+63.03    ELEVATION: 675.1  
NQ Rock Core Barrel    147.49' Rt. of Centerline    DATE: 4/11/06 - 4/17/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
	150					SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few interbedded silt seams and pockets, and few medium-stiff zones.										
	155	7/12/13	0.5-1.5				39	2	2	3	32	61	33	12	24	A-6a(9)
	160	7/10/13	1.5-1.75				40									Est. A-6a
	165	7/10/14	1.5-2.25				41									Est. A-6a
	170	7/11/16	1.75-3.0				42									Est. A-6a
	175	6/10/14	1.75-2.75				43	4	0	1	32	63	35	14	22	A-6a(10)
498.1	180	6/9/12	1.5-2.5		177.0		SANDY SILT: Medium-stiff to stiff gray clay, some to "and" silt, trace fine to coarse sand, trace fine gravel, contains few interbedded silt seams and pockets, and many very-stiff to hard zones.	44								Est. A-4a
	185	6/7/7	0.5-2.25				45									Est. A-4a
	190	6/6/9	0.5-1.25				46	1	1	2	39	57	30	9	26	A-4a(8)
	195	10/19/32	3.0-4.5+				47									Est. A-4a
	200	12/22/36	4.5+			48									Est. A-4a	

PLATE 33

WATER LEVEL:                               
WATER NOTE:                               
DATE:



**LOG OF BORING NO. B-05-11**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 230.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 128+63.03    ELEVATION: 675.1  
NQ Rock Core Barrel    147.49' Rt. of Centerline    DATE: 4/11/06 - 4/17/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
	200																	
	205		11/16/21	1.75-4.0		SANDY SILT: Medium-stiff to stiff gray clay, some to "and" silt, trace fine to coarse sand, trace fine gravel, contains few interbedded silt seams and pockets, and many very-stiff to hard zones.	49	1	1	0	34	64	31	8	23	A-4a(8)		
	210		7/10/14	1.0-1.75			50									Est. A-4a		
463.1	212.0																	
	215		18/28/33	4.5+		SANDY SILT: Hard gray silt, little clay, some fine to coarse sand, some fine to coarse gravel, contains many shale fragments, similar to very-soft shale.	51	23	12	10	35	20	24	6	12	A-4a(4)		
458.1	217.0																	
	220		50-3"R			SHALE: Very-soft gray shale, fragmented.	52									Visual		
455.1	220.0																	
	225		18%		5.0/0.0	SHALE: Soft gray shale, nearly horizontally bedded, many horizontal and few vertical fractures, contains few interbedded silty clay seams, possible slickenside at 229.0', arenaceous.	53									Visual		
	229.0					- Qu=209 psi at 225.0'.												
	230		37%		4.8/0.2		54									Visual		
445.1	230.0																	
	235																	
	240																	
	245																	
	250																	

**NOTES:**  
- Encountered seepage at 33.5'.  
- Water added to borehole at 35.0' to facilitate drilling.  
- Switched to washbore at 55.0'.  
- Base of inclinometer installed at an approximate depth of 229'.  
- Two vibrating wire piezometers installed in an offset hole between 6/7/06 and 6/9/06. Transducers were installed at approximate depths of 95' and 130'. The piezometer offset hole was backfilled with grout.  
- Possible gas pocket encountered at 218.0'. Water bubbled to surface of drilling fluid.

WATER LEVEL:                       
WATER NOTE: \_\_\_\_\_  
DATE: \_\_\_\_\_

PLATE 34



**LOG OF BORING NO. B-05-12**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 213.5'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 131+14.70    ELEVATION: 652.7  
NX Rock Core Barrel    74.16' Rt. of Centerline    DATE: 4/17/06 - 4/21/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
651.8	0					0.9 CONCRETE - 10 1/2 INCHES												
651.7	1.0					1.0 GRANULAR BASE - 1 1/2 INCHES												
	5		5/6/5			GRAVEL WITH SAND (FILL): Loose to medium-dense dark brown and brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay, contains few slag fragments.	1											Est. A-1-b
	10		3/2/3				2											Est. A-1-b
640.7	12.0					COARSE AND FINE SAND: Loose brown and gray fine sand, trace coarse sand, little silt, trace clay, contains many iron oxide stains.	3	0	2	80	15	3	NP	NP	13			A-3a(0)
	15		2/2/3				4											Est. A-3a
	20		2/3/3				5											Est. A-3a
	25		2/3/2				6											Est. A-3a
625.2	27.5					SILT: Medium-dense gray silt, little clay, trace fine to coarse sand.	7											Est. A-4b
	30		6/8/8				8	0	1	4	76	19	NP	NP	17			A-4b(0)
	35		8/9/11				9											Est. A-4b
	38.0		10/13/13				10											Est. A-6a
614.7	40		10/12/11			SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains few hard zones.	11											Est. A-6a
	45		2/4/5	3.0-4.25			12											Est. A-6a
			P	1.5-1.75			13											Est. A-6a
			P	3.0-4.0			14	0	1	1	53	45	31	12	23			A-6a(9)
			4/5/7	1.5-2.0			15											Est. A-6a
			6/7/10	3.0-4.0														
			5/7/9	3.0-4.5														

WATER LEVEL: ▽ 23.0    ▽ "Dry"    ▽  
WATER NOTE: Encountered    Inside Casing - Prior to Washbore  
DATE: 4/17/06    4/17/06

PLATE 35



**LOG OF BORING NO. B-05-12**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 213.5'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 131+14.70    ELEVATION: 652.7  
NX Rock Core Barrel    74.16' Rt. of Centerline    DATE: 4/17/06 - 4/21/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
	50		5/9/11	3.0-4.5		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains few hard zones.	16									Est. A-6a
	55		6/8/10	2.0-3.0			17	0	1	1	53	45	32	12	23	A-6a(9)
	60		5/6/11	2.0-3.0			18									Est. A-6a
588.7			6/6/10	1.75-3.0		64.0	19									Est. A-6a
	65		4/5/7	1.0-2.0	++++	SILT: Stiff to very-stiff gray mottled with red silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many interbedded silty clay seams.	20	2	1	2	52	43	30	10	23	Est. A-4b(8)
			3/4/7	1.75-2.5	++++		21									Est. A-4b
			4/6/7	1.25-2.0	++++		22									Est. A-4b
582.2	70		3/6/7	1.0-1.25	++++		23									Est. A-4b
			3/5/7	0.75-1.25	++++		70.5	24	0	1	1	42	56	28	8	26
	75		3/4/3	0.5-0.75		SANDY SILT: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, contains few silt seams and lenses.	25									Est. A-4a
			4/5/7	1.0-1.5			26									Est. A-4a
573.2			P	1.5-2.0			27									Est. A-4a
	80		4/5/8	1.25-1.75	++++		79.5	28								Est. A-4b
			4/7/9	2.0-2.25	++++	SILT: Stiff to very-stiff gray silt, "and" clay, trace fine sand, contains many interbedded silty clay seams, few cobbles.	29	0	0	2	53	45	29	10	22	A-4b(8)
			5/7/11	2.25-3.0	++++		30									Est. A-4b
	85		5/8/13	2.5-3.0	++++		31									Est. A-4b
			5/10/12	3.0-3.75	++++		32									Est. A-4b
	90		5/7/10	2.0-3.5	++++		33									Est. A-4b
			5/8/11	1.5-2.0	++++		34	0	0	2	55	43	30	10	23	A-4b(8)
	95				++++											
	100		6/10/13	1.5-2.25	++++		35									Est. A-4b

WATER LEVEL: 23.0    "Dry"    4/17/06  
WATER NOTE: Encountered    Inside Casing - Prior to Washbore  
DATE: 4/17/06

PLATE 36





**LOG OF BORING NO. B-05-12**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 213.5'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 131+14.70    ELEVATION: 652.7  
NX Rock Core Barrel    74.16' Rt. of Centerline    DATE: 4/17/06 - 4/21/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	150																	
	155	7/11/13		2.0-2.75		SILTY CLAY: Stiff to very-stiff gray silty clay, trace fine sand.	46	0	0	1	33	66	36	16	24		A-6b(10)	
	160	5/8/11		1.75-2.25			47										Est. A-6b	
490.2	165	SD-9"/4/5		0.5-0.75		SILT AND CLAY: Soft to medium-stiff gray clay, some silt, trace fine sand.	48	0	0	1	25	74	35	13	29		A-6a(9)	
485.2	170	5/5/5		1.0-1.5 0.75		SILT: Medium-stiff to stiff gray silt, "and" clay.	49A 49B	0	0	0	61	39	25	6	28		A-4b(8) Est. A-6a	
483.2	175	13/18/20		4.5+		SANDY SILT: Dense gray fine sand, some silt, little clay, little coarse sand, trace fine gravel.	50A 50B	5	11	40	29	15			17		Est. A-4a Est. A-4a	
480.2	180	18/21/42		4.5+		SANDY SILT: Very-stiff to hard gray clay, some silt, little fine to coarse sand, trace fine gravel, contains few silt seams, few cobbles.	51	3	5	8	29	55	28	10	16		A-4a(8)	
478.3	185	11/16/19		2.5-4.5			52										Est. A-4a	
465.2	190	7/9/11		2.0-2.5		SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, contains few to many silt seams and lenses.	53	0	0	0	46	54	31	11	25		A-6a(8)	
	195	8/11/15		2.5-3.25			54										Est. A-6a	
455.0	197.7	26/50-5"R				SHALE: Very-soft gray shale, fragmented.	55										Visual	
	200																	

PLATE 38

WATER LEVEL: ▽ 23.0    ▽ "Dry"    ▽  
WATER NOTE: Encountered    Inside Casing - Prior to Washbore  
DATE: 4/17/06    4/17/06



**LOG OF BORING NO. B-05-12**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 213.5'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 131+14.70    ELEVATION: 652.7  
NX Rock Core Barrel    74.16' Rt. of Centerline    DATE: 4/17/06 - 4/21/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
450.7	200					202.0 SHALE: Very-soft gray shale, fragmented.											
	205		10%		4.9/0.1	SHALE: Very-soft to soft gray and dark gray shale, nearly horizontally bedded, many horizontal and few vertical fractures, contains many interbedded silty clay seams from 203.8' to 205.2' and from 205.6' to 206.8'.	56										Visual
444.2	210		23%		4.6/0.4	208.5 - Qu=1021 psi at 208.0'. SHALE: Soft dark gray and gray shale, nearly horizontally bedded, few to many horizontal and diagonal fractures, arenaceous, contains a possible slickenside at 209.9'.	57										Visual
439.2	213.5					NOTES: - Encountered seepage at 8.0'. - Encountered water at 23.0'. - Switched to washbore at 45.5'. - Encountered cobbles at 111.5' and 176.5'. - Base of inclinometer installed at an approximate depth of 212'. - Two vibrating wire piezometers installed in an offset hole between 5/22/06 and 5/24/06. Transducers were installed at approximate depths of 75' and 120'. The piezometer offset hole was backfilled with grout.											
	215																
	220																
	225																
	230																
	235																
	240																
	245																
	250																

WATER LEVEL: ∇    23.0    ∇    "Dry"    ∇    ∇  
WATER NOTE: Encountered    Inside Casing - Prior to Washbore  
DATE: 4/17/06    4/17/06

PLATE 39





**LOG OF BORING NO. B-05-13**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.46  
53.17' Rt. of Centerline

COMPLETION DEPTH: 189.0'  
ELEVATION: 580.0  
DATE: 5/4/06 - 5/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
579.0	0		12/5/5			1.0 GRANULAR BASE - 12 INCHES												
575.0	5		2/2/1	0.0		5.0 COARSE AND FINE SAND (FILL): Very-loose to loose black and brown fine to coarse sand, little fine gravel, little silt, little clay, contains few asphalt fragments, slightly organic.	1											Est. A-3a
572.5						7.5 SILT AND CLAY: Very-soft black and gray silt, "and" clay, contains a hydrocarbon odor.	2A											Est. A-3a
						12.0 SANDY SILT: Very-loose gray and brown silt, some clay, some fine sand, trace coarse sand, trace fine gravel.	2B											Est. A-6a
568.0	10		1/1-12"			17.0 SANDY SILT: Very-loose brown and gray fine sand, "and" silt, little clay.	3	1	1	26	47	25	20	2	27			A-4a(7)
563.0	15		1/1/3			32.0 GRAVEL WITH SAND: Loose to medium-dense brown and gray fine to coarse sand, trace fine gravel, trace silt, trace clay.	4	0	0	41	41	18	NP	NP	47			A-4a(0)
	20		2/7/5				5											Est. A-1-b
	25		3/4/7				6	3	47	39	5	6	NP	NP	18			A-1-b(0)
	30		8/5/4				7											Est. A-1-b
548.0	35		4/5/7	1.25-2.5			8											Est. A-4b
	40		3/4/5	0.75-2.25			9	0	0	1	50	49	30	10	26			A-4b(8)
	45		P	1.25-1.5			10											Est. A-4b
			3/4/6	0.5-1.25			11											Est. A-4b

WATER LEVEL: ▽ 13.5    ▽    ▽    ▽  
WATER NOTE: Encountered  
DATE: 5/4/06

PLATE 40



**LOG OF BORING NO. B-05-13**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 189.0'  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 137+07.46    ELEVATION: 580.0  
NQ Rock Core Barrel    53.17' Rt. of Centerline    DATE: 5/4/06 - 5/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
532.5	45					++++ ++++ ++++ 47.5												
	50	2S	5/8/9 20 P	1.25-2.0 1.25-1.5		SANDY SILT: Stiff to very-stiff gray silt, "and" clay, little fine to coarse sand, trace fine gravel.	12 13	3	8	12	40	37	24	7	16	A-4a(8) Est. A-4a		
527.0	55		3/5/7	0.75-1.5		SILT AND CLAY: Medium-stiff to stiff gray silt, trace clay, trace fine to coarse sand, trace fine gravel.	14									Est. A-6a		
	60		5/6/9	1.0-1.5			15	2	3	4	81	10	32	12	22	A-6a(9)		
518.0	65		7/9/12	1.5-2.25		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt seams, lenses and pockets, and few soft zones.	16									Est. A-6a		
	70		5/7/11 P	1.25-1.75 0.5-1.25			17 18	1 4	2 3	4 5	31 35	62 53	33 30	13 13	23 22	A-6a(9) A-6a(9)		
	75		4/7/11	1.25-1.5			19									Est. A-6a		
	80		5/8/12	1.25-2.25			20	1	1	2	30	66	35	15	24	A-6a(10)		
	85		4/7/9	1.0-2.0			21									Est. A-6a		
	90		4/6/9	1.0-2.25			22	1	1	1	29	68	34	12	27	A-6a(9)		

WATER LEVEL: 13.5  
WATER NOTE: Encountered  
DATE: 5/4/06

PLATE 41



**LOG OF BORING NO. B-05-13**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger 3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.46  
53.17' Rt. of Centerline

COMPLETION DEPTH: 189.0'  
 ELEVATION: 580.0  
 DATE: 5/4/06 - 5/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
488.0	90					92.0 SANDY SILT: Dense to very-dense gray silt, some clay, some fine to coarse sand, trace fine gravel, contains a fine to coarse sand seam from 98.5' to 98.8'.	23										Est. A-4a
-95		1/16/18					24	6	13	18	34	29	19	4	11		A-4a(6)
-100		15/27/23					25										Est. A-4a
-105		15/27/44					26	1	3	5	26	65	35	14	19		A-6a(10)
473.0		15/24/34	4.5+			107.0 SILT AND CLAY: Hard gray clay, some silt, trace fine to coarse sand, trace fine gravel.	27										Est. A-6a
-110		7/12/13	1.25-2.5			112.0 SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, contains many silt seams and lenses, and few soft and very-stiff zones.	28	0	0	0	32	68	35	14	29		A-6a(10)
468.0		5/8/10	0.5-1.5				29										Est. A-6a
-120		7/8/10	0.5-1.5				30A										Est. A-6a
-125		17/26/26	0.25-0.5			129.0 COARSE AND FINE SAND: Very-dense gray fine to coarse sand, little fine to coarse gravel, trace silt, trace clay.	30B										Est. A-3a
451.0		23/34/35				132.0 SANDY SILT: Very-dense gray fine sand, "and" silt, little clay, trace fine to coarse sand, trace fine gravel.	31	1	1	47	39	12	NP	NP	17		A-4a(0)
-130																	
448.0																	
-135																	

WATER LEVEL: 13.5  
 WATER NOTE: Encountered  
 DATE: 5/4/06

PLATE 42



**LOG OF BORING NO. B-05-13**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.46  
53.17' Rt. of Centerline

COMPLETION DEPTH: 189.0'  
ELEVATION: 580.0  
DATE: 5/4/06 - 5/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
443.0	135					137.0												
			20/41/48			GRAVEL WITH SAND AND SILT: Very-dense gray fine to coarse gravel, some fine to coarse sand, some clay, little silt, contains many siltstone fragments and a silty clay seam from 138.8' to 139.8'.	32	37	18	10	13	22	25	8	25		A-2-4(0)	
436.2			45/50-4"R			143.8												Visual
						SHALE: Very-soft gray shale.	33											
431.0			50-2"R			149.0												Visual
			55%		5.0/0.0	SHALE: Soft to medium-hard dark gray and gray shale, nearly horizontally bedded, few horizontal fractures, contains nodules, and many silty clay pockets, seams and nodules, highly fractured from 149.4' to 149.8'.	35											Visual
			78%		4.9/0.1	- Qu=1553 psi at 152.5'.	36											Visual
421.0			42%		4.5/0.5	159.0												Visual
						SHALE: Medium-hard dark gray and gray shale interbedded with siltstone, nearly horizontally bedded, many horizontal and few diagonal fractures, nodules, contains many silty lenses and pockets.	37											
			48%		2.8/2.2	- Qu=2955 psi at 160.5'. - μ=0.39 at 160.5'.	38											Visual
			20%		2.1/2.9		39											Visual
406.0			88%		5.0/0.0	174.0												Visual
							40											

WATER LEVEL: ▽ 13.5    ▽    ▽    ▽  
WATER NOTE: Encountered  
DATE: 5/4/06

PLATE 43




**LOG OF BORING NO. B-05-13**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.46  
53.17' Rt. of Centerline

COMPLETION DEPTH: 189.0'  
ELEVATION: 580.0  
DATE: 5/4/06 - 5/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class	
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC
	180		63%		5.0/0.0	 SHALE: Medium-hard dark gray and gray shale, nearly horizontally bedded, few horizontal and few diagonal fractures at 177.8', 180.2' and 181.0', contains many silty clay seams and nodules.  - Qu=348 psi at 178.5'.	41									Visual
	185		87%		4.7/0.3		42									
391.0						189.0										
	190					<b>NOTES:</b> - Encountered seepage at 5.0'. - Encountered water at 13.5'. - Pressure Tests were performed by EL Robinson on 5/5/06 between the depths of 31.0' to 33.0', 41.0' to 43.0', and 52.5' to 54.5'. - Switched to washbore at 40.0'. - Encountered a gas pocket during rock coring. Water bubbled to surface of drilling fluid. - Base of inclinometer installed at an approximate depth of 141'. - Two vibrating wire piezometers installed in an offset hole between 6/8/06 and 6/12/06. Transducers were installed at approximate depths of 60' and 135'. The piezometer offset hole was backfilled with grout.										
	195															
	200															
	205															
	210															
	215															
	220															
	225															

WATER LEVEL:  13.5     5/4/06     5/4/06     5/4/06

WATER NOTE: Encountered

PLATE 44



**LOG OF BORING NO. B-05-14**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.98  
172.70' Rt. of Centerline

COMPLETION DEPTH: 199.0'  
ELEVATION: 579.7  
DATE: 5/11/06 - 5/18/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
579.2	0		7/21/13			0.5' GRANULAR BASE - 6 INCHES											
	5		28/21/28			GRAVEL WITH SAND (FILL): Dense gray fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay, contains many limestone fragments.	1										Est. A-1-b
572.2						7.5'											
	10		5/3/2	0.5-1.5		SANDY SILT (POSSIBLE FILL): Medium-stiff to stiff greenish brown silt, some clay, some fine to coarse sand, contains few fine to coarse sand seams, slightly organic.	2	41	27	21	3	8	NP	NP	35		A-1-b(0)
567.7						12.0'											
	15		2/3/3			COARSE AND FINE SAND: Very-loose to loose gray fine sand, trace coarse sand, trace silt, trace clay.	3	0	3	79	9	9	NP	NP	25		A-3a(0)
	20		1/1/3				4										
557.7						22.0'											
	25		5/4/4			COARSE AND FINE SAND: Very-loose to loose gray fine to coarse sand, trace to little fine gravel, trace to little silt, trace to little clay.	5										Est. A-3a
	30		3/2/2				6	11	25	52	5	7	NP	NP	18		A-3a(0)
545.8						33.9'											
545.2	35		10/11/7	1.0-1.75		34.5' SILT: Medium-dense gray silt, little clay, little fine sand. SILTY CLAY: Medium-stiff to stiff gray silty clay, trace fine sand, contains few soft zones.	6	8	31	35	13	13	NP	NP	36		A-3a(0)
	40		4/5/8	1.0-2.0			7	0	0	20	64	16	NP	NP	20		Est. A-3a A-4b(0) Est. A-6b
	45		4/4/5	0.25-1.0			8A										
							8B										
							8C										
							9										Est. A-6b
							10	0	1	1	29	69	34	16	28		A-6b(10)

WATER LEVEL: 10.0  
WATER NOTE: Encountered  
DATE: 5/11/06

PLATE 45



**LOG OF BORING NO. B-05-14**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.98  
172.70' Rt. of Centerline

COMPLETION DEPTH: 199.0'  
ELEVATION: 579.7  
DATE: 5/11/06 - 5/18/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
	45																	
	50		4/7/8	0.5-1.0		SILTY CLAY: Medium-stiff to stiff gray silty clay, trace fine sand, contains few soft zones.	11											Est. A-6b
527.7						52.0												
	55	2S	6/9/9 21	0.25-0.75		SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt seams and shale fragments, and few soft zones.	12	4	4	4	27	61	32	12	26			A-6a(9)
	60		3/6/9	0.5-1.75			13											Est. A-6a
	65		P 4/8/10	0.5			14											Est. A-6a
				0.5-1.5			15	1	1	3	32	63	34	13	24			A-6a(9)
	70		4/7/9	0.75-1.5			16											Est. A-6a
	75		5/8/12	1.0-1.5			17											Est. A-6a
	80		6/9/14	1.25-2.0			18	1	1	2	33	63	34	14	23			A-6a(10)
497.7						82.0												
	85		7/9/12	1.0-2.0		SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains many silt seams.	19											Est. A-6a
	90		5/6/6	0.5-0.75			20											Est. A-6a

WATER LEVEL: ▽ 10.0 ▽ ▽ ▽ ▽  
WATER NOTE: Encountered  
DATE: 5/11/06

PLATE 46



**LOG OF BORING NO. B-05-14**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger 3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.98  
172.70' Rt. of Centerline

COMPLETION DEPTH: 199.0'  
ELEVATION: 579.7  
DATE: 5/11/06 - 5/18/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
482.7	90		3/5/5	0.5-0.75		SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains many silt seams.	21	1	1	1	41	56	31	11	27	A-6a(8)
	95		P	4.5+		SILT AND CLAY: Very-stiff to hard gray clay, some silt, little fine to coarse sand, trace fine gravel, contains many shale fragments, few cobbles and fine sand lenses.	22									Est. A-6a
	100		19/48/50-5"R	4.5+			23									Est. A-6a
467.7	105		21/27/38 50-4"R	3.0-3.5			24	3	5	8	29	55	33	14	18	A-6a(10)
	110	2S	13/13/13	0.75-1.75		SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few fine to coarse sand and silt seams.	25									Est. A-6a
	115		7/10/12	0.75-1.5			26									Est. A-6a
455.1	120		6/13/26	0.75-1.25 0.75			27A	4	3	4	30	59	32	11	25	A-6a(8) Est. A-4a
	125		30/50-5"R	3.5-4.5+		SANDY SILT: Medium-stiff becoming hard silt, some clay, "and" fine to coarse sand, little fine to coarse gravel, contains few cobbles.	27B									Est. A-4a
447.7	130		33/48/38	3.5-4.25			28									Est. A-4a
	135						29	2	3	5	47	43	27	9	16	A-4a(8)

WATER LEVEL: 10.0  
WATER NOTE: Encountered  
DATE: 5/11/06

PLATE 47





**LOG OF BORING NO. B-05-14**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.98  
172.70' Rt. of Centerline

COMPLETION DEPTH: 199.0'  
ELEVATION: 579.7  
DATE: 5/11/06 - 5/18/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	135																	
	140		26/30/50-3"R	2.75-4.5+		SANDY SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silt lenses, and few stiff zones.	30											Est. A-4a
435.9	145		38/28/42	1.5-4.5+ 0.5-1.5		SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, little fine to coarse sand, little fine gravel, contains many shale fragments.	31A 31B	16	8	3	31	42	31	11	18			Est. A-4a A-6a(8)
432.7	150		50/50-3"R			SANDY SILT: Very-dense gray fine to coarse sand, trace fine gravel, little silt, little clay.	32											Est. A-4a
	155		37/50-5"R				33											Est. A-4a
422.7	160		50-3"R			SHALE: Very-soft gray shale.	34											Visual
420.7	165		77%		5.0/0.0	SHALE: Soft dark gray and gray shale, nearly horizontally bedded, few horizontal, diagonal, and vertical fractures, contains many interbedded siltstone layers, nodules.	35											Visual
413.1	170		53%		2.6/0.0		36											Visual
407.0	175		54%		6.1/0.0	SHALE: Soft dark gray and gray shale, nearly horizontally bedded, many horizontal, and diagonal fractures, contains few interbedded silty clay layers, highly fractured from 171.5' to 171.7' and 172.4' to 172.8'.												
	180		64%		1.3/0.0	- Qu=1313 psi at 168.5'.												
			79%		10.0/0.0		37											Visual

WATER LEVEL: ▽    10.0    ▽    ▽    ▽  
WATER NOTE: Encountered  
DATE: 5/11/06

PLATE 48



**LOG OF BORING NO. B-05-14**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 137+07.98  
172.70' Rt. of Centerline

COMPLETION DEPTH: 199.0'  
ELEVATION: 579.7  
DATE: 5/11/06 - 5/18/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
180						SHALE: Soft dark gray and gray shale, nearly horizontally bedded, few horizontal, diagonal, and vertical fractures, contains many interbedded siltstone layers, nodules.  - Qu=1198 psi at 180.0'. - Qu=3228 psi at 190.5'. - μ=0.13 at 190.5'.													
-185			75%		5.0/0.0		38												Visual
-190																			
-195			14%		2.5/7.5		39												Visual
380.7						199.0													
-200						<u>NOTES:</u> - Encountered water at 10.0'. - Added water at 15.0' to prevent heave. - Switched to washbore at 35.0'. - Pressure Tests were performed by EL Robinson on 5/5/06 between the depths of 40.0' to 42.0', 62.0' to 64.0', and 71.0' to 73.0'. - Encountered cobbles at 104.5', 110.0', and 129.0'. - Encountered a gas pocket at approximately 161.0'. Gas vapor visible during rock coring. - Rock-core barrel may have become plugged leading to poor recovery in Sample S-39.													
-205																			
-210																			
-215																			
-220																			
-225																			

WATER LEVEL: ∇ 10.0 ∇ ∇ ∇

WATER NOTE: Encountered

DATE: 5/11/06

PLATE 49



**LOG OF BORING NO. B-05-15**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 139+23.33  
65.91' Rt. of Centerline

COMPLETION DEPTH: 214.0'  
ELEVATION: 581.1  
DATE: 5/18/06 - 5/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
579.8	0		20/14/7			1.3 GRANULAR BASE - 16 INCHES	1A										Visual
576.4	5		3/3/5	2.0-4.5+		4.7 COARSE AND FINE SAND (FILL): Loose to medium-dense black intermixed with brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay.	1B										Est. A-3a
573.6	10		1/1/1			7.5 SILT AND CLAY (FILL): Very-stiff to hard brown intermixed with black clay, "and" silt, some fine to coarse sand, little fine to coarse gravel.	2A										Est. A-3a
569.1	15		2/2/2			12.0 SANDY SILT: Very-loose brown and gray silt, some clay, some fine sand, contains many silty clay pockets and seams.	2B										Est. A-6a
564.1	20		2/3/3			17.0 COARSE AND FINE SAND: Very-loose gray fine sand, some silt, little clay, trace coarse sand.	3	0	0	35	41	24	NP	NP	25		A-4a(0)
557.1	25		2/3/3			24.0 COARSE AND FINE SAND: Loose gray fine to coarse sand, trace fine gravel, trace silt, trace clay.	4	0	1	66	22	11	NP	NP	30		A-3a(0)
549.1	30		5/5/5			32.0 COARSE AND FINE SAND: Loose gray fine to coarse sand, little to some fine gravel, trace silt, trace clay.	5	1	22	61	9	7	NP	NP	23		A-3a(0)
	35		P	2.25-3.75			6A										Est. A-3a
	40		5/8/12	1.25-2.75			6B										Est. A-3a
	45		4/6/9	1.75-2.5			7										Est. A-3a
533.1	50		P	0.25-0.5			8										Est. A-6a
			2/3/5	0.5-1.0			9										Est. A-6a
			4/7/11	0.75-3.0			10	0	0	2	49	49	34	13	27		A-6a(9)
							11										Est. A-6a
							12										Est. A-6a
							13	6	8	11	35	40	26	8	18		A-4a(8)

PLATE 50

WATER LEVEL: 8.0  
WATER NOTE: Encountered  
DATE: 5/18/06

WATER LEVEL: 0.5  
WATER NOTE: After HSA Removed - Prior to Washbore  
DATE: 5/18/06

WATER LEVEL: 4.0  
WATER NOTE: Augers Pulled - Prior to Washbore  
DATE: 5/19/06

WATER LEVEL:       
WATER NOTE:       
DATE:



**LOG OF BORING NO. B-05-15**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 139+23.33  
65.91' Rt. of Centerline

COMPLETION DEPTH: 214.0'  
ELEVATION: 581.1  
DATE: 5/18/06 - 5/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	50																	
	55		4/8/11	1.0-1.75		SANDY SILT: Medium-stiff to stiff gray clay, some silt, little fine to coarse sand, trace fine gravel, contains few very-stiff zones.	14											Est. A-4a
	60		5/9/12	1.25-2.0			15											Est. A-4a
	65		5/9/13	0.75-1.75			16											Est. A-4a
514.1			P	1.25-1.5			17											Est. A-6a
	70		5/8/10	1.25-1.5		SILT AND CLAY: Stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel.	18	2	2	3	33	60	35	14	25			A-6a(10)
	75		5/9/12	1.0-1.5			19											Est. A-6a
			P	1.25-1.75			20											Est. A-6a
	80		7/10/16	1.5-1.75			21											Est. A-6a
498.6		2S	27															
	85		7/10/13	1.75-2.25		SILTY CLAY: Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel.	22	1	1	1	33	64	38	16	25			A-6b(10)
494.1																		
	90		6/9/12	1.25-2.0		SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few soft zones.	23											Est. A-6a
	95		3/4/6	0.5-1.25			24	1	1	1	29	68	37	15	30			A-6a(10)
			P	1.0-1.5			25											Est. A-6a
	100		5/6/10	0.25-1.25			26											Est. A-6a

PLATE 51

WATER LEVEL: 8.0  
WATER NOTE: Encountered  
DATE: 5/18/06

0.5  
After HSA Removed - Prior to Washbore  
5/18/06

4.0  
Augers Pulled - Prior to Washbore  
5/19/06



**LOG OF BORING NO. B-05-15**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger 3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 139+23.33  
65.91' Rt. of Centerline

COMPLETION DEPTH: 214.0'  
 ELEVATION: 581.1  
 DATE: 5/18/06 - 5/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
479.1	100					102.0 SANDY SILT: Hard gray clay, some silt, some fine to coarse sand.	27	9	12	15	31	33	22	7	11	A-4a(6)
474.1	105	13/31/44	4.5+			107.0 SILT AND CLAY: Very-stiff to hard gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt lenses.	28									Est. A-6a
	110	15/29/44	4.0-4.5+				29	2	3	3	29	63	36	14	19	A-6a(10)
	115	13/28/39	3.75-4.5+				30									Est. A-6a
459.1	120	9/16/21	2.5-4.0			122.0 SILTY CLAY: Stiff gray silty clay, contains few silt lenses.	31	0	0	0	27	73	39	16	29	A-6b(10)
454.1	125	9/11/11	1.25-1.5			127.0 SANDY SILT: Very-dense gray fine to coarse sand, some silt, little clay, little fine gravel.	32									Est. A-4a
449.1	130	31/25/33				132.0 SILTY CLAY: Hard gray silty clay, trace fine to coarse sand, contains few shale fragments.	33									Est. A-6b
	135	22/44/50-5"R	4.5+				34	0	1	2	26	71	39	16	22	A-6b(10)
439.1	140	17/39/33	4.5+			142.0 SILT AND CLAY: Hard gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains few silt lenses.	35									Est. A-6a
	145	14/27/35	4.0-4.25				36									Est. A-6a
	150	17/31/39	4.5+													

WATER LEVEL: 8.0  
 WATER NOTE: Encountered  
 DATE: 5/18/06

WATER LEVEL: 0.5  
 WATER NOTE: After HSA Removed - Prior to Washbore  
 DATE: 5/18/06

WATER LEVEL: 4.0  
 WATER NOTE: Augers Pulled - Prior to Washbore  
 DATE: 5/19/06

WATER LEVEL:       
 WATER NOTE:       
 DATE:     

PLATE 52



**LOG OF BORING NO. B-05-15**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 139+23.33  
65.91' Rt. of Centerline

COMPLETION DEPTH: 214.0'  
ELEVATION: 581.1  
DATE: 5/18/06 - 5/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
	150																	
	155		19/33/45	4.5+		SILT AND CLAY: Hard gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains few silt lenses.	37	1	1	1	41	56	34	12	20		A-6a(9)	
	160		23/33/39	4.5+			38										Est. A-6a	
419.1																		
	165		18/33/43	4.5+		SANDY SILT: Hard gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains few shale fragments.	39	4	5	5	45	41	27	9	15		A-4a(8)	
414.1																		
	170		50-5"R			SHALE: Very-soft gray shale, contains few silty clay seams.	40											Visual
407.1			50-1"R				41											Visual
	175		35%		5.0/0.0	SHALE: Soft dark gray to gray shale, nearly horizontally bedded, many horizontal and few vertical fractures, contains few interbedded siltstone and silty clay layers, vertical fracture from 183.4' to 184.0'.	42											Visual
	180		47%		4.8/0.2		43											Visual
397.1																		
	185		0%		5.0/0.0	SHALE: Very-soft to soft dark gray and gray shale, nearly horizontally bedded, many horizontal fractures, contains many interbedded silty clay and few siltstone layers.	44											Visual
392.1																		
	190		68%		5.0/0.0		45											Visual
	195		68%		5.0/0.0		46											Visual
	200																	

PLATE 53

WATER LEVEL: ▽ 8.0  
WATER NOTE: Encountered  
DATE: 5/18/06

WATER LEVEL: ▽ 0.5  
WATER NOTE: After HSA Removed - Prior to Washbore  
DATE: 5/18/06

WATER LEVEL: ▽ 4.0  
WATER NOTE: Augers Pulled - Prior to Washbore  
DATE: 5/19/06

WATER LEVEL: ▽




**LOG OF BORING NO. B-05-15**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NQ Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 139+23.33  
65.91' Rt. of Centerline

COMPLETION DEPTH: 214.0'  
ELEVATION: 581.1  
DATE: 5/18/06 - 5/24/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class	
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC
	200		52%		5.0/0.0	 SHALE: Soft gray and dark gray shale, nearly horizontally bedded, few to many horizontal and few diagonal fractures, major diagonal fractures located at 196.1', 197.2', 199.3', and 199.7'. - Qu=2057 psi at 202.5'. - Qu=2916 psi at 208.5'. - Qu=2322 psi at 213.5'. - μ=0.40 at 213.5'.	47									Visual
	205		52%		4.2/0.8		48									Visual
	210		73%		5.0/0.0		49									Visual
367.1	214.0															
	215					<b>NOTES</b> - Encountered water at 8'. - Water added at 15.0' to prevent heave. - Switched to washbore at 35.0'. - Constant 8' to 10' eruption of water/gas above casing for 10 minutes during first core run. Water/gas also erupted during core barrel removal. Water escaped from top of core barrel, which was lifted up approximately 15 feet above ground surface. Water/gas/debris also escaped horizontally from the top of the core barrel connection and sprayed approximately 40' horizontally from drill rig.										
	220															
	225															
	230															
	235															
	240															
	245															
	250															

WATER LEVEL: ▽ 8.0  
 WATER NOTE: Encountered    After HSA Removed - Prior to Washbore    Augers Pulled - Prior to Washbore  
 DATE: 5/18/06    5/18/06    5/19/06

PLATE 54



**LOG OF BORING NO. B-05-16**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NX Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 133+62.01  
61.67' Rt. of Centerline

COMPLETION DEPTH: 164.0'  
ELEVATION: 598.5  
DATE: 6/8/06 - 6/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
598.3	0					0.2' TOPSOIL/ROOTMAT - 2 1/2 INCHES											
595.0			5/6/12			GRAVEL WITH SAND (FILL): Medium-dense dark brown and black fine to coarse sand, little fine to coarse gravel, trace silt, contains few slag fragments.	1										Est. A-1-b
	5		3/2/3			GRAVEL WITH SAND (FILL): Very-loose to loose brown and black fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay, contains many slag and coal fragments.	2										Est. A-1-b
	10		3/2/1				3										Est. A-1-b
586.0			1/1/1			COARSE AND FINE SAND: Very-loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	4	9	27	46	9	9	NP	NP	13		A-3a(0)
580.0			1/2/1			COARSE AND FINE SAND: Very-loose black and brown fine to coarse sand, trace fine gravel, little silt, trace clay, contains few coal fragments, slightly organic.	5										Est. A-3a
578.5	20		P			SILT: Very-loose brown silt, "and" fine sand, trace coarse sand.	6A										Est. A-4b
576.0			2/2/1	0.5-1.25		SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silty clay lenses and seams.	6B	1	1	3	57	38	25	7	26		A-4b(8)
575.5			P	1.5-2.0		SILTY CLAY: Medium-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, contains few silt lenses.	7	1	1	1	49	48	36	16	26		A-6b(10)
	25		1/2/3	0.5-1.5			8	1	1	1	33	64	35	16	28		A-6b(10)
566.5			3/4/3	1.0-1.75		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine gravel, contains many silt pockets and lenses, and few hard zones.	9										Est. A-6a
	35		3/4/6	1.75-3.5			10										Est. A-6a
	40		5/8/11	2.75-4.25			11	0	0	3	51	45	28	11	22		A-6a(8)
	45																

WATER LEVEL: 21.0  
WATER NOTE: Encountered  
DATE: 6/8/06

PLATE 55





**LOG OF BORING NO. B-05-16**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 164.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+62.01    ELEVATION: 598.5  
NX Rock Core Barrel    61.67' Rt. of Centerline    DATE: 6/8/06 - 6/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
551.0	45																	
	47.5																	
	50	6/8/11	4.25			SILT: Stiff to very-stiff gray silt, "and" clay, trace fine sand, contains many silty clay seams, and few hard zones.	12											Est. A-4b
	55	4/6/9	1.75-2.25				13											Est. A-4b
	60	4/7/7	1.75-2.25				14	0	0	1	53	46	27	10	26			A-4b(8)
536.0	62.5																	
	65	4/7/7	1.25-2.5			SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few medium-stiff zones, and a fine to coarse sand seam from 69.5' to 69.6'.	15											Est. A-6a
	70	4/6/7	0.75-1.5				16	1	2	6	27	64	32	13	26			A-6a(9)
	75	5/7/10	1.25-1.75				17											Est. A-6a
	80	5/6/8	1.25-1.75				18											Est. A-6a
	85	4/7/10	1.0-1.75				19	1	2	3	28	66	31	12	24			A-6a(9)
	90	5/5/9	1.25-1.75				20											Est. A-6a

WATER LEVEL: ▽    21.0    ▽    ▽    ▽  
WATER NOTE: Encountered  
DATE: 6/8/06

PLATE 56





**LOG OF BORING NO. B-05-16**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit    LOCATION: Proposed I-90 Central Viaduct    COMPLETION DEPTH: 164.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    Sta. 133+62.01    ELEVATION: 598.5  
NX Rock Core Barrel    61.67' Rt. of Centerline    DATE: 6/8/06 - 6/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	135																	
	140		7/9/11	1.0-2.0		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine sand.	31											Est. A-6a
456.0																		
	145		6/11/15	1.75-2.25		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, little fine to coarse sand, trace fine gravel.	32	2	4	8	26	60	30	11	22			A-6a(8)
451.4																		
	150		16/30/50-5"R	4.0-4.5+		SANDY SILT: Hard gray silt, "and" clay, little fine to coarse sand, little fine gravel.	33											Est. A-4a
446.5																		
444.5			50-2"R			SHALE: Very-soft gray shale.	34											Visual
	155		18%		3.6/1.4	SHALE: Soft gray and dark gray shale, nearly horizontally bedded, many horizontal and few diagonal and vertical fractures, contains few to many silty clay seams.	35											Visual
	160		33%		4.8/0.2	- Qu=2295 psi at 163.5'.	36											Visual
434.5																		
	165																	
	170																	
	175																	
	180																	

**NOTES:**  
- Encountered seepage at 8.5'.  
- Encountered water at 21.0'.  
- Switched to washbore at 42.5'.  
- Base of inclinometer installed at an approximate depth of 163'.

WATER LEVEL: 21.0  
WATER NOTE: Encountered  
DATE: 6/8/06

PLATE 58



**LOG OF BORING NO. B-105A**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NX Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 134+26.02  
338.66' Rt. of Centerline

COMPLETION DEPTH: 156.0'  
ELEVATION: 585.7  
DATE: 5/5/06 - 5/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
585.5	0		4/7/8			0.2' TOPSOIL/ROOTMAT - 2 INCHES	1										Est. A-1-b
	5		3/2/3			GRAVEL WITH SAND (FILL): Medium-dense becoming very-loose dark brown, black and brown fine gravel, "and" fine to coarse sand, trace silt, trace clay, contains many slag and asphalt fragments.	2	46	28	15	7	4	NP	NP	18		A-1-b(0)
576.6	10		1/1/2			9.1 GRAVEL WITH SAND AND SILT (FILL): Very-loose to loose dark brown, black and brown fine to coarse sand, some fine gravel, little silt, trace clay, contains few to many asphalt and slag fragments.	3A 3B										Est. A-1-b Est. A-2-4
	15		1/1/1				4										Est. A-2-4
566.0	20		4/4/3			19.7 COARSE AND FINE SAND: Loose brown, black and gray fine to coarse sand, little silt, trace clay.	5A 5B	30	19	22	20	9	NP	NP	32		A-2-4(0) Est. A-3a
563.2	25		2/4/4	0.75-2.5		22.5 SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains few silt pockets and fine to coarse sand seams, and few very-stiff zones.	6	1	3	4	39	53	33	13	23		A-6a(9)
	30		2/3/3	0.75-2.0			7										Est. A-6a
553.2	35		4/6/7	1.25-3.0		32.5 SILT: Stiff to very-stiff gray silt, "and" clay, trace fine sand, contains many silt lenses, few pockets and seams.	8	0	0	1	51	48	29	9	22		A-4b(8)
	40		4/7/8	1.25-3.5			9										Est. A-4b
	45		4/5/6	1.5-2.5			10										Est. A-4b
	50		4/5/7	1.5-3.5			11	0	0	1	52	47	29	10	24		A-4b(8)

WATER LEVEL: 13.5  
WATER NOTE: Encountered    After HSA Removed - Prior to Washbore  
DATE: 5/5/06    5/5/06

PLATE 59








**LOG OF BORING NO. B-105A  
 CUY-90-15.24 West Abutment  
 CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger 3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler  
NX Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 134+26.02  
338.66' Rt. of Centerline

COMPLETION DEPTH: 156.0'  
 ELEVATION: 585.7  
 DATE: 5/5/06 - 5/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
429.7	150		32%		5.0/0.0	 156.0	34										Visual	
	155					<p><u>NOTES:</u></p> <ul style="list-style-type: none"> <li>- Encountered water at 13.5'.</li> <li>- Switched to washbore at 37.5'.</li> <li>- Base of inclinometer installed at an approximate depth of 155'.</li> </ul>												
	160																	
	165																	
	170																	
	175																	
	180																	
	185																	
	190																	
	195																	
	200																	

WATER LEVEL: ∇ 13.5 ∇ 12.6 ∇ ∇  
 WATER NOTE: Encountered After HSA Removed - Prior to Washbore  
 DATE: 5/5/06 5/5/06

PLATE 62



**LOG OF BORING NO. B-108A**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NX Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 133+21.32  
151.63' Rt. of Centerline

COMPLETION DEPTH: 168.7'  
ELEVATION: 603.0  
DATE: 4/28/06 - 5/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
602.7	0					0.3' TOPSOIL - 3 INCHES												
600.0			4/3/3			3.0' COARSE AND FINE SAND (FILL): Loose dark brown fine to coarse sand, trace silt, trace clay, trace fine to coarse gravel, contains few concrete fragments.	1											Est. A-3a
	5		2/5/6			SANDY SILT (FILL): Loose to medium-dense dark brown and brown fine to coarse sand, some silt, little clay, little fine to coarse gravel, contains many slag and coal fragments.	2											Est. A-4a
	10		3/5/5				3	14	18	23	27	18	22	4	14			A-4a(2)
590.5						12.5' COARSE AND FINE SAND (POSSIBLE FILL): Loose dark brown fine to coarse sand, little fine gravel, little silt, trace clay, contains many coal fragments.	4	19	26	26	19	10	NP	NP	16			A-3a(0)
585.5	15		3/4/3				4											
	20		4/4/4			21.0' GRAVEL WITH SAND: Loose light gray fine to coarse sand, some fine to coarse gravel, trace silt.	5											Est. A-1-b
582.0						CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel.	6	1	1	1	24	73	42	19	28			A-7-6(12)
	25		3/4/6	1.5-2.25			7											Est. A-7-6
	30		2/3/4	1.5-2.5			8	0	1	1	21	77	42	19	31			A-7-6(12)
	35		2/2/3	1.0-1.25			9											Est. A-4b
565.5						37.5' SILT: Stiff to very-stiff gray silt, "and" clay, contains many silt pockets and lenses, and few hard zones.	9											
	40		3/5/6	2.0-4.5+			10											Est. A-4b
	45		4/5/7	2.0-3.5			11	0	0	0	53	47	29	10	23			A-4b(8)
	50		4/5/7	1.75-3.0														

WATER LEVEL: ▽ "Dry"    ▽ "Dry"    ▽    ▽  
WATER NOTE: Inside HSA - Prior to Washbore    Inside HSA - Prior to Washbore    \_\_\_\_\_  
DATE: 4/28/06    5/1/06    \_\_\_\_\_

PLATE 63









**LOG OF BORING NO. B-108A**  
**CUY-90-15.24 West Abutment**  
**CUYAHOGA COUNTY, OHIO**

BBC&M JOB: 012-00946.300

TYPE: 3-1/4" I.D. Hollow-stem Auger    3-7/8" Tricone Roller Bit  
2/2.5" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler  
NX Rock Core Barrel

LOCATION: Proposed I-90 Central Viaduct  
Sta. 133+21.32  
151.63' Rt. of Centerline

COMPLETION DEPTH: 168.7'  
ELEVATION: 603.0  
DATE: 4/28/06 - 5/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: DESCRIPTION	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
450.0	150					153.0 SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine sand, contains many silt seams and lenses.											
446.7	155		21/21/30			156.3 SHALE: Very-soft gray shale, similar to hard silty clay.	33										Visual
444.3						158.7 SHALE: Very-soft gray shale, fragmented.											
	160		50-2"R				34										Visual
	165		15%		4.6/0.4	SHALE: Very-soft to soft dark gray and gray shale, nearly horizontally bedded, many horizontal fractures, few vertical and diagonal fractures, contains diagonal joints at 165.2' and 168.2', highly fractured from 159.4' to 159.9' and from 164.6' to 165.1', and few interbedded silty clay seams.	35										Visual
434.3	165		10%		4.7/0.3		36										Visual
	170																
	175																
	180																
	185																
	190																
	195																
	200																

NOTES:  
- Encountered seepage at 18.5'.  
- Switched to washbore at 41.5'.  
- Base of inclinometer installed at an approximate depth of 168'.  
- Encountered gas pocket. Water pressure rocked drill rods and water bubbled up to surface of drilling fluid.

WATER LEVEL: ∇ "Dry" ∇ "Dry" ∇ ∇  
WATER NOTE: Inside HSA - Prior to Washbore Inside HSA - Prior to Washbore \_\_\_\_\_  
DATE: 4/28/06 5/1/06 \_\_\_\_\_

PLATE 66

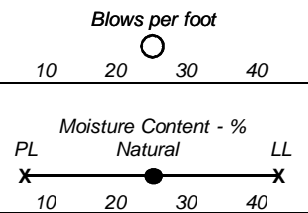








Client: Ohio Department of Transportation				Project: Cleveland Innerbelt Stability Evaluation (CUY-90-15.24)				Job No. 0021-3217.00									
LOG OF: Boring B-2				Location: ~ 45 ft. west of Pier No. 2				Date Drilled: 12/19/00 - 12/21/00									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.		Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 3.5' Water level at completion: 15.2' on 12/19 prior to mud rotary (inside hollowstem augers)	GRADATION						STANDARD PENETRATION (N) Blows per foot			
				Drive	Press			% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	PL	LL		
							<b>DESCRIPTION</b>							Moisture Content - % Natural			
100	479.0						Very soft gray SILT AND CLAY (A-6a), trace fine sand; varved; moist.										
101.8	477.2							Medium stiff gray SILT AND CLAY (A-6a), little to some fine to coarse sand, trace gravel; damp.									
105		27 26 32	18		S-26	0.75	@ 108.5', hard.										
110		16 36 38	18		S-27	4.5+		@ 118.5' - 120.0', no recovery from split spoon sampler.									
115		7 12 30	17		S-28	4.5	Medium stiff gray SILT AND CLAY (A-6a), trace fine sand; moist.										
120		8 10 11	0		S-29												
123.5	455.5																
125		6 11 13	18		S-30	0.8											



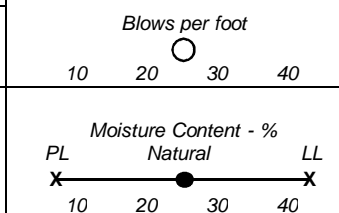






**LOG OF:** Boring B-3      **Location:** ~ 50 ft. east of Pier No. 3      **Date Drilled:** 1/9/01      **STANDARD PENETRATION (N)**

Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.		Hand Penetro-meter (tsf)	WATER OBSERVATIONS: Water seepage at: 3.5' Water level at completion: None Recorded	GRADATION						Blows per foot		Moisture Content - %			
				Drive	Press			% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	PL	LL	10	20	30	40
25	555.0						<b>DESCRIPTION</b>												
		WOH 1	18		S-11			Loose gray SANDY SILT (A-4a); moist to wet.											
29.6	550.4	WOH 7	18		S-12			Medium dense gray COARSE AND FINE SAND (A-3a), some gravel, little silty clay; wet.											
32.0	548.0																		
		4 9	13	17	S-13	1.0		Medium stiff to stiff gray SILT AND CLAY (A-6a), trace to little fine to coarse sand; moist.	0	0	--	1	44	55					
		5 7	9	18	S-14	1.0													
47.0	533.0																		
		6 6	8	18	S-15	1.0	Stiff gray SILT (A-4b); damp.												
50																			

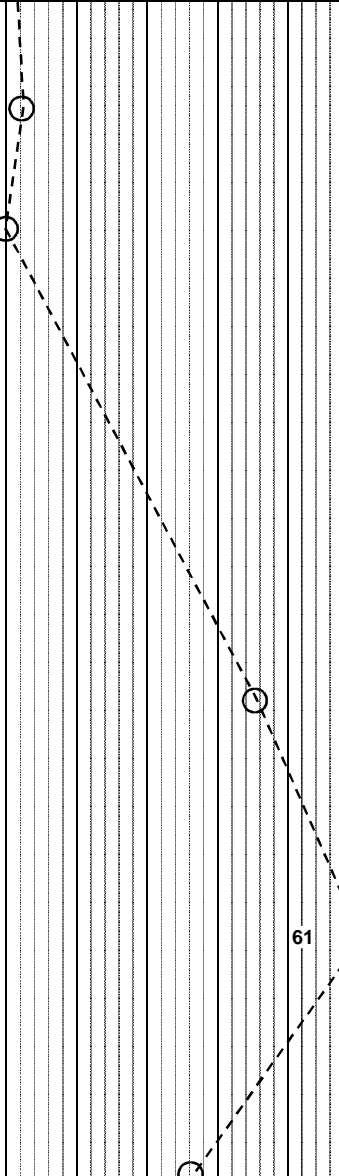
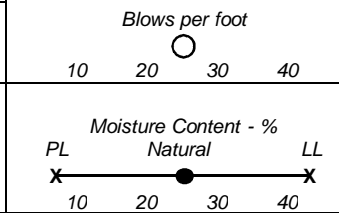






Client: Ohio Department of Transportation				Project: Cleveland Innerbelt Stability Evaluation (CUY-90-15.24)				Job No. 0021-3217.00									
LOG OF: Boring B-4				Location: ~ 71 ft. north west of Pier No. 4				Date Drilled: 1/3/01 to 1/8/01									
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.		Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 3.5' Water level at completion: None Recorded	GRADATION						STANDARD PENETRATION (N) Blows per foot			
				Drive	Press			% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	PL	LL		
							DESCRIPTION							Moisture Content - % Natural			
0	585.0						18" Large Limestone Aggregate										
1.5	583.5	8					FILL: Medium dense dark brown and black COARSE AND FINE SAND (A-3a), little to some silt; contains slag and chemical odor; damp.										
		10	13	16	S-1												
4.0	581.0	3					FILL: Very dense brown GRAVEL WITH SAND (A-1-b); moist.										
		6	50/3	14	S-2												
5							Soft to medium stiff gray and black SILT AND CLAY (A-6a), trace coarse sand; organic; moist.										
6.4	578.6	12	5	10	S-3	0.5											
			2				@ 8.5' - 10.0', no recovery from split spoon sampler.										
10		6	3	0	S-4												
10.5	574.5						Soft to medium stiff brown SANDY SILT (A-4a), little gravel; moist to wet.										
		5	4	7	S-5	0.0 - 0.5											
			3				@ 13.5' - 15.0', no recovery from split spoon sampler.										
15		2	3	0	S-6												
15.5	569.5						Very soft gray SILT (A-4b), some clay, little fine sand; wet.										
		1	2	18	S-7	0.0 - 0.25											
			2				0.0										
20		2	3	12	S-8	0.0			0	0	---	10	66	24		X	X
			0				0.0										
		0	0	3	S-9	0.0											
							Unconfined Compression Test - Su = 340 psf										
25									0	0	---	2	79	19		X	X

Client: Ohio Department of Transportation				Project: Cleveland Innerbelt Stability Evaluation (CUY-90-15.24)				Job No. 0021-3217.00										
LOG OF: Boring B-4				Location: ~ 71 ft. north west of Pier No. 4				Date Drilled: 1/3/01 to 1/8/01										
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.		Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 3.5' Water level at completion: None Recorded	GRADATION						STANDARD PENETRATION (N) Blows per foot				
				Drive	Press			% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	PL	LL			
							DESCRIPTION							Moisture Content - % Natural				
25	560.0																	
		1					Very soft gray SILT (A-4b), little clay, trace fine sand; wet.											
28.0	557.0	1	17															
		WOH WOH WOH	18				Very loose gray SILT (A-4b), some fine sand; moist to wet.											
30																		
						P-2	Unconfined Compression Test - Su = 1680 psf	0	0	---	21	71	8					
35																		
37.0	548.0																	
		7					Dense gray GRAVEL WITH SAND AND SILT (A-2-4); moist to wet.											
40		20 15	7															
42.0	543.0																	
		22 32	18				Very dense gray GRAVEL WITH SAND (A-1-b); wet.											
45		29																
47.0	538.0																	
		10 15	7				Medium dense gray GRAVEL WITH SAND (A-1-b); wet.											
50		11																



Client: Ohio Department of Transportation				Project: Cleveland Innerbelt Stability Evaluation (CUY-90-15.24)				Job No. 0021-3217.00										
LOG OF: Boring B-4				Location: ~ 71 ft. north west of Pier No. 4				Date Drilled: 1/3/01 to 1/8/01										
Depth (ft)	Elev. (ft)	Blows per 6"	Recovery (in)	Sample No.		Hand Penetrometer (tsf)	WATER OBSERVATIONS: Water seepage at: 3.5' Water level at completion: None Recorded	GRADATION						STANDARD PENETRATION (N) Blows per foot				
				Drive	Press			% Aggregate	% C. Sand	% M. Sand	% F. Sand	% Silt	% Clay	PL	LL			
							DESCRIPTION							Moisture Content - % Natural				
50	535.0						Medium dense gray GRAVEL WITH SAND (A-1-b); wet.											
55		9 7 11	16		S-15													
57.0	528.0						Stiff gray SILT AND CLAY (A-6a), trace to little fine to coarse sand, trace to little gravel; moist.											
60		2 5 6	13		S-16	1.0			1	4	---	6	35	54				
65							No Recovery On Press Tube P-3											
70							No Recovery On Press Tube P-4											
72.0	513.0						Stiff gray SILTY CLAY (A-6b), trace fine sand; damp to moist.											
75		6 11 14	17		S-17				1	2	---	4	35	58				











BBC&M ENGINEERING, INC.		LOG OF BORING NO. B-1 CUY-90-15.24 CLEVELAND, OHIO											
TYPE: 3-1/4" I.D. HOLLOW-STEM AUGER		LOCATION: STA. 48+75		COMPLETION DEPTH: 45.0'		ELEVATION:		DATE: 10/23/96					
2" O.D. SPLIT-BARREL SAMPLER		9' LEFT OF CENTERLINE											
DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	PLASTIC LIMIT	DESCRIPTION							
						1st	%	%	ADD.	C.S.	F.S.	SILT	CLAY
0													
1	3/17/11					68	8	11	13	FILL: Medium-dense gray fine to coarse gravel, some fine to coarse sand, little clayey silt.			
										A-1-a(0)			
2	6/8/10	4.25	17	26	22	Hard gray and brown becoming gray silt, little fine sand, with fine sand seams, little clay.							
										Est. A-4b			
3	8/6/7												
4	2/3/4	3.25-3.25				0	0	1	67	32	Very-stiff to hard gray silty clay, trace fine sand.		
										- 8.5' to 13.5', interbedded with silt, trace fine to coarse sand, with dark-gray silt organic seams.			
										- 13.5' to 38.5', little fine sand, with silt and fine sand seams.			
5	3/4/7	4.5+											
6	2/3/5	2.2-3.2											
7	2/3/4	4.2-4.5	24	34	20	0	0	1	59	40			
8	1/3/5	1.7-3.0											
9	4/1/12	4.5-4.5+											
10	4/1/8	3.2-4.0											
11	3/6/9	4.5+									- Below 43.5', with clayey silt and silt seams.		
											A-6a(10)		
WATER LEVEL: DRY													
WATER NOTE:													
DATE: 10/23/96													

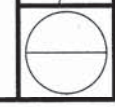
BBC&M ENGINEERING, INC.		LOG OF BORING NO. B-2 CUY-90-15.24 CLEVELAND, OHIO											
TYPE: 3-1/4" I.D. HOLLOW-STEM AUGER		LOCATION: STA. 48+97		COMPLETION DEPTH: 45.0'		ELEVATION:		DATE: 10/23/96					
2" O.D. SPLIT-BARREL SAMPLER		122' RIGHT OF CENTERLINE											
DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	PLASTIC LIMIT	DESCRIPTION							
						1st	%	%	ADD.	C.S.	F.S.	SILT	CLAY
0													
1	1/2/6										FILL: Very-loose brown-gray fine to coarse gravel, "and" clayey silt, some fine sand, slightly organic.		
											Est. A-4a		
2	3/3/11					25	7	17	51	FILL: Stiff gray-brown silty clay interbedded with silt and fine sand, contains brick, concrete.			
											Est. A-6a		
3	12/9/9	4.5+				0	0	3	97	Hard gray clayey silt, trace fine sand, few silty clay seams.			
											Est. A-4a		
4	2/1/7	4.5+	19	33	20	Very-stiff to hard gray silty clay.							
										- 8.5' to 23.5', with fine sand and silt seams.			
5	1/3/5	4.5+											
6	5/8/9	4.5+											
7	2/3/6	4.0									- 23.5' to 28.5' with clayey silt and silt seams.		
											- 28.5' to 33.5', with few lenses of silt and fine sand.		
8	2/6/9												
9	2/4/7	2.5-3.5	21	30	19	0	0	0	51	49	- 35.0' to 38.5', interbedded with silt, trace fine to medium sand.		
											- 38.5' to 43.5', with fine sand and silt seams.		
10	6/9/13	4.5+											
11	5/1/11	4.5+									- Below 43.5', trace fine sand.		
											A-6a(8)		
WATER LEVEL: DRY													
WATER NOTE:													
DATE: 10/23/96													



DESIGNED: F.X.C.  
CHECKED: P.H.A.  
DRAWN: S.P.S.  
REVIEWED: F.X.C.  
DATE: 12/02/96  
STRUCTURE FILE NUMBER

SUBSURFACE INVESTIGATION  
CUY-90-15.24 EAST APPROACH  
CLEVELAND, OHIO

CUY-90-15.24





DEPTH FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: 2" O.D. Split-barrel Sampler				LOCATION: Sta. 15+06.50								
							3" O.D. Shelby Tube				120.7' Rt. of Centerline								
							COMPLETION DEPTH: 230.1'				ELEVATION: 676.6		DATE: 8/23/94 8/25/94						
							tsf	%	%	%	AGG.	C. S.	F. S.	SILT:CLAY	DESCRIPTION				
0															FILL: Loose brown fine to coarse sand, trace to little fine to coarse gravel, interbedded with fine to medium sand, trace coarse sand, trace fine gravel.				
5	1	3 / 3 / 3															Est. A-2-4		
10	2A 2B	3 / 3 / 4															Loose brown and gray fine to medium sand, trace coarse sand, trace fine gravel. - From 10.4' to 12.0': Seam of clayey silt.		
15	3	6 / 10 / 10								36	43	14	7				Est. A-1-b		
20	4	5 / 7 / 8															A-1-b(0)		
25	5	8 / 11 / 12								10	54	26	10				Medium-dense brown fine to medium sand, trace to little silt, trace coarse sand, trace fine gravel, contains seams (1 to 6 inches) of silt, fine sand, and silty clay.  - Sample 5: Medium-dense fine to coarse sand, trace fine gravel, trace silt, A-1-b(0).		
30	6A 6B	5 / 9 / 14																	
35	7A 7B	10 / 12 / 15																	
40	8	3 / 6 / 11								0	2	84	14				A-3a(0)		
45	9	6 / 7 / 15								0	0	21	71	8			Medium-dense gray silt, little fine sand, trace clay.		
																	A-4b(8)		
DESCRIPTION ON NEXT PAGE																			
50	WATER LEVEL: ▽		▽		▽		▽		▽		▽		▽						
WATER NOTE: _____																			
DATE: _____																			





**LOG OF BORING NO. B-101**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>			LOCATION: <u>Sta. 15+06.50</u>		
								COMPLETION DEPTH: <u>230.1'</u> ELEVATION: <u>676.6</u> DATE: <u>8/23/94 8/25/94</u>			<u>120.7' Rt. of Centerline</u>		
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
50	10	3	5/7	1.5-2.0	21	24	17	0	0	10	66	24	Medium-dense to dense gray silt interbedded with silt clay, trace fine to medium sand.
55	11	P			19	25	18	0	0	3	80	17	A-4b(8)
	12	15	22/32										Dense gray silt, little to "and" fine sand, trace clay interbedded with dense gray fine sand, little to "and" silt, trace clay.
60	13	21	32/49		15			0	0	38	54	8	
65	14	29	46/48										A-4b(5)
	15	3	6/9	1.5-2.2	22	32	16	0	0	1	57	42	Stiff to hard gray silt clay, trace fine to medium sand, few lenses of silt, horizontal structure.
	16	9	15/21	4.5+									- From 73.4' to 87.0': Hard in consistency.
80	17	7	14/19	4.0-4.5+									- From 80.0' to 92.0': Contains seams of silt.
85	18	7	12/15	4.5+									
90	19	5	8/12	2.0-4.0	22	33	17	0	0	0	56	44	
95	20	4	4/5	1.0-1.5									A-6b(10)
													DESCRIPTION ON NEXT PAGE
100	WATER LEVEL: ▽ _____ ▽ _____ ▽ _____ ▽ _____ ▽ _____ ▽ _____ WATER NOTE: _____ DATE: _____												





**LOG OF BORING NO. B-101**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPT. FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 15+06.50</u>	
							COMPLETION DEPTH: <u>230.1'</u> ELEVATION: <u>676.6</u> DATE: <u>8/23/94 8/25/94</u>				<u>120.7' Rt. of Centerline</u>	
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
150	35	8 / 12 1/2 18	2.0-2.5									DESCRIPTION ON PREVIOUS PAGE
155	36	7 / 15 1/2 21	3.0-3.3	20	36	19	1	2	3	32	62	Very-stiff gray silty clay, trace fine to coarse sand, trace fine to coarse gravel, some horizontal structures.
160	37	10 / 16 1/2 24	2.5-3.5									
165	38	9 / 17 1/2 26	3.4-3.7									
170	39	9 / 14 1/2 21	2.3-3.8	21	34	20	1	1	2	35	61	
175	40	7 / 13 1/2 18	2.5-3.0									A-6a, A-6b(10,11) Stiff to very-stiff gray silty clay, trace fine to medium sand, horizontal structure, contains streaks of silt and clayey silt.
180	41	6 / 10 1/2 16	2.2-3.0									- From 179.5' to 180.2': Diorite boulder.
185	42	4 / 7 1/2 7	1.0-1.7	27	39	22	0	0	1	28	71	A-6b(11) Dense gray silt, little fine sand, trace medium to coarse sand interbedded with silty clay.
190	43	9 / 15 1/2 26		20	20	14	2	2	16	61	19	A-4b(8) Dense gray fine to coarse sand, little fine gravel, some silty clay.
195	44	29 / 90-1"R										- From 195.5' to 196.3': Granite boulder. Est. A-1-b
200												DESCRIPTION ON NEXT PAGE

WATER LEVEL:                              

WATER NOTE:                              

DATE:





**LOG OF BORING NO. B-101**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 15+06.50</u>				COMPLETION DEPTH: <u>230.1'</u> ELEVATION: <u>676.6</u> DATE: <u>8/23/94 8/25/94</u>					
							3" O.D. Shelby Tube					120.7' Rt. of Centerline				
							tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
200	45	36/60	4.5+													Very-stiff to hard gray silty clay, trace to little fine to coarse sand, trace fine to coarse gravel, few lenses of silt.
205	46	28/47/67	4.5+													
210	47	27/32/32	2.5-4.5													- From 210.0; to 211.5': Contains slickenside planes.
215	48	9/13/18	2.5-3.5													- From 217.2' to 217.4': Cobble or cobble gravel.
220	49	11/14/18	2.2-2.8	19	29	17	1	5	9	33	52					A-6a(9)
225	50	77-1"R NXM REC	RQD													Soft to medium-hard gray and dark-gray shale, nearly horizontally bedded, fissile, 1/4" to 13" core pieces.
230	51	98%	76%													- Encountered water at 36.0'.
235																- From 0.0' to 55.0': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 60.0'.
240																- From 55.0' to 225.0': 3-7/8" Tricone Bit.
245																- From 58.3' to 230.1': Recirculated water used for drilling fluid.
250																

WATER LEVEL:                                   

WATER NOTE:                                   

DATE:





**LOG OF BORING NO. B-102**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

TYPE: <u>2" O.D. Split-barrel Sampler</u>	LOCATION: <u>Sta. 15+95.34</u>
<u>3" O.D. Shelby Tube</u>	<u>134.7' Rt. of</u>
<u>NXM Rock-core Barrel</u>	<u>Centerline</u>
COMPLETION DEPTH: <u>232.0'</u> ELEVATION: <u>675.7</u> DATE: <u>9/9/94</u> <u>9/14/94</u>	

DEP't, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	COMPLETION DEPTH: 232.0' ELEVATION: 675.7 DATE: 9/9/94 9/14/94					DESCRIPTION - CONTINUED
							tsf	%	%	%	AGG.	
50	10	4 / 10 / 11	2.8-3.5	18	23	18	0	0	10	65	25	Very-stiff gray clayey silt interbedded with silt, trace-fine to medium sand.  A-4b(8) Medium-dense to dense gray silt, little to "and" fine sand.
55	11	16 / 24 / 22										
60	12	12 / 12 / 14					0	0	5	79	16	A-4b(8)  Interbedded medium-stiff gray silty clay and very-loose to loose silt, some fine sand, horizontal laminated structure.
65	13	2 / 3 / 2	0.5-0.7									
70	14	P	0.8-1.0									Est. A-6a  Stiff to hard gray silty clay, trace fine to medium sand, contains seams of silt, horizontal structure.
75	15	5 / 9 / 12	1.5-4.5+									
80	16	P	4.5+									
85	17	5 / 7 / 13	1.5-2.5									
90	18	P	1.0									Est. A-6b  Medium-stiff to stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few seams of silt.
95	19	2 / 2 / 2	0.5-1.0									
100												A-6a, A-6b(9,11)

WATER LEVEL:                              

WATER NOTE:                              

DATE:







**LOG OF BORING NO. B-102**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

	TYPE: <u>2" O.D. Split-barrel Sampler</u>	LOCATION: <u>Sta. 15+95.34</u>
	<u>3" O.D. Shelby Tube</u>	<u>134.7' Rt. of</u>
	<u>NXM Rock-core Barrel</u>	<u>Centerline</u>
COMPLETION DEPTH: <u>232.0'</u> ELEVATION: <u>675.7</u> DATE: <u>9/9/94</u> <u>9/14/94</u>		

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	COMPLETION DEPTH: 232.0' ELEVATION: 675.7 DATE: 9/9/94 9/14/94					DESCRIPTION - CONTINUED
							tsf	%	%	%	AGG.	
150	30	8 /17/24	3.0-3.5									Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, horizontal structure, contains thin seams of clayey silt and silt.
155	31	10 /16/20	2.0-3.0									
160	32	6 /11/16	1.8-2.4									
165	33	8 /13/18	2.0-2.5									
170	34	12 /17/20	1.5-2.0	28	35	19	0	2	2	27	69	
175	35	7 /13/18	2.5-3.0									
180	36	7 /11/14	2.4-3.0									
185	37	P	1.0-1.5									
190	38	P	1.5									
195	39	P	2.5-3.0									

A-6b(10)

DESCRIPTION ON NEXT PAGE

200	WATER LEVEL: <u>▽</u>	<u>▽</u>	<u>▽</u>	<u>▽</u>	<u>▽</u>	<u>▽</u>	<u>▽</u>
	WATER NOTE: _____	_____	_____	_____	_____	_____	_____
	DATE: _____	_____	_____	_____	_____	_____	_____



**LOG OF BORING NO. B-102**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>			LOCATION: <u>Sta. 15+95.34</u>		
							COMPLETION DEPTH: <u>232.0'</u> ELEVATION: <u>675.7</u> DATE: <u>9/9/94 9/14/94</u>			<u>3" O.D. Shelby Tube</u>		
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
200	40	19/32/44	4.5+									Very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt.
205	41	11/21/25	4.3-4.5+									<ul style="list-style-type: none"> <li>- From 198.4' to 200.0': Few seams of fine to coarse gravel.</li> <li>- From 200.1' to 200.4': Cobble.</li> </ul>
210	42	13/19/23	3.0-3.8									
215	43	8/14/17	2.0-3.0									
220	44	6/12/14	2.0-2.5									
225		NXM REC	RQD									Est. A-6b
												Dense gray fine to coarse gravel, "and" silty clay, some fine to coarse sand.
	45	100%	50%									Est. A-1-b
230												Medium-hard gray shale, nearly horizontally bedded, slightly fissile. <ul style="list-style-type: none"> <li>- From 230.7' to 231.2': Several vertical fractures.</li> <li>- From 231.8' to 232.0': Few diagonal fractures.</li> </ul>
235												<ul style="list-style-type: none"> <li>- Encountered water at 39.5'.</li> </ul>
240												<ul style="list-style-type: none"> <li>- From 0.0' to 64.0': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 64.0'.</li> <li>- From 65.0' to 225.5': 3-7/8" Tricone Bit.</li> </ul>
245												<ul style="list-style-type: none"> <li>- From 65.0' to 232.0': Recirculated water used for drilling fluid.</li> </ul>
250												WATER LEVEL: <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> WATER NOTE: <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> DATE: <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u> <u>  </u>





**LOG OF BORING NO. B-103**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 16+93.83</u>				DESCRIPTION	
							COMPLETION DEPTH: <u>175.0'</u> ELEVATION: <u>616.2</u> DATE: <u>8/15/94 8/17/94</u>			3" O.D. Shelby Tube		34.49' Rt. of Centerline
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	
0												FILL: Loose light-gray fine gravel (crushed stone).
5	1	1 / 1 / 3										FILE: Medium-dense black fine to coarse gravel, some fine to coarse sand, little silt. Est. A-1-b
10	2A 2B	4 / 7 / 8										FILL: Very-loose to loose brown and black fine to medium sand, trace silt, few fragments of decayed wood. Est. A-3
15	3	5 / 10 / 13		17	24	18	0	0	12	66	22	Medium-dense gray silt, little fine sand, little clay, contains thin seams of fine and fine to medium sand.
20	4 5A 5B	P/R 9 / 12 / 14	4.2-4.5+	20	37	20	0	0	1	57	42	A-4b(8) Very-stiff to hard gray silty clay, trace fine to medium sand, contains seams of silt.
25	6	P	4.5+	20	29	20	0	0	0	57	43	
30	7	4 / 7 / 12	3.5-4.5+									
35	8	5 / 9 / 15	2.5-3.3									A-6b(11)
40	9	2 / 4 / 5	0.8-1.8									Medium-stiff to stiff gray silty clay, trace fine to coarse sand, trace fine gravel, horizontal structure.
45	10	2 / 4 / 4	0.8-2.0	30	39	21	0	1	2	20	77	A-6b(11)
50												

WATER LEVEL:                                
 WATER NOTE:                                
 DATE:



LOG OF BORING NO. B-103  
 CUY-90-15.24  
 CLEVELAND, OHIO

DEP. FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 16+93.83</u>				SILT	CLAY	DESCRIPTION - CONTINUED
							TYPE: <u>3" O.D. Shelby Tube</u>			LOCATION: <u>34.49' Rt. of Centerline</u>			
			tsf	%	%	%							
50	11	2 1/4 / 5	0.9-1.3										Medium-stiff to stiff gray silty clay, trace fine to coarse sand, trace fine gravel, horizontal structure.  A-6b(11)
55	12	3 1/6 / 10	1.6-2.5										Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, contains seams of clayey silt and silt.
60	13	5 1/8 / 11	2.0-3.3	22	30	20	0	0	2	66	32		- Sample 13: Very-stiff brown-gray clayey silt, trace fine to medium sand, A-4b(8).
65	14	5 1/8 / 12	2.5-3.5	21	32	17	0	0	2	61	37		
70	15	5 1/9 / 12	3.3-4.0										
75	16	4 1/9 / 11	2.0-3.0										
80	17	7 1/11 / 15	2.5-3.0										
85	18	7 1/12 / 16	2.3-2.9										
90	19	5 1/11 / 14	2.0-2.5										
95	20	5 1/9 / 15	1.5-2.0	21	31	17	2	2	6	41	49		A-6a(10)

100  
 WATER LEVEL:                                
 WATER NOTE:                                
 DATE:





**LOG OF BORING NO. B-103**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 16+93.83</u>				DESCRIPTION - CONTINUED	
							COMPLETION DEPTH: <u>175.0'</u> ELEVATION: <u>616.2</u> DATE: <u>8/15/94 8/17/94</u>			3" O.D. Shelby Tube		34.49' Rt. of Centerline
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	
100	21	5 / 9 / 12	1.5-2.0									Stiff to very-stiff gray silty clay, trace fine to coarse sand; trace fine gravel, contains seams of clayey silt and silt.
105	22	5 / 9 / 13	1.5-2.3	20	34	19	6	2	3	38	51	
110	23	6 / 11 / 17	2.5									A-6a(10) Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, horizontal structure, few lenses of silt.
115	24	6 / 13 / 17	2.5-3.2									
120	25	P	2.5									
	26	7 / 10 / 12	1.0-1.7	26	41	21	0	1	1	29	69	- Sample 26: Stiff to very-stiff gray silty clay, A-7-6(12).
125	27	P	1.8-2.0	29	40	20	0	0	1	23	76	
	28	4 / 6 / 8	1.0-1.5	26	36	21	1	1	1	19	78	A-6a, A-6b(10)
130	29A	P										Interbedded: Medium-stiff to stiff gray clayey silt, silty clay, medium-dense silt, and dense fine sand, some silt, 1/2" to 6"+ each soil type.
	29B	8 / 13 / 24	1.0	21	NP	NP	0	0	1	82	17	A-4b(8)
135	30	7 / 20 / 28					35	41	12		12	Dense gray fine to coarse sand, little fine gravel, little clayey silt. A-1-b(0)
140	31	24 / 50 / 77	4.5+									Very-hard gray silty clay, little to some fine to coarse sand, trace fine to coarse gravel.  - From 142.1' tp 142.5': Cobbles or boulders.  - At 146.0': Slickensided plane.  - From 150.0' to 151.5': Contains slickensided planes.
145	32	18 / 41 / 64	4.5+									Est. A-6a
150	WATER LEVEL: <input checked="" type="checkbox"/> _____ <input checked="" type="checkbox"/> _____ <input checked="" type="checkbox"/> _____ <input checked="" type="checkbox"/> _____ <input checked="" type="checkbox"/> _____ <input checked="" type="checkbox"/> _____ WATER NOTE: _____ DATE: _____											



**LOG OF BORING NO. B-103**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPT. FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: 2" O.D. Split-barrel Sampler				LOCATION: Sta. 16+93.83						
								3" O.D. Shelby Tube				34.49' Rt. of Centerline						
								COMPLETION DEPTH: 175.0'				ELEVATION: 616.2		DATE: 8/15/94 8/17/94				
								tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED	
150	33	18/33	47	4.5+														DESCRIPTION ON PREVIOUS PAGE Est. A-6a
155	34	7/10	14	1.8-2.5	24	32	20	0	0	1	43	56						Stiff to very-stiff gray silty clay, trace fine to medium sand, horizontal structure.
160	35	6/13	15	2.2-2.5														A-6a(9)
165	36	23/44	60	4.5+				21	25	19		35						Dense gray fine to coarse gravel (mostly shale fragments) "and" silty clay, some fine to coarse sand, contains seams of fine to medium sand, some silt. A-2-4(0)
170	37	NXM REC	96%	RQD	60%													Very-soft to soft gray shale, partly similar to soil. Soft to medium-hard gray shale, nearly horizontally bedded, fissile 1/4" to 7" core layers. - From 169.6' to 174.1': Very-soft shale seam similar to hard soil.
175																		- Encountered water at 27.5'.
180																		- From 0.0' to 27.5': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 30.0'.
185																		- From 27.5' to 170.0': 3-7/8" Tricone Bit.
190																		- From 27.5' to 175.0': Recirculated water used for drilling fluid.
195																		

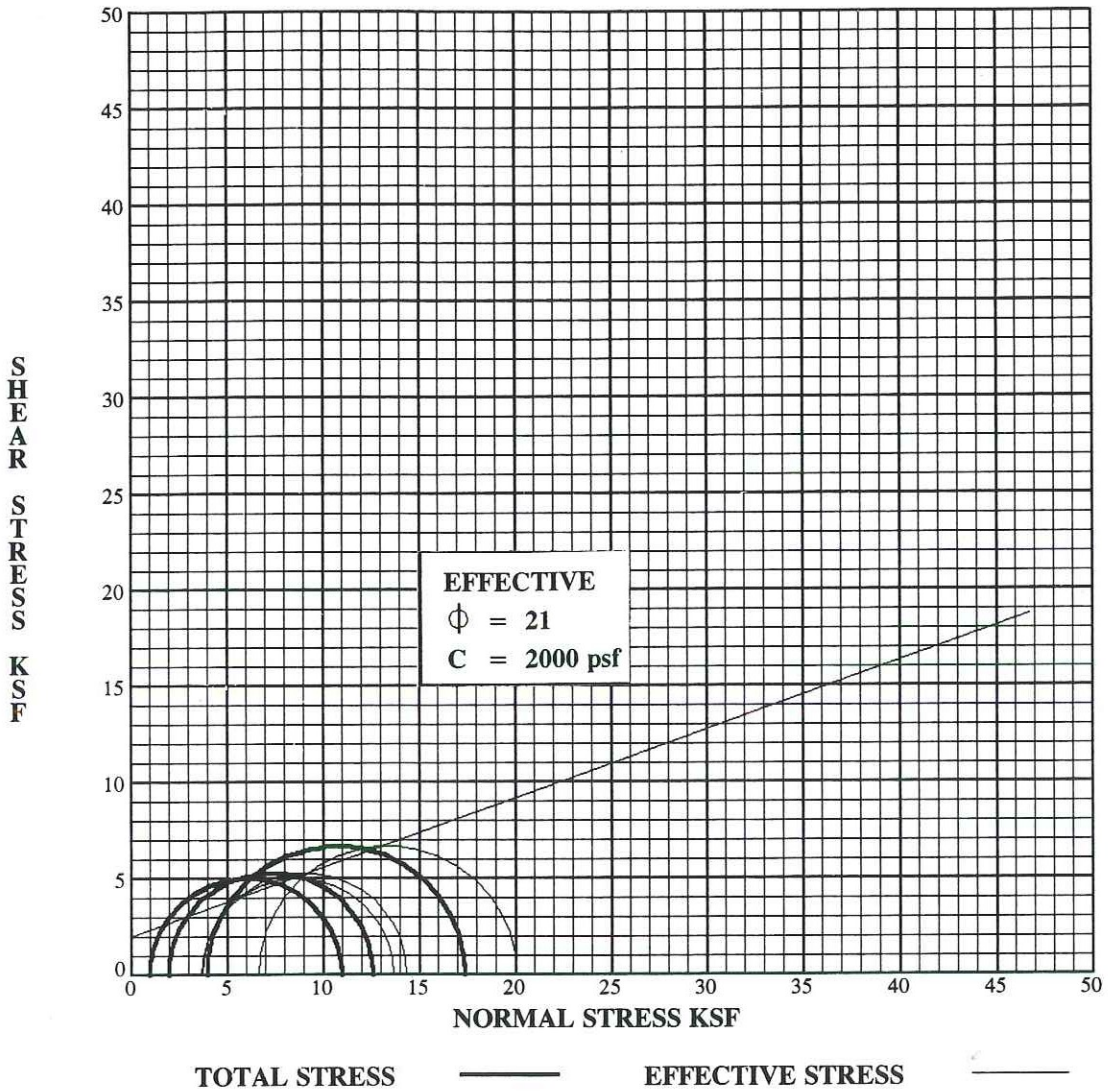
200 WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_



# SUMMARY OF TRIAXIAL COMPRESSION TESTS

SATURATED, CONSOLIDATED, UNDRAINED  
( PEAK PLOTTED )

## SHEAR STRESS VS NORMAL STRESS



Specimen Identification	Classification	DD	MC %
B-103 S-6 I 25.0'-27.0'	Hard gray silty clay inter-bedded with silt, trace fine to medium sand. A-4b (8)	110	20
B-103 S-6 II 25.0'-27.0'	Hard gray silty clay inter-bedded with silt, trace fine to medium sand. A-4b (8)	111	20
B-103 S-6 III 25.0'-27.0'	Hard gray silty clay inter-bedded with silt, trace fine to medium sand. A-4b (8)	112	20



PROJECT CUY-90-15.24  
 LOCATION Cleveland, Ohio  
 JOB NO. 4500 DATE 10/31/94



DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: 2" O.D. Split-barrel Sampler				LOCATION: Sta. 18+50.53					
							3" O.D. Shelby Tube				100.2' Rt. of Centerline					
							COMPLETION DEPTH: 165.5'				ELEVATION: 601.8		DATE: 9/13/94 9/15/94			
							tsf	%	%	%	AGG.	C.S.	F.S.	SILT	CLAY	DESCRIPTION
0																FILL: (Estimated) Medium-dense to dense brown and gray fine to coarse gravel, little fine to coarse sand. Est. A-1-a
5	1	5 / 5 / 7														FILL: Medium-dense to dense black fine to coarse sand, some fine to coarse gravel, trace clayey silt, (cinders), and shale fragments.
10	2A 2B	2 / 3 / 4														
15	3A 3B	3 / 2 / 2														Est. A-1-b Loose brown fine to medium sand, trace coarse sand, trace silt.
20	4A 4B	P														Est. A-3a Gray silt, little fine sand.
25	5	3 / 4 / 7	3.7-4.3													Est. A-4b Very-stiff to hard gray silty clay, trace fine sand, few lenses of silt.
30	6	P	1.1-1.2													Est. A-6b Stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few seams and lenses of silt.
35	7	2 / 3 / 4	1.2-1.3	30	42	24	1	1	1	22	75					A-7-6(12) Very-stiff gray silty clay, trace fine sand, many seams and lenses of silt, horizontal structure.
40	8	P	2.3-2.7	24	30	20	0	0	0	50	50					
45	9	4 / 4 / 5	2.2-2.6													A-4b(8)
50																

WATER LEVEL:                              

WATER NOTE:                              

DATE:





**LOG OF BORING NO. B-104**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 18+50.53</u>				AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
							COMPLETION DEPTH: <u>165.5'</u> ELEVATION: <u>601.8</u> DATE: <u>9/13/94 9/15/94</u>									
			tsf	%	%	%										
50	10	P													Very-stiff to hard gray silty clay, trace fine sand, many seams and lenses of silt, horizontal structure.	
55	11	4 / 4 / 7	2.4-2.7													
60	12	P														
65	13	5 / 7 / 10	2.5-3.2													
70	14	4 / 5 / 9	2.4-2.7													
75	15	3 / 4 / 3	1.4-1.8	24	29	19	0	0	1	60	39				A-4b(8)	
80	16	4 / 6 / 8	1.8-2.2												Stiff to hard gray silty clay, trace fine to coarse sand, trace fine gravel, many seams and lenses of silt, horizontal structure.	
85	17	4 / 7 / 8	2.1-2.3													
90	18	4 / 7 / 9	2.4-2.7													
95	19	4 / 7 / 9	2.0-2.7													
100															A-6a(10)	
WATER LEVEL:			▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	
WATER NOTE:																
DATE:																





**LOG OF BORING NO. B-104**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPT. FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 18+50.53</u>	
								COMPLETION DEPTH: <u>165.5'</u> ELEVATION: <u>601.8</u> DATE: <u>9/13/94 9/15/94</u>				<u>100.2' Rt. of Centerline</u>	
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT:CLAY	DESCRIPTION - CONTINUED	
150	30		P									Dense gray fine to coarse sand, some fine to coarse gravel, trace silt.	
155	31		29/27/33					40	29	11	20	A-1-b(0)	
160	32		NXM REC 89%	RQD 26%	0							Hard gray silty clay, some fine to coarse sand, little fine gravel (shale fragments). Est. A-6a	
165												Medium-hard gray shale, nearly horizontally bedded. - From 163.1' to 163.8': Contains zones of clay.	
170												- Encountered water from 25.0' to 165.5'.	
175												- From 0.0' to 29.0': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 29.0'.	
180												- From 29.0' to 159.5': 3-7/8" Tricone Bit.	
185												- From 29.0' to 165.5': Recirculated water used for drilling fluid.	
190													
195													
200													

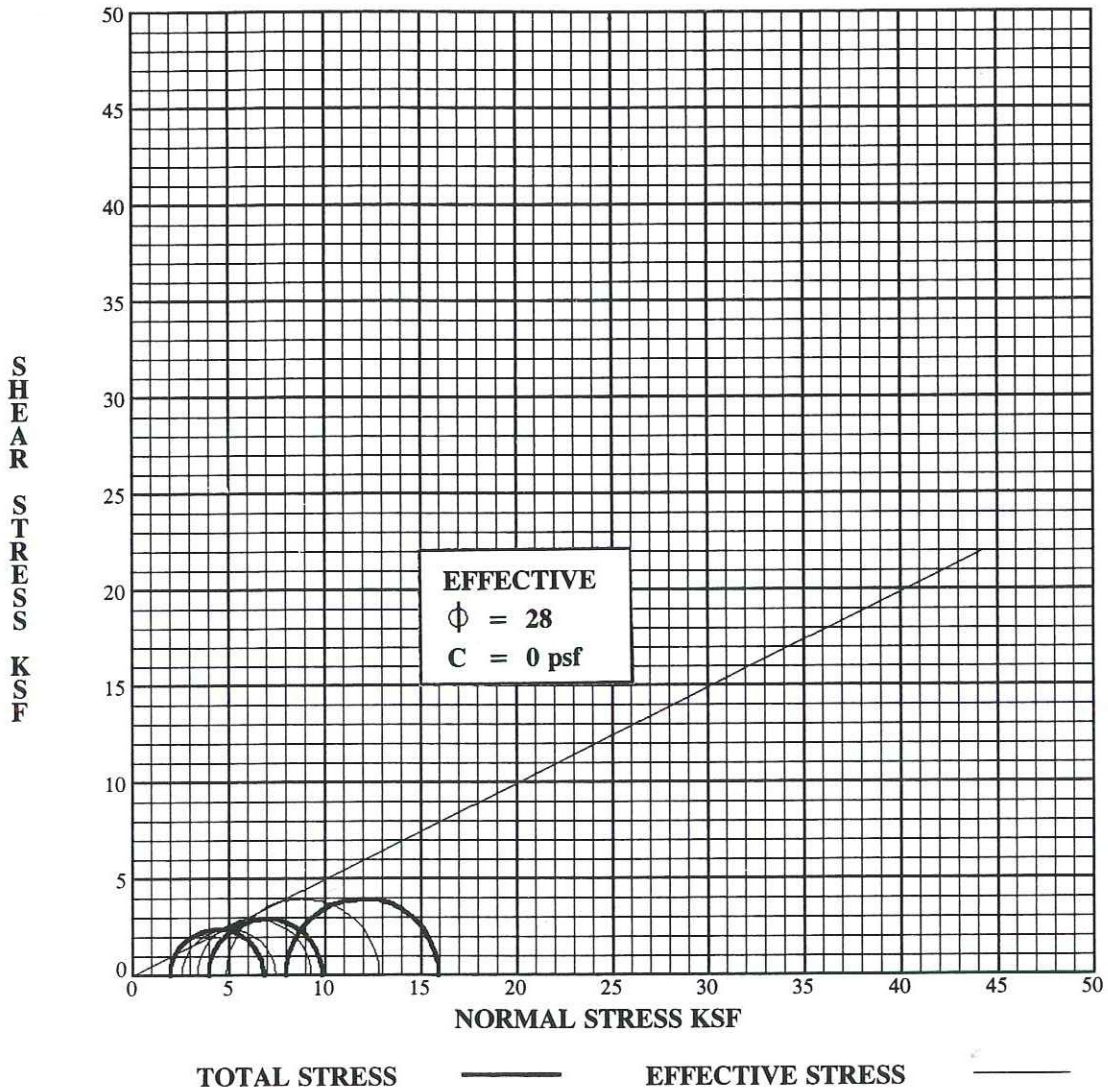
WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_



# SUMMARY OF TRIAXIAL COMPRESSION TESTS

SATURATED, CONSOLIDATED, UNDRAINED  
( RESIDUAL PLOTTED )

## SHEAR STRESS VS NORMAL STRESS



Specimen Identification	Classification	DD	MC%
B-104 S-8 I 39.5'-41.5'	Stiff to very-stiff gray silty clay, trace fine to medium sand, many lenses of silt and fine sand. A-4b (8)	102	24
B-104 S-8 II 39.5'-41.5'	Stiff to very-stiff gray silty clay, trace fine to medium sand, many lenses of silt and fine sand. A-4b (8)	103	24
B-104 S-8 III 39.5'-41.5'	Stiff to very-stiff gray silty clay, trace fine to medium sand, many lenses of silt and fine sand. A-4b (8)	104	23



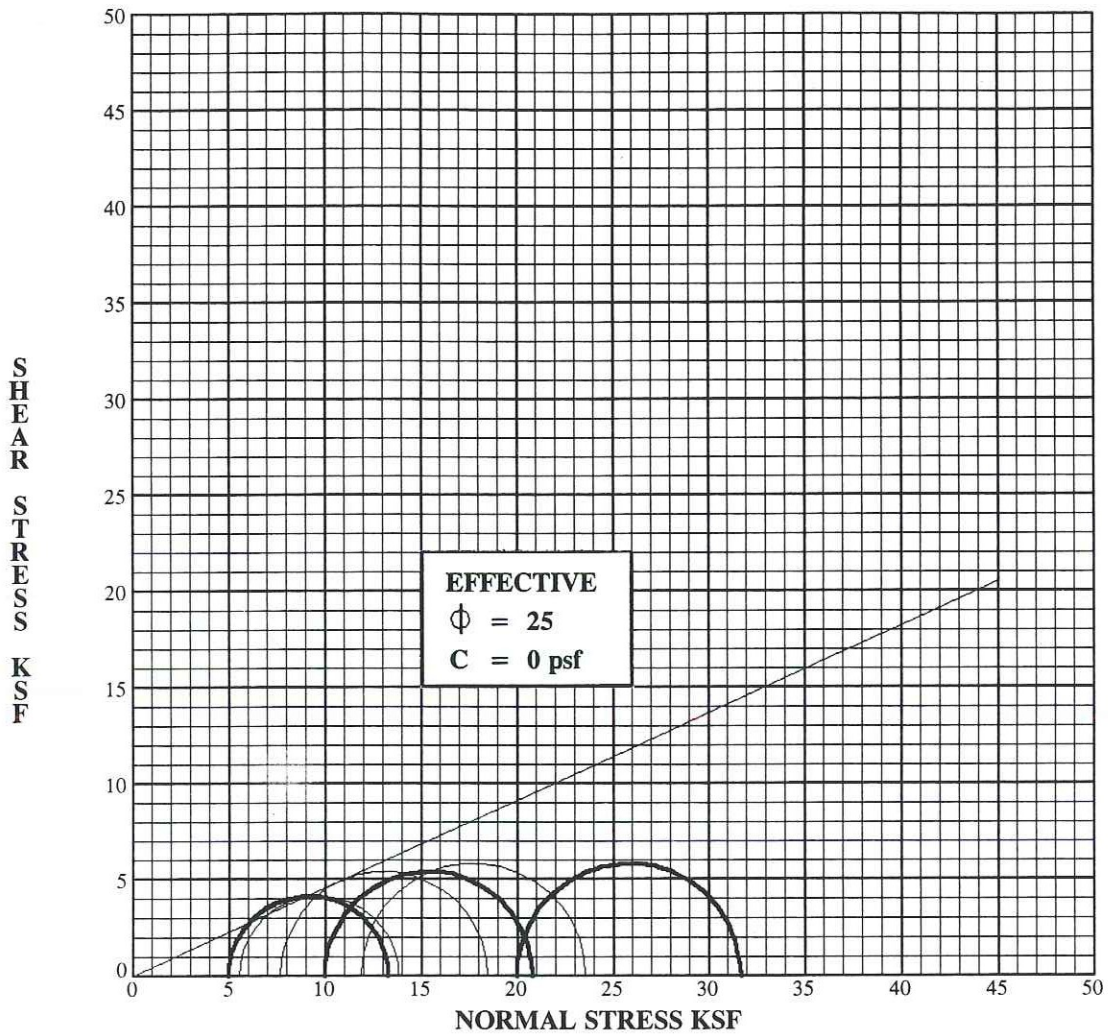
PROJECT CUY-90-15.24  
 LOCATION Cleveland, Ohio  
 JOB NO. 4500 DATE 10/31/94



# SUMMARY OF TRIAXIAL COMPRESSION TESTS

SATURATED, CONSOLIDATED, UNDRAINED  
( RESIDUAL PLOTTED )

## SHEAR STRESS VS NORMAL STRESS



TOTAL STRESS

EFFECTIVE STRESS

Specimen Identification	Classification	DD	MC%
B-104 S-28 I 139.5'-141.5'	Very-stiff to hard gray silty clay, trace fine to coarse sand, few lenses of silt. A-6b (11)	105	22
B-104 S-28 II 139.5'-141.5'	Very-stiff to hard gray silty clay, trace fine to coarse sand, few lenses of silt. A-6b (11)	106	22
B-104 S-28 III 139.5'-141.5'	Very-stiff to hard gray silty clay, trace fine to coarse sand, few lenses of silt. A-6b (11)	96	28



PROJECT CUY-90-15.24  
 LOCATION CLEVELAND, OHIO  
 JOB NO. 4500 DATE 11/21/94



DEPT., FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 19+11.38</u>				COMPLETION DEPTH: <u>149.5'</u> ELEVATION: <u>585.4</u> DATE: <u>8/17/94 8/18/94</u>
							3" O.D. Shelby Tube				
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT:CLAY	DESCRIPTION
0											FILL: Loose to medium-dense (Estimated) brown fine to coarse gravel, some fine to coarse sand, little clayey silt, contains cinders and slag.
5	1	3 / 2 / 3									FILL: Very-loose dark-gray and gray fine to coarse sand, little to some fine to coarse gravel, trace to some clayey silt, contains cinders, slag, and wood pieces.
10	2	2 / 2 / 1									
15	3	2 / 3 / 1		60			27	15	30	28	
20	4A 4B	4 / 5 / 4									Est. A-2-4 Loose brown and gray fine to medium sand, little silt, trace coarse sand.
25	5A 5B	2 / 4 / 6	1.2-1.7	23	31	18	8	2	5	40 45	Est. A-3a Stiff gray silty clay, trace fine to coarse sand, trace fine gravel, many seams and lenses of silt.
30	6	1 / 3 / 3	0.4-0.7	25	38	18	0	1	2	25 72	A-6a(9) Soft to medium-stiff gray silty clay, trace fine to medium sand.
35	7	P	1.0-1.6								Stiff to very-stiff gray silty clay, trace fine to medium sand, few to many seams of silt.
40	8	7 / 7 / 10	1.6-3.4	22	28	18	0	0	2	54 44	
45	9	4 / 6 / 8	2.1-4.0								A-4b(8)
50	10	P	1.2-1.6	27	31	17	0	0	1	48 51	Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt.
	11	3 / 4 / 5	1.0-2.4	25	36	18	0	0	0	63 37	A-6a, A-6b(10,11)
50	WATER LEVEL: $\nabla$ 11.0 $\nabla$ $\nabla$ $\nabla$ $\nabla$ $\nabla$ $\nabla$										
	WATER NOTE: _____										
	DATE: 08/17/94										





LOG OF BORING NO. B-105  
 CUY-90-15.24  
 CLEVELAND, OHIO

TYPE: 2" O.D. Split-barrel Sampler LOCATION: Sta. 19+11.38  
3" O.D. Shelby Tube  
NXM Rock-core Barrel 90.9' Rt. of Centerline  
 COMPLETION DEPTH: 149.5' ELEVATION: 585.4 DATE: 8/17/94 8/18/94

DEP. FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	COMPLETION DEPTH: 149.5' ELEVATION: 585.4 DATE: 8/17/94 8/18/94					DESCRIPTION - CONTINUED	
							tsf	%	%	%	AGG.		C. S.
50	12	4 / 6 / 7	1.3-2.5										Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt.
55	13	P											
	14A	4 / 6 / 10	1.6-2.2										
	14B		1.3-1.8										
60	15	5 / 6 / 9	1.2-1.7	21	32	18	0	0	2	21	77		
65	16	P	1.8-1.9										
	17	5 / 8 / 12	1.4-1.7										
70	18	7 / 8 / 10	1.3-1.9										
75	19	4 / 7 / 11	1.6-2.0	22	32	18	1	2	4	43	50		
													- Below 77.5': Few seams of 1/8" silt.
80	20	4 / 8 / 11	1.5-2.2										
85	21	P	1.3-1.5										
	22	4 / 7 / 9	1.2-2.0	27	40	22	0	1	1	24	74		
90	23	5 / 8 / 11	1.2-2.0										
													A-6a, A-6b(10,11)
													Medium-stiff to stiff gray silty clay, trace fine to coarse sand, few seams of silt, horizontal structure.
95	24	P	1.0-2.0	30	42	23	0	1	1	13	85		
	25	3 / 4 / 6	0.5-0.6										
100													A-6a(10)

WATER LEVEL: 11.0  
 WATER NOTE: \_\_\_\_\_  
 DATE: 08/17/94



**LOG OF BORING NO. B-105**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPT. FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 19+11.38</u>				COMPLETION DEPTH: <u>149.5'</u> ELEVATION: <u>585.4</u> DATE: <u>8/17/94 8/18/94</u>				
							TYPE: <u>3" O.D. Shelby Tube</u> LOCATION: <u>90.9' Rt. of</u>								
							TYPE: <u>NXM Rock-core Barrel</u> LOCATION: <u>Centerline</u>								
							tsf	%	%	%	AGG.	C.S.	F.S.	SILT:CLAY	DESCRIPTION - CONTINUED
100	26	1 / 3 / 4	0.5-1.1												Medium-stiff to stiff gray silty clay, trace fine to coarse sand, few seams of silt, horizontal structure.
105	27	P	1.0-1.5												
	28	4 / 7 / 7	0.6-1.3												- From 107.5' to 109.0': Numerous seams of 1/8" silt. A-6a(10)
110	29A 29B	3 / 4 / 5	0.5-0.8	27	NP	NP	0	0	0	86	14				Loose gray silt, trace clay. A-4b(8)
115	30	10 / 16 / 24	3.0-4.1												Very-stiff to hard gray silty clay, trace fine to coarse sand, many seams of silt, few slickensides, horizontal structure.
120	31	8 / 12 / 14	2.2-3.5												
125	32	5 / 8 / 12	2.0-2.8	24	36	21	4	4	6	31	55				- From 124.5' to 126': Little fine to coarse sand, little fine to coarse gravel.
130	33	7 / 9 / 13	2.0-3.2												
135	34A 34B 34C	8 / 18 / 26	2.5-3.0 2.0-3.0												- From 134.5' to 135.4': Interbedded with fine to coarse sand. A-6a(10)
140	35A 35B	24 / 32 / 35													Dense gray fine to coarse sand, trace silt, trace fine to coarse gravel. Est. A-3a
145	36	NXM REC 94%	RQD 45%												Gray shale "and" gray silty clay, little fine to coarse sand, possible top of rock. Est. A-2-6
150															Very-soft to soft gray shale.

150 WATER LEVEL: ▽ 11.0      ▽      ▽      ▽      ▽      ▽      ▽  
 WATER NOTE: \_\_\_\_\_  
 DATE: 08/17/94



**LOG OF BORING NO. B-105**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

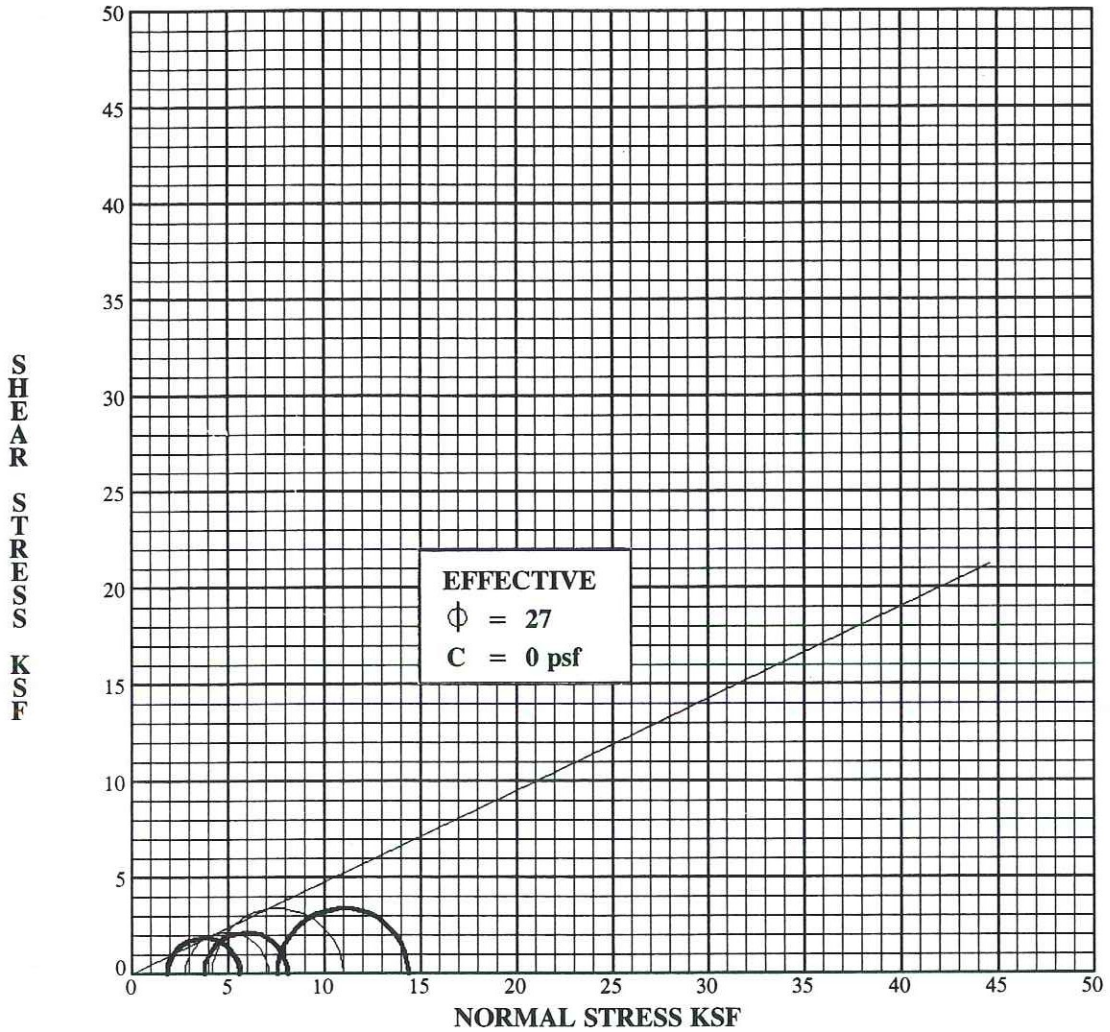
DEPTH FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 19+11.38</u>								
							COMPLETION DEPTH: <u>149.5'</u> ELEVATION: <u>585.4</u> DATE: <u>8/17/94 8/18/94</u>								
							3" O.D. Shelby Tube				90.9' Rt. of				
							NXM Rock-core Barrel				Centerline				
							tsf	%	%	%	AGG.	C. S.	F. S.	SILT:CLAY	DESCRIPTION - CONTINUED
150															<ul style="list-style-type: none"> <li>- Encountered slight seepage at 9.3' to 12.0'.</li> <li>- Encountered water at 12.0' to 24.9'.</li> <li>- Encountered seepage at 110.0' to 113.5'.</li>   <li>- From 0.0' to 30.2': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 30.2'.</li> <li>- From 30.2' to 144.5': 3-7/8" Tricone Bit.</li>   <li>- From 30.2' to 149.5': Recirculated water used for drilling fluid.</li> </ul>
155															
160															
165															
170															
175															
180															
185															
190															
195															
200															WATER LEVEL: <u>∇ 11.0</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> <u>∇</u> WATER NOTE: _____ DATE: <u>08/17/94</u>



# SUMMARY OF TRIAXIAL COMPRESSION TESTS


SATURATED, CONSOLIDATED, UNDRAINED  
( RESIDUAL PLOTTED )

## SHEAR STRESS VS NORMAL STRESS



TOTAL STRESS      ———      EFFECTIVE STRESS      - - - - -

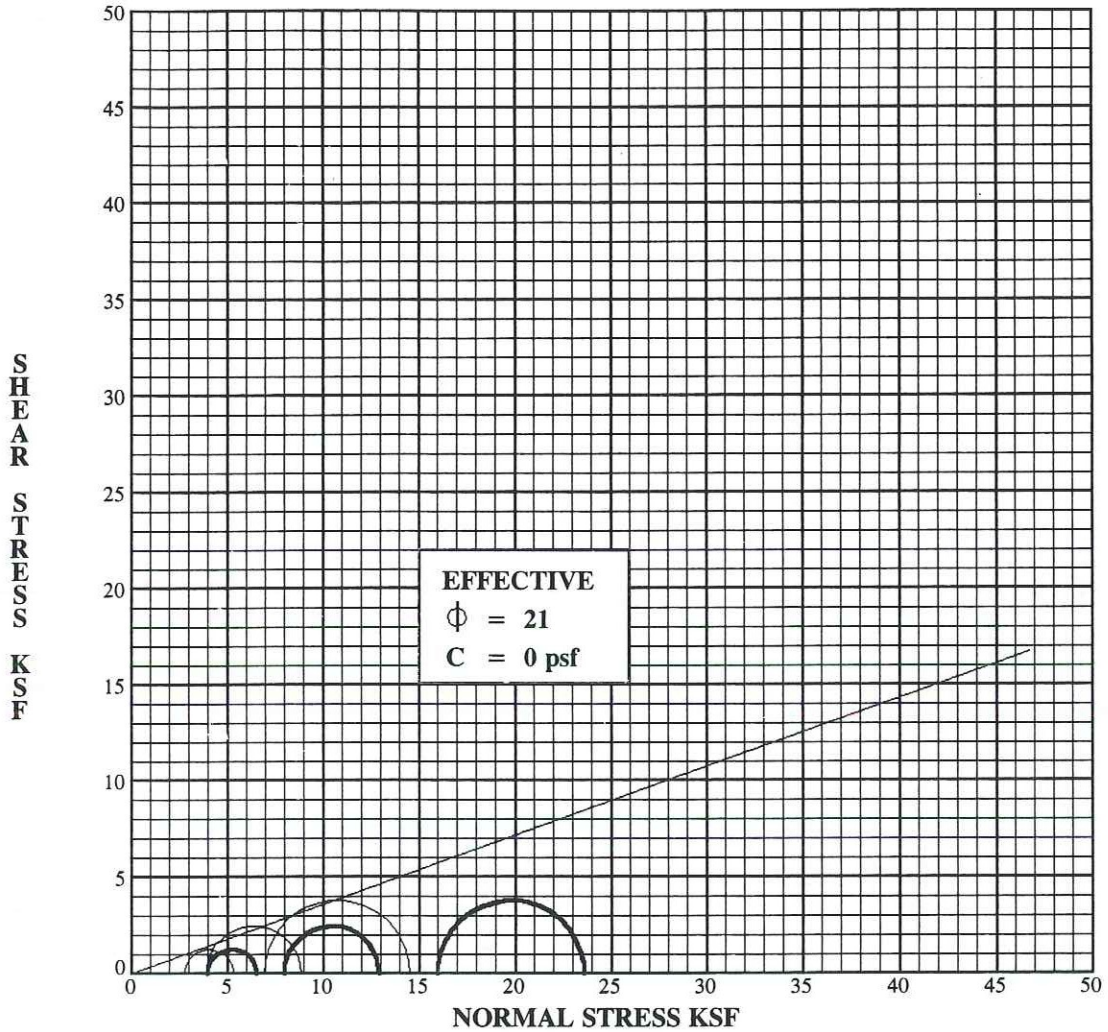
Specimen Identification	Classification	DD	MC%
B-105 S-10 I 44.5'-46.5'	Stiff gray silty clay inter-bedded with silt, trace fine sand. A-6a (10)	97	27
B-105 S-10 II 44.5'-46.5'	Stiff gray silty clay inter-bedded with silt, trace fine sand. A-6a (10)	98	26
B-105 S-10 III 44.5'-46.5'	Stiff gray silty clay inter-bedded with silt, trace fine sand. A-6a (10)	99	25

	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">PROJECT</td> <td style="border-bottom: 1px solid black;">CUY-90-15.24</td> </tr> <tr> <td>LOCATION</td> <td style="border-bottom: 1px solid black;">Cleveland, Ohio</td> </tr> <tr> <td>JOB NO.</td> <td style="border-bottom: 1px solid black;">4500      DATE 10/31/94</td> </tr> </table>	PROJECT	CUY-90-15.24	LOCATION	Cleveland, Ohio	JOB NO.	4500      DATE 10/31/94
PROJECT	CUY-90-15.24						
LOCATION	Cleveland, Ohio						
JOB NO.	4500      DATE 10/31/94						

# SUMMARY OF TRIAXIAL COMPRESSION TESTS

SATURATED, CONSOLIDATED, UNDRAINED  
( RESIDUAL PLOTTED )

## SHEAR STRESS VS NORMAL STRESS



TOTAL STRESS

EFFECTIVE STRESS

Specimen Identification	Classification	DD	MC%
B-105 S-24 I 94.5'-96.2'	Stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt. A-7-6 (12)	89	32
B-105 S-24 II 94.5'-96.2'	Stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt. A-7-6 (12)	89	32
B-105 S-24 III 94.5'-96.2'	Stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt. A-7-6 (12)	90	32



PROJECT CUY-90-15.24  
 LOCATION Cleveland, Ohio  
 JOB NO. 4500 DATE 10/31/94





**LOG OF BORING NO. B-106**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 18+38.12</u>	
								COMPLETION DEPTH: <u>174.2'</u> ELEVATION: <u>612.3</u> DATE: <u>9/8/94 9/12/94</u>				<u>243.9' Rt. of Centerline</u>	
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION
0													FILL: Very-loose to loose black fine to coarse sand, some fine to coarse gravel, trace silt, (cinders).
5	1	4	4/4/4										
10	2	2	2/2/2										
15	3	2	2/1/3										
20	4	3	3/4/8					0	0	74	26	0	Est. A-1-b Medium-dense brown fine sand, trace medium sand, some silt.
25	5	3	3/4/5	2.2-4.3									A-3a(0) Stiff to hard gray silty clay, trace fine to coarse sand, few seams and lenses of silt, horizontal structure.
30	6A 6B 6C	P		3.3-3.7 4.1 4.2									
35	7	P		2.6-3.2									
40	8	2	2/4/4	1.5-3.0									
45	9	P		1.2-1.5									
50													A-6a(10)
WATER LEVEL:				▽	▽	▽	▽	▽	▽	▽	▽	▽	
WATER NOTE:													
DATE:													







**LOG OF BORING NO. B-106**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 18+38.12</u>		
							COMPLETION DEPTH: <u>174.2'</u> ELEVATION: <u>612.3</u> DATE: <u>9/8/94 9/12/94</u>				<u>243.9' Rt. of Centerline</u>		
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED	
100		7 /12/14										Very-stiff to hard gray silty clay, trace fine to medium sand, trace fine gravel, few seams and lenses of silt.	
105	20	8 /12/17	3.4-3.8										
110	21	6 /13/18	3.1-3.4										
115	22	8 /11/5	3.8-4.1										
120	23	5 /7/8	2.0-2.3										
125	24	4 /6/8	2.1-2.2										
130	25	8 /14/20		11			8	41	20	26	5	A-6b(10) Dense gray fine to medium sand, some silty clay, trace coarse sand, trace fine gravel.	
135	26	P											
140	27	13 /22/26	4.5+									A-3a(0) Very-stiff to hard gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt.	
145	28	P	2.3-2.6										
150												Est. A-6b	
WATER LEVEL:			▽	▽	▽	▽	▽	▽	▽	▽	▽		
WATER NOTE:													
DATE:													



**LOG OF BORING NO. B-106**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEP. FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: 2" O.D. Split-barrel Sampler				LOCATION: Sta. 18+38.12						
							3" O.D. Shelby Tube				243.9' Rt. of Centerline						
							COMPLETION DEPTH: 174.2'				ELEVATION: 612.3		DATE: 9/8/94 9/12/94				
							tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED	
150	29	7/9/11	2.7-3.2														Very-stiff to hard gray silty clay, trace fine to coarse sand; trace fine gravel, few lenses of silt.  Est. A-6b
155	30	25/30/30															Dense gray fine to coarse sand, little to some silty clay, little fine gravel.
160	31	57/38/30		13			35	15	27	19	4						
165	32	28/22/24															
170	33	50-2" R	RQD														Soft gray shale, nearly horizontally bedded.
	34	NXM REC	67%														
	35	77%	0%														
175																	- Encountered seepage at 18.0'.
180																	- From 0.0' to 30.8': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 30.8'.
185																	- From 30.8' to 169.2': 3-7/8" Tricone Bit.
190																	- From 30.8' to 147.2': Recirculated water used for drilling fluid.
195																	

200  
 WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_





**LOG OF BORING NO. B-107**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPT., FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 15+49.05</u>				COMPLETION DEPTH: <u>215.0'</u> ELEVATION: <u>662.7</u> DATE: <u>9/19/94 9/22/94</u>	
							3" O.D. Shelby Tube				89.6' Lt. of Centerline	
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION
0												ASPHALT - 13 INCHES
												FILL: Loose brown fine to coarse sand, some fine to coarse gravel. Est. A-1-b
5	1	3/4/4										Loose brown fine to medium sand, little coarse sand, trace silt. Est. A-3a
10	2A 2B	4/7/7										Loose brown silt, little fine sand. Est. A-4a
15	3	P										Medium-dense brown fine sand, trace medium to coarse sand, trace silt.
20	4	6/7/8										Loose brown fine sand, some silt, trace medium to coarse sand. Est. A-3a
25	5	2/3/3		25			0	0	70	30		Very-stiff gray silty clay, little fine to coarse sand, many seams and lenses of silt. A-3a(0)
30	6	7/10/14										Dense gray fine sand, trace medium to coarse sand, little silt. Est. A-4b
35	7	5/6/9		19			0	0	11	63	26	Dense gray fine sand, trace medium to coarse sand, little silt. Est. A-3a
40	8	16/28/40										Medium-dense to dense gray silt interbedded with silty clay, trace fine to medium sand. Est. A-4b
45	9	12/10/19					0	0	2	79	19	

50 WATER LEVEL:                              

WATER NOTE:                              

DATE:









**LOG OF BORING NO. B-107**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEP. (FT.)	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: 2" O.D. Split-barrel Sampler				LOCATION: Sta. 15+49.05			
								AGG.	C. S.	F. S.	SILT:CLAY	3" O.D. Shelby Tube	89.6' Lt. of Centerline		
								COMPLETION DEPTH: 215.0'				ELEVATION: 662.7		DATE: 9/19/94 9/22/94	
													DESCRIPTION - CONTINUED		
150	29	6	10/15	1.8-2.1									Stiff to very-stiff gray silty clay, trace fine to coarse sand, few lenses of silt. A-6a(9)		
155	30	S/H	18/23	2.1-2.4									Very-stiff to hard gray silty clay, trace fine to coarse sand, trace fine gravel.		
160	31	7	13/18	3.2-3.3											
165	32	7	12/17	3.0-3.4											
170	33	7	11/15	2.7-4.2									Est. A-6a		
175	34	5	8/10	1.7-2.8	26	32	18	0	0	1	38	61	Stiff to very-stiff gray silty clay, trace fine to coarse sand, few seams and lenses of silt. A-6a(10)		
180	35	16	27/38										Dense gray fine to medium sand, little silt, trace coarse sand. Est. A-3a		
185	36	16	43/50-4	4.5+									Hard gray silty clay, trace to little fine to coarse sand, trace fine gravel, few lenses of silt.		
190	37	18	38/50-5	4.5+											
195	38	11	22/30	4.5+									Est. A-6b		
200	WATER LEVEL: ▽ _____ ▽ _____ ▽ _____ ▽ _____ ▽ _____ ▽ _____														
WATER NOTE: _____															
DATE: _____															



**LOG OF BORING NO. B-107**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 15+49.05</u>	
							COMPLETION DEPTH: <u>215.0'</u> ELEVATION: <u>662.7</u> DATE: <u>9/19/94 9/22/94</u>				<u>89.6' Lt. of Centerline</u>	
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
200	39	8 <sup>12</sup> / <sub>14</sub>	2.3-3.5									Hard gray silty clay, trace to little fine to coarse sand, trace fine gravel, few lenses of silt.
205	40A 40B	11 <sup>20</sup> / <sub>30</sub>	2.4-3.5 3.4-4.5+									
210	41	25 <sup>50-2" R NXM REC</sup>	4.2-4.5+ RQD									Est. A-6b Very-soft to soft gray shale, nearly horizontally bedded, contains few horizontal to diagonal fractures.
215	42	100%	83%									- Encountered water from 0.0' to 215.0'.
220												- From 0.0' to 59.4': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 59.4'.
225												- From 59.4' to 210.0': 3-7/8" Tricone Bit.
230												- From 0.0' to 215.0': Recirculated water used for drilling fluid.
235												
240												
245												
250												

WATER LEVEL:                              

WATER NOTE:                              

DATE:





**LOG OF BORING NO. B-108**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 18+00.15</u>				COMPLETION DEPTH: <u>170.2'</u> ELEVATION: <u>610.4</u> DATE: <u>8/8/94 8/10/94</u>				
							3" O.D. Shelby Tube				87.8' Lt. of Centerline				
							AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION			
0												FILL: Loose black cinders and slag, contains seams or lenses of: Silt; clayey silt; fine to coarse gravel; and brown fine to medium sand, trace brick or tile fragments.			
5												Est. A-3a			
10	1	P										POSSIBLE FILL: Loose brown fine to coarse sand, little fine to coarse gravel, trace to little silt.			
15	2	3 / 4 / 4										A-1-b(0)			
15	3	4 / 4 / 3					32	40	17		11	Loose brown fine to medium sand, trace silt.			
20	4	P										Est. A-3			
20	5A	4 / 4 / 5	1.8-2.0	22	26	19	0	0	2	74	24	Loose brown fine to medium sand, little silt, trace coarse sand.			
20	5B											Est. A-3a			
25	6	5 / 7 / 10	2.0-4.5+									Stiff gray silty clay interbedded with clayey silt, "and" silt, few thin seams of fine sand.			
25												A-4b(8)			
30	7	P	1.0-1.8	28	39	22	1	3	4	18	74	Medium-stiff to stiff gray silty clay, little fine to coarse sand, few lenses of silt and fine sand.			
30		2 / 3 / 5										- From 25.0' to 26.5': Hard.			
35	8	P	1.3-1.5	26	36	21	0	0	1	33	66				
35	9	3 / 3 / 5	1.0												
40	10	P	1.0	28	39	22	0	1	1	32	66				
40	11	2 / 3 / 3	0.7-1.0	26	38	20	0	1	2	35	62	A-6a, A-6b(10,11)			
45	12	P	2.5									Stiff to very-stiff gray silty clay, trace to little fine to medium sand, contains many seams and lenses of silt.			
45	13	3 / 6 / 7	1.5-2.0	22	30	18	0	0	1	55	44	- From 44.0' to 49.0': Irregular "disturbed" structure.			
50												A-6a(8,9)			

50  
 WATER LEVEL: ▽ ▽ ▽ ▽ ▽ ▽  
 WATER NOTE: None to 48.5' \_\_\_\_\_  
 DATE: 08/10/94 \_\_\_\_\_







DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 18+00.15</u>	
							3" O.D. Shelby Tube				87.8' Lt. of	
							<u>NXM Rock-core Barrel</u>				Centerline	
							COMPLETION DEPTH: <u>170.2'</u> ELEVATION: <u>610.4</u>				DATE: <u>8/8/94</u> <u>8/10/94</u>	
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
100	24	5/9/12	1.6-1.9	22	33	20	4	3	3	30	60	Stiff to very-stiff gray silty clay, trace to little fine to coarse sand, trace fine gravel, few lenses of silt.
105	25	5/9/13	1.9-2.3									
110	26	5/9/13	2.0-2.5	23	34	19	0	0	1	37	62	
115	27	5/7/11	1.7-2.3									
120	28A 28B	3/6/9	1.0-1.3 2.0-2.5	29	38	20	0	1	3	22	74	A-6a, A-6b(10,11) Interbedded: Medium-dense gray silt, stiff gray silty clay; and fine sand.
125	29A 29B	4/6/5	1.0									Est. A-4b Very-stiff to hard gray silty clay, trace to little fine to coarse sand, trace fine gravel.
130	30	15/20/27										- From 129.8' to 131.8': Seam of dense gray fine to coarse sand, "and" fine gravel, little silt.
135	31	18/40/58	4.5+	16	32	18	5	3	6	29	57	- From 135.0' to 135.7': Contains many slickensided partings.
140	32	16/31/38	3.5-4.5+									A-6a(10) Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine to coarse gravel, many lenses of silt.
145	33	7/10/13	2.0-2.6	25	32	20	0	0	0	95	5	A-6a(8,9)
150	WATER LEVEL: <u>▽</u> <u>None to 48.5'</u> <u>▽</u> <u>▽</u> <u>▽</u> <u>▽</u> <u>▽</u> WATER NOTE: <u>None to 48.5'</u> DATE: <u>08/10/94</u>											



DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 18+00.15</u>				DESCRIPTION - CONTINUED	
							COMPLETION DEPTH: <u>170.2'</u> ELEVATION: <u>610.4</u> DATE: <u>8/8/94 8/10/94</u>			3" O.D. Shelby Tube		87.8' Lt. of
							AGG.	C. S.	F. S.	SILT	CLAY	
150	34	SH-12" 16	1.0-2.0	23	31	20	13	0	1	33	53	Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine to coarse gravel, many lenses of silt.
155	35	7 /10 <sub>15</sub>	2.0-2.5									A-6a(8,9)
160	36	P/R	4.5+				43	11	4		42	Hard gray silty clay, little to some fine to coarse sand, trace to little fine to coarse gravel. Est. A-6a
	37	20 <sub>28</sub> / <sub>52</sub>	4.5+									Dense gray fine to coarse gravel, some fine to coarse sand, "and" clayey silt.
165	38	100-2" R NXM REC	RQD									Soft to medium-hard black and gray shale. A-4a(1)
	39	100%	64%									Very-soft to soft gray shale, nearly horizontally bedded, partly similar to hard soil.
170												Soft to medium-hard black and gray shale, nearly horizontally bedded, fissile.
												- From 165.9' to 166.2': Iron carbonate seams.
												- From 169.3' to 170.2': Near-vertical fracture, filled with broken shale fragments and soft clay.
175												- From 0.0' to 45.0': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 45.0'.
180												- From 45.0' to 165.2': 3-7/8" Tricone Bit.
185												- From 45.0' to 170.2': Recirculated water used for drilling fluid.
190												
195												
200												

WATER LEVEL: ∇ None to 48.5' ∇ ∇ ∇ ∇ ∇ ∇

WATER NOTE: \_\_\_\_\_

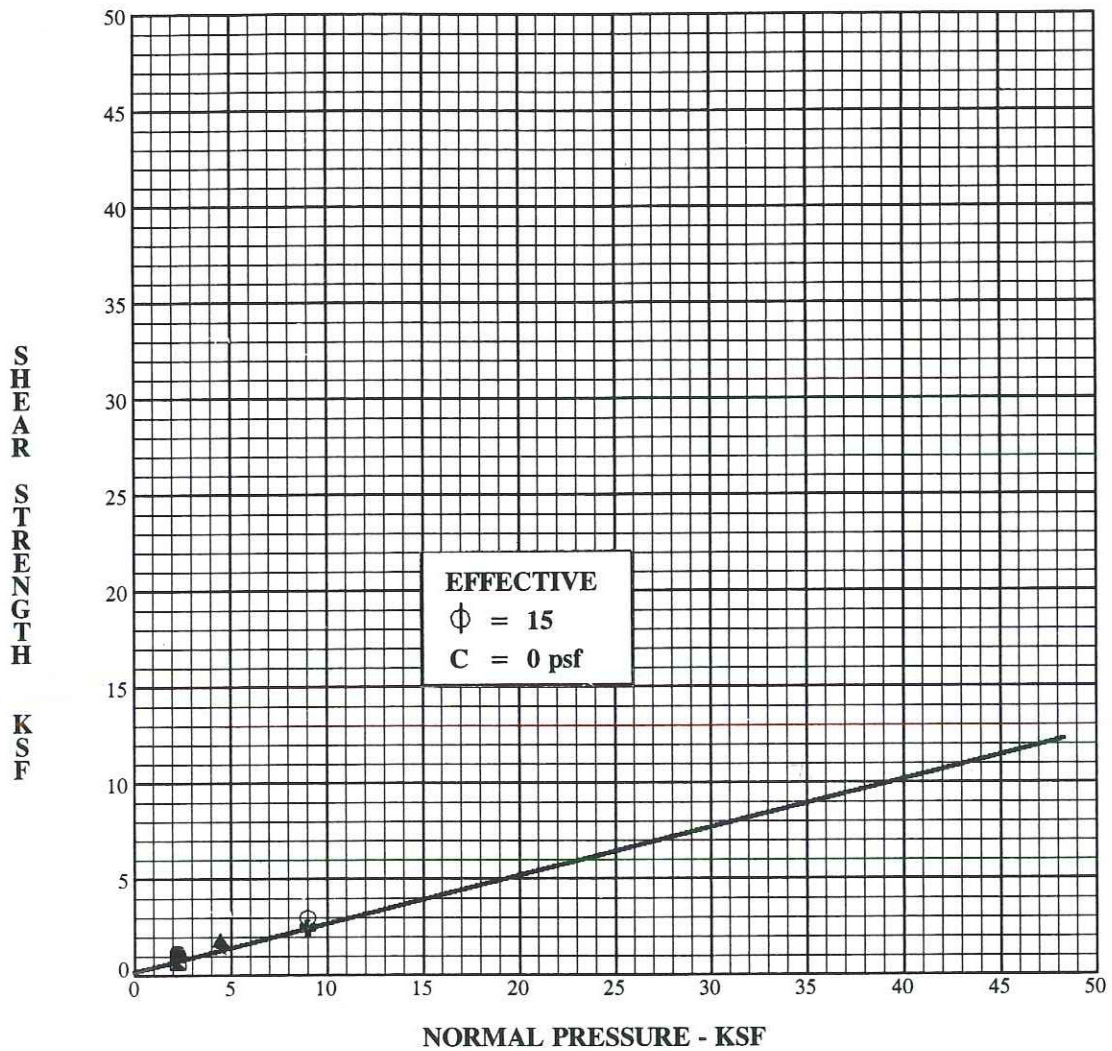
DATE: 08/10/94



# SUMMARY OF DIRECT SHEAR TESTS

SATURATED, CONSOLIDATED, DRAINED

SHEAR STRESS VS NORMAL LOAD



Specimen Identification	Normal Load	Type Plot	Classification	DD	MC %
● B-108 S-8 IV 35.0'-37.0'	2.25 KSF	Peak	Stiff gray silty clay, trace fine	101	26
☒	2.25 KSF	RESIDUAL	to medium sand. A-6a (10)		
▲	4.50 KSF	Peak		100	26
★	4.50 KSF	RESIDUAL			
○	9.00 KSF	Peak		95	28
⊕	9.00 KSF	RESIDUAL			

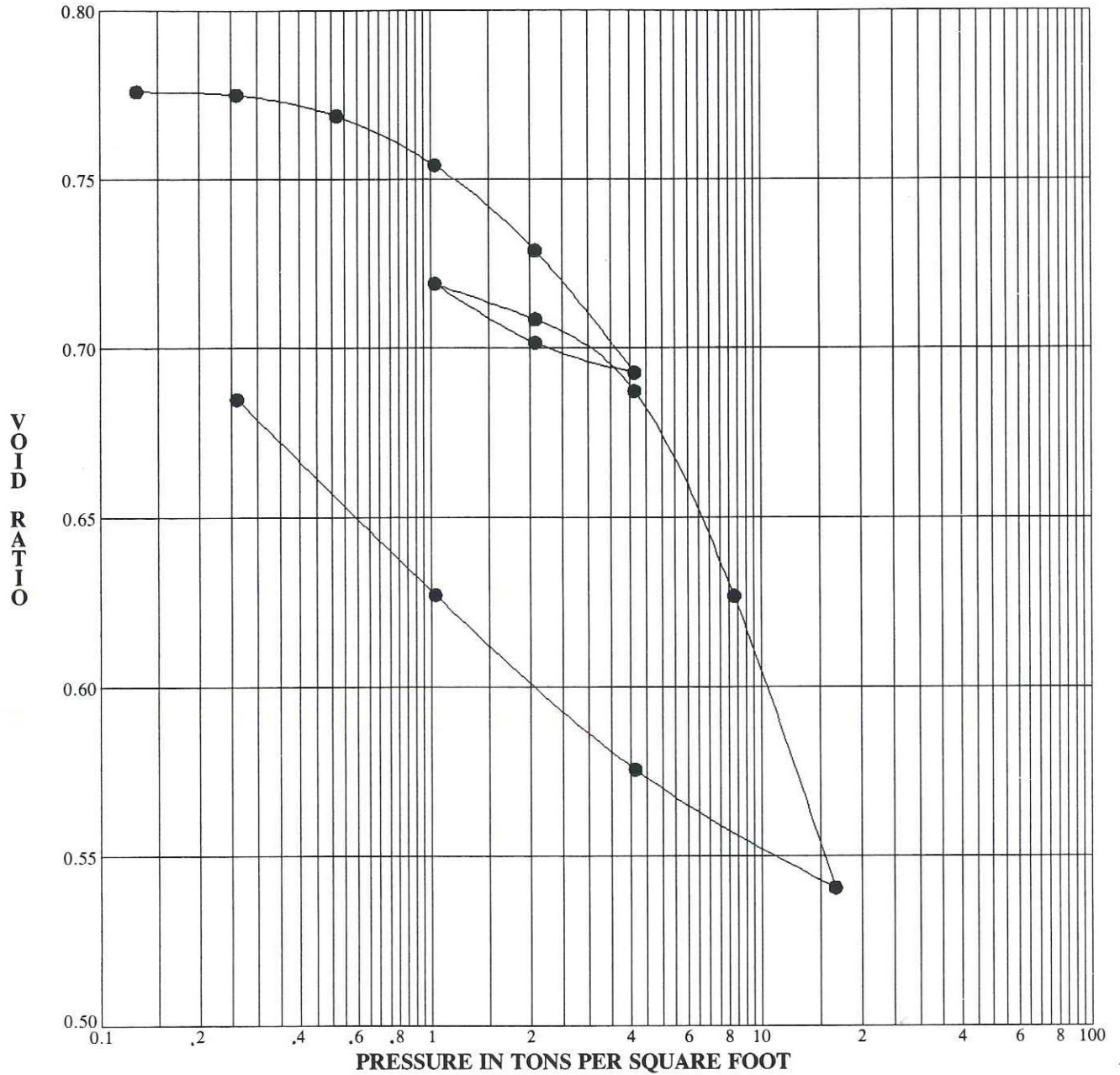


PROJECT \_\_\_\_\_ CUY-90-15.24  
 LOCATION \_\_\_\_\_ Cleveland, Ohio  
 JOB NO. \_\_\_\_\_ 4500 \_\_\_\_\_ DATE \_\_\_\_\_ 10/29/94






# PRESSURE - VOID RATIO CURVE



Specimen Identification	Classification
● B-108 S-10 IV 40.0'-42.0'	Stiff gray silty clay, trace fine to medium sand. A-6b (11)

MC	LL	PL	PI	DD	SG	Eo	Ef
29	39	22	17	96	2.73	0.7757	0.6846

	PROJECT	CUY-90-15.24	
	LOCATION	Cleveland, Ohio	
	JOB NO.	4500	DATE



**LOG OF BORING NO. B-109**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPT., FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 18+86.96</u>	
							COMPLETION DEPTH: <u>163.2'</u> ELEVATION: <u>593.3</u> DATE: <u>8/25/94</u>				<u>65.6' Lt. of Centerline</u>	
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION
0												FILL: Dense black fine to coarse sand, little fine to coarse gravel, trace silt, (cinders, slag, and foundry sand).
5	1	24/34/31										
10	2	5/6/4										
15	3	2/1/1										
20	4	3/2/2										
25	5	2/3/5	1.5-3.5	21	34	19	0	0	1	66	33	Stiff to very-stiff gray silty clay, trace fine to medium sand, horizontal structure. Est. A-1-b A-6a(10)
30	6	2/3/5	0.3-0.5									Medium-stiff to stiff gray silty clay, trace fine to medium sand, trace fine gravel, few lenses of silt.
35	7	1/3/6	0.5-1.5	24	32	19	0	1	1	64	34	A-6a(9)
	8	P		25	32	18	0	1	1	55	43	Stiff to very-stiff gray silty clay, trace fine to coarse sand, few seams and lenses of silt.
45	9	P	3.0-3.5									A-6a, A-6b(9,10)
50												

WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_







**LOG OF BORING NO. B-109**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 18+86.96</u>				COMPLETION DEPTH: <u>163.2'</u> ELEVATION: <u>593.3</u> DATE: <u>8/25/94</u>					
							3" O.D. Shelby Tube				65.6' Lt. of Centerline					
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED				
100	19	P	2.0-3.0									Stiff to very-stiff gray silty clay, trace fine to coarse sand; few seams and lenses of silt.				
105	20	P	2.0-2.5									- From 110.0' to 113.0': Very-stiff to hard.				
110	21	P	2.5									A-6a, A-6b(9,10)				
115	22A 22B	10/14/19	2.5-4.5+				9	9	33	49		(Estimated) Medium-dense fine to medium sand intermixed with clayey silt, trace coarse sand, trace fine gravel. Est. A-4a				
120	23	15/21/27	4.5+									Very-stiff to hard gray silty clay, little fine to coarse sand, trace fine gravel.				
125	24	P	4.5+		37	21	1	1	2	33	64					
130		P										Est. A-6b				
135	25	19/19/27		2			16	35	31	15	3	Dense gray fine to coarse sand, little clayey silt, trace coarse sand, trace fine gravel.				
140	26	15/19/20										A-1-b(0)				
145	27	23/34/38										Dense gray fine to coarse gravel, some fine to coarse sand, trace clayey silt.				
150	28	52	4.5+									Est. A-1-a				
													DESCRIPTION ON NEXT PAGE			

WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_

WATER NOTE: \_\_\_\_\_

DATE: \_\_\_\_\_







**LOG OF BORING NO. B-110**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEP. (ft.) FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 18+43.85</u>				DESCRIPTION	
							COMPLETION DEPTH: <u>155.0'</u> ELEVATION: <u>596.7</u> DATE: <u>8/31/94 9/8/94</u>					
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	
0												FILL: Loose brown and black fine to coarse gravel, some to "and" fine to coarse sand, trace to little clayey silt, (cinders and slag).
5	1	3 / 3 / 3										Est. A-1-b
10	2	2 / 1 / 2										Very-loose brown and gray silt, "and" fine sand, trace medium to coarse sand.
15	3A 3B	1 / 3 / 2					0	1	43	56		Est. A-4a
20	4	1 / 3 / 5	0.8-2.0	22	31	19	0	0	1	57	42	Medium-stiff to stiff gray silty clay, trace fine to medium sand, few lenses of silt.
25	5	3 / 4 / 5	0.8-1.8									A-6a(9)
30	6	P	2.0									Stiff to very-stiff gray silty clay, trace fine to medium sand, many lenses of silt and fine sand.
35	7	3 / 6 / 8	1.3-2.0	24	31	18	0	0	2	52	46	A-6a(9)
40	8	P	2.0-3.0									Stiff to hard gray silty clay interbedded with silt, trace fine to medium sand, horizontal structure.
45	9	5 / 9 / 13	3.5-4.5									A-6a(8)
50												

WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_



LOG OF BORING NO. B-110  
 CUY-90-15.24  
 CLEVELAND, OHIO

TYPE: 2" O.D. Split-barrel Sampler LOCATION: Sta. 18+43.85  
3" O.D. Shelby Tube 243.9' Lt. of  
NXM Rock-core Barrel Centerline

COMPLETION DEPTH: 155.0' ELEVATION: 596.7 DATE: 8/31/94 9/8/94

DEPTH FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	COMPLETION DEPTH: 155.0' ELEVATION: 596.7 DATE: 8/31/94 9/8/94				DESCRIPTION - CONTINUED	
							tsf	%	%	%		AGG.
50	10	P	2.0-2.5									Stiff to hard gray silty clay interbedded with silt, trace fine to medium sand, horizontal structure.
55	11	4 / 5 / 7	1.0-1.5	25	29	18	0	0	1	55	44	
60	12	P	1.5-1.8									A-6a(8) Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel.
65	13	5 / 8 / 13	2.0-2.4									
70	14	4 / 8 / 12	1.5-2.3	21	33	19	7	3	5	29	56	
75	15	4 / 7 / 12	1.8-2.4									
80	16	4 / 10 / 11	1.2-1.5	24	34	20	1	2	2	32	63	
85	17	4 / 8 / 12	1.5-2.0									
90	18	5 / 8 / 13	1.5-1.8	23	34	20	2	2	2	32	62	
95	19	5 / 9 / 13	1.8-2.0									

A-6a, A-6b(10)

100 WATER LEVEL: ▽ ▽ ▽ ▽ ▽ ▽

WATER NOTE: \_\_\_\_\_

DATE: \_\_\_\_\_



**LOG OF BORING NO. B-110**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 18+43.85</u>				DESCRIPTION - CONTINUED	
								COMPLETION DEPTH: <u>155.0'</u> ELEVATION: <u>596.7</u> DATE: <u>8/31/94 9/8/94</u>					
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	
100	20	5	8/11	1.5-2.0	25	37	21	0	1	1	29	69	Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel.
105	21	5	9/11	1.0-2.0									
110	22	P											A-6a, A-6b(10) Medium-dense gray silt, little to some fine sand. Est. A-4b
115	23	11	14/19					13	28	39		20	Dense gray fine to coarse sand, trace silt, trace fine gravel. - From 119.6' to 119.9': Seam of fine to coarse gravel. A-3a(0)
120	24A 24B	15	37/58	4.5+									Hard gray silty clay, trace to little fine to coarse sand, trace fine gravel, contains slickensided surfaces.
125	25	14	36/52	4.5+	18	35	18	2	3	5	27	63	A-6b(11) Medium-stiff to stiff gray silty clay, trace fine to coarse sand, trace fine to coarse gravel.
130	26	7	12/14	1.3-2.0									
135	27	P-R		0.8-1.0									- From 140.1' to 140.8': fine sandstone boulder. Est. A-6a
140	28	80-4" R		2.0									Hard gray silty clay, some fine to coarse gravel (shale fragments). Est. A-6a
145	29	20	41/67	4.5+									Est. A-6a
150	DESCRIPTION ON NEXT PAGE												
WATER LEVEL:				▽	▽	▽	▽	▽	▽	▽	▽	▽	
WATER NOTE:													
DATE:													





**LOG OF BORING NO. B-110**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 18+43.85</u>			COMPLETION DEPTH: <u>155.0'</u> ELEVATION: <u>596.7</u> DATE: <u>8/31/94 9/8/94</u>									
							3" O.D. Shelby Tube			243.9' Lt. of Centerline									
							tsf	%	%	%	AGG.	C.	S.	F.	S.	SILT	CLAY	DESCRIPTION - CONTINUED	
150	30	NXM REC 100%	RQD 92%															Soft to medium-hard dark-gray to light-gray shale, nearly horizontally bedded, 2" to 9" core pieces, few cemented vertical fractures, contains few thin seams of hard siltstone.	
155																		- Encountered water at 11.0'.	
160																		- From 0.0' to 29.5': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 34.0'.	
165																		- From 29.5' to 150.0': 3-7/8" Tricone Bit.	
170																		- From 29.5' to 120.0': Circulated water used for drilling fluid.	
175																		- From 120.0' to 155.0': Bentonite drilling mud used.	
180																			
185																			
190																			
195																			
200																			
WATER LEVEL:							▽	▽	▽	▽	▽	▽	▽	▽	▽	▽	▽		
WATER NOTE:																			
DATE:																			

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 8/19/92 Sampler Type SS Dia. 1 3/8" Water Elev. 587.3' **Project Identification:** CUYAHOGA  
 Date Completed 8/25/92 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 ASSUMING THE STRUCTURE RUNS E AND W  
 Boring No. B-10 Station & Offset 2' E AND 32' S OF B-5 Surface Elev. 617.3' CENTRAL VIADUCT  
STRUCTURAL REHABILITATION INVEST.

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class				
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.			
617.3	0				CINDERS, SAND AND STONE FRAGMENTS (DRILLER'S DESCRIPTION)	-	-	-	-	-	-	-	-	-	-	-	VISUAL		
	2																		
	4																		
	6																		
609.8	8	6/8/10			GRAY SILT WITH WOOD FRAGMENTS	1	-	0	0	10	78	12	NP	NP	25		A-4b		
607.3	10	PRESS			GRAY SILT	2	-	0	0	3	67	30	25	6	16		A-4b		
	12																		
	14																		
	16																		
599.8	18	10/16/21			GRAY SILT	3**	-	0	0	2	79	19	NP	NP	17		A-4b		
	20																		
	22																		
	24																		
591.3	26	PRESS			GRAY SILT	4	-	0	1	4	55	40	NP	NP	22		A-4b		
	28																		
	30																		

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample. \*\*Sample 3 is shown at the same depth as on original log, elevation shown on original log was 592.8 and is assumed to be a mistake.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.



**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 8/19/92 Sampler Type SS Dia. 1 3/8" Water Elev. 587.3' **Project Identification:** CUYAHOGA  
 Date Completed 8/25/92 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-10 Station & Offset 2' E AND 32' S OF B-5 Surface Elev. 617.3' CENTRAL VIADUCT  
 \_\_\_\_\_ STRUCTURAL REHABILITATION INVEST.

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class		
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.	
587.3	32	8/13/14			GRAY CLAYEY SILT	5	-	-	-	-	-	-	-	-	-	-	VISUAL
	34																
	36																
579.8	38	13/21/25			GRAY CLAYEY SILT	6	-	-	-	-	-	-	-	-	-	-	VISUAL
	40																
576.3	42	PRESS			GRAY SILT	7	-	0	0	8	51	41	NP	NP	22		A-4b
	44																
	46																
569.8	48	4/6/7			GRAY SILTY CLAY	8	-	0	2	3	26	69	38	16	28		A-6B
	50																
	52																
	54																
	56																
559.8	58	8/12/13			GRAY SILTY CLAY	9	-	-	-	-	-	-	-	-	-	-	VISUAL
	60																

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 8/19/92 Sampler Type SS Dia. 1 3/8" Water Elev. 587.3' **Project Identification:** CUYAHOGA  
 Date Completed 8/25/92 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-10 Station & Offset 2' E AND 32' S OF B-5 Surface Elev. 617.3' CENTRAL VIADUCT  
 \_\_\_\_\_ STRUCTURAL REHABILITATION INVEST.

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
519.8	94	8/14/17			GRAY SILT AND CLAY	13	-	0	2	4	34	60	31	12	20	A-6a
	96															
	98															
	100															
	102															
509.8	104	9/14/18			GRAY SILTY CLAY	14	-	-	-	-	-	-	-	-	-	VISUAL
	106															
	108															
	110															
	112															
499.8	114	9/13/17			GRAY SILTY CLAY	15	-	-	-	-	-	-	-	-	-	VISUAL
	116															
	118															
	120															
	122															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.















SUMMARY OF DIRECT SHEAR TESTS  
CONSOLIDATED, UNDRAINED

PROJECT : CUY - 90 - 1524

LOCATION : STA. 100+02, 32'R

BORING : B - 10

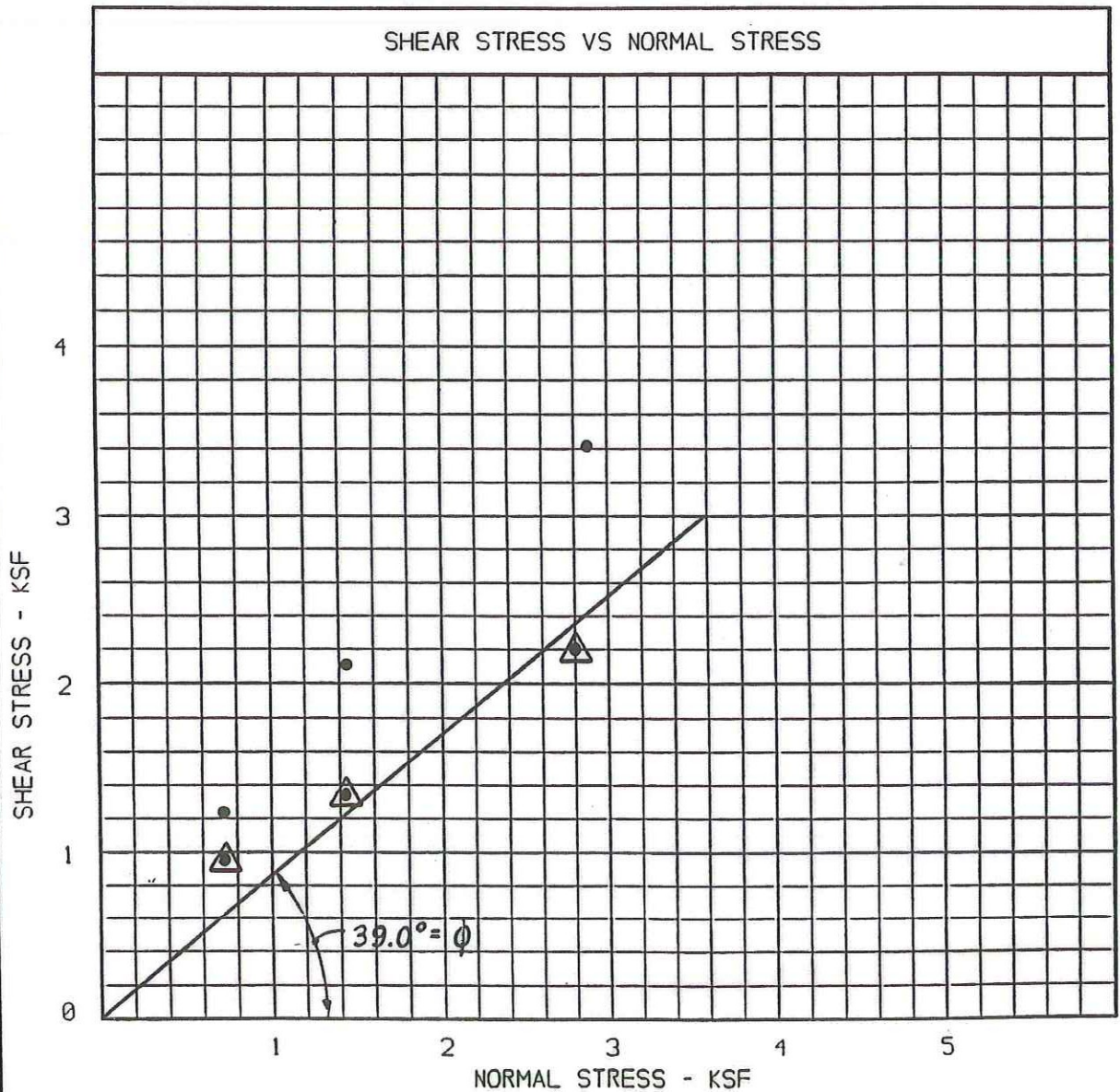
SAMPLES : 2P

DEPTH : 10.0' TO 12.0'

MATERIAL : Gray silty clay inter-bedded with silt, trace fine to medium sand.

• BBC&M PLOT

△ PLOT FOR  $\phi$



JOB NO. : T-354

PLATE

SUMMARY OF DIRECT SHEAR TESTS  
CONSOLIDATED, UNDRAINED

PROJECT : Cuy - 90 - 1524

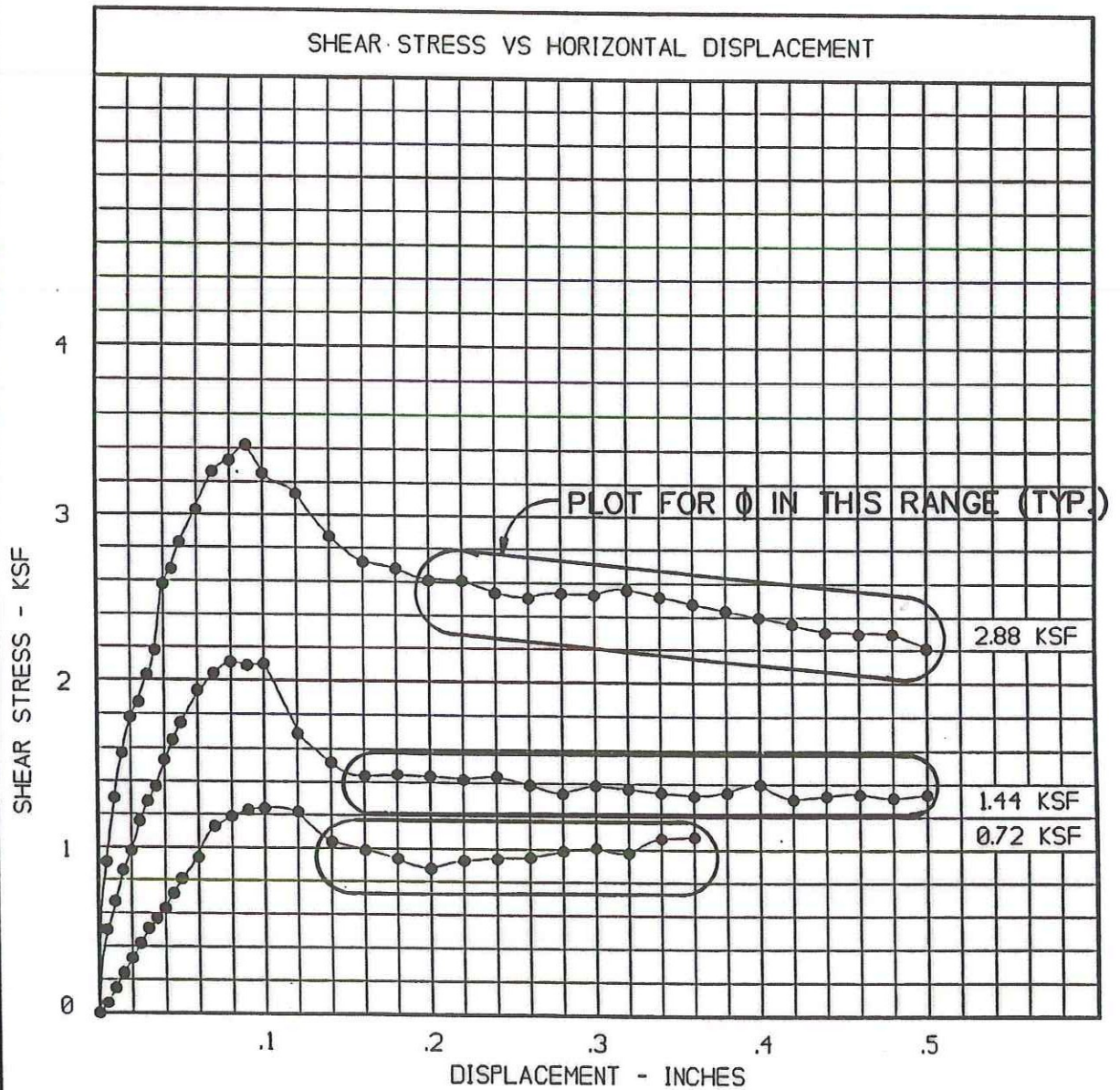
LOCATION : 100 + 02 , 32' R

BORING : B - 10

SAMPLES : 2 P

DEPTH : 10.0' TO 12.0'

MATERIAL : Gray silty clay inter-bedded with silt , trace fine to medium sand .





TRIAXIAL COMPRESSION TEST  
 SATURATED , CONSOLIDATED , UNDRAINED  
 WITH PORE-PRESSURE MEASUREMENTS

PROJECT : Cuy - 90 - 1524

LOCATION : 100 + 02 , 32' R

BORING : B - 10

SAMPLES : 4 P

DEPTH : 26.0' TO 28.0'

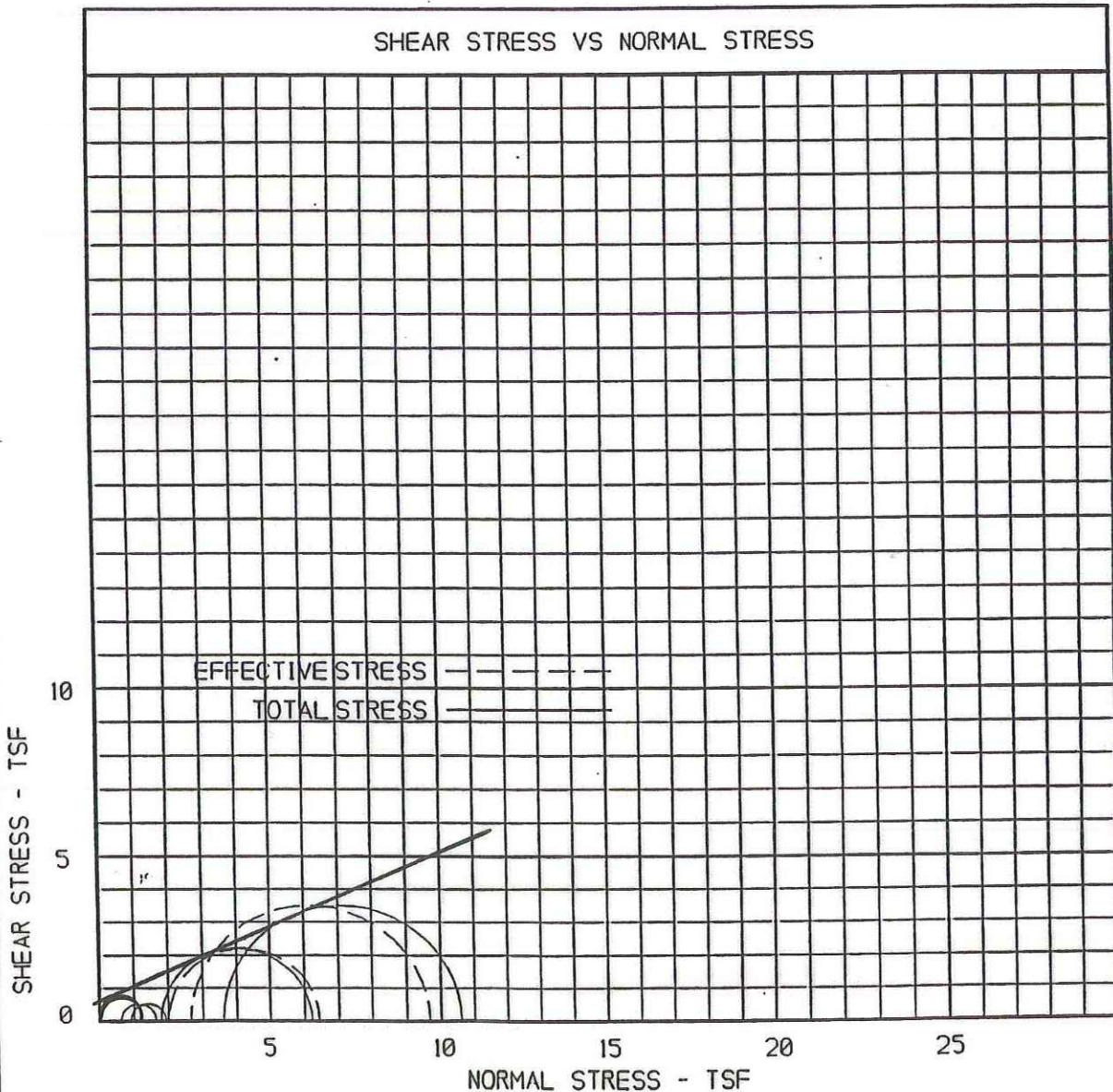
MATERIAL : Gray silty clay , trace fine to coarse sand ,  
 few to many seams of silt .

①  $q_u = 2C$

②  $q_u \approx G_1$   
 if  $G_3 = 0$

③  $q_u = 1.3 \text{ T/SF} \Rightarrow C = 1.3 \text{ K/SF}$

SHEAR STRESS VS NORMAL STRESS



JOB NO. : T-354

TRIAXIAL COMPRESSION TEST  
SATURATED, CONSOLIDATED, UNDRAINED  
WITH PORE-PRESSURE MEASUREMENTS

PROJECT : Cuy - 90 - 1524

LOCATION : 100 + 02 , 32' R

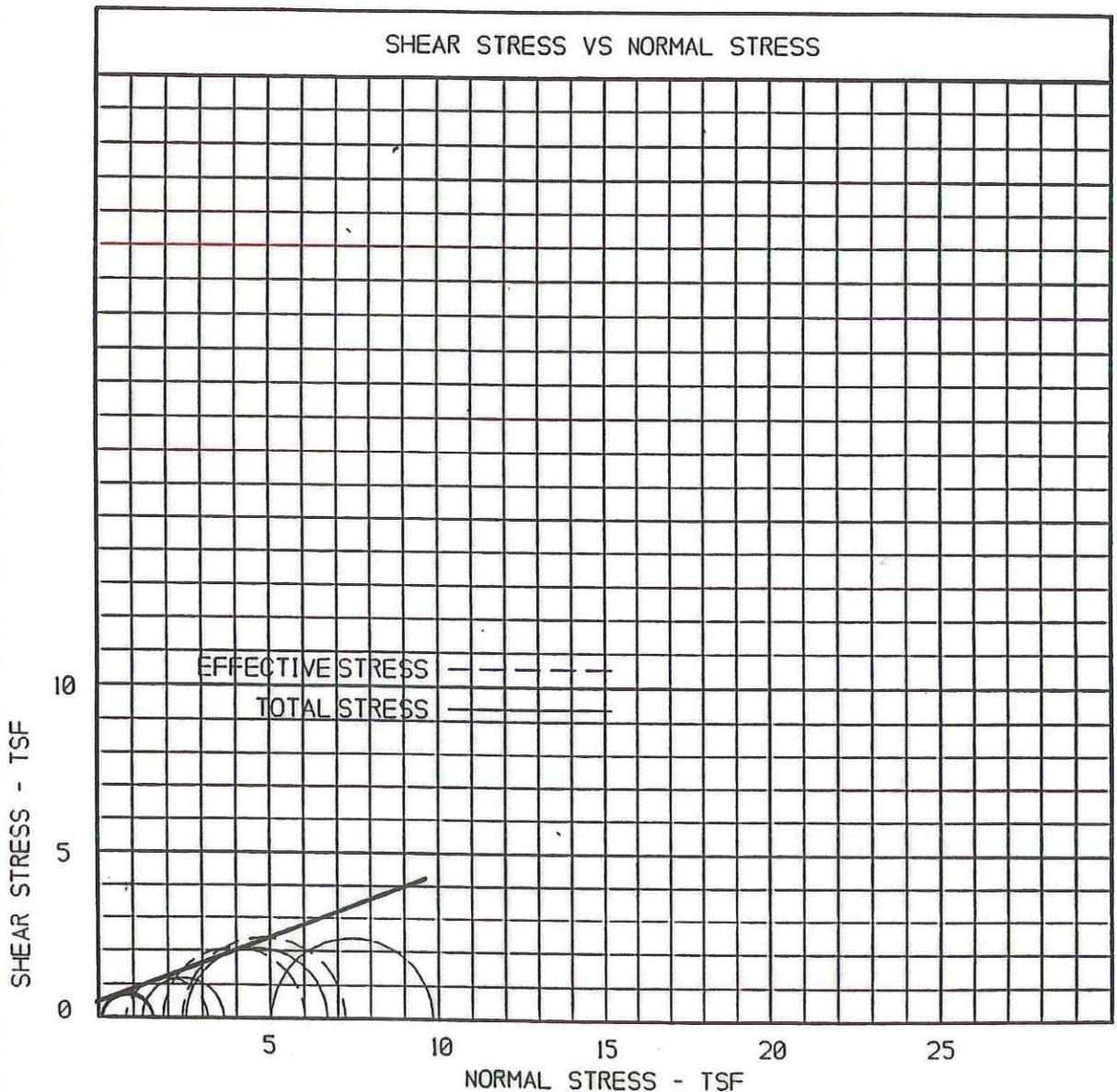
BORING : B - 10                      SAMPLES : 7 P                      DEPTH : 41.0' TO 43.0'

MATERIAL : Gray silty clay , trace fine to medium sand ,  
few to many seams of silt .

$$G_3 = q_u = 1.75 \text{ T/SF}$$

$$C = q_u / 2 = 1.75 \text{ K/SF}$$

JOB NO. : T-354



PLATE



TRIAXIAL COMPRESSION TEST  
 SATURATED , CONSOLIDATED , UNDRAINED  
 WITH PORE-PRESSURE MEASUREMENTS

PROJECT : Cuy - 90 - 1524

LOCATION : 100 + 02 , 32' R

BORING : B - 10

SAMPLES : 11 P

DEPTH : 76.0' TO 78.0'

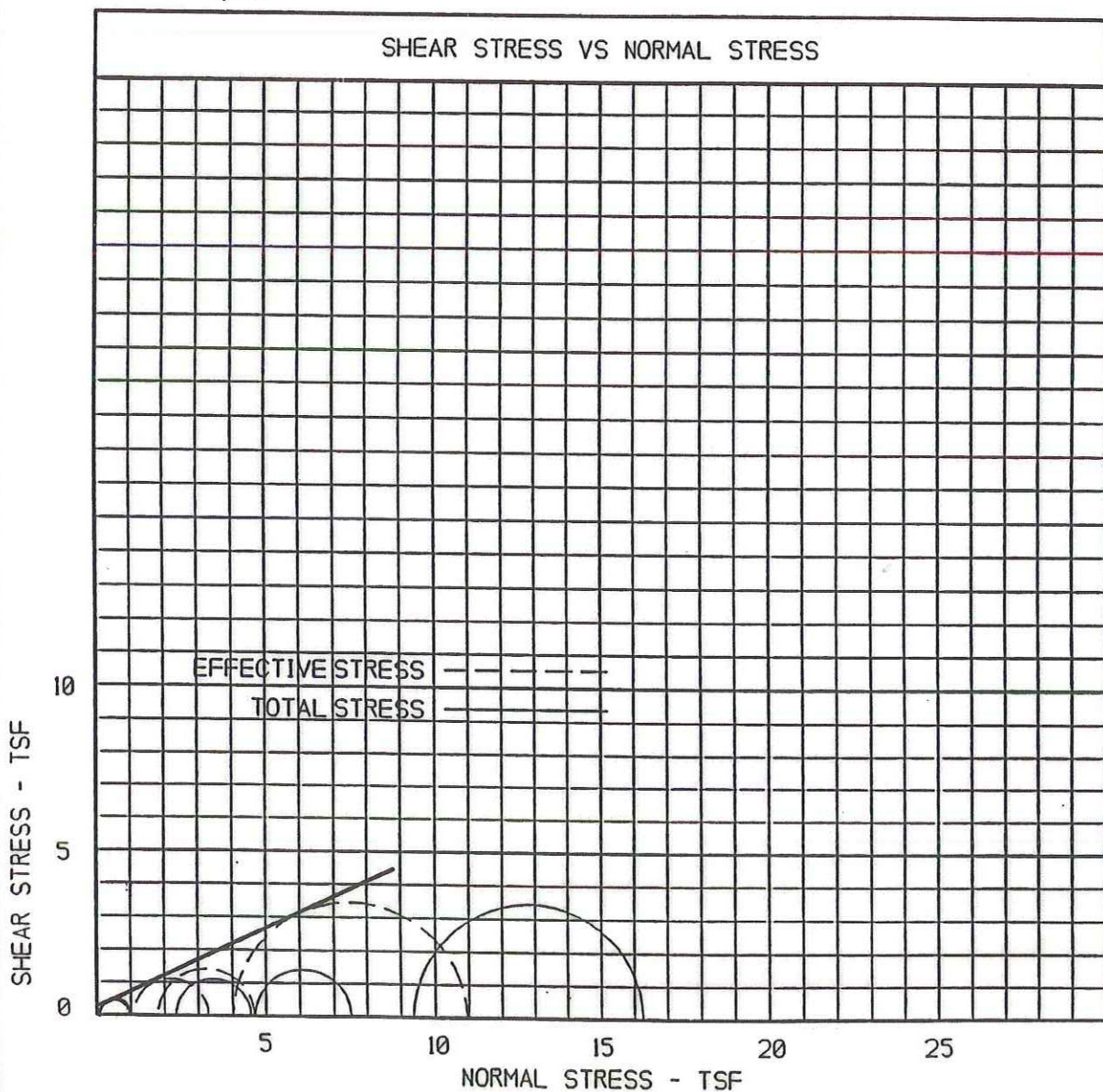
MATERIAL : Gray silty clay , trace fine to coarse sand , trace fine gravel , occasional very thin seams of silt .

$$G_3 = 1 \text{ T/SF}$$

$$q_u = G_3 = 2C$$

$$C = 1 \text{ K/SF}$$

JOB NO. : T-354



**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/30/90 Sampler Type SS Dia. 1 3/8" Water Elev. 639.6' **Project Identification:** CUYAHOGA  
 Date Completed 6/1/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-1 Station & Offset \_\_\_\_\_ Surface Elev. 675.6' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class				
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.			
675.6	0	AUGERED			GRAVELLY SANDY TOPSOIL													VISUAL	
	2																		
	4	AUGERED			BROWN GRAVELLY SAND	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL	
	6																		
668.1	8	AUGERED			BROWN GRAVELLY SAND	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL	
	10																		
665.6	12	3/5/5			BROWN SILTY GRAVELLY SAND	1	63050	25	35	22	12	6	NP	NP	6		A-1-B		
663.1	14																		
	16																		
	18																		
	20																		
	22																		
653.1	24	9/16/24			BROWN SILTY SAND	2	63051	8	42	30	14	6	NP	NP	4		A-1-B		
	26																		
	28																		
	30																		

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/30/90 Sampler Type SS Dia. 1 3/8" Water Elev. 639.6' **Project Identification:** CUYAHOGA  
 Date Completed 6/1/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-1 Station & Offset \_\_\_\_\_ Surface Elev. 675.6' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
643.1	32 34 36 38 40 42	9/15/12			BROWN SILTY SAND	3	63052	0	3	72	19	6	NP	NP	16	A-3A
633.1	44 46 48 50 52	15/30/60			GRAY SANDY SILT	4	63053	0	6	39	49	6	NP	NP	20	A-4A
623.1	54 56 58 60	27/40/70			GRAY SILT	5	63054	0	0	9	74	17	NP	NP	17	A-4B

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/30/90 Sampler Type SS Dia. 1 3/8" Water Elev. 639.6' **Project Identification:** CUYAHOGA  
 Date Completed 6/1/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-1 Station & Offset \_\_\_\_\_ Surface Elev. 675.6' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
613.1	62 64 66 68 70 72	34/21/18			BROWN AND GRAY SILTY SAND	6	63055	0	4	61	28	7	NP	NP	13	A-3A
603.1	74 76 78 80 82	13/17/24			GRAY SILT	7	63056	0	0	1	51	48	NP	NP	20	A-4B
593.1	84 86 88 90 92	14/20/27			GRAY SILT	8	63057	0	0	0	64	36	NP	NP	18	A-4B

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/30/90 Sampler Type SS Dia. 1 3/8" Water Elev. 639.6' **Project Identification:** CUYAHOGA  
 Date Completed 6/1/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-1 Station & Offset \_\_\_\_\_ Surface Elev. 675.6' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
583.1	94	5/10/13			GRAY SILT AND CLAY	9	63058	0	2	3	35	60	36	13	18	A-6A
	96															
	98															
	100															
	102															
573.1	104	5/9/14			GRAY CLAYEY SILT	10	63059	0	0	1	51	48	31	10	22	A-4B
	106															
	108															
	110															
	112															
563.1	114	11/19/24			GRAY SILT AND CLAY	11	63060	0	0	1	55	44	31	11	21	A-6A
	116															
	118															
	120															
	122															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/30/90 Sampler Type SS Dia. 1 3/8" Water Elev. 639.6' **Project Identification:** CUYAHOGA  
 Date Completed 6/1/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-1 Station & Offset \_\_\_\_\_ Surface Elev. 675.6' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
553.1	124	6/13/23			GRAY SILT AND CLAY	12**	63061	0	0	1	60	39	30	11	21	A-6A
	126															
	128															
545.6	130	12/20/23			GRAY CLAYEY SILT	13	63062	0	0	2	55	43	30	10	20	A-4B
	132				BOTTOM OF BORING - ELEV. 544.1											
	134															
	136				NOTE: SLOPE INDICATOR PIPE INSTALLED AT 131.0'.											
	138															
	140															
	142															
	144															
	146															
	148															
	150															
	152															
	154															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample. \*\*Sample 12 is shown beginning 0.5' lower than it should be due to page space (top of sample elevation is correct)

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/30/90 Sampler: Type SS Dia. 1 3/8" Water Elev. 639.6'  
Date Completed 6/1/90 Casing: Length \_\_\_\_\_ Dia. \_\_\_\_\_

Project Identification: CUYAHOGA

CUY-90-15.24

STABILITY ANALYSIS

SUBSURFACE INVESTIGATION

Boring No. B-1 Station & Offset \_\_\_\_\_ Surface Elev. 675.6'

Elev.	Depth	Std. Pen. (N)	Rec. #	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics							SHTL Class			
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	P.I.		W.C.		
675.6	0																	
	2				GRAVELLY SANDY TOPSOIL													VISUAL
	4																	
	6				BROWN GRAVELLY SAND													VISUAL
668.1	8																	
665.6	10				BROWN GRAVELLY SAND													VISUAL
663.1	12																	
	14	3/5/5			BROWN SILTY GRAVELLY SAND	1	63050	25	35	22	12	6	NP	NP	6			A-1-B
	16																	
	18																	
	20																	
653.1	22																	
	24	9/16/24			BROWN SILTY SAND	2	63051	8	42	30	14	6	NP	NP	4			A-1-B
	26																	
	28																	
	30																	
643.1	32																	
	34	9/15/12			BROWN SILTY SAND	3	63052	0	3	72	19	6	NP	NP	16			A-3A
	36																	

Particle Sizes: Agg. >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay <= 0.005 mm

Boring No. B-1

Station &amp; Offset

Surface Elev. 675.6'

Project: CCUY-90-15.24

(34)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristic					L.L.	P.I.	W.C.	SHTL Class
								% Agg	% C.S.	% F.S.	% Silt	% Clay				
633.1	38	15/30/60			GRAY SANDY SILT	4	63053	0	6	39	49	6	NP	NP	20	A-4A
	40															
	42															
	44															
	46															
	48															
623.1	50	27/40/70			GRAY SILT	5	63054	0	0	9	74	17	NP	NP	17	A-4B
	52															
	54															
	56															
	58															
	60															
613.1	62	34/21/18			BROWN AND GRAY SILTY SAND	6	63055	0	4	61	28	7	NP	NP	13	A-3A
	64															
	66															
	68															
	70															
	72															
603.1	74	13/17/24			GRAY SILT	7	63056	0	0	1	51	48	NP	NP	20	A-4B
	76															
	78															
	80															



Boring No. B-1

Station &amp; Offset

Surface Elev. 675.1'

Project: CUY-90-15.24

34

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics						SHTL Class				
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL		PL	W.C.		
593.1	82																	
	84	14/20/27			GRAY SILT	8	63057	0	0	0	64	36	NP	NP	18			A-4B
	86																	
	88																	
	90																	
583.1	92																	
	94	5/10/13			GRAY SILT AND CLAY	9	63058	0	2	3	35	60	36	13	18			A-6A
	96																	
	98																	
	100																	
573.1	102																	
	104	5/9/14			GRAY CLAYEY SILT	10	63059	0	0	1	51	48	31	10	22			A-4B
	106																	
	108																	
	110																	
563.1	112																	
	114	11/19/24			GRAY SILT AND CLAY	11	63060	0	0	1	55	44	31	11	21			A-6A
	116																	
	118																	
	120																	
553.1	122																	
	124	6/13/23			GRAY SILT AND CLAY	12	63061	0	0	1	60	39	30	11	21			A-6A

Boring No. -1 Station B Offset

Surface Elev. 675.6' Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics						SHTL Class				
								% Agg	% C.S.	% F.S.	% Sil	% Clay	L.L.		P.I.	W.C.		
	126																	
	128																	
545.6	130																	
544.1	132	12/20/23			GRAY CLAYEY SILT	13	63062	0	0	2	55	43	30	10	20			A-4B
	134				← BOTTOM OF BORING													
	136																	
	138																	
	140																	
	142																	
	144																	
	146																	
	148																	
	150																	
	152																	
	154																	
	156																	
	158																	
	160																	
	162																	
	164																	
	166																	
	168																	

NOTE: SLOPE INDICATOR PIPE INSTALLED AT 131.0'

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 634.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/25/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-2 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class			
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
675.1	0																	
	2	AUGERED			RANDOM FILL	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL
670.1	4																	
	6	3/3/3			BROWN SILTY GRAVELLY SAND	1	63007	33	38	17	10	2	NP	NP	10			A-1-B
	8																	
	10																	
	12																	
	14																	
660.1	16	3/6/11			BROWN SANDY SILT	2	63008	0	19	33	42	6	NP	NP	28			A-4A
	18																	
	20																	
	22																	
	24																	
650.1	26	8/16/22			LIGHT BROWN SILTY SAND	3	63009	0	42	47	11	0	NP	NP	2			A-3A
	28																	
	30																	

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 634.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/25/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-2 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
640.1	32	5/10/10			BROWN SILTY SAND	4	63010	0	2	74	22	2	NP	NP	22	A-3A
	34															
	36															
	38															
	40															
630.1	42	17/45/54			GRAY SANDY SILT	5	63011	0	1	53	42	4	NP	NP	19	A-4A
	44															
	46															
	48															
	50															
620.1	52	7/16/26			GRAY SILT	6	63012	0	0	6	83	11	NP	NP	17	A-4B
	54															
	56															
	58															
	60															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 634.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/25/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-2 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
610.1	62	3/6/11			GRAY CLAYEY SILT	7	63013	0	0	1	47	52	28	7	23	A-4A
	64															
	66															
	68															
	70															
600.1	72	4/8/12			GRAY CLAYEY SILT	8	63014	0	0	1	59	40	28	7	19	A-4B
	74															
	76															
	78															
	80															
590.1	82	8/13/20			GRAY SILT	9	63015	0	0	1	59	40	27	6	19	A-4B
	84															
	86															
	88															
	90															
92																

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 634.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/25/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-2 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
580.1	94	5/8/9			GRAY CLAY	10	63016	0	3	6	51	40	41	22	22	A-7-6
	96															
	98															
	100															
	102															
570.1	104	5/7/9			GRAY SILTY CLAY	11	63017	0	1	2	39	58	37	16	28	A-6B
	106															
	108															
	110															
	112															
560.1	114	5/9/10			GRAY SILT AND CLAY	12	63018	0	1	1	28	70	37	12	30	A-6A
	116															
	118															
	120															
	122															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 634.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/25/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-2 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
550.1	124	4/6/12			GRAY CLAYEY SILT	13	63019	0	1	2	52	45	28	8	22	A-4B
	126															
	128															
	130															
	132															
540.1	134	10/18/35			GRAY SILT AND CLAY	14	63020	0	0	1	51	48	34	15	22	A-6A
	136															
	138															
	140															
	142															
	144															
	146															
	148															
	150															
	152															
154																
BOTTOM OF BORING - ELEV. 538.6																
NOTE: SLOPE INDICATOR PIPE INSTALLED AT 138.0'.																

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/23/90 Sampler: Type SS Dia. 1 3/8" Water Elev. 634.1'  
 Date Completed 5/25/90 Casing: Length \_\_\_\_\_ Dia. \_\_\_\_\_

Project Identification: CUYAHOGA  
CUY-90-15,24  
 STABILITY ANALYSIS  
 SUBSURFACE INVESTIGATION

Boring No. B-2 Station & Offset \_\_\_\_\_ Surface Elev. 675.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics							SHTL Class		
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.	
675.1	0																
	2	AUGERED			RANDOM FILL	-	-	-	-	-	-	-	-	-	-	-	VISUAL
670.1	4																
	6	3/3/3			BROWN SILTY GRAVELLY SAND	1	63007	33	38	17	10	2	NP	NP	10		A-1-B
	8																
	10																
	12																
	14																
660.1	16	3/6/11			BROWN SANDY SILT	2	63008	0	19	33	42	6	NP	NP	28		A-4A
	18																
	20																
	22																
	24																
650.1	26	8/16/22			LIGHT BROWN SILTY SAND	3	63009	0	42	47	11	0	NP	NP	2		A-3A
	28																
	30																
	32																
	34																
640.1	36	5/10/10			BROWN SILTY SAND	4	63010	0	2	74	22	2	NP	NP	22		A-3A

Particle Sizes: Agg. >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

Boring No. B-2 Station &amp; Offset

face Elev. 675.1'

Project: CUY-90-15.24

34

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics					LL	PI	W.C.	SHTL Class
								% Agg.	% C.S.	% F.S.	% Silt	% Clay				
630.1	38	17/45/54			GRAY SANDY SILT	5	63011	0	1	53	42	4	NP	NP	19	A-4A
	40															
	42															
	44															
	46															
	48															
620.1	50	7/16/26			GRAY SILT	6	63012	0	0	6	83	11	NP	NP	17	A-4B
	52															
	54															
	56															
	58															
	60															
610.1	62	3/6/11			GRAY CLAYEY SILT	7	63013	0	0	1	47	52	28	7	23	A-4A
	64															
	66															
	68															
	70															
	72															
600.1	74	4/8/12			GRAY CLAYEY SILT	8	63014	0	0	1	59	40	28	7	19	A-4B
	76															
	78															
	80															



Boring No. 1 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N) <sub>100</sub>	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics					SHTL Class			
								% Agg	% C.S.	% F.S.	% Silt	% Clay		L.L.	P.I.	W.C.
590.1	82	8/13/20	GRAY SILT			9	63015	0	0	1	59	40	27	6	19	A-4B
	84															
	86															
	88															
	90															
	92															
580.1	94	5/8/9	GRAY CLAY			10	63016	0	3	6	51	40	41	22	22	A-7-6
	96															
	98															
	100															
570.1	102	5/7/9	GRAY SILTY CLAY			11	63017	0	1	2	39	58	37	16	28	A-6B
	104															
	106															
	108															
560.1	110	5/9/10'	GRAY SILT AND CLAY			12	63018	0	1	1	28	70	37	12	30	A-6A
	112															
	114															
	116															
	118															
	120															
122																
124																

Boring No. Station & Offset Source Elev. 675.1' Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics					L.L.	P.I.	W.C.	SHTL Class
								% Agg.	% C.S.	% F.S.	% Silt	% Clay				
550.1	126	4/6/12			GRAY CLAYEY SILT	13	63019	0	1	2	52	45	28	8	22	A-4B
	128															
	130															
	132															
	134															
540.1	136	10/18/35			GRAY SILT AND CLAY	14	63020	0	0	1	51	48	34	15	22	A-6A
538.6	138															
	140															
	142															
	144															
	146															
	148															
	150															
	152															
	154															
	156															
	158															
	160															
	162															
	164															
	166															
	168															

— BOTTOM OF BORING

NOTE: SLOPE INDICATOR PIPE INSTALLED AT 138.0'

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 610.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-3 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class			
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
675.1	0																	
	2	AUGERED			SILTY SAND WITH GRAVEL	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	4																	
	6																	
	8																	
665.1	10	2/4/5			BROWN SILT	1	62993	0	1	5	75	19	NP	NP	22		A-4B	
	12																	
	14																	
	16																	
	18																	
655.1	20	5/13/19			LIGHT BROWN SAND	2	62994	0	16	74	8	2	NP	NP	3		A-3	
	22																	
	24																	
	26																	
	28																	
	30																	

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 610.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-3 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
645.1	32	5/10/20			LIGHT BROWN SILTY SAND	3	62995	0	3	84	11	2	NP	NP	7	A-3A
	34															
	36															
	38															
	40															
635.1	42	7/13/19			BROWNISH GRAY SILTY SAND	4	62996	0	5	63	23	9	NP	NP	24	A-3A
	44															
	46															
	48															
	50															
625.1	52	10/10/14			BROWNISH GRAY SILTY SAND	5	62997	0	4	76	18	2	NP	NP	16	A-3A
	54															
	56															
	58															
	60															
615.1		12/32/80			GRAYISH BROWN SANDY SILT	6	62998	0	0	52	43	5	NP	NP	17	A-4A

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 610.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-3 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
605.1	62	2/4/8			GRAY SILT	7	62999	0	0	2	51	47	NP	NP	25	A-4B
	64															
	66															
	68															
	70															
	72															
	74															
595.1	76	4/9/14			GRAY SILT	8	63000	0	0	2	54	44	NP	NP	22	A-4B
	78															
	80															
	82															
	84															
	86															
	88															
585.1	90	6/10/14			GRAY CLAYEY SILT	9	63001	0	0	1	56	43	28	8	22	A-4B
	92															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 610.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-3 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
575.1	94	2/5/8			GRAY SILT AND CLAY	10	63002	0	1	2	32	65	37	14	26	A-6A
	96															
	98															
	100															
	102															
	104															
	106															
565.1	108	3/5/6			GRAY SILT AND CLAY	11	63003	0	1	2	27	70	40	15	29	A-6A
	110															
	112															
	114															
	116															
555.1	118	6/12/20			GRAY SILT	12	63004	0	0	1	59	40	NP	NP	23	A-4B
	120															
	122															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 610.1' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-3 Station & Offset \_\_\_\_\_ Surface Elev. 675.1' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
545.1	124	6/12/20			GRAY CLAYEY SILT	13	63005	0	0	1	59	40	27	7	22	A-4B
	126															
	128															
	130															
	132															
	134															
	136															
535.1	138	13/18/25			GRAY CLAY	14	63006	9	3	6	33	49	40	21	20	A-6B
	140															
	142															
	144															
	146															
	148															
	150															
152																
154																

BOTTOM OF BORING - ELEV. 533.6

NOTE: SLOPE INDICATOR PIPE INSTALLED AT 142.0'.

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/22/90 Sampler: Type SS Dia. 1 3/8" Water Elev. 610.1'  
Date Completed 5/23/90 Casing: Length \_\_\_\_\_ Dia. \_\_\_\_\_

Project Identification: CUYAHOGA  
CUY-90-15.24  
STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Boring No. B-3 Station & Offset \_\_\_\_\_ Surface Elev. 675.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics						SHTL Class				
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL		P.I.	W.C.		
675.1	0																	
	2				AUGERED SILTY SAND WITH GRAVEL													VISUAL
	4																	
	6																	
	8																	
665.1	10																	
	12	2/4/5			BROWN SILT	1	62993	0	1	5	75	19	NP	NP	22			A-1B
	14																	
	16																	
	18																	
655.1	20																	
	22	5/13/19			LIGHT BROWN SAND	2	62994	0	16	74	8	2	NP	NP	3			A-3
	24																	
	26																	
	28																	
645.1	30																	
	32	5/10/20			LIGHT BROWN SILTY SAND	3	62995	0	3	84	11	2	NP	NP	7			A-3A
	34																	
	36																	

Particle Sizes: Agg >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay <= 0.005 mm

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Surface Elev.	Field No.	Lab. Nos. Sa.	Physical Characteristics							SHTL Class	
									% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.L.		W.C.
635.1	38	7/13/19			BROWNISH GRAY SILTY SAND		4	62996	0	5	63	23	9	NP	NP	24	A-3A
	40																
	42																
	44																
	46																
625.1	48	10/10/14			BROWNISH GRAY SILTY SAND		5	62997	0	4	76	18	2	NP	NP	16	A-3A
	50																
	52																
	54																
	56																
615.1	58	12/32/80			GRAYISH BROWN SANDY SILT		6	62998	0	0	52	43	5	NP	NP	17	A-4A
	60																
	62																
	64																
	66																
605.1	68	12/4/8			GRAY SILT		7	62999	0	0	2	51	47	NP	NP	25	A-4B
	70																
	72																
	74																
	76																
	78																
	80																





Boring No. Station & Offset

Surface Elev. 675.1'

Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics							SHTL Class														
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.													
545.1	126	6/12/20			GRAY CLAYEY SILT	13	63005	0	0	1	59	40	27	7	22	A-4B													
	128																												
	130																												
	132																												
	134																												
	136																												
535.1	138	13/18/25			GRAY CLAY	14	63006	9	3	6	33	49	40	21	20	A-6B													
533.6	140																												
	142																												
	144																← BOTTOM OF BORING												
	146																												
	148																												
	150																NOTE: SLOPE INDICATOR PIPE INSTALLED AT 142.0'												
	152																												
	154																												
	156																												
	158																												
	160																												
	162																												
	164																												
	166																												
	168																												



**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. 607.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ STANDING WATER 5/17/90 CUY-90-15.24  
 SEE NOTE ON BOTTOM OF LOG **STABILITY ANALYSIS**  
 Boring No. B-4 Station & Offset \_\_\_\_\_ Surface Elev. 616.5' **SUBSURFACE INVESTIGATION**

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class		
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.	
616.5	0																
	2	AUGERED			CINDERS	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	4	AUGERED			BROWN SAND AND GRAVEL	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	6	AUGERED			BROWN AND GRAY SAND	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	8																
606.5	10	9/10/11			BROWN SILTY SAND	1	62950	0	31	51	14	4	NP	NP	5	A-3A	
	12																
	14																
	16																
	18																
596.5	20	3/13/19			GRAY SILTY SAND	2	62951	0	0	63	35	2	NP	NP	23	A-4A	
	22																
	24																
	26																
	28																
	30																

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. 607.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-4 Station & Offset \_\_\_\_\_ Surface Elev. 616.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
586.5	32	2/4/6			GRAY SILT	3	62952	0	0	2	62	36	NP	NP	26	A-4B
	34															
	36															
	38															
576.5	40	5/9/16			GRAY CLAYEY SILT	4	62953	0	0	1	55	44	31	10	19	A-4B
	42															
	44															
	46															
	48															
566.5	50	6/6/8			GRAY CLAY	5**	62954	0	1	2	35	62	30	80	22	A-7-6
	52															
	54															
	56															
	58															
556.5	60	7/14/17			GRAY SILTY CLAY	6	62955	0	0	2	56	42	36	17	23	A-6B

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample. \*\*The liquid limit and plasticity index for sample 5 have been entered as shown on original log. True order or values are unknown.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. 607.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-4 Station & Offset \_\_\_\_\_ Surface Elev. 616.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
546.5	62	4/7/10			GRAY CLAYEY SILT	7	62956	0	0	1	56	43	29	10	21	A-4B
	64															
	66															
	68															
	70															
	72															
	74															
536.5	76	5/9/16			GRAY SILTY CLAY	8	62957	0	3	7	47	43	36	18	19	A-6B
	78															
	80															
	82															
	84															
	86															
	88															
526.5	90	2/4/8			GRAY CLAYEY SILT	9	62958	0	2	3	37	58	30	9	21	A-4A
	92															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. 607.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-4 Station & Offset \_\_\_\_\_ Surface Elev. 616.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
516.5	94	7/13/17			GRAY SILT AND CLAY	10	62959	0	2	3	38	57	34	13	23	A-6A
	96															
	98															
	100															
	102															
	104															
	106															
506.5	108	5/9/17			GRAY SILT AND CLAY	11	62960	0	1	2	36	61	35	14	23	A-6A
	110															
	112															
	114															
	116															
	118															
	120															
496.5	122	7/10/14			GRAY SILT AND CLAY	12	62961	0	1	2	40	57	33	13	24	A-6A

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. 607.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-4 Station & Offset \_\_\_\_\_ Surface Elev. 616.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
486.5	124	0/0/0**			GRAY SILTY SAND	13	62962	0	30	52	15	3	NP	NP	19	A-3A
	126															
	128															
	130															
	132															
	134															
476.5	136	15/37/56			GRAY SILT AND CLAY	14	62963	0	4	9	34	53	33	13	16	A-6A
	138															
	140															
	142															
471.5	144	19/34/50			GRAY SANDY SILT	15	62964	11	5	8	29	47	33	14	15	A-6A
	146															
	148															
	150															
	152	BOTTOM OF BORING - ELEV. 470.0														
	154	** ROD WENT DOWN 1.5' FROM WEIGHT OF ITSELF NOTE: SLOPE INDICATOR PIPE INSTALLED AT 140.0'. WATER HEAVED 8' ABOVE GROUND SURFACE DURING INSTALLATION OF SLOPE INCLINOMETER PIPE.														

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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State of Ohio  
Department of Transportation  
Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" STANDING WATER 5/17/90  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Water Elev. 607.5'  
 SEE NOTE ON BOTTOM OF LOG

Project Identification: CUYAHOGA  
CUY-90-15.24

STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Boring No. B-4 Station & Offset \_\_\_\_\_ Surface Elev. 616.5'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics							SHTL Class		
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PL		W.C.	
616.5	0																
	2	AUGERED			CINDERS	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	4	AUGERED			BROWN SAND AND GRAVEL	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	6	AUGERED			BROWN AND GRAY SAND	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	8																
606.5	10																
	12	9/10/11			BROWN SILTY SAND	1	62950	0	31	51	14	4	NP	NP	5	A-3A	
	14																
	16																
	18																
596.5	20																
	22	3/13/19			GRAY SILTY SAND	2	62951	0	0	63	35	2	NP	NP	23	A-4A	
	24																
	26																
	28																
586.5	30																
	32	2/4/6			GRAY SILT	3	62952	0	0	2	62	36	NP	NP	26	A-4B	
	34																
	36																

Particle Sizes: Agg. > 2.00mm Coarse Sand = 2.00 - 0.425mm Fine Sand = 0.425 - 0.075mm Silt = 0.075 - 0.0075mm Clay = < 0.0075mm

Boring No.		Station & Offset			Face Elev.	Project:	Physical Characteristics							SHTL Class		
Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
576.5	38	5/9/16'			GRAY CLAYEY SILT	4	62953	0	0	1	55	44	31	10	19	A-4B
	40															
	42															
	44															
	46															
566.5	48	6/6/8			GRAY CLAY	5	62954	0	1	2	35	62	30	80	22	A-7-6
	50															
	52															
	54															
	56															
556.5	58	7/14/17'			GRAY SILTY CLAY	6	62955	0	0	2	56	42	36	17	23	A-6B
	60															
	62															
	64															
	66															
546.5	68	4/7/10			GRAY CLAYEY SILT	7	62956	0	0	1	56	43	29	10	21	A-4B
	70															
	72															
	74															
	76															
	78															
	80															









**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. DRY **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-5 Station & Offset \_\_\_\_\_ Surface Elev. 617.4' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class			
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
617.4	0																	
	2	AUGERED			BLACK SAND AND GRAVEL	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL
614.9	4																	
612.4	6	7/10/12			BROWN SILTY SAND	1	62965	0	27	60	12	1	NP	NP	6		A-3A	
	8																	
	10																	
	12																	
	14																	
602.4	16	13/20/30			BROWN SANDY SILT	2	62966	0	0	51	48	1	NP	NP	25		A-4A	
	18																	
	20																	
	22																	
	24																	
592.4	26	8/19/23			GRAY SILT	3	62967	0	0	1	86	13	NP	NP	17		A-4B	
	28																	
	30																	

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. DRY **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-5 Station & Offset \_\_\_\_\_ Surface Elev. 617.4' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
582.4	32	4/8/13			GRAY SILTY CLAY	4	62968	0	0	1	56	43	28	19	21	A-6B
	34															
	36															
	38															
	40															
572.4	42	2/4/9			GRAY SILT AND CLAY	5	62969	0	1	2	38	59	36	15	30	A-6A
	44															
	46															
	48															
	50															
562.4	52	7/11/10			GRAY SILTY CLAY	6	62970	0	1	1	32	66	40	16	29	A-6B
	54															
	56															
	58															
	60															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. DRY **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-5 Station & Offset \_\_\_\_\_ Surface Elev. 617.4' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
552.4	62	15/19/21			GRAY CLAYEY SILT	7	62971	0	0	2	53	45	30	10	22	A-4B
	64															
	66															
	68															
	70															
542.4	72	12/22/20			GRAY CLAYEY SILT	8	62972	0	1	2	54	43	30	10	22	A-4B
	74															
	76															
	78															
	80															
532.4	82	15/19/20			GRAY SILT AND CLAY	9	62973	0	1	3	50	46	30	11	23	A-6A
	84															
	86															
	88															
	90															
92																

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. DRY **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-5 Station & Offset \_\_\_\_\_ Surface Elev. 617.4' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
522.4	94	7/14/18			GRAY SILT AND CLAY	10	62974	0	2	4	39	55	33	13	24	A-6A
	96															
	98															
	100															
	102															
512.4	104	11/19/22			GRAY SILT	11	62975	13	2	3	31	51	27	6	21	A-4A
	106															
	108															
	110															
	112															
502.4	114	7/15/24			GRAY GRAVELLY CLAY	12	62976	13	3	6	37	41	32	14	24	A-6A
	116															
	118															
	120															
	122															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. DRY **Project Identification:** CUYAHOGA  
 Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-5 Station & Offset \_\_\_\_\_ Surface Elev. 617.4' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
492.4	124	8/15/22			GRAY SILTY CLAY  BOTTOM OF BORING - ELEV. 490.9  NOTE: SLOPE INDICATOR PIPE INSTALLED AT 125.0'.	13	62977	0	0	1	29	70	41	16	28	A-7-6
	126															
	128															
	130															
	132															
	134															
	136															
	138															
	140															
	142															
	144															
	146															
	148															
	150															
	152															
	154															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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Department of Transportation  
Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/16/90 Sampler Type SS Dia. 1 3/8" Water Elev. DRY  
Date Completed 5/17/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_

Project Identification: CUYAHOGA  
CUY-90-15.24  
STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Boring No. B-5 Station & Offset \_\_\_\_\_ Surface Elev. 617.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics						SHTL Class				
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL		P.I.	W.C.		
617.4	0																	
614.9	2	AUGERED			BLACK SAND AND GRAVEL	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL
612.4	4																	
	6	7/10/12			BROWN SILTY SAND	1	62965	0	27	60	12	1	NP	NP	6			A-3A
	8																	
	10																	
	12																	
602.4	14																	
	16	13/20/30			BROWN SANDY SILT	2	62966	0	0	51	18	1	NP	NP	25			A-4A
	18																	
	20																	
	22																	
	24																	
592.4	26	8/19/23			GRAY SILT	3	62967	0	0	1	86	13	NP	NP	17			A-4B
	28																	
	30																	
	32																	
	34																	
582.4	36	4/8/13			GRAY SILTY CLAY	4	62968	0	0	1	56	43	28	19	21			A-6B

Particle Sizes: Agg >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm



Boring No.		Station & Offset			ace Elev.	Project:	Physical Characteristics							SHTL Class		
Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class
572.4	38	2/4/9			GRAY SILT AND CLAY	5	62969	0	1	2	38	59	36	15	30	A-6A
	40															
	42															
	44															
	46															
562.4	48	7/11/10			GRAY SILTY CLAY	6	62970	0	1	.1	32	66	40	16	29	A-6B
	50															
	52															
	54															
	56															
552.4	58	15/19/21			GRAY CLAYEY SILT	7	62971	0	0	2	53	45	30	10	22	A-4B
	60															
	62															
	64															
	66															
542.4	68	12/22/20			GRAY CLAYEY SILT	8	62972	0	1	2	54	43	30	10	22	A-4B
	70															
	72															
	74															
	76															
78																
80																



Boring No. B-5 Station & Offset

Surface Elev. 617.4'

Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics					L.L.	P.I.	W.C.	SHTL Class
								% Agg.	% C.S.	% F.S.	% Sil.	% Clay				
532.4	82	15/19/20			GRAY SILT AND CLAY	9	62973	0	1	3	50	46	30	11	23	A-6A
	84															
	86															
	88															
	90															
522.4	92	7/14/18			GRAY SILT AND CLAY	10	62974	0	2	4	39	55	33	13	24	A-6A
	94															
	96															
	98															
	100															
512.4	102	11/19/22			GRAY SILT	11	62975	13	2	3	31	51	27	6	21	A-4A
	104															
	106															
	108															
	110															
502.4	112	7/15/24			GRAY GRAVELLY CLAY	12	62976	13	3	6	37	41	32	14	24	A-6A
	114															
	116															
	118															
	120															
122																
124																

Boring No. B-5 Station B Offset

Surface Elev. 617.4'

Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft	Loss ft	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics					SHTL Class					
								% Agg	% C.S.	% F.S.	% Silt	% Clay		L.L.	P.I.	W.C.		
492.4																		
490.9	126	8/15/22			GRAY SILTY CLAY	13	62977	0	0	1	29	70	41	16	28	A-7-6		
	128				BOTTOM OF BORING													
	130																	
	132																	
	134																	
	136																	
	138																	
	140																	
	142																	
	144																	
	146																	
	148																	
	150																	
	152																	
	154																	
	156																	
	158																	
	160																	
	162																	
	164																	
	166																	
	168																	

NOTE: SLOPE INDICATOR PIPE INSTALLED AT 125.0'

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/25/90 Sampler Type SS Dia. 1 3/8" Water Elev. 605.0' **Project Identification:** CUYAHOGA  
 Date Completed 5/30/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-6 Station & Offset \_\_\_\_\_ Surface Elev. 617.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class			
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
617.5	0																	
	2	AUGERED			GRAVEL	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL
614.5	4	AUGERED			BROWN SAND	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	6																	
610.5	8	AUGERED			SILTY SAND	-	-	-	-	-	-	-	-	-	-	-	-	VISUAL
609.5																		
	10																	
	12																	
605.0	14	6/11/11			GRAY SILT	1	63063	0	0	7	84	9	NP	NP	19		A-4B	
	16																	
	18																	
	20																	
	22																	
595.0	24	7/9/19			GRAY SILT AND CLAY	2	63064	0	0	3	57	40	31	11	20		A-6A	
	26																	
	28																	
	30																	

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/25/90 Sampler Type SS Dia. 1 3/8" Water Elev. 605.0' **Project Identification:** CUYAHOGA  
 Date Completed 5/30/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-6 Station & Offset \_\_\_\_\_ Surface Elev. 617.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
585.0	32	9/13/13			GRAY SILT AND CLAY	3	63065	0	0	2	58	40	31	11	18	A-6A
	34															
	36															
	38															
	40															
575.0	42	7/8/12			GRAY CLAYEY SILT	4	63066	0	2	4	42	52	34	10	18	A-4A
	44															
	46															
	48															
	50															
565.0	52	5/6/12			GRAY CLAYEY SILT	5	63067	0	1	1	37	61	34	8	29	A-4A
	54															
	56															
	58															
	60															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/25/90 Sampler Type SS Dia. 1 3/8" Water Elev. 605.0' **Project Identification:** CUYAHOGA  
 Date Completed 5/30/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-6 Station & Offset \_\_\_\_\_ Surface Elev. 617.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
555.0	62	10/17/21			GRAY SILT AND CLAY	6	63068	0	0	1	54	45	34	14	21	A-6A
	64															
	66															
	68															
	70															
545.0	72	11/17/23			GRAY CLAYEY SILT	7	63069	0	0	1	60	39	30	9	20	A-4B
	74															
	76															
	78															
	80															
535.0	82	8/20/25			GRAY SILT	8	63070	0	4	9	49	38	25	6	13	A-4A
	84															
	86															
	88															
	90															
92																

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/25/90 Sampler Type SS Dia. 1 3/8" Water Elev. 605.0' **Project Identification:** CUYAHOGA  
 Date Completed 5/30/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-6 Station & Offset \_\_\_\_\_ Surface Elev. 617.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
525.0	94	17/24/34			GRAY SILT	9	63071	0	2	4	37	57	25	2	21	A-4A
	96															
	98															
	100															
	102															
515.0	104	8/15/19			GRAY CLAYEY SILT	10	63072	0	1	3	38	58	34	10	23	A-4A
	106															
	108															
	110															
	112															
505.0	114	13/16/19			GRAY SILT AND CLAY	11	63073	0	2	3	38	57	35	12	18	A-6A
	116															
	118															
	120															
	122															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/25/90 Sampler Type SS Dia. 1 3/8" Water Elev. 605.0' **Project Identification:** CUYAHOGA  
 Date Completed 5/30/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-6 Station & Offset \_\_\_\_\_ Surface Elev. 617.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
495.0	124	7/13/18			GRAY SILT AND CLAY	12**	63074	0	1	2	38	59	36	12	23	A-6A
	126				BOTTOM OF BORING - ELEV. 493.5											
	128				NOTE: SLOPE INDICATOR PIPE INSTALLED AT 120.0'.											
	130															
	132															
	134															
	136															
	138															
	140															
	142															
	144															
	146															
	148															
	150															
	152															
	154															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample. \*\*Sample 12 is shown beginning 0.5' lower than it should be due to page space (top of sample elevation is correct)

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State of Ohio  
Department of Transportation  
Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/25/90 Sampler Type SS Dia. 1 3/8" Water Elev. 605.0'  
Date Completed 5/30/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_

Project Identification: CUYAHOGA  
CUY-90-15.24  
STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Boring No. B-6 Station & Offset \_\_\_\_\_ Surface Elev. 617.5'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics						SHTL Class			
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL		P.I.	W.C.	
617.5	0																
614.5	2	AUGERED			GRAVEL	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	4																
610.5	6	AUGERED			BROWN SAND	-	-	-	-	-	-	-	-	-	-	-	VISUAL
	8																
609.5	8	AUGERED			SILTY SAND	-	-	-	-	-	-	-	-	-	-	-	VISUAL
605.0	10																
	12																
	14	6/11/11			GRAY SILT	1	63063	0	0	7	84	9	NP	NP	19		A-4B
	16																
	18																
	20																
595.0	22																
	24	7/9/19			GRAY SILT AND CLAY	2	63064	0	0	3	57	40	31	11	20		A-6A
	26																
	28																
	30																
	32																
585.0	34	9/13/13			GRAY SILT AND CLAY	3	63065	0	0	2	58	40	31	11	18		A-6A
	36																

Particle Sizes: Agg >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay <= 0.005 mm





Boring No. B=0

Station & Offset

Surface Elev. 617.5'

Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N) #	Rec. ft.	Loss ff	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics					L.L.	P.I.	W.C.	SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay					
535.0	82																
	84	8/20/25			GRAY SILT	8	63070	0	4	9	49	38	25	6	13		A-4A
	86																
	88																
	90																
525.0	92																
	94	17/24/34			GRAY SILT	9	63071	0	2	4	37	57	25	2	21		A-4A
	96																
	98																
	100																
515.0	102																
	104	8/15/19			GRAY CLAYEY SILT	10	63072	0	1	3	38	58	34	10	23		A-4A
	106																
	108																
	110																
505.0	112																
	114	13/16/19			GRAY SILT AND CLAY	11	63073	0	2	3	38	57	35	12	18		A-6A
	116																
	118																
	120																
	122																
495.0	124	7/13/18			GRAY SILT AND CLAY	12	63074	0	1	2	38	59	36	12	23		A-6A

BOTTOM OF BORING

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90  
Date Completed 5/23/90

Sampler Type SS Dia. 1 3/8"  
Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_

A LARGE AMOUNT AT  
Water Elev. 528.5'  
SEE NOTE ON BOTTOM  
OF LOG  
Surface Elev. 588.5'

**Project Identification:** CUYAHOGA  
CUY-90-15.24  
STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Boring No. B-7

Station & Offset \_\_\_\_\_

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class			
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
588.5	0				BLACK SANDY SILT WITH CINDERS AND ASHES													
	2																	
	4																	
	6																	
	8																	
	10																	
	12																	
576.0	14	3/3/4			BLACK SILTY GRAVELLY SAND WITH CINDERS AND ASHES	14	63034	26	24	26	20	4	NP	NP	19	VISUAL		
	16																	
	18																	
	20				SLAG BOULDERS (19.5' - 20.5')													
	22																	
566.0	24	12/7/20			GRAY GRAVELLY SILT WITH SLAG AND COBBLES	15	63035	43	1	2	33	21	-	-	23	VISUAL		
	26																	
	28																	
	30																	

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 528.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-7 Station & Offset \_\_\_\_\_ Surface Elev. 588.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
556.0	32	4/5/14			GRAY SILTY CLAY W/ BRICK FRAGMENTS AND WOOD (TIMBER PILE)	16	63036	0	2	2	44	52	36	15	23	VISUAL
	34															
	36															
	38															
	40															
546.0	42	11/11/16			GRAY SILT	17	63037	0	0	1	53	46	NP	NP	24	A-4B
	44															
	46															
	48															
	50															
536.0	52	50 (0.4)			GRAY GRAVELLY SANDY SILT AND BRICK BATS AND WOOD	18	63038	19	15	7	31	28	NP	NP	20	VISUAL
	54															
	56															
	58															
	60															
					LARGE AMOUNT OF WATER COMING OUT OF HOLE AT 60'											

Particle Sizes: Agg => 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 528.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-7 Station & Offset \_\_\_\_\_ Surface Elev. 588.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
526.0	62	29/11/15			GRAY WET SILT WITH WOOD (TIMBER PILE)	19	63039	-	-	-	-	-	-	-	54	VISUAL
	64															
	66															
	68															
	70															
516.0	72	17/14/19			GRAY SILT WITH WOOD (TIMBER PILE)	20	63040	0	3	4	38	55	-	-	31	VISUAL
	74															
	76															
	78															
	80															
506.0	82	22/15/19			GRAY SILT AND WOOD (TIMBER PILE)	21	63041	0	3	4	35	58	NP	NP	29	VISUAL
	84															
	86															
	88															
	90															
92																

Particle Sizes: Agg => 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 528.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-7 Station & Offset \_\_\_\_\_ Surface Elev. 588.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
496.0	94	14/12/20			GRAY SILT AND WOOD (TIMBER PILE)	22	63042	-	-	-	-	-	-	-	42	VISUAL
	96															
	98															
	100															
	102															
486.0	104	12/12/17			GRAY SILT	23	63043	0	2	2	55	41	NP	NP	35	A-4B
	106															
	108															
	110															
	112															
476.0	114	20/31/63			GRAY SILT	24	63044	0	4	8	33	55	NP	NP	15	A-4A
	116															
	118															
	120															
	122															

Particle Sizes: Agg => 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 528.5' **Project Identification:** CUYAHOGA  
 Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-7 Station & Offset \_\_\_\_\_ Surface Elev. 588.5' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
466.0	124	30/65/5-(0.3)			GRAY SILTY SAND	25**†	63045	0	54	19	26	2	-	-	5	A-3
	126				BOTTOM OF BORING - ELEV. 464.5											
	128				NOTE: HYDROSTATIC PRESSURE WAS ENCOUNTERED AT 102' BLEW WATER OVER DRILL RIG APPROX. 30'											
	130															
	132															
	134															
	136															
	138															
	140															
	142															
	144															
	146															
	148															
	150															
	152															
	154															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm †The SHTL class for sample 25 is incorrect and should be A-3a.

\* Elevation values represent the elevation at the top of the sample. \*\*Sample 25 is shown beginning 0.5' lower than it should be due to page space (top of sample elevation is correct)

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Department of Transportation  
Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/23/90 Sampler Type SS Dia. 1 3/8" Water Elev. 528.5'  
Date Completed 5/23/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ SEE NOTE ON BOTTOM OF LOG

Project Identification: CUYAHOGA  
CUY-90-15.24  
STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Boring No. B-7 Station & Offset \_\_\_\_\_ Surface Elev. 588.5'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics						SHTL Class			
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL		P.I.	W.C.	
588.5	0																
	2																
	4																
	6																
	8				BLACK SANDY SILT WITH CINDERS AND ASHES												
	10																
576.0	12																
	14	3/3/4			BLACK SILTY GRAVELLY SAND WITH CINDERS AND ASHES	14	63034	26	24	26	20	4	NP	NP	19	VISUAL	
	16																
	18																
	20				SLAG BOULDERS (19.5 - 20.5')												
566.0	22																
	24	12/7/20			GRAY GRAVELLY SILT WITH SLAG AND COBBLES	15	63035	43	1	2	33	21	-	-	23	VISUAL	
	26																
	28																
	30																
556.0	32																
	34	4/5/14			GRAY SILTY CLAY W/BRICK FRAGMENTS AND WOOD (TIMBER PILE)	16	63036	50	2	2	44	52	36	15	23	VISUAL	
	36																

Particle Sizes: Agg. >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay <= 0.005 mm



Boring No. 7 Station & Offset Surface Elev. 588.5' Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. So.	Physical Characteristics					LL.	P.I.	W.C.	SHTL Class
								% Agg.	% C.S.	% F.S.	% Silt	% Clay				
546.0	38	11/11/16			GRAY SILT	17	63037	0	0	1	53	46	NP	NP	24	A-4B
	40															
	42															
	44															
	46															
536.0	48	50 (0.4)			GRAY GRAVELLY SANDY SILT AND BRICK BATS AND WOOD	18	63038	19	15	7	31	28	NP	NP	20	VISUAL
	50															
	52															
	54															
	56															
526.0	58	29/11/15			LARGE AMOUNT OF WATER COMING OUT OF HOLE AT 60'	19	63039	-	-	-	-	-	-	-	54	VISUAL
	60															
	62															
	64															
	66															
516.0	68	17/14/19			GRAY SILT WITH WOOD (TIMBER PILE)	20	63040	0	3	4	38	55	-	-	31	VISUAL
	70															
	72															
	74															
	76															
	78															
	80															

Boring No. B-7 Station & Offset Surface Elev. 588.5' Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ff	Description	Field No.	Lab. Nos. So.	Physical Characteristics					L.L.	P.I.	W.C.	SHTL Class
								% Agg	% C.S.	% F.S.	% Silt	% Clay				
506.0	82	22/15/19			GRAY SILT AND WOOD (TIMBER PILE)	21	63041	0	3	4	35	58	NP	NP	29	VISUAL
	84															
	86															
	88															
	90															
496.0	92	14/12/20			GRAY SILT AND WOOD (TIMBER PILE)	22	63042	-	-	-	-	-	-	-	42	VISUAL
	94															
	96															
	98															
	100															
486.0	102	12/12/17			GRAY SILT	23	63043	0	2	2	55	41	NP	NP	35	A-4B
	104															
	106															
	108															
	110															
476.0	112	20/31/63			GRAY SILT	24	63044	0	4	8	33	55	NP	NP	15	A-4A
	114															
	116															
	118															
	120															
466.0	122	39/65/57(0.3)			GRAY SILTY SAND	25	63045	0	54	19	26	2	-	-	5	A-3
	124															

HYDROSTATIC PRESSURE WAS ENCOUNTERED AT 102' BLEW WATER OVER DRILL RIG APPROX. 30'  
 BOTTOM OF BORING

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 501.3' **Project Identification:** CUYAHOGA  
 Date Completed 5/22/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-8 Station & Offset \_\_\_\_\_ Surface Elev. 591.3' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
591.3	0	1/2/2			DARK BROWN SILTY GRAVELLY SAND	1	63021	22	32	22	24	0	NP	NP	20	A-1-B
	2															
	4															
	6															
	8															
	10															
581.3	12															
	14															
	16															
	18															
571.3	20	4/6/9			GRAY SILTY CLAY	2	63022	0	1	1	52	46	38	17	20	A-6B
	22															
	24															
	26															
	28															
	30															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 501.3' **Project Identification:** CUYAHOGA  
 Date Completed 5/22/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-8 Station & Offset \_\_\_\_\_ Surface Elev. 591.3' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
561.3	32	2/2/4			GRAY SILT	3	63023	0	1	1	34	64	28	6	26	A-4A
	34															
	36															
	38															
551.3	40	6/9/12			GRAY SILTY CLAY	4	63024	0	0	1	50	49	36	16	22	A-6B
	42															
	44															
	46															
	48															
541.3	50	8/12/16			GRAY SILTY CLAY	5	63025	0	0	1	61	38	37	17	22	A-6B
	52															
	54															
	56															
	58															
531.3	60	14/25/32			GRAY SANDY CLAY	6	63026	0	9	15	43	33	28	11	13	A-6A

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 501.3' **Project Identification:** CUYAHOGA  
 Date Completed 5/22/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-8 Station & Offset \_\_\_\_\_ Surface Elev. 591.3' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
521.3	62	6/11/15			GRAY SILT AND CLAY	7	63027	0	2	3	37	58	36	15	21	A-6A
	64															
	66															
	68															
	70															
	72															
	74															
511.3	76	7/12/17			GRAY CLAYEY SILT	8	63028	0	2	3	33	62	28	7	22	A-4A
	78															
	80															
	82															
	84															
	86															
	88															
501.3	90	14/19/25			GRAY SILT	9	63029	0	2	2	34	62	NP	NP	21	A-4A
	92															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 501.3' **Project Identification:** CUYAHOGA  
 Date Completed 5/22/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-8 Station & Offset \_\_\_\_\_ Surface Elev. 591.3' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
491.3	94	3/19/15			GRAY SILT	10	63030	0	1	2	31	66	NP	NP	28	A-4A
	96															
	98															
	100															
	102															
	104															
	106															
481.3	108	21/27/33			GRAY SANDY SILT	11	63031	7	7	11	35	40	NP	NP	12	A-4A
	110															
	112															
	114															
	116															
471.3	118	36/52/58			GRAY GRAVELLY SILT	12	63032	13	5	8	33	41	NP	NP	12	A-4A
	120															
	122															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 501.3' **Project Identification:** CUYAHOGA  
 Date Completed 5/22/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-8 Station & Offset \_\_\_\_\_ Surface Elev. 591.3' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class																		
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.																	
461.3	124	25/26/33			GRAY GRAVELLY SILT	13	63033	13	4	6	29	48	NP	NP	16	A-4A																	
	126																																
	128																																
	130																																
	132																																
	BOTTOM OF BORING - ELEV. 459.8																																
	134																NOTE: SLOPE INDICATOR PIPE INSTALLED AT 130.0'																
	136																																
	138																																
	140																																
	142																																
	144																																
	146																																
	148																																
	150																																
	152																																
154																																	

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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Department of Transportation  
Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/22/90 Sampler Type SS Dia. 1 3/8" Water Elev. 501.3'  
Date Completed 5/22/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_

Project Identification: CUYAHOGA  
CUY-90-15.24  
STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Boring No. B-8 Station & Offset \_\_\_\_\_ Surface Elev. 591.3'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab Nos. Sa	Physical Characteristics						SHTL Class			
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL		P.I.	W.C.	
591.3	0																
	2																
	4																
	6																
	8																
581.3	10																
	12	1/2/2			DARK BROWN SILTY GRAVELLY SAND	1	63021	22	32	22	24	0	NP	NP	20		A-1-B
	14																
	16																
	18																
571.3	20																
	22	4/6/9			GRAY SILTY CLAY	2	63022	0	1	1	52	46	38	17	20		A-6B
	24																
	26																
	28																
561.3	30																
	32	2/2/4			GRAY SILT	3	63023	0	1	1	34	64	28	6	26		A-4A
	34																
	36																

Particle Sizes: Agg >2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay <0.005 mm





Boring No. B-8 Station & Offset

Surface Elev. 591.3'

Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics					SHTL Class			
								% Agg.	% C.S.	% F.S.	% Silt	% Clay		L.L.	P.I.	W.C.
501.3	82	7/12/17			GRAY CLAYEY SILT	8	63028	0	2	3	33	62	28	7	22	A-4A
	84															
	86															
	88															
	90															
491.3	92	14/19/25			GRAY SILT	9	63029	0	2	2	34	62	NP	NP	21	A-4A
	94															
	96															
	98															
	100															
481.3	102	3/9/15			GRAY SILT	10	63030	0	1	2	31	66	NP	NP	28	A-4A
	104															
	106															
	108															
	110															
471.3	112	21/27/33			GRAY SANDY SILT	11	63031	7	7	11	35	40	NP	NP	12	A-4A
	114															
	116															
	118															
	120															
	122	36/52/58			GRAY GRAVELLY SILT	12	63032	13	5	8	33	41	NP	NP	12	A-4A
	124															

Boring No. B-8 Station & Offset

Surface Elev. 591.3'

Project: CUY-90-15.24

Elev.	Depth	Std. Peg. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics					SHTL Class					
								% Agg	% C.S.	% F.S.	% Silt	% Clay		L.L.	P.L.	W.C.		
	126																	
	128																	
461.3	130																	
459.8	132	25/26/33			GRAY GRAVELLY SILT	13	63033	13	4	6	29	48	NP	NP	16	A-4A		
	134				↳ BOTTOM OF BORING													
	136																	
	138																	
	140																	
	142																	
	144																	
	146																	
	148																	
	150																	
	152																	
	154																	
	156																	
	158																	
	160																	
	162																	
	164																	
	166																	
	168																	

NOTE: SLOPE INDICATOR PIPE INSTALLED AT 130.0'

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/17/90 Sampler Type SS Dia. 1 3/8" Water Elev. 481.2' **Project Identification:** CUYAHOGA  
 Date Completed 5/19/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-9 Station & Offset \_\_\_\_\_ Surface Elev. 586.2' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class		
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.	
586.2	0																
	2																
	4																
581.2	6	8/14/7			DARK GRAY SILTY GRAVELLY SAND	14	62978	19	35	27	17	2	NP	NP	21	A-1-B	
	8																
	10																
	12																
	14																
571.2	16	5/7/12			DARK GRAY SILTY SAND	15	62979	0	40	33	26	1	NP	NP	46	A-3A	
	18																
	20																
	22																
	24																
561.2	26	4/7/12			GRAY SILTY CLAY	16	62980	0	1	3	27	69	41	16	31	A-7-6	
	28																
	30																

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/17/90 Sampler Type SS Dia. 1 3/8" Water Elev. 481.2' **Project Identification:** CUYAHOGA  
 Date Completed 5/19/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-9 Station & Offset \_\_\_\_\_ Surface Elev. 586.2' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
551.2	32	7/11/13			GRAY CLAYEY SILT	17	62981	0	0	2	61	37	29	9	21	A-4B
	34															
	36															
	38															
	40															
541.2	42	7/18/20			GRAY CLAYEY SILT	18	62982	0	0	1	63	36	26	7	21	A-4B
	44															
	46															
	48															
	50															
531.2	52	7/16/14			GRAY CLAYEY SILT	19	62983	0	0	1	55	44	29	9	22	A-4B
	54															
	56															
	58															
	60															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/17/90 Sampler Type SS Dia. 1 3/8" Water Elev. 481.2' **Project Identification:** CUYAHOGA  
 Date Completed 5/19/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-9 Station & Offset \_\_\_\_\_ Surface Elev. 586.2' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
521.2	62	9/15/17			GRAY CLAYEY SILT	20	62984	0	1	2	51	46	29	9	21	A-4B
	64															
	66															
	68															
	70															
511.2	72	11/12/16			GRAY SILT AND CLAY	21	62985	0	2	3	40	55	35	13	22	A-6A
	74															
	76															
	78															
	80															
501.2	82	8/15/19			GRAY GRAVELLY CLAY	22	62986	18	1	2	29	50	36	14	21	A-6A
	84															
	86															
	88															
	90															
92																

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/17/90 Sampler Type SS Dia. 1 3/8" Water Elev. 481.2' **Project Identification:** CUYAHOGA  
 Date Completed 5/19/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-9 Station & Offset \_\_\_\_\_ Surface Elev. 586.2' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class	
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
491.2	94	13/19/21			GRAY SILT AND CLAY	23	62987	0	1	2	31	66	35	11	25	A-6A
	96															
	98															
	100															
	102															
481.2	104	7/8/13			GRAY CLAYEY SILT	24	62988	0	0	1	53	46	33	10	36	A-4B
	106															
	108															
	110															
	112															
471.2	114	75 (0.2)			BOULDER (113.5' - 114.0') GRAY CLAYEY SILT	25	62989	-	-	-	-	-	-	-	14	VISUAL
	116															
	118															
	120															
	122															

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

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**State of Ohio Department of Transportation  
Division of Highways Testing Laboratory**

**LOG OF BORING**

Date Started 5/17/90 Sampler Type SS Dia. 1 3/8" Water Elev. 481.2' **Project Identification:** CUYAHOGA  
 Date Completed 5/19/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ CUY-90-15.24  
 Boring No. B-9 Station & Offset \_\_\_\_\_ Surface Elev. 586.2' STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Field No.	Lab Nos. So.	Physical Characteristics							SHTL Class																
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.															
461.2	124	22/32/45			GRAY SILTY CLAY	26	62990	0	2	7	32	59	38	16	17	A-6B															
	126																														
	128																														
456.2	130	17/21/27			GRAY CLAYEY SILT	27	62991	0	1	1	29	69	35	10	23	A-4A															
	132																														
	BOTTOM OF BORING - ELEV. 454.7																														
	134																														
	136																														
	NOTE: SLOPE INDICATOR PIPE INSTALLED AT 130.0'																														
	138																														
	140																														
	142																														
	144																														
	146																														
	148																														
	150																														
	152																														
	154																														

Particle Sizes: Agg = > 2.00 mm, Coarse Sand = 2.00 - 0.42 mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = <0.005 mm

\* Elevation values represent the elevation at the top of the sample.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.



State of Ohio  
Department of Transportation  
Division of Highways  
Testing Laboratory

LOG OF BORING

Date Started 5/17/90 Sampler Type SS Dia. 1 3/8" Water Elev. 481.2'  
Date Completed 5/19/90 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_

Project Identification: CUYAHOGA  
CUY-90-15.24  
STABILITY ANALYSIS  
SUBSURFACE INVESTIGATION

Boring No. B-9 Station & Offset \_\_\_\_\_ Surface Elev. 586.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa	Physical Characteristics						SHTL Class				
								% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL		P.I.	W.C.		
586.2	0																	
	2																	
581.2	4																	
	6	8/14/7			DARK GRAY SILTY GRAVELLY SAND	14	62978	19	35	27	17	2	NP	NP	21			A-1-B
	8																	
	10																	
	12																	
571.2	14																	
	16	5/7/12			DARK GRAY SILTY SAND	15	62979	0	40	33	26	1	NP	NP	46			A-3A
	18																	
	20																	
	22																	
561.2	24																	
	26	4/7/12			GRAY SILTY CLAY	16	62980	0	1	3	27	69	41	16	31			A-7-6
	28																	
	30																	
	32																	
	34																	
551.2	36	7/11/13			GRAY CLAYEY SILT	17	62981	0	0	2	61	37	29	9	21			A-4B

Particle Sizes: Agg. > 2.00mm, Coarse Sand = 2.00 - 0.42mm, Fine Sand = 0.42 - 0.074 mm, Silt = 0.074 - 0.005 mm, Clay = 0.005 mm

Boring No. 9 Station & Offset

ace Elev. 586.2'

Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics					L.L.	P.L	W.C.	SHTL Class
								% Agg	% C.S.	% F.S.	% Sil	% Clay				
541.2	38	7/18/20			GRAY CLAYEY SILT	18	62982	0	0	1	63	36	26	7	21	A-4B
	40															
	42															
	44															
	46															
	48															
531.2	50	7/16/14			GRAY CLAYEY SILT	19	62983	0	0	1	55	44	29	9	22	A-4B
	52															
	54															
	56															
	58															
	60															
521.2	62	9/15/17			GRAY CLAYEY SILT	20	62984	0	1	2	51	46	29	9	21	A-4B
	64															
	66															
	68															
	70															
	72															
511.2	74	11/12/16			GRAY SILT AND CLAY	21	62985	0	2	3	40	55	35	13	22	A-6A
	76															
	78															
	80															

Boring No. B-9 Station & Offset

Surface Elev. 586.2'

Project: CUY-90-15.24

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Field No.	Lab. Nos. Sa.	Physical Characteristics						SHTL Class		
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.		P.L.	W.C.
501.2	82	8/15/19			GRAY GRAVELLY CLAY	22	62986	18	1	2	29	50	36	14	21	A-6A
	84															
	86															
	88															
	90															
491.2	92	13/19/21			GRAY SILT AND CLAY	23	62987	0	1	2	31	66	35	11	25	A-6A
	94															
	96															
	98															
	100															
481.2	102	7/8/13			GRAY CLAYEY SILT	24	62988	0	0	1	53	46	33	10	36	A-4B
	104															
	106															
	108															
	110															
471.2	112	75(0.2)			BOULDER (113.5' - 114.0') GRAY CLAYEY SILT	25	62989	-	-	-	-	-	-	-	14	VISUAL
	114															
	116															
	118															
	120															
	122															
	124															



Boring No. B-9 Station & Offset

Surface Elev. 586.2' Project: CUY-90-15.24

Elev.	Depth	Std. Peg. (N)	Rec. ft	Loss ft	Description	Field No.	Lab. Nos. Sa	Physical Characteristics						SHTL Class		
								% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.		P.I.	W.C.
461.2	126	22/32/45			GRAY SILTY CLAY	26	62990	0	2	7	32	59	38	16	17	A-6B
	128															
456.2	130	17/21/27			GRAY CLAYEY SILT	27	62991	0	1	1	29	69	35	10	23	A-4A
454.7	132															
	134	BOTTOM OF BORING														
	136	NOTE: SLOPE INDICATOR PIPE INSTALLED AT 130.0'														
	138															
	140															
	142															
	144															
	146															
	148															
	150															
	152															
	154															
	156															
	158															
	160															
	162															
	164															
	166															
	168															

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LABORATORY LOG OF BORING

Method of Sampling:

Split spoon  Shelby   
Core drill  Auger

Boring No. B-4

Surface Elevation 672.77

Depth in feet	Symbol	DESCRIPTION	Blows on spoon for 12 inches	Depth to bottom of sample in feet	SUMMARY OF TEST RESULTS					
					Natural Moisture %	Liquid Limit	Plasticity Index	Unconfined Shear Stress #/SF	Strain %	Unit Dry Weight #/cu. ft.
		Fill: black cinders, brick, tile	16	1.5						
		Sand, brown w/tr. gravel	4	3.5						
			8	6.5						
10			18	10.0						
		brown w/s gravel	5	15.0						
20			28	20.0						
		brown	24	25.0						
30			33	30.0						
		brown, silty	35	35.0						
40			39	40.0						
			31	45.0						
50		Silt, gray, clayey w/s clay seams	17	50.0	17.1		3175	11.1		119
			15	55.0	23.3		1280	13.0		107
60		gray, sandy	47	60.0	26.3 30.2					
		gray, clayey	22	65.0	20.7		1890	10.2		111
70			23	70.0	21.3					
			23	75.0	24.0					
80		End of boring at 75.0'								
		REMARKS:								
		Water at 21' on completion								
		Installed wellpoint on 10/28/86								
							Boring Completed:	10/28/86		
							Location:	Cleveland, Ohio		
							Job No.:	C. 4088		

LABORATORY LOG OF BORING

Method of Sampling:

Split spoon  Shelby   
 Core drill  Auger

Boring No. B-5

Surface Elevation 669.40

Depth in feet	Symbol	DESCRIPTION	Blows on spoon for 12 inches	Depth to bottom of sample in feet	SUMMARY OF TEST RESULTS					
					Natural Moisture %	Liquid Limit	Plasticity Index	Unconfined Shear Stress #/SF	Strain %	Unit Dry Weight #/cu. ft.
		Fill: topsoil	6	1.5						
		dark brown sand	3	3.5						
		brown sand w/tr. of brick & decayed wood	4	6.5						
10		Sand, brown w/tr. gravel	15	10.0						
20		brown	21	15.0						
			21	20.0						
30		Silt, gray, sandy	19	25.0						
		Sand, gray, silty	18	30.0	24.5					
40			25	35.0						
			26	40.0						
50		Silt, gray, sandy	18	45.0	26.5					
		gray, sandy, clayey	17	50.0	20.7					
		End of boring at 50.0'								

REMARKS

Water at 26.5' on completion  
 Water at 21.0' after 24 hours

Boring Completed: 10/31/86  
 Location: Cleveland, Ohio  
 Job No.: C. 4088

LOG OF BORING

Date Started 7-5-86 Sampler Type Split Spoon Dia. 2.0 Water Elev. 604.3  
 Date Completed 7-5-86 Casing Length -- Dia. ---  
 Boring No. B-7 (Cont.) Station & Offset Sta. 17 + 02 11.5' LT. Surface Elev. 610.26

ELEV.	DEPTH	STD. PEN. (N)	REC. FI.	LOSS FI.	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	PHYSICAL CHARACTERISTICS								SHTL CLASS.		
								% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LL	P.L.	P.I.		W.C.	
541.3	0																	
	75	9-15-22	1.5		SAME AS ABOVE	19	SS											
	80	11-21-20	1.5			20	SS											
527.8	85	10-19-19	1.4			21	SS											
	90	12-21-26	1.5		Hard, gray <u>SILTY CLAY</u> , trace gravel, moist.	22	SS											
	95	11-19-24	1.5			23	SS											
	100	10-14-17	1.5			24	SS											
	105	12-12-18	1.5			25	SS											
	110	10-15-20	1.5			26	SS											
	115	40-60-65	1.5			27	SS											
	120	40-60-100/0.5	1.3			28	SS											
	125	42-57-97	1.5			29	SS											
	130	20-35-35	1.5			30	SS											
481.3	130	Run 1	0.2	4.8		Gray <u>SILTY SHALE</u> , extremely altered, friable.		NXM										
476.3	135				TERMINATION DEPTH 135.0 FEET													

LOG OF BORING

Date Started 2-19-87 Sampler Type Split Spoon Dia. 2.0 Water Elev. 621.0  
 Date Completed 2-23-87 Casing Length -- Dia. ---  
 Boring No. B-8 Station & Offset Sta. 18 + 27 12.5' RT. Surface Elev. 635.3

FLWA REGION	STATE	PROJECT



13  
14

ELEV.	DEPTH	STD. PEN. (N)	REC. FI.	LOSS FI.	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	PHYSICAL CHARACTERISTICS								SHTL CLASS.		
								% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LL	P.L.	P.I.		W.C.	
638.3	0	18-12-10	1.3			1	SS											
	5	9-7-9	1.4		Medium dense, black <u>SAND AND GRAVEL</u> , little silt, moist.	2	SS											
	10	3-4-8	1.3			3	SS											
	15	3-3-5	1.2		Medium dense to loose, brown <u>SILTY SAND</u> , moist to wet.	4	SS											
624.3	15	4-5-8	1.5			5	SS											
	20	8-6-9	1.3			6	SS											
618.3	20	5-5-6	1.4		Stiff, gray <u>SANDY SILT</u> , wet to moist.	7	SS											
615.8	25	5-6-7	1.2			8	SS											
	30	11-7-7	1.5		Stiff, gray <u>SILTY CLAY</u> , trace sand, moist.	9	SS											
	35	5-5-6	1.4			10	SS											
610.8	35	5-6-5	1.5			11	SS											
	40	7-9-10	1.4		Stiff to very stiff, gray <u>SILTY CLAY</u> , trace to little sand, moist.	12	SS											
	45	11-13-15	1.5			13	SS											
	50	11-12-13	1.5			14	SS											
	55	7-7-8	1.5			15	SS											
	60	6-5-7	1.4			16	SS											
	65	5-5-5	1.5		17	SS												
	70	5-5-6	1.5		18	SS												
	75	7-7-8	1.5		19	SS												

SUBSURFACE INVESTIGATION  
 ABBEY AVENUE VIADUCT  
 OVER THE CONRAIL & NORFOLK & SOUTHERN RAILROADS  
 CUYAHOGA COUNTY, OHIO





LOG OF BORING

Date Started 2-19-87 Sampler Type Split Spoon Dia. 2.0 Water Elev. 621.0  
 Date Completed 2-23-87 Casing Length -- Dia. ---  
 Boring No. B-8 (Cont.) Station & Offset Sta. 18 + 27 12.5' RT. Surface Elev. 635.3

FHWA REGION	STATE	PROJECT



SOIL PROFILE

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ELEV.	DEPTH	STD. PEN. (N)	REC. Ft.	LOSS Ft.	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	PHYSICAL CHARACTERISTICS										SHTL CLASS.		
								% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LL	P.L.	P.I.	W.C.				
568.3	0																			
	75	12-10-11	1.3			20	SS													
	80	11-13-16	1.5			21	SS													
	85	13-14-17	1.3			22	SS													
	90	7-8-9	1.5		SAME AS ABOVE	23	SS													
	95	8-10-16	1.5			24	SS													
	100	11-13-16	1.4			25	SS													
533.3	105	7-8-11	1.3			26	SS													
	110	10-11-14	1.5			27	SS													
	115	11-11-16	1.3			28	SS													
	120	13-14-17	1.5			29	SS													
	125	15-21-25	1.5		Very stiff to hard, gray CLAY, little silt, moist.	30	SS													
	130	10-13-16	1.4			31	SS													
	135	15-17-24	1.5			32	SS													
	140	14-16-22	1.4			33	SS													

LOG OF BORING

Date Started 2-19-87 Sampler Type Split Spoon Dia. 2.0 Water Elev. 621.0  
 Date Completed 2-23-87 Casing Length -- Dia. ---  
 Boring No. B-8 (Cont.) Station & Offset Sta. 18 + 27 11.5' RT. Surface Elev. 635.3

ELEV.	DEPTH	STD. PEN. (N)	REC. Ft.	LOSS Ft.	DESCRIPTION	SAMPLE NO.	SAMPLE TYPE	PHYSICAL CHARACTERISTICS										SHTL CLASS.		
								% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LL	P.L.	P.I.	W.C.				
498.3	0																			
	145	30-41-68	1.5			34	SS													
	150	44-54-87	0.9			35	SS													
	155	50-70-112	0.5		SAME AS ABOVE	36	SS													
	160	72-95-115	0.0			37	SS													
473.3 473.0	165	100/0.3	0.3		Gray, extremely altered SILTY SHALE.	38	SS													
					TERMINATION DEPTH 165.3 FEET															

SUBSURFACE INVESTIGATION  
 ABBEY AVENUE VIADUCT  
 OVER THE CONRAIL & NORFOLK & SOUTHERN RAILROADS  
 CUYAHOGA COUNTY, OHIO

R & R International, Inc.  
 GEOTECHNICAL ENGINEERS - GEOLOGISTS

3675 COPLEY ROAD  
 AKRON, OH 44321  
 216-666-2200



**LOG OF BORING**

Date Started 2-19-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-21-64 Casing Length 35' Dia. 3 1/2"  
 Boring No. B-10 Station & Offset 993+78, 120' Lt. (RETAINING WALL)

Water Elev. \_\_\_\_\_

Surface Elev. 670.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†				
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.			
670.0	0																	
	2																	
	4																	
665.0	6	11/17			Brown Silty Sandy Gravel and Brick Bats	1	V	I	S	U	A	L						
	8																	
	10																	
660.0	12	2/2			Brown Silty Sand and Gravel Cinders Brick Bats	2	V	I	S	U	A	L						
657.5	14	7/13			Brown Sandy Silt	3	0	1	19	59	21	NP	NP	15				A-4b(8)
655.0	16	10/17			Brown Silty Sand	4	0	4	82	14		NP	NP	8				A-3a(0)
652.5	18	11/14			Brown Silty Sand	5	0	3	58	27	12	NP	NP	17				A-4a(1)
	20																	
650.0	22	8/15			Brown Sandy Silt	6	0	1	50	35	14	NP	NP	22				A-4a(3)
647.5	24	12/18			Brown Sandy Silt	7	0	0	55	31	14	NP	NP	24				A-4a(2)
645.0	26	11/9			Brown Sand	8	0	5	87	8		NP	NP	24				A-3(0)
642.5	28	7/9			Brown Sand	9	0	3	87	10		NP	NP	24				A-3(0)
	30																	

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 2-19-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-21-64 Casing Length 35' Dia. 3 1/2"  
 Boring No. B-10 Station & Offset 993+78, 120' Lt. (RETAINING WALL)

Water Elev. \_\_\_\_\_

Surface Elev. 670.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
640.0	32	8/8			Brown Silty Sand	10	0	0	86	14	NP	NP	25	A-3a(0)	
	34														
635.0	36	20/27			Gray Silty Sand	11	0	0	20	65	15	NP	NP	21	A-4b(8)
	38														
630.0	40	12/23			Gray Silt	12	0	0	18	66	16	NP	NP	22	A-4b(8)
	42														
	44	10/14			Gray Silt	13	0	0	1	70	29	NP	NP	21	A-4b(8)
625.0	46														
	48	3/4			Gray Silt	14	0	0	1	56	43	25	6	26	A-4b(8)
620.0	50														
	52	9/14			Gray Clayey Silt	15	0	0	1	55	44	27	7	18	A-4b(8)
	54														
615.0	56	15/17			Gray Silt	16	0	0	0	66	34	NP	NP	19	A-4b(8)
	58														
	60														

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 2-19-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-21-64 Casing Length 35' Dia. 3 1/2"  
 Boring No. B-10 Station & Offset 993+78, 120' Lt. (RETAINING WALL)

Water Elev. \_\_\_\_\_

Surface Elev. 670.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
605.0	62	10/15			Gray Silt	17	0	0	4	62	34	23	4	18	A-4b(8)
	64														
	66														
	68														
600.0	70	9/12			Gray Silt	18	0	0	0	55	45	22	4	24	A-4b(8)
	72														
	74														
595.0	76	5/6			Gray Clayey Silt	19	0	1	4	45	50	24	9	25	A-4a(8)
	78														
590.0	80	3/5			Gray Clayey Silt	20	0	1	2	33	64	32	7	32	A-4a(8)
	82														
	84														
585.0	86	3/7			Gray Silt and Clay	21	0	1	2	31	66	35	11	27	A-6a(8)
	88														
580.0	90	4/8			Gray Silt and Clay	22	0	1	1	36	62	38	15	29	A-6a(10)
	92														

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**LOG OF BORING**

Date Started 2-19-64 Sampler Type SS Dia. 1 3/8" Water Elev. \_\_\_\_\_  
 Date Completed 2-21-64 Casing Length 35' Dia. 3 1/2"  
 Boring No. B-10 Station & Offset 993+78, 120' Lt. (RETAINING WALL) Surface Elev. 670.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
575.0	94	5/6			Gray Silt and Clay	23	0	0	1	28	71	39	15	30	A-6a(10)
	96														
	98														
570.0	100	7/14			Gray Silt	24	0	0	2	55	43	25	5	22	A-4b(8)
	102				BOTTOM OF BORING - ELEV. 569.0										
	104														
	106														
	108														
	110														
	112														
	114														
	116														
	118														
	120														
	122														

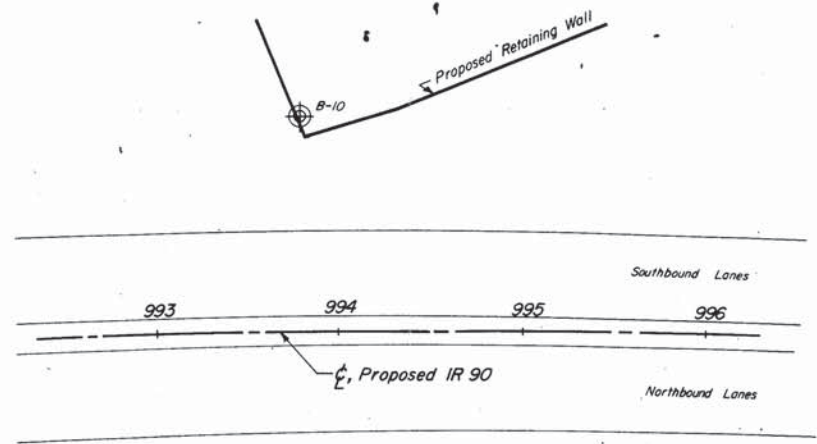
\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

LOG OF BORING  
 Date Started 2-19-64 Date Completed 2-21-64 Boring No. B-10  
 Sampler Type SS Dia. 1 3/8" Casing Length 35' Dia. 3 1/2"  
 Station B Offset 993+78, 120' Lt (RETAINING WALL) Surface Elev. 670.0'

Elev.	Depth	Sd. Pen (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Close.
							% Agg.	% S.	% F.S.	% Silt	% Clay	LL	PI	
670.0	0													
665.0	5	11/7			Brown Silty Sandy Gravel and Brick Bats	1								
660.0	10	2/2			Brown Silty Sand and Gravel Clusters Brick Bats	2								
657.5	12	7/13			Brown Sandy Silt	3	0	1	19	59	21	MP	MP	15
655.0	14	10/17			Brown Silty Sand	4	0	4	82	-1	4	MP	MP	8
652.5	16	11/14			Brown Silty Sand	5	0	3	58	27	12	MP	MP	17
650.0	20	8/15			Brown Sandy Silt	6	0	1	50	35	14	MP	MP	22
647.5	22	12/18			Brown Sandy Silt	7	0	0	55	31	14	MP	MP	24
645.0	24	11/9			Brown Sand	8	0	5	87	-8	-	MP	MP	24
642.5	28	7/9			Brown Sand	9	0	3	87	-1	0	MP	MP	24
640.0	30	8/8			Brown Silty Sand	10	0	0	86	-1	4	MP	MP	25
635.0	34	20/27			Gray Silty Sand	11	0	0	20	65	15	MP	MP	21
630.0	40	12/23			Gray Silt	12	0	0	18	66	16	MP	MP	22
625.0	44	10/14			Gray Silt	13	0	0	1	70	29	MP	MP	21
620.0	50	3/4			Gray Silt	14	0	0	1	56	43	25	6	26
615.0	56	9/14			Gray Clayey Silt	15	0	0	1	55	44	27	7	18
610.0	62	15/17			Gray Silt	16	0	0	0	66	34	MP	MP	19
605.0	68	10/15			Gray Silt	17	0	0	4	62	34	23	4	18
600.0	72	9/12			Gray Silt	18	0	0	0	55	45	22	4	24
595.0	76	5/6			Gray Clayey Silt	19	0	1	4	45	50	24	9	25
590.0	82	3/5			Gray Clayey Silt	20	0	1	2	33	64	32	7	32
585.0	86	3/7			Gray Silt and Clay	21	0	1	2	31	66	35	11	27
580.0	92	4/8			Gray Silt and Clay	22	0	1	1	36	62	38	15	29
575.0	96	5/6			Gray Silt and Clay	23	0	0	1	28	71	39	15	30
570.0	100	7/14			Gray Silt	24	0	0	2	55	43	25	5	22

BOTTOM OF BORING



PLAN VIEW  
 SCALE: 1"=50'

670	B-10	670
660	11/7	660
650	2/2	650
640	7/13	640
630	10/17	630
620	11/14	620
610	8/15	610
600	12/18	600
590	11/9	590
580	8/8	580
570	20/27	570
560	12/23	560
993	10/14	995
	3/4	
	9/14	
	15/17	
	10/15	
	9/10	
	5/6	
	3/5	
	3/7	
	4/8	
	5/6	
	7/14	

OHIO STATE HIGHWAY TESTING LABORATORY  
 1620 WEST BROAD ST., COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION  
 BRIDGE NO. CUY - IR 90 -  
 RETAINING WALL (STA. 993+50 TO 995+50)  
 SEC. CUY - IR 90 -

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.P.W.	R.D.R.	G.P.H.	3/10/64

PROFILE SCALE: 1"=20'

**LOG OF BORING**

Date Started 2-13-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-18-64 Casing Length 30' Dia. 3 1/2"  
 Boring No. B-84 Station & Offset 990+85, 77' Rt. (FORWARD PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 678.6'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics						SHTL Class†					
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.		P.I.	W.C.			
678.6	0																	
	2																	
	4																	
673.6	6	7/5			Brown Sandy Gravel	1	50	36	10	4	NP	NP	18	A-1-a(0)				
	8	11/11			Brown Silty Gravelly Sand	2	22	37	27	14	NP	NP	11	A-1-b(0)				
	10	11/7			Brown Silty Sandy Gravel	3	47	11	16	26	NP	NP	14	A-2-4-(0)				
668.6	12																	
666.1	14	11/19			Brown Silty Gravelley Sand	4	37	29	23	11	NP	NP	15	A-1-b(0)				
	16	15/15			Brown Silty Sand	5	0	40	46	14	NP	NP	11	A-3a(0)				
	18	13/21			Brown Sand	6	0	12	80	8	NP	NP	18	A-3(0)				
	20																	
658.6	22	8/14			Brown Silty Sand	7	4	29	48	8	11	NP	NP	14	A-3a(0)			
	24	8/11			Brown Silty Sand	8	0	2	81	9	8	NP	NP	20	A-3a(0)			
	26	10/13			Brown Silty Sand	9	V	I	S	U	A	L	27					
	28																	
	30																	

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 2-13-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-18-64 Casing Length 30' Dia. 3 1/2"  
 Boring No. B-84 Station & Offset 990+85, 77' Rt. (FORWARD PIER)

Water Elev. \_\_\_\_\_

Surface Elev. 678.6'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
648.6	32	16/20			Brown Silty Sand	10	3	7	74	16	NP	NP	24	A-3a(0)	
	34														
643.6	36	8/13			Gray Sandy Silt	11	0	0	25	59	16	NP	NP	21	A-4b(8)
	38														
	40														
638.6	42	16/17			Gray Sandy Silt	12	3	3	43	42	9	NP	NP	20	A-4a(3)
	44														
633.6	46	18/27			Gray Silt	13	0	1	15	70	14	NP	NP	19	A-4b(8)
	48														
	50														
628.6	52	7/11			Gray Silt	14	0	0	2	67	31	NP	NP	24	A-4b(8)
	54														
623.6	56	4/7			Gray Silt	15	0	0	1	58	41	24	5	27	A-4b(8)
	58														
	60														
618.6		8/11			Gray Clayey Silt	16	0	0	1	50	49	26	7	21	A-4b(8)

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 2-13-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-18-64 Casing Length 30' Dia. 3 1/2"  
 Boring No. B-84 Station & Offset 990+85, 77' Rt. (FORWARD PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 678.6'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics						SHTL Class†		
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.		P.I.	W.C.
613.6	62	11/20			Gray Clayey Silt	17	0	0	0	52	48	29	8	22	A-4b(8)
	64														
	66														
	68														
608.6	70	12/21			Gray Clayey Silt	18	0	0	1	57	42	27	8	21	A-4b(8)
	72														
	74														
603.6	76	5/9			Gray Clayey Silt	19	0	0	0	55	45	27	7	23	A-4b(8)
	78														
598.6	80	5/8			Gray Clayey Silt	20	0	0	1	45	54	28	7	26	A-4a(8)
	82														
	84														
593.6	86	4/7			Gray Clayey Silt	21	0	2	5	46	47	26	7	24	A-4a(8)
	88														
	90														
588.6	92	5/8(?)			Gray Silt and Clay	22	0	0	1	30	69	37	14	34	A-6a(10)

(?) Indicates inability to discern SPT blowcount value for certain from existing boring log. Number shown may not be accurate.

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.



### LOG OF BORING

Date Started 2-13-64      Sampler Type SS      Dia. 1 3/8"      Water Elev. \_\_\_\_\_  
 Date Completed 2-18-64      Casing Length 30'      Dia. 3 1/2"  
 Boring No. B-84      Station & Offset 990+85, 77' Rt. (FORWARD PIER)      Surface Elev. 678.6'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†		
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.	
583.6	94	5/6			Gray Silt	23	0	0	1	58	41	26	5	28	A-4b(8)	
	96															
	98															
-5.0	100	6/8			Gray Silt and Clay	24	0	1	2	31	66	36	14	29	A-6a(10)	
	102															
	104				BOTTOM OF BORING - ELEV. 577.6											
	106															
	108															
	110															
	112															
	114															
	116															
	118															
	120															
	122															

\* Elevation values represent the elevation at the top of the sample.    †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

MICROFILMED  
OCT 26 1982

CUY- 90-13.81  
CUY-71-18.54

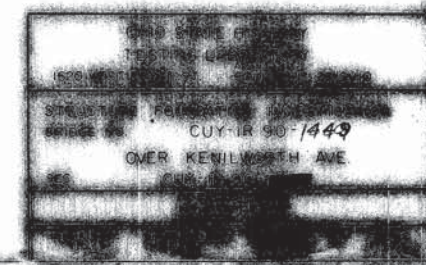
LOG OF BORING

Date Started 2-13-64 Date Completed 2-18-64 Boring No. E-21

Sampler Type SS Casing Length 30' Dia 3 1/2" Water Elev. \_\_\_\_\_

Station & Offset 990+85, 77' Bt (FORWARD FIEP) Surface Elev. 672.6'

Elev	Depth	Sig Pen	Ret	Last	Description	Sample No.	Physical Characteristics				SHT			
							CS	FS	Silt	Clay		W.C.	Class	
678.6	0													
673.6	5	7/5			Brown Sandy Gravel	1	50	36	10	-4	-	NP	NP	18
671.1	8	11/11			Brown Silty Gravelly Sand	2	22	37	27	-1	4	NP	NP	11
668.6	10	11/7			Brown Silty Sandy Gravel	3	47	11	16	-2	6	NP	NP	14
666.1	14	11/19			Brown Silty Gravelly Sand	4	37	29	23	-1	1	NP	NP	15
663.6	16	15/15			Brown Silty Sand	5	0	40	46	-1	4	NP	NP	11
661.1	18	12/21			Brown Sand	6	0	12	80	-8	-	NP	NP	18
658.6	20	9/14			Brown Silty Sand	7	4	29	49	8	11	NP	NP	14
656.1	22	9/11			Brown Silty Sand	8	0	2	81	9	8	NP	NP	20
653.6	26	10/13			Brown Silty Sand	9	V	I	S	U	A	L		27
648.6	30	16/20			Brown Silty Sand	10	3	7	74	-1	6	NP	NP	24
643.6	36	8/13			Gray Sandy Silt	11	0	0	25	59	16	NP	NP	21
638.6	40	16/17			Gray Sandy Silt	12	3	3	43	42	9	NP	NP	20
633.6	46	12/27			Gray Silt	13	0	1	15	70	14	NP	NP	19
628.6	50	7/11			Gray Silt	14	0	0	2	67	31	NP	NP	24
623.6	56	4/7			Gray Silt	15	0	0	1	58	41	24	5	27
618.6	60	8/11			Gray Clayey Silt	16	0	0	1	50	49	26	7	21
613.6	66	11/20			Gray Clayey Silt	17	0	0	0	52	48	29	8	22
608.6	70	12/21			Gray Clayey Silt	18	0	0	1	57	42	27	8	21
603.6	76	5/9			Gray Clayey Silt	19	0	0	0	55	45	27	7	23
598.6	80	5/9			Gray Clayey Silt	20	0	0	1	45	54	28	7	26
593.6	86	4/7			Gray Clayey Silt	21	0	2	5	46	47	26	7	24
588.6	90	5/11			Gray Silt and Clay	22	0	0	1	30	69	37	14	34
583.6	96	5/6			Gray Silt	23	0	0	1	58	41	26	5	28
578.6	102	6/8			Gray Silt and Clay	24	0	1	2	31	66	36	14	29
577.6					BOTTOM OF BORING									



**LOG OF BORING**

Date Started 2-11-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-12-64 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-90 Station & Offset 981+42, 65' Lt. (REAR PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 680.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics						SHTL Class†					
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.		P.I.	W.C.			
680.0	0																	
	2																	
	4																	
675.0	6	4/4			Brown Sandy Gravel	1	62	23	9	6	NP	NP	6	A-1-a(0)				
	8																	
	10																	
670.0	12	3/3			Brown Gravelly Sand	2	17	26	49	8	NP	NP	13	A-3(0)				
	14																	
665.0	16	9/13			Brown Silty Sand	3	10	7	67	16	NP	NP	8	A-3a(0)				
	18																	
	20																	
660.0	22	15/24			Brown Gravelly Silt	4	17	0	13	56	14	NP	NP	18	A-4b(7)			
	24																	
655.0	26	14/20			Brown Sandy Silt	5	7	0	35	48	10	NP	NP	22	A-4a(5)			
	28																	
652.5	30	19/49			Brown and Gray Silty Sand	6	0	3	67	20	10	NP	NP	21	A-3a(0)			

\* Elevation values represent the elevation at the top of the sample. \*\*Refusal \*\*\*Penetrated by weight of rod. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**LOG OF BORING**

Date Started 2-11-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-12-64 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-90 Station & Offset 981+42, 65' Lt. (REAR PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 680.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
650.0	32	27/38			Gray Sandy Silt	7	0	1	49	39	11	NP	NP	19	A-4a(3)
647.5	34	30/32			Gray Sandy Silt	8	0	0	22	65	13	NP	NP	16	A-4b(8)
645.0	36	25/38			Gray Sandy Silt	9	0	0	43	47	10	NP	NP	19	A-4a(4)
642.5	38	30/28** (0.4')			Gray Sandy Silt	10	0	0	36	55	9	NP	NP	18	A-4b(6)
	40														
640.0	42	6/9			Gray Silt	11	0	0	5	62	33	24	5	22	A-4b(8)
637.5	44	5/10			Gray Silt	12	0	0	4	69	27	NP	NP	30	A-4b(8)
635.0	46	9/13			Gray Silt	13	0	0	4	73	23	NP	NP	21	A-4b(8)
	48														
	50														
630.0	52	5/7			Gray Silt	14	0	0	2	60	38	NP	NP	27	A-4b(8)
	54														
	56														
625.0	58	12/11			Gray Silt	15	0	0	1	59	40	NP	NP	19	A-4b(8)
	60														
620.0		5/7			Gray Clayey Silt	16	0	0	1	55	44	28	8	22	A-4b(8)

\* Elevation values represent the elevation at the top of the sample. \*\*Refusal \*\*\*Penetrated by weight of rod. SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 2-11-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-12-64 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-90 Station & Offset 981+42, 65' Lt. (REAR PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 680.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
615.0	62	5/6			Gray Clayey Silt	17	0	1	0	53	46	29	8	28	A-4b(8)
	64														
	66														
	68														
610.0	70	7/10			Gray Silt	18	0	0	1	64	35	25	6	21	A-4b(8)
	72														
	74														
605.0	76	4/8			Gray Silt	19	0	1	4	53	42	25	6	22	A-4b(8)
	78														
600.0	80	4/5			Gray Silt	20	0	3	8	54	35	23	5	19	A-4b(8)
	82														
	84														
595.0	86	***			Gray Silt and Clay	21	0	2	2	34	62	34	12	33	A-6a(9)
	88														
590.0	90	***			No Sample Recovered - Silt and Clay										
	92														

\* Elevation values represent the elevation at the top of the sample. \*\*Refusal \*\*\*Penetrated by weight of rod. SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

### LOG OF BORING

Date Started 2-11-64 Sampler Type SS Dia. 1 3/8"  
 Date Completed 2-12-64 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-90 Station & Offset 981+42, 65' Lt. (REAR PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 680.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
585.0	94	7/9			Gray Clayey Silt	22	0	0	2	56	42	27	7	24	A-4b(8)
	96														
	98														
580.0	100	5/9			Gray Clayey Silt	23	0	0	2	57	41	27	7	23	A-4b(8)
	102														
	104														
575.0	106	13/23			Gray Silt	24	0	0	2	63	35	24	5	22	A-4b(8)
	108														
	110														
570.0	112	17/23			Gray Silt	25	0	0	1	65	34	NP	NP	23	A-4b(8)
	114														
	116														
565.0	118	13/18			Gray Silt	26	0	0	2	59	39	23	5	24	A-4b(8)
	120														
	122														
560.0		9/14			Gray Silt	27	0	0	0	58	42	26	6	24	A-4b(8)

\* Elevation values represent the elevation at the top of the sample. \*\*Refusal \*\*\*Penetrated by weight of rod. SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**LOG OF BORING**

Date Started 2-11-64 Sampler Type SS Dia. 1 3/8" Water Elev. \_\_\_\_\_  
 Date Completed 2-12-64 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-90 Station & Offset 981+42, 65' Lt. (REAR PIER) Surface Elev. 680.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
555.0	124	15/17			Gray Silt BOTTOM OF BORING - ELEV. 554.0	28	0	5	13	48	34	21	5	15	A-4a(8)
	126														
	128														
	130														
	132														
	134														
	136														
	138														
	140														
	142														
	144														
	146														
	148														
	150														
	152														
	154														

\* Elevation values represent the elevation at the top of the sample. \*\*Refusal \*\*\*Penetrated by weight of rod. SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

LOG OF BORING  
Date Started 2-11-64 Sampler Type SS Dia 1 3/8"  
Date Completed 2-12-64 Casing Length Dia  
Boring No. B-90 Station B Offset 291+42.65' Lt (BEAR PIER) Surface Elev. 680.0'

Elev.	Depth	Std. Pen. (N)	Rec. Fl.	Loss Fl.	Description	Sample No.	Physical Characteristics													
							Agg.	C.S.	F.S.	Silt	Clay	W	L	U	HTL	Class				
680.0	0																			
675.0	4																			
675.0	6	4/4			Brown Sandy Gravel	1	62	23	9	-6	-	NP	NP	6						
670.0	10																			
670.0	12	3/3			Brown Gravelly Sand	2	17	26	49	-8	-	NP	NP	13						
665.0	16																			
665.0	18	9/13			Brown Silty Sand	3	10	7	67	-1	6-	NP	NP	8						
660.0	20																			
660.0	22	15/24			Brown Gravelly Silt	4	17	0	13	56	14	NP	NP	18						
655.0	26																			
655.0	28	14/20			Brown Sandy Silt	5	7	0	35	49	10	NP	NP	22						
652.5	30																			
652.5	32	19/49			Brown and Gray Silty Sand	6	0	3	67	20	10	NP	NP	21						
650.0	34																			
650.0	36	27/38			Gray Sandy Silt	7	0	1	49	39	11	NP	NP	19						
647.5	38																			
647.5	40	30/32			Gray Sandy Silt	8	0	0	22	65	13	NP	NP	16						
645.0	42																			
645.0	44	25/33			Gray Sandy Silt	9	0	0	43	47	10	NP	NP	19						
642.5	46																			
642.5	48	30/28* (0.4*)			Gray Sandy Silt	10	0	0	36	55	9	NP	NP	18						
640.0	50																			
640.0	52	6/0			Gray Silt	11	0	0	5	62	33	24	5	22						
637.5	54																			
637.5	56	5/10			Gray Silt	12	0	0	4	69	27	NP	NP	30						
635.0	58																			
635.0	60	9/13			Gray Silt	13	0	0	4	73	23	NP	NP	21						
630.0	64																			
630.0	66	5/7			Gray Silt	14	0	0	2	60	38	NP	NP	27						
625.0	70																			
625.0	72	12/11			Gray Silt	15	0	0	1	59	40	NP	NP	19						
620.0	76																			
620.0	78	5/7			Gray Clayey Silt	16	0	0	1	55	44	28	8	22						
615.0	82																			
615.0	84	5/6			Gray Clayey Silt	17	0	1	0	53	46	29	8	28						
610.0	88																			
610.0	90	7/10			Gray Silt	18	0	0	1	64	35	25	6	21						
605.0	94																			
605.0	96	4/8			Gray Silt	19	0	1	4	53	42	25	6	22						
600.0	100																			
600.0	102	4/5			Gray Silt	20	0	3	8	54	35	23	5	19						
595.0	106																			
595.0	108	**			Gray Silt and Clay	21	0	2	2	34	62	34	12	33						
590.0	112																			
590.0	114	**			No Sample Recovered - Silt and Clay															
585.0	118																			
585.0	120	7/9			Gray Clayey Silt	22	0	0	2	56	42	27	7	24						
580.0	124																			
580.0	126	5/9			Gray Clayey Silt	23	0	0	2	57	41	27	7	23						
575.0	130																			
575.0	132	13/23			Gray Silt	24	0	0	2	63	35	24	5	22						
570.0	136																			
570.0	138	17/23			Gray Silt	25	0	0	1	65	34	NP	NP	23						
565.0	142																			
565.0	144	13/18			Gray Silt	26	0	0	2	59	39	23	5	24						
560.0	148																			
560.0	150	9/14			Gray Silt	27	0	0	0	58	42	26	6	24						
555.0	154																			
555.0	156	15/17			Gray Silt	28	0	0	5	13	48	34	21	5	15					

1 BOTTOM OF BORING  
\* REFUSAL  
\*\* Penetrated by weight of rod.

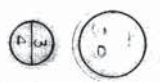
OHIO STATE HIGHWAY  
TESTING LABORATORY  
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATIONS  
BRIDGE NO. CUY-1R 90-1423  
R 90 AND LANE W-N AND LANE N-W  
OVER STARKWEATHER AVE  
CUY-1R 90-1423

BORED BY  
CHECKED BY  
R.D.R.  
C.P.H.

DATE  
3-24-64

CUY - 90-13-81  
CUY - 77-18-54





**LOG OF BORING**

Date Started 7-9-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 7-9-63 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-6 Station & Offset 5+24, 55' Rt. (2nd PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 676.7'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics						SHTL Class†					
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.		P.I.	W.C.			
676.7	0																	
	2																	
	4																	
671.7	6	3/3			Brown Silty Gravelly Sand	1	27	38	19	8	8	NP	NP	12				A-1-b(0)
	8																	
669.2	10	3/5			Brown Silty Gravelly Sand	2	30	23	25	12	10	NP	NP	8				A-1-b(0)
	12																	
666.7	14	10/12			Brown Silty Gravelly Sand	3	27	49	12	5	7	NP	NP	10				A-1-b(0)
	16																	
664.2	18	10/11			Brown Silty Gravelly Sand	4	V	I	S	U	A	L		17				
	20																	
661.7	22	12/12			Brown Silty Gravelly Sand	5	34	27	18	11	10	NP	NP	17				A-1-b(0)
	24																	
659.2	26	11/14			Brown Silty Sand	6	12	1	64	16	7	NP	NP	17				A-3a(0)
	28																	
656.7	30	9/14			Brownish-Gray Silty Gravelly Sand	7	20	9	57	3	11	NP	NP	14				A-3a(0)
	32																	
654.2	34	16/32			Brownish-Gray Silty Sand	8	0	12	74	7	7	NP	NP	14				A-3a(0)
	36																	
651.7	38	22/24			Brownish-Gray Sandy Silt	9	13	2	37	36	12	NP	NP	21				A-4a(3)
	40																	

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 7-9-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 7-9-63 Casing Length 0 Dia. 0  
 Boring No. B-6 Station & Offset 5+24, 55' Rt. (2nd PIER)

Water Elev. \_\_\_\_\_

Surface Elev. 676.7'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics						SHTL Class†		
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.		P.I.	W.C.
646.7	32	30/30			Brown Sandy Gravel	10	78	5	11	6	NP	NP	9	A-1-a(0)	
	34														
641.7	36	17/22			Brown Silty Sand	11	0	5	78	6	11	NP	NP	24	A-3a(0)
	38														
	40														
636.7	42	10/23			Gray Sandy Silt	12	0	1	45	40	14	NP	NP	22	A-4a(4)
	44														
631.7	46	14/16			Gray Silt	13	0	0	14	65	21	NP	NP	16	A-4b(8)
	48														
	50														
626.7	52	28/40			Gray Silt	14	0	0	9	74	17	NP	NP	18	A-4b(8)
	54														
621.7	56	13/21			Gray Silt	15	0	0	2	68	30	21	4	21	A-4b(8)
	58														
	60														
616.7		12/20			Gray Silt	16	0	0	4	53	43	23	5	21	A-4b(8)

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**LOG OF BORING**

Date Started 7-9-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 7-9-63 Casing Length 0 Dia. 0  
 Boring No. B-6 Station & Offset 5+24, 55' Rt. (2nd PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 676.7'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
611.7	62	12/18			Gray Silt	17	0	1	4	58	37	22	5	21	A-4b(8)
	64														
	66														
	68														
606.7	70	20/29			Gray Silt	18	0	0	1	52	47	25	4	21	A-4b(8)
	72														
	74														
601.7	76	21/25			Gray Silt	19	0	0	0	76	24	23	2	23	A-4b(8)
BOTTOM OF BORING - ELEV. 600.7'															
	78														
	80														
	82														
	84														
	86														
	88														
	90														
	92														

\* Elevation values represent the elevation at the top of the sample. †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

**LOG OF BORING**

Date Started 6-26-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 6-28-63 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-13 Station & Offset 8+47, 55' Lt. (6TH PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 675.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics						SHTL Class†					
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.		P.I.	W.C.			
675.0	0																	
	2																	
	4																	
670.0	6	5/8			Brown Sandy Gravel	1	45	30	15	10	NP	NP	10	A-1-b(0)				
	8	5/7			Brown Gravelly Sand	2	25	45	21	9	NP	NP	12	A-1-b(0)				
	10																	
665.0	12	3/4			Brown Silt	3	0	1	3	59	37	28	4	22	A-4b(8)			
	14	7/13			Brown Sand	4	0	6	87	7	NP	NP	11	A-3(0)				
	16	8/10			Brown Silty Sand	5	0	19	67	2	12	NP	NP	11	A-3a(0)			
	18	6/7			Brown Silty Sand	6	0	9	64	14	13	NP	NP	19	A-3a(0)			
	20																	
655.0	22	10/1			Brown Silty Sand	7	0	21	67	9	8	NP	NP	13	A-3a(0)			
	24	11/15			Brown Silty Sand	8	0	2	76	10	12	NP	NP	14	A-3a(0)			
	26	9/12			Brown Silty Sand	9	0	1	61	26	12	NP	NP	24	A-4a(1)			
	28																	
	30																	

\* Elevation values represent the elevation at the top of the sample. PS = Press Sample †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 6-26-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 6-28-63 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-13 Station & Offset 8+47, 55' Lt. (6TH PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 675.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
645.0	32	27/41			Brown Silty Sand	10	0	1	76	10	13	NP	NP	18	A-3a(0)
	34														
	36														
640.0	36	32/42			Brown Silty Sand	11	0	5	58	26	11	NP	NP	17	A-4a(0)
	38														
	40														
635.0	40	30/47			Brown Silty Sand	12	0	1	82	6	11	NP	NP	18	A-3a(0)
	42														
	44														
630.0	46	24/25			Brownish-Gray Sandy Silt	13	0	0	31	53	16	NP	NP	18	A-4b(7)
	48														
	50														
625.0	50	32/40			Gray Silt	14	0	0	6	76	18	NP	NP	20	A-4b(8)
	52														
	54														
620.0	56	10/13			Gray Silt	15	0	0	0	62	38	NP	NP	21	A-4b(8)
	58														
	60														
615.0		7/8			Gray Silt	16	0	1	2	62	35	NP	NP	27	A-4b(8)

\* Elevation values represent the elevation at the top of the sample. PS = Press Sample †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 6-26-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 6-28-63 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-13 Station & Offset 8+47, 55' Lt. (6TH PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 675.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
610.0	62	6/7			Gray Silt	17	0	0	4	59	37	NP	NP	22	A-4b(8)
	64														
	66														
	68														
605.0	70	22/19			Gray Silt	18	0	0	0	53	47	26	6	22	A-4b(8)
	72														
	74														
600.0	76	22/23			Gray Silt	19	0	0	0	60	40	NP	NP	18	A-4b(8)
	78														
	80														
595.0	82	PS			Gray Clayey Silt	20	0	0	0	49	51	31	9	23	A-4a(8)
593.5	84	17/23			Gray Silt	21	0	0	0	46	54	27	5	22	A-4a(8)
	86														
590.0	88	PS			Gray Clayey Silt	22	0	0	0	49	51	30	8	24	A-4a(8)
588.5	90	12/13			Gray Clayey Silt	23	0	1	3	45	51	27	7	26	A-4a(8)
	92														
585.0	94	-- --			Gray Silt and Clay	24	0	2	4	23	71	35	15	25	A-6a(10)
	96														

\* Elevation values represent the elevation at the top of the sample. PS = Press Sample †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 6-26-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 6-28-63 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-13 Station & Offset 8+47, 55' Lt. (6TH PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 675.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
583.5	94	7/8**			Gray Clayey Silt	25**	0	1	1	32	66	28	8	31	A-4a(8)
	96				**Sample 25 is shown beginning 0.5' lower than it should be due to page space (top of sample elevation is correct)										
578.5	98	9/10			Gray Silt and Clay	26	0	1	2	22	75	38	14	31	A-6a(10)
	100														
575.0	102	PS			Gray Silt and Clay	27	0	0	1	56	43	39	15	27	A-6a(10)
573.5	104	10/12			Gray Silt and Clay	28	0	1	2	52	45	30	11	25	A-6a(8)
	106														
570.0	106	PS			Gray Silt and Clay	29	0	0	3	32	65	36	14	23	A-6a(10)
568.5	108	11/14			Gray Silt	30	0	0	2	49	49	26	5	22	A-4a(8)
	110														
565.0	112	PS			Gray Clayey Silt	31	0	0	2	50	48	29	8	28	A-4b(8)
563.5	114	12/17			Gray Clayey Silt	32	0	0	1	48	51	27	8	23	A-4a(8)
	116														
558.5	118	10/11			Gray Silt	33	0	0	1	50	49	25	5	23	A-4b(8)
	120														
555.0	122	PS			Gray Silt	34	0	0	0	61	39	26	6	19	A-4b(8)
553.5		9/14			Gray Silt	35	0	0	2	53	45	25	5	23	A-4b(8)

\* Elevation values represent the elevation at the top of the sample. PS = Press Sample †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 6-26-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 6-28-63 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-13 Station & Offset 8+47, 55' Lt. (6TH PIER)

Water Elev. \_\_\_\_\_  
 Surface Elev. 675.0'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
550.0	124	PS			Gray Clayey Silt	36	0	0	0	70	30	27	7	22	A-4b(8)
	126														
548.5	128	8/15			Gray Silt	37	0	0	1	50	49	26	6	23	A-4b(8)
545.0	130	PS			Gray Clayey Silt	38	0	0	1	45	54	27	8	21	A-4a(8)
	132														
543.5	134	15/20			Gray Silt	39	0	0	1	51	48	21	2	21	A-4b(8)
	136	11/17			Gray Clayey Silt	40	0	2	5	33	60	31	10	21	A-4a(8)
	138														
	140	8/18			Gray Clayey Silt	41	9	3	5	26	57	29	9	22	A-4a(8)
	142														
	144	11/18			Gray Clayey Silt	42	0	2	4	31	63	28	9	24	A-4a(8)
530.0	146														
	148	BOTTOM OF BORING - ELEV. 529.0													
	150														
	152														
	154														

\* Elevation values represent the elevation at the top of the sample. PS = Press Sample †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

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**LOG OF BORING**

Date Started 6-25-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 6-25-63 Casing Length None Dia. None  
 Boring No. B-23 Station & Offset 11+74, CL

Water Elev. \_\_\_\_\_  
 Surface Elev. 676.2'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†				
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.			
676.2	0																	
	2																	
	4																	
671.2	6	7/6			Brown Silty Gravelly Sand	1	33	23	29	7	8	NP	NP	8				A-1-b(0)
668.7	8	7/7			Brown Sandy Gravel	2	V	I	S	U	A	L		7				
	10																	
666.2	12	9/10			Brown Sandy Gravel	3	V	I	S	U	A	L		10				
663.7	14	19/31			Brown Sandy Gravel	4	48	26	16	10		NP	NP	6				A-1-b(0)
661.2	16	13/19			Brown Sandy Gravel	5	52	24	14	10		NP	NP	9				A-1-a(0)
658.7	18	13/17			Brown Sand	6	8	9	75	8		NP	NP	12				A-3(0)
	20																	
656.2	22	9/13			Brown Gravelly Sand	7	13	10	67	0	10	NP	NP	17				A-3(0)
653.7	24	13/16			Brown Silty Gravelly Sand	8	42	2	44	5	7	NP	NP	9				A-2-4(0)
651.2	26	15/18			Brown Gravel	9	81	5	10	4		NP	NP	9				A-1-a(0)
	28																	
	30																	

\* Elevation values represent the elevation at the top of the sample. \*\* Refusal †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

**LOG OF BORING**

Date Started 6-25-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 6-25-63 Casing Length None Dia. None  
 Boring No. B-23 Station & Offset 11+74, CL

Water Elev. \_\_\_\_\_

Surface Elev. 676.2'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
646.2	32	14/18			Brown Silty Gravelly Sand	10	16	1	58	16	9	NP	NP	17	A-3a(0)
	34														
641.2	36	17/38													
	38														
	40														
636.2	42	50**			Brown Sand	12	10	12	69	1	8	NP	NP	17	A-3(0)
	44														
	46														
631.2	48	30/33			Brown Sandy Gravel	13	77	9	7	7	NP	NP	9	A-1-a(0)	
	50														
626.2	52	18/50													Gray Sandy Silt
	54														
621.2	56	46**			Gray Silt	15	0	0	7	73	20	NP	NP	14	
	58														
616.2	60	12/14													Gray Silt

\* Elevation values represent the elevation at the top of the sample. \*\* Refusal †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

### LOG OF BORING

Date Started 6-25-63 Sampler Type SS Dia. 1 3/8"  
 Date Completed 6-25-63 Casing Length None Dia. None  
 Boring No. B-23 Station & Offset 11+74, CL

Water Elev. \_\_\_\_\_  
 Surface Elev. 676.2'

Elev.*	Depth	Std. Pen (N)	Rec. ft	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class†	
							% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.
611.2	62	8/9			Gray Silt	17	0	1	4	58	37	NP	NP	26	A-4b(8)
	64														
	66														
	68														
606.2	70	15/21			Gray Silt	18	0	0	1	51	48	26	6	23	A-4b(8)
	72														
	74														
601.2	76	17/19			Gray Clayey Silt	19	0	0	1	47	52	26	7	22	A-4b(8)
BOTTOM OF BORING - ELEV. 600.2'															
	78														
	80														
	82														
	84														
	86														
	88														
	90														
	92														

\* Elevation values represent the elevation at the top of the sample. \*\* Refusal †SHTL Class not included on original log; shown as calculated in accordance to 2009 SGE.

DISCLAIMER: This boring log is a reproduction of an existing historic boring log provided to improve clarity. Complete accuracy is not guaranteed and original log should accompany this reproduction.

CUY-90-14.67

LOG OF BORING

Date Started 7-9-63 Sampler Type SS Dia. 1 3/8" Water Elev. \_\_\_\_\_  
 Date Completed 7-6-63 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-6 Station & Offset 5+24.55' Rt. (2nd FIFR) Surface Elev. 676.7'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.	
							% Agg.	% CS.	% F.S.	% Silt	% Clay	LL	PI		W.C.
676.7	0														
	2														
	4														
671.7	5	3/3			Brown Silty Gravelly Sand	1	27	38	19	8	8	NP	NP	12	
669.2	8	3/5			Brown Silty Gravelly Sand	2	30	23	25	12	10	NP	NP	8	
666.7	10														
664.2	12	10/12			Brown Silty Gravelly Sand	3	27	49	12	5	7	NP	NP	10	
661.7	14	10/11			Brown Silty Gravelly Sand	4									
660.2	16	12/12			Brown Silty Gravelly Sand	5	34	27	18	11	10	NP	NP	17	
656.7	20	11/14			Brown Silty Sand	6	12	1	64	16	7	NP	NP	17	
654.2	22	9/14			Brownish-Gray Silty Gravelly Sand	7	20	9	57	3	11	NP	NP	14	
651.7	24	16/32			Brownish-Gray Silty Sand	8	0	12	74	7	7	NP	NP	14	
646.7	28	22/24			Brownish-Gray Sandy Silt	9	13	2	37	36	12	NP	NP	21	
	30														
641.7	32	30/30			Brown Sandy Gravel	10	78	5	11	-6-		NP	NP	9	
	34														
636.7	36	17/22			Brown Silty Sand	11	0	5	78	6	11	NP	NP	24	
	38														
631.7	40	10/23			Gray Sandy Silt	12	0	1	45	40	14	NP	NP	22	
	42														
626.7	44	14/16			Gray Silt	13	0	0	14	65	21	NP	NP	16	
	46														
621.7	48	28/40			Gray Silt	14	0	0	9	74	17	NP	NP	18	
	50														
616.7	52	13/21			Gray Silt	15	0	0	2	68	30	21	4	21	
	54														
611.7	56	12/20			Gray Silt	16	0	0	4	53	43	23	5	21	
	58														
606.7	60	12/18			Gray Silt	17	0	1	4	58	37	22	5	21	
	62														
601.7	64	20/29			Gray Silt	18	0	0	1	52	47	25	4	21	
	66														
600.7	68	21/25			Gray Silt	19	0	0	0	76	24	23	2	23	
	70														
	72														
	74														
	76														

BOTTOM OF BORING

LOG OF BORING

Date Started 6-25-63 Sampler Type SS Dia. 1 3/8" Water Elev. \_\_\_\_\_  
 Date Completed 6-25-63 Casing Length None Dia. None  
 Boring No. B-23 Station & Offset 11+74.4 CL Surface Elev. 676.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.	
							% Agg.	% CS.	% F.S.	% Silt	% Clay	LL	PI		W.C.
676.2	0														
	2														
	4														
671.2	6	7/6			Brown Silty Gravelly Sand	1	33	23	29	7	8	NI	NI	8	
668.7	8	7/7			Brown Sandy Gravel	2									
666.2	10	9/10			Brown Sandy Gravel	3									
663.7	12	19/31			Brown Sandy Gravel	4	48	26	16	-1	0-	NP	NP	6	
661.2	14	13/19			Brown Sandy Gravel	5	52	24	14	-1	0-	NP	NP	9	
658.7	16	13/17			Brown Sand	6	8	9	75	-8	-	NP	NP	12	
656.2	18	9/13			Brown Gravelly Sand	7	13	10	67	0	10	NP	NP	17	
653.7	20	13/16			Brown Silty Gravelly Sand	8	42	2	44	5	7	NP	NP	9	
651.2	22	15/18			Brown Gravel	9	81	5	10	-4	-	NP	NP	9	
	24														
	26														
646.2	28	14/18			Brown Silty Gravelly Sand	10	16	1	58	16	9	NI	NI	17	
	30														
	32														
641.2	34	17/38			Gray Silty Gravelly Sand	11	25	2	55	7	11	NP	NP	15	
	36														
636.2	38	50*			Brown Sand	12	10	12	69	1	8	NP	NP	17	
	40														
631.2	42	30/33			Brown Sandy Gravel	13	77	9	7	-7	-	NP	NP	9	
	44														
626.2	46	18/50			Gray Sandy Silt	14	0	0	22	51	27	NP	NP	17	
	48														
621.2	50	46*			Gray Silt	15	0	0	7	73	20	NP	NP	14	
	52														
616.2	54	12/14			Gray Silt	16	0	0	1	61	38	24	3	28	
	56														
611.2	58	8/9			Gray Silt	17	0	1	4	58	37	NP	NP	26	
	60														
606.2	62	15/21			Gray Silt	18	0	0	1	51	48	26	6	23	
	64														
601.2	66	17/19			Gray Clayey Silt	19	0	0	1	47	52	26	7	22	
	68														
	70														
	72														
	74														
	76														

BOTTOM OF BORING

\*REFUSAL

OHIO STATE HIGHWAY  
TESTING LABORATORY  
1620 WEST BROAD ST., COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. CUY-42 R-1730  
FREEWAY OVER FAIRFIELD AVE. LANE B & RAMP W/2  
SEC. CUY-42-16.43

BORING DATA

TYPED BY: <u>JAC</u>	CHECKED BY: <u>LEE</u>	REVIEWED BY: <u>ROD</u>	DATE: <u>8-9-63</u>
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CUY-90-14.67

LOG OF BORING

Date Started 6-26-63 Sampler Type SS Dia. 1 3/8" Water Elev. \_\_\_\_\_  
 Date Completed 6-27-63 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_ Surface Elev. 675.0'  
 Boring No. 9-13 Station & Offset R+47, 55' I.T. (GTI FTR)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.				
							% Aggl.	% C.S.	% F.S.	% Silt	% Clay	LL	PI		W.C.			
675.0	0																	
670.0	5																	
667.5	7.5	4/8			Brown Silty Gravel	1	45	10	15	-1	0	NF	NF	10				
665.0	10	5/7			Brown Gravelly Sand	2	25	45	21	-9	-	NF	NF	12				
662.5	12.5	3/4			Brown Silt	3	0	1	3	59	37	28	4	22				
660.0	15	7/13			Brown Sand	4	0	6	87	-7	-	NF	NF	11				
657.5	17.5	8/10			Brown Silty Sand	5	0	19	67	2	12	NF	NF	11				
655.0	20	6/7			Brown Silty Sand	6	0	9	64	14	13	NF	NF	19				
652.5	22.5	10/1			Brown Silty Sand	7	0	21	67	9	8	NF	NF	13				
650.0	25	11/15			Brown Silty Sand	8	0	2	76	10	12	NF	NF	14				
645.0	30	9/12			Brown Silty Sand	9	0	1	61	26	12	NF	NF	24				
640.0	35	27/41			Brown Silty Sand	10	0	1	76	10	13	NF	NF	18				
635.0	40	32/42			Brown Silty Sand	11	0	5	68	26	11	NF	NF	17				
630.0	45	10/47			Brown Silty Sand	12	0	1	82	6	11	NF	NF	18				
625.0	50	24/25			Brownish-Gray Silty Sand	13	0	0	31	53	16	NF	NF	18				
620.0	55	32/40			Gray Silt	14	0	0	6	76	18	NF	NF	20				
615.0	60	10/13			Gray Silt	15	0	0	0	62	38	NF	NF	21				
610.0	65	7/8			Gray Silt	16	0	1	2	62	35	NF	NF	27				
605.0	70	6/7			Gray Silt	17	0	0	4	59	37	NF	NF	22				
600.0	75	22/19			Gray Silt	18	0	0	0	53	47	26	6	22				
595.0	80	22/23			Gray Silt	19	0	0	0	60	40	NF	NF	18				
593.5	81.5	PS			Gray Clayey Silt	20	0	0	0	49	51	31	9	23				
593.5	81.5	17/23			Gray Silt	21	0	0	0	46	54	27	5	22				

R-13 (Con't.)

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.				
							% Aggl.	% C.S.	% F.S.	% Silt	% Clay	LL	PI		W.C.			
590.0	86	PS			Gray Clayey Silt	22	0	0	0	49	51	30	8	24				
588.5	87.5	12/13			Gray Clayey Silt	23	0	1	3	45	51	27	7	26				
585.0	90	--			Gray Silt and Clay	24	0	2	4	23	71	35	15	25				
583.5	91.5	7/8			Gray Clayey Silt	25	0	1	1	32	66	28	8	31				
579.5	95.5	9/10			Gray Silt and Clay	26	0	1	2	22	75	38	14	31				
575.0	100	PS			Gray Silt and Clay	27	0	0	1	56	43	39	15	27				
573.5	101.5	10/12			Gray Silt and Clay	28	0	1	2	52	45	30	11	25				
570.0	104	PS			Gray Silt and Clay	29	0	0	3	32	65	36	14	23				
568.5	105.5	11/14			Gray Silt	30	0	0	2	49	49	26	5	22				
565.0	108	PS			Gray Clayey Silt	31	0	0	2	50	48	29	8	28				
563.5	109.5	12/17			Gray Clayey Silt	32	0	0	1	48	51	27	8	23				
558.5	114.5	10/11			Gray Silt	33	0	0	1	50	49	25	5	23				
555.0	120	PS			Gray Silt	34	0	0	0	61	39	26	6	19				
553.5	121.5	9/14			Gray Silt	35	0	0	2	53	45	25	5	23				
550.0	124	PS			Gray Clayey Silt	36	0	0	0	70	30	27	7	22				
548.5	125.5	8/15			Gray Silt	37	0	0	1	50	49	26	6	23				
545.0	130	PS			Gray Clayey Silt	38	0	0	1	45	54	27	8	21				
543.5	131.5	15/20			Gray Silt	39	0	0	1	51	48	21	2	21				
538.5	136.5	11/17			Gray Clayey Silt	40	0	2	5	33	60	31	10	21				
533.5	141.5	8/18			Gray Clayey Silt	41	9	3	5	26	57	29	9	22				
530.0	144	PS			Gray Clayey Silt	42	0	2	4	31	63	28	9	24				
529.0	145	11/18			Gray Clayey Silt													

PS Press Sample      BOTTOM OF BORING

OHIO STATE HIGHWAY  
TESTING LABORATORY  
1620 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. CUY-42R-1750  
FREEWAY OVER FAIRFIELD AVE. LANE B&E RAMP #2  
SEC. CUY-42-15.43

BORING DATA

TYPED BY <u>JAC</u>	CHECKED BY <u>RLP</u>	REVIEWED BY <u>ROC</u>	DATE <u>8-9-63</u>
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STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
TESTING LABORATORY

## LOG OF BORING

CO., RT. NO. SEC. CUYAHOGA-CLEVELAND \_\_\_\_\_ BRIDGE NO. \_\_\_\_\_  
WILLOW INNERBELT INTERCHANGE \_\_\_\_\_

LOCATION: T.H.B-103 STA. \_\_\_\_\_ OFFSET \_\_\_\_\_ FED. NO. \_\_\_\_\_

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
674.5	0			
	2			
	4			
669.5	6	7/8	85005	Brown Silty Gravelly Sand
	8			
664.5	10	15/8	85006	Brown Silty Sandy Gravel
	12			
	14			
659.5	16	8/6	85007	Brown Silty Sand
	18			
654.5	20	7/50	85008	Brown Silty Gravelly Sand
	22			
	24			
649.5	26	14/30	85009	Brown & Gray Sandy Silt
	28			
644.5	30	14/26	85010	Gray Silty Sand
	32			
	34			
639.5	36	32/55	85011	Gray Sandy Silt

4-17-58

RC

## LOG OF BORING (CONTINUED)

BRIDGE NO. \_\_\_\_\_ T.H. B-103

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
	38			
634.5	40	27/60	85012	Gray Sandy Silt
	42			
	44			
629.5	46	29/41	85013	Gray Silt
	48			
624.5	50	25/52	85014	Gray Silt
	52			
	54			
619.5	56	30/60	85015	Gray Silt
	58			
614.5	60	63/63	85016	Gray Silt
	62			
	64			
609.5	66	31/50	85017	Gray Silt
	68			
604.5	70	8/13	85018	Gray silt & Clay
	72			
	74			
599.5	76	7/12	85019	Gray Silt & Clay
	78			
594.5	80			
593.5		6/11	85020	Gray silt & Clay
	82			BOTTOM OF BORING

4-17-58 RC

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
TESTING LABORATORY

SHEET 11

## LOG OF BORING

CO., RT. NO., SEC. CUYAHOGA-CLEVELAND BRIDGE NO. \_\_\_\_\_  
WILLOW INNERBELT INTERCHANGE

LOCATION: T.H. B-106 STA. \_\_\_\_\_ OFFSET 20' N. \_\_\_\_\_ FED. NO. \_\_\_\_\_

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
674.8	0			
	2			
	4			
669.8	6	6/7	85298	Brown Silty Gravelly Sand
	8			
664.8	10	7/4	85299	Brown Silty Gravelly Sand
	12			
	14			
659.8	16	16/16	85300	Brown Silty Gravelly Sand
	18			
654.8	20	12/24	85301	Brown Silty Sand
	22			
	24			
649.8	26	20/40	85302	Brown Sand
	28			
644.8	30	15/23	85303	Brown Silty Sand
	32			
	34			
639.8	36	14/26	-----	Br. Silty Sand

4-17-58

RC



## LOG OF BORING (CONTINUED)

BRIDGE NO. \_\_\_\_\_ T.H. B-106

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
	38			
634.8	40	15/40	85304	Gray Silty Sand
	42			
	44			
629.8	46	16/42	85305	Gray Sandy Silt
	48			
624.8	50	27/41	85306	Gray Sandy Silt
	52			
	54			
619.8	56	9/19	85307	Gray Silt
	58			
614.8	60	12/26	85308	Gray Silt
	62			
	64			
609.8	66	12/26	85309	Gray Silt
	68			
604.8	70	24/28	85310	Gray Silt
	72			
	74			
599.8	76	7/8	85311	Gray Silt
	78			
594.8	80	12/19	85312	Gray Silt
	82			

4-17-56  
RC

LOG OF BORING (CONTINUED)

BRIDGE NO. \_\_\_\_\_ T.H. B-106

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
589.8	84	26/42	85313	Gray Silt
	86			
	88			
585.8 584.8	90	-----	85314	Gray Sand
	86			BOTTOM OF BORING
	88			
	90			
	92			
	94			
	96			
	98			
	100			
	102			
	104			
	106			
	108			
	110			
	112			
	114			
	116			
	118			
	120			

4-17-58  
RC

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
TESTING LABORATORY

SHEET 3

LOG OF BORING

CO., RT. NO., SEC. CUYAHOGA-CLEVELAND BRIDGE NO. \_\_\_\_\_  
WILLOW INNERBELT INTERCHANGE

LOCATION: T.H. B-106A STA. 67+13 OFFSET 20' RT FED. NO. \_\_\_\_\_

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
674.7	0			Brown Silty Sand
	2			
	4			
669.7	6	4/4	92887	Brown Silty Gravelly Sand
666.7	8			
664.7	10		92939	Brown Silty Sandy Gravel
	12	3/4	-----	Brown Gravelly Sand
660.7	14			
659.7	16	30/30	92940 92888	Brown Silty Sand Brown Silty Sandy Gravel
657.7	18		92943	Brown Gravelly Sand Brown Sandy Silt
654.7	20			
	22	27/20	92889	Brown Gravel
652.7	24		92941	Brown Silty Gravelly Sand
649.7	26	26/20	92890	Brown Silty Sand
646.7	28			
644.7	30		92942	Brown Silty Sand
	32	30/31	92891	Brown Silty Sand
	34			
639.7	36	17/37	92892	Brown Silty Sand

Direct Shear\*  
Quick-Undrained  
C=0.12 T/ft<sup>2</sup>  
φ=23°12'  
δ<sub>w</sub>=108.0 #/ft<sup>3</sup>  
WC=8%

Direct Shear\*  
Quick-Undrained  
C=0.0 T/ft<sup>2</sup>  
φ=48°03'  
δ<sub>w</sub>=127.0 #/ft<sup>3</sup>  
WC=21

Direct Shear\*  
Quick-Undrained  
C=0.08 T/ft<sup>2</sup>  
φ=38°40'  
δ<sub>w</sub>=140.0 #/ft<sup>3</sup>  
WC=13%

Direct Shear\*  
Quick-Undrained  
C=0.08 T/ft<sup>2</sup>  
φ=31°26'  
δ<sub>w</sub>=125.0 #/ft<sup>3</sup>  
WC=17%

\*Remolded

KMM, 8/4/58

LOG OF BORING (CONTINUED)

SHEET 4

BRIDGE NO. \_\_\_\_\_ T.H. B-106-A \_\_\_\_\_

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
634.7	38	27/32	92893	Brown Sandy Silt
	40			
	42			
628.7	44	40/44	92894	Gray Sandy Silt
	46			
	48			
624.7	50	8/9	92895	Gray Silt
	52			
	54			
619.7	56	12/16	92896	Gray Silt
	58			
	60			
614.7	62	14/16	92898	Gray Silt and Clay
	64			
	66			
609.7	68	8/10	92897	Gray Silt and Clay
	70			
	72			
604.7	74	14/16	92898	Gray Silt and Clay
	76			
	78			
599.7	80	8/10	92897	Gray Silt and Clay
	82			
	84			
594.7	86	8/10	92897	Gray Silt and Clay
	88			
	90			

$q_u = 1.48 \text{ T/ft}^2$   
 $\gamma_s = 127.0 \text{ \#/ft}^3$   
 $WC = 21\%$

$q_u = 0.59 \text{ T/ft}^2$   
 $\gamma_s = 117.3 \text{ \#/ft}^3$   
 $WC = 29\%$

Direct Shear \*  
 Quick Undrained  
 $C = 0.02 \text{ T/ft}^2$   
 $\phi = 50.43^\circ$   
 $\gamma_s = 126.9 \text{ \#/ft}^3$   
 $WC = 23\%$

$q_u = 1.86 \text{ T/ft}^2$   
 $\gamma_s = 144.1 \text{ \#/ft}^3$   
 $WC = 22\%$

\*Remolded

LOG OF BORING (CONTINUED)

SHEET 5

BRIDGE NO. \_\_\_\_\_ T.H. B-106-A

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
589.7	86	11/13	92899	Gray Silt
	88			
	90			
584.7	90	16/18	92900	Gray Silt
	92			
	94			
579.7	96	17/17	92901	Gray Silt
	98			
	100			
574.7	100	10/11	92902	Gray Silt and Clay
	102			
	104			
569.7	106	13/13	92903	Gray Silty Clay
	108			
	110			
564.7	110	10/11	92902	Gray Silt and Clay
	112			
	114			
561.7	116	13/13	92903	Gray Silty Clay
	118			
	120			
559.7	120	10/11	92902	Gray Silt and Clay
	122			
	124			
554.7	124	10/11	92902	Gray Silt and Clay
	126			
	128			

$q_u = 1.87 \text{ T/ft}^2$   
 $f_w = 128.5 \text{ \#/ft}^3$   
 WC=17%

Direct Shear\*, Quick Consolidated Undrained  
 $C = 0.02 \text{ T/ft}^2$   
 $\phi = 11^\circ 19'$   
 $f_w = 118.7 \text{ \#/ft}^3$   
 WC=35%

\*Remolded

LOG OF BORING (CONTINUED)

BRIDGE NO. \_\_\_\_\_ T.H. B-106-A

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
544.7	130	9/12	92904	Gray Clay
	132			
	134			
539.7	136	11/13	92905	Gray Silty Clay
	138			
536.2	140		93276	Gray Clay
534.7				
				Bottom of Boring
	50			Direct shear tests are quick unconsolidated undrained unless otherwise noted.
	52			
	54			
	56			
	58			
	60			
	62			
	64			
	66			
	68			
	70			
	72			
	74			
	76			
	78			
	80			
	82			

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
TESTING LABORATORY

## LOG OF BORING

CO., RT. NO. SEC. CUYAHOGA-CLEVELAND BRIDGE NO. \_\_\_\_\_  
WILLOW INNERBELT INTERCHANGE \_\_\_\_\_  
 LOCATION: T.H.B.-111 STA. \_\_\_\_\_ OFFSET \_\_\_\_\_ FED. NO. \_\_\_\_\_

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
673.0	0			
	2			Brick & Cinders
	4			
688.0	6	9/10	84989	Brown Silty Sand
	8			
663.0	10	7/17	84990	Brown Silty Gravelly Sand
	12			
	14			
658.0	16	8/33	84991	Brown Silty Sand
	18			
653.0	20	6/12	84992	Brown Silty Sand
	22			
	24			
648.0	26	9/17	84993	Brown Silty Sand
	28			
643.0	30	15/25	84994	Brown Silty Sand
	32			
	34			
638.0	36	38/55	84995	Brown Silty Sand

4-17-58

RC

LOG OF BORING (CONTINUED)

SHEET 15

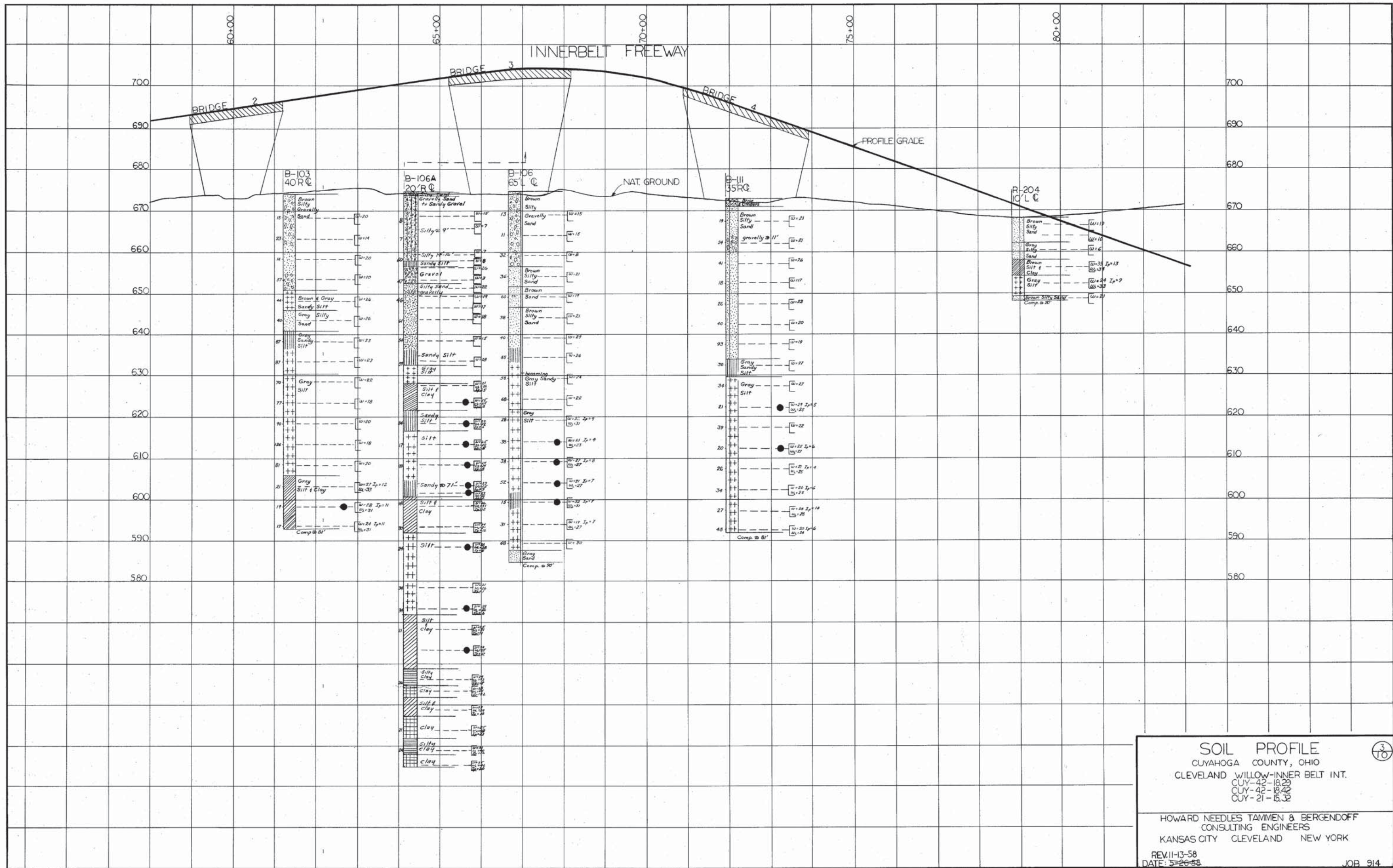
BRIDGE NO. \_\_\_\_\_ T.H. R-111

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
	38			
633.0	40	10/26	84996	Gray Sandy Silt
	42			
	44			
628.0	46	17/17	84997	Gray Silt
	48			
623.0	50	9/12	84998	Gray Silt
	52			
	54			
618.0	56	12/27	84999	Gray Silt
	58			
613.0	60	7/13	85000	Gray Silt
	62			
	64			
608.0	66	9/17	85001	Gray Silt
	68			
603.0	70	15/19	85002	Gray Silt
	72			
	74			
598.0	76	12/15	85003	Gray Silt
	78			
593.0	80	15/30	85004	Gray Silt
592.0	82			BOTTOM OF BORING

4-17-58

RC





3  
10

**SOIL PROFILE**  
 CUYAHOGA COUNTY, OHIO  
 CLEVELAND WILLOW-INNER BELT INT.  
 CUY-42-18.29  
 CUY-42-18.42  
 CUY-21-15.32

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HOWARD NEEDLES TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY CLEVELAND NEW YORK

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REV. 11-13-58  
 DATE: 5-26-58

JOB 914

STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
TESTING LABORATORY

LOG OF BORING

CO., RT. NO., SEC. CUYAHOGA-CLEVELAND BRIDGE NO. \_\_\_\_\_  
WILLOW INNERBELT INTERCHANGE

LOCATION: T.H. B-114 STA. \_\_\_\_\_ OFFSET \_\_\_\_\_ FED. NO. \_\_\_\_\_

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
678.6	0			
	2			
	4			
673.6	6	-----	-----	Brown Sandy Gravel-Fill
	8			
668.6	10	7/7	85279	Brown Sand
	12			
	14			
663.6	16	10/10	85280	Brown Gravel & Sandstone Fragments
	18			
658.6	20	23/27	85281	Gray Sand & Stone Fragments
	22			
	24			
653.6	26	25/30	85282	Gray Gravelly Sand
	28			
648.6	30	25/38	85283	Gray Silty Gravelly Sand
	32			
	34			
643.6	36	45/56	85284	Gray Silty Sand

4-17-58

RC

LOG OF BORING (CONTINUED)

SHEET 17

BRIDGE NO. \_\_\_\_\_ T.H. E-114

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
638.6	38	13/13	85285	Gray Silty Sand
	40			
	42			
	44			
633.6	46	8/17	85286	Gray Sandy Silt
	48			
	50			
628.6	52	37/40	85287	Gray Silt
	54			
	56			
623.6	58	21/24	85288	Gray Silt
	60			
	62			
618.6	64	18/33	85289	Gray Silt (Layer of Fine Sand & Gravel)
	66			
	68			
613.6	70	10/16	85290	Gray Sandy Silt
	72			
	74			
607.6	76	10/18	85291	Gray Silt
	78			
	80			
603.6	82	20/27	85292	Gray Silt
	84			
	86			
598.6	88	-----	85293	Gray Silt
	90			

4-17-58

RC

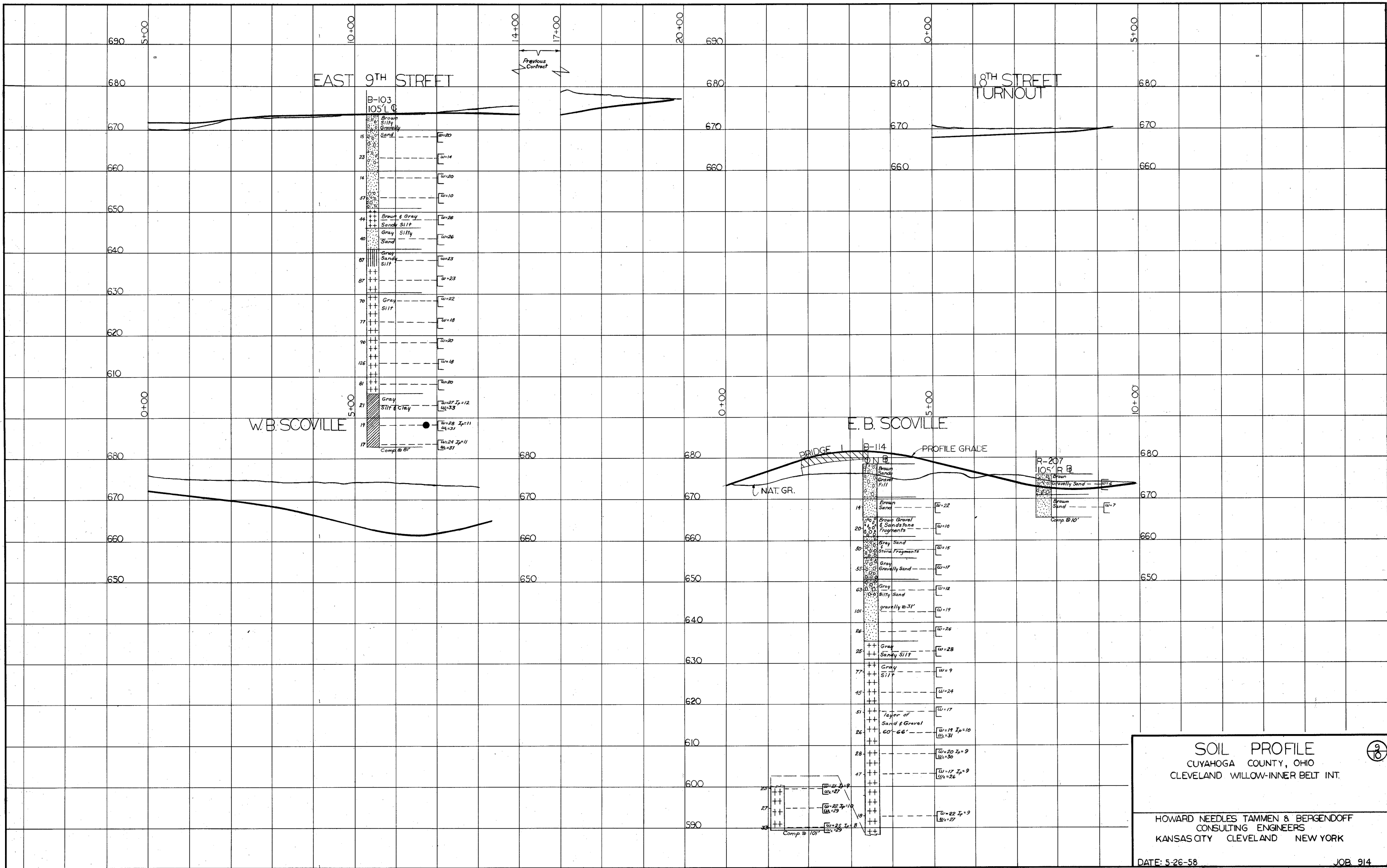
LOG OF BORING (CONTINUED)

SHEET 18

BRIDGE NO. \_\_\_\_\_ T.H. B-114

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
593.6	84	5/13	85294	Gray Silt
	86			
	88			
588.6	90	7/18	85295	Gray Silt
	92			
	94			
583.6	96	11/16	85296	Gray Silt
	98			
	100			
578.6 577.6		14/19	85297	Gray Silt
	56			BOTTOM OF BORING
	58			
	60			
	62			
	64			
	66			
	68			
	70			
	72			
	74			
	76			
	78			
	80			
	82			

4-17-58 *ec*



**SOIL PROFILE**  
 CUYAHOGA COUNTY, OHIO  
 CLEVELAND WILLOW-INNER BELT INT.

HOWARD NEEDLES TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY CLEVELAND NEW YORK

DATE: 5-26-58 JOB 914



STATE OF OHIO  
DEPARTMENT OF HIGHWAYS  
TESTING LABORATORY

## LOG OF BORING

CO., RT. NO., SEC. CUYAHOGA-CLEVELAND BRIDGE NO. CUY  
WILLOW INNERBELT INTERCHANGE  
 LOCATION: T.H. B-121 STA. \_\_\_\_\_ OFFSET \_\_\_\_\_ FED. NO. \_\_\_\_\_

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
678.1	0			
	2			
	4			
673.1	6	7/10	86061	Brown Sand
	8			
668.1	10	7/13	86062	Brown Silty Sand
	12			
	14			
663.1	16	12/16	86063	Brown Silty Sand
	18			
658.1	20	17/26	86064	Brown Silt
	22			
	24			
653.1	26	23/25	86065	Brown Silty Gravelly Sand
	28			
648.1	30	26/58	86066	Grayish-Brown Silty Sand
	32			
	34			
643.1	36	16/18	86067	Grayish-Brown Sandy Silt

4-17-58

RC

## LOG OF BORING (CONTINUED)

CUYAHOGA-CLEVELAND

BRIDGE NO. WILLOW TOWER BLT IMPROV T.H. B-121

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
638.1	38	29/44	86068	Gray Silty Sand
	40			
	42			
	44			
633.1	46	21/36	86069	Gray Silt
	48			
628.1	50	20/42	86070	Gray Silt
	52			
	54			
623.1	56	15/20	86071	Gray Silt
	58			
618.1	60	32/43	86072	Gray Silt
	62			
	64			
613.1	66	32/24	86073	Gray Silt
	68			
608.1	70	10/16	86074	Gray Silt
	72			
	74			
603.1	76	6/9	86075	Gray Silt
	78			
	80			
598.1	80	14/21	86076	Gray Silt
	82			

4-17-58

RC

LOG OF BORING (CONTINUED)

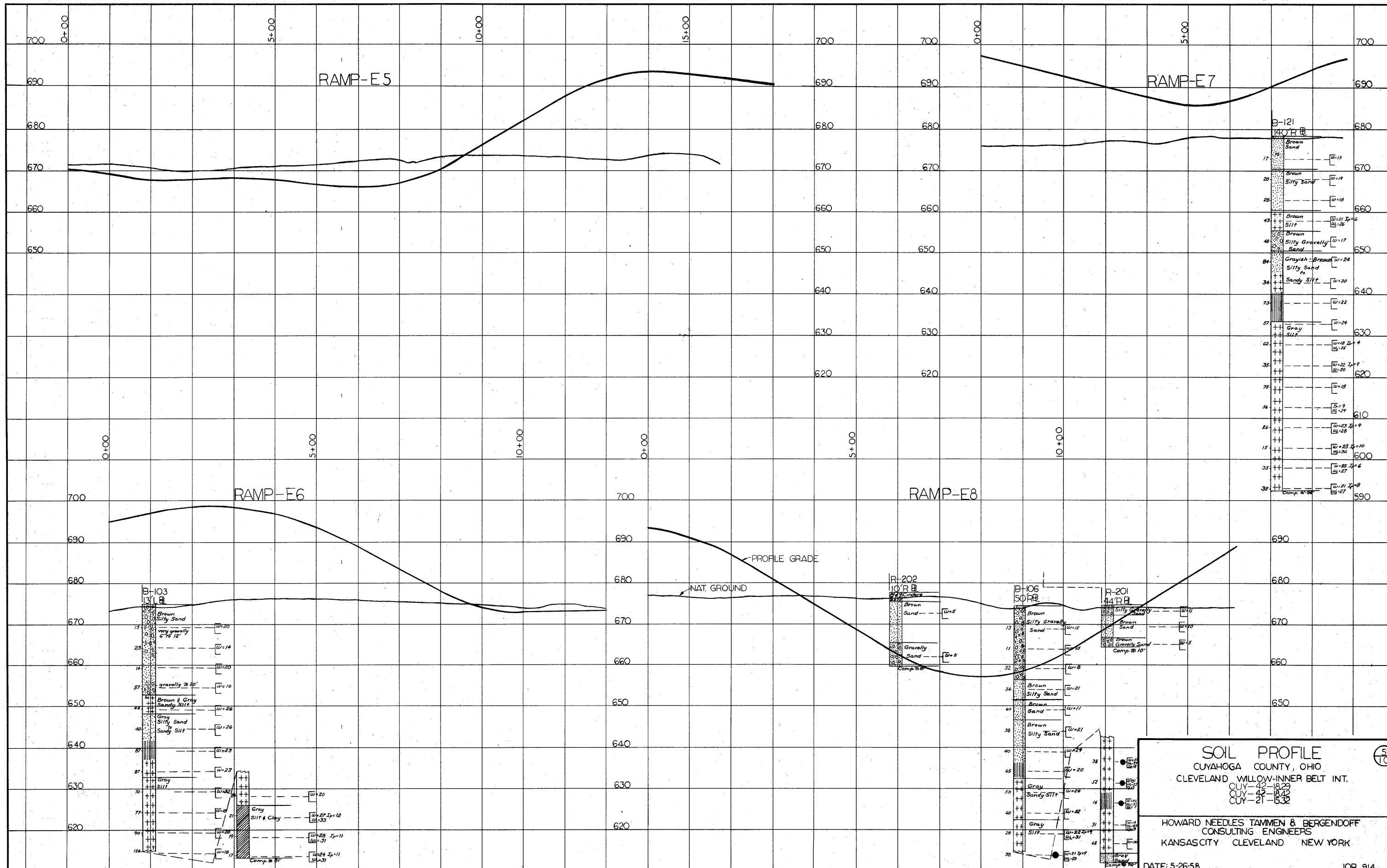
SHEET 23

GUYAHOGA-CLEVELAND  
 BRIDGE NO. WILLOW INNERBELT INTERCH. T.H. B-121

ELEV.	DEPTH	NO. BLOWS	SAMPLE NO.	DESCRIPTION
	84			
593.1 592.1	86	12/23	86077	Gray Silt
	88			BOTTOM OF BORING
	90			
	92			
	94			
	96			
	98			
	100			
	102			
	104			
	106			
	108			
	110			
	112			
	114			
	116			
	118			
	120			
	122			
	124			
	126			
	128			
	130			
	132			

4-17-58  
 RC





RAMP-E5

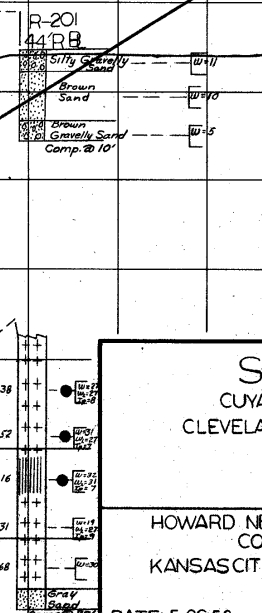
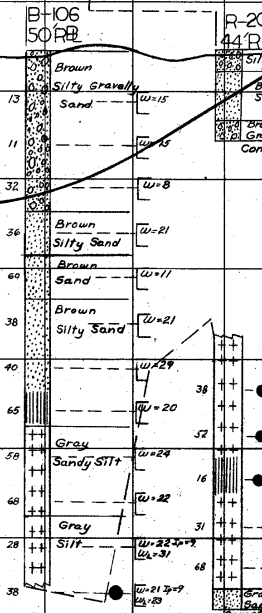
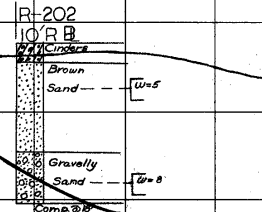
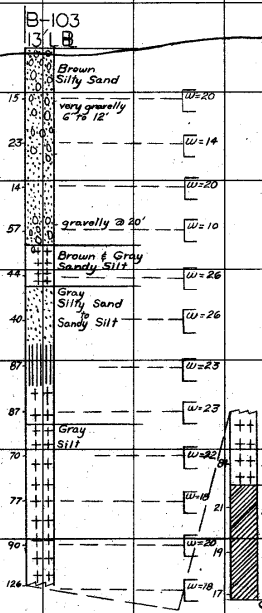
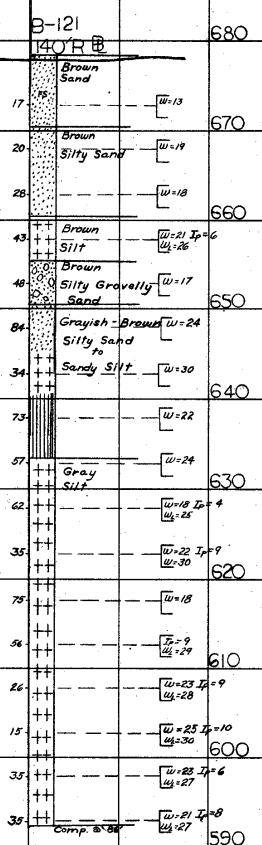
RAMP-E7

RAMP-E6

RAMP-E8

PROFILE GRADE

NAT. GROUND

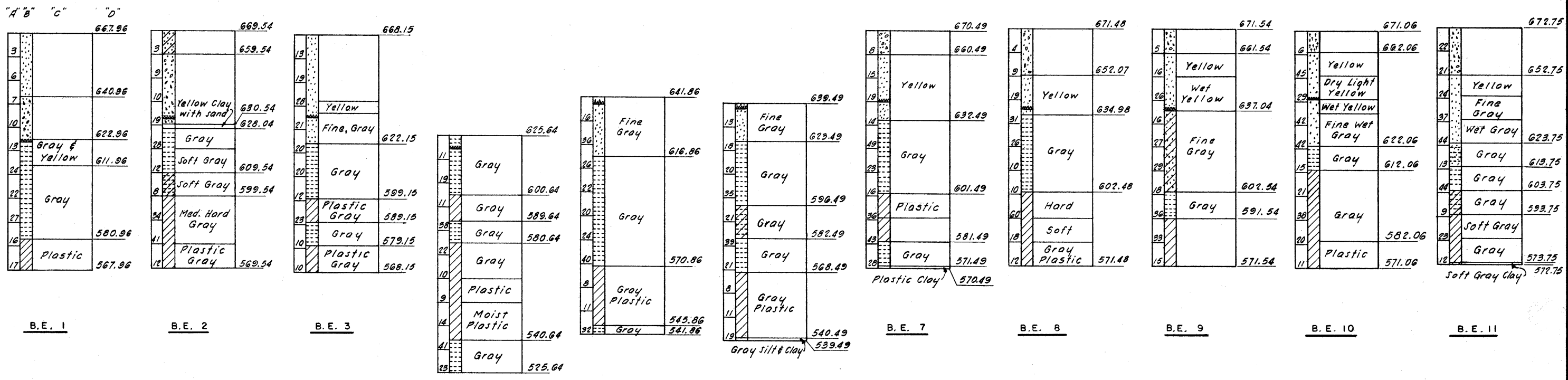


REVISIONS  
FEB 23 1956

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS
2	OHIO		

41  
117

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
INNER BELT FREEWAY  
EAST APPROACH VIADUCT  
CUY-42-(1743-18.02)



BORING LOGS  
Vert. 1" = 20"

SOIL LEGEND

- Sand
- Sand & Gravel
- Sand & Clay
- Sand & Silt
- Silt
- Silt & Clay
- Clay
- Cinders & Debris
- Ground Water

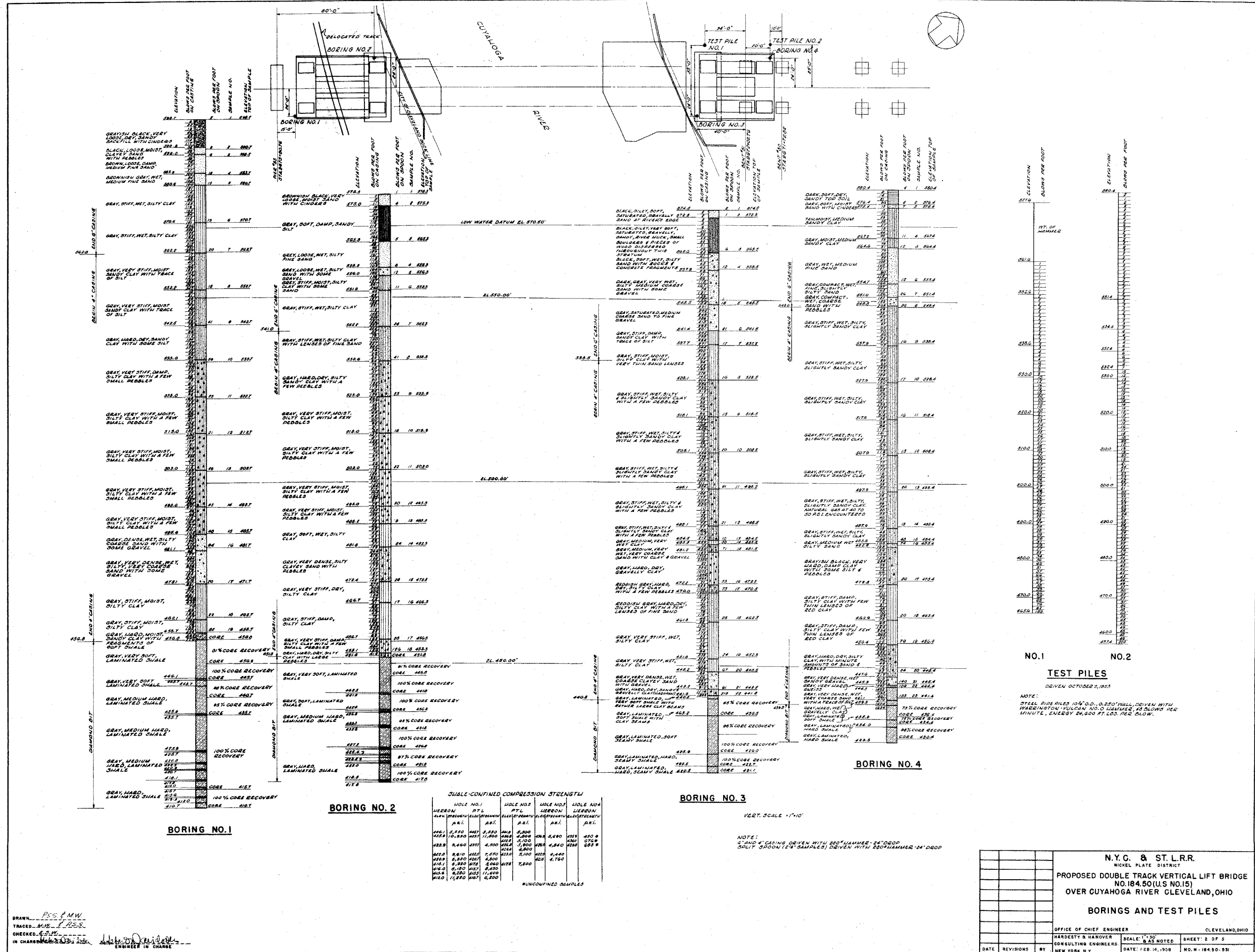
NOTES:  
With reference to B.E. 1  
In Column "A" the figures 3, 6, 7 etc. are the hammer blows required to advance sample spoon one foot.  
Column "B" shows the legend of soil type and ground water elevations.  
Column "C" shows soil classification.  
Column "D" shows elevation of soil levels. Elevation at top is top of ground, elevation at bottom is bottom of hole.  
Boring information, logs and samples of materials encountered may be examined in the Cleveland City Engineers Office but the borings are not guaranteed to present complete picture of subsurface conditions to be encountered.

U. S. ROUTE 42 RELOCATION  
INNER BELT FREEWAY  
EAST APPROACH VIADUCT  
BR. NO. CUY-42-1750

BORING LOGS  
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE: As Noted  
MADE INFO DATE 11-12-56  
TRCD DATE 2-7-57  
CHK DATE 12-17-56

HOWARD, NEEDLES, TAMMEN & BERGENOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
914 (2E) B SHEET-41



DRAWN: P.S. & M.W.  
 TRACED: M.S. & P.S.  
 CHECKED: E.T.M.  
 IN CHARGE: [Signature]



**N.Y.C. & ST. L.R.R.**  
 NICKEL PLATE DISTRICT  
 PROPOSED DOUBLE TRACK VERTICAL LIFT BRIDGE  
 NO. 184.50 (U.S. NO. 15)  
 OVER CUYAHOGA RIVER CLEVELAND, OHIO

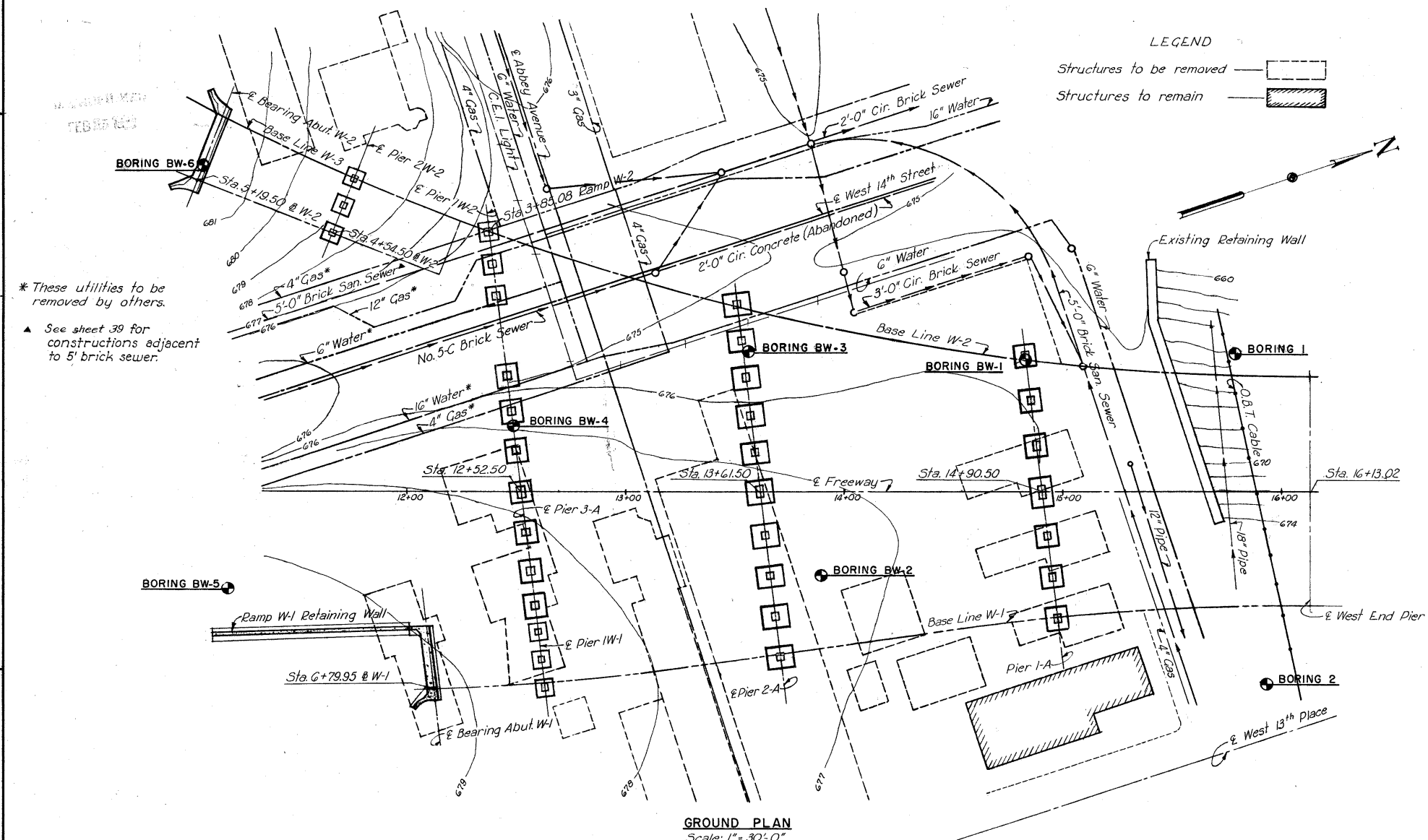
**BORINGS AND TEST PILES**

OFFICE OF CHIEF ENGINEER CLEVELAND, OHIO  
 HARDESTY & HANOVER SCALE: 1" = 20' SHEET: 2 OF 5  
 CONSULTING ENGINEERS DATE: FEB. 14, 1958 NO. N-184.50-31  
 NEW YORK, N.Y.

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
INNER BELT FREEWAY  
WEST APPROACH VIADUCT  
CUY-42R-17.43

LEGEND

Structures to be removed   
Structures to remain 



\* These utilities to be removed by others.  
▲ See sheet 39 for constructions adjacent to 5' brick sewer.

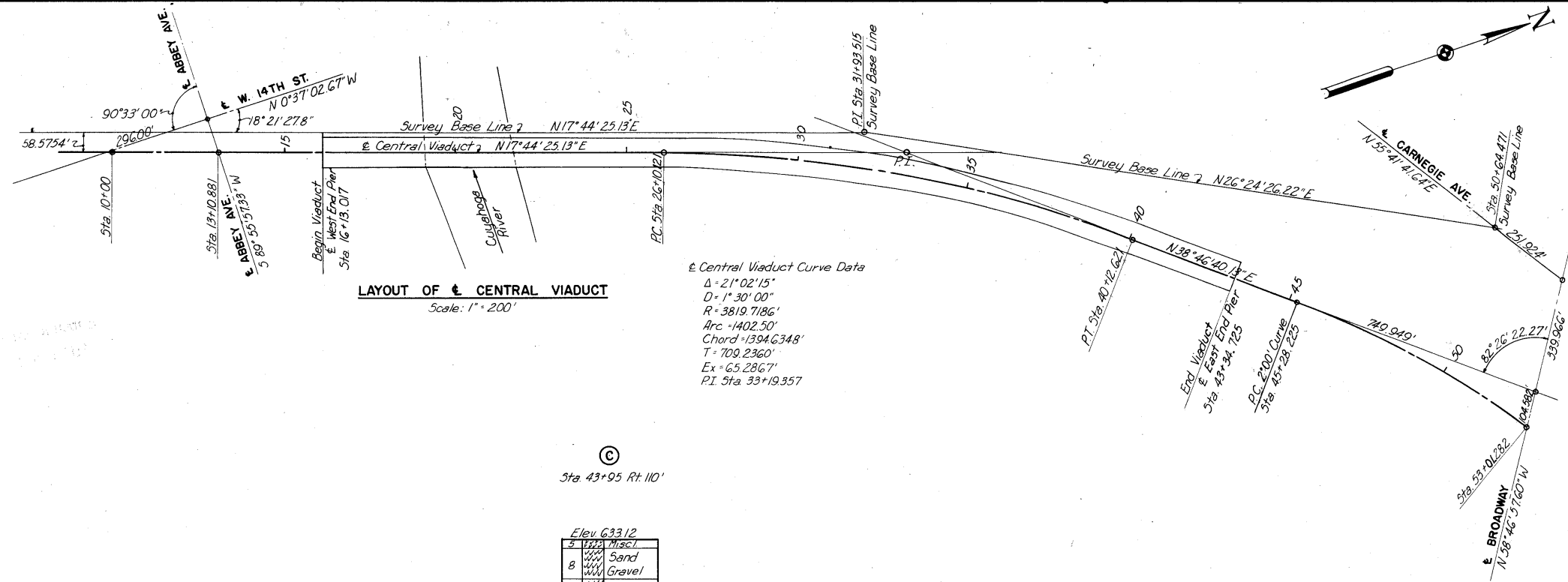
GROUND PLAN  
Scale: 1"=30'-0"

Boring	Depth (ft)	Soil Description	Elevation (ft)
BW-1	4	Small Gravel	657.8
	13		657.8
	18		633.8
	20	Wet	633.8
	18	Fine	623.8
	24		613.8
	26	Plastic	
	42		
	16		
	12	Moist Plastic	575.8
BW-2	4	Dirty	678.5
	9		666.5
	9	Small	653.0
	41		654.0
	51	Yellow	
	40	Wet, Yellow	
	52	Gray	
	297	Fine	618.5
	22		617.5
	52	Plastic	
31			
21		578.5	
BW-3	8	Coarse	674.7
	25		
	21		
	29	Fine	626.7
	18		
	20	Gray	
	15		
	39		594.7
	11	Plastic	
	8	Moist, Plastic	574.7
BW-4	11		667.1
	15	Yellow	655.1
	31	Yellow	650.6
	31	Yellow, Dry	649.6
	54	Gray	
	19	Yellow	625.1
	6	Soft & Plastic	
	17		
	29		595.1
	16	Gray	
10	Gray, Plastic	575.1	
BW-5	6	Coarse Sand	679.6
	34		659.6
	20	Fine	
	46		
	15	Fine Gray	621.6
	38	Gray	
	12	Gray Moist	609.6
	18	Gray Plastic	
	14		
	12	Moist, Gray Plastic	579.6
BW-6	9	Yellow	664.5
	37		665.5
	37		661.5
	22	Yellow	
	28	Gray	
	84	Fine Gray	631.5
	138	Fine Dry	621.5
	10	Gray	611.5
	44	Gray, Medium Hard	
	23	Gray Soft, Plastic	581.5
BORING 1	AS	Coarse	675.2
	7	Medium	673.7
	9		
	15	Coarse Med. Wet	647.2
	15		
	73	Med. Wet	
	15		
	35	Fine, Wet	617.2
	73	Fine, Wet	614.2
	9	Stiff	
BORING 2	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING I	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING II	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING III	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING IV	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING V	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING VI	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING VII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING VIII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING IX	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING X	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XI	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XIII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XIV	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XV	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XVI	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XVII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XVIII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XIX	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XX	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXI	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXIII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXIV	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXV	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXVI	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXVII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXVIII	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXIX	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	615.0
	11		
	6	Medium	
BORING XXX	AS		666.3
	11		659.8
	12	Compact Medium	658.5
	14		
	16	Compact, Med. Wet	
	18	Compact, Fine, Wet	
	75		
	21	Stiff	61

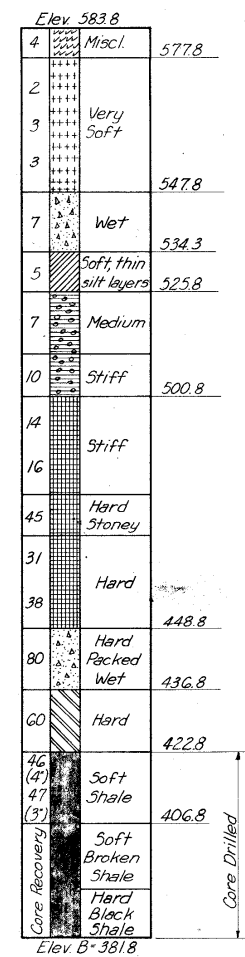
MICROFILMED  
FEB 15 1983

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NO.	TYPE FUNDS	7 122
2	OHIO			

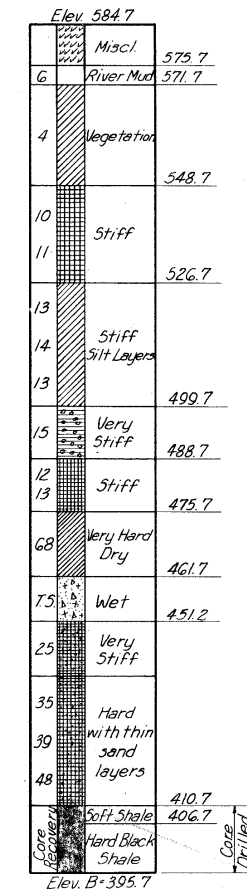
CUYAHOGA COUNTY  
CITY OF CLEVELAND  
INNER BELT FREEWAY  
CENTRAL VIADUCT  
CUY - 42 R - 17.50



(A)  
Sta. 29+53 Rt. 265

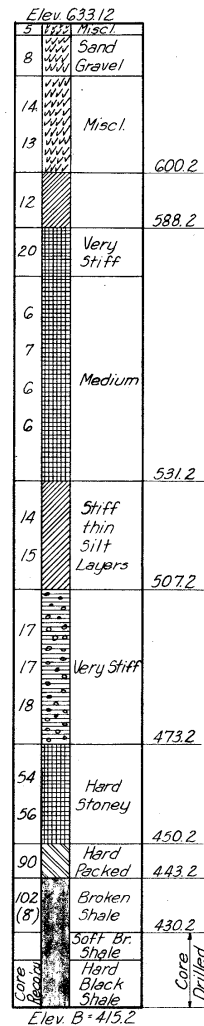


(B)  
Sta. 37+10 Rt. 205'



TEST HOLE BORINGS A, B AND C

(C)  
Sta. 43+95 Rt. 110'

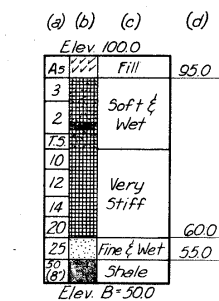


GENERAL NOTES

SOIL LEGEND

- Misc.
- Fill
- Clay
- Sand
- Silt
- Silty Sand
- Silty Clay
- Sandy Clay
- Pebbly Clay
- Sand and Gravel
- Silt, Sand and Gravel
- Sand, Clay and Gravel
- Rock
- Ground Water
- Trap Sample T.S.
- Auger Sample A.S.
- Tube Trap T.T.

BORING LEGEND



With reference to above example;  
 1. In column (a) the figures 2, 3, etc. are the hammer blows required to advance the casing one foot unless otherwise noted.  
 2. Column (b) shows the legend of soil types and ground water elevation.  
 3. Column (c) shows soil classification.  
 Elev. 100.0 is the ground level and Elev. B=50.0 is the bottom of the boring.  
 4. Column (d) shows the intermediate elevations of limits of different soil layers.

Misc. Notes: Vertical scale for boring 1" = 20'.  
 All samples taken with Split Type Tube, 2" O.D. x 15" I.D. and 4" steel casing unless otherwise noted.  
 Hammer wt. 140". Average Fall 30".

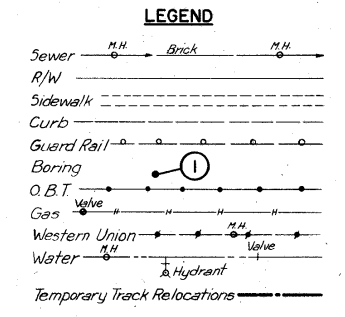
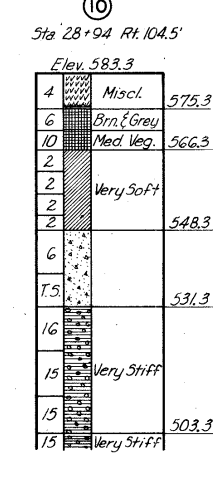
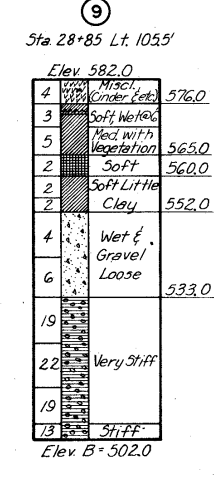
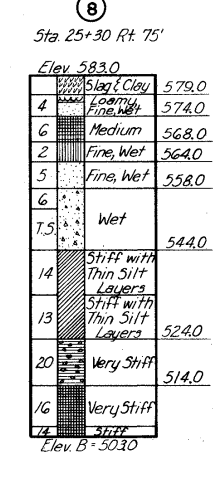
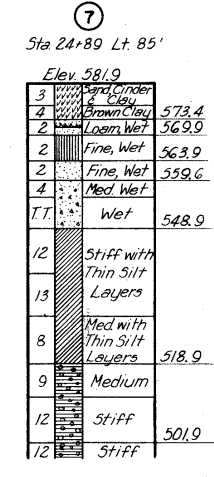
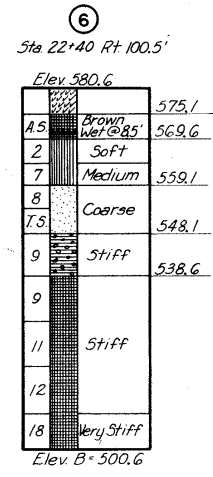
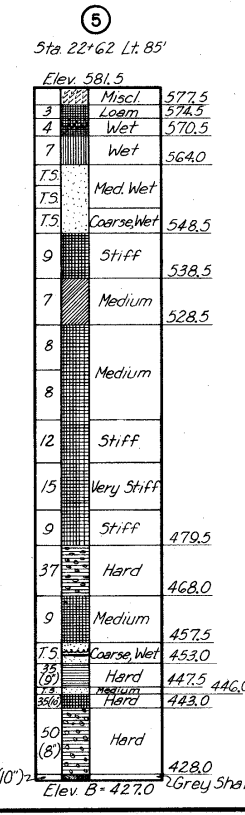
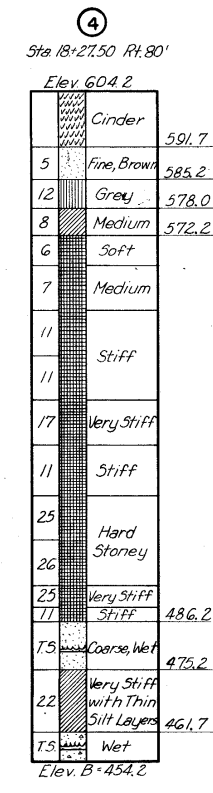
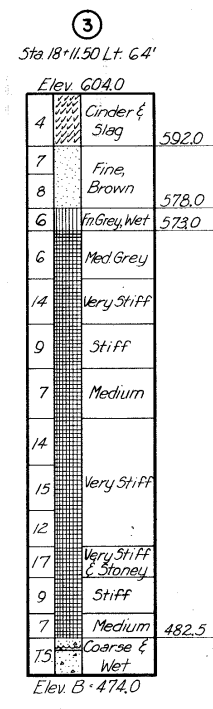
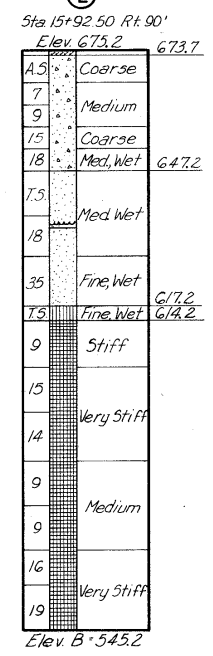
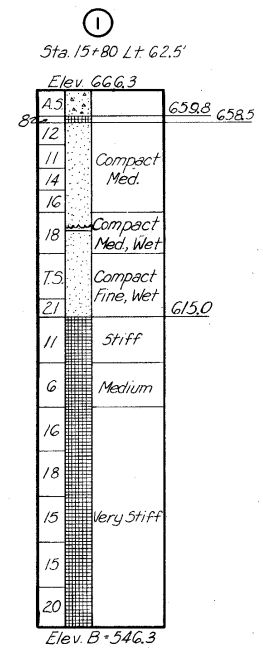
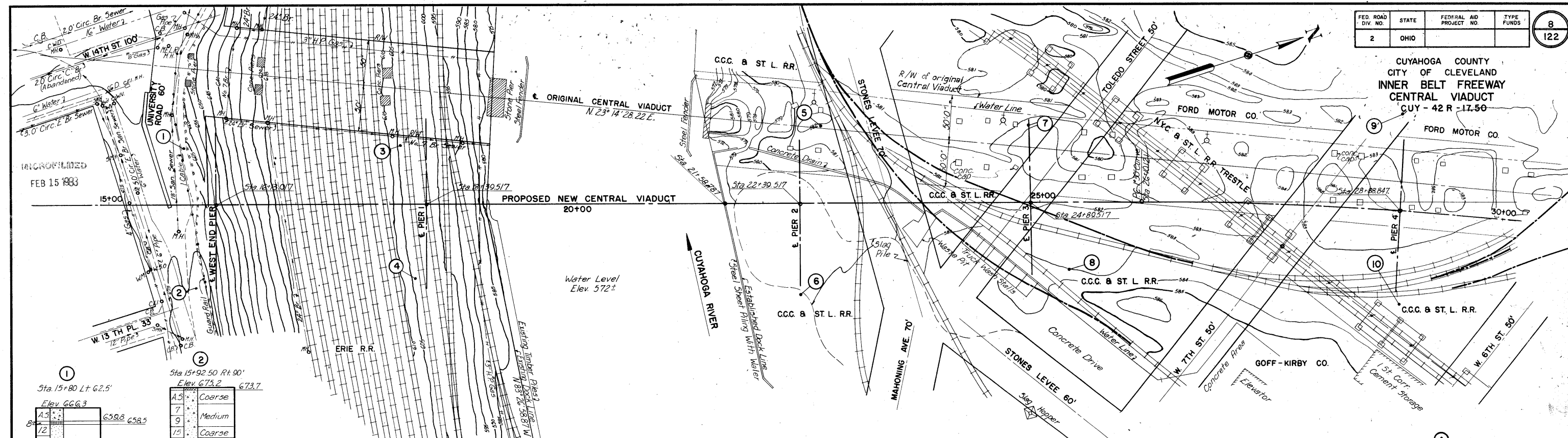
PART 3

U. S. ROUTE 42 RELOCATION  
INNER BELT FREEWAY - CENTRAL VIADUCT  
BR. NO. CU - 42 R - 17.5

GENERAL LAYOUT AND  
TEST HOLE BORINGS  
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE Vertical: 1" = 20'  
 MADE BY S. DATE 1-27-54  
 TRCD. NAME DATE 2-6-54  
 CKD. C.L.G. DATE 2-25-54  
 HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
 CONSULTING ENGINEERS  
 KANSAS CITY CLEVELAND NEW YORK  
 914-1A SHEET 2.07

CUYAHOGA COUNTY  
CITY OF CLEVELAND  
INNER BELT FREEWAY  
CENTRAL VIADUCT  
CUY - 42 R - 17.50



Notes: For general notes on borings and soil and boring legend, see Sheet 7.

PART 3

U. S. ROUTE 42 RELOCATION  
**INNER BELT FREEWAY - CENTRAL VIADUCT**  
BR. NO. CU - 42 R - 17.5'

**EXISTING CONDITIONS AND TEST HOLE BORINGS**

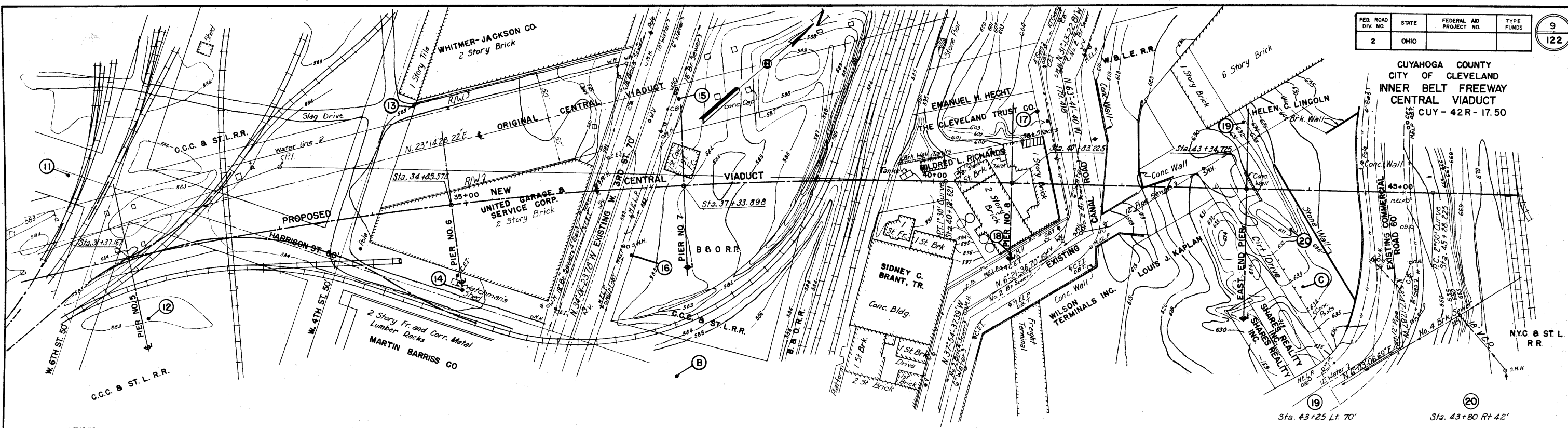
CLEVELAND CUYAHOGA COUNTY OHIO

SCALE: 1" = 20'  
MADE: 6.5. DATE: 11-2-54  
TRCD: 11. DATE: 11-54  
CKD: C.V.G. DATE: 2-25-54

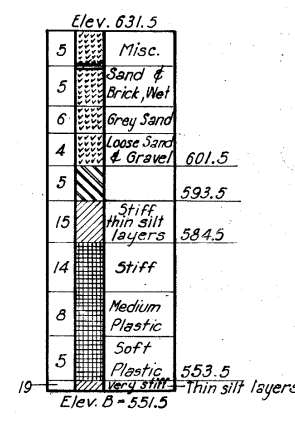
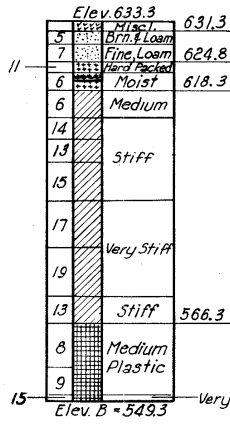
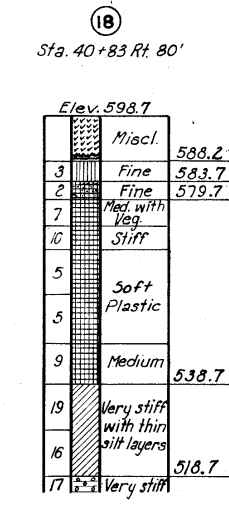
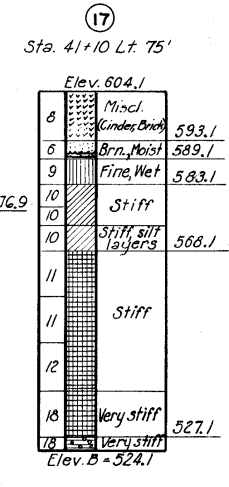
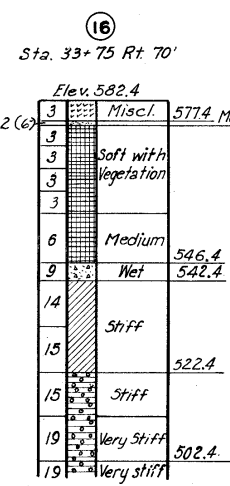
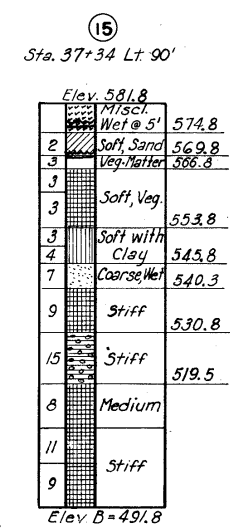
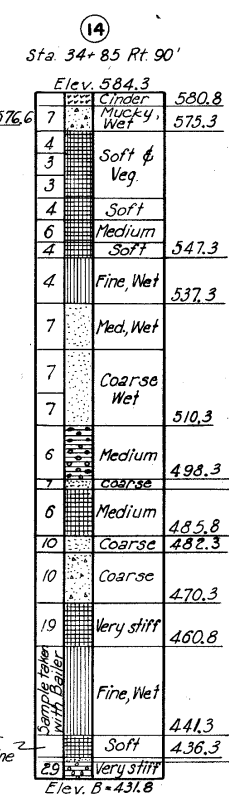
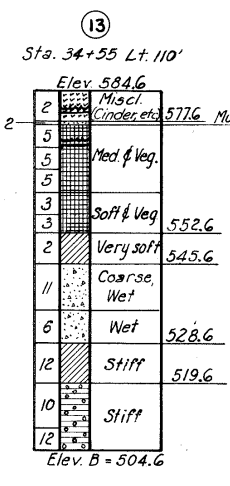
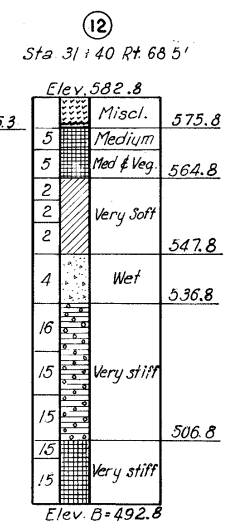
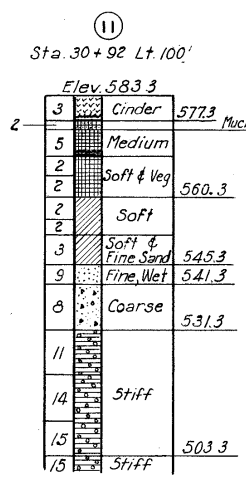
HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS  
KANSAS CITY CLEVELAND NEW YORK  
914-IA SHEET 2.08



CUYAHOGA COUNTY  
CITY OF CLEVELAND  
INNER BELT FREEWAY  
CENTRAL VIADUCT  
CUY-42R-17.50



MICROFILMED  
FEB 15 1983



Notes: For general notes on borings and soil and boring legend, see Sheet 7.  
Vertical scale for borings: 1" = 20'.  
For existing conditions legend, see Sheet 8.

PART 3

U. S. ROUTE 42 RELOCATION  
INNER BELT FREEWAY - CENTRAL VIADUCT  
BR. NO CU - 42R-17.50  
EXISTING CONDITIONS AND  
TEST HOLE BORINGS

CLEVELAND CUYAHOGA COUNTY OHIO

SCALE: 1" = 50', 20'  
MADE: 65 DATE: 1-13-54  
TRUCK: AH DATE: 1-12-54  
CKD: JG DATE: 2-26-54

HOWARD, NEEDLES, TAMMEN & BERGENDOFF  
CONSULTING ENGINEERS,  
KANSAS CITY CLEVELAND, NEW YORK  
914-IA SHEET- 2.09

## Central Viaduct

Test 1: C-49

Test 2-5: C-57

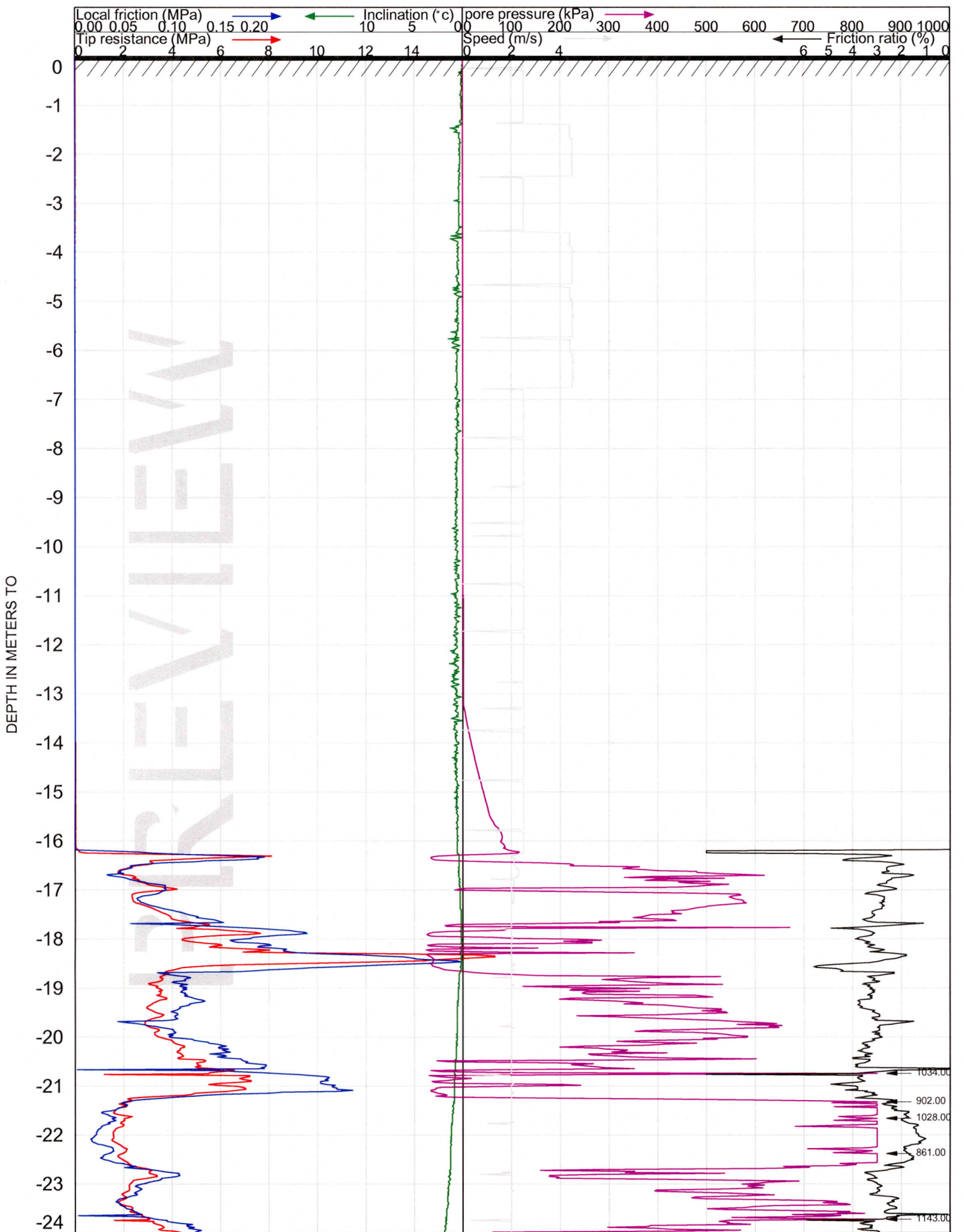
Test 2...tried without pre-coring

Test 3...tried without pre-coring

Test 4...tried with pre-coring down to 20-ft, inclination was too high at 35-ft

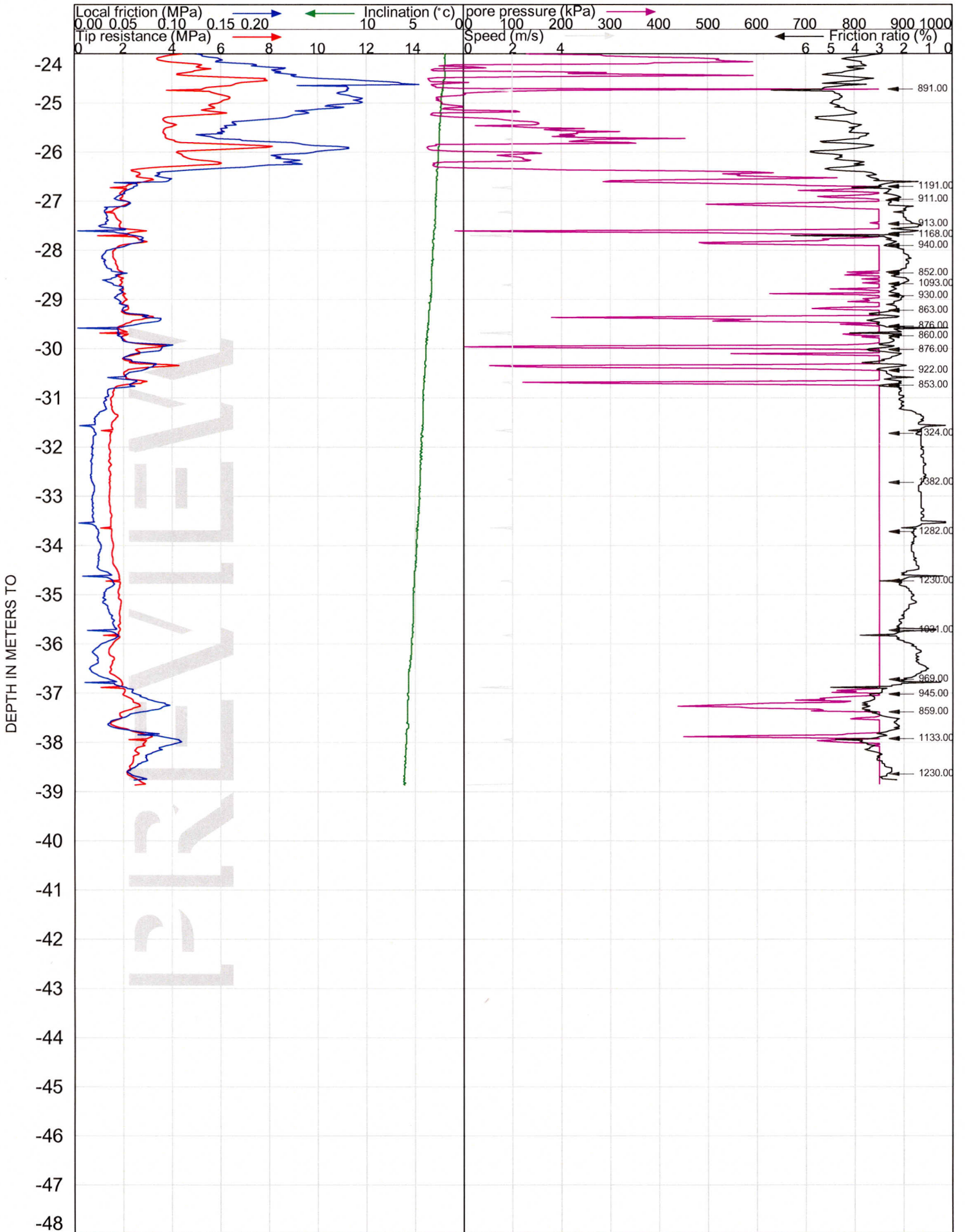
Test 5...pre-auger down to 40-ft; inclination too high at about 80-ft, aborted sounding.





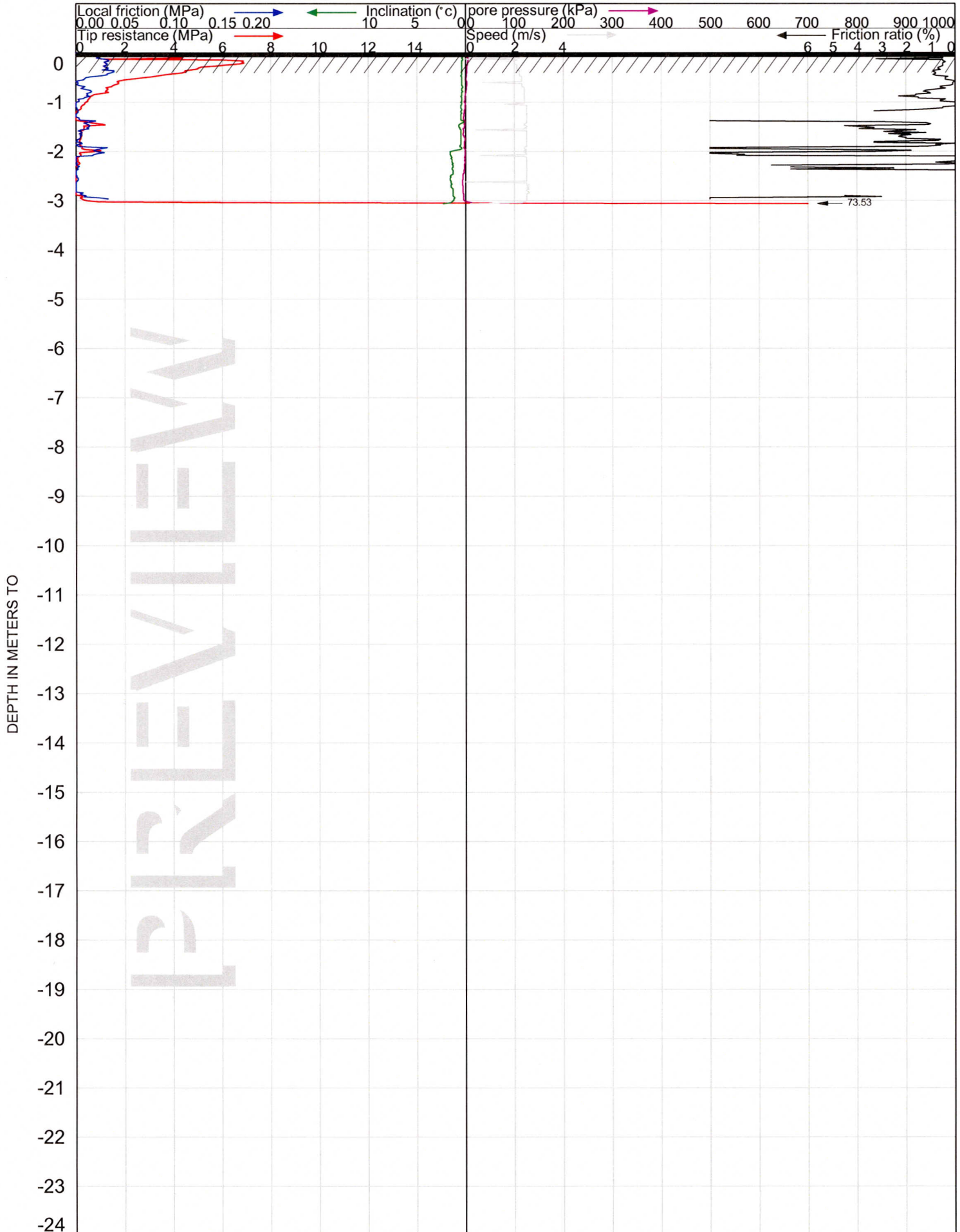
**JOB NR** : CentralViaduct  
**TEST NR** : 1  
**DATE** : 18/8/2009 **TIME** : 10:48:0

**OPERATOR** : Alex  
**REFERENCE LEVEL** : 0.0 m to  
**CONE TYPE** : I-CFYYP20-15 Nr. : 090304  
**INCLINOMETER** : Nr. :



JOB NR : CentralViaduct  
 TEST NR : 1  
 DATE : 18/8/2009 TIME : 10:48:0

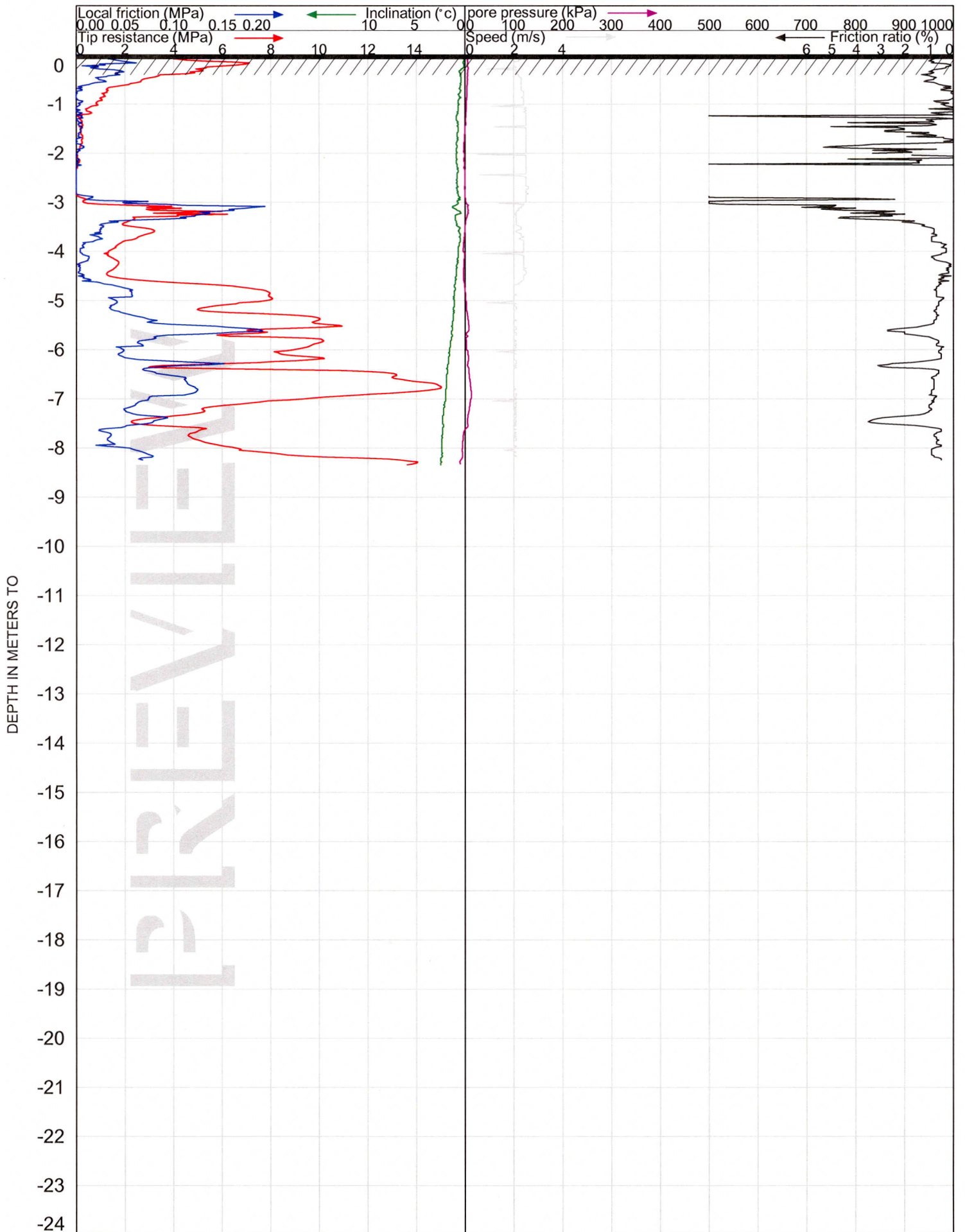
OPERATOR : Alex  
 REFERENCE LEVEL : 0.0 m to  
 CONE TYPE : I-CFYYP20-15 Nr. : 090304  
 INCLINOMETER : Nr. :



**JOB NR** : CentralViaduct  
**TEST NR** : 2  
**DATE** : 18/8/2009 **TIME** : 12:59:0

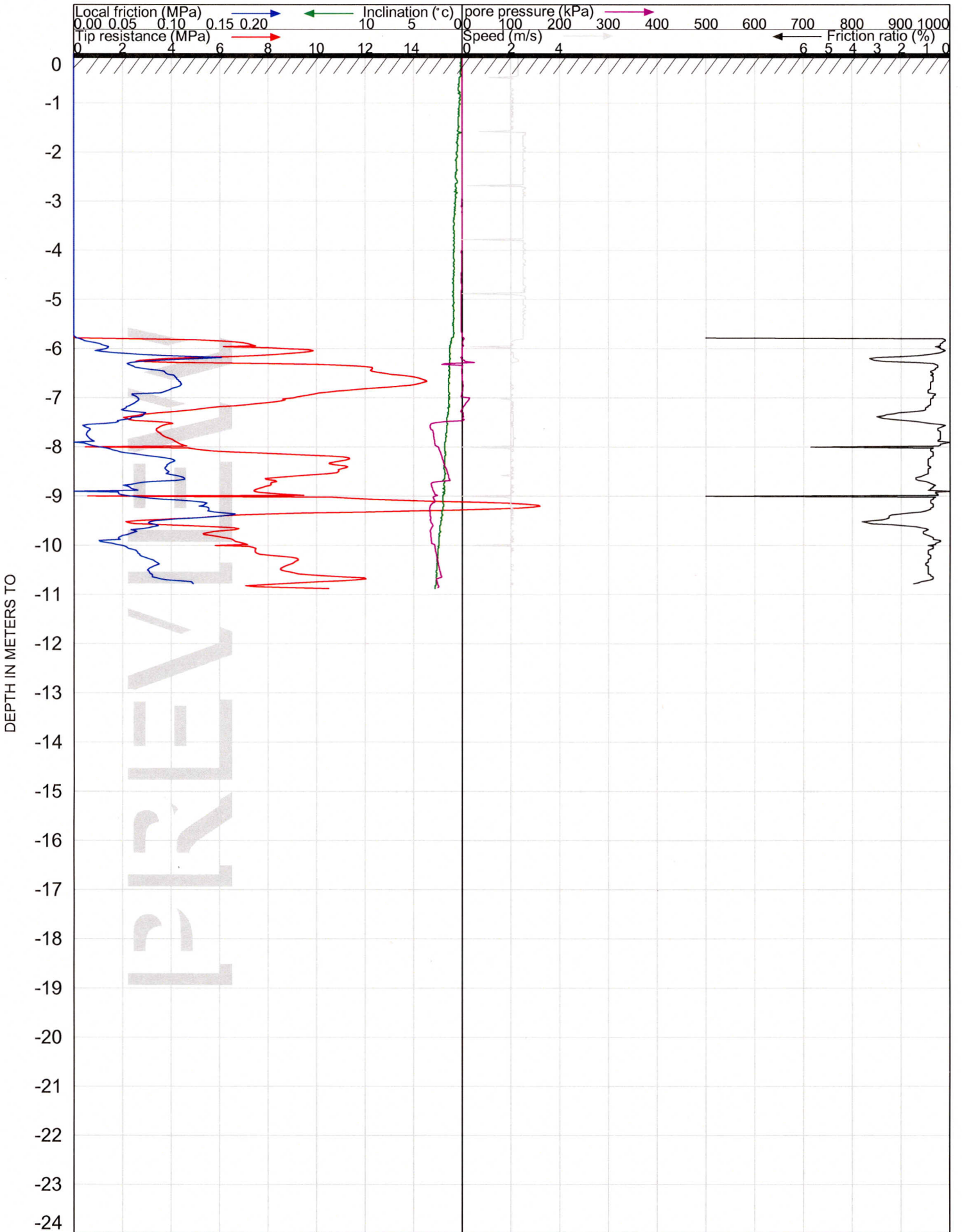
**OPERATOR** : Alex  
**REFERENCE LEVEL** : 0.0 m to  
**CONE TYPE** : I-CFY20-15 Nr. : 090304  
**INCLINOMETER** : Nr. :





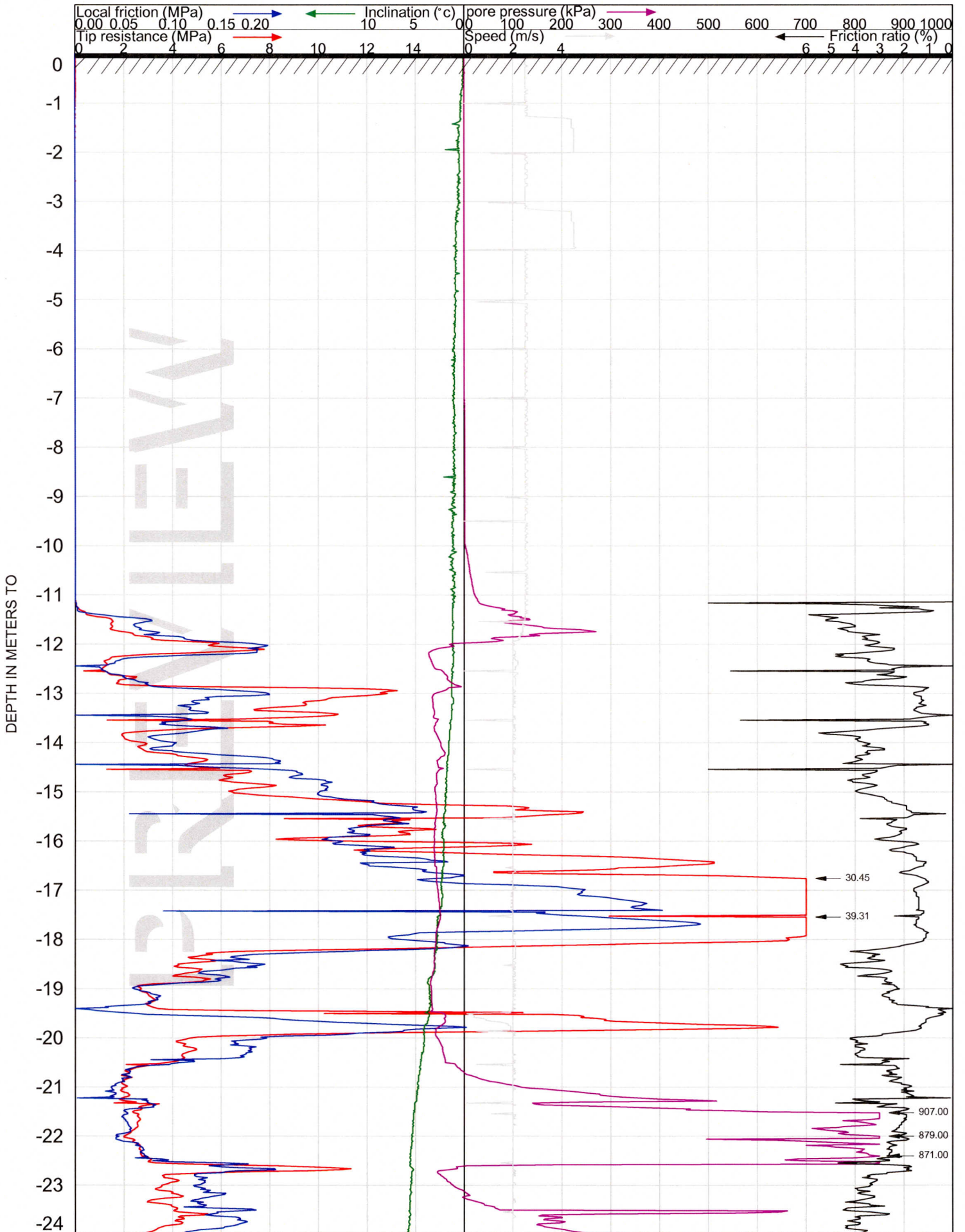
JOB NR : CentralViaduct  
 TEST NR : 3  
 DATE : 18/8/2009 TIME : 13:8:0

OPERATOR : Alex  
 REFERENCE LEVEL : 0.0 m to  
 CONE TYPE : I-CFYYP20-15 Nr. : 090304  
 INCLINOMETER : Nr. :



JOB NR : CentralViaduct  
 TEST NR : 4  
 DATE : 18/8/2009 TIME : 13:56:0

OPERATOR : Alex  
 REFERENCE LEVEL : 0.0 m to  
 CONE TYPE : I-CFY20-15 Nr. : 090304  
 INCLINOMETER : Nr. :



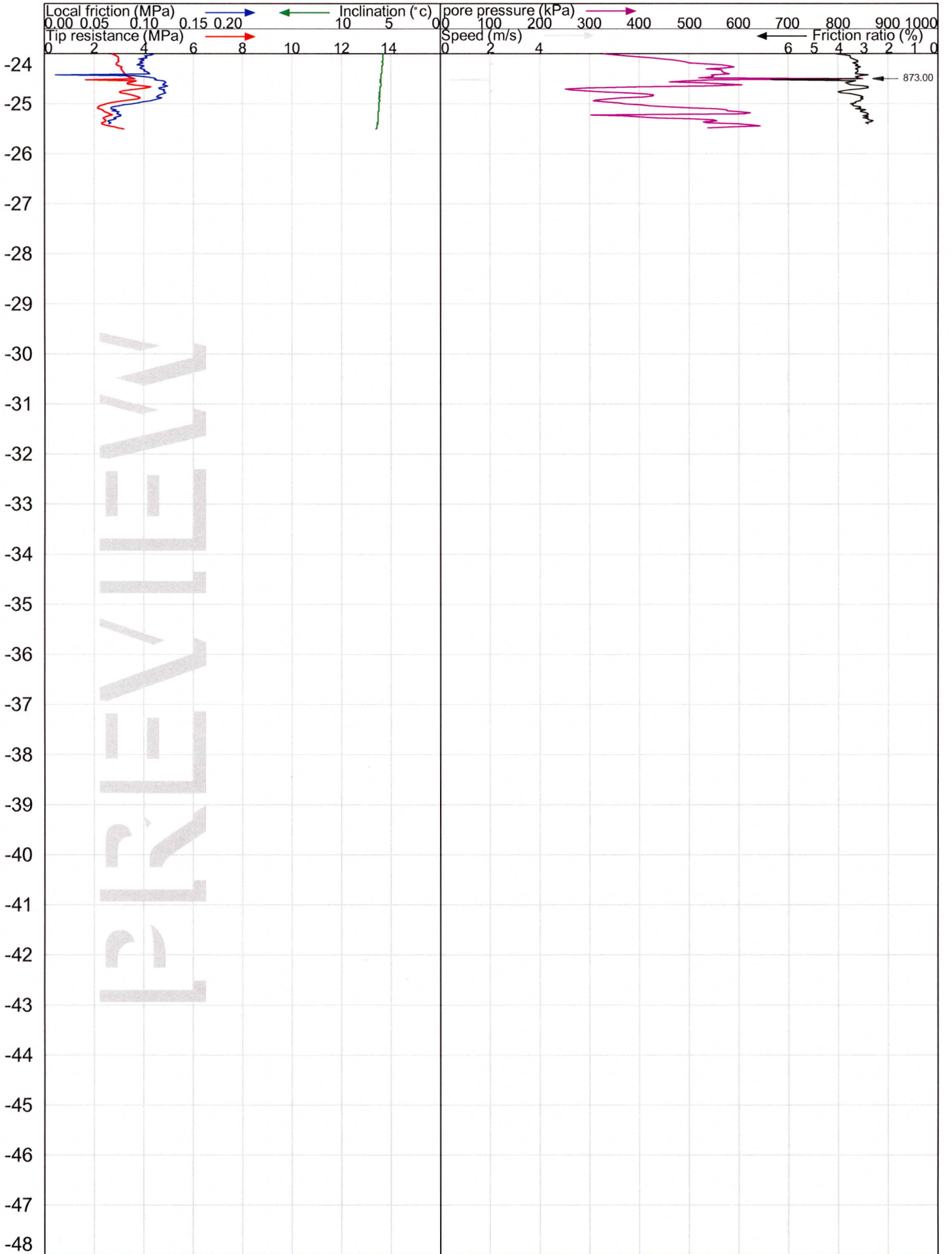
JOB NR : CentralViaduct  
 TEST NR : 5  
 DATE : 18/8/2009 TIME : 16:47:0

OPERATOR : Alex  
 REFERENCE LEVEL : 0.0 m to  
 CONE TYPE : I-CFY20-15 Nr. : 090304  
 INCLINOMETER : Nr. :

907.00  
 879.00  
 871.00



DEPTH IN METERS TO



JOB NR : CentralViaduct  
TEST NR : 5  
DATE : 18/8/2009 TIME : 16:47:0

OPERATOR : Alex  
REFERENCE LEVEL : 0.0 m to  
CONE TYPE : I-CFY20-15 Nr. : 090304  
INCLINOMETER : Nr. :

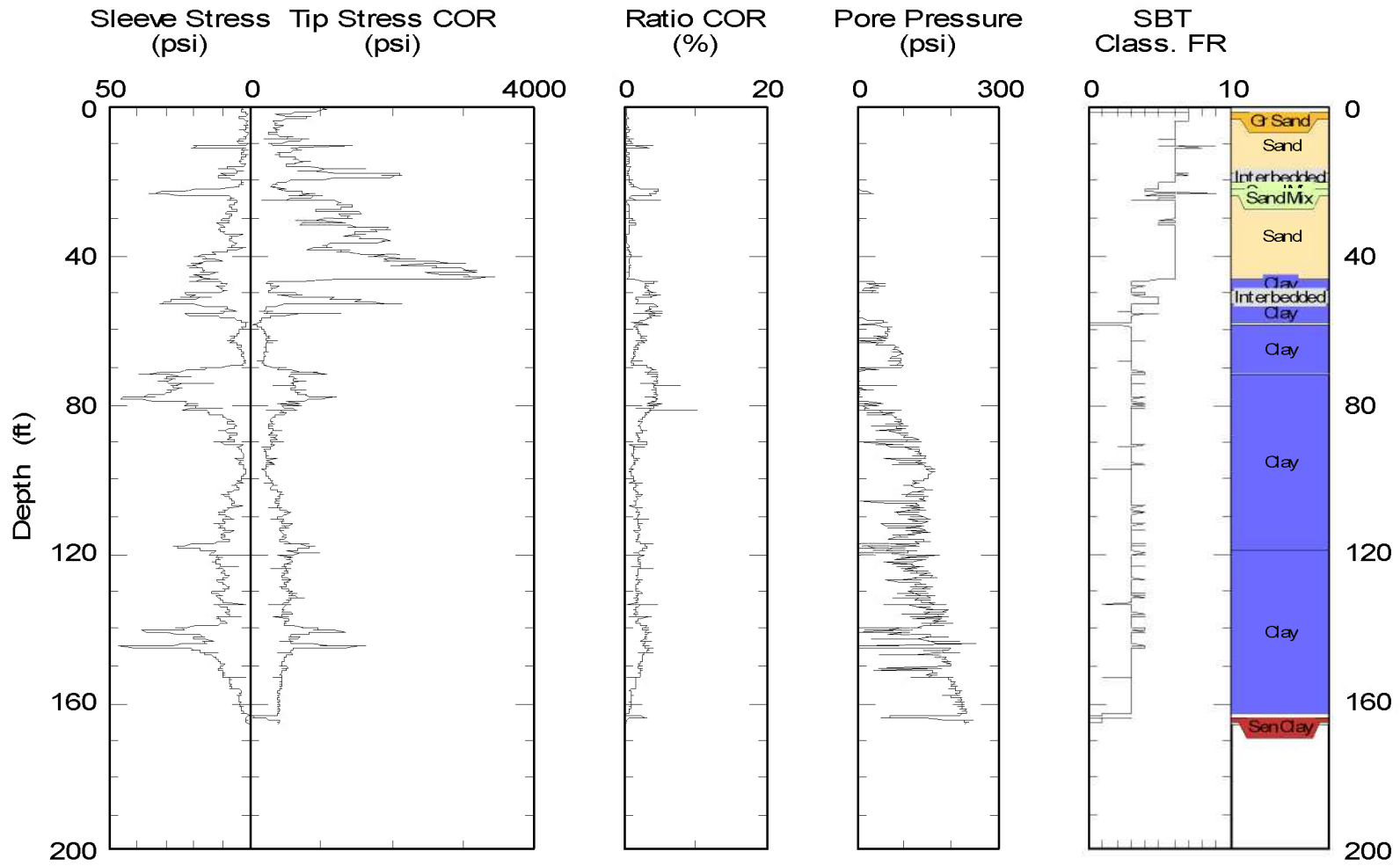


Plate 1: Cone Penetration Testing Results for C-05-01



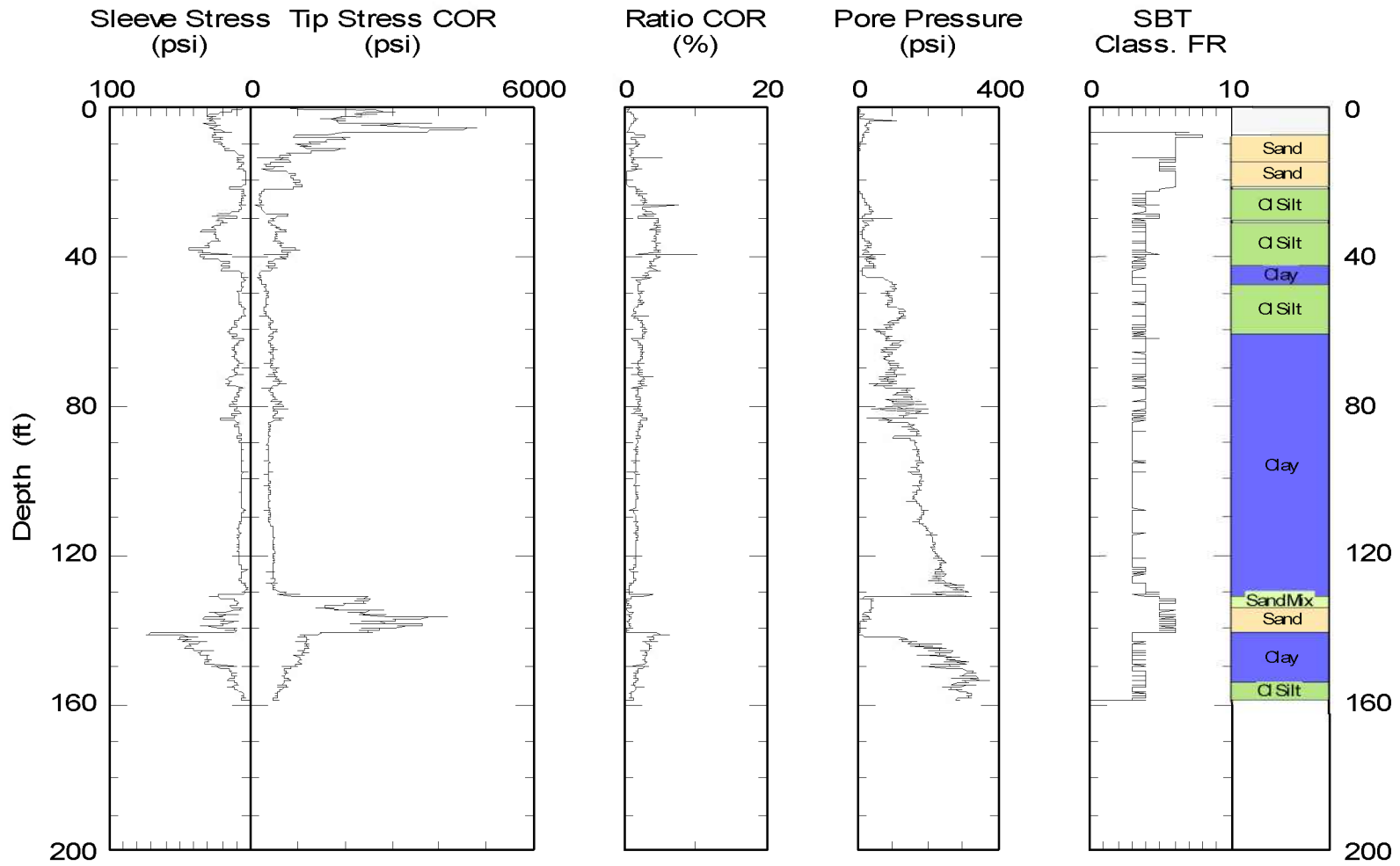


Plate 3: Cone Penetration Testing Results for C-05-02.

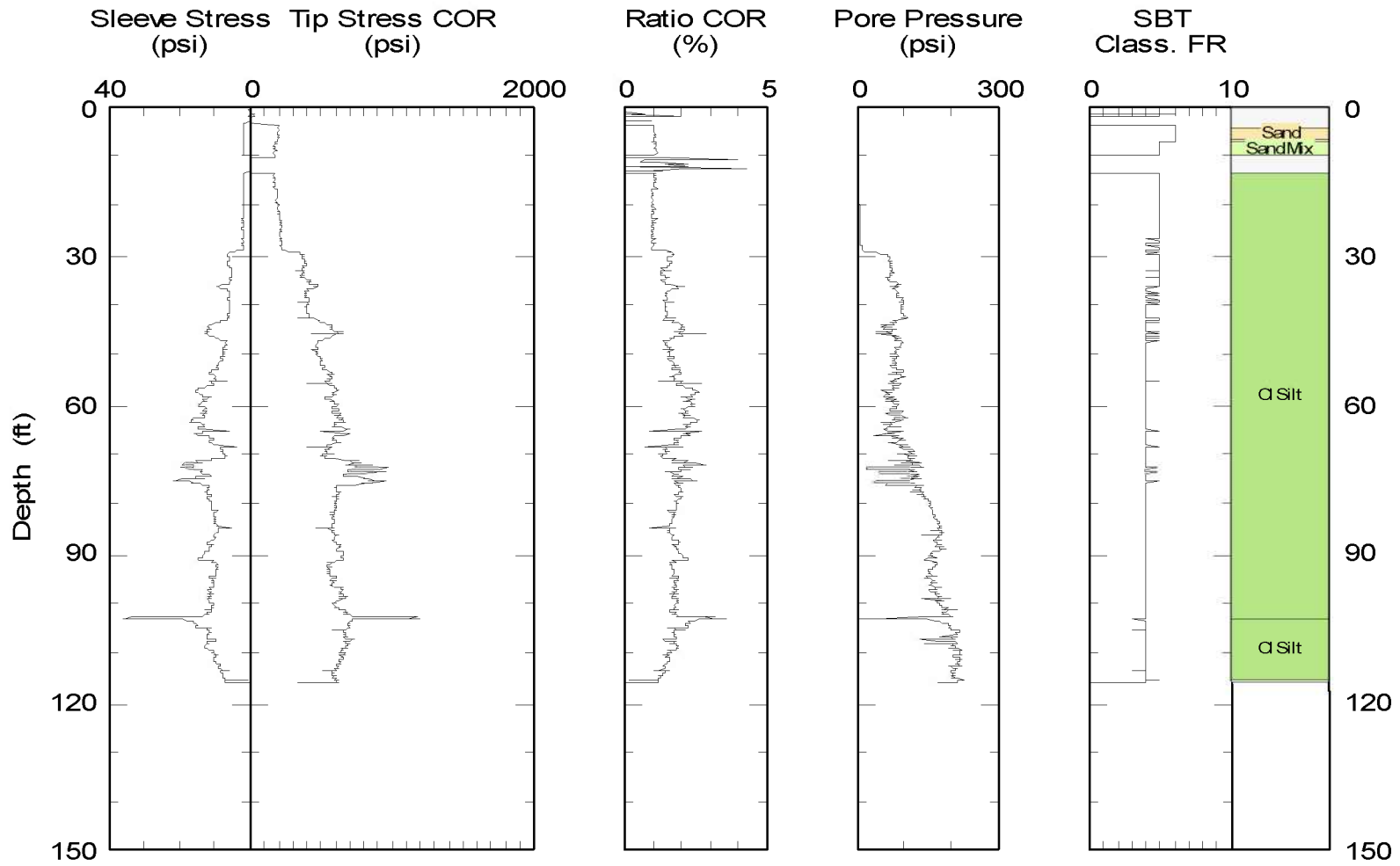


Plate 5: Cone Penetration Testing Results for C-05-03, run number 2.

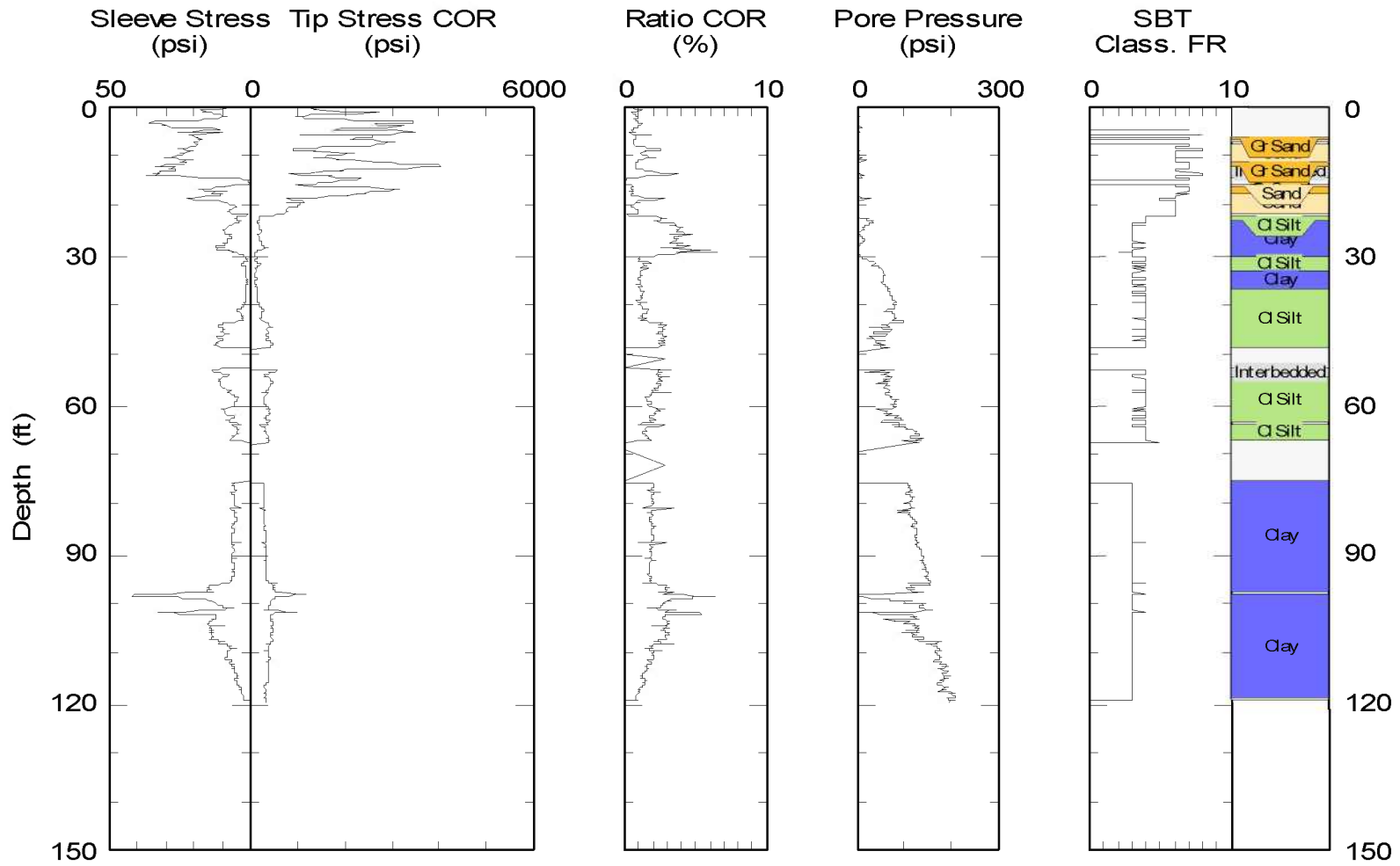


Plate 6: Cone Penetration Testing Results for C-05-04, run number 3.

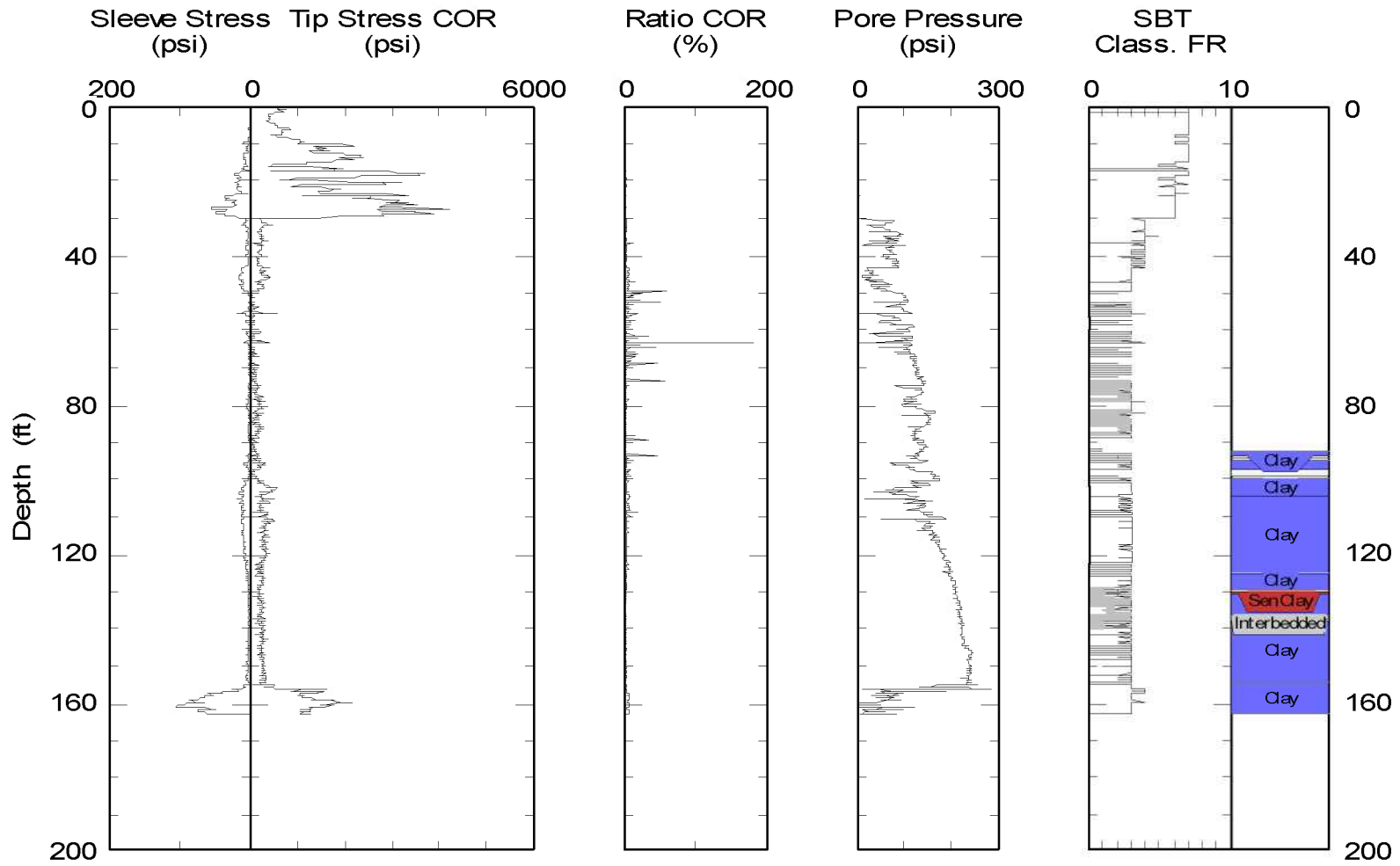


Plate 8: Cone Penetration Testing Results for C-05-05.

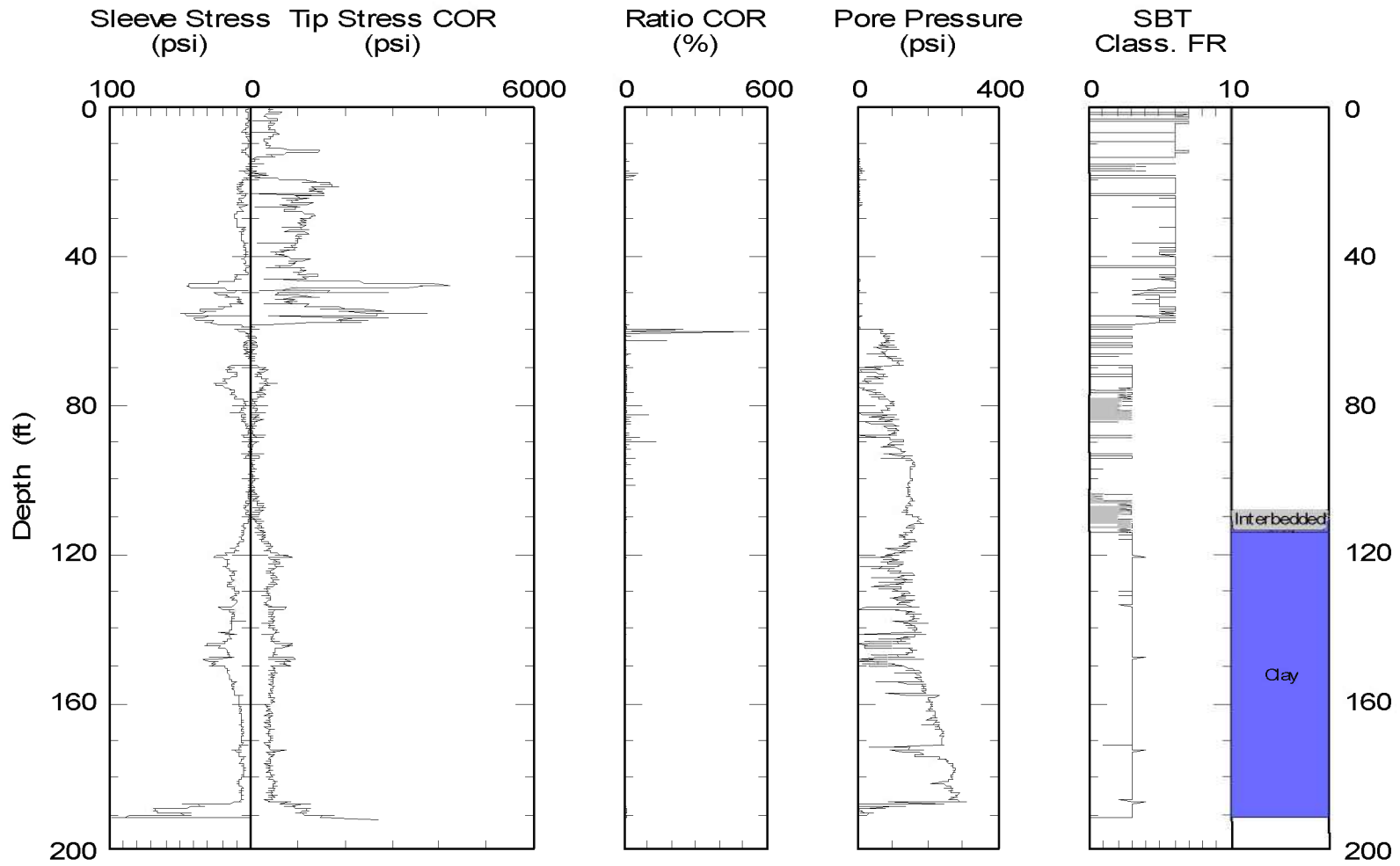


Plate 10: Cone Penetration Testing Results for C-05-06.

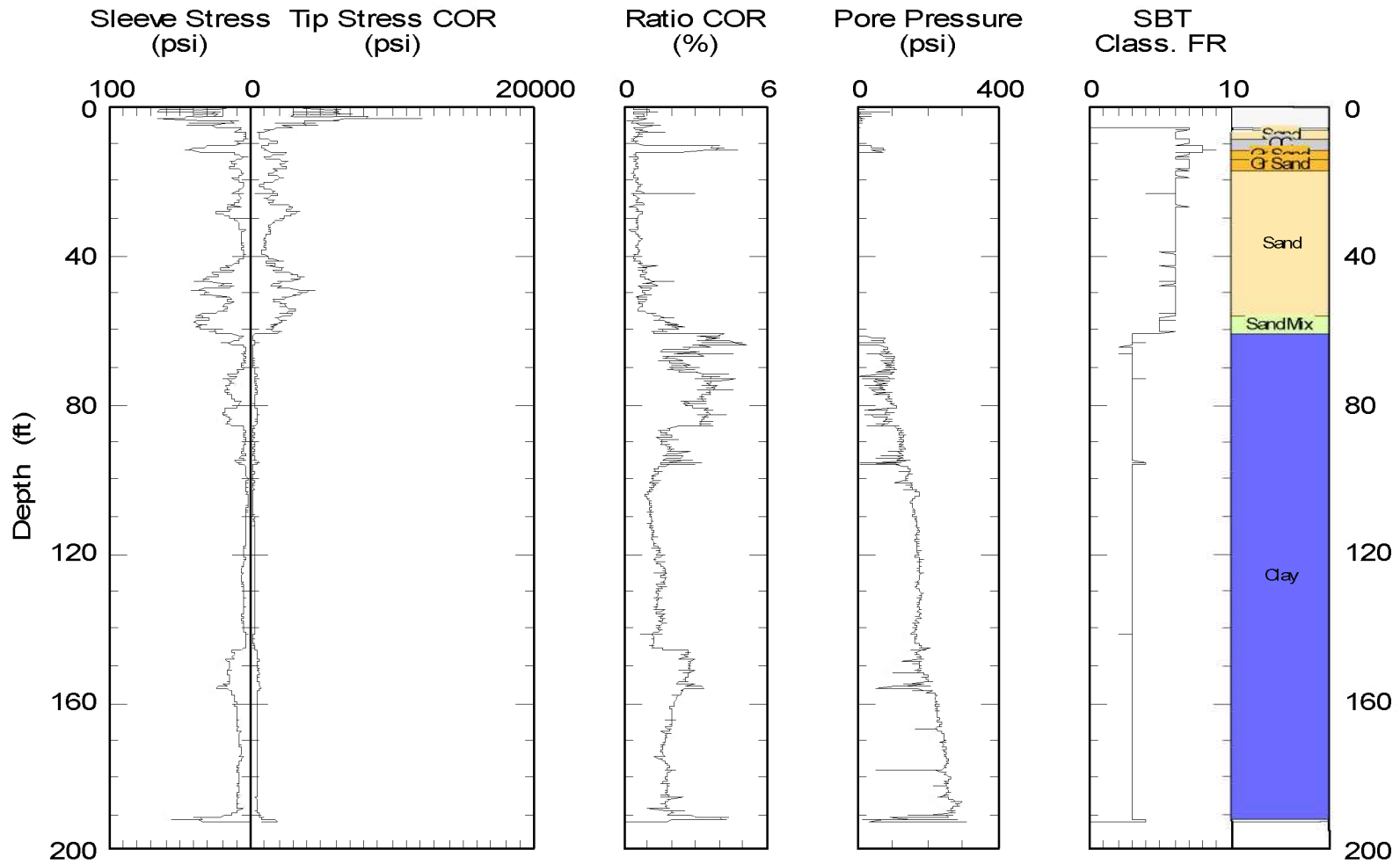


Plate 12: Cone Penetration Testing Results for C-05-07.

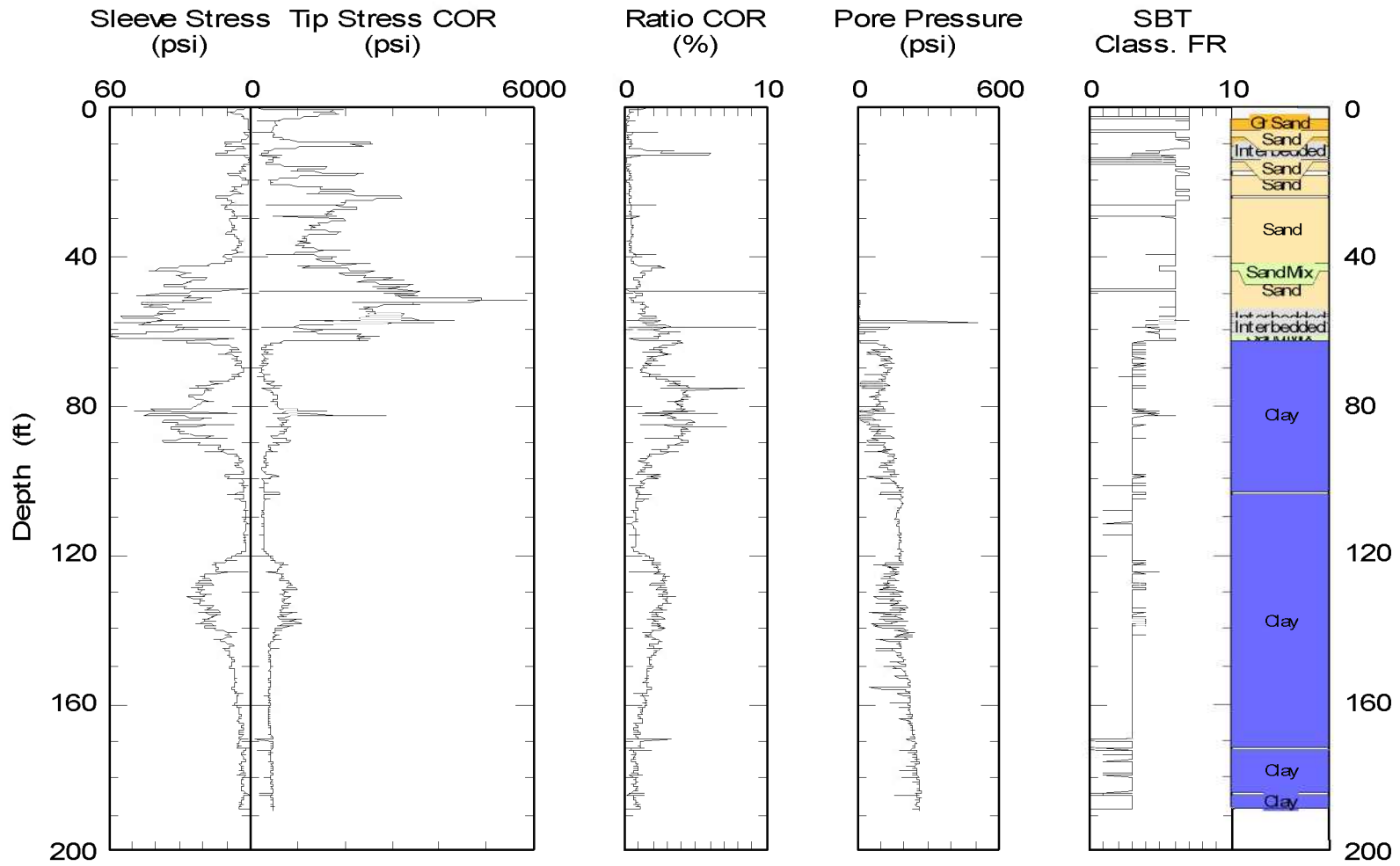


Plate 14: Cone Penetration Testing Results for C-05-08.

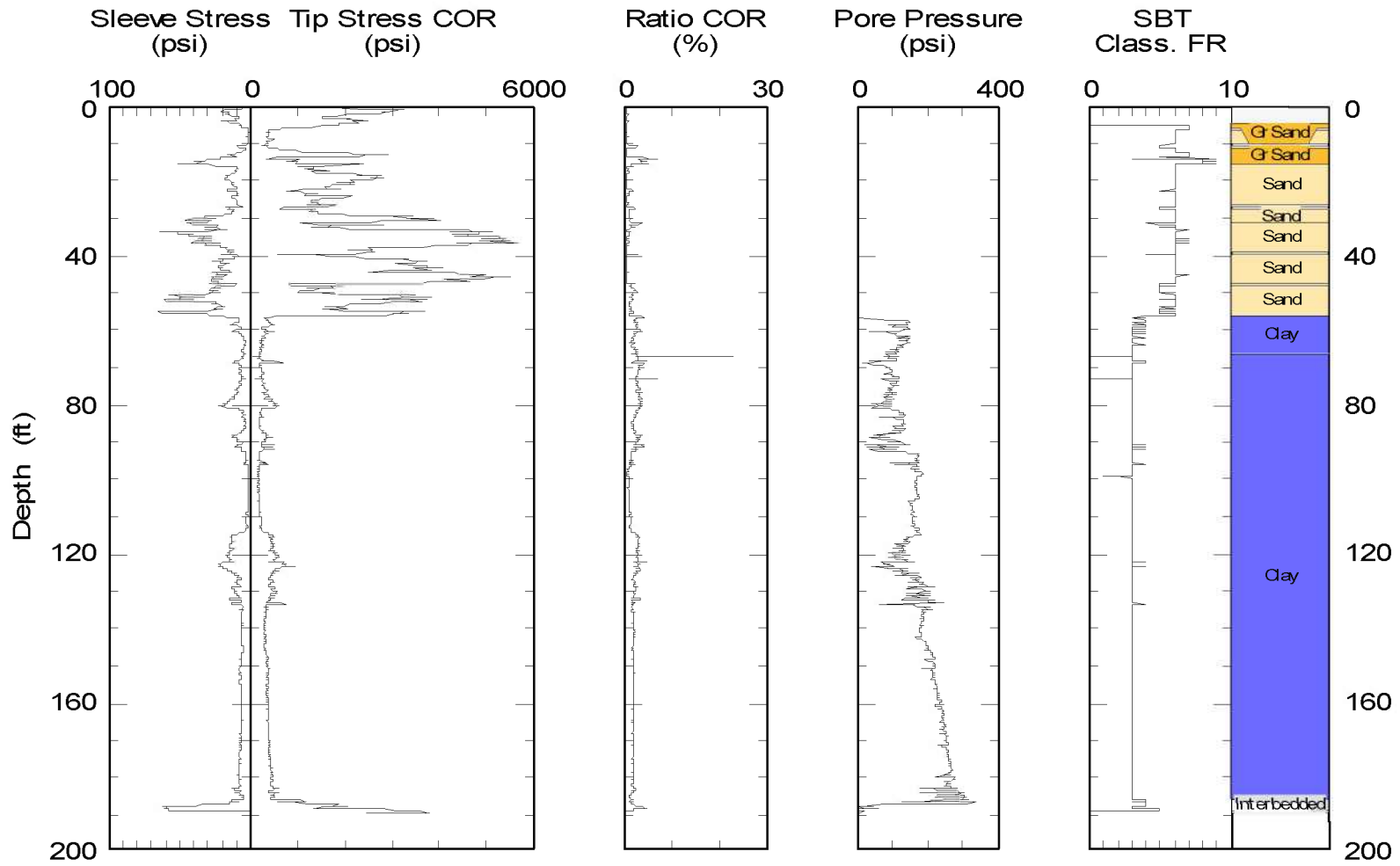


Plate 16: Cone Penetration Testing Results for C-05-09.



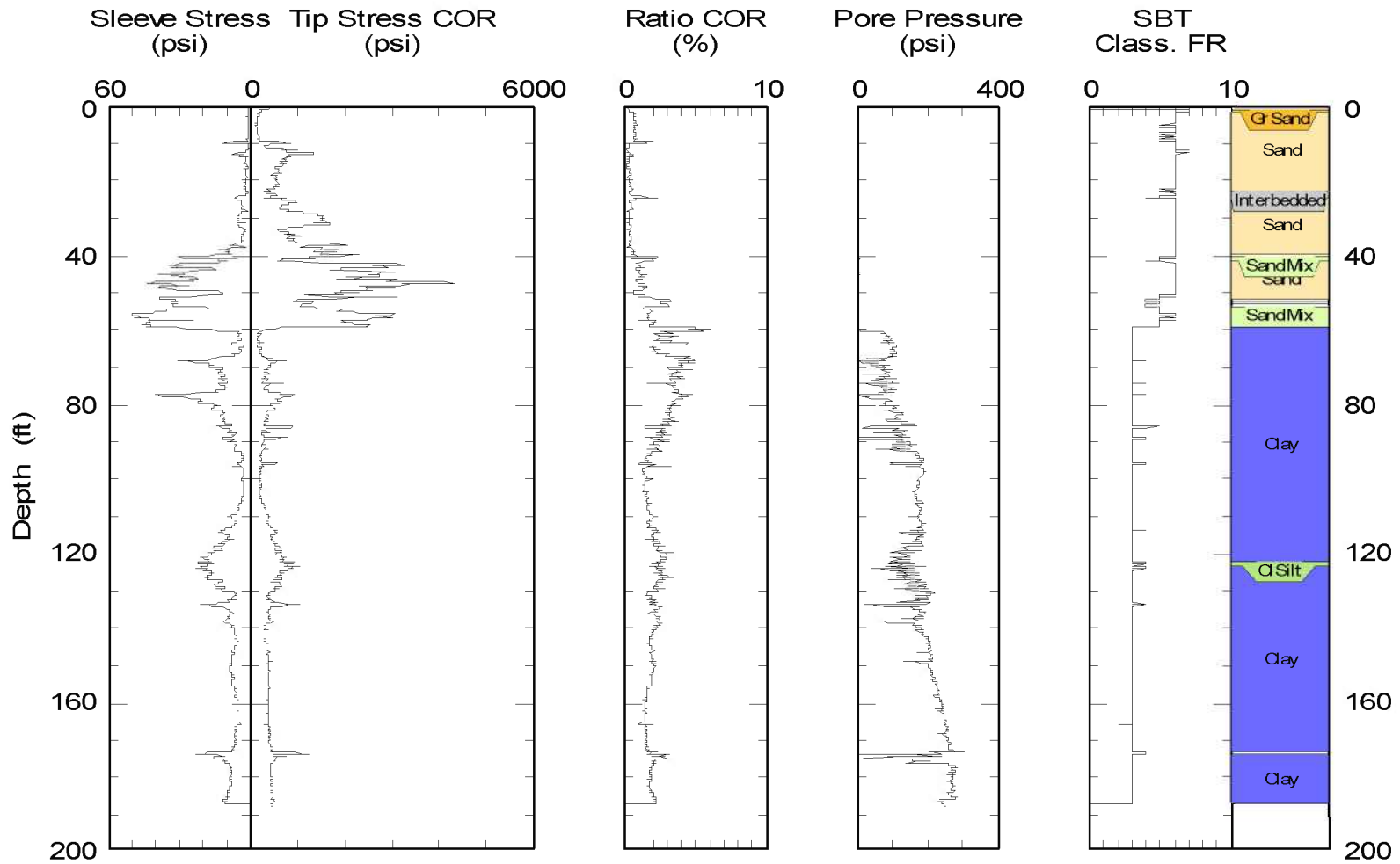


Plate 18: Cone Penetration Testing Results for C-05-10.

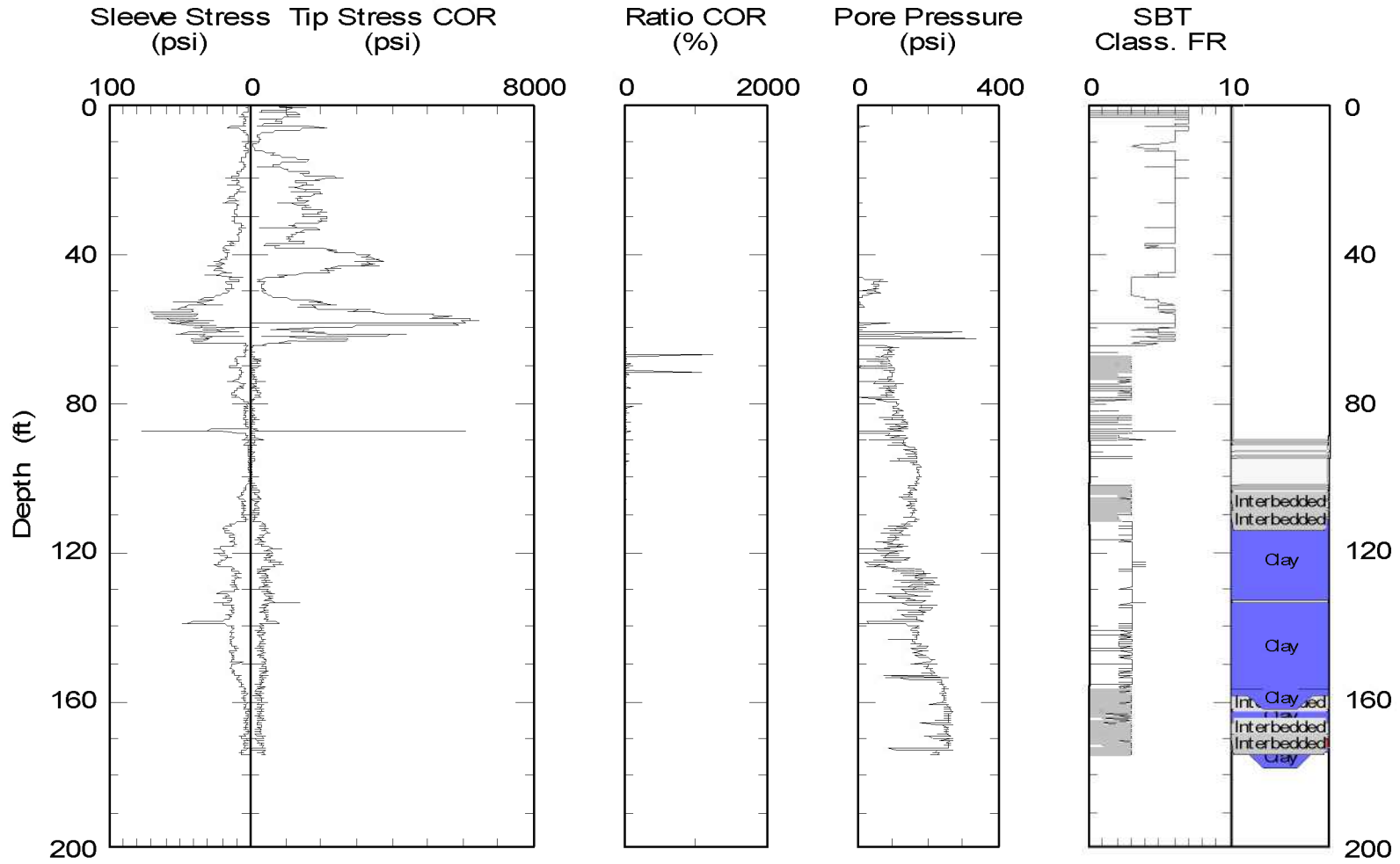


Plate 20: Cone Penetration Testing Results for C-05-11.



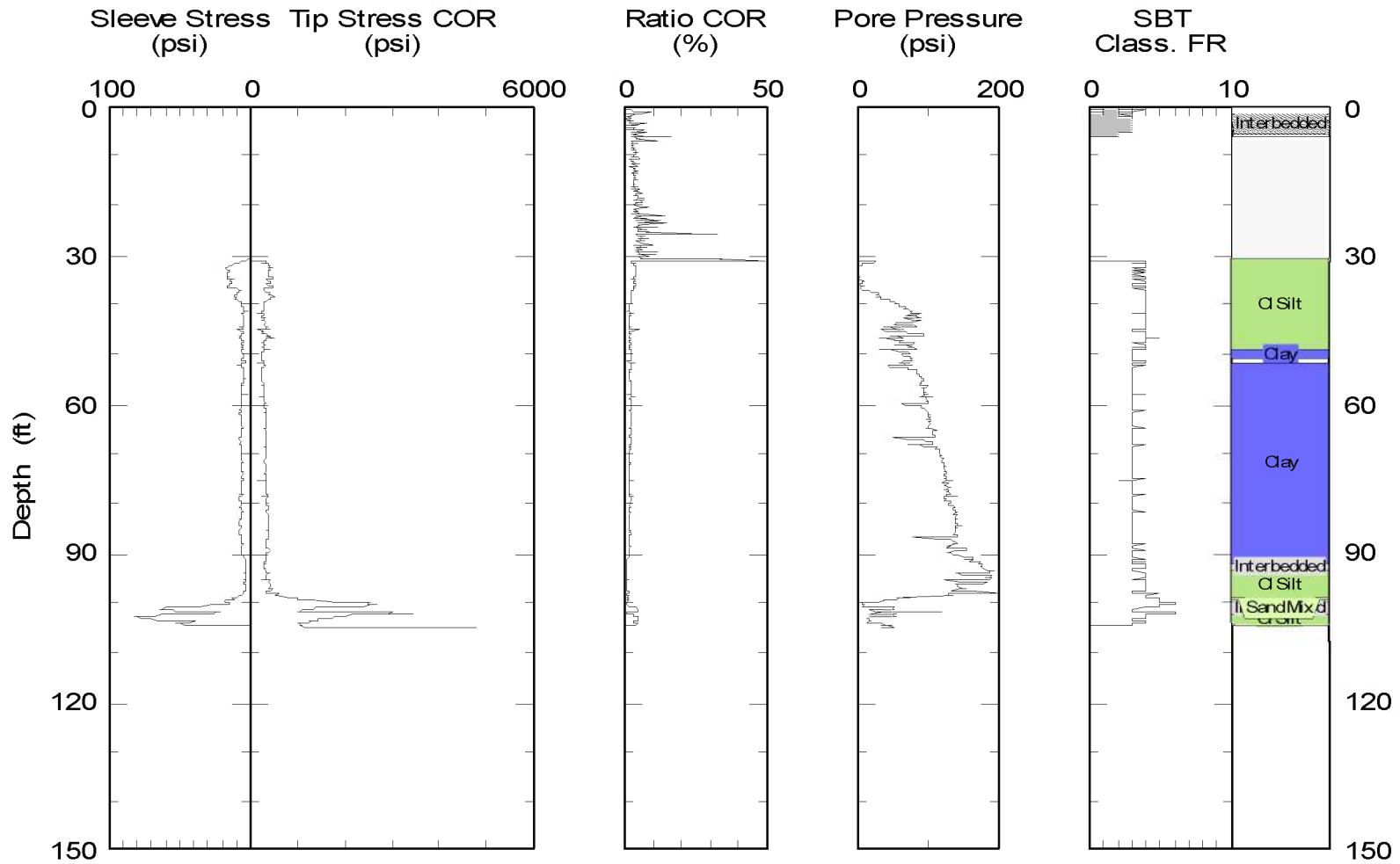


Plate 23: Cone Penetration Testing Results for C-05-13.

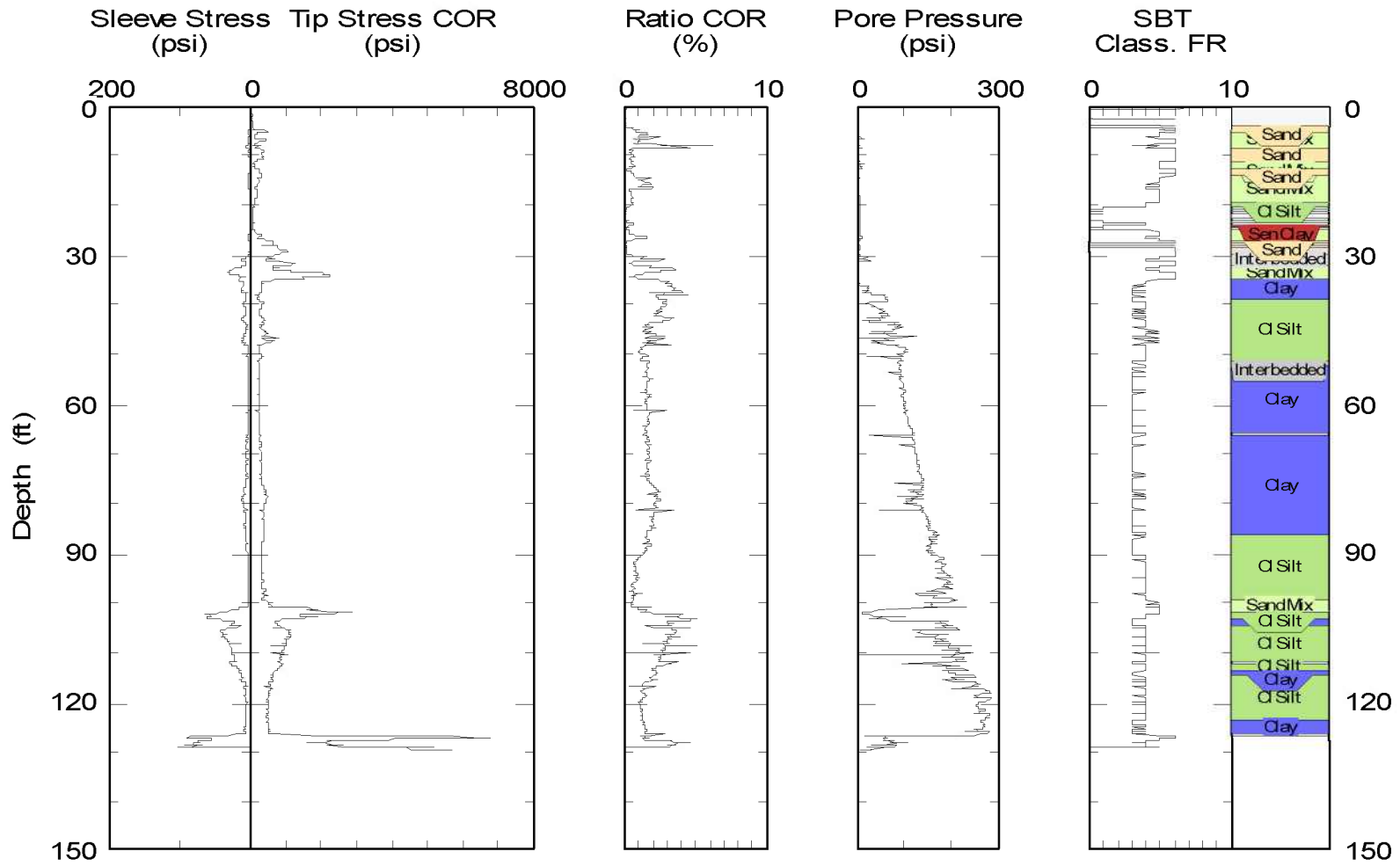


Plate 24: Cone Penetration Testing Results for C-05-14.

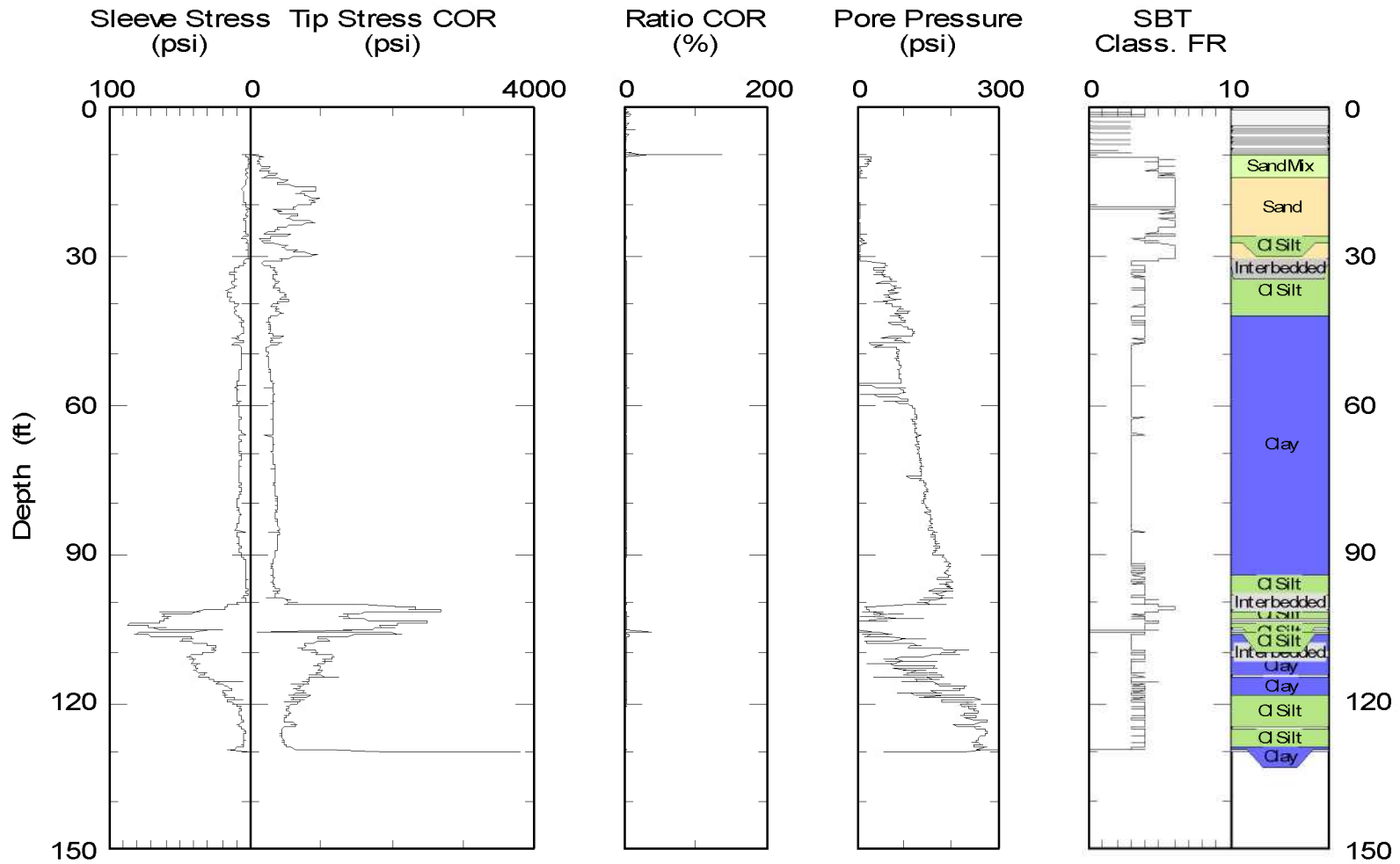


Plate 26: Cone Penetration Testing Results for C-05-15.



**LOG OF BORING NO. P-1**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 15+06.89</u>				DESCRIPTION
								COMPLETION DEPTH: <u>158.5'</u> ELEVATION: <u>676.6</u> DATE: <u>9/1/94 9/2/94</u>				
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT:CLAY	
0												FILL: Loose black and brown fine to coarse sand and cinders, little to some fine to coarse gravel.
5												- At 4.5': Brick fragments. Est. A-1-b
10	1	6	8/10									Medium-dense brown fine to medium sand, trace coarse sand, trace to little fine to coarse gravel, contains occasional thin seam of silt or clayey silt.
15												Est. A-1-b
20	2	5	5/6									Medium-dense brown fine to coarse sand, little fine to coarse gravel, trace silt.
25												Est. A-1-b
30	3	11	12/14									Medium-dense to dense brown fine to medium sand, trace to little silt, trace coarse sand, trace fine gravel, contains seams (1 to 6 inches) of silt, fine sand, and silty clay.
35								1	9	59	31	
40	4	4	4/9/12									
45												
50	5	6	6/9/7									
	6A	5	5/8/12									
	6B											
	7A	3	3/6/8									
	7B											
	8	4	4/15/28					8	9	69	14	
												A-3a (0)
												Dense gray silt, little fine sand, trace clay.
	9	15	15/14/19									Est. A-4b
DESCRIPTION ON NEXT PAGE												
WATER LEVEL: <u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> WATER NOTE: <u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> <u>    </u> DATE: <u>    </u> <u>    </u> <u>    </u>												







LOG OF BORING NO. P-1  
 CUY-90-15.24  
 CLEVELAND, OHIO

TYPE: 2" O.D. Split-barrel Sampler LOCATION: Sta. 15+06.89  
3" O.D. Shelby Tube 114.5' Rt. of  
NXM Rock-core Barrel Centerline

COMPLETION DEPTH: 158.5' ELEVATION: 676.6 DATE: 9/1/94 9/2/94

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	COMPLETION DEPTH: 158.5' ELEVATION: 676.6 DATE: 9/1/94 9/2/94					DESCRIPTION - CONTINUED	
							tsf	%	%	%	AGG.		C. S.
100													
20		2 / 3 / 4	0.5-0.8	31	43	22	0	1	1	20	78	Medium-stiff to stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt.	
105													
21		P	1.5										
110													
22		3 / 5 / 8	1.2-1.8										
115													
23		P	1.5-1.8										
120													
24		4 / 11 / 16	1.5-3.0	21	31	19	0	0	1	52	47	Stiff to very-stiff gray silty clay, trace fine to medium sand, contains thin seams of silt and clayey silt, mostly with horizontal structure.	
125													
25		P	3.0-4.0										
130													
26		5 / 10 / 14	2.2-2.5										
135													
27		P	2.0-3.0										
140													
28		6 / 12 / 16	1.5-2.5	24	34	21	0	0	0	43	57		
145													
29		5 / 13 / 20	2.5-3.0										

A-7-6(13)

A-6a(9)

WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_



**LOG OF BORING NO. P-1**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 15+06.89</u>				
							COMPLETION DEPTH: <u>158.5'</u> ELEVATION: <u>676.6</u> DATE: <u>9/1/94 9/2/94</u>				
			tsf	%	%	%	AGG.	C. S.	F. S.	SILT:CLAY	DESCRIPTION - CONTINUED
150											DESCRIPTION ON PREVIOUS PAGE
30		8 / 16 <sub>22</sub>	2.0-3.8								Very-stiff gray silty clay, trace fine to coarse sand, trace fine to coarse gravel, horizontal structure.
155											
31		9 / 16 <sub>24</sub>	2.5-3.0								Est. A-6b
160											- Encountered water at 36.0'.
165											- From 0.0' to 52.5': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 54.0'.
170											- From 52.5' to 158.5': 3-7/8" Tricone Bit.
175											- From 52.5' to 158.5': Recirculated water used for drilling fluid.
180											
185											
190											
195											
200											
WATER LEVEL:			▽	▽	▽	▽	▽	▽	▽	▽	
WATER NOTE:											
DATE:											

TYPE: 2" O.D. Split-barrel Sampler LOCATION: Sta. 16+98.90  
3" O.D. Shelby Tube 36.2' Rt. of  
NXM Rock-core Barrel Centerline

COMPLETION DEPTH: 168.1' ELEVATION: 616.3 DATE: 8/18/94 8/19/94

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	COMPLETION DEPTH: 168.1' ELEVATION: 616.3 DATE: 8/18/94 8/19/94					DESCRIPTION
								tsf	%	%	%	AGG.	
0													FILL: Medium-dense gray and brown fine to coarse gravel. Est. A-1-b/
1		5	7/11										POSSIBLE FILL: Medium-dense brown fine to medium sand. Est. A-3
2A		6	6/7										Medium-dense gray silt, trace to little clay, trace to little fine sand. Est. A-4b
3		5	8/11										Very-stiff to hard gray silty clay, trace fine to medium sand, contains seams of silt. Est. A-6b
4		8	11/12										Medium-stiff to stiff gray silty clay, trace to little fine to coarse sand, trace fine gravel, horizontal structure. A-6b(12)
5		5	9/14	3.5-4.5+									
6		6	11/16	4.5+	20								
7		8	14/20	4.5+									
8		6	11/16	2.7-4.5+									
9		P		1.2-1.7	31	35	21	2	1	1	23	73	
10		3	4/5	0.5-1.8	32								
11		P		1.3-1.5									

50  
 WATER LEVEL: ▽ ▽ ▽ ▽ ▽ ▽  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_





DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: 2" O.D. Split-barrel Sampler				LOCATION: Sta. 16+98.90					
							3" O.D. Shelby Tube				36.2' Rt. of Centerline					
							COMPLETION DEPTH: 168.1'				ELEVATION: 616.3		DATE: 8/18/94 8/19/94			
							tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
100	23	4 / 9 / 13	1.5-1.7													Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, contains seams of clayey silt and silt.
105	24	5 / 10 / 14	1.7-2.1													
110	25	6 / 10 / 16	1.8-2.4	22	34	18	6	1	1	41	51					
115	26	8 / 13 / 17	1.9-2.2													
120	27	P	1.0-1.5													
125	28	P														
130	29A 29B	5 / 8 / 9	1.0-2.0	26	26	19	0	0	0	75	25					A-6a, A-6b(10) Interbedded: Stiff gray silty clay, and medium-dense gray silt, 1/4" to 8"+ layers of each soil type. A-4b(8)
135	30 31	P-R 10 / 24 / 23		12			35	39	12		14					Dense gray fine to coarse sand, little to some fine to coarse gravel, trace to little silt. A-1-b(0)
140	32A 32B	18 / 22 / 22	4.5+													Hard gray silty clay, little to some fine to coarse sand, trace fine to coarse gravel, contains slickensided planes.
145		35 / 60														
150	33	20 / 40 / 62	4.5+	15	31	17	3	5	8	32	52					A-6a(10)

WATER LEVEL:                                        

WATER NOTE:                                        

DATE:



**LOG OF BORING NO. P-2**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 16+98.90</u>	
								COMPLETION DEPTH: <u>168.1'</u> ELEVATION: <u>616.3</u> DATE: <u>8/18/94 8/19/94</u>				<u>36.2' Rt. of Centerline</u>	
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
150	34	12/21/27		4.5+									Hard gray silty clay, little to some fine to coarse sand; trace fine to coarse gravel, contains slickensided planes.  A-6a(10)
155	35	4/9/10		1.5-2.5	13	33	20	0	0	0	43	57	Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine to coarse gravel, few seams of fine to medium sand.  A-6a(10)
160	36	10/13/17		1.2-2.0	23	30	20	22	0	0	37	41	Stiff gray clayey silt, trace fine to coarse sand, trace fine to coarse gravel.  A-4a(8)
165	37A 37B	44/ 50-1"R		1.5-2.0									Dense gray fine to coarse gravel, some silty clay, some fine to coarse sand.  Est. A-2-4'
170													- Encountered water at 19.0'.
175													- From 0.0' to 27.5': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 30.0'.
180													- From 27.5' to 140.0': 3-7/8" Tricone Bit.
185													- From 27.5' to 175': Recirculated water used for drilling fluid.
190													
195													
200													

WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_





**LOG OF BORING NO. P-3**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 19+10.11</u>				DESCRIPTION	
								COMPLETION DEPTH: <u>140.0'</u> ELEVATION: <u>585.6</u> DATE: <u>8/22/94</u>					
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	
0													FILL: Loose dark-brown fine to coarse sand, some to "and" fine to coarse gravel (cinders and slag).
5													
10	1	2	3/3										
15	2	3	3/3										
20	3	3	2/1										
25	4A 4B	4 5-1	4/4/R	1.5									Est. A-2-4 Stiff gray silty clay, trace fine sand, few very-thin silt seams.
30	5	4	4/7	1.0-1.2	25	41	18	1	0	1	65	33	- At 24.0': Encountered cobble.
35	6	4	6/8	1.8-2.5	21	31	19	0	0	1	57	42	A-7-6(13) Stiff to very-stiff gray silty clay, trace fine to coarse sand, few to many seams and lenses of silt.
40	7	5	7/9	2.0-3.5									
45	8 9	P 3	4/6	1.8-2.0 1.2-2.2	25	35	20	0	0	0	39	61	A-6a(9) Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt.
50	10	3	4/4	1.2-1.8									A-6a, A-6b(10)
WATER LEVEL:				▽	▽	▽	▽	▽	▽	▽	▽	▽	
WATER NOTE:													
DATE:													



LOG OF BORING NO. P-3  
 CUY-90-15.24  
 CLEVELAND, OHIO

TYPE: 2" O.D. Split-barrel Sampler LOCATION: Sta. 19+10.11  
3" O.D. Shelby Tube 86.4' Rt. of  
NXM Rock-core Barrel Centerline

COMPLETION DEPTH: 140.0' ELEVATION: 585.6 DATE: 8/22/94

DEP. FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	COMPLETION DEPTH				SILT:CLAY	DESCRIPTION - CONTINUED	
							tsf	%	%	%			AGG.
50												Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, few lenses of silt.	
	11	P	1.8-2.2										
55		4 / 6 / 8											
		P											
65	12	P	1.5										
	13	5 / 7 / 10	1.5-2.0	22	36	20	1	2	4	34	59		
70													
	14	5 / 7 / 10	1.5-2.0										
75													
	15	5 / 9 / 14	2.5-2.8										
80													
	16	6 / 8 / 11	1.5-2.2	27	44	22	1	0	1	17	81		- Sample 16: Stiff to very-stiff silty clay, A-7-6(14).
85													
	17	5 / 8 / 11	2.2-2.5										
90													
	18	P	2.2										
95													
	19	3 / 3 / 4	0.5-1.0	29	39	20	0	0	1	22	77		A-6a, A-6b(10) Medium-stiff to stiff gray silty clay, trace fine to coarse sand, few seams of silt.
100													A-6b(12)

WATER LEVEL: ▽ ▽ ▽ ▽ ▽ ▽  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_





**LOG OF BORING NO. P-3**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

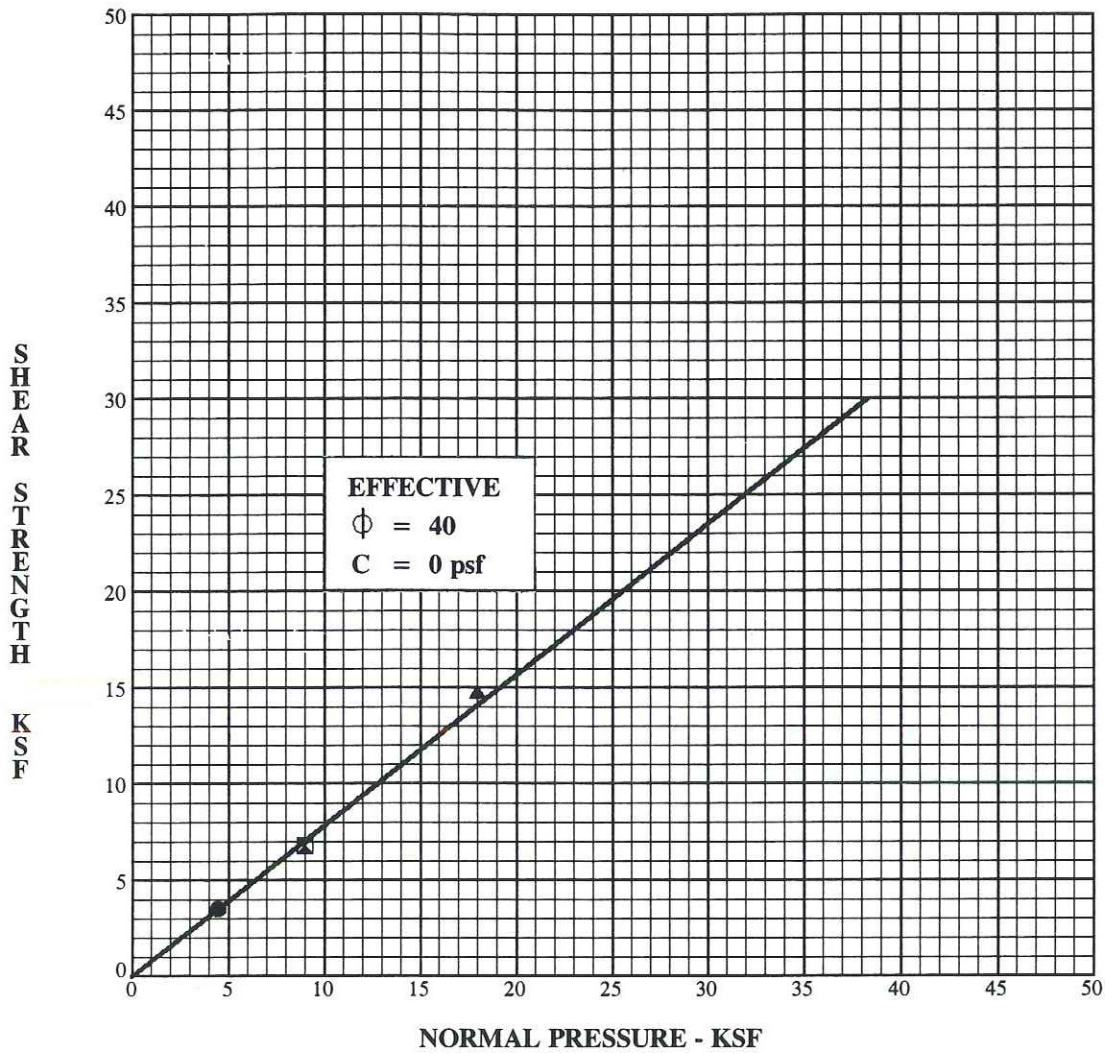
DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 19+10.11</u>	
								COMPLETION DEPTH: <u>140.0'</u> ELEVATION: <u>585.6</u> DATE: <u>8/22/94</u>				<u>86.4' Rt. of Centerline</u>	
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
100													Medium-stiff to stiff gray silty clay, trace fine to coarse sand, few seams of silt.
	20	P		1.25									A-6b(12)
105	21A 21B	2 / 4 / 7		0.8	24	NP	NP	0	0	2	79	19	Medium-dense gray silt, trace clay.
110													A-4b(8)
	22	P		3.5									Stiff to very-stiff gray silty clay, trace fine to coarse sand, few seams and lenses of silt.
115													- Sample 23: Stiff to very-stiff silty clay, A-7-6(13).
	23	10 / 13 / 13		2.5-3.5	28	42	21	0	0	1	16	83	- From 0.0' to 27.5': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 27.5'. - From 27.5' to 140.0': 3-7/8" Tricone Bit. - From 30.2' to 149.5': Recirculated water used for drilling fluid.
120													
	24	7 / 11 / 13		1.5-2.0									
125													
	25	6 / 7 / 9		2.0-2.2									
130													
	26	12 / 11 / 13			21	34	19	1	6	7	28	58	A-6a(10)
135													Medium-dense gray fine to coarse sand, trace silt, trace fine to coarse gravel.
	27A 27B	10 / 14 / 19		2.2									Est. A-3a
140													Very-stiff gray silty clay, some fine to coarse sand, trace fine gravel.
													Est. A-6b'
145													- Encountered slight seepage at 13.0'. - Encountered water at 17.0'.
150													

WATER LEVEL: ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_ ▽ \_\_\_\_\_  
 WATER NOTE: \_\_\_\_\_  
 DATE: \_\_\_\_\_

# SUMMARY OF REMOLDED DIRECT SHEAR TESTS

SATURATED, CONSOLIDATED, DRAINED

SHEAR STRESS VS NORMAL LOAD



Specimen Identification	Normal Load	Type Plot	Classification	DD	MC%
● P-3 S-21B 108.0'-108.6'	4.50 KSF	PEAK	Gray silt, trace fine sand,	94	24
⊗	9.00 KSF	PEAK	trace clay. A-4b (8)	94	23
▲	18.0 KSF	PEAK		94	23



PROJECT CUY-90-15.24  
 LOCATION Cleveland, Ohio  
 JOB NO. 4500 DATE 10/29/94







**LOG OF BORING NO. P-4**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u> LOCATION: <u>Sta. 18+00.08</u>				COMPLETION DEPTH: <u>149.0'</u> ELEVATION: <u>610.1</u> DATE: <u>8/11/94 8/12/94</u>	
							TYPE: <u>3" O.D. Shelby Tube</u> LOCATION: <u>89.7' Lt. of Centerline</u>					TYPE: <u>NXM Rock-core Barrel</u>
							AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
50	13	4 / 6 / 8	1.2-2.0									
	14	4 / 8 / 9	1.0-2.0	17	29	17	0	0	1	57	42	
55												
	15	4 / 6 / 10	1.2-1.9									
60												
	16	4 / 5 / 10	1.8-3.0									
65												
	17	4 / 6 / 9	1.9-2.5									
70												
	18	2 / 2 / 4	0.8-1.2	26	31	18	0	0	0	50	50	
75												
	19	P	1.3-1.8									
80												
	20	5 / 8 / 14	1.5-2.2									
	21	8 / 9 / 13	1.7-2.0	22	33	17	0	2	4	32	62	
85												
	22	7 / 11 / 15	1.8-2.1									
90												
	23	6 / 11 / 17	2.2-2.8	22	33	19	1	2	3	30	64	
95												
	24	6 / 10 / 14	1.8-2.2	22 22	33	18	1	2	3	34	60	
100												

WATER LEVEL:                                
 WATER NOTE:                                
 DATE:





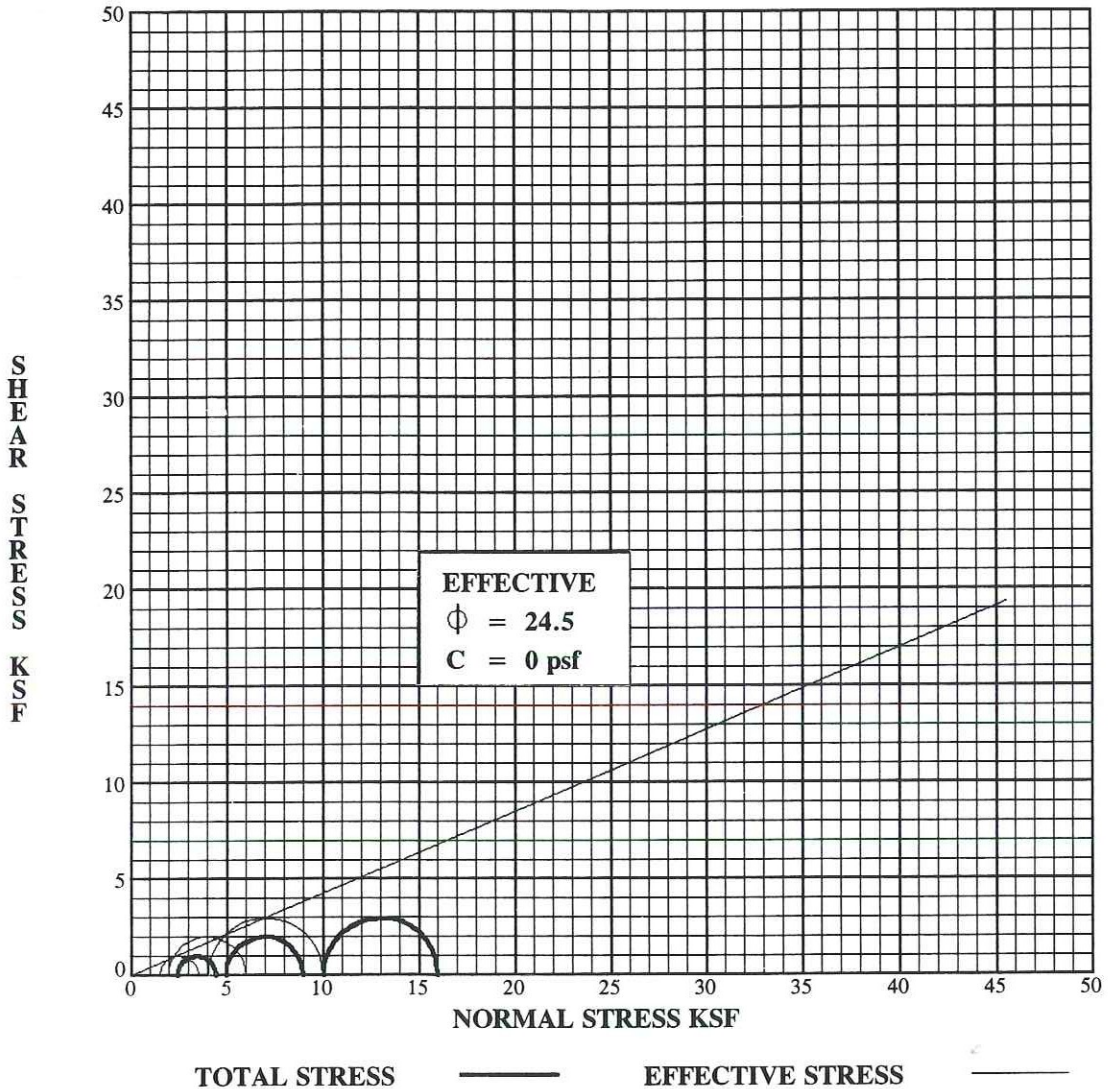
LOG OF BORING NO. P-4  
 CUY-90-15.24  
 CLEVELAND, OHIO

DEP. FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: 2" O.D. Split-barrel Sampler				LOCATION: Sta. 18+00.08			
							AGG.	C.S.	F.S.	SILT:CLAY	3" O.D. Shelby Tube	89.7' Lt. of Centerline		
							COMPLETION DEPTH: 149.0'				ELEVATION: 610.1		DATE: 8/11/94 8/12/94	
DESCRIPTION - CONTINUED														
100												Stiff to very-stiff gray silty clay, trace to little fine to coarse sand, trace fine gravel, few lenses of silt.		
105	25	5 / 9 / 14	1.7-2.0									<p>- From 0.0' to 27.5': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 31.5'.</p> <p>- From 27.5' to 149.0': 3-7/8" Tricone Bit.</p> <p>- From 45.0' to 149.0': Recirculated water used for drilling fluid.</p>		
110	26	6 / 11 / 15	1.8-2.2	23	34	20	1	1	1	31	66			
115	27	7 / 10 / 14	1.8-2.5											
120	28	5 / 8 / 11	1.5-1.8	26	36	21	0	2	2	21	75			
125	29	P	1.1-1.2	27	30	21	0	0	4	37	59			
	30A	5 / 7 / 7	1.0-1.5	27	25	18	0	0	1	83	16			
	30B													
	31A	5 / 20 / 20	1.5				39	17	21		23			
	31B													
130	32	20 / 50 / 79	4.5+	15	31	18	0	4	7	31	58			
135	33	15 / 32 / 47	4.5+											
140	34	5 / 9 / 12	1.2-1.5	24	34	19	0	0	1	27	72			
145	35	5 / 9 / 12	1.9-2.5											
150														

# SUMMARY OF TRIAXIAL COMPRESSION TESTS

SATURATED, CONSOLIDATED, UNDRAINED  
( RESIDUAL PLOTTED )

## SHEAR STRESS VS NORMAL STRESS



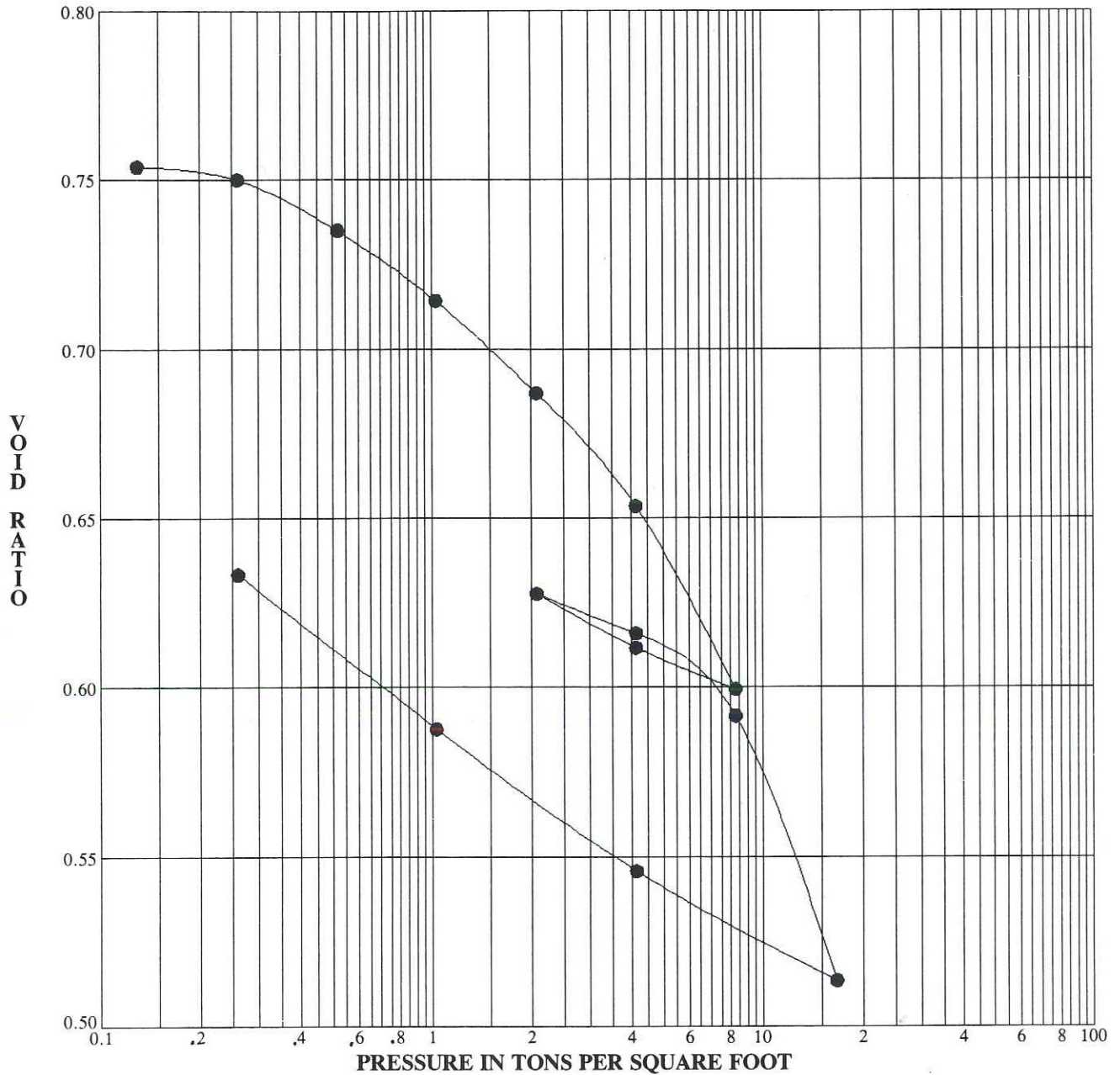
Specimen Identification	Classification	DD	MC %
P-4 S-29 I 122.5'-124.2'	Stiff to very-stiff gray silty clay, trace fine to medium sand, many lenses and seams of silt. A-4a (8)	94	28
P-4 S-29 II 122.5'-124.2'	Stiff to very-stiff gray silty clay, trace fine to medium sand, many lenses and seams of silt. A-4a (8)	96	28
P-4 S-29 III 122.5'-124.2'	Stiff to very-stiff gray silty clay, trace fine to medium sand, many lenses and seams of silt. A-4a (8)	96	28



PROJECT CUY-90-15.24  
 LOCATION Cleveland, Ohio  
 JOB NO. 4500      DATE 10/31/94




# PRESSURE - VOID RATIO CURVE



Specimen Identification	Classification
● P-4 S-29 IV 122.5'-124.2'	Stiff gray silty clay, trace fine to medim sand, many lenses and seams of silt. A-4a (8)

MC	LL	PL	PI	DD	SG	Eo	Ef
28	30	21	9	95	2.68	0.7554	0.6332

	PROJECT	CUY-90-15.24
	LOCATION	Cleveland, Ohio
	JOB NO.	4500      DATE 8/28/94







**LOG OF BORING NO. P-5**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE- TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 15+48.44</u>			
							<u>3" O.D. Shelby Tube</u>				<u>93.1' Lt. of</u>			
							<u>NXM Rock-core Barrel</u>				<u>Centerline</u>			
							COMPLETION DEPTH: <u>173.0'</u>				ELEVATION: <u>662.3</u>		DATE: <u>9/26/94 9/28/94</u>	

			tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
50												Stiff to very-stiff gray silty clay, trace to little fine to medium sand, few seams and lenses of silt.
	10	4 / 6 / 6	1.1-1.9	30	32	19	0	0	1	62	37	
55												A-6a(9)
	11	6 / 12 / 14	3.0-4.5+									Very-stiff to hard gray silty clay, trace fine to medium sand, few seams and lenses of silt.
60	12	6 / 10 / 14	2.7-3.4									
65												
	13	P	3.8-4.5+		27	19	0	0	0	69	31	Stiff to very-stiff gray silty clay, trace fine to medium sand, few to many seams and lenses of silt.
70	14	8 / 12 / 16	4.0-4.3									
75												A-4b(8)
	15	P	2.5-3.8									Stiff to very-stiff gray silty clay, trace fine to medium sand, few to many seams and lenses of silt.
80	16	3 / 4 / 8	1.8-3.2									
85												
	17	5 / 8 / 11	2.7-3.2									Stiff to very-stiff gray silty clay, trace fine to medium sand, few to many seams and lenses of silt.
90	18	4 / 8 / 11	2.4-3.0									
95												
	19	4 / 7 / 9	1.7-2.5	24	30	18	0	0	2	54	44	A-6a(9)

WATER LEVEL:	▽	▽	▽	▽	▽	▽
WATER NOTE:						
DATE:						



LOG OF BORING NO. P-5  
 CUY-90-15.24  
 CLEVELAND, OHIO

DEPTH, FEET	SAMPLE NO.	SAMPLES SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: 2" O.D. Split-barrel Sampler				LOCATION: Sta. 15+48.44					
							3" O.D. Shelby Tube				93.1' Lt. of Centerline					
							COMPLETION DEPTH: 173.0'				ELEVATION: 662.3		DATE: 9/26/94 9/28/94			
							tsf	%	%	%	AGG.	C. S.	F. S.	SILT:CLAY	DESCRIPTION - CONTINUED	
100	20	7 / 13 1/18	1.6-4.3													Stiff to very-stiff gray silty clay, trace fine to medium sand, few to many seams and lenses of silt.  A-6a(9)
105	21	6 / 10 1/14	2.4-3.3													Very-stiff to hard gray silty clay, trace fine to medium sand, few to many seams and lenses of silt, horizontal structure.
110	22	8 / 15 1/20	4.1-4.5+													
115	23	5 / 10 1/11	2.1-3.4													
120	24	2 / 5 1/7	1.5-2.7													- From 121.5' to 123.0': Stiff to very-stiff.
125	25	P	4.5+													Est. A-6a
130	26	8 / 18 1/26	4.3-4.5+													Very-stiff to hard gray silty clay, trace to little fine to coarse sand, trace fine gravel.
135	27	P	2.1-2.3													
140	28	5 / 10 1/12	2.2-2.3													
145	29	P	2.0-2.1													A-6a(9)
150	WATER LEVEL: ▽		▽		▽		▽		▽		▽		▽			
WATER NOTE:																
DATE:																



**LOG OF BORING NO. P-5**  
**CUY-90-15.24**  
**CLEVELAND, OHIO**

DEPTH, FEET	SAMPLE NO.	SAMPLES	SAMPLING EFFORT	HAND PENE-TROMETER	MOISTURE CONTENT	LIQUID LIMIT	PLASTIC LIMIT	TYPE: <u>2" O.D. Split-barrel Sampler</u>				LOCATION: <u>Sta. 15+48.44</u>	
								COMPLETION DEPTH: <u>173.0'</u> ELEVATION: <u>662.3</u> DATE: <u>9/26/94 9/28/94</u>				<u>93.1' Lt. of Centerline</u>	
				tsf	%	%	%	AGG.	C. S.	F. S.	SILT	CLAY	DESCRIPTION - CONTINUED
150	30	5	11/13	2.4-2.7	23	33	20	1	2	2	35	60	Very-stiff to hard gray silty clay, trace to little fine to coarse sand, trace fine gravel.
155	31	7	13/18	2.7-3.0									
160	32	8	14/20	2.0-2.2									
165	33	10	12/17	2.3-2.7									
170	34	8	14/16	2.5-2.7									
175													A-6a(9)
180													- Encountered water at 27.5'.
185													- From 0.0' to 54.0': 3-1/4" I.D. Hollow-stem Auger with plug, replaced with 4" I.D. Flush-coupled casing from 0.0' to 54.0'.
190													- From 54.0' to 173.0': 3-7/8" Tricone Bit.
195													- From 54.0' to 173.0': Recirculated water used for drilling fluid.
200													

WATER LEVEL:                        

WATER NOTE:                        

DATE:



**LOG OF BORING NO. R-001-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 99+66 COMPLETION DEPTH: 25.0'  
2" O.D. Split-barrel Sampler 98' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 696.1  
N - 660556.452; E - 2189570.854 DATE: 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
695.8	0					0.3 ASPHALT - 3 INCHES											
695.2						0.9 CONCRETE - 8 INCHES											
694.1						2.0 GRANULAR BASE - 13 INCHES											
692.6			6/7/8			3.5 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay.	1	27	34	32	6	1	NP	NP	6		A-1-b(0)
			4/6/8			COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, little fine gravel, trace silt, trace clay.	2	16	31	37	10	6	NP	NP	10		A-3a(0)
689.6	5		11/12/12			6.5 GRAVEL WITH SAND (FILL): Medium-dense to dense brown fine to coarse sand, "and" fine gravel, trace silt, trace clay, contains few wood fragments.	3								9		Est. A-3a
			15/18/15				4								12		Est. A-1-b
			8/12/13				5										Est. A-1-b
			11/12/12				6										Est. A-1-b
679.6	15					16.5 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay, contains iron oxide stains.	7	29	27	31	13				8		Est. A-1-b
			6/7/7				8										Est. A-1-b
671.1	25		6/7/9			25.0											Est. A-1-b

NOTES:  
 - Encountered water at 6.5'.

WATER LEVEL: ▽ 6.5      ▽ 6.5      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 20.1'      \_\_\_\_\_  
 DATE: 9/8/06      9/8/06      \_\_\_\_\_

PLATE 1

**LOG OF BORING NO. R-002-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 104+34 COMPLETION DEPTH: 25.0'  
2" O.D. Split-barrel Sampler 64' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 703.9  
N - 661033.417; E - 2189598.581 DATE: 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
702.9	0					1.0 ASPHALT - 12 INCHES											
701.9						2.0 GRANULAR BASE - 12 INCHES											
700.4			10/12/17			3.5 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, some fine to coarse gravel, little silt, trace clay.	1	28	25	24	15	8	NP	NP	8	A-1-b(0)	
			17/27/50-3"R			COARSE AND FINE SAND (FILL): Dense to very-dense brown fine to coarse sand, some fine gravel, little silt, trace clay, contains few brick fragments.	2	21	20	38	15	6	NP	NP	10	A-3a(0)	
	5		10/14/18				3								10	Est. A-3a	
			16/17/49				4								8	Est. A-3a	
			17/20/20				5									Est. A-3a	
	10																
690.9			14/14/16			13.0 GRAVEL WITH SAND (FILL): Medium-dense to dense brown and dark brown fine to coarse sand, some fine to coarse gravel, trace to little silt, trace clay, contains few brick fragments.	6	25	26	32	17				9	Est. A-1-b	
	15																
			12/16/16				7										Est. A-1-b
	20																
			34/21/21				8	35	23	27	15				12	Est. A-1-b	
678.9	25																
	30																

NOTES:  
 - No seepage encountered during drilling.

WATER LEVEL: ▽ "Dry" ▽  
 WATER NOTE: Augers Removed - Caved at 19.3'  
 DATE: 9/8/06

PLATE 2

**LOG OF BORING NO. R-003-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 107+82 COMPLETION DEPTH: 25.0'  
2" O.D. Split-barrel Sampler 48' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 701.8  
N - 661382.449; E - 2189646.035 DATE: 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
701.0	0					0.8 ASPHALT - 10 INCHES											
699.8						2.0 GRANULAR BASE - 14 INCHES											
			15/15/19			COARSE AND FINE SAND (FILL): Dense brown fine to coarse sand, little silt, trace clay, trace to little fine gravel.	1	9	15	55	14	7	NP	NP	7	A-3a(0)	
			17/20/25				2	11	33	39	12	5	NP	NP	6	A-3a(0)	
	5		15/19/22				3								8	Est. A-3a	
693.8			15/18/20				4								11	Est. A-3a	
			15/25/50-2"R/			8.0 GRAVEL WITH SAND (FILL): Medium-dense to dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay, contains many brick and few wood fragments, and few very-dense zones.	5									Est. A-1-b	
	10		9/10/11				6									Est. A-1-b	
			12/15/22				7	38	26	23	13				12	Est. A-1-b	
676.8			8/9/12				8									Est. A-1-b	
	25					25.0											

NOTES:  
 - Encountered seepage at 13.0'.

WATER LEVEL: ∇ "Dry" ∇ ∇ ∇  
 WATER NOTE: Augers Removed  
 DATE: 9/8/06

PLATE 3

**LOG OF BORING NO. R-004-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 112+39 COMPLETION DEPTH: 19.5'  
2" O.D. Split-barrel Sampler 7' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 698.7  
N - 661829.977; E - 2189753.921 DATE: 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
697.9	0					0.8 ASPHALT - 10 INCHES												
696.7						2.0 GRANULAR BASE - 14 INCHES												
695.2			7/9/13			3.5 COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, little silt, trace clay, trace fine gravel.	1	10	21	53	12	4	NP	NP	8	A-3a(0)		
			14/18/22			COARSE AND FINE SAND (FILL): Dense to very-dense brown fine to coarse sand, little silt, trace clay, trace fine gravel.	2	8	18	57	13	4	NP	NP	6	A-3a(0)		
	5		12/18/24				3									6	Est. A-3a	
			20/25/50-2"R				4									8	Est. A-3a	
			15/20/50-1"R				5										Est. A-3a	
			15/18/22				6										Est. A-3a	
683.2	15					15.5 GRAVEL WITH SAND (FILL): Very-dense brown fine to coarse gravel, some fine to coarse sand, trace to little silt, trace clay.												
679.2			38/50-5"R			19.5 -Encountered cobbles at 19.5'	7	49	16	19	16				9	Est. A-1-b		
	20					<b>NOTES:</b> - No seepage encountered during drilling. - Encountered cobbles at 19.5'. - Encountered auger penetration refusal at 19.5'.												
	25																	
	30																	

WATER LEVEL: ▽ "Dry" ▽ ▽ ▽  
 WATER NOTE: Augers Removed - Caved at 18.0'  
 DATE: 9/8/06

PLATE 4

**LOG OF BORING NO. R-005-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 193+80 COMPLETION DEPTH: 25.0'  
2" O.D. Split-barrel Sampler 18' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 666.8  
N - 668064.912; E - 2194200.956 DATE: 9/29/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
666.6	0					0.2 ASPHALT - 2 INCHES											
666.2						0.6 GRANITE PAVER - 5 INCHES											
666.1			3/2/2			0.7 SAND - 1 1/2 INCHES	1	1	24	53	11	11	NP	NP	12	A-3a(0)	
665.7			2/4/6			1.1 CONCRETE - 5 INCHES	2								11	Est. A-3a	
			2/2/2			COARSE AND FINE SAND (FILL): Very-loose to loose brown fine to coarse sand, trace to little silt, trace to little clay, trace fine gravel, contains few slag fragments.	3	7	12	70	3	8	NP	NP	9	A-3a(0)	
	5		2/3/3				4								9	Est. A-3a	
658.8						8.0											
657.5			2/2/2	0.0-0.5		9.3 SILT AND CLAY: Very-soft to soft brown and gray silt, "and" clay, trace fine to coarse sand, contains few fine to coarse sand lenses.	5A										Est. A-6a
	10					GRAVEL WITH SAND: Very-loose brown fine to coarse sand, little fine gravel, trace silt, trace clay.	5B	17	35	30	8	10	NP	NP	11	A-1-b(0)	
654.8						12.0 FINE SAND: Medium-dense brown-gray fine sand, little coarse sand, trace silt, trace clay.											
	15		6/8/8				6										Est. A-3
	20		6/9/10				7										Est. A-3
641.8	25		6/9/11				8	0	11	80	9				23	Est. A-3	

**NOTES:**  
 - Encountered a perched water table from 7.5' to 9.3'.  
 - Encountered water at 17.5'.

WATER LEVEL: 17.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/29/06

PLATE 1



**LOG OF BORING NO. R-006-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 197+10 COMPLETION DEPTH: 25.0'  
2" O.D. Split-barrel Sampler 2' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 663.5  
N - 668226.348; E - 2194490.144 DATE: 10/2/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
662.9	0					0.6 ASPHALT - 7 INCHES												
662.2						1.3 GRANULAR BASE - 8 INCHES												
660.1			2/3/4			3.4 GRAVEL WITH SAND (FILL): Loose brown fine to coarse sand, some fine gravel, trace silt, trace clay.	1	21	36	36	3	4	NP	NP	6		A-1-b(0)	
			3/4/4			FINE SAND: Loose brown fine sand, trace coarse sand, trace fine gravel, trace silt, trace clay.	2A								6		Est. A-1-b	
			1/2/3				2B	10	5	77	3	5	NP	NP	9		A-3(0)	
			2/3/2				3								19		Est. A-3	
655.5						8.0 SILTY CLAY: Very-soft to soft gray silty clay, trace fine sand, contains many silt seams and lenses.	4										Est. A-3	
			2/1/1	0.0-0.5			5	0	0	3	50	47	36	16	29		A-6b(10)	
651.5						12.0 FINE SAND: Loose brown fine sand, trace coarse sand, trace fine gravel, trace silt, trace clay, contains few silty clay pockets.												Est. A-3
			3/4/4				6											
646.5						17.0 SANDY SILT: Medium-dense brown silt, little clay, some fine sand, trace coarse sand, trace fine gravel, slightly organic.												Est. A-4a
			5/5/7				7								27			
641.5						22.0 COARSE AND FINE SAND: Medium-dense brown fine to coarse sand, trace to little silt, trace clay, trace fine gravel.												Est. A-3a
			5/5/7				8	3	20	59	18				17			
638.5	25																	

NOTES:  
 - Encountered water at 5.3'.

WATER LEVEL: 5.3      4.0                              
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 9.4'                              
 DATE: 10/2/06      10/2/06                            

PLATE 2





**LOG OF BORING NO. R-009-0-06  
CUY-90-14.52 MAINLINE  
CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 164+89 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 992' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 672.8  
N - 665803.703; E - 2192379.921 DATE: 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
672.6	0					0.2' ASPHALT - 2 INCHES												
			13/12/10			GRAVEL WITH SAND (FILL): Medium-dense brown and gray fine to coarse sand, "and" fine gravel, trace silt, trace clay, contains many brick and slag fragments.	1	47	16	32	1	4	NP	NP	11		A-1-b(0)	
			25/50-2"R			- Encountered cobble at 3.1'.	2								13		Est. A-1-b	
668.8						4.0												
			5/6/5			GRAVEL WITH SAND: Loose to medium-dense brown fine to coarse sand, "and" fine gravel, trace silt, trace clay.	3	38	29	22	7	4	NP	NP	7		A-1-b(0)	
	5		6/4/4				4								6		Est. A-1-b	
			4/5/6				5										Est. A-1-b	
662.8	10					10.0												

**NOTES:**  
 - No seepage encountered during drilling.  
 - Encountered cobble at 3.1'.

WATER LEVEL: ▽ "Dry" ▽ ▽ ▽  
 WATER NOTE: Augers Removed - Caved at 9.7'  
 DATE: 9/7/06

PLATE 3

**LOG OF BORING NO. R-010-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 174+88 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 993' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 675.3  
N - 666195.789; E - 2193003.785 DATE: 9/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
675.1	0					0.2' SAND AND GRAVEL - 2 INCHES											
						CONCRETE - 16 INCHES											
673.8						1.5' GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, "and" fine gravel, trace silt, trace clay, contains many concrete fragments.	1	42	18	26	8	6	NP	NP	6		A-1-b(0)
672.3			5/6/7			3.0' FINE SAND (FILL): Very-loose to medium-dense brown fine sand, little coarse sand, little fine gravel, trace silt, trace clay, contains many brick and few siltstone fragments.	2	14	11	66	4	5	NP	NP	6		A-3(0)
	5						3									9	Est. A-3
			2/3/3				4									8	Est. A-3
666.4						8.9'	5A										Est. A-3
665.3	10		3/6/6			10.0' COARSE AND FINE SAND (POSSIBLE FILL): Medium-dense brown fine to coarse sand, little fine gravel, trace silt, trace clay.	5B										Est. A-3a

NOTES:  
 - No seepage encountered during drilling.

WATER LEVEL: ▽ "Dry"      ▽      ▽      ▽  
 WATER NOTE: Augers Removed  
 DATE: 9/14/06

PLATE 4



**LOG OF BORING NO. R-012-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 180+1 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 1617' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 676.7  
N - 665806.547; E - 2193695.877 DATE: 9/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
675.7	0					GRAVEL (FILL): Medium-dense (Est.) brown fine to coarse gravel, contains many rock fragments.												
674.2			9/9/7			COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, little fine gravel, little silt, trace clay, contains many slag fragments.	1	19	22	31	19	9	NP	NP	11		A-3a(0)	
672.7			3/6/6			GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, some fine to coarse gravel, little silt, trace clay, contains many brick and concrete fragments.	2	34	16	28	16	6	NP	NP	10		A-1-b(0)	
	5		5/7/7			COARSE AND FINE SAND (FILL): Loose to medium-dense brown fine to coarse sand, trace to little fine gravel, trace silt, trace clay, contains few slag fragments.	3								16		Est. A-3a	
			3/4/4				4								9		Est. A-3a	
666.7	10		3/10/9				5										Est. A-3a	
	15																	

NOTES:  
 - No seepage encountered during drilling.

WATER LEVEL: ▽ "Dry" ▽  
 WATER NOTE: Augers Removed  
 DATE: 9/14/06

PLATE 6

**LOG OF BORING NO. R-013-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 181+98 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 1999' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 683.5  
N - 665597.217; E - 2194149.318 DATE: 10/2/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
683.3	0					0.2 ASPHALT - 2 1/2 INCHES												
682.7						0.8 SANDSTONE PAVER - 6 1/2 INCHES												
682.4						1.1 SAND - 4 INCHES												
			4/4/4			GRAVEL WITH SAND (FILL): Loose becoming very-loose brown fine to coarse sand, some to "and" fine gravel, trace silt, trace clay, contains many sandstone fragments, few coal and brick fragments, and few silty clay pockets.	1	37	34	16	6	7	NP	NP	7		A-1-b(0)	
			4/2/2		2		35	35	15	8	7	NP	NP	9		A-1-b(0)		
	5		2/2/2		3										7	Est. A-1-b		
			3/2/1		4										7	Est. A-1-b		
675.5						8.0 GRAVEL WITH SAND (POSSIBLE FILL): Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay.	5										Est. A-1-b	
673.5	10		6/6/6			10.0												

NOTES:  
 - No seepage encountered during drilling.

WATER LEVEL: ▽ "Dry" ▽  
 WATER NOTE: Augers Removed  
 DATE: 10/2/06

PLATE 7



**LOG OF BORING NO. R-014-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 4-1/2" O.D. Continuous-flight Auger LOCATION: Sta. 158+70 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 561' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 616.3  
N - 665765.929; E - 2191727.058 DATE: 10/2/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
616.0	0					XXX 0.3 ASPHALT - 4 INCHES											
						BRICK - 12 INCHES											
615.0						1.3											
614.2			10/11/9			2.1 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay, contains few coal fragments and silty clay pockets.	1A	21	38	23	9	9	NP	NP	7		A-1-b(0)
613.3						3.0 SANDY SILT (FILL): Medium-dense brown silt, little clay, some fine to coarse sand, trace fine gravel, contains few coal fragments.	1B								13		Est. A-4a
			6/6/8	4.5+		SILT: Hard gray silt, some clay, trace fine sand, contains many silty clay seams.	2	0	0	2	63	35	24	6	16		A-4b(8)
	5		6/7/9	4.5+			3								18		Est. A-4b
			6/6/8	4.5+			4										Est. A-4b
608.3						8.0											
			4/6/6	1.5-3.0		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	5								22		Est. A-6a
606.3	10					10.0											

NOTES:  
 - No seepage encountered during drilling.

WATER LEVEL: ▽ "Dry" ▽ ▽ ▽  
 WATER NOTE: Augers Removed - No Cave  
 DATE: 10/2/06

**LOG OF BORING NO. R-015-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 2-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 161+24 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 359' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 638.7  
N - 666066.828; E - 2191731.465 DATE: 10/2/06; 10/16/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
638.1	0					0.6 ASPHALT - 7 INCHES											
637.7						1.0 SANDSTONE PAVER - 5 INCHES											
637.4						1.3 SAND - 4 INCHES											
636.9						1.8 CONCRETE - 6 INCHES											
636.7						2.0 GRANULAR BASE - 2 INCHES											
			2/2/2			COARSE AND FINE SAND (FILL): Very-loose to loose brown fine to coarse sand, trace to little silt, trace to little clay, trace fine gravel, contains few sandstone and brick fragments.	1	9	19	46	14	12	NP	NP	12	A-3a(0)	
	5		1/2/2				2								14	Est. A-3a	
			2/1/2				3	9	35	42	6	8	NP	NP	8	A-3a(0)	
			2/2/1				4								7	Est. A-3a	
			3/3/4				5									Est. A-3a	
628.7	10					10.0											

**NOTES:**  
 - No seepage encountered during drilling.  
 - Borehole was advanced on 10/2/06 to a depth of 1.5' before encountering a possible utility. It was then offset approximately 100' to the north and completed on 10/16/06.

WATER LEVEL: ∇ "Dry"      ∇ "Dry"      ∇      ∇  
 WATER NOTE: Inside Augers - End of Drilling      Augers Removed - Caved at 3.8'      \_\_\_\_\_  
 DATE: 10/16/06      10/16/06      \_\_\_\_\_

PLATE 9

**LOG OF BORING NO. R-016-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 2-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 182+6 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 1347' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 678.1  
N - 666183.273; E - 2193863.724 DATE: 10/16/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
677.8	0					0.3 TOPSOIL - 3 INCHES												
			3/5/8			GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, some fine gravel, little silt, trace clay, contain few concrete and coal fragments. - Encountered possible concrete block from 2.5' to 3.0'.	1	33	18	25	15	9	NP	NP	17		A-1-b(0)	
675.1						3.0 GRAVEL WITH SAND (POSSIBLE FILL): Very-loose brown fine gravel, "and" fine to coarse sand, trace silt, trace clay.	2	48	29	14	3	6	NP	NP	8		A-1-b(0)	
673.6			2/2/2			4.5 COARSE AND FINE SAND (POSSIBLE FILL): Loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	3								8		Est. A-3a	
	5		2/3/2				4									6		Est. A-3a
			2/2/3				5											Est. A-3a
668.1	10																	

NOTES:  
- No seepage encountered during drilling.

WATER LEVEL: ∇ "Dry"      ∇ "Dry"      ∇      ∇  
WATER NOTE: Inside Augers - End of Drilling      Augers Removed - Caved at 3.6'      \_\_\_\_\_  
DATE: 10/16/06      10/16/06      \_\_\_\_\_

PLATE 3

**LOG OF BORING NO. R-017-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 188+68 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 3' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 669.4  
N - 667743.192; E - 2193801.073 DATE: 9/28/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
669.1	0					0.3 TOPSOIL - 3 INCHES												
			1/3/3			COARSE AND FINE SAND (FILL): Loose becoming medium-dense brown fine sand, little coarse sand, little silt, trace clay, trace fine gravel, contains few slag and brick fragments.	1	9	16	54	19	2	NP	NP	11		A-3a(0)	
			2/5/6				2										8	Est. A-3a
			14/13/13				3	6	11	59	15	9	NP	NP	10		A-3a(0)	
	5		6/12/15				4										9	Est. A-3a
661.9						7.5 GRAVEL WITH SAND (POSSIBLE FILL): Loose brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay, contains few silty clay pockets.												
660.3			4/3/4	1.0-3.5		9.1 SILT AND CLAY (POSSIBLE FILL): Stiff to very-stiff brown mottled with gray silt, "and" clay, little fine to coarse sand, trace fine gravel.	5A											Est. A-1-b
659.9						9.5 COARSE AND FINE SAND (POSSIBLE FILL): Loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	5B											Est. A-6a
659.4	10					10.0 COARSE AND FINE SAND (POSSIBLE FILL): Loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	5C											Est. A-3a
						NOTES: - No seepage encountered during drilling.												
	15																	

WATER LEVEL: ▽ "Dry" ▽  
 WATER NOTE: Augers Removed  
 DATE: 9/28/06

PLATE 4



**LOG OF BORING NO. R-022-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: <u>2-1/4" I.D. Hollow-stem Auger</u>	LOCATION: <u>Sta. 188+4</u>	COMPLETION DEPTH: <u>10.0'</u>
<u>2" O.D. Split-barrel Sampler</u>	<u>468' Lt. of Proposed W.B. I-90 Centerline</u>	ELEVATION: <u>671.1</u>
	<u>N - 668077.790; E - 2193463.289</u>	DATE: <u>10/16/06</u>

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
	0					ASPHALT - 18 INCHES											
669.6						1.5											
669.1						2.0											
			2/2/2			GRAVEL WITH SAND (FILL): Very-loose brown fine to coarse sand, little fine gravel, trace silt, trace clay.	1	19	47	24	4	6	NP	NP	5		A-1-b(0)
			1/1/1				2								6		Est. A-1-b
665.6	5					5.5											
			1/2/1			FINE SAND (FILL): Very-loose to loose brown fine to coarse sand, little fine gravel, trace clay.	3	16	24	56	0	4	NP	NP	7		A-3(0)
			2/3/4				4								5		Est. A-3
			2/3/2				5										Est. A-3
661.1	10					10.0											

NOTES:  
 - No seepage encountered during drilling.

WATER LEVEL: <input checked="" type="checkbox"/> "Dry"	<input checked="" type="checkbox"/> "Dry"	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
WATER NOTE: <u>Inside Augers - End of Drilling</u>	<u>Augers Removed - Caved at 3.1'</u>		
DATE: <u>10/16/06</u>	<u>10/16/06</u>		

PLATE 9

**LOG OF BORING NO. R-023-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**

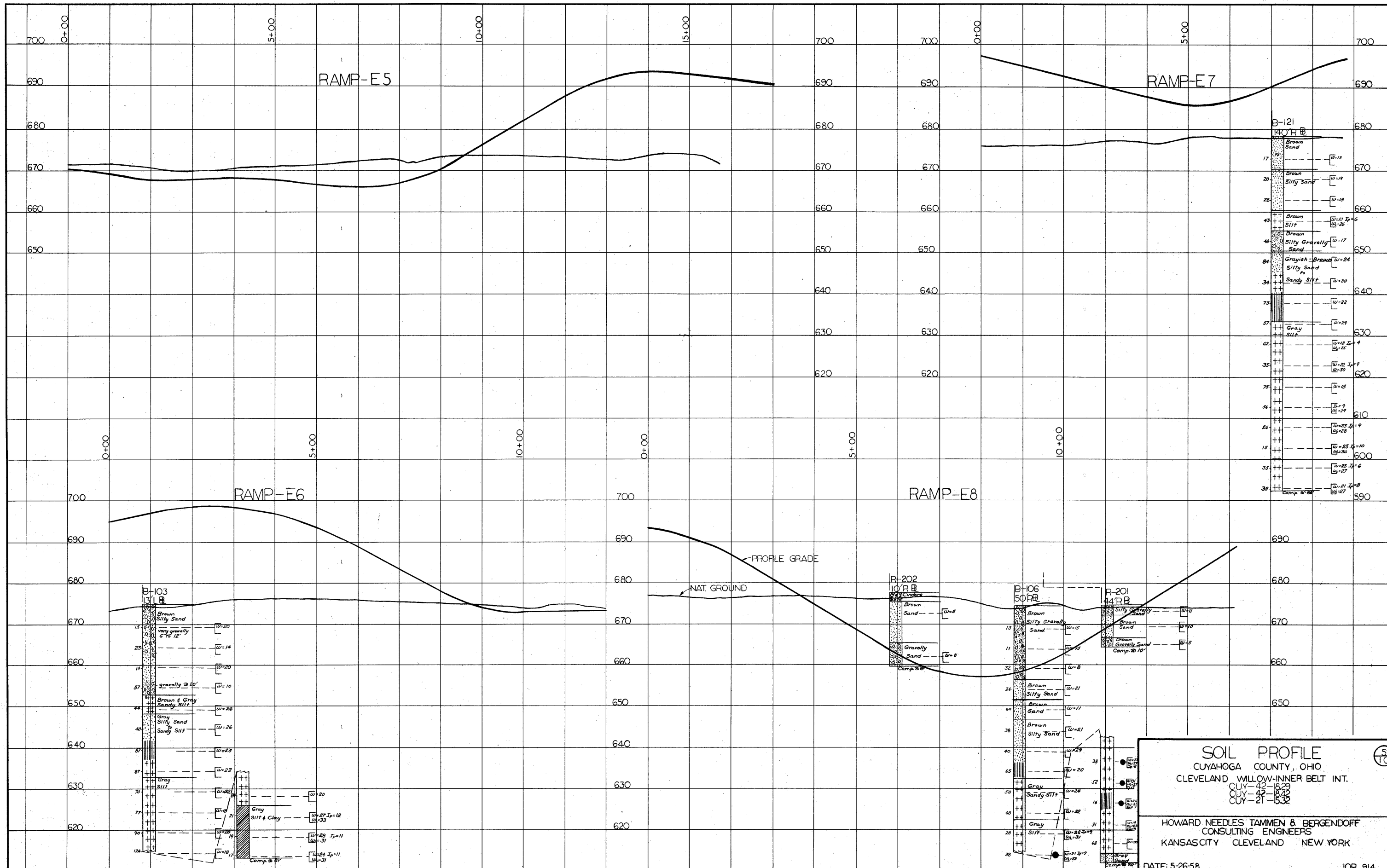


TYPE: 2-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 194+39 COMPLETION DEPTH: 10.0'  
2" O.D. Split-barrel Sampler 391' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 667.3  
N - 668408.992; E - 2194042.460 DATE: 10/16/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
667.0	0					XXX 0.3 ASPHALT - 3 INCHES												
666.4						4.4 0.9 CONCRETE - 8 INCHES												
						GRANULAR BASE - 13 INCHES												
665.3						2.0												
664.8			7/9/5			2.5 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay, contains many brick and concrete fragments.	1A										Est. A-1-b	
						GRAVEL WITH SAND (FILL): Medium-dense becoming loose brown fine to coarse sand, little fine gravel, trace silt, trace clay, contains few slag fragments.	1B										6	Est. A-1-b
			3/2/3				2	11	48	31	5	5	NP	NP	7		A-1-b(0)	
	5						3	17	57	21	1	4	NP	NP	6		A-1-b(0)	
			3/3/3				4										6	Est. A-1-b
							5											Est. A-1-b
657.3	10		2/3/4			10.0												

NOTES:  
 - No seepage encountered during drilling.

WATER LEVEL: ∇ "Dry" ∇ "Dry" ∇ ∇  
 WATER NOTE: Inside Augers - End of Drilling Augers Removed - Caved at 3.3'  
 DATE: 10/16/06 10/16/06







**LOG OF BORING NO. S-001-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 101+18 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 40' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.6  
N - 660712.782; E - 2189620.647 DATE: 9/26/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
679.3	0					0.3' CONCRETE - 3 INCHES											
			7/8/10			COARSE AND FINE SAND: Medium-dense brown fine to coarse sand, trace to little silt, trace clay, trace fine gravel, contains few silty clay pockets.	1										Est. A-3a
			5/6/7				2										Est. A-3a
674.1	5		4/7/7			5.5' GRAVEL WITH SAND: Medium-dense becoming very-loose brown fine to coarse sand, some fine gravel, trace silt, trace clay.	3	29	32	29	10				9		Est. A-1-b
			2/2/2				4										Est. A-1-b
669.1	10		5/8/7			10.5' FINE SAND: Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	5										Est. A-3
			3/6/7				6	3	34	56	7				5		Est. A-3
	15		6/9/11				7										Est. A-3
661.6			4/6/12			18.0' SILT: Medium-dense brown silt, little clay, some fine to coarse sand, trace fine gravel.	8	1	1	21	66	11	NP	NP	18		A-4b(8) A-4b(0)
	20		5/9/12			22.0' SILT: Medium-dense to dense gray and brown silt, little clay, some fine sand, trace coarse sand, contains many fine sand seams and few silty clay lenses.	9	0	1	30	58	11	19	1	18		A-4b(7)
	25		10/17/24				10										Est. A-4b
647.6	30		11/16/26			32.0' SANDY SILT: Medium-dense to dense gray silt, trace clay, "and" fine sand, trace coarse sand, contains few silty clay seams.	11										Est. A-4a
	35																

PLATE 1

WATER LEVEL: 28.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/26/06

**LOG OF BORING NO. S-001-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 101+18 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 40' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.6  
N - 660712.782; E - 2189620.647 DATE: 9/26/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
	35																	
	40	12/10/6				SANDY SILT: Medium-dense to dense gray silt, trace clay, "and" fine sand, trace coarse sand, contains few silty clay seams.	12	0	1	43	49	7	NP	NP	21		A-4a(4) A-4a(0)	
	45	4/6/8					13								19		Est. A-4a	
632.6						47.0												
	50	2/4/4		1.0-2.5		SILT: Stiff to very-stiff gray silt, some to "and" clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams, few fine to coarse sand seams, and few medium-stiff zones.	14	2	1	2	65	30	28	9	26		A-4b(8)	
	55	4/4/6		1.5-2.0			15								21		Est. A-4b	
	60	1/4/5		1.5-2.0			16										Est. A-4b	
	65	1/4/5		1.25-2.5			17	0	1	2	60	37	27	7	24		A-4b(8)	
	70	2/5/6		2.5-3.5			18								19		Est. A-4b	

PLATE 2

WATER LEVEL: 28.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/26/06

**LOG OF BORING NO. S-001-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 101+18 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 40' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.6  
N - 660712.782; E - 2189620.647 DATE: 9/26/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
604.6	70		3/4/5	0.5-3.0		++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ 75.0	19										26	Est. A-4b
	75					<u>NOTES:</u> - Encountered slight seepage at 5.0'. - Encountered water at 28.5'. - Water was added inside augers at 30.0' to prevent heave.												
	80																	
	85																	
	90																	
	95																	
	100																	
	105																	

WATER LEVEL: 28.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/26/06

PLATE 3

**LOG OF BORING NO. S-002-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 101+29 COMPLETION DEPTH: 95.0'  
2" O.D. Split-barrel Sampler 112' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.1  
N - 660722.465; E - 2189548.550 DATE: 9/25/06 - 9/26/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class					
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC				
678.4	0					0.7 TOPSOIL - 8 INCHES														
			3/4/4			GRAVEL WITH SAND: Loose brown fine to coarse sand, "and" fine gravel, trace silt, trace clay.	1											Est. A-1-b		
	5		3/4/3				2	41	31	21	7							7	Est. A-1-b	
671.1			3/3/2				3												Est. A-1-b	
			1/2/2			GRAVEL WITH SAND: Very-loose to loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	4												Est. A-1-b	
	10		1/2/1				5	6	47	41	2	4	NP	NP				7	A-1-b(0)	
	15		1/1/2				6												Est. A-1-b	
661.1			3/4/6				7												5	Est. A-1-b
			3/4/8			FINE SAND: Loose to medium-dense brown fine sand, little coarse sand, trace silt, trace clay.	8													Est. A-3
	20		3/5/5				9	1	19	71	3	6	NP	NP				12	A-3(0)	
	25		3/5/8				10													Est. A-3
647.1			10/25/29			SANDY SILT: Very-dense brown and gray fine sand, some silt, trace clay, trace coarse sand.	11	0	1	57	32	10	NP	NP				18	A-4a(2)	
	35																			

WATER LEVEL: 27.0 "Dry"  
 WATER NOTE: Encountered During Drilling Augers Removed - Caved at 22.0'  
 DATE: 9/25/06 9/26/06

PLATE 4



**LOG OF BORING NO. S-002-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 101+29 COMPLETION DEPTH: 95.0'  
2" O.D. Split-barrel Sampler 112' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.1  
N - 660722.465; E - 2189548.550 DATE: 9/25/06 - 9/26/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
602.1	70		5/7/7	1.25-2.0		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand.	19									Est. A-6a
597.1	80		1/3/4	0.25-0.75		SANDY SILT: Soft to medium-stiff gray clay, "and" silt, some fine to coarse sand, trace fine gravel.	20	5	10	11	36	38	26	9	21	A-4a(8)
592.1	85		1/1/1	0.25-0.75		SILT: Soft to medium-stiff gray silt, "and" clay, trace fine sand.	21								32	Est. A-4b
584.1	90		1/3/5	1.5-2.5		SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains few stiff zones.	22									Est. A-4b
584.1	95		6/8/12	4.0-4.5+		SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains few stiff zones.	23	0	1	2	55	42	29	9	21	A-4b(8)

NOTES:  
 - Encountered water at 27.0'.  
 - Water was added inside augers at 30.0' to prevent heave.

WATER LEVEL: 27.0 "Dry"  
 WATER NOTE: Encountered During Drilling Augers Removed - Caved at 22.0'  
 DATE: 9/25/06 9/26/06

PLATE 6

**LOG OF BORING NO. S-003-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 101+83 COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler 34' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.0  
N - 660779.161; E - 2189625.234 DATE: 9/26/06 - 9/27/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
678.7	0					0.3' CONCRETE - 3 INCHES													
			6/5/5			GRAVEL WITH SAND: Loose to medium-dense brown fine to coarse sand, little fine gravel, trace silt, trace clay, contains few very-loose zones.	1											Est. A-1-b	
			3/4/5				2												Est. A-1-b
	5		3/2/2				3	20	52	23	5						7		Est. A-1-b
			4/7/7				4												Est. A-1-b
668.5	10					10.5													
			6/7/7			FINE SAND: Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	5											Est. A-3	
			3/6/10				6	4	24	62	7	3	NP	NP	5			A-3(0)	
	15		2/5/6				7												Est. A-3
			4/6/7				8												Est. A-3
	20						9												Est. A-3
			5/6/5																
			8/10/9			29.6	10A	4	40	47	7	2	NP	NP	20		A-3(0)		
649.4	30					SILT: Medium-dense brown silt, trace clay, some fine sand, trace coarse sand, trace fine gravel, contains many fine sand seams.	10B											Est. A-4b	
			10/12/15				11	1	1	34	57	7	NP	NP	21			A-4b(6)	

PLATE 7

WATER LEVEL: ▽ 27.5 "Dry" "Dry" "Dry" "Dry"  
 WATER NOTE: Encountered During Drilling Inside Augers - End of Drilling Augers Removed - Caved at 24.3'  
 DATE: 9/27/06 9/27/06 9/27/06





**LOG OF BORING NO. S-003-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 101+83 COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler 34' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.0  
N - 660779.161; E - 2189625.234 DATE: 9/26/06 - 9/27/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
606.5	70					++++ ++++ ++++ ++++ 72.5												
	75	█	3/4/7	1.25-3.0		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains few silty clay seams.	19	0	1	2	51	46	32	11	25	A-6a(8)		
599.0	80	█	5/6/6	1.0-1.75			80.0	20									Est. A-6a	
	85					NOTES: - Encountered seepage at 25.0'. - Encountered water at 27.5'. - Water was added inside augers at 28.5' to prevent heave.												
	90																	
	95																	
	100																	
	105																	

WATER LEVEL: ▽ 27.5      ▽ "Dry"      ▽ "Dry"      ▽  
 WATER NOTE: Encountered During Drilling      Inside Augers - End of Drilling      Augers Removed - Caved at 24.3'  
 DATE: 9/27/06      9/27/06      9/27/06

PLATE 9

**LOG OF BORING NO. S-004-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 102+2 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 119' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.2  
N - 660796.601; E - 2189540.163 DATE: 9/5/06 - 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
678.6	0					0.6 TOPSOIL - 7 INCHES											
676.2			10/20/15			GRAVEL WITH SAND: Dense brown fine to coarse sand, little to some fine gravel, trace silt, trace clay contains few roots.	1										Est. A-1-b
	5		6/5/5			GRAVEL WITH SAND: Loose brown fine to coarse sand, some fine gravel, trace silt, trace clay.	2	26	31	33	10				3		Est. A-1-b
			3/4/4				3										Est. A-1-b
			2/2/3				4										Est. A-1-b
668.7	10					10.5 FINE SAND: Loose to medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	5										Est. A-3
			6/7/8				6	3	22	66	9				5		Est. A-3
	15		5/7/8				7										Est. A-3
			5/7/10				8										Est. A-3
	20		6/7/8				9										Est. A-3
			4/6/7				10										Est. A-3
	25																
			4/5/7														Est. A-3
	30																

WATER LEVEL: ▽ "Dry" ▽ 28.5 ▽ "Dry" ▽  
 WATER NOTE: Inside Augers - End of Day Encountered During Drilling Inside Augers - End of Drilling  
 DATE: 9/5/06 9/6/06 9/6/06

**LOG OF BORING NO. S-004-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 102+2 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 119' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.2  
N - 660796.601; E - 2189540.163 DATE: 9/5/06 - 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
	-35		2/3/5			FINE SAND: Loose to medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	11									Est. A-3	
	-40		9/10/14				12										Est. A-3
635.7					43.5		13									19	Est. A-4b
	-45		6/8/9	2.5-4.5+		SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains few fine sand lenses and seams, and many medium-stiff to stiff zones.											
	-50		2/3/3	0.5-2.5			14	0	1	3	59	37	27	8	24	A-4b(8)	
	-55		3/4/4	1.0-4.5+			15										Est. A-4b
	-60		5/8/11	1.5-4.5+			16									19	Est. A-4b
	-65		3/6/7	2.5-3.5			17										Est. A-4b

PLATE II

WATER LEVEL: ∇ "Dry" ∇ 28.5 ∇ "Dry" ∇  
 WATER NOTE: Inside Augers - End of Day Encountered During Drilling Inside Augers - End of Drilling  
 DATE: 9/5/06 9/6/06 9/6/06

**LOG OF BORING NO. S-004-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 102+2 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 119' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.2  
N - 660796.601; E - 2189540.163 DATE: 9/5/06 - 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class					
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC			
611.7						++++ ++++ ++++ 67.5													
	-70-	█	5/7/10	1.25-3.5		SILT AND CLAY: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains few fine sand seams, and many very-stiff to hard zones.	18	0	1	2	55	42	30	15	20	A-6a(10)			
	-75-	█	5/7/8	2.75-4.5+			19									Est. A-6a			
	-80-	█	3/4/5	0.5-3.0			20	1	1	2	50	46	28	11	25	A-6a(8)			
	-85-	█	3/3/4	0.5-1.25			21								32	Est. A-6a			
591.7						87.5													
589.2	-90-	█	2/2/3	0.25-0.75		90.0	22	1	4	5	30	60	35	14	27	A-6a(10)			
	-95-						<p><u>NOTES:</u>                      - Encountered water at 28.5'.                      - Water was added inside augers at 28.5' to prevent heave.</p>												

WATER LEVEL: ▽ "Dry"      ▽ 28.5      ▽ "Dry"      ▽  
 WATER NOTE: Inside Augers - End of Day      Encountered During Drilling      Inside Augers - End of Drilling  
 DATE: 9/5/06      9/6/06      9/6/06

PLATE 12

**LOG OF BORING NO. S-005-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 109+38 COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 67' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 677.6  
N - 661539.554; E - 2189645.403 DATE: 9/27/06 - 9/28/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
677.4	0					0.2' TOPSOIL / ROOTMAT - 2 INCHES											
674.6			4/6/7			GRAVEL WITH SAND (FILL): Medium-dense brown and dark brown fine to coarse sand, some to "and" fine to coarse gravel, trace silt, trace clay, contains few coal and slag fragments.	1										Est. A-1-b
	5		3/3/3			GRAVEL WITH SAND: Very-loose to loose brown fine to coarse sand, some fine gravel, trace silt, trace clay.	2										Est. A-1-b
			2/2/2				3										Est. A-1-b
	10		3/4/4				4	33	36	22	9				8		Est. A-1-b
664.6			2/2/2				5										Est. A-1-b
	15		2/2/2			COARSE AND FINE SAND: Very-loose to loose brown fine sand, little coarse sand, trace fine gravel, trace silt, trace clay.	6										Est. A-3a
			3/3/3				7	1	11	75	4	9	NP	NP	14		A-3a(0)
658.1			3/4/3	1.0-3.5			8A										Est. A-3a
	20					SILT AND CLAY: Stiff to very-stiff brown mottled with gray silt, "and" clay, trace fine to coarse sand.	8B								20		Est. A-6a
655.6																	
	25		2/3/4			COARSE AND FINE SAND: Loose brown fine sand, some silt, trace clay, trace coarse sand.	9A	0	2	67	22	9	NP	NP	25		A-3a(0)
653.4						SILT: Loose brown becoming gray silt, little clay, little to some fine to coarse sand.	9B										Est. A-4b
650.6																	
	30		8/9/11			SANDY SILT: Medium-dense gray fine sand, "and" silt, little clay, trace coarse sand.	10	0	1	46	41	12	NP	NP	17		A-4a(4) A-4a(0)
647.1																	
	35		9/11/12			COARSE AND FINE SAND: Medium-dense brown fine sand, little coarse sand, little silt, trace clay, trace fine gravel.	11										Est. A-3a

PLATE 13

WATER LEVEL: 23.5      11.0      "Dry"      "Dry"  
 WATER NOTE: Encountered During Drilling      Inside Augers - Beginning of Day      Inside Augers - End of Drilling      Augers Removed - Caved at 29.0'  
 DATE: 9/27/06      9/28/06      9/28/06      9/28/06

**LOG OF BORING NO. S-005-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 109+38 COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 67' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 677.6  
N - 661539.554; E - 2189645.403 DATE: 9/27/06 - 9/28/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class	
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC
635.1	35					COARSE AND FINE SAND: Medium-dense brown fine sand, little coarse sand, little silt, trace clay, trace fine gravel.	12	1	14	63	13	9	NP	NP	20	A-3a(0)
630.6	45		6/6/8	1.5-4.0		SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains few fine sand seams, and few stiff zones.	13									Est. A-4b
626.6	50		3/4/5			SANDY SILT: Medium-dense gray silt, trace to little clay, "and" fine sand, trace coarse sand, trace coarse sand.	14								18	Est. A-4a
620.9	55		10/12/16			SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains few fine sand seams. - Unit Dry Weight (UDW) = 113.5 pcf from 56.5' to 57.0'	15	0	1	2	59	38	28	9	24	A-4b(8)
607.6	70		3/3/3	0.5-1.25		SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand, contains many silt seams, lenses and pockets, and few stiff zones. - Unit Dry Weight (UDW) = 108.2 pcf from 57.0' to 57.5'	16	0	1	3	59	37	25	7	20 23	A-4b(8)
			P	0.5-0.75 3.0-4.5+			17									Est. A-6a
			6/9/15	2.0-4.5+			18	0	1	2	46	51	33	12	22	A-6a(9)
			8/9/15	2.5-3.75			19									Est. A-6a
			5/7/11	1.75-4.0												

PLATE 14

WATER LEVEL: ▽ 23.5      ▽ 11.0      ▽ "Dry"      ▽ "Dry"  
 WATER NOTE: Encountered During Drilling      Inside Augers - Beginning of Day      Inside Augers - End of Drilling      Augers Removed - Caved at 29.0'  
 DATE: 9/27/06      9/28/06      9/28/06      9/28/06

**LOG OF BORING NO. S-005-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 109+38 COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 67' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 677.6  
N - 661539.554; E - 2189645.403 DATE: 9/27/06 - 9/28/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
	70					SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine to coarse sand, contains many silt seams, lenses and pockets, and many medium-stiff zones.											
	75	█	5/6/6	0.5-1.25			20	0	1	2	46	51	32	11	26		A-6a(8)
	80	█	5/6/6	0.5-2.0			21									25	Est. A-6a
592.6	85	█	5/7/11	0.5-3.5			22									25	Est. A-6a
	90																
	95																
	100																
	105																

NOTES:  
 - Encountered seepage at 18.5'.  
 - Encountered water at 23.5'.  
 - Water was added inside augers at 23.5' to prevent heave.

WATER LEVEL: ▽ 23.5      ▽ 11.0      ▽ "Dry"      ▽ "Dry"  
 WATER NOTE: Encountered During Drilling      Inside Augers - Beginning of Day      Inside Augers - End of Drilling      Augers Removed - Caved at 29.0'  
 DATE: 9/27/06      9/28/06      9/28/06      9/28/06

PLATE 15



**LOG OF BORING NO. S-006-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 109+51 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 128' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 677.9  
N - 661530.225; E - 2189840.807 DATE: 10/3/06 - 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
677.6	0					0.3' TOPSOIL - 3 1/2 INCHES											
			8/10/8			COARSE AND FINE SAND: Medium-dense brown fine to coarse sand, little fine gravel, little silt, trace clay.	1	19	25	39	1	7	NP	NP	4		A-3a(0)
	5		5/6/6		2												Est. A-3a
			5/6/6		3												Est. A-3a
			6/9/9		4												Est. A-3a
667.4	10					10.5											
			6/8/8			COARSE AND FINE SAND: Loose to medium-dense brown fine sand, trace coarse sand, trace fine gravel, trace silt, trace clay.	5										Est. A-3a
	15		4/4/4		6		2	3	84	7	4	NP	NP	5		A-3a(0)	
			4/6/9		7												Est. A-3a
	20		5/6/6		8												Est. A-3a
653.5	25		3/4/6			24.4	9A										Est. A-3a
						+++++ SILT: Loose brown silt, trace fine to coarse sand, contains many silty clay seams, and iron oxide staining. +++++	9B								28		Est. A-4b
650.4							27.5										
	30		3/5/6			COARSE AND FINE SAND: Medium-dense brown fine sand, some silt, trace clay, trace coarse sand, trace fine gravel.	10										Est. A-3a
	35		3/5/9				11	1	3	69	22	5	NP	NP	22		A-3a(0)

PLATE 16

WATER LEVEL: ▽ 23.5 ▽ 25.5 ▽ "Dry" ▽ "Dry"  
 WATER NOTE: Encountered During Drilling Inside Augers - Beginning of Day Inside Augers - End of Drilling Augers Removed - Caved at 25.1'  
 DATE: 10/3/06 10/4/06 10/4/06 10/4/06

**LOG OF BORING NO. S-006-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 109+51 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 128' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 677.9  
N - 661530.225; E - 2189840.807 DATE: 10/3/06 - 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
638.6	35					COARSE AND FINE SAND: Medium-dense brown fine sand, some silt, trace clay, trace coarse sand, trace fine gravel.	12A												
	40	10/11/13				SILT: Medium-dense becoming loose gray silt, trace clay, trace fine to coarse sand, contains few silty clay seams.	12B										20	Est. A-3a Est. A-4b	
	45	5/6/7					13	0	1	5	86	8	21	3	25		A-4b(8)		
	50	4/4/6					14										20	Est. A-4b	
625.4	55	3/3/3		0.5-1.5		SILT: Medium-stiff to stiff gray silt, some to "and" clay, trace fine to coarse sand, contains few silty clay seams, and few very-soft to soft zones.	15	0	1	2	63	34	27	8	25		A-4b(8)		
620.4	60	P 4/5/7		0.0-0.5 1.25-3.5 2.0-3.0		- Unit Dry Weight (UDW) = 106.7 pcf from 57.0' to 57.5'	16	0	0	1	63	37	28	8	24		A-4b(8)		
	65	5/10/13		4.0-4.5+		SILT AND CLAY: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, and few stiff zones.	17										22	Est. A-6a	
	70	4/6/8		2.5-4.5+			18										18	Est. A-6a	
							19	0	1	2	59	38	30	12	20		A-6a(9)		


PLATE 17

WATER LEVEL: ▽ 23.5      ▽ 25.5      ▽ "Dry"      ▽ "Dry"  
 WATER NOTE: Encountered During Drilling      Inside Augers - Beginning of Day      Inside Augers - End of Drilling      Augers Removed - Caved at 25.1'  
 DATE: 10/3/06      10/4/06      10/4/06      10/4/06

**LOG OF BORING NO. S-006-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 109+51 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 128' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 677.9  
N - 661530.225; E - 2189840.807 DATE: 10/3/06 - 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
602.9	70		6/6/8	2.5-4.5+		 SILT AND CLAY: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, and few stiff zones.  NOTES: - Encountered water at 23.5'. - Water was added inside the augers at 33.5' to prevent heave.	20									17	Est. A-6a
	75																
	80																
	85																
	90																
	95																
	100																
	105																

WATER LEVEL:  $\nabla$  23.5       $\nabla$  25.5       $\nabla$  "Dry"       $\nabla$  "Dry"  
 WATER NOTE: Encountered During Drilling      Inside Augers - Beginning of Day      Inside Augers - End of Drilling      Augers Removed - Caved at 25.1'  
 DATE: 10/3/06      10/4/06      10/4/06      10/4/06

PLATE 18

**LOG OF BORING NO. S-007-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 110+8 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 64' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 677.3  
N - 661608.455; E - 2189657.188 DATE: 10/2/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
677.0	0					0.3' TOPSOIL - 4 INCHES												
			8/9/9			GRAVEL WITH SAND: Medium-dense becoming loose brown fine to coarse sand, some fine gravel, trace silt, trace clay.	1										Est. A-1-b	
	5		3/3/4				2	29	32	27	12					5	Est. A-1-b	
			4/4/4				3											Est. A-1-b
			3/4/4				4											Est. A-1-b
666.8	10					10.5												
			4/3/3			COARSE AND FINE SAND: Very-loose to loose brown fine to coarse sand, little fine gravel, little silt, trace clay.	5	19	26	34	21					10	Est. A-3a	
			2/2/2				6											Est. A-3a
661.8	15					15.5												
			2/3/3			FINE SAND: Loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	7										Est. A-3	
			2/3/3				8	8	38	45	9	NP	NP	9			A-3(0)	
654.8						22.5												
653.2			2/3/3			24.1	9A										Est. A-4b	
	25					27.5	9B										Est. A-4b	
649.8						27.5												
			8/10/12			SILT: Medium-dense gray silt, trace clay, some fine sand.	10										Est. A-4b	
	30																	
644.8						32.5												
			7/14/16			COARSE AND FINE SAND: Medium-dense brown fine sand, some silt, trace clay, trace coarse sand.	11	0	1	67	25	7	NP	NP	22		A-3a(0)	

PLATE 19

WATER LEVEL: ▽ 33.5 ▽ "Dry" ▽ "Dry" ▽  
 WATER NOTE: Encountered During Drilling Inside Augers - End of Drilling Augers Removed  
 DATE: 10/2/06 10/2/06 10/2/06

**LOG OF BORING NO. S-007-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 110+8 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 64' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 677.3  
N - 661608.455; E - 2189657.188 DATE: 10/2/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
639.8	35					COARSE AND FINE SAND: Medium-dense brown fine sand, some silt, trace clay, trace coarse sand.												
	40	6/6/12				SILT: Loose to medium-dense gray silt, some clay, trace fine to coarse sand, contains few silty clay seams.	12											Est. A-4b
	45	3/4/5					13	0	1	2	69	28	24	4	19			A-4b(8)
	50	6/8/9					14									20		Est. A-4b
624.8	52.5					SILT: Medium-stiff to stiff gray silt, some clay, trace fine to coarse sand, contains many silty clay seams.												
	55	3/3/4	0.5-1.5				15	0	1	2	62	35	28	8	26			A-4b(8)
619.8	57.5					SILT AND CLAY: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, and few stiff zones.												
	60	6/8/9	3.5-4.5+				16									18		Est. A-6a
	65	6/12/14	4.5+				17											Est. A-6a
	70	4/6/8	2.5-4.5+				18	0	1	1	56	42	29	11	20			A-6a(8)


WATER LEVEL: 33.5 "Dry" "Dry" "Dry"  
 WATER NOTE: Encountered During Drilling Inside Augers - End of Drilling Augers Removed  
 DATE: 10/2/06 10/2/06 10/2/06

PLATE 20

**LOG OF BORING NO. S-007-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 110+8 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 64' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 677.3  
N - 661608.455; E - 2189657.188 DATE: 10/2/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
602.3	70		6/4/5	1.5-3.0		 <p>SILT AND CLAY: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, and few stiff zones.</p> <p>NOTES:                      - Encountered seepage at 23.5'.                      - Encountered water at 33.5'.</p>	19									24	Est. A-6a
	75																
	80																
	85																
	90																
	95																
	100																
	105																

WATER LEVEL: ▽ 33.5      ▽ "Dry"      ▽ "Dry"      ▽  
 WATER NOTE: Encountered During Drilling      Inside Augers - End of Drilling      Augers Removed  
 DATE: 10/2/06      10/2/06      10/2/06

PLATE 21

**LOG OF BORING NO. S-008-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 110+32 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 133' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 677.6  
N - 661609.621; E - 2189855.362 DATE: 10/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
677.3	0					0.3 CONCRETE - 3 INCHES												
677.3			3/5/5			0.4 GRANULAR BASE - 2 INCHES	1										Est. A-1-b	
676.6			4/4/4			1.0 GRAVEL WITH SAND (POSSIBLE FILL): Loose (Est.) black fine to coarse sand, "and" fine to coarse gravel, contains many roots, and organic material.	2	35	31	22	7	5	NP	NP	8		A-1-b(0)	
670.6	5		4/4/5	4.0-4.5+		7.0 GRAVEL WITH SAND: Loose brown fine to coarse sand, some fine gravel, trace silt, trace clay.	3A										Est. A-1-b	
670.1			2/3/4			7.5 SILT: Hard brown silt, some clay, trace fine to coarse sand.	3B									19	Est. A-4b	
667.1	10		3/3/4			10.5 FINE SAND: Loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	4										Est. A-3	
664.6			3/5/7			13.0 SILT: Loose brown silt, trace to little clay, trace fine to coarse sand, trace fine gravel, contains many sand seams.	5										Est. A-4b	
	15		5/7/6				6										Est. A-3	
	20		4/4/4				7	2	34	56	4	4	NP	NP	3		A-3(0)	
653.7	25		3/5/8			23.9 SANDY SILT: Medium-dense brown silt, trace clay, little to some fine sand.	9A										Est. A-3	
							9B									22	Est. A-4a	
650.1	30		7/14/15			27.5 SANDY SILT: Medium-dense brown fine sand, "and" silt, trace clay, trace coarse sand.	10										22	Est. A-4a
	35		6/10/11				11	0	4	50	37	9	NP	NP	22		A-4a(3)	

WATER LEVEL: 28.5      33.5      "Dry"      "Dry"  
 WATER NOTE: Encountered During Drilling      Encountered During Drilling      Inside Augers - End of Drilling      Augers Removed - Caved at 27.3'  
 DATE: 10/3/06      10/3/06      10/3/06      10/3/06

PLATE 22

**LOG OF BORING NO. S-008-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 110+32 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 133' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 677.6  
N - 661609.621; E - 2189855.362 DATE: 10/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
640.1	35					SANDY SILT: Medium-dense brown fine sand, "and" silt, trace clay, trace coarse sand.											A-4a(0)
	40	5/6/7				SILT: Loose to medium-dense gray silt, trace clay, "and" fine sand.	12										Est. A-4b
	45	10/12/18					13	0	0	37	55	8	NP	NP	19		A-4b(6) A-4b(0)
	50	4/4/4					14								21		Est. A-4b
625.1	52.5					SILT: Soft to medium-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, lenses, and pockets, and few stiff to very-stiff zones.											
	55	3/4/4	0.25-1.0				15	0	1	1	56	42	29	10	28		A-4b(8)
	60	4/4/4	0.75-2.5				16								26		Est. A-4b
615.1	62.5					SILT: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay lenses, and few hard zones.											
	65	5/6/9	1.25-3.0				17										Est. A-4b
	70	6/7/8	2.0-4.5+				18								25		Est. A-4b

WATER LEVEL: ▽ 28.5      ▽ 33.5      ▽ "Dry"      ▽ "Dry"  
 WATER NOTE: Encountered During Drilling      Encountered During Drilling      Inside Augers - End of Drilling      Augers Removed - Caved at 27.3'  
 DATE: 10/3/06      10/3/06      10/3/06      10/3/06

PLATE 23



**LOG OF BORING NO. S-008-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 110+32 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 133' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 677.6  
N - 661609.621; E - 2189855.362 DATE: 10/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class	
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC
602.6	70-75		5/7/7	2.0-3.5		++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ 75.0	19	0	1	1	58	40	28	8	20	A-4b(8)
						<u>NOTES:</u> - Encountered seepage at 23.5'. - Encountered water at 28.5' and 33.5'. - Water was added inside augers at 33.5' to prevent heave.										

WATER LEVEL: ∇ 28.5      ∇ 33.5      ∇ "Dry"      ∇ "Dry"  
 WATER NOTE: Encountered During Drilling      Encountered During Drilling      Inside Augers - End of Drilling      Augers Removed - Caved at 27.3'  
 DATE: 10/3/06      10/3/06      10/3/06      10/3/06

PLATE 24

**LOG OF BORING NO. S-009-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 119+2 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 13' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 657.1  
N - 662491.350; E - 2189813.289 DATE: 9/27/06 - 9/28/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
655.8	0					1.3 CONCRETE - 15 INCHES											
653.6			15/11/10			3.5 COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay, contains few brick fragments.	1										Est. A-3a
	5		2/2/3			8.5 COARSE AND FINE SAND (POSSIBLE FILL): Very-loose to loose brown fine to coarse sand, little silt, trace clay, trace fine gravel.	2	8	28	44	20				7		Est. A-3a
648.6			1/1/1				3										Est. A-3a
	10		2/3/3				4										Est. A-3a
			4/3/4				5	0	2	79	12	7	NP	NP	23		A-3a(0)
	15		4/7/13				6										Est. A-3a
638.6			3/8/11				7										Est. A-3a
	20		2/3/4			18.5 SANDY SILT: Loose gray fine sand, some silt, trace clay, trace coarse sand, contains many silt seams.	8	0	1	59	32	8	NP	NP	23		A-4a(0)
635.1			2/7/13			22.0 SILT: Medium-dense to dense gray silt, little clay, trace fine to coarse sand, contains few fine to coarse sand seams.	9										Est. A-4b
	25																
	30		10/15/19				10								18		Est. A-4b

WATER LEVEL: ▽ 11.5 ▽ ▽ ▽  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/27/06

PLATE 25



**LOG OF BORING NO. S-009-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 119+2 COMPLETION DEPTH: 75.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 13' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 657.1  
N - 662491.350; E - 2189813.289 DATE: 9/27/06 - 9/28/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	-70-	█	2/3/4	1.0-1.5		 SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silty seams and lenses.	19										Est. A-6a	
582.1	-75-	█	SH/4/4	1.0-1.75	75.0		20	2	2	4	33	58	32	13	25		A-6a(9)	
	-80-					NOTES: - Encountered water at 11.5'.												
	-85-																	
	-90-																	
	-95-																	

WATER LEVEL: ▽ 11.5      ▽      ▽      ▽  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/27/06

PLATE 27

**LOG OF BORING NO. S-010-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 119+24 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 59' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 660.5  
N - 662502.021; E - 2189887.768 DATE: 9/27/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
659.8	0					0.7 TOPSOIL - 8 INCHES													
			2/3/5			COARSE AND FINE SAND (FILL): Loose becoming very-loose brown fine to coarse sand, little fine gravel, little silt, trace clay, contains few brick and coal fragments.	1											Est. A-3a	
			1/2/1				2												Est. A-3a
	5		SH-18"				3												Est. A-3a
			SH-18"				4	16	26	36	15	7	NP	NP	16				A-3a(0)
	10		1-12"/1				5												Est. A-3a
647.5						13.0													
645.0	15		1-9"/1-9"			15.5													
			3/5/8			FINE SAND: Medium-dense becoming loose brown fine sand, trace coarse sand, trace fine gravel, trace silt, trace clay.	6	2	1	70	18	9	NP	NP	27			A-3a(0)	
			1/2/5				7												Est. A-3
	20		1/2/3				8	1	7	83	9				26			Est. A-3	
			5/9/13				9												Est. A-3
632.0	30					28.5													
						SILT: Medium-dense gray silt, trace clay, little fine to coarse sand.	10										20	Est. A-4b	
	35		5/6/11				11	0	1	10	81	8	NP	NP	22			A-4b(0)	

WATER LEVEL: 13.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/27/06

PLATE 28

**LOG OF BORING NO. S-010-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 119+24 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 59' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 660.5  
N - 662502.021; E - 2189887.768 DATE: 9/27/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
623.5	35					++++ ++++ ++++ ++++ 37.0												
	40	█	1/3/4	1.5-2.5		SILT: Stiff to very-stiff gray silt, some clay, trace fine to coarse sand, contains many silty clay seams.	12											Est. A-4b
	45	█	2/3/5	1.0-2.5			13	0	1	2	69	28	28	8	23			A-4b(8)
	50	█	2/3/5	1.5-2.0			14										21	Est. A-4b
608.5	52.0					++++ ++++ ++++ ++++ 52.0												
	55	█	2/3/7	3.25-4.5+		SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, and few stiff zones.	15											Est. A-4b
	60	█	3/6/10	3.0-4.5+			16										19	Est. A-4b
	65	█	2/6/8	2.5-4.25			17	0	1	2	55	42	30	10	20			A-4b(8)
	70	█	4/4/6	1.25-3.25			18										21	Est. A-4b

WATER LEVEL: 13.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/27/06

PLATE 29



**LOG OF BORING NO. S-011-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 124+51 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 30' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 687.7  
N - 663016.663; E - 2189972.572 DATE: 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
687.4	0					0.3 ASPHALT - 3 INCHES											
686.5						1.2 CONCRETE - 11 INCHES											
686.2			8/10/13			1.5 GRANULAR BASE - 4 INCHES	1										Est. A-3a
	5		15/20/23			COARSE AND FINE SAND (FILL): Medium-dense to dense brown fine to coarse sand, some fine to coarse gravel, little clay, trace silt, contains many brick fragments.	2	21	26	34	7	12				11	Est. A-3a
681.7			9/11/13			6.0 - Encountered cobbles at 4.5'. GRAVEL WITH SAND (FILL): Medium-dense dark brown and black fine to coarse sand, little fine gravel, trace silt, trace clay, contains few brick fragments.	3										Est. A-1-b
	10		3/3/3			11.0 GRAVEL WITH SAND (POSSIBLE FILL): Loose brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay.	4										Est. A-1-b
676.7			2/3/3			GRAVEL WITH SAND (POSSIBLE FILL): Loose brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay.	5	20	32	36	5	7				7	Est. A-1-b
	15		3/3/3			16.0 GRAVEL WITH SAND: Loose to medium-dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay.	6										Est. A-1-b
671.7			6/7/9			22.5 COARSE AND FINE SAND: Medium-dense brown fine sand, trace coarse sand, trace fine gravel, trace silt, trace clay, contains few silt and silty clay seams and pockets.	7	42	35	17	3	3	NP	NP		4	A-1-b(0)
	20		4/3/5				8										Est. A-1-b
665.2			6/8/13				9										Est. A-3a
	25		5/3/8				10	1	6	78	7	8				7	Est. A-3a
656.2	30		5/6/7			31.5 FINE SAND: Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	11										Est. A-3
	35																

PLATE 31

WATER LEVEL: 43.5 "Dry"  
 WATER NOTE: Encountered During Drilling Augers Removed - Caved at 30.6'  
 DATE: 9/6/06 10/6/06



**LOG OF BORING NO. S-011-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 124+51 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 30' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 687.7  
N - 663016.663; E - 2189972.572 DATE: 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
	35					FINE SAND: Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.													
	40	6/6/9					12												Est. A-3
	45	6/7/7					13	4	26	61	3	6	NP	NP	19				A-3(0)
	50	6/7/9					14												Est. A-3
635.2						52.5													
	55	7/9/13				SANDY SILT: Medium-dense to dense brown-gray fine sand, "and" silt, little clay, trace coarse sand.	15	0	2	46	41	11	NP	NP	16				A-4a(3) A-4a(0)
	60	9/16/17				61.0	16												Est. A-4a
626.7																			
	65	19/31/48				SILT: Very-dense brown-gray silt, little clay, little fine sand.	17	0	0	13	69	18	NP	NP	17				A-4b(8) A-4b(0)
619.7						68.0													
	70	3/4/6	2.5-4.25			SILT: Very-stiff to hard gray silt, "and" clay, trace fine sand.	18												Est. A-4b

PLATE 32

WATER LEVEL: ▽ 43.5      ▽ "Dry"      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 30.6'      \_\_\_\_\_  
 DATE: 9/6/06      10/6/06      \_\_\_\_\_

**LOG OF BORING NO. S-011-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 124+51 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 30' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 687.7  
N - 663016.663; E - 2189972.572 DATE: 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
615.7	70					++++ SILT: Very-stiff to hard gray silt, "and" clay, trace fine sand. 72.0												
610.7	75	█	1/2/3	0.75-1.5		++++ SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine sand. 77.0	19	0	0	1	57	42	29	9	28		A-4b(8)	
604.7	80	█	3/5/6	1.5-2.75		++++ SILT: Stiff to very-stiff gray silt, "and" clay, trace fine sand. 83.0	20									24	Est. A-4b	
604.7	85	█	6/8/12	3.0-4.5		++++ SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, trace fine sand. 90.0	21											Est. A-6a
597.7	90	█	7/7/11	3.5-4.5		-----	22									23	Est. A-6a	

NOTES:  
 - Encountered cobbles at 4.5'.  
 - Encountered water at 43.5'.

WATER LEVEL: ▽ 43.5      ▽ "Dry"      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 30.6'      \_\_\_\_\_  
 DATE: 9/6/06      10/6/06      \_\_\_\_\_

PLATE 33

**LOG OF BORING NO. S-012-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 125+71  
33' Lt. of Proposed W.B. I-90 Centerline  
N - 663150.266; E - 2189947.376

COMPLETION DEPTH: 90.5'  
 ELEVATION: 681.3  
 DATE: 9/5/06 - 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
681.0	0					0.3 TOPSOIL - 4 INCHES											
680.4			3/6/10			0.9 SANDY SILT: Medium-dense (Est.) dark brown fine to coarse sand, "and" silt, trace clay.	1										Est. A-1-b
	5		3/5/6			GRAVEL WITH SAND (FILL): Loose to medium-dense brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay, contains few wood fragments.	2										Est. A-1-b
			2/3/3				3	23	34	37	6				7		Est. A-1-b
672.3			1/1/2			9.0 GRAVEL WITH SAND (POSSIBLE FILL): Very-loose to loose brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay.	4										Est. A-1-b
	10		1/1/1				5										Est. A-1-b
	15		1/1/1				6	25	39	30	6				8		Est. A-1-b
			3/4/4				7										Est. A-1-b
662.8			2/2/2			18.5 COARSE AND FINE SAND: Very-loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	8A										Est. A-3a
661.7	20					19.6 SANDY SILT: Very-loose brown fine sand, some silt, trace clay, trace coarse sand.	8B										Est. A-4a
658.8			4/6/8			22.5 FINE SAND: Medium-dense brown fine to coarse sand, trace coarse sand, trace silt, trace clay.	9	3	30	59	8				5		Est. A-3
	25																
	30		4/6/7				10										Est. A-3

WATER LEVEL: 39.0      30.5           

WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 31.5'           

DATE: 9/7/06      9/7/06           

PLATE 34

**LOG OF BORING NO. S-012-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 125+71 COMPLETION DEPTH: 90.5'  
2" O.D. Split-barrel Sampler 33' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 681.3  
N - 663150.266; E - 2189947.376 DATE: 9/5/06 - 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
644.8	-35	█	4/4/5			FINE SAND: Medium-dense brown fine to coarse sand, trace coarse sand, trace silt, trace clay.	11										Est. A-3
639.8	-40	█	3/5/6			COARSE AND FINE SAND: Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	12										Est. A-3
	-45	█	6/8/15			SANDY SILT: Medium-dense gray and dark gray fine sand, some silt, little clay.	13								23		Est. A-4a
	-50	█	9/12/17				14	0	0	55	34	11	NP	NP	19		A-4a(2) A-4a(0)
623.8	-55	█	7/8/10				15										Est. A-4a
618.8	-60	█	11/25/27			SILT: Very-dense gray silt, little clay, trace fine sand.	16	0	0	4	81	15	NP	NP	19		A-4b(8) A-4b(0)
	-65	█	10/12/14	3.5-4.5		SILT: Very-stiff to hard gray silt, some clay, some fine sand.	17								20		Est. A-4b

WATER LEVEL: ▽ 39.0      ▽ 30.5      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 31.5'      \_\_\_\_\_      \_\_\_\_\_  
 DATE: 9/7/06      9/7/06      \_\_\_\_\_      \_\_\_\_\_

PLATE 35

**LOG OF BORING NO. S-012-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 125+71 COMPLETION DEPTH: 90.5'  
2" O.D. Split-barrel Sampler 33' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 681.3  
N - 663150.266; E - 2189947.376 DATE: 9/5/06 - 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
613.8						++++ ++++ 67.5 ++++ SILT: Very-stiff to hard gray silt, some clay, some fine sand.											
	-70-	█	2/2/3	0.75-1.5		++++ ++++ 67.5 ++++ SILT: Medium-stiff to stiff gray mottled with dark gray silt, "and" clay, trace fine sand, slightly organic.	18									27	Est. A-4b
609.3						++++ ++++ 72.0 ++++ SILT: Very-soft to soft gray mottled with dark gray silt, "and" clay, trace fine to coarse sand, slightly organic.											
	-75-	█	3/3/4	0.0-0.25		++++ ++++ 72.0 ++++ SILT: Very-soft to soft gray mottled with dark gray silt, "and" clay, trace fine to coarse sand, slightly organic.	19	0	1	2	59	38	30	9	29		A-4b(8)
603.8						++++ ++++ 77.5 ++++ SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand.											
	-80-	█	3/7/10	2.25-3.5		++++ ++++ 77.5 ++++ SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand.	20										Est. A-6a
	-85-	█	7/9/13	4.0-4.5+		++++ ++++ 77.5 ++++ SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand.	21	0	1	2	46	51	31	12	20		A-6a(9)
590.8						++++ ++++ 90.5 ++++ SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand.											
	-90-	█	6/9/12	4.5+		++++ ++++ 90.5 ++++ SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand.	22									19	Est. A-6a
	-95-					NOTES: - Encountered water at 39.0'.											

WATER LEVEL: ▽ 39.0      ▽ 30.5      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 31.5'      \_\_\_\_\_  
 DATE: 9/7/06      9/7/06      \_\_\_\_\_

PLATE 36

**LOG OF BORING NO. S-013-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 175+28  
90' Lt. of Proposed W.B. I-90 Centerline  
N - 667195.881; E - 2192588.272

COMPLETION DEPTH: 90.0'  
ELEVATION: 672.8  
DATE: 9/14/06 - 9/15/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
672.4	0					0.4 TOPSOIL - 5 INCHES											
670.3			10/20/29			2.5 GRAVEL WITH SAND (FILL): Dense brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay, contains many brick and sandstone fragments.	1										Est. A-1-b
	5		2/3/2			COARSE AND FINE SAND: Loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	2										Est. A-3a
			2/3/3				3	7	11	68	14				11		Est. A-3a
			1/2/3				4										Est. A-3a
662.3	10		2/2/2			10.5 GRAVEL WITH SAND: Very-loose brown fine to coarse sand, some fine gravel, trace silt, trace clay.	5										Est. A-1-b
			2/2/1				6	31	51	13	5				9		Est. A-1-b
	15		2/1/2				7										Est. A-1-b
654.8			4/6/6			18.0 SANDY SILT: Medium-dense to dense brown fine sand, some silt, trace clay, trace coarse sand, contains few silt and silty clay lenses.	8										Est. A-4a
	20						9										Est. A-4a
	25		6/12/18				10	0	1	58	32	9	NP	NP	25		A-4a(0)
	30		3/6/11				11										Est. A-4a
	35		8/10/12														

WATER LEVEL: 24.1  
WATER NOTE: Encountered During Drilling  
DATE: 9/14/06

PLATE 37

**LOG OF BORING NO. S-013-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 175+28    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    90' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 672.8  
N - 667195.881; E - 2192588.272    DATE: 9/14/06 - 9/15/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	35																	
	40		11/17/14			SANDY SILT: Medium-dense to dense brown fine sand, some silt, trace clay, trace coarse sand, contains few silt and silty clay lenses.	12										23	Est. A-4a
630.8						42.0												
	45		3/5/10			SILT: Medium-dense becoming loose gray silt, some clay, trace fine to coarse sand.	13	0	1	3	74	22	NP	NP	21		A-4b(8) A-4b(0)	
	50		4/2/2				14											Est. A-4b
619.8						53.0												
	55		10/10/9			SILT: Medium-dense to dense gray silt, little clay, little fine to coarse sand.	15										17	Est. A-4b
	60		11/18/18				16	0	1	10	69	20	NP	NP	17		A-4b(0)	
610.8						62.0												
	65		2/3/6	1.25-3.5		SILT: Stiff to very-stiff gray silt, some clay, trace fine sand, contains many silty clay seams.	17	0	0	1	64	35	28	8	23		A-4b(8)	
	70		3/4/7	2.5-4.0			18										12	Est. A-4b

WATER LEVEL: 24.1  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/14/06

PLATE 38

**LOG OF BORING NO. S-013-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 175+28    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    90' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 672.8  
N - 667195.881; E - 2192588.272    DATE: 9/14/06 - 9/15/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
601.8	70					++++ ++++ 71.0													
	75	█	1/2/3	0.5-1.5		SILT AND CLAY: Medium-stiff to stiff becoming very-stiff to hard gray clay, "and" silt, trace fine to coarse sand, contains many silt seams.	19	0	1	2	48	49	34	13	29		A-6a(9)		
	80	█	2/3/3	1.0-2.5			20											Est. A-6a	
	85	█	4/7/9	3.0-4.5+			21											21	Est. A-6a
582.8	90	█	4/8/10	2.0-4.5			90.0	22										24	Est. A-6a
	95					<u>NOTES:</u> - Encountered seepage at 14.0'. - Encountered water at 24.1'. - Water was added inside augers at 28.5' to prevent heave. - Used 3-1/4" I. D. Hollow-Stem Augers from 0' to 45'. - Used 3-1/8" Tricone Roller Bit with water (washbore) from 45' to 90'.													
	100																		
	105																		

WATER LEVEL: 24.1    WATER NOTE: Encountered During Drilling    DATE: 9/14/06

PLATE 39



**LOG OF BORING NO. S-014-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 176+16    COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler    21' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 672.7  
N - 667168.644; E - 2192697.300    DATE: 10/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
672.3	0					0.4 CONCRETE - 5 INCHES											
671.7			4/4/10			1.0 GRANULAR BASE - 7 INCHES	1										Est. A-1-b
669.7			4/3/4			3.0 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, little fine gravel, trace silt, trace clay, contains few brick fragments.	2										Est. A-3a
	5		2/2/2			COARSE AND FINE SAND (POSSIBLE FILL): Very-loose to loose brown fine sand, little coarse sand, trace fine gravel, trace silt, trace clay.	3	3	12	72	6	7	NP	NP	11		A-3a(0)
			1/2/2				4										Est. A-3a
662.2	10		2/3/3			10.5 FINE SAND: Very-loose to loose brown fine sand, little coarse sand, trace silt, trace clay.	5										Est. A-3
			2/2/2				6	0	11	84	2	3	NP	NP	6		A-3(0)
	15		1/2/3				7										Est. A-3
654.7		▽	3/3/7			18.0 COARSE AND FINE SAND: Loose to medium-dense brown fine sand, little silt, trace clay, trace coarse sand.	8									8	Est. A-3a
	20	▽					9										Est. A-3a
	25	▽	6/9/7														Est. A-3a
			5/9/11				10	0	1	74	19	6	NP	NP	24		A-3a(0)
640.2	30																
	35		5/7/8			32.5 SILT: Loose to medium-dense brown and gray silt, trace clay, little fine sand, slightly organic. - Sample 12A: Loss-on-Ignition (LOI) Test = 2.2%.	11										Est. A-4b

WATER LEVEL: ▽ 23.5    ▽ 21.6    ▽ 17.4    ▽  
WATER NOTE: Encountered During Drilling    Inside Augers - After Washbore    Augers Removed - Caved at 21.0'  
DATE: 10/10/06    10/10/06    10/10/06


PLATE 40



**LOG OF BORING NO. S-014-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 176+16    COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler    21' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 672.7  
N - 667168.644; E - 2192697.300    DATE: 10/10/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								AGG. %	C.S. %	F.S. %	SILT %	CLAY %	LL	PI		WC	
	-75-	█	2/2/3	0.5-2.0		 SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine sand, contains many silt lenses and seams, and few medium-stiff and hard zones.	19									26	Est. A-6a
	-80-	█	3/4/6	1.5-2.25			20	0	0	1	46	53	31	12	24	A-6a(9)	
587.7	-85-	█	4/6/7	1.5-4.0			21									22	Est. A-6a
	-90-					NOTES: - Encountered seepage at 11.0' and 13.5'. - Encountered water at 23.5'. - Water was added inside augers at 25.0' to prevent heave. - Used 3-1/4" I. D. Hollow-Stem Augers from 0' to 45'. - Used 3-1/8" Tricone Roller Bit with water (washbore) from 45' to 85'.											
	-95-																
	-100-																
	-105-																

WATER LEVEL: ▽ 23.5    ▽ 21.6    ▽ 17.4    ▽  
 WATER NOTE: Encountered During Drilling    Inside Augers - After Washbore    Augers Removed - Caved at 21.0'  
 DATE: 10/10/06    10/10/06    10/10/06

PLATE 42

**LOG OF BORING NO. S-015-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 176+94    COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler    62' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 673.4  
N - 667234.776; E - 2192752.477    DATE: 9/26/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
673.4	0					0.3' TOPSOIL - 4 INCHES												
			3/5/14			COARSE AND FINE SAND (FILL): Medium-dense to dense brown fine to coarse sand, little fine gravel, little silt, trace clay, contains many cinders and slag fragments.	1										Est. A-3a	
667.9	5		10/18/15		5.5		2	20	23	33	24						9	Est. A-3a
			3/5/7			COARSE AND FINE SAND: Medium-dense becoming very-loose brown fine to coarse sand, little fine gravel, little silt, trace clay.	3											Est. A-3a
			3/3/3				4											Est. A-3a
	10		1/1/2			COARSE AND FINE SAND: Loose to medium-dense brown fine sand, little silt, trace clay, trace coarse sand, trace fine gravel, contains few silt seams.	5	19	16	51	11	3	NP	NP	9		A-3a(0)	
			1/1/2				6											Est. A-3a
655.4	15		SH/1/1			18.0	7									10	Est. A-3a	
			3/2/3			COARSE AND FINE SAND: Loose to medium-dense brown fine sand, little silt, trace clay, trace coarse sand, trace fine gravel, contains few silt seams.	8											Est. A-3a
	20						9											Est. A-3a
	25		2/4/4															Est. A-3a
	30		6/9/10				10	1	2	77	17	3	NP	NP	24		A-3a(0)	
	35		2/4/6				11											Est. A-3a

WATER LEVEL: 23.2  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/26/06

PLATE 43

**LOG OF BORING NO. S-015-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 176+94    COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler    62' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 673.4  
N - 667234.776; E - 2192752.477    DATE: 9/26/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
636.4	35					37.0												
			11/16/18			SANDY SILT: Dense gray silt, trace clay, little fine to coarse sand, contains many fine to coarse sand seams.	12											Est. A-4a
632.4	40					41.0												
			4/5/7			SILT: Medium-dense gray silt, little clay, trace fine to coarse sand, contains many silty clay seams.	13	0	1	6	76	17	22	1	23			A-4b(8)
	45																	
			4/6/7				14										21	Est. A-4b
621.4	50					52.0												
			5/9/10			SILT: Medium-dense to dense gray silt, little clay, trace fine to coarse sand, contains few silty clay seams.	15											Est. A-4b
	55																	
			6/9/11				16	0	1	3	81	15	25	4	18			A-4b(8)
	60																	
			13/18/23				17										21	Est. A-4b
606.4	65					67.0												
			2/4/5	1.0-2.0		SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains many silt seams.	18										23	Est. A-6a
	70																	

WATER LEVEL: 23.2  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/26/06

PLATE 44

**LOG OF BORING NO. S-015-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 176+94    COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler    62' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 673.4  
N - 667234.776; E - 2192752.477    DATE: 9/26/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
	70																	
	75		1/2/3	0.5-1.75		SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, trace fine gravel, contains many silt seams.	19										27	Est. A-6a
594.3	80		1/4/5	0.75-1.0 1.25-2.25		SILT: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, and few hard zones.	20A 20B	1	1	2	40	56	32	11	25			A-6a(8) Est. A-4b
588.4	85		4/8/10	3.25-4.25		SILT: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, and few hard zones.	21	0	1	2	57	40	29	10	21			A-4b(8)
	90																	
	95																	
	100																	
	105																	

NOTES:  
 - Encountered water at 23.2'.  
 - Water was added inside augers at 28.5' to prevent heave.  
 - Used 3-1/4" I. D. Hollow-stem Augers from 0' to 50'.  
 - Used 3-1/8" Tricone Roller bit with water (washbore) from 50' to 85'.

WATER LEVEL: 23.2  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/26/06

**LOG OF BORING NO. S-016-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 177+35    COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    88' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 671.9  
N - 667275.310; E - 2192783.335    DATE: 9/27/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
671.7	0					0.2 ASPHALT - 2 INCHES											
670.7						1.2 CONCRETE - 12 INCHES											
670.2						1.7 GRANULAR BASE - 6 INCHES	1										Est. A-3
	5		2/1/1			FINE SAND (FILL): Very-loose to loose brown fine to coarse sand, little fine gravel, trace silt, trace clay, contains many slag and rock fragments.	2										Est. A-3
			2/1/1				3	17	21	52	10					10	Est. A-3
	10		2/2/2				4										Est. A-3
			2/2/3				5										Est. A-3
657.8			2/2/2	1.25-2.25		14.1 SILT: Stiff to very-stiff brown silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	6A										Est. A-3
656.4	15					15.5 COARSE AND FINE SAND: Loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	6B									24	Est. A-4b
655.4			2/4/6	1.5-4.5		16.5 SILT: Very-stiff to hard brown and gray silt, some clay, little fine to coarse sand, contains many silty clay seams.	7A										Est. A-3a
			3/4/4	2.75-4.5+		19.3 COARSE AND FINE SAND: Loose to medium-dense brown fine sand, some silt, trace clay, trace coarse sand, trace fine gravel, contains many silt and silty clay seams.	7B	0	1	11	60	28	29	8	20		A-4b(8)
652.6	20						8A										Est. A-4b
			3/3/5				8B										Est. A-3a
	25						9										Est. A-3a
	30		7/11/10				10	1	6	65	24	4	NP	NP	24		A-3a(0)
	35		6/7/12				11										Est. A-3a

WATER LEVEL: 20.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/27/06

PLATE 46

**LOG OF BORING NO. S-016-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 177+35    COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    88' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 671.9  
N - 667275.310; E - 2192783.335    DATE: 9/27/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
634.9	35					37.0												
	40		4/8/12			SILT: Medium-dense gray silt, little clay, trace fine to coarse sand, contains few silty clay seams.	12										26	Est. A-4b
	45		5/8/13				13	0	1	5	78	16	25	4	21		A-4b(8)	
624.9						47.0												
	50		1/2/2	0.5-1.25		SILT AND CLAY: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams, and few very-stiff zones.	14	1	1	2	54	42	31	11	28		A-6a(8)	
620.9			P	1.0-3.0		51.0												
	55		5/7/8	1.5-4.5+		SILT: Very-stiff to hard gray silt, little clay, trace fine to coarse sand, trace fine gravel, contains few silty clay seams, and few stiff zones.	15	0	0	3	71	26	25	5	22		A-4b(8)	
				4.5+		- Unit Dry Weight = 109.3 pcf from 51.5' to 52.0'	16										19	Est. A-4b
	60		7/7/9	4.5+			17	1	1	2	78	18	26	7	22		A-4b(8)	
609.9						62.0												
	65		3/4/7	2.0-3.75		SILT: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams.	18											Est. A-4b
	70		3/4/6	1.0-2.75			19										22	Est. A-4b

WATER LEVEL: 20.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/27/06

PLATE 47





**LOG OF BORING NO. S-017-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 183+8    COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler    58' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 669.4  
N - 667479.508; E - 2193309.522    DATE: 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
668.1	0					1.3 TOPSOIL - 16 INCHES	1A										Visual
			2/3/4			GRAVEL WITH SAND (POSSIBLE FILL): Loose brown fine to coarse sand, some fine gravel, trace silt, trace clay, contains many roots, slightly organic.	1B										Est. A-1-b
	5		3/3/3				2	27	34	33	6				4		Est. A-1-b
			2/2/3				3										
660.6						8.8	4A										Est. A-1-b
659.4	10		4/4/5	3.5-4.5+		10.0 SANDY SILT (POSSIBLE FILL): Very-stiff to hard brown silt, "and" clay, little fine to coarse sand.	4B									15	Est. A-4a
			2/2/4			COARSE AND FINE SAND (POSSIBLE FILL): Loose brown fine to coarse sand, little silt, little clay, trace fine gravel.	5										Est. A-3a
656.4			2/2/4				13.0	5									
655.2			3/4/4	2.25-3.75		14.2 SILT: Loose brown silt, some clay, little fine sand.	6A	0	0	13	63	23	24	1	23		A-4b(8)
653.9	15					15.5 SILT AND CLAY: Stiff to very-stiff brown and gray clay, "and" silt, little fine to coarse sand.	6B								19		Est. A-6a
652.2			2/2/2			17.2 COARSE AND FINE SAND: Very-loose gray fine to coarse sand, trace silt, trace clay.	7A										Est. A-3a
651.4			2/2/5			18.0 COARSE AND FINE SAND: Very-loose gray fine to coarse sand, trace silt, trace clay.	7B	0	0	39	50	11	NP	NP	25		A-4b(0)
	20					SILT: Very-loose gray silt, little clay, "and" fine sand.	8	0	3	87	10				25		Est. A-3
						FINE SAND: Loose becoming medium-dense gray fine sand, trace coarse sand, trace silt, trace clay.											
645.3			5/11/13			24.1 COARSE AND FINE SAND: Medium-dense brown and gray fine sand, trace coarse sand, trace silt, trace clay.	9A										Est. A-3
	25						9B										Est. A-3a
	30		5/12/12				10	0	3	83	8	6	NP	NP	22		A-3a(0)
	35		6/6/9				11										Est. A-3a

WATER LEVEL: 18.1  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/7/06

PLATE 49

**LOG OF BORING NO. S-017-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger 3-1/8" Tricone Roller Bit LOCATION: Sta. 183+8 COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler 58' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 669.4  
N - 667479.508; E - 2193309.522 DATE: 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
631.4	35					COARSE AND FINE SAND: Medium-dense brown and gray fine sand, trace coarse sand, trace silt, trace clay.											
627.9	40	3/2/2				SILT: Very-loose dark gray and gray silt, little clay, trace fine to coarse sand, slightly organic, contains many black organic silt lenses from 39.5' to 39.9'. - Sample S-12: Loss-on-Ignition (LOI) Test = 2.8%. SILT: hard gray silt, "and" clay, trace to little fine sand.	12	0	1	3	81	15	NP	NP	35	A-4b(0)	
622.4	45	4/6/6	4.5+				13									Est. A-4b	
613.4	50	2/3/3	0.75-1.5			SILT AND CLAY: Medium-stiff to stiff becoming stiff to very-stiff gray silt, "and" clay, trace fine sand, contains many silt seams.	14	0	0	1	56	43	32	11	28	A-6a(8)	
	55	2/4/5	1.0-2.75				15									Est. A-6a	
601.9	60	4/7/10	4.5+			SILT: Very-stiff to hard gray silt, some clay, trace fine sand, contains many silty clay seams.	16	0	0	1	65	34	28	8	19	A-4b(8)	
	65	3/5/8	3.0-4.5				17									Est. A-4b	
	70	1/2/1	0.75-1.25			SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, contains many silt seams and lenses.	18	0	0	0	49	51	33	13	29	A-6a(9)	

PLATE 50

WATER LEVEL: 18.1  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/7/06

**LOG OF BORING NO. S-017-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 183+8    COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler    58' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 669.4  
N - 667479.508; E - 2193309.522    DATE: 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
595.9	70					SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, contains many silt seams and lenses.													
	75	█	3/6/8	2.0-3.75		SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, contains many silt lenses and pockets.	19											Est. A-6a	
589.4	80	█	5/9/12	4.5+			20										19	Est. A-6a	
	85					<b>NOTES:</b> - Encountered seepage at 13.5'. - Encountered water at 18.1'. - Water was added inside augers at 23.5' to prevent heave. - Used 3-1/4" I. D. Hollow-stem Augers from 0' to 45'. - Used 3-1/8" Tricone Roller Bit with water (washbore) from 45' to 80'.													
	90																		
	95																		
	100																		
	105																		

WATER LEVEL: 18.1    WATER NOTE: Encountered During Drilling    DATE: 9/7/06

PLATE 51

**LOG OF BORING NO. S-018-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 184+11    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    112' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 667.1  
N - 667576.964; E - 2193368.439    DATE: 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
665.9	0					1.2 TOPSOIL - 14 INCHES	1A											Visual
664.1			4/5/10			GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay, contains few glass and brick fragments, and few roots.	1B											Est. A-1-b
	5		3/3/4			SANDY SILT: Loose brown fine sand, some silt, little clay, trace coarse sand, contains a silty clay seam from 6.2' to 6.8' and a silt seam from 11.7' to 12.0'.	2											Est. A-4a
			2/2/5				3											Est. A-4a
	10		2/5/4				4											Est. A-4a
			2/3/5				5	0	5	59	23	13				17		Est. A-4a
651.6	15		2/4/5				6											Est. A-4a
650.4			3/5/8			15.5 SILT: Medium-dense brown silt, trace clay, some fine sand.	7A											Est. A-4b
			3/7/8			COARSE AND FINE SAND: Medium-dense to dense brown fine sand, little coarse sand, trace silt, trace clay, trace fine gravel.	7B											Est. A-3a
	20		3/7/8				8	1	16	69	8	8				21		Est. A-3a
			10/16/18				9											Est. A-3a
	30		5/8/9				10											Est. A-3a
635.1			9/11/12			32.0 COARSE AND FINE SAND: Medium-dense brown fine sand, little silt, trace clay.	11	0	0	75	18	7					24	Est. A-3a

WATER LEVEL: 18.5    WATER NOTE: Encountered During Drilling    DATE: 9/6/06

PLATE 52

**LOG OF BORING NO. S-018-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 184+11    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    112' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 667.1  
N - 667576.964; E - 2193368.439    DATE: 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
626.1	35-40	4/8/11				COARSE AND FINE SAND: Medium-dense brown fine sand, little silt, trace clay.	12									Est. A-3a
620.1	40-45	9/7/7				SILT: Medium-dense gray silt, some clay, trace fine sand.	13	0	0	4	72	24	24	4	19	A-4b(8)
615.1	45-50	2/2/3	0.75-2.0			SILT: Medium-stiff to stiff gray silt, some clay, trace fine sand, contains many black organic silt lenses from 49.6' to 49.8'.	14	0	0	3	63	34	27	9	30	A-4b(8)
	50-55	1/2/3				SILT: Loose to medium-dense gray silt, some clay, trace fine sand, contains few silty clay seams.	15								27	Est. A-4b
	55-60	4/7/9					16	0	0	1	72	27	26	3	23	A-4b(8)
	60-65	3/5/6					17								23	Est. A-4b
600.1	65-70	SH-18"	0.0-0.75			SANDY SILT: Very-soft to soft gray clay, "and" silt.	18	0	0	0	46	54	30	10	30	A-4a(8)

PLATE 53

WATER LEVEL: 18.5  
WATER NOTE: Encountered During Drilling  
DATE: 9/6/06

**LOG OF BORING NO. S-018-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 184+11    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    112' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 667.1  
N - 667576.964; E - 2193368.439    DATE: 9/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
594.1	70		P	0.25-1.25		SILT AND CLAY: Soft to medium-stiff gray mottled with red clay, "and" silt, trace fine sand, contains many silt seams, and few stiff zones.	19	0	0	1	38	61	32	13	32	A-6a(9)
589.6	75		SH/1/2	0.25-1.0		SILT: Soft to medium-stiff gray silt, "and" clay, trace fine sand, contains few fine sand pockets and seams.	20	0	0	4	55	41	28	9	26	A-4b(8)
	80		4/8/11	2.75-4.5+		SILT: Very-stiff to hard gray silt, "and" clay, contains few silty clay lenses.  - Unit Dry Weight (UDW) = 112.2 pcf from 80.0' to 80.5'	21								23	Est. A-4b
	85		5/8/11	3.75-4.5+			22								20	Est. A-4b
577.1	90		5/8/12	3.0-4.25			23	0	0	0	57	43	28	8	21	A-4b(8)
	95					<u>NOTES:</u> - Encountered seepage at 16.0'. - Encountered water at 18.5'. - Water was added inside augers at 23.5' to prevent heave. - Used 3-1/4" I. D. Hollow-stem Augers from 0' to 45'. - Used 3-1/8" Tricone Roller Bit with water (washbore) from 45' to 90'.										

WATER LEVEL: 18.5    WATER NOTE: Encountered During Drilling    DATE: 9/6/06

**LOG OF BORING NO. S-019-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 185+67  
69' Lt. of Proposed W.B. I-90 Centerline  
N - 667622.721; E - 2193519.521

COMPLETION DEPTH: 90.0'  
ELEVATION: 677.9  
DATE: 9/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
677.5	0					0.4 TOPSOIL - 5 INCHES												
676.5			50-6"R			1.4 GRAVEL WITH SAND (FILL): Very-dense brown fine to coarse sand, some fine gravel, trace silt, contains many slag fragments.	1											Est. A-1-b
673.4	5		2/1/2			4.5 CONCRETE (POSSIBLE OLD FOUNDATION) - 37 INCHES	2											Est. A-3a
			4/6/14			COARSE AND FINE SAND (FILL): Very-loose to medium-dense brown, gray and dark brown fine to coarse sand, little fine gravel, little silt, trace clay, contains many slag and brick fragments, and few cobbles.	3	13	21	47	11	8	NP	NP	11			A-3a(0)
668.8			2/3/4			9.1 GRAVEL WITH SAND (POSSIBLE FILL): Loose brown fine to coarse sand, some fine gravel, trace silt, trace clay, contains few rock fragments.	4A											Est. A-3a
			2/3/3				4B											Est. A-1-b
			2/3/3				5											Est. A-1-b
	15		3/3/3				6	25	26	42	7				10			Est. A-1-b
			2/2/4				7											Est. A-1-b
			2/2/3				8											Est. A-1-b
655.9	20					22.0 FINE SAND: Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	9	2	22	69	3	4	NP	NP	5			A-3(0)
			3/5/8				10											Est. A-3
	25																	
			5/7/7															
645.9	30					32.0 COARSE AND FINE SAND: Medium-dense to dense brown fine sand, some silt, trace clay, trace coarse sand, trace fine gravel.	11	2	8	60	23	7	NP	NP	20			A-3a(0)
			5/13/15															
	35																	

PLATE 55

WATER LEVEL: 27.0  
WATER NOTE: Encountered During Drilling  
DATE: 9/13/06



**LOG OF BORING NO. S-019-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 185+67    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    69' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 677.9  
N - 667622.721; E - 2193519.521    DATE: 9/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	35																	
	40	12/18/19				COARSE AND FINE SAND: Medium-dense to dense brown fine sand, some silt, trace clay, trace coarse sand, trace fine gravel.	12											Est. A-3a
	45	6/10/11					13											Est. A-3a
	50	6/7/10					14											Est. A-3a
626.9						51.0												
	55	4/3/6		1.5-3.5		SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, contains many silty clay lenses, and few stiff zones.	15	0	1	7	65	27	27	8	21			A-4b(8)
	60	4/6/8		3.5-4.5+			16								19			Est. A-4b
	65	8/9/13		4.5+			17	0	1	3	74	22	26	5	18			A-4b(8)
	70	4/7/9		2.5-4.5+			18											Est. A-4b

PLATE 56

WATER LEVEL: 27.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/13/06

**LOG OF BORING NO. S-019-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 185+67    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    69' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 677.9  
N - 667622.721; E - 2193519.521    DATE: 9/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	70					++++ SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, contains many silty clay lenses, and few stiff zones.												
	75		2/5/9	2.5-4.5+		++++ SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, contains many silty clay lenses, and few stiff zones.	19										21	Est. A-4b
601.4						++++ SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.												
	80		1/3/3	0.5-1.0		++++ SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	20	0	1	2	51	46	31	10	25			A-4b(8)
	85		2/4/5	0.75-2.0		++++ SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	21										26	Est. A-4b
591.9						++++ SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.												
	90		6/9/11	3.5-4.5+		++++ SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	22											Est. A-4b
587.9																		
	95																	
	100																	
	105																	

NOTES:  
 - Encountered a possible old concrete foundation from 1.4' to 4.5'. A piece of 1.5" thick rebar was recovered.  
 - Encountered seepage at 16.0'.  
 - Encountered water at 27.0'.  
 - Water was added inside augers at 33.5' to prevent heave.  
 - Used 3-1/4" I. D. Hollow-stem Augers from 0' to 55'.  
 - Used 3-1/8" Tricone Roller Bit with water (washbore) from 55' to 90'.

WATER LEVEL: 27.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/13/06

PLATE 57

**LOG OF BORING NO. S-020-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 185+51  
126' Lt. of Proposed W.B. I-90 Centerline  
N - 667660.655; E - 2193474.146

COMPLETION DEPTH: 80.0'  
 ELEVATION: 668.8  
 DATE: 9/7/06 - 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
668.4	0					0.4' TOPSOIL - 5 INCHES													
665.8			3/7/11			GRAVEL WITH SAND (FILL): Medium-dense brown and dark brown fine to coarse sand, little fine gravel, trace silt, trace clay, contains few brick and glass fragments. COARSE AND FINE SAND: Very-loose to loose brown fine to coarse sand, trace fine gravel, trace silt, trace clay, contains silty clay seams from 11.0' to 11.3' and 13.5' to 13.9'.	1											Est. A-1-b	
	5		4/4/3				2												Est. A-3a
			1/2/2				3												Est. A-3a
	10		3/3/3				4	7	28	48	7	10	NP	NP	12				A-3a(0)
			2/2/1				5												Est. A-3a
653.3	15		1/5/5				6												Est. A-3a
			7/7/8			FINE SAND: Loose to medium-dense brown and gray fine to coarse sand, trace fine gravel, trace silt, trace clay, contains silt seams from 18.9' to 19.2' and 24.0' to 24.3'.	7	3	25	67	5					7			Est. A-3
	20		5/5/5				8												Est. A-3
	25		4/6/10				9												Est. A-3
641.3	30		8/15/17				10												Est. A-3a
	35		5/10/12			COARSE AND FINE SAND: Medium-dense to dense gray fine sand, trace coarse sand, trace silt, trace clay.	11	0	2	85	13					22		Est. A-3a	

WATER LEVEL: 18.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/7/06

PLATE 58

**LOG OF BORING NO. S-020-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 185+51  
126' Lt. of Proposed W.B. I-90 Centerline  
N - 667660.655; E - 2193474.146

COMPLETION DEPTH: 80.0'  
 ELEVATION: 668.8  
 DATE: 9/7/06 - 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
	35																	
	40		4/6/10			COARSE AND FINE SAND: Medium-dense to dense gray fine sand, trace coarse sand, trace silt, trace clay.	12											Est. A-3a
626.1						42.7												
	45		10/12/7			SILT: Medium-dense to dense gray silt, some clay, trace fine sand, contains few silty clay seams and pockets.	13	0	0	5	71	24	23	4	25			A-4b(8)
	50		2/4/7				14									20		Est. A-4b
	55		11/16/19				15									16		Est. A-4b
611.8						57.0												
	60		3/6/8	2.5-4.5+		SILT: Stiff to very-stiff gray silt, "and" clay, contains many silty clay seams, and many hard zones.	16	0	0	0	64	36	27	8	21			A-4b(8)
	65		2/4/5	1.0-2.75			17									21		Est. A-4b
	70		4/7/7	1.0-4.5+			18											Est. A-4b

WATER LEVEL: 18.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/7/06

PLATE 59



**LOG OF BORING NO. S-021-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 188+2    COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    62' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 668.4  
N - 667754.737; E - 2193709.224    DATE: 9/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
668.0	0					0.4' TOPSOIL - 4 INCHES												
			3/4/5			GRAVEL WITH SAND (FILL): Very-loose to loose brown fine to coarse sand, some fine gravel, trace silt, trace clay, contains many roots from 0.4' to 4.4'.	1										Est. A-1-b	
			4/5/4				2											Est. A-1-b
	5		2/3/3				3	31	31	32	6					3		Est. A-1-b
			2/3/2				4											Est. A-1-b
	10		2/2/2				5											Est. A-1-b
655.4			4/6/7			13.0 GRAVEL WITH SAND: Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay, contains few silty clay and silt seams.	6	22	41	27	10					6		Est. A-1-b
	15		3/5/8			18.0 GRAVEL WITH SAND: Loose to medium-dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay.	7											Est. A-1-b
650.4			6/4/6				8	38	41	18	3					14		Est. A-1-b
	20		6/7/10			24.0 COARSE AND FINE SAND: Medium-dense to dense gray and brown fine sand, little silt, trace clay, trace coarse sand.	9A											Est. A-1-b
644.4			6/9/10				9B										16	
	25						10										24	Est. A-3a
	30		7/16/19				11	0	1	79	14	6	NP	NP	22			A-3a(0)
	35																	

WATER LEVEL: 18.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06

PLATE 61

**LOG OF BORING NO. S-021-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 188+2    COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    62' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 668.4  
N - 667754.737; E - 2193709.224    DATE: 9/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class							
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC						
629.4	35		4/6/7			COARSE AND FINE SAND: Medium-dense to dense gray and brown fine sand, little silt, trace clay, trace coarse sand.	12A															
626.4	40					COARSE AND FINE SAND: Medium-dense brown and gray fine to coarse sand, little to some silt, trace clay, slightly organic.	12B													30	Est. A-3a Est. A-3a	
620.9	45		17/25/29			COARSE AND FINE SAND: Very-dense brown and gray fine to coarse sand, some silt, trace clay.	13														Est. A-3a	
616.4	50		1/2/1	0.5-1.5		SILT AND CLAY: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	14	0	1	1	56	42	32	11	27						A-6a(8)	
611.4	55		8/10/6			SILT: Medium-dense gray silt, trace clay, little fine sand.	15														Est. A-4b	
	60		1/2/3	0.25-1.5		SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, lenses and pockets, and few soft and very-stiff zones.	16	0	1	2	60	37	29	9	26						A-4b(8)	
			P	0.5-2.75		- Unit Dry Weight (UDW) = 108.2 pcf from 61.0' to 61.5'	17	0	0	0	58	42	29	10	23						A-4b(8)	
	65		1/3/3	1.0-1.75			18														22	Est. A-4b
	70		1/2/4	0.5-1.5			19														25	Est. A-4b

WATER LEVEL: 18.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06

PLATE 62





**LOG OF BORING NO. S-022-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 188+93  
115' Lt. of Proposed W.B. I-90 Centerline  
N - 667852.440; E - 2193748.940

COMPLETION DEPTH: 85.0'  
 ELEVATION: 669.7  
 DATE: 9/28/06 - 10/2/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
669.4	0					0.3 TOPSOIL - 4 INCHES											
665.3	5		4/5/9			GRAVEL WITH SAND (FILL): Medium-dense to dense brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay, contains many sandstone and brick fragments, and few silty clay pockets.	1										Est. A-1-b
			8/12/20				2A										Est. A-1-b
			10/20/26			COARSE AND FINE SAND (FILL): Dense becoming medium-dense brown fine to coarse sand, little fine gravel, little silt, trace clay, contains few slag fragments, silty clay pockets, and few cobbles/boulders.	2B										Est. A-3a
	10		9/13/17				3	18	25	39	18				8		Est. A-3a
			7/11/14				4										Est. A-3a
			8/8/14				5										Est. A-3a
653.7	15		2/4/2			GRAVEL WITH SAND: Loose becoming very-loose brown fine to coarse sand, little fine gravel, trace silt, trace clay.	6										Est. A-3a
			2/1/1				7										Est. A-1-b
	20						8	18	36	37	9				11		Est. A-1-b
647.7	25		6/8/6			GRAVEL WITH SAND: Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay, contains few silty clay pockets.	9										Est. A-1-b
			6/6/8				10	29	29	27	7	8	NP	NP	14		A-1-b(0)
637.7	30						11										Est. A-4a
	35		4/6/10			SANDY SILTY: Medium-dense brown fine sand, some silt, little clay, trace coarse sand.											Est. A-4a

WATER LEVEL: 20.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/28/06

PLATE 64

**LOG OF BORING NO. S-022-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 188+93    COMPLETION DEPTH: 85.0'  
2" O.D. Split-barrel Sampler    115' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 669.7  
N - 667852.440; E - 2193748.940    DATE: 9/28/06 - 10/2/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
	35																
	40	8/10/13				SANDY SILTY: Medium-dense brown fine sand, some silt, little clay, trace coarse sand.	12										Est. A-4a
	45	12/14/10					13	0	1	54	33	12	NP	NP	23		A-4a(0)
622.2						47.5											
	50	2/3/3		1.5-3.75		SILT: Stiff to very-stiff gray silt, some clay, trace fine to coarse sand, contains many silty clay seams, and few medium-stiff zones.	14									25	Est. A-4b
	55	1/4/8		1.0-3.5			15								22		Est. A-4b
	60	2/4/4		0.75-3.25			16	0	1	1	66	32	26	7	23		A-4b(8)
	65	3/6/7		2.5-4.0			17										Est. A-4b
	70	2/4/5		1.5-3.0			18								23		Est. A-4b

PLATE 65

WATER LEVEL: 20.0    WATER NOTE: Encountered During Drilling    DATE: 9/28/06



**LOG OF BORING NO. S-023-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler

LOCATION: Sta. 189+73  
167' Lt. of Proposed W.B. I-90 Centerline  
N - 667942.132; E - 2193780.662

COMPLETION DEPTH: 90.0'  
ELEVATION: 668.5  
DATE: 9/28/06 - 9/29/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
668.4	0					0.1 ASPHALT - 1 1/2 INCHES												
668.0						0.5 GRANULAR BASE - 4 INCHES												
666.0			2/2/2			2.5 COARSE AND FINE SAND (FILL): Very-loose brown and black fine to coarse sand, little silt, trace clay, trace fine gravel, contains few roots.	1A											Est. A-3a
664.0			2/4/4			4.5 COARSE AND FINE SAND (POSSIBLE FILL): Very-loose to loose brown fine to coarse sand, trace silt, trace clay.	1B											Est. A-3a
	5		2/2/3			9.2 COARSE AND FINE SAND: Loose brown fine sand, little coarse sand, little fine gravel, trace silt, trace clay, contains few silty clay pockets.	2A											Est. A-3a
			2/2/3			10.5 SILT: Very-stiff brown silt, "and" clay, trace to little fine sand.	2B											Est. A-3a
659.3			2/2/3	2.0-3.5		18.0 GRAVEL WITH SAND: Very-loose brown fine to coarse sand, "and" fine gravel, trace silt, trace clay, contains few silty clay seams.	3	11	12	66	6	5	NP	NP	8			A-3a(0)
658.0	10		2/1/2			19.6 GRAVEL WITH SAND: Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay.	4A											Est. A-3a
			1/2/1			22.0 SILT: Stiff to very-stiff brown silt, "and" clay, trace to little fine sand.	4B											Est. A-4b
	15		1/2/2			28.9 SANDY SILT: Medium-dense brown fine sand, "and" silt, trace clay, trace coarse sand, contains few silty clay seams.	5											Est. A-1-b
650.5			6/7/4	1.0-2.25			6											Est. A-1-b
648.9	20		3/7/7				7	44	36	12	8				11			Est. A-1-b
646.5			8/9/11				8A											Est. A-1-b
	25		4/8/8				8B											Est. A-4b
639.6	30						9	25	35	34	3	3	NP	NP	16			A-1-b(0)
	35						10A											Est. A-1-b
							10B											Est. A-4a
							11	0	1	47	44	8	NP	NP	26			A-4a(0)

WATER LEVEL: 19.5  
WATER NOTE: Encountered During Drilling  
DATE: 9/28/06

PLATE 67

**LOG OF BORING NO. S-023-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 189+73    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    167' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 668.5  
N - 667942.132; E - 2193780.662    DATE: 9/28/06 - 9/29/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	35																	
	40		7/11/12			SANDY SILT: Medium-dense brown fine sand, "and" silt, trace clay, trace coarse sand, contains few silty clay seams.	12											Est. A-4a
626.5																		
	45		3/5/6			SILT: Medium-dense gray silt, some clay, trace fine to coarse sand, contains few silty clay seams.	13										21	Est. A-4b
	50		5/6/7				14	0	1	1	74	24	25	4	21			A-4b(8)
	55		3/6/8				15									20		Est. A-4b
611.5																		
	60		4/3/5	1.5-4.5		SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many thin silty clay seams, and many very-stiff to hard zones.	16											Est. A-4b
	65		2/2/3	0.75-1.75			17	0	1	1	55	43	29	7	24			A-4b(8)
	70		2/4/7	1.5-2.75			18									20		Est. A-4b

WATER LEVEL: 19.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/28/06

PLATE 68



**LOG OF BORING NO. S-027-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 168+75 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 1185' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 670.6  
N - 665814.434; E - 2192715.686 DATE: 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
669.6	0					1.0 GRAVEL (FILL): Medium-dense (Est.) fine to coarse gravel, contains many limestone and brick fragments.	1										Est. A-3a
	5		9/10/10			COARSE AND FINE SAND: Loose to medium-dense brown fine to coarse sand, little fine gravel, trace silt, trace clay.	2										Est. A-3a
			4/7/7				3	14	34	39	13				6		Est. A-3a
			5/7/7				4										Est. A-3a
660.1	10		3/4/6			10.5	5										Est. A-3a
			4/5/6			COARSE AND FINE SAND: Medium-dense brown fine sand, little silt, trace clay, trace coarse sand, trace fine gravel.	6										Est. A-3a
	15		3/5/6				7										Est. A-3a
			5/6/6				8	2	1	83	14				6		Est. A-3a
	20		6/7/7				9										Est. A-3a
			4/6/5				10										Est. A-3a
	25		5/6/8				11	2	11	60	27				8		Est. A-3a
638.1	30		12/20/26			32.5	11										Est. A-3a
	35					COARSE AND FINE SAND: Dense brown fine sand, little coarse sand, little silt, trace clay, trace fine gravel.											

PLATE 79

WATER LEVEL: ▽ 44.0 "Dry" "Dry" "Dry"  
 WATER NOTE: Encountered During Drilling Inside Augers - End of Drilling Augers Removed - Caved at 10'  
 DATE: 9/7/06 9/7/06 9/7/06

**LOG OF BORING NO. S-027-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 168+75 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 1185' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 670.6  
N - 665814.434; E - 2192715.686 DATE: 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
631.5	35					COARSE AND FINE SAND: Dense brown fine sand, little coarse sand, little silt, trace clay, trace fine gravel.	12A												
	40		7/18/25			SILT: Dense gray silt, trace clay, little fine sand, trace coarse sand, contains few silty clay seams.	12B										15		Est. A-3a Est. A-4b
	45		9/18/22				13	0	1	20	71	8	NP	NP	17				A-4b(8) A-4b(0)
623.1							14	0	1	2	78	19	26	6	16				A-4b(8)
	50		9/13/19			SILT: Very-stiff to hard (Est.) gray silt, little to some clay, trace fine to coarse sand.	15												Est. A-4b
	55		6/8/12				16	0	1	2	72	25	28	10	16				A-4b(8)
	60		8/10/14				17												Est. A-4b
603.1	65		6/8/14				18												Est. A-4b
	70		5/5/6	1.0-3.5															Est. A-4b

PLATE 80

WATER LEVEL: ▽ 44.0 ▽ "Dry" ▽ "Dry" ▽  
 WATER NOTE: Encountered During Drilling Inside Augers - End of Drilling Augers Removed - Caved at 10'  
 DATE: 9/7/06 9/7/06 9/7/06





**LOG OF BORING NO. S-028-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 170+94 COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler 1235' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 634.1  
N - 665851.798; E - 2192869.710 DATE: 9/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
631.6	0		8/9/11			GRAVEL WITH SAND (FILL): Medium-dense brown and gray fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay, contains many limestone fragments.	1										Est. A-1-b
628.6	5		8/8/8			COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, trace silt, trace clay, trace fine gravel, contains few roots.	2										Est. A-3a
			5/10/9	4.5+		SILT: Very-stiff to hard gray silt, some clay, trace fine sand, contains few silty clay lenses and seams.	3								20		Est. A-4b
	10		1/4/7	4.5+			4										Est. A-4b
			6/6/7	4.5+			5	0	0	2	66	32	25	6	18		A-4b(8)
	15		3/6/8	4.25-4.5+			6										Est. A-4b
			9/10/16	4.5+			7								15		Est. A-4b
	20		15/15/23	4.5+			8										Est. A-4b
			4/6/7	4.5+			9	0	0	2	68	30	24	5	17		A-4b(8)
	25		8/9/11	4.5+			10										Est. A-4b
602.1	30																
			3/4/8	2.5-4.5+		SILT: Very-stiff to hard gray silt, "and" clay, trace fine sand, contains many silty clay seams.	11	0	0	1	51	48	29	9	22		A-4b(8)
	35																

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽ ▽  
 WATER NOTE: Inside Augers - End of Drilling Augers Pulled  
 DATE: 9/14/06 9/14/06

PLATE 82



**LOG OF BORING NO. S-028-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 170+94 COMPLETION DEPTH: 80.0'  
2" O.D. Split-barrel Sampler 1235' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 634.1  
N - 665851.798; E - 2192869.710 DATE: 9/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	70																	
	75		SH/1/4	0.5-1.0		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silty clay seams and few medium-stiff zones.	19	0	1	1	26	72	34	13	30		A-6a(9)	
554.1	80		3/4/7	1.0-2.0	80.0		20											Est. A-6a
	85					<u>NOTES:</u> - Encountered seepage at 18.5' and 38.4'.												
	90																	
	95																	
	100																	
	105																	

WATER LEVEL: ▼ "Dry"      ▼ "Dry"      ▼      ▼  
 WATER NOTE: Inside Augers - End of Drilling      Augers Pulled      \_\_\_\_\_  
 DATE: 9/14/06      9/14/06      \_\_\_\_\_

PLATE 84

**LOG OF BORING NO. S-029-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 172+67 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 1106' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 675.8  
N - 666022.891; E - 2192910.979 DATE: 9/11/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
675.7	0					0.1 ASPHALT - 1/2 INCH												
			13/24/20				1											Est. A-1-b
671.6						4.2 GRAVEL WITH SAND (FILL): Dense becoming medium-dense brown fine to coarse sand, little fine gravel, trace silt, trace clay, contains many brick and concrete fragments.	2A 2B											Est. A-1-b Est. A-3a
	5		11/11/16															
			10/5/5				3	18	16	53	13					10		Est. A-3a
667.0						8.8 COARSE AND FINE SAND (FILL): Medium-dense becoming loose brown fine to coarse sand, little fine gravel, trace silt, trace clay.	4A 4B											Est. A-3a Est. A-3a
	10		3/4/5															
			4/4/6				5											Est. A-3a
660.3	15		2/2/8			15.5 COARSE AND FINE SAND: Loose brown fine to coarse sand, little silt, little clay, trace fine gravel, contains many silty clay and silt seams.	6	5	13	54	14	14	NP	NP		13		A-3a(0)
			5/7/9				7											Est. A-3a
			8/10/11				8											Est. A-3a
	20																	
			4/4/4				9											Est. A-3a
	25																	
			7/8/11				10											Est. A-3a
	30																	
			5/9/5				11	0	1	79	20						25	Est. A-3a
	35																	

WATER LEVEL: 34.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/11/06

PLATE 85

**LOG OF BORING NO. S-029-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 172+67 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 1106' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 675.8  
N - 666022.891; E - 2192910.979 DATE: 9/11/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
638.8	35					37.0												
	40	11/15/24				SILT: Medium-dense to dense gray silt, little to some clay, trace fine sand.	12											Est. A-4b
	45	10/10/13					13									16		Est. A-4b
	50	15/25/24					14											Est. A-4b
	55	9/18/26					15	0	0	5	67	28	24	4	16			A-4b(8)
	60	16/22/23					16									16		Est. A-4b
	65	9/15/21					17											Est. A-4b
	70	21/15/27					18	0	0	6	75	19	23	3	17			A-4b(8)

WATER LEVEL: 34.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/11/06

PLATE 86

**LOG OF BORING NO. S-029-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 172+67 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 1106' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 675.8  
N - 666022.891; E - 2192910.979 DATE: 9/11/06

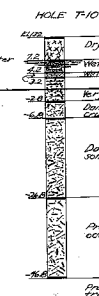
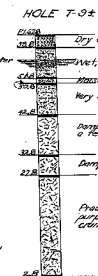
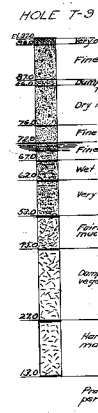
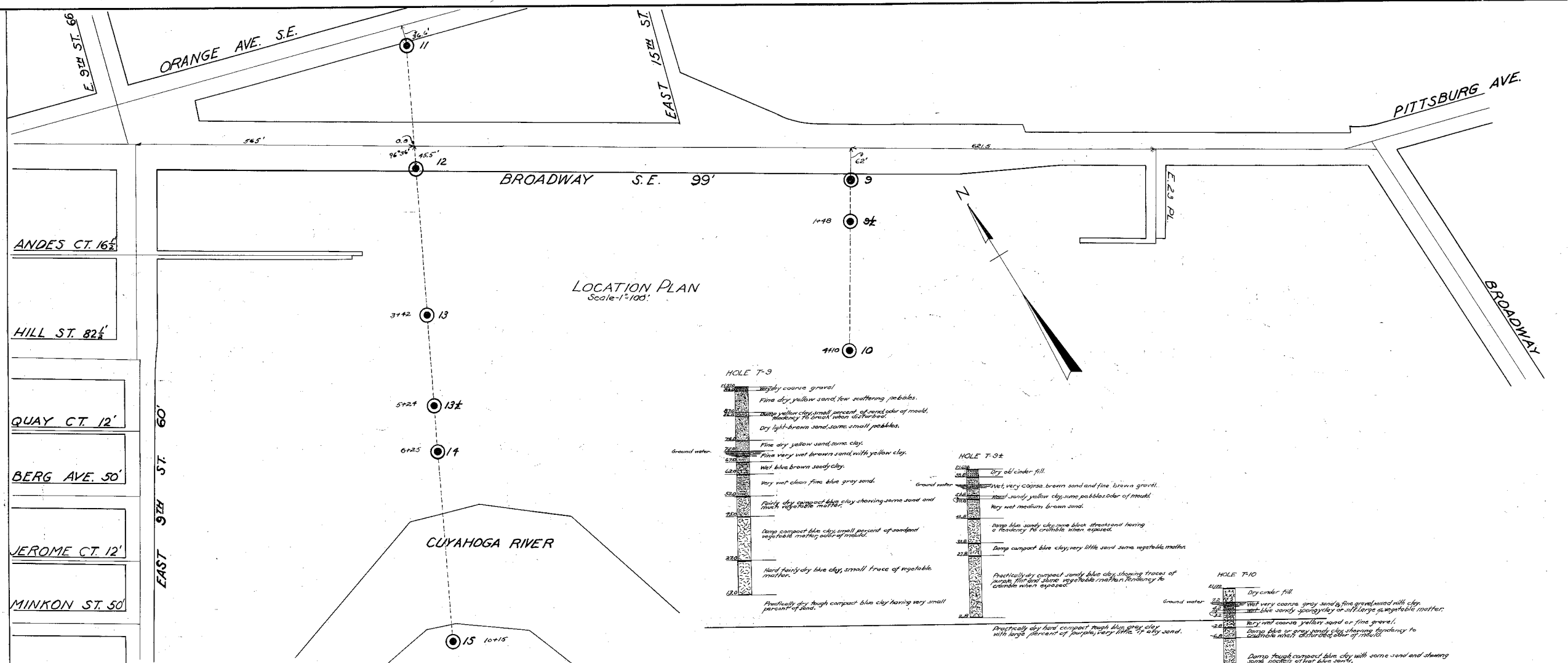
Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
603.8	70					++++ ++++ ++++												
	72.0																	
	75		5/9/10	4.5+		SILT AND CLAY: Hard gray silt, "and" clay, trace fine sand, contains many silt seams and lenses.	19											Est. A-6a
598.8	77.0																	
	80		4/3/6	1.0-2.0		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine sand, contains many silt seams and lenses.	20										23	Est. A-6a
	85		3/4/5	1.25-2.5			21											Est. A-6a
	90		3/6/9	1.0-3.25			22	0	0	1	59	40	28	11	23		A-6a(8)	
	95		4/5/7	1.0-2.0			23											Est. A-6a
575.8	100		3/5/6	1.0-2.0			24										24	Est. A-6a

NOTES:  
 - Encountered seepage at 12.0' and 14.3'.  
 - Encountered water at 34.0'.  
 - Water was added inside augers at 35.0' to prevent heave.

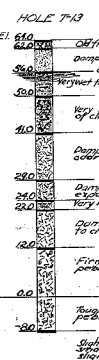
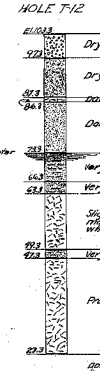
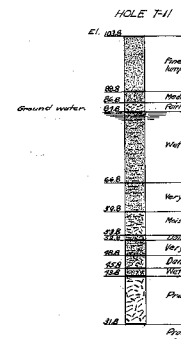
WATER LEVEL: 34.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/11/06

PLATE 87

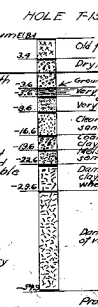
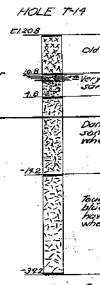
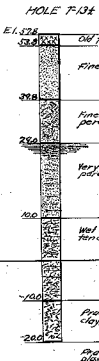
Revisions:  
Issue No. A, October 17, 1923.  
Issue No. 1, Nov. 3, 1923. Approved by  
Chief Engineer  
Issue No. 2, Jan. 30, 1924  
Changed River Line.



SECTION T-9, 9 1/2, 10.



SECTION T-11, 12, 13, 14, 15.  
Vertical Scale 1"=20'  
Horizontally not to scale.



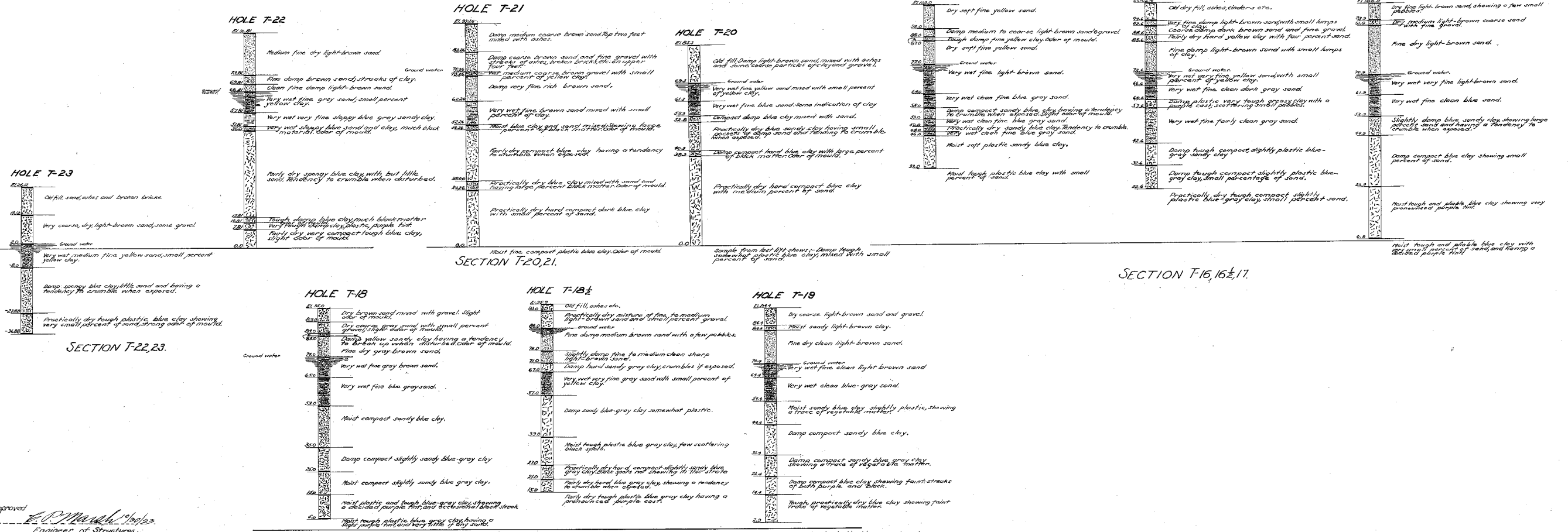
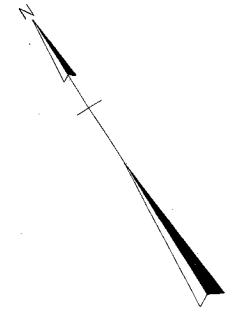
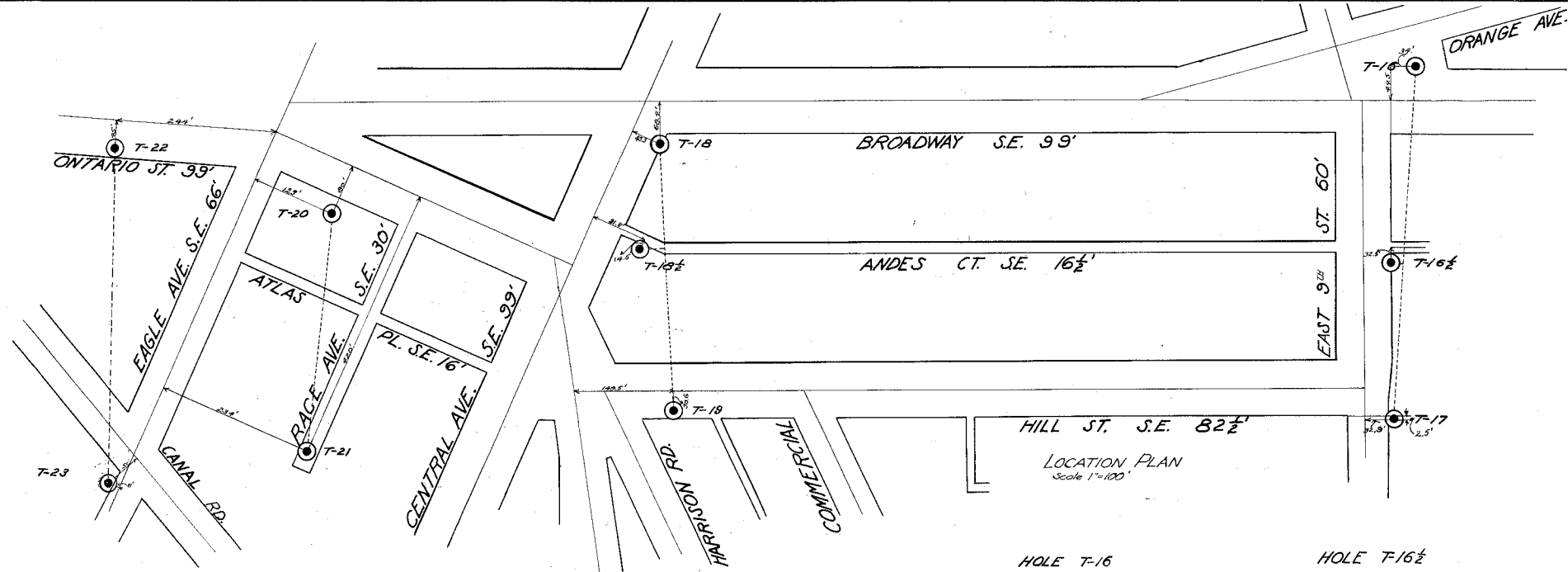
Approved *E. P. Marshall* 10/23  
Engineer of Structures  
Approved *Amelunier* 11/23  
Dist. Assistant Engineer  
Approved *M. B. Coffey*  
Office Engineer

Designed by J.L.S. Jan. 1923  
Detailed by J.L.S. Jan. 1923  
Traced by J.L.S. Jan. 1923  
Checked by W.Z.T. Oct. 24, 1923  
Designing Engineer

THE CLEVELAND UNION TERMINALS CO.  
LOCATION AND RECORD OF BORINGS.  
TEST HOLES T-9, 9 1/2, 10, 11, 12, 13, 13 1/2, 14, 15  
CLEVELAND, OHIO.  
OFFICE OF ENGINEER OF STRUCTURES.  
SCALES AS SHOWN.  
ISSUE NO. 2  
Oct. 17, 1923  
REVISION 11/23  
REVISION 11/23  
CHIEF ENGINEER  
FILE NO. 112-003



Revisions:-  
 Issue No. A, October 17, 1923.  
 Issue No. 1, Nov. 3, 1923, Approved by Chief Engineer.  
 Issue No. 2, Jun. 28, 1924, Changed intersection of Eagle Ave. and Canal Rd.



Approved *[Signature]* 10/24/23  
 Engineer of Structures  
 Approved *[Signature]* 10/24/23  
 Prin. Assistant Engineer  
 Approved *[Signature]*  
 Office Engineer  
 Designed by *[Signature]* June 1923  
 Detailed by *[Signature]* June 1923  
 Traced by *[Signature]* June 1923  
 Checked by *[Signature]* Oct 23, 1923  
 Correct *[Signature]* Oct 26, 1923  
 Designing Engineer

SECTION T-18, 18 1/2, 19.  
 Vertical Scale - 1"=20'  
 Horizontally not to Scale.

SECTION T-16, 16 1/2, 17.

THE CLEVELAND UNION TERMINALS CO.  
 LOCATION AND RECORD OF BORINGS.  
 TEST HOLES T-16, 16 1/2, 17, 18, 18 1/2, 19, 20, 21, 22, 23.  
 CLEVELAND, OHIO.  
 OFFICE OF ENGINEER OF STRUCTURES.  
 Scales as shown  
 Issue No. 2  
 Oct 17, 1923  
*[Signature]* 10/24/23  
 Chief Engineer

**LOG OF BORING NO. V-002-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 139+26  
91' Lt. of Proposed W.B. I-90 Centerline  
N - 664450.201; E - 2190332.978

COMPLETION DEPTH: 100.0'  
 ELEVATION: 579.8  
 DATE: 10/4/06 - 10/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
578.8	0					1.0 GRAVEL - 12 INCHES												
578.3			2/2/2			1.5 FINE SAND: Very-loose brown fine sand, trace coarse sand, trace silt, trace clay.	1A											Est. A-3
						4.0 COARSE AND FINE SAND: Very-loose dark brown and black fine to coarse sand, little silt, little clay, little fine gravel.	1B	11	12	47	30							Est. A-3a
575.8			SH-12"/1	0.5-1.0		6.6 VISUAL: Medium-stiff to stiff dark gray and black organic silt, "and" clay, little fine to coarse sand, trace fine gravel.	2A											Est. A-3a
	5					8.0 VISUAL: Medium-stiff to stiff brown silt, "and" clay, trace to little fine to coarse sand.	2B											Visual
573.2			1/2/1	0.5-1.0		10.5 SANDY SILT: Very-loose brown silt, some fine to coarse sand, little clay.	3A	1	2	10	48	39	42	13	36			Visual
571.8				0.5-1.0		13.0 SILT: Very-loose gray silt, trace to little clay, little fine to coarse sand.	3B								25			A-7-6(10)
			SH-18"			13.9 SILT AND CLAY: Medium-stiff to stiff gray silt, "and" clay, trace fine sand, slightly organic.	4											Est. A-6a
569.3	10					16.3 COARSE AND FINE SAND: Very-loose to loose gray fine to coarse sand, trace silt, trace clay.	5											Est. A-4a
			SH-12"/1			18.0 SILT: Soft to medium-stiff gray silt, some clay, little fine to coarse sand.	6A											Est. A-4b
566.8						27.5 SILT AND CLAY: Very-stiff gray clay, "and" silt, trace fine to coarse sand, contains many silt seams.	6B											Est. A-6a
565.9			SH/2/2	0.5-1.0			7A											Est. A-3a
	15						7B	0	1	11	56	32	29	5	36			Est. A-3a
563.5			SH/2/4	0.25-1.0			8											Est. A-3a
561.8							9	2	32	56	10							A-4b(8)
	20		1/2/1				10											Est. A-3
	25		4/5/4															Est. A-3
552.3																		Est. A-3
	30		3/5/6	2.0-3.25														Est. A-6a

PLATE 1

WATER LEVEL: ▽ 13.5    ▽ "Dry"    ▽ "Dry"    ▽  
 WATER NOTE: Encountered During Drilling    Inside Augers - End of Drilling    Augers Removed - Caved at 29.2'  
 DATE: 10/4/06    10/6/06    10/6/06

**LOG OF BORING NO. V-002-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 139+26    COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler    91' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 579.8  
N - 664450.201; E - 2190332.978    DATE: 10/4/06 - 10/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	30																	
	35		4/4/5	2.0-3.5		SILT AND CLAY: Very-stiff gray clay, "and" silt, trace fine to coarse sand, contains many silt seams.	11	0	1	1	45	53	30	12	26		A-6a(9)	
542.3					37.5													
	40		3/3/3	0.5-1.75		SILT: Medium-stiff to stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams, and few very-stiff zones, slightly organic.  - Sample 12: Loss-on-Ignition (LOI) Test = 2.2%.	12									31	Est. A-4b	
	45		3/4/4	1.0-2.25			13	0	1	1	50	48	29	9	26		A-4b(8)	
	50		4/6/7	0.5-3.0			14									16	Est. A-4b	
527.3					52.5													
	55		5/7/7	1.0-2.0		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt lenses.	15											Est. A-6a
	60		6/6/6	1.0-2.0			16	1	2	2	34	61	33	11	25		A-6a(8)	

WATER LEVEL: ∇ 13.5    ∇ "Dry"    ∇ "Dry"    ∇  
WATER NOTE: Encountered During Drilling    Inside Augers - End of Drilling    Augers Removed - Caved at 29.2'  
DATE: 10/4/06    10/6/06    10/6/06

PLATE 2

**LOG OF BORING NO. V-002-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 139+26  
91' Lt. of Proposed W.B. I-90 Centerline  
N - 664450.201; E - 2190332.978

COMPLETION DEPTH: 100.0'  
 ELEVATION: 579.8  
 DATE: 10/4/06 - 10/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
	60					SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt lenses.													
	65	█	4/5/6	1.0-2.0			17										24	Est. A-6a	
	70	█	4/5/7	1.0-1.75			18												Est. A-6a
	75	█	4/5/6	1.0-2.0			19										23	Est. A-6a	
	80	█	4/6/6	1.0-2.25			20	1	1	2	29	67	36	13	25			A-6a(9)	
	85	█	4/5/6	1.5-2.25			21										24	Est. A-6a	
	90	█	4/5/5	1.5-2.0			22												Est. A-6a

PLATE 3

WATER LEVEL: ▽ 13.5    ▽ "Dry"    ▽ "Dry"    ▽  
 WATER NOTE: Encountered During Drilling    Inside Augers - End of Drilling    Augers Removed - Caved at 29.2'  
 DATE: 10/4/06    10/6/06    10/6/06

**LOG OF BORING NO. V-002-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 139+26    COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler    91' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 579.8  
N - 664450.201; E - 2190332.978    DATE: 10/4/06 - 10/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
	90					 SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt lenses.											
	95	█	4/4/4	1.0-1.5				23									27
482.3						97.5											
	100	█	1/1/3			++++ ++++ ++++ ++++ ++++ 100.0	24	6	6	6	62	20	NP	NP	22		A-4b(0)
479.8						NOTES: - Encountered water at 13.5'. - Approximately 10' of heave was observed inside the augers at 20.0'. Water was added inside augers at 20.0' to prevent heave. - Used 3-1/4" I.D. Hollow-stem Augers from 0' to 40', and 60' to 100'. - Used 3-1/8" Tricone Roller Bit with water (washbore) from 40' to 60'. Auger drilling was resumed at 60' due to significant water loss during washbore drilling from 55' to 60'.											
	105																
	110																
	115																
	120																

WATER LEVEL: ▽ 13.5    ▽ "Dry"    ▽ "Dry"    ▽  
 WATER NOTE: Encountered During Drilling    Inside Augers - End of Drilling    Augers Removed - Caved at 29.2'  
 DATE: 10/4/06    10/6/06    10/6/06

PLATE 4

**LOG OF BORING NO. V-003-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger 3-1/8" Tricone Roller Bit LOCATION: Sta. 141+37 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 81' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 582.5  
N - 664646.175; E - 2190411.829 DATE: 10/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	0																	
			9/15/13			GRAVEL WITH SAND (FILL): Medium-dense becoming very-loose to loose dark brown and brown fine to coarse sand, little to some fine to coarse gravel, trace silt, trace clay, contains many slag, sandstone and brick fragments.	1											Est. A-1-b
	5		4/3/5				2											Est. A-1-b
576.1						6.4												Est. A-1-b
574.5			1/2/2	1.0-2.0		8.0	3A 3B	1	1	25	40	33	36	12	27			A-6a(8)
			SH-18"	0.0-0.5		10.5	4	0	0	36	33	31	26	9	23			A-4a(6)
572.0	10						5											Est. A-6a
569.5			SH/1/1	0.25-1.0		13.0	6											Est. A-4a
	15		1/2/2				7											Est. A-4a
			SH-12"/1				8											Est. A-4a
	20		SH/1/1				9	0	0	50	35	15	NP	NP	25			A-4a(0)
	25		SH-18"				10											Est. A-4a
	30		1/2/1				11	0	1	2	49	48	28	11	24			A-6a(8)
550.5	35		1/3/4	0.5-1.5														

PLATE 5

WATER LEVEL: 15.6  
 WATER NOTE: Encountered During Drilling  
 DATE: 10/6/06

**LOG OF BORING NO. V-003-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 141+37    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    81' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 582.5  
N - 664646.175; E - 2190411.829    DATE: 10/6/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class					
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC			
545.5	35																		
	40	█	4/6/9	2.0-3.75		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, contains many silt seams, lenses, and pockets, and few hard zones.	12											Est. A-6a	
	45	█	3/5/5	1.25-4.25			13										26	Est. A-6a	
	50	█	3/3/4	1.0-2.0			14	0	1	1	35	63	37	15	28			A-6a(10)	
530.5	55	█	3/5/7	0.75-3.75		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, some fine to coarse sand, contains many medium-stiff zones.	15										19	Est. A-6a	
525.5	60	█	2/4/6	0.5-2.0		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt pockets, and few medium-stiff zones.	16												Est. A-6a
	65	█	3/5/7	1.5-2.25			17	2	2	3	33	60	34	13	22			A-6a(9)	
	70	█	2/4/7	1.0-2.0			18											23	Est. A-6a

PLATE 6

WATER LEVEL: 15.6    WATER NOTE: Encountered During Drilling    DATE: 10/6/06

**LOG OF BORING NO. V-003-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 141+37    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    81' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 582.5  
N - 664646.175; E - 2190411.829    DATE: 10/6/06


Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
	70					 SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt pockets, and few medium-stiff zones.											
	75	█	2/5/6	1.0-2.0			19								22	Est. A-6a	
	80	█	2/4/7	1.0-1.5			20									Est. A-6a	
	85	█	3/5/7	1.25-2.0			21								23	Est. A-6a	
492.5	90	█	3/5/7	1.25-2.25		90.0	22	0	1	1	34	64	36	13	25	A-6a(9)	
	95					NOTES: - Encountered seepage at 8.5'. - Encountered water at 15.6'. - Water was added inside augers at 18.5' to prevent heave. - Used 3-1/4" I.D. Hollow-stem Augers from 0' to 40'. - Used 3-1/8" Tricone Roller Bit with water (washbore) from 40' to 90'.											
	100																
	105																

PLATE 7

WATER LEVEL: 15.6    WATER NOTE: Encountered During Drilling    DATE: 10/6/06



**LOG OF BORING NO. V-004-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 143+30    COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler    50' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 583.7  
N - 664819.230; E - 2190504.007    DATE: 10/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
582.7	0					1.0 GRAVEL LOT - 12 INCHES												
			9/17/17			GRAVEL WITH SAND (FILL): Dense becoming loose brown and dark brown fine to coarse sand, some fine to coarse gravel, little silt, trace clay, contains many brick and sandstone fragments.	1											Est. A-1-b
	5		5/6/7				2	29	27	28	16						13	Est. A-1-b
			3/4/3				3											Est. A-1-b
575.7			2/3/3	2.0-4.0		8.0 SILT AND CLAY: Very-stiff to hard gray mottled with brown silt, "and" clay, little fine sand, contains few fine sand pockets and lenses, and few stiff zones.	4										23	Est. A-6a
	10		2/3/3	2.0-4.0			5	0	0	14	47	39	32	13	20			A-6a(9)
			3/3/3	1.75-4.5			6										21	Est. A-6a
568.2	15		SH-18"			15.5 SANDY SILT: Very-loose gray fine sand, "and" silt, little clay.	7											Est. A-4a
			SH-18"				8	0	0	41	41	18	19	3	25			A-4a(5)
	20		SH-18"				9										22	Est. A-4a
	25		SH-18"				10											Est. A-4a
556.2			SH-18"			27.5 SANDY SILT: Very-loose gray fine sand, "and" silt, trace clay, trace coarse sand, trace fine gravel, contains few roots.	10										25	Est. A-4a
	30		1-18"				11	1	1	46	42	10	NP	NP	23			A-4a(3) A-4a(0)
	35																	

WATER LEVEL: ▽ 7.0    ▽ 16.0    ▽ 12.0    ▽ 16.2  
WATER NOTE: Encountered During Drilling    Encountered During Drilling    Prior to Washbore    Augers Removed - Caved at 23.6'  
DATE: 10/12/06    10/12/06    10/12/06    10/12/06

PLATE 8

**LOG OF BORING NO. V-004-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 143+30    COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler    50' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 583.7  
N - 664819.230; E - 2190504.007    DATE: 10/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
541.2	40	1/1/2				SANDY SILT: Very-loose gray fine sand, "and" silt, trace clay, trace coarse sand, trace fine gravel, contains few roots.	12										26	Est. A-4a
	45	4/3/4				GRAVEL WITH SAND: Loose gray and dark gray fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay, slightly organic.	13											Est. A-1-b
534.2	50	8/5/4		0.5-2.0		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt seams, and few medium-stiff zones.	14A 14B	37	31	19	8	5	NP	NP	13	22		A-1-b(0) Est. A-6a
	55	3/5/6		1.0-2.5			15										21	Est. A-6a
	60	3/4/7		1.25-2.25			16											Est. A-6a
	65	4/5/6		1.25-2.25			17	2	3	4	35	56	30	11	22			A-6a(8)
	70	3/5/7		0.75-2.5			18										21	Est. A-6a

WATER LEVEL: 7.0    16.0    12.0    16.2  
WATER NOTE: Encountered During Drilling    Encountered During Drilling    Prior to Washbore    Augers Removed - Caved at 23.6'  
DATE: 10/12/06    10/12/06    10/12/06    10/12/06

PLATE 9

**LOG OF BORING NO. V-004-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit  
2" O.D. Split-barrel Sampler

LOCATION: Sta. 143+30  
50' Lt. of Proposed W.B. I-90 Centerline  
N - 664819.230; E - 2190504.007

COMPLETION DEPTH: 100.0'  
ELEVATION: 583.7  
DATE: 10/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
	-75-	█	3/5/6	1.25-2.25		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt seams, and few medium-stiff zones.	19										Est. A-6a
	-80-	█	3/5/6	1.25-2.25			20	2	3	5	33	57	33	13	22		A-6a(9)
	-85-	█	3/5/7	1.25-2.5			21								24		Est. A-6a
	-90-	█	3/5/6	1.25-2.25			22										Est. A-6a
491.7	-92.0																
	-95-	█	3/5/6	1.0-2.0		SILT AND CLAY: Medium-stiff to stiff gray clay, some silt, trace fine sand, contains many silt seams.	23	0	0	1	27	72	34	13	27		A-6a(9)
483.7	-100-	█	2/2/3	0.5-1.25			24								28		Est. A-6a
	-105-					<p><u>NOTES:</u></p> <ul style="list-style-type: none"> <li>- Encountered water at 7.0' and 16.0'.</li> <li>- Water was added inside augers at 18.5' to prevent heave.</li> <li>- Used 3-1/4" I.D. Hollow-Stem Augers from 0' to 50'.</li> <li>- Used 3-1/8" Tricone Roller Bit with water (washbore) from 50' to 100'.</li> </ul>											

PLATE 10

WATER LEVEL: ▽ 7.0      ▽ 16.0      ▽ 12.0      ▽ 16.2  
WATER NOTE: Encountered During Drilling    Encountered During Drilling    Prior to Washbore    Augers Removed - Caved at 23.6'  
DATE: 10/12/06                      10/12/06                      10/12/06                      10/12/06

**LOG OF BORING NO. V-005-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 145+82    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    64' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 582.9  
N - 665062.860; E - 2190577.715    DATE: 10/5/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
	0		10/10/9			COARSE AND FINE SAND (FILL): Medium-dense becoming very-loose brown and black fine to coarse sand, trace to little fine to coarse gravel, trace silt, trace clay, contains many cinders, and few coal and glass fragments.	1										Est. A-3a
577.4	5		2/2/2				2										Est. A-3a
574.9	8.0		1/1/1			GRAVEL WITH SAND (FILL): Very-loose gray fine to coarse sand, some fine to coarse gravel, trace silt, trace clay, contains few brick fragments.	3	32	24	29	15				23		Est. A-1-b
	10		2/1/3	1.25-3.0		CLAY: Stiff to very-stiff gray mottled with brown silt, "and" clay, trace fine to coarse sand, contains iron oxide staining, and few roots, slightly organic.	4								28		Est. A-7-6
			2/2/3	1.25-2.0			5	0	1	6	51	42	43	19	31		A-7-6(12)
568.4	15		1/2/1	1.0-2.0 0.25-0.5			6A 6B								35 103		Est. A-7-6 Visual
564.9	18.0		SH-18"	0.25-0.5		VISUAL: Soft to medium-stiff brown organic silt, "and" clay, trace fine to coarse sand, contains many peat seams and few roots.	7	0	4	5	53	38	65	16	91		Visual A-7-5(14)
	20		SH-18"			- Sample 6B: Loss-on-Ignition (LOI) Test = 25.1%. - Sample 7: Loss-on-Ignition (LOI) Test = 11.3%.	8								40		Est. A-4b
			SH-18"			SILT: Very-loose gray silt, some clay, trace fine to coarse sand, contains few roots and wood fragments, slightly organic.											
	25		SH-18"			- Sample 8: Loss-on-Ignition (LOI) Test = 3.6%. - Sample 9: Loss-on-Ignition (LOI) Test = 2.6%.	9	0	1	1	75	23	28	4	32		A-4b(8)
555.9	27.0																
			SH-18"			SILT: Very-loose gray silt, trace clay, "and" fine sand, trace coarse sand, trace fine gravel.	10								26		Est. A-4b
547.4	35		1/1/1				11	1	2	36	51	10	NP	NP	22		A-4b(5) A-4b(0)



WATER LEVEL: 5.5  
WATER NOTE: Encountered During Drilling  
DATE: 10/5/06

PLATE II

**LOG OF BORING NO. V-005-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger 3-1/8" Tricone Roller Bit LOCATION: Sta. 145+82 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 64' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 582.9  
N - 665062.860; E - 2190577.715 DATE: 10/5/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
						 GRAVEL WITH SAND: Loose to medium-dense gray fine to coarse sand, "and" fine gravel, trace silt, trace clay.												
	-40-		7/5/5				12											Est. A-1-b
	-45-		6/6/9				13											Est. A-1-b
	-50-		4/5/4				14	38	40	14	4	4	NP	NP	13		A-1-b(0)	
531.9							51.0											
	-55-		2/4/6	1.0-1.75			 SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel.	15										Est. A-6a
	-60-		2/5/6	1.75-2.0		16									24		Est. A-6a	
	-65-		2/4/6	1.25-1.75		17											Est. A-6a	
	-70-		2/4/6	1.5-2.0		18		2	1	3	32	62	35	14	24		A-6a(10)	


WATER LEVEL: 5.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 10/5/06

PLATE 12

**LOG OF BORING NO. V-005-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 145+82    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    64' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 582.9  
N - 665062.860; E - 2190577.715    DATE: 10/5/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
	-75-	█	2/4/7	1.5-2.0		 SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel.	19									Est. A-6a	
	-80-	█	2/5/6	1.5-2.0			20								24	Est. A-6a	
	-85-	█	3/5/7	1.75-2.25			21								22	Est. A-6a	
492.9	-90-	█	3/4/6	1.0-1.75			22									Est. A-6a	
	-95-					NOTES: - Encountered water at 5.5'. - Water was added inside the augers at 6.0' to prevent heave. - Used 3-1/4" I.D. Hollow-stem Augers from 0' to 55'. - Used 3-1/8" Tricone Roller Bit with water (washbore) from 55' to 90'.											
	-100-																
	-105-																

WATER LEVEL: 5.5    WATER NOTE: Encountered During Drilling    DATE: 10/5/06

PLATE 13

**LOG OF BORING NO. V-007-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit      LOCATION: Sta. 148+63      COMPLETION DEPTH: 110.0'  
2" O.D. Split-barrel Sampler      99' Lt. of Proposed W.B. I-90 Centerline      ELEVATION: 585.0  
N - 665340.497;    E - 2190661.027      DATE: 10/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
584.7	0					0.3 ASPHALT - 4 INCHES											
584.0			30/35/34			1.0 GRANULAR BASE - 8 INCHES	1										Est. A-1-b
582.0						3.0 GRAVEL WITH SAND (FILL): Very-dense brown fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay, contains many sandstone and slag fragments.	2										Est. A-1-b
578.5	5		5/5/4			6.5 GRAVEL WITH SAND (FILL): Loose to medium-dense black and dark brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay, contains many slag and brick fragments and few coal fragments.	3A 3B										Est. A-1-b Est. A-4a
577.0			3/6/8			8.0 SANDY SILT (POSSIBLE FILL): Medium-dense gray and brown fine to coarse sand, some silt, little clay, trace fine gravel.	4										Est. A-3a
574.5	10		9/5/7			10.5 COARSE AND FINE SAND (POSSIBLE FILL): Medium-dense dark brown, black and gray fine to coarse sand, little fine to coarse gravel, trace silt, trace clay, slightly organic.	5A 5B									96	Visual Est. A-6a
573.7		▽	SH/2/3	0.5-2.0		11.3 VISUAL: Very-soft to soft (Est.) dark brown, black and gray organic clay, "and" silt, trace fine to coarse sand, contains many peat pockets.	6	0	1	1	45	53	60	27	48		Visual A-7-5(19)
572.0			SH/1/2	0.5-1.5		13.0 SILT AND CLAY: Medium-stiff to stiff gray silt, "and" clay, trace fine sand.	7A 7B									29	Est. A-6a Visual
569.5	15		2/2/2	0.5-3.0		15.5 VISUAL: Medium-stiff to stiff gray organic silty clay, trace fine to coarse sand.	8	1	1	8	47	43	73	14	98		Visual A-7-5(14)
568.2			1/1/1	0.0-1.0		16.8 SILT AND CLAY: Medium-stiff to stiff gray silt, "and" clay, trace fine sand, contains few very-stiff zones, slightly organic.	9	0	0	2	54	44	35	12	34		A-6a(9)
562.5	20		SH-18"	0.25-1.0		22.5 VISUAL: Soft to medium-stiff gray organic silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many peat pockets, and many very-soft zones.	10									31	Est. A-6a
	25		SH-18"	0.25-1.0		32.5 SILT: Very-soft to soft (Est.) dark brown, black and gray organic clay, "and" silt, trace fine to coarse sand, contains many peat pockets.	11									29	Est. A-4b
	30		SH-18"	0.25-1.0													
552.5	35		SH-18"	0.25-1.0													

WATER LEVEL: ▽ 11.0      ▽ 23.7      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 47.2'  
 DATE: 10/7/06      10/7/06

PLATE 14

**LOG OF BORING NO. V-007-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit      LOCATION: Sta. 148+63      COMPLETION DEPTH: 110.0'  
2" O.D. Split-barrel Sampler      99' Lt. of Proposed W.B. I-90 Centerline      ELEVATION: 585.0  
N - 665340.497; E - 2190661.027      DATE: 10/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
547.5						++++ SILT: Very-loose gray silt, some clay, little fine sand. ++++ 37.5												
	-40-	█	1/2/2			 SANDY SILT: Very-loose gray fine sand, some silt, trace clay, trace coarse sand. 42.5	12	0	2	54	35	9	NP	NP	21	A-4a(2) A-4a(0)		
542.5		█	2/2/4			..... COARSE AND FINE SAND: Loose gray fine to coarse sand, little silt, trace clay, trace fine gravel. 47.5	13									Est. A-3a		
537.5		█	4/6/6			..... GRAVEL WITH SAND: Medium-dense gray fine to coarse sand, some to "and" fine to coarse gravel, trace silt, trace clay. 52.5	14									Est. A-1-b		
532.5		█	3/3/4	1.0-2.0		 SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt pockets. 60	15								27	Est. A-6a		
	-60-	█	3/5/8	1.5-2.5			16									Est. A-6a		
	-65-	█	3/5/8	1.5-2.5			17	1	4	4	34	57	33	13	21	A-6a(9)		
	-70-	█	3/4/7	1.5-2.25			18								22	Est. A-6a		

PLATE 15

WATER LEVEL: ▽ 11.0      ▽ 23.7      ▽      ▽  
WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 47.2'  
DATE: 10/7/06      10/7/06



**LOG OF BORING NO. V-007-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 148+63    COMPLETION DEPTH: 110.0'  
2" O.D. Split-barrel Sampler    99' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 585.0  
N - 665340.497; E - 2190661.027    DATE: 10/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
	-75-	█	3/5/7	1.25-2.5		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt pockets.	19										Est. A-6a
	-80-	█	3/4/7	1.5-2.25			20									22	Est. A-6a
	-85-	█	4/6/12	1.5-3.0			21	2	3	6	33	56	32	12	20		A-6a(9)
497.5					87.5												
	-90-	█	3/5/7	1.5-2.25		SILTY CLAY: Stiff to very-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, contains few fine to coarse sand pockets, and many soft to medium-stiff zones.	22									24	Est. A-6b
	-95-	█	3/4/5	0.75-2.0			23	1	1	1			39	16	27		A-6b(10)
	-100-	█	2/2/3	0.25-1.75			24									27	Est. A-6b
482.5					102.5												
	-105-	█	2/1/2	0.0-0.5		SANDY SILT: Very-soft to soft gray clay, "and" silt, little fine sand, trace fine gravel.	25	1	0	20	37	42	23	8	22		A-4a(8)

WATER LEVEL: 11.0    23.7          
 WATER NOTE: Encountered During Drilling    Augers Removed - Caved at 47.2'          
 DATE: 10/7/06    10/7/06       

PLATE 16

**LOG OF BORING NO. V-007-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: <u>3-1/4" I.D. Hollow-stem Auger</u> <u>3-1/8" Tricone Roller Bit</u>	LOCATION: <u>Sta. 148+63</u>	COMPLETION DEPTH: <u>110.0'</u>
<u>2" O.D. Split-barrel Sampler</u>	<u>99' Lt. of Proposed W.B. I-90 Centerline</u>	ELEVATION: <u>585.0</u>
	<u>N - 665340.497; E - 2190661.027</u>	DATE: <u>10/7/06</u>

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
476.2			8/11/15	0.0 2.0-4.5+		108.8 SANDY SILT: Very-soft to soft gray clay, "and" silt, little fine sand, trace fine gravel.	26A										Est. A-4a Est. A-4a
475.0	-110				110.0 SANDY SILT: Very-stiff to hard gray clay, "and" silt, little fine to coarse sand, trace fine gravel.	26B											
						<u>NOTES:</u> - Encountered seepage at 6.5'. - Encountered water at 11.0'. - Water was added inside augers at 23.5' to prevent heave. - Used 3-1/4" I.D. Hollow-Stem Augers from 0' to 55'. - Used 3-1/8" Tricone Roller Bit with water (washbore) from 55' to 110'. - A gas pocket was encountered at 85.0'. - Sample 5A: Loss-on-Ignition (LOI) Test = 17.5%. - Sample 6: Loss-on-Ignition (LOI) Test = 6.3%. - Sample 7A: Loss-on-Ignition (LOI) Test = 3.3%. - Sample 7B: Loss-on-Ignition (LOI) Test = 20.6%. - Sample 8: Loss-on-Ignition (LOI) Test = 14.6%.											
	-115																
	-120																
	-125																
	-130																
	-135																
	-140																

WATER LEVEL: <u>11.0</u>	WATER NOTE: <u>Encountered During Drilling</u>	DATE: <u>10/7/06</u>
WATER LEVEL: <u>23.7</u>	WATER NOTE: <u>Augers Removed - Caved at 47.2'</u>	DATE: <u>10/7/06</u>

**LOG OF BORING NO. V-008-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 150+80    COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    105' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 583.3  
N - 665540.664; E - 2190759.165    DATE: 10/3/06 - 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	0																	
			3/4/3			GRAVEL WITH SAND (FILL): Loose to medium-dense brown and dark brown fine to coarse sand, little to some fine to coarse gravel, trace silt, trace clay, contains many coal, slag, asphalt and brick fragments.  - Possible cobble encountered at 4.5'.	1										Est. A-1-b	
			5/8/31				2											Est. A-1-b
	5		3/3/3				3											Est. A-1-b
575.3					8.0													
			2/1/1			VISUAL: Very-soft to soft (Est.) black and brown organic silt, "and" clay, trace fine to coarse sand, contains many wood fragments. - Sample 4: Loss-on-Ignition (LOI) Test = 18.5%.	4									63	Visual	
572.8	10				10.5		5	0	2	1	43	54	51	22	38		Visual	
			2/2/2	0.75-1.75		VISUAL: Medium-stiff to stiff gray organic clay, "and" silt, trace fine to coarse sand, contains many wood fragments. - Sample 5: Loss-on-Ignition (LOI) Test = 5.6%. - Sample 6: Loss-on-Ignition (LOI) Test = 5.8%.	6									38	Visual	
			1/2/2	0.5-1.75			16.0	7	1	6	3	47	43	71	19	110		Visual
567.3	15		SH-18"	0.00-0.5		VISUAL: Very-soft to soft gray organic silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many peat pockets, many wood fragments, and few medium-stiff zones. - Sample 7: Loss-on-Ignition (LOI) Test = 14.4%. - Sample 8: Loss-on-Ignition (LOI) Test = 9.1%.	8									69	Visual	
			SH-18"	0.25-0.75			22.0	9	0	0	1	62	37	34	12	37		A-6a(9)
561.3	20					SILT AND CLAY: Very-soft to soft gray silt, "and" clay, trace fine sand, contains many medium-stiff zones, slightly organic. - Sample 9: Loss-on-Ignition (LOI) Test = 4.8%.	10											
			SH-18"	0.0-1.0			26.5	11	0	0	0	63	37	34	10	33		A-4b(8)
556.8	25		P	0.5-0.75		SILT: Very-soft to soft gray silt, some to "and" clay, contains few wood fragments, and few medium-stiff zones, slightly organic. - Sample 10: Loss-on-Ignition (LOI) Test = 3.5%. - Sample 11: Loss-on-Ignition (LOI) Test = 2.3%. - Unit Dry Weight (UDW) = 92.5 pcf from 27.5' to 28.0'	11											
			SH-18"	0.0-0.5			32.0	12	0	0	0	65	35	31	9	34		A-4b(8)
551.3	30					SILT: Very-loose to loose gray silt, little clay, some fine to coarse sand, trace fine gravel, slightly organic.												
			SH-12"/2														25	Est. A-4b
	35																	

WATER LEVEL: 6.0  
WATER NOTE: Encountered During Drilling  
DATE: 10/3/06

PLATE 18

**LOG OF BORING NO. V-008-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 150+80    COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    105' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 583.3  
N - 665540.664; E - 2190759.165    DATE: 10/3/06 - 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
544.3			SH/3/4			++++ - Sample 12: Loss-on-Ignition (LOI) Test = 2.2%. ++++ 39.0	13A												
	-40-					COARSE AND FINE SAND: Loose gray fine to coarse sand, little fine gravel, trace silt, trace clay.	13B	1	3	21	62	13	NP	NP	25			A-4b(8) A-4b(0) Est. A-3a	
	-45-		2/3/3				14	20	41	27	12				18			Est. A-3a	
535.8			4/6/10	1.75-4.25		47.5 SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt lenses and few hard zones.	15											Est. A-6a	
	-50-						16								21			Est. A-6a	
	-55-		3/5/9	2.0-3.75			17											Est. A-6a	
	-60-		3/6/9	1.5-3.0			18	2	4	5	34	55	31	11	20			A-6a(8)	
	-65-		3/6/9	1.5-3.0			19											Est. A-6a	
	-70-		3/7/8	1.5-2.75															

WATER LEVEL: 6.0  
WATER NOTE: Encountered During Drilling  
DATE: 10/3/06

PLATE 19

**LOG OF BORING NO. V-008-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 150+80    COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler    3" O.D. Shelby Tube Sampler    105' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 583.3  
N - 665540.664; E - 2190759.165    DATE: 10/3/06 - 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	-75-	█	2/7/8	1.75-2.75		<p>SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt lenses and few hard zones.</p>	20									22	Est. A-6a	
	-80-	█	3/6/8	1.25-2.25			21										21	Est. A-6a
	-85-	█	3/5/7	1.0-2.25			22	0	1	2		36	15	24			A-6a(10)	
496.3	-90-	█	3/5/5	0.75-2.0			23	1	0	1	35	63	33	13	25		A-6a(9)	
	-95-	█	2/3/6	0.5-1.5			24										28	Est. A-6a
486.3	-97.0					97.0												
	-100-	█	3/10/15			<p>COARSE AND FINE SAND: Medium-dense gray fine sand, trace coarse sand, trace silt, trace clay.</p>	25	0	5	80	9	6	NP	NP	20		A-3a(0)	
483.3	-100.0						100.0											
	-105-					<p><b>NOTES:</b>                      - Encountered water at 6.0'.                      - Possible cobble encountered at 4.5'.                      - Used 3-1/4" I.D. Hollow-Stem Augers from 0' to 20'.                      - Used 3-1/8" Tricone Roller Bit with water (washbore) from 20' to 40', and with water and bentonite from 40' to 100'.</p>												

WATER LEVEL: 6.0    WATER NOTE: Encountered During Drilling    DATE: 10/3/06

**LOG OF BORING NO. V-009-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 152+84 COMPLETION DEPTH: 109.4'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 55' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 580.6  
N - 665694.159; E - 2190907.837 DATE: 9/12/06 - 9/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
580.4	0					0.2' ASPHALT - 2 INCHES												
579.6			5/5/4			1.0' CONCRETE - 10 INCHES	1										Est. A-3a	
578.6						2.0' COARSE AND FINE SAND (FILL): Loose dark brown and brown fine to coarse sand, little fine to coarse gravel, little silt, trace clay.	2										Est. A-1-b	
574.6	5		1/1/1			6.0' GRAVEL WITH SAND (FILL): Very-loose gray fine to coarse sand, some fine to coarse gravel, trace silt, trace clay, contains petroleum odor.	3								43		Visual	
569.6	10		1/2/3	0.0-0.75		VISUAL: Very-soft to soft gray organic clay, "and" silt, trace fine to coarse sand, contains few roots and wood fragments, and few medium-stiff zones.	4	0	1	2	37	60	64	32	60		Visual A-7-5(20)	
			SH-18"	0.0-0.25		- Sample 3: Loss-on-Ignition (LOI) Test = 6.6%.	5									87	Visual	
			SH-18"	0.0-1.75		- Sample 4: Loss-on-Ignition (LOI) Test = 7.3%.	6										Visual	
	15		SH-18" P	0.0-0.75 0.25		VISUAL: Very-soft to soft dark brown and gray organic silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many wood fragments and many peat pockets, few brick fragments and few medium-stiff to stiff zones.	7	1	1	8	46	44	67	20	93		Visual A-7-5(16)	
562.1			SH-18"	0.0-0.25		- Sample 5: Loss-on-Ignition (LOI) Test = 15.0%.	8									74	Visual	
			SH-18"	0.0-0.50		- Sample 6: Loss-on-Ignition (LOI) Test = 14.6%.	9										Visual	
	20		SH-18"	0.0-0.50		- Sample 7: Loss-on-Ignition (LOI) Test = 10.2%.	8	0	0	1	60	39	36	10	36		A-4b(8)	
			SH-18"	0.0-0.50		SILT: Very-soft to soft gray and dark gray silt, "and" clay, trace fine sand, contains few wood fragments and few medium-stiff to stiff zones, slightly organic.	9										26	Est. A-4b
	25		SH/1/1	0.25-1.25		- Sample 8: Loss-on-Ignition (LOI) Test = 3.7%.	9										26	Est. A-4b
			SH-18"	0.0-0.75		- Sample 28: Loss-on-Ignition (LOI) Test = 3.8%.	28										32	A-4b(8)
	30		P SH-18"	0.0-0.75		- Unit Dry Weight (UDW) = 95.1 pcf from 28.5' to 29.0'	10	0	0	0	75	25	29	3	32		Est. A-4b	
549.1	30					31.5' SILT: Very-loose gray silt, little clay, "and" fine sand.												
	35		SH-18"				11										Est. A-4b	

WATER LEVEL: 31.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06

PLATE 21

**LOG OF BORING NO. V-009-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 152+84 COMPLETION DEPTH: 109.4'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 55' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 580.6  
N - 665694.159; E - 2190907.837 DATE: 9/12/06 - 9/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
545.1	35					++++ 35.5 SANDY SILT: Very-loose gray fine to coarse sand, some silt, little clay, trace fine gravel.												
539.6	40	SH/1/3				41.0	12	2	13	44	30	11	NP	NP	19		A-4a(1) A-4a(0)	
533.6	45	7/5/6				47.0	13										Est. A-3a	
	50	2/5/7		1.5-2.75			14								25		Est. A-6a	
	55	5/5/6		1.25-2.0			15										Est. A-6a	
	60	9/9/12		1.5-1.75			16	3	4	7	31	55	30	11	20		A-6a(8)	
	65	14/17/20		2.0-2.5			17								20		Est. A-6a	
	70	16/19/19		1.5-2.25			18										Est. A-6a	

WATER LEVEL: 31.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06

PLATE 22

**LOG OF BORING NO. V-009-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 152+84 COMPLETION DEPTH: 109.4'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 55' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 580.6  
N - 665694.159; E - 2190907.837 DATE: 9/12/06 - 9/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class					
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC			
485.1	70					SILT AND CLAY: Stiff to very-stiff gray clay, some to "and" silt, trace to little fine to coarse sand, trace fine gravel, contains few fine sand seams and lenses.													
	75	10/11/12	1.5-2.0				19										21	Est. A-6a	
	80	8/11/13	1.25-1.75				20												Est. A-6a
	85	9/12/14	1.5-2.0				21	2	1	2	37	58	30	11	22			A-6a(8)	
	90	11/11/12	1.25-2.5				22										23	Est. A-6a	
	95	7/6/7	1.0-1.5				23												Est. A-6a
479.1	100	6/6/7	0.5-1.0				24	2	1	2	33	62	30	11	27			A-6a(8)	
475.6	105	7/15/24				25												Est. A-4a	

PLATE 23

WATER LEVEL: 31.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06



**LOG OF BORING NO. V-009-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 152+84 COMPLETION DEPTH: 109.4'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 55' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 580.6  
N - 665694.159; E - 2190907.837 DATE: 9/12/06 - 9/13/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
471.2	105					SANDY SILT: Very-dense gray fine to coarse sand, some fine to coarse gravel, some silt, little clay.												
		21/50-5"R					26	28	16	13	23	20	22	7	9			A-4a(2)
	110																	
	115																	
	120																	
	125																	
	130																	
	135																	
	140																	

NOTES:  
 - Encountered seepage at 4.0'.  
 - Encountered water at 31.5'.  
 - Shelby Tube Samples S-27 and S-28 were attempted in an offset hole. Sample S-27 contains only 4 inches of recovered sample that was retained in a jar.

WATER LEVEL: 31.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06

PLATE 24

**LOG OF BORING NO. V-010-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 154+77 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 37' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 584.8  
N - 665846.254; E - 2191031.787 DATE: 9/12-13/06; 10/25/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
584.4	0					0.4- ASPHALT - 5 INCHES											
581.3			8/8/12			GRAVEL (FILL): Medium-dense dark brown and dark gray fine to coarse gravel, "and" fine to coarse sand, trace silt, contains many brick fragments.	1										Est. A-1-a
578.8	5		3/3/4			GRAVEL WITH SAND (FILL): Loose dark gray and brown fine to coarse sand, some fine gravel, trace silt, trace clay.	2	27	38	24	1:1				9		Est. A-1-b
576.3			2/2/4			COARSE AND FINE SAND (FILL): Loose brown and dark gray fine to coarse sand, little fine to coarse gravel, trace silt, trace clay.	3										Est. A-3a
573.3	10		2/3/4			SILT AND CLAY (FILL): Stiff to very-stiff (Est.) dark gray clay, "and" silt, little fine to coarse sand, contains many wood fragments.	4										Est. A-6a
568.3	15		SH-2/2 P	0.0 0.25-0.75		VISUAL: Very-soft to soft gray and dark gray organic clay, some to "and" silt, trace to little fine sand, trace coarse sand, contains few peat pockets, fine sand pockets and wood fragments, and few medium-stiff zones.	5 25	0	1	5	33	61	69	31	43	54	Visual A-7-5(20)
568.3			SH-12"/1 P	0.0 0.5-0.75		- Sample 5: Loss-on-Ignition (LOI) Test = 6.8%. - Sample 25: Loss-on-Ignition (LOI) Test = 7.6%.	6 26	0	3	17	36	44	48	19	45	43	A-7-6(13) Visual
564.3	20		SH-12"/1 P	0.0-1.0 0.0-1.0		- Sample 6: Loss-on-Ignition (LOI) Test = 6.8%. - Unit Dry Weight (UDW) = 77.1 pcf from 15.0' to 15.5'	27 7								75	104	Visual Visual
564.3			SH-18" P	0.25-0.75 0.0-0.5		WOODY PEAT: Very-soft to soft dark gray, dark brown and black organic clay, "and" silt, trace fine to coarse sand, woody, and few medium-stiff zones.	28 8	0	1	6	42	51	63	18	166	104	Visual A-7-5(15)
564.3			SH-18" P	0.25-0.75 0.0-0.5		- Sample 27: Loss-on-Ignition (LOI) Test = 8.0%. - Sample 7: Loss-on-Ignition (LOI) Test = 16.8%. - Sample 8: Loss-on-Ignition (LOI) Test = 12.7%. - Unit Dry Weight (UDW) = 45.3 pcf from 19.0' to 19.5'	28 8										
556.8	25		SH-18"	0.0-0.25		VISUAL: Very-soft to soft gray and dark gray organic clay, some to "and" silt, trace to little fine sand, trace coarse sand, contains few peat pockets, fine sand pockets and wood fragments.	9									53	Visual
556.8	28.0					- Sample 9: Loss-on-Ignition (LOI) Test = 5.3%.											

WATER LEVEL: ▽ 6.0      ▽ 5.7      ▽ 5.7      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 28.5'      Augers Removed - Offset Borehole  
 DATE: 9/12/06      9/13/06      10/25/06

PLATE 25

**LOG OF BORING NO. V-010-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 154+77 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 37' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 584.8  
N - 665846.254; E - 2191031.787 DATE: 9/12-13/06; 10/25/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
552.8	-30	SH-18"	0.0-0.75			++++ ++++ ++++ ++++ ++++ ++++ ++++ 32.0	10	0	1	14	53	32	25	6	23	A-4b(8)
547.8	-35	1/1/4	1.0-2.75			             37.0	11								25	Est. A-6a
542.8	-40	4/5/7	3.25-4.5			             42.0	12									Est. A-6a
	-45	3/4/5	1.75-3.25			             56.0	13	0	0	0	47	53	33	14	23	A-6a(10)
	-50	4/7/11	2.25-4.5				14								21	Est. A-6a
528.8	-55	5/8/9	1.75-3.0				15								24	Est. A-6a

PLATE 26

WATER LEVEL: ▽ 6.0      ▽ 5.7      ▽ 5.7      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 28.5'      Augers Removed - Offset Borehole  
 DATE: 9/12/06      9/13/06      10/25/06

**LOG OF BORING NO. V-010-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 154+77 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 37' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 584.8  
N - 665846.254; E - 2191031.787 DATE: 9/12-13/06; 10/25/06


Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
523.8	-60		5/9/13	3.5-4.5		SANDY SILT: Very-stiff to hard gray mottled with red silt, "and" clay, some fine to coarse sand, trace fine to coarse gravel, contains few fine to coarse sand seams.	16									16	Est. A-4a
	-65		7/10/12	1.75-2.5		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt and fine sand seams and pockets, and few medium-stiff zones.	17										Est. A-6a
	-70		7/9/10	1.5-2.5			18	2	3	6	32	57	31	13	20		A-6a(9)
	-75		4/7/8	1.0-1.75			19										Est. A-6a
	-80		6/7/9	0.75-1.5			20								30		Est. A-6a
	-85		6/8/9	1.0-1.5			21	2	1	4	32	61	32	13	22		A-6a(9)

WATER LEVEL: ▽ 6.0      ▽ 5.7      ▽ 5.7      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 28.5'      Augers Removed - Offset Borehole  
 DATE: 9/12/06      9/13/06      10/25/06

**LOG OF BORING NO. V-010-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 154+77 COMPLETION DEPTH: 100.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 37' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 584.8  
N - 665846.254; E - 2191031.787 DATE: 9/12-13/06; 10/25/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class	
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC
			9/13/16	0.75-1.5		 SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains few silt and fine sand seams and pockets, and few medium-stiff zones.	22									Est. A-6a
	-90		9/11/12	1.0-3.25			23								22	Est. A-6a
484.8	-100		9/9/11	1.0-1.75			24								22	Est. A-6a
						NOTES: - Encountered water at 6.0'. - Shelby Tube samples S-25 through S-28 were obtained from an offset borehole performed on 10/25/06.										

WATER LEVEL:  $\nabla$  6.0       $\nabla$  5.7       $\nabla$  5.7       $\nabla$  \_\_\_\_\_  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 28.5'      Augers Removed - Offset Borehole  
 DATE: 9/12/06      9/13/06      10/25/06

PLATE 28

**LOG OF BORING NO. V-011-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 157+50 COMPLETION DEPTH: 13.0'  
2" O.D. Split-barrel Sampler 3' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 606.1  
N - 666040.494; E - 2191228.960 DATE: 10/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
606.0	0					0.1 ASPHALT - 1 INCH												
605.7						0.6 GRANITE PAVER - 6 INCHES												
605.4						0.7 SAND - 1 INCH												
604.9			5/7/8			1.2 CONCRETE - 6 INCHES	1											Est. A-1-b
602.6						3.5 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay, contains few slag fragments.	2	1	8	51	27	13	NP	NP	15			A-4a(0)
600.1	5		2/3/3			6.0 SANDY SILT (POSSIBLE FILL): Loose brown fine sand, some silt, little clay, trace coarse sand, trace fine gravel.												
597.6			SH/1/2	0.75-2.5		8.5 SILT AND CLAY: Medium-stiff gray clay, "and" silt, trace fine to coarse sand, contains many silt lenses and seams, and few very-stiff zones.	3										28	Est. A-6a
			2/3/4			SILT: Loose gray and black silt, little clay, some fine sand, contains many silty clay lenses and seams.	4											Est. A-4b
593.1	10		4/3/6			- A strong petroleum odor was noted in augers and recovered Samples 4 and 5.	5											Est. A-4b
						13.0												

**NOTES:**  
 - No seepage encountered during drilling.  
 - Borehole was abandoned due to a strong petroleum odor from 8.5' to 13.0'.  
 - Borehole was offset and continued on Log of Boring No. VB-11A.

WATER LEVEL: ∇ "Dry" ∇ ∇ ∇  
 WATER NOTE: Augers Removed  
 DATE: 10/3/06

**LOG OF BORING NO. V-011-A-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 157+73 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 59' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 608.0  
N - 666097.906; E - 2191195.403 DATE: 10/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
606.8	0					1.2 PAVEMENT (EST.) - 14 INCHES												
604.5						3.5 GRAVEL WITH SAND (FILL): Medium-dense (Est.) brown fine to coarse sand, some fine to coarse gravel, trace silt, trace clay.												
602.0	5					6.0 SANDY SILT (POSSIBLE FILL): Loose (Est.) brown fine sand, some silt, little clay, trace coarse sand, trace fine gravel.												
599.0						9.0 SILT AND CLAY: Medium-stiff to stiff (Est.) gray clay, "and" silt, trace fine to coarse sand, contains many silt lenses and seams.												
	10	3/1/3		0.5-1.5		+++++ SILT: Medium-stiff to stiff becoming hard gray silt, some clay, trace fine to coarse sand, contains few silty clay seams.	1											Est. A-4b
594.5		2/4/5		4.25-4.5+		+++++ 13.5 SILT: Medium-stiff to stiff becoming hard gray silt, some clay, trace fine to coarse sand, contains few silty clay seams.	2	0	1	1	67	31	26	6	19			A-4b(8)
	15	4/5/7				+++++ SILT: Medium-dense gray silt, some clay, trace fine sand, contains few silty clay seams.	3											Est. A-4b
589.5		3/5/6				+++++ 18.5 SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silt seams, and few hard zones.	4	0	0	6	72	22	25	4	18			A-4b(8)
	20	3/4/5		3.75-4.5+			5											Est. A-6a
	25	2/4/5		1.25-3.75			6											Est. A-6a
	30	3/4/6		1.5-3.5			7	0	1	1	51	47	31	12	24			A-6a(9)
	35	3/4/6		2.0-3.0			8											Est. A-6a

PLATE 30

WATER LEVEL: 83.5 "Dry" 10/3/06  
 WATER NOTE: Encountered During Drilling Inside Augers - End of Drilling  
 DATE: 10/3/06 10/3/06

**LOG OF BORING NO. V-011-A-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 157+73 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 59' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 608.0  
N - 666097.906; E - 2191195.403 DATE: 10/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
571.0	35																	
	40	█	2/2/4	0.75-1.25		SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine to coarse sand, contains many silt seams and few fine sand seams.	9											Est. A-6a
	45	█	2/2/5	0.75-1.75			10										31	Est. A-6a
	50	█	2/2/5	1.25-1.75			11	0	1	2	45	52	33	13	23			A-6a(9)
	55	█	1/2/4	0.5-1.25			12										23	Est. A-6a
	60	█	2/3/5	0.5-1.75			13											Est. A-6a
544.2	65	█	2/6/8	0.5-1.75 2.0-3.5		SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine sand, contains many silt seams and pockets, and few hard zones.	14A										22	Est. A-6a
	70	█	4/6/9	2.5-4.25			14B											Est. A-6a

PLATE 31

WATER LEVEL: ▽ 83.5 "Dry" ▽  
 WATER NOTE: Encountered During Drilling Inside Augers - End of Drilling  
 DATE: 10/3/06 10/3/06



**LOG OF BORING NO. V-011-A-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 157+73 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 59' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 608.0  
N - 666097.906; E - 2191195.403 DATE: 10/3/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
	70					<p>SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine sand, contains many silt seams and pockets, and few hard zones.</p>										
	75		4/5/8	2.0-3.75			16	0	0	1	48	51	32	13	23	A-6a(9)
	80		3/5/7	2.25-2.75			17									Est. A-6a
523.8	85	▽	3/5/10	1.5-2.5 3.5-4.5+	84.2		<p>SANDY SILT: Very-stiff to hard gray clay, "and" silt, some fine to coarse sand, trace fine gravel.</p>	18A 18B	5	8	14	36	37	24	8	15
518.0	90		5/7/11	2.0-2.75	90.0		19								20	Est. A-4a
	95					<p><u>NOTES:</u>                      - Encountered water at 83.5'.                      - Borehole was offset from VB-11 approximately 40' to the west and sampling was continued at 9.0'.</p>										
	100															
	105															

WATER LEVEL: ▽ 83.5 ▽ "Dry" ▽ ▽  
 WATER NOTE: Encountered During Drilling Inside Augers - End of Drilling  
 DATE: 10/3/06 10/3/06

PLATE 32

**LOG OF BORING NO. V-012-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 158+40 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 40' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 627.0  
N - 666137.723; E - 2191253.522 DATE: 9/11/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
626.4	0					XXX 0.6 ASPHALT - 7 INCHES												
624.0			6/6/7	3.75-4.5+		SANDY SILT (FILL): Very-stiff to hard brown silt, some clay, little to some fine to coarse sand, trace fine gravel, contains few brick fragments.	1											Est. A-4a
	5		3/3/4			COARSE AND FINE SAND (FILL): Loose to medium-dense brown fine to coarse sand, little fine to coarse gravel, little silt, trace clay.	2											Est. A-3a
618.5			5/7/7				3	15	24	35	16	10	NP	NP	10			A-3a(0)
	10		5/5/6			COARSE AND FINE SAND (POSSIBLE FILL): Medium-dense brown fine sand, little silt, trace clay, trace coarse sand.	4											Est. A-3a
613.5			4/5/7				5	0	1	81	18				6			Est. A-3a
	15		3/4/6			SANDY SILT: Loose to medium-dense brown fine to coarse sand, some to "and" silt, trace clay.	6											Est. A-4a
608.5			5/7/11				7									20		Est. A-4a
	20		5/5/7			SILT: Medium-dense brown silt, little clay, little fine sand, trace coarse sand, contains iron oxide staining.	8	0	1	18	66	15	NP	NP	21			A-4b(8) A-4b(0)
	25		9/7/11				9									21		Est. A-4b
600.0			6/6/6	3.0-4.5		SILT: Very-stiff to hard brown silt, "and" clay, trace fine to coarse sand, slightly organic.	10											Est. A-4b
	30		4/4/7	4.5+			11	0	1	2	61	36	29	9	19			A-4b(8)

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽ ▽  
 WATER NOTE: Inside Augers - End of Drilling Augers Removed - Caved at 9.4' \_\_\_\_\_  
 DATE: 9/11/06 9/11/06 \_\_\_\_\_

PLATE 33

**LOG OF BORING NO. V-012-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 158+40 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 40' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 627.0  
N - 666137.723; E - 2191253.522 DATE: 9/11/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
589.0	35					++++ SILT: Very-stiff to hard brown silt, "and" clay, trace fine to coarse sand, slightly organic.											
	40		4/5/6	4.5+		++++ SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, slightly organic.	12									20	Est. A-4b
	45		5/6/7	3.75-4.5+		++++ SILT AND CLAY: Medium-stiff to stiff gray clay, "and" silt, trace fine sand, contains few fine sand seams.	13	0	1	2	67	30	28	5	20		A-4b(8)
	50		2/3/4	2.25-4.25		++++ SILT AND CLAY: Soft gray clay, some silt, trace fine to coarse sand.	14										Est. A-4b
575.0	55		1/2/3	1.25-1.75		++++ SILT AND CLAY: Stiff to very-stiff gray clay, some to "and" silt, trace fine to coarse sand, trace fine gravel, contains many medium-stiff zones.	15	0	0	2	44	54	32	11	25		A-6a(8)
	60		2/3/3	0.5-2.0		++++ SILT AND CLAY: Stiff to very-stiff gray clay, some to "and" silt, trace fine to coarse sand, trace fine gravel, contains many medium-stiff zones.	16									25	Est. A-6a
565.5	65		SH-18"	0.25-0.5		++++ SILT AND CLAY: Stiff to very-stiff gray clay, some to "and" silt, trace fine to coarse sand, trace fine gravel, contains many medium-stiff zones.	17	0	1	2			35	13	32		A-6a(9)
561.5	70		P	0.75-3.25		++++ SILT AND CLAY: Stiff to very-stiff gray clay, some to "and" silt, trace fine to coarse sand, trace fine gravel, contains many medium-stiff zones.	18	0	1	2	30	67	36	13	31		A-6a(9)
			1/3/5	1.5-2.0		- Unit Dry Weight (UDW) = 97.8 pcf from 65.5' to 66.0'	19										Est. A-6a

WATER LEVEL: ▽ "Dry" ▽ "Dry" ▽ ▽  
 WATER NOTE: Inside Augers - End of Drilling Augers Removed - Caved at 9.4' \_\_\_\_\_  
 DATE: 9/11/06 9/11/06 \_\_\_\_\_

PLATE 34

**LOG OF BORING NO. V-012-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 158+40 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 40' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 627.0  
N - 666137.723; E - 2191253.522 DATE: 9/11/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class						
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC				
	70																			
	75		SH/3/5	0.5-1.5		SILT AND CLAY: Stiff to very-stiff gray clay, some to "and" silt, trace fine to coarse sand, trace fine gravel, contains many medium-stiff zones.  - Unit Dry Weight (UDW) = 97.8 pcf from 65.5' to 66.0'	20	1	1	2	42	54	36	15	24				A-6a(10)	
550.5																				
	80		4/5/7	2.5-4.5+		SILT AND CLAY: Very-stiff to hard gray clay, "and" silt, trace fine to coarse sand, contains few fine sand pockets and seams.	21												21	Est. A-6a
	85		6/7/11	2.75-4.5+			22	0	1	2	45	52	32	11	22				A-6a(8)	
	90		8/13/17	3.0-4.5+			23												Est. A-6a	
537.0																				
	95																			
	100																			
	105																			

NOTES:  
 - Encountered seepage at 16.0'.

WATER LEVEL: ∇ "Dry"      ∇ "Dry"      ∇      ∇  
 WATER NOTE: Inside Augers - End of Drilling      Augers Removed - Caved at 9.4'      \_\_\_\_\_  
 DATE: 9/11/06      9/11/06      \_\_\_\_\_

PLATE 35

**LOG OF BORING NO. V-013-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 161+13 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 29' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 663.7  
N - 666292.317; E - 2191489.637 DATE: 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
662.7	0					1.0 TOPSOIL - 12 INCHES											
			3/3/3			COARSE AND FINE SAND (FILL): Loose becoming very-loose brown fine to coarse sand, little fine gravel, little silt, trace clay, contains few brick and slag fragments.	1										Est. A-3a
	5		1-9"/1-9"				2										
655.7			SH-18"			8.0	3	14	28	34	17	7	NP	NP	16		A-3a(0)
			50-1"			GRAVEL (FILL): Dense to very-dense brown and red fine to coarse gravel, some to "and" fine to coarse sand, trace silt, contains many brick fragments.	4										Est. A-1-a
	10		SH/22/11				5										
650.7			1-9"/1-9"			13.0	6	29	27	27	17				27		Est. A-1-b
	15		2/3/6			16.4	7A										Est. A-1-b
647.3			5/3/4			18.0	7B								20		Est. A-4b
645.7			2/2/5			22.0	8										Est. A-3a
641.7			5/6/9			27.0	9	0	1	12	80	7	NP	NP	16		A-4b(0)
636.7			1/2/4			32.0	10								24		Est. A-4b
631.7							11	0	1	9	70	20	21	5	19		A-4b(8)

WATER LEVEL: 38.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 10/4/06

PLATE 36

**LOG OF BORING NO. V-013-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 161+13 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 29' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 663.7  
N - 666292.317; E - 2191489.637 DATE: 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
625.7	35					+++++ SILT: Stiff to very-stiff (Est.) gray silt, little clay, trace fine to coarse sand, contains few silty clay seams and few fine to coarse sand seams.											
	40		7/9/10			+++++ SILT: Medium-dense gray silt, some clay, trace fine sand.	12	0	0	40	51	9	NP	NP	23		Est. A-4b A-4b(0)
	45		10/13/12			+++++ SILT: Medium-dense gray silt, some clay, trace fine sand.	13	0	0	9	74	17	NP	NP	18		A-4b(8) A-4b(0)
616.7	50		2/3/6	2.25-4.5+		+++++ SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, contains many silty clay seams.	14								21		Est. A-4b
	55		2/5/5	4.5+		+++++ SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, contains many silty clay seams.	15	0	1	2	75	22	27	6	20		A-4b(8)
	60		2/5/7	4.5+		+++++ SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, contains many silty clay seams.	16										Est. A-4b
601.7	65		1/2/2	1.25-2.0		+++++ SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams.	17								30		Est. A-6a
	70		2/3/5	1.5-2.5		+++++ SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams.	18	1	1	2	54	42	31	12	24		A-6a(9)

WATER LEVEL: 38.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 10/4/06

PLATE 37

**LOG OF BORING NO. V-013-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 161+13 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 29' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 663.7  
N - 666292.317; E - 2191489.637 DATE: 10/4/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
591.7	70					72.0												
	75	█	4/8/11	4.5+		SILT: Hard becoming stiff to very-stiff gray silt, "and" clay, trace fine sand, contains many silty clay seams.	19											Est. A-4b
	80	█	8/11/16	4.5+			20									20		Est. A-4b
	85	█	8/9/10	2.0-4.5+			21	0	0	2	56	42	29	9	22			A-4b(8)
573.7	90	█	2/4/6	1.5-2.5		90.0	22										23	Est. A-4b
	95																	
	100																	
	105																	

NOTES:  
 - Encountered water at 38.0'.

WATER LEVEL: 38.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 10/4/06

**LOG OF BORING NO. V-014-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 162+84 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 6' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 669.1  
N - 666435.882; E - 2191588.068 DATE: 9/7/06 - 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
668.9	0					0.2 ASPHALT - 2 INCHES											
668.1						1.0 CONCRETE - 10 INCHES											
667.6			3/3/3			1.5 GRANULAR BASE - 6 INCHES	1										Est. A-1-b
	5		1/1/1			GRAVEL WITH SAND (FILL): Very-loose to loose brown fine to coarse sand, little fine gravel, little silt, trace clay, contains few brick fragments.	2										Est. A-1-b
			1/1/3				3										Est. A-1-b
	10		2/2/2				4	18	34	29	19				12		Est. A-1-b
656.1			2/2/2				5										Est. A-1-b
	15		2/2/2			13.0 GRAVEL WITH SAND: Very-loose to loose brown fine to coarse sand, trace fine gravel, trace to little silt, trace clay.	6										Est. A-1-b
			2/3/3				7	9	42	37	12				5		Est. A-1-b
	20		3/3/3				8										Est. A-1-b
646.6			4/5/6			22.5 GRAVEL WITH SAND: Medium-dense brown fine to coarse sand, trace fine gravel, trace silt.	9										Est. A-1-b
	25																
641.6						27.5 SILT: Medium-dense brown silt, trace clay, some fine sand, trace coarse sand, contains few silty clay seams.	10A	0	1	21	70	8	NP	NP	24		A-4b(0)
639.9			8/11/15			29.2 SANDY SILT: Medium-dense brown fine sand, "and" silt, trace clay, trace coarse sand.	10B								8		Est. A-4a

WATER LEVEL: ▽ "Dry"      ▽ "Dry"      ▽ "Dry"      ▽  
 WATER NOTE: Inside Augers - End of Day      Inside Augers - End of Drilling      Augers Removed  
 DATE: 9/7/06      9/8/06      9/8/06



**LOG OF BORING NO. V-014-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 162+84 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 6' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 669.1  
N - 666435.882; E - 2191588.068 DATE: 9/7/06 - 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class	
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC
634.6	-35		7/12/18			34.5 ++++ SILT: Medium-dense brown and gray silt, trace clay, little to some fine sand, contains few silty clay seams.	11A 11B	0	1	56	36	7	NP	NP	13	A-4a(2) A-4a(0) Est. A-4b
631.6	-40		3/5/6	2.0-4.5		37.5 ++++ SILT: Very-stiff to hard brown and gray silt, little to some clay, trace fine sand.	12								20	Est. A-4b
626.6	-45		10/10/16			42.5 ++++ SILT: Medium-dense gray-brown silt, little clay, trace fine to coarse sand.	13								20	Est. A-4b
	-50		10/12/8			57.0 ++++ SILT: Very-stiff to hard gray-brown silt, some clay, trace fine to coarse sand, contains many silty clay seams.	14	0	1	4	84	11	NP	NP	21	A-4b(8) A-4b(0)
612.1	-55		4/5/7			62.5 ++++ SILT AND CLAY: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams.	15									Est. A-4b
606.6	-60		8/9/9	3.0-4.5			16									A-4b
	-65		5/5/8	3.0-4.5			17	1	1	2	64	32	31	12	22	A-6a(9)

WATER LEVEL: ∇ "Dry" ∇ "Dry" ∇ "Dry" ∇  
 WATER NOTE: Inside Augers - End of Day Inside Augers - End of Drilling Augers Removed  
 DATE: 9/7/06 9/8/06 9/8/06

PLATE 40

**LOG OF BORING NO. V-014-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 162+84 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 6' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 669.1  
N - 666435.882; E - 2191588.068 DATE: 9/7/06 - 9/8/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
596.6	70	█	9/12/16	4.0-4.5		SILT AND CLAY: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams.	18									20	Est. A-6a
	75	█	3/3/4	1.25-2.0		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains many silt seams.	19	1	1	2	56	40	30	11	26		A-6a(8)
586.6	80	█	6/8/9	1.5-3.5			20										Est. A-6a
583.1	85	█	8/12/16	3.0-4.5		SILT AND CLAY: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains few silt seams.	21									19	Est. A-6a
579.1	90	█	6/8/10	1.5-4.0		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silt seams.	22	0	1	2	50	47	30	12	22		A-6a(9)
	95					<u>NOTES:</u> - Encountered seepage at 28.5'.											

WATER LEVEL: ▽ "Dry"      ▽ "Dry"      ▽ "Dry"      ▽  
 WATER NOTE: Inside Augers - End of Day      Inside Augers - End of Drilling      Augers Removed  
 DATE: 9/7/06      9/8/06      9/8/06

PLATE 41

**LOG OF BORING NO. V-015-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 164+68 COMPLETION DEPTH: 95.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 4' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 625.3  
N - 666550.297; E - 2191732.550 DATE: 9/13/06 - 9/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
621.8	0					TOPSOIL (intermixed with brick and limestone fragments) - 42 INCHES											
	5		5/8/10			SILT: Loose to medium-dense gray silt, little clay, trace fine to coarse sand, contains many organic silty clay lenses from 11.0' to 12.1'.	1										Est. A-4b
			8/12/16				2	0	1	2	82	15	NP	NP	18		A-4b(0)
	10		5/6/9				3										Est. A-4b
			6/4/4				4										Est. A-4b
612.3																	
611.2			SH/2/7	0.25-0.75		SILT AND CLAY: Soft to medium-stiff gray and dark gray clay, "and" silt, trace fine to coarse sand, slightly organic.	5A									28	Est. A-6a
609.8	15			1.5-4.0		SILT AND CLAY: Stiff to very-stiff gray clay, "and" silt, trace fine to coarse sand, contains many silt lenses and seams.	5B									25	Est. A-6a
			5/7/10	4.5+			6	0	0	3	71	26	28	9	19		A-4b(8)
607.3			3/5/6	3.0-3.25		SILT: Hard gray silt, some clay, trace fine sand, contains many silty clay seams and lenses.	7										Est. A-6a
	20					SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel, contains few fine sand and silt lenses, slightly organic.											
			3/3/5	1.25-2.0			8									25	Est. A-6a
	25																
			2/3/4	2.0-3.25			9	1	1	2	50	46	31	12	25		A-6a(9)
	30																
593.3			3/7/14	4.5+		SANDY SILT: Very-stiff to hard gray clay, "and" silt, trace fine sand.	10										Est. A-4a
	35																

WATER LEVEL: 8.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/13/06

PLATE 42

**LOG OF BORING NO. V-015-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 164+68 COMPLETION DEPTH: 95.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 4' Rt. of Proposed W.B. I-90 Centerline  
N - 666550.297; E - 2191732.550 ELEVATION: 625.3  
 DATE: 9/13/06 - 9/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
	35																	
	40		5/9/11	4.5+		SANDY SILT: Very-stiff to hard gray clay, "and" silt, trace fine sand.	11										20	Est. A-4a
	45		5/10/16	3.0-4.5+			12											Est. A-4a
	50		3/6/8	2.5-4.0			13	0	0	1	49	50	28	9	19			A-4a(8)
573.3						52.0												
	55		4/5/8	1.75-3.25		SILT: Stiff to very-stiff gray silt, "and" clay, trace fine sand, contains few fine sand lenses and pockets.	14										24	Est. A-4b
	60		4/5/9	1.5-2.5			15	0	0	2	50	48	26	8	23			A-4b(8)
563.3						62.0												
	65		3/5/8	0.25-1.0		SILTY CLAY: Soft to medium-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, contains many silt lenses, and few stiff zones, slightly organic.	16										32	Est. A-6b
						- Sample 17: Loss-on-Ignition (LOI) Test = 2.6%.												
	70		P	0.5-1.5		- Unit Dry Weight (UDW) = 89.3 pcf from 68.5' to 69.0'	17	0	0	1			40	17	36			A-6b(10) A-6b(11)

WATER LEVEL: 8.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/13/06

PLATE 43

**LOG OF BORING NO. V-015-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 164+68 COMPLETION DEPTH: 95.0'  
2" O.D. Split-barrel Sampler 3" O.D. Shelby Tube Sampler 4' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 625.3  
N - 666550.297; E - 2191732.550 DATE: 9/13/06 - 9/14/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
	70																	
	75	█	4/4/5	0.25-0.75		SILTY CLAY: Soft to medium-stiff gray silty clay, trace fine to coarse sand, trace fine gravel, contains many silt lenses, and few stiff zones, slightly organic.  - Sample 17: Loss-on-Ignition (LOI) Test = 2.6%.	18	1	1	2			38	16	30		A-6b(10)	
547.3																		
	80	█	7/8/11	0.75-1.25		SILT AND CLAY: Medium-stiff to stiff becoming very-stiff to hard gray clay, "and" silt, trace fine sand, contains many silt lenses and few fine sand lenses and pockets.	19										23	Est. A-6a
	85	█	4/6/7	1.0-2.0			20											Est. A-6a
	90	█	11/10/14	1.5-2.5			21										22	Est. A-6a
530.3	95	█	9/12/19	2.75-4.5+			22	0	0	1	49	50	29	11	22		A-6a(8)	
	100																	
	105																	

NOTES:  
 - Encountered water at 8.0'.  
 - Water was added inside augers at 8.5' to prevent heave.

WATER LEVEL: 8.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/13/06

PLATE 44

**LOG OF BORING NO. V-016-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 166+93 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 25' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 672.0  
N - 666713.237; E - 2191891.504 DATE: 9/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
671.0	0					1.0 TOPSOIL - 12 INCHES												
666.5	5		5/14/16			GRAVEL WITH SAND (FILL): Medium-dense becoming loose brown fine to coarse sand, little fine to coarse gravel, trace silt, trace clay, contains many brick and sandstone fragments.	1											Est. A-1-b
			14/5/5			5.5	2											Est. A-1-b
656.5	10		3/3/3			COARSE AND FINE SAND (POSSIBLE FILL): Very-loose to loose brown fine sand, little silt, trace clay, trace coarse sand, trace fine gravel, contains few silty clay pockets and seams.	3											Est. A-3a
			3/2/2				4											Est. A-3a
			2/3/6			5	2	9	73	7	9	NP	NP	10			A-3a(0)	
			3/4/5			6												Est. A-3a
650.0	20		3/3/4			FINE SAND: Very-loose to loose brown fine to coarse sand, trace silt, trace clay.	7	2	31	59	8						7	Est. A-3
			2/2/2			8	- Contains a medium-stiff to stiff silty clay layer from 19.0' to 19.5'.	8										Est. A-3
641.0	30		5/10/12			COARSE AND FINE SAND: Medium-dense brown fine sand, trace coarse sand, trace silt, trace clay, trace fine gravel.	9											Est. A-3a
			4/7/10				10	1	3	84	12	NP	NP	6			A-3a(0)	
637.0	35		4/9/10			SANDY SILT: Medium-dense brown-gray fine sand, some to "and" silt, little clay.	11											Est. A-4a

WATER LEVEL: 33.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06

PLATE 45

**LOG OF BORING NO. V-016-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 166+93 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 25' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 672.0  
N - 666713.237; E - 2191891.504 DATE: 9/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC
630.0	35-40	5/8/14				SILT: Medium-dense gray-brown silt, little clay, little fine sand.	12	0	0	19	63	18	NP	NP	21	A-4b(8) A-4b(0)
625.0	45	5/3/4	1.0-4.0			SILT: Stiff to very-stiff gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains few fine sand seams and lenses.	13	2	1	2	64	31	26	6	24	A-4b(8)
615.0	50-55	9/11/16				SILT: Medium-dense gray silt, little clay, little fine sand.	14	0	0	12	72	16	NP	NP	20	A-4b(8) A-4b(0)
610.0	55-60	11/13/20					15								19	Est. A-4b
610.0	60	7/10/12	2.0-4.0			SILT: Stiff to very-stiff gray silt, some clay, trace fine to coarse sand, contains few fine sand seams and pockets.	16	0	1	2	65	32	26	5	22	A-4b(8)
605.0	65	8/12/19				SILT: Medium-dense gray silt, little clay, little to some fine sand.	17									Est. A-4b
70	65-70	4/8/9	2.75-3.75			SANDY SILT: Very-stiff to hard silt, "and" clay, trace fine to coarse sand, trace fine gravel.	18								22	Est. A-4a

PLATE 46

WATER LEVEL: 33.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06

**LOG OF BORING NO. V-016-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 166+93 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 25' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 672.0  
N - 666713.237; E - 2191891.504 DATE: 9/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
	70					SANDY SILT: Very-stiff to hard silt, "and" clay, trace fine to coarse sand, trace fine gravel.													
	75	█	3/6/5	2.0-2.5			19												Est. A-4a
	80	█	5/6/12	3.0-4.5+			20	1	1	2	48	48	28	9	27				A-4a(8)
	85	█	4/7/19	2.5-4.5+			21												Est. A-4a
582.0	90	█	7/10/20	2.5-4.5		90.0	22										20	Est. A-4a	
	95					<u>NOTES:</u> - Encountered water at 33.5'. - Water was added inside augers at 33.5' to prevent heave.													
	100																		
	105																		

WATER LEVEL: ▽ 33.5      ▽      ▽      ▽  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/12/06

PLATE 47



**LOG OF BORING NO. V-017-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit      LOCATION: Sta. 168+27      COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler      6' Rt. of Proposed W.B. I-90 Centerline      ELEVATION: 669.8  
N - 666765.673; E - 2192018.795      DATE: 9/25/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
	0		3/2/1			GRAVEL WITH SAND (FILL): Very-loose brown, dark-brown, and black fine to coarse sand, some fine to coarse gravel, little silt, trace clay, contains many cinders, slag, and brick fragments.	1									Est. A-1-b	
	5		2/2/1				2										Est. A-1-b
			2-18"				3	25	30	22	18	5	NP	NP	23		A-1-b(0)
658.8	10		SH-12"/1				4								32		Est. A-1-b
			2/3/3			GRAVEL WITH SAND AND SILT: Loose to medium-dense brown fine to coarse sand, some fine to coarse gravel, little clay, trace silt, contains many silty clay and silt seams.	5										Est. A-2-4
	15		2/4/5				6	27	23	28	9	13	21	8	12		A-2-4(0)
			2/2/3				7										Est. A-2-4
	20		4/4/7				8										Est. A-2-4
647.8						COARSE AND FINE SAND: Loose brown fine to coarse sand, little silt, trace to little clay, trace fine gravel, contains many silty clay lenses.	9										Est. A-3a
645.0	25		2/3/5				24.8										
						COARSE AND FINE SAND: Loose to medium-dense brown and gray fine sand, little silt, trace clay, trace coarse sand, trace fine gravel.	10	1	1	81	17				28		Est. A-3a
	30		3/3/4				11										Est. A-3a
	35		4/6/8														

WATER LEVEL: 27.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/25/06

PLATE 48

**LOG OF BORING NO. V-017-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger 3-1/8" Tricone Roller Bit LOCATION: Sta. 168+27 COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler 6' Rt. of Proposed W.B. I-90 Centerline ELEVATION: 669.8  
N - 666765.673; E - 2192018.795 DATE: 9/25/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
631.8	35					COARSE AND FINE SAND: Loose to medium-dense brown and gray fine sand, little silt, trace clay, trace coarse sand, trace fine gravel.												
630.8			8/7/7	2.5-4.5		SILT: Medium-dense gray and brown silt, trace clay, trace to little fine to coarse sand.	12A										19	Est. A-4b
627.8	40					SILT: Very-stiff to hard gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams.	12B											
622.8	45		2/3/11	0.5		SILT: Medium-stiff gray silt, some clay, trace fine to coarse sand, trace fine gravel, contains many silty clay seams, slightly organic.	13	1	1	3	68	27	29	10	25			A-4b(8)
						SILT: Very-stiff to hard gray silt, some clay, trace fine sand, contains few silty clay seams and lenses.	14	0	0	6	68	26	25	6	19			A-4b(8)
612.8	50		4/6/10	4.25-4.5+			15										19	Est. A-4b
607.8	55		6/7/8	3.0-4.25			16	0	1	39	53	7	NP	NP	21			A-4b(5) A-4b(0)
	60		19/24/27				17	0	0	1	60	39	32	11	21			A-6a(8)
	65		8/9/11	2.5-4.5		SILT AND CLAY: Very-stiff to hard gray silt, "and" clay, trace fine sand.	18											
	70		6/9/12	3.25-4.5+														Est. A-6a

WATER LEVEL: 27.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/25/06

PLATE 49

**LOG OF BORING NO. V-017-0-06  
 CUY-90-14.52 MAINLINE  
 CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 168+27    COMPLETION DEPTH: 90.0'  
2" O.D. Split-barrel Sampler    6' Rt. of Proposed W.B. I-90 Centerline    ELEVATION: 669.8  
N - 666765.673; E - 2192018.795    DATE: 9/25/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
598.8	70					71.0												
	75	█	2/3/5	1.25-2.75		SILT: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, trace fine gravel.	19	2	1	2	52	43	29	8	24			A-4b(8)
591.8	80	█	4/8/10	1.75-4.5+		78.0												
	85	█	4/8/12	2.5-4.0		SILT AND CLAY: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silt seams, and few hard zones.	20	0	1	2	52	45	32	13	24			A-6a(9)
		█					21											Est. A-6a
579.8	90	█	3/6/9	1.5-2.0		90.0												
							22											22
																		Est. A-6a

**NOTES:**  
 - Encountered water at 27.5'.  
 - Water was added inside augers at 28.5' to prevent heave.  
 - Used 3-1/4" I. D. Hollow-stem Augers from 0' to 45'.  
 - Used 3-1/8" Tricone Roller Bit with water (washbore) from 45' to 90'.

WATER LEVEL: 27.5  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/25/06

**LOG OF BORING NO. V-018-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 169+55    COMPLETION DEPTH: 95.0'  
2" O.D. Split-barrel Sampler    58' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 667.8  
N - 666890.878; E - 2192090.202    DATE: 10/9/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC	
667.5	0					0.3 ASPHALT - 4 INCHES											
666.7						1.1 CONCRETE - 9 INCHES											
665.8						2.0 GRANULAR BASE - 11 INCHES	1										Est. A-1-b
663.8			10/12/17			4.0 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, little to some fine to coarse gravel, trace silt, trace clay, contains many brick fragments.	2										Est. A-1-a
	5		2/2/2				3	80	8	8	4				22		Est. A-1-a
659.8			3/3/3			8.0 GRAVEL (FILL): Very-loose to loose brown fine to coarse gravel, little fine to coarse sand, trace silt, contains few brick fragments.	4										Est. A-3
	10		2/2/2			FINE SAND: Very-loose to loose brown fine sand, little coarse sand, trace fine gravel, trace silt, trace clay, contains few silt and silty clay seams.	5										Est. A-3
			2/3/3				6	2	23	70	5				5		Est. A-3
652.3	15		3/4/4			15.5 COARSE AND FINE SAND: Medium-dense brown fine sand, little silt, trace clay, contains few silt pockets.	7										Est. A-3a
			3/7/9				8										Est. A-3a
	20		7/8/7				9	0	0	84	16				27		Est. A-3a
			6/6/7				10										Est. A-3a
	25		4/6/9				11	0	1	56	34	9	NP	NP	27		A-4a(2)
635.3	30		5/7/8			32.5 SANDY SILT: Medium-dense brown fine sand, some silt, trace clay, trace coarse sand.											
	35																

PLATE 51

WATER LEVEL: ▽ 27.5    ▽ 17.3    ▽ 23.5    ▽  
WATER NOTE: Encountered During Drilling    Inside Augers - End of Drilling    Augers Removed - Caved at 23.5'  
DATE: 10/9/06    10/9/06    10/9/06

**LOG OF BORING NO. V-018-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 169+55    COMPLETION DEPTH: 95.0'  
2" O.D. Split-barrel Sampler    58' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 667.8  
N - 666890.878; E - 2192090.202    DATE: 10/9/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
630.3	35					SANDY SILT: Medium-dense brown fine sand, some silt, trace clay, trace coarse sand.											A-4a(0)
	40	3/4/5				SILT: Loose to medium-dense gray silt, some clay, trace fine to coarse sand, contains many silty clay seams.	12									20	Est. A-4b
	45	7/10/11					13										Est. A-4b
	50	6/8/9					14									21	Est. A-4b
	55	6/8/9					15	0	1	3	71	25	25	4	19		A-4b(8)
	60	10/12/12					16									19	Est. A-4b
	65	7/10/13					17										Est. A-4b
599.8	68.0					SILT: Stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	18	0	1	1	56	42	29	9	29		A-4b(8)
	70	SH/2/2		1.0-1.5													

PLATE 52

WATER LEVEL: ▽ 27.5    ▽ 17.3    ▽ 23.5    ▽  
WATER NOTE: Encountered During Drilling    Inside Augers - End of Drilling    Augers Removed - Caved at 23.5'  
DATE: 10/9/06    10/9/06    10/9/06

**LOG OF BORING NO. V-018-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger    3-1/8" Tricone Roller Bit    LOCATION: Sta. 169+55    COMPLETION DEPTH: 95.0'  
2" O.D. Split-barrel Sampler    58' Lt. of Proposed W.B. I-90 Centerline    ELEVATION: 667.8  
N - 666890.878; E - 2192090.202    DATE: 10/9/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
595.3	70					++++ ++++ ++++ ++++ 72.5													
	75	█	3/5/6	2.0-3.5		SILT: Stiff gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	19											23	Est. A-6a
	80	█	5/9/10	3.5-4.5+		SILT AND CLAY: Stiff to very-stiff gray clay, some silt, trace fine to coarse sand, trace fine gravel, contains many silt seams, and few hard zones.	20												Est. A-6a
	85	█	2/3/3	1.0-1.75			21	1	1	3	32	63	35	15	27			A-6a(10)	
	90	█	2/4/6	1.5-3.0			22											23	Est. A-6a
572.8	95	█	3/4/6	1.5-3.75			23											22	Est. A-6a
	100																		
	105																		

NOTES:  
 - Encountered seepage at 11.0' and 23.5'.  
 - Encountered water at 27.5'.  
 - Water was added inside the augers at 28.5' to prevent heave.  
 - Used 3-1/4" I. D. Hollow-stem Augers from 0' to 40'.  
 - Used 3-1/8" Tricone Roller Bit with water (washbore) from 40' to 95'.

WATER LEVEL: ▽ 27.5    ▽ 17.3    ▽ 23.5    ▽  
 WATER NOTE: Encountered During Drilling    Inside Augers - End of Drilling    Augers Removed - Caved at 23.5'  
 DATE: 10/9/06    10/9/06    10/9/06

PLATE 53

**LOG OF BORING NO. W-001-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 116+50 COMPLETION DEPTH: 40.0'  
2" O.D. Split-barrel Sampler 65' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 660.1  
N - 662246.814; E - 2189730.895 DATE: 9/29/06 - 10/5/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
659.9	0					0.2 ASPHALT - 2 INCHES											
658.6			6/7/8			1.5 GRANULAR BASE - 16 INCHES	1										Est. A-3a
	5		4/5/5			COARSE AND FINE SAND: Loose to medium-dense brown fine sand, trace silt, trace clay, trace coarse sand, trace fine gravel, contains few silt seams.	2	1	1	87	8	3	NP	NP	4		A-3a(0)
			4/4/5				3										Est. A-3a
	10		5/6/6				4								13		Est. A-3a
648.6			5/5/9			11.5 SANDY SILT: Medium-dense brown fine sand, "and" silt, trace clay, trace coarse sand, trace fine gravel, contains many silty clay and silt seams.	5	1	1	46	44	8	NP	NP	20		A-4a(0)
646.6	15		4/6/9			13.5 FINE SAND: Loose to medium-dense brown fine sand, trace silt, trace clay, trace coarse sand, trace fine gravel.	6										Est. A-3
			7/7/12				7	1	5	84	8	2	NP	NP	24		A-3(0)
	20		3/4/5				8								29		Est. A-3
			2/2/10				9										Est. A-3
636.6	25		1/1/4			23.5 COARSE AND FINE SAND: Loose gray fine to coarse sand, trace silt, trace clay.	10										Est. A-3a
633.1						27.0 SANDY SILT: Medium-dense gray silt, trace clay, some fine to coarse sand.	11A										Est. A-4a
631.1	30		2/8/11			29.0 SILT: Medium-dense gray silt, trace clay, trace fine to coarse sand, contains few silty clay seams, slightly organic.	11B								19		Est. A-4b
627.6						32.5 SILT: Dense gray silt, trace clay, some fine to coarse sand.	12	0	1	22	68	9	NP	NP	19		A-4b(0)
623.1	35		11/12/23			37.0 SILT: Very-stiff to hard gray silt, "and" clay, trace fine to coarse sand, contains many silty clay seams.	13										Est. A-4b
620.1	40		3/4/6	2.25-4.0		40.0											

NOTES:  
 - Encountered water at 14.0'

WATER LEVEL: 14.0 "Dry"  
 WATER NOTE: Encountered During Drilling Augers Removed - Caved at 13.5'  
 DATE: 10/5/06 10/5/06

PLATE 1

**LOG OF BORING NO. W-002-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 117+93 COMPLETION DEPTH: 40.0'  
2" O.D. Split-barrel Sampler 30' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 658.6  
N - 662384.292; E - 2189781.903 DATE: 9/28/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
657.4	0					1.2 CONCRETE - 14 INCHES											
655.1			7/10/8			3.5 COARSE AND FINE SAND (POSSIBLE FILL): Medium-dense brown fine to coarse sand, trace fine gravel, trace silt, trace clay.	1	3	27	57	13				4	Est. A-3a	
	5		3/6/9			COARSE AND FINE SAND: Medium-dense brown fine sand, little silt, trace clay, trace coarse sand, contains many silt seams and pockets.	2									Est. A-3a	
			6/7/9				3	0	5	70	18	7	NP	NP	10	A-3a(0)	
647.6	10		4/7/7				4										Est. A-3a
			5/6/5				5								23	Est. A-3	
	15		2/3/3			FINE SAND: Loose to medium-dense brown fine sand, little coarse sand, trace silt, trace clay, contains few silt seams and pockets.	6									Est. A-3	
			2/6/8				7	0	11	79	4	6	NP	NP	23	A-3(0)	
	20		4/5/8				8								29	Est. A-3	
			4/5/11				9									Est. A-3	
633.8	25		3/10/13			24.8 SANDY SILT: Medium-dense gray silt, little clay, "and" fine sand.	10A									Est. A-3	
						29.1	10B	0	0	36	46	18	NP	NP	21	A-4a(0)	
629.5	30		6/10/10			32.0 COARSE AND FINE SAND: Medium-dense gray fine to coarse sand, little silt, trace clay.	11A								20	Est. A-4a	
626.6						34.2 COARSE AND FINE SAND: Medium-dense gray and black fine to coarse sand, little silt, trace clay, slightly organic.	11B									Est. A-3a	
624.4	35		14/10/15			37.0 SANDY SILT: Medium-dense gray silt, little clay, "and" fine sand.	12A								18	Est. A-3a	
621.6						40.0 SILT: Stiff to very-stiff gray silt, "and" clay, trace fine to coarse sand, contains many silt seams and lenses.	12B									Est. A-4a	
618.6	40		2/4/6	1.25-2.75			13	0	1	2	60	37	28	8	22	A-4b(8)	

NOTES:  
 - Encountered water at 12.9'.

WATER LEVEL: ▽ 12.9 "Dry" ▽  
 WATER NOTE: Encountered During Drilling Augers Removed - Caved at 12.0'  
 DATE: 9/28/06 9/28/06

PLATE 2



**LOG OF BORING NO. W-003-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 121+76 COMPLETION DEPTH: 40.0'  
2" O.D. Split-barrel Sampler 138' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 677.3  
N - 662787.977; E - 2189739.871 DATE: 9/7/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
677.0	0					0.3' TOPSOIL - 3 INCHES											
	5		1/1/2			GRAVEL WITH SAND (POSSIBLE FILL): Very-loose to loose brown fine to coarse sand, "and" fine gravel, trace silt, trace clay.	1										Est. A-1-b
			2/2/3				2										Est. A-1-b
669.3			2/2/2				3	40	33	18	9				8		Est. A-1-b
668.3			1/3/5	2.0-2.25		9.0 SANDY SILT: Very-stiff brown silt, some clay, some fine to coarse sand, trace fine gravel, contains many silty clay and fine to coarse sand seams.	4A	1	3	21	45	30	24	7	19		A-4a(8)
	10		5/6/8			GRAVEL WITH SAND: Loose to medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay.	4B										Est. A-1-b
			2/2/3				5	33	41	17	9				4		Est. A-1-b
	15		1/1/5				6										Est. A-1-b
660.5			6/6/7			16.8 SILT: Loose brown silt, some clay, trace fine to coarse sand, contains many silty clay seams.	7A										Est. A-1-b
659.3			5/7/7			18.0 FINE SAND: Medium-dense brown fine to coarse sand, trace silt, trace clay, trace fine gravel.	7B										Est. A-4b
	20		5/7/9				8	1	38	54	7				4		Est. A-3
			5/6/7				9										Est. A-3
	25		5/5/6				10										Est. A-3
650.3			2/2/5			27.0 FINE SAND: Loose to medium-dense brown fine sand, trace coarse sand, trace fine gravel, trace silt, trace clay.	11										Est. A-3
	30						12										Est. A-3
	35						13	2	1	87	10				26		Est. A-3
637.3	40																

NOTES:  
 - Encountered water at 33.5'

WATER LEVEL: ▽ 33.5      ▼ "Dry"      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed - Caved at 17.2'      \_\_\_\_\_  
 DATE: 9/7/06      9/7/06      \_\_\_\_\_

PLATE 3

**LOG OF BORING NO. W-004-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 126+17 COMPLETION DEPTH: 40.0'  
2" O.D. Split-barrel Sampler 66' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 679.0  
N - 663204.687; E - 2189931.568 DATE: 9/5/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class		
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC	
678.1	0					0.9 TOPSOIL - 11 INCHES											
676.0			9/8/7			3.0 GRAVEL WITH SAND (FILL): Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay.	1										Est. A-1-b
	5		3/3/4			GRAVEL WITH SAND (POSSIBLE FILL): Loose becoming very-loose brown fine to coarse sand, some fine gravel, trace silt, trace clay.	2										Est. A-1-b
			2/2/3				3	32	32	29	7				8		Est. A-1-b
			1/1/2				4										Est. A-1-b
668.5	10					10.5 SANDY SILT: Loose brown fine to coarse sand, some silt, trace to little clay, trace fine gravel.	5A										Est. A-4a
667.2			2/2/3			11.8 GRAVEL WITH SAND: Very-loose to loose brown fine to coarse sand, "and" fine gravel, trace silt, trace clay.	5B										Est. A-1-b
			1/1/1				6	37	39	17	7				8		Est. A-1-b
	15		3/4/5				7										Est. A-1-b
661.5						17.5 GRAVEL WITH SAND: Medium-dense brown fine to coarse sand, some fine gravel, trace silt, trace clay.	8										Est. A-1-b
658.5	20		7/10/15			20.5 SANDY SILT: Medium-dense brown fine sand, some silt, trace clay, trace coarse sand.	9	0	3	59	29	9	NP	NP	13		A-4a(1) A-4a(0)
656.0			4/6/8				10										Est. A-3
	25		3/9/10				11										Est. A-3
	30		6/6/9				12	0	2	89	9				6		Est. A-3
	35		5/5/8				13										Est. A-3
639.0	40		3/3/6			40.0											Est. A-3

NOTES:  
 - Encountered water at 38.5'.

WATER LEVEL: 38.5 "Dry"  
 WATER NOTE: Encountered During Drilling Augers Removed - Caved at 14.2'  
 DATE: 9/5/06 9/5/06

PLATE 4

**LOG OF BORING NO. W-005-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 180+23 COMPLETION DEPTH: 40.0'  
2" O.D. Split-barrel Sampler 122' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 671.8  
N - 667415.096; E - 2193034.032 DATE: 9/11/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
671.4	0		7/14/10			0.4' TOPSOIL - 5 INCHES												
			5/9/11			5.5' COARSE AND FINE SAND (FILL): Medium-dense brown fine to coarse sand, little fine gravel, trace silt, trace clay, contains many brick fragments, and few roots.	1											Est. A-3a
666.3	5		9/10/12				2											
			3/5/7			10.5' COARSE AND FINE SAND (POSSIBLE FILL): Medium-dense brown fine to coarse sand, little fine gravel, little silt, trace clay, contains few silty clay seams.	3	18	14	43	25					9		Est. A-3a
661.3	10		3/5/5				4											
			4/5/4			18.0' COARSE AND FINE SAND: Loose to medium-dense brown fine to coarse sand, little silt, little clay, trace fine gravel, contains few silty clay seams.	5											Est. A-3a
	15		7/9/8				6	5	13	59	11	12	NP	NP	10			A-3a(0)
653.8			2/4/3				7											
	20		1/1/1			27.0' COARSE AND FINE SAND: Vey-loose to loose brown fine sand, little silt, trace clay, trace coarse sand, trace fine gravel, contains many silty clay seams.	8									8		Est. A-3a
			2/2/2				9	2	5	68	16	9	NP	NP	22			A-3a(0)
644.8	25		6/8/10			40.0' COARSE AND FINE SAND: Medium-dense brown fine sand, little silt, trace clay, trace coarse sand.	10											Est. A-3a
	30		6/6/7				11											
	35		6/9/9				12	0	1	71	20	8	NP	NP	24			A-3a(0)
631.8	40						13											Est. A-3a

NOTES:  
 - Encountered seepage at 16.0'.  
 - Encountered water at 21.6'.  
 - Water was added inside augers at 23.5' to prevent heave.

WATER LEVEL: ▽ 21.6      ▽ 10.3      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed  
 DATE: 9/11/06      9/11/06

PLATE 5

**LOG OF BORING NO. W-006-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 181+96 COMPLETION DEPTH: 40.0'  
2" O.D. Split-barrel Sampler 130' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 666.5  
N - 667492.132; E - 2193180.479 DATE: 9/11/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics						ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL		PI	WC		
666.5	0					0.4' TOPSOIL - 5 INCHES												
	5		2/2/1			COARSE AND FINE SAND (FILL): Very-loose becoming loose to medium-dense brown fine to coarse sand, little silt, trace clay, trace fine gravel, contains few brick fragments, cinders and roots. - Cobbles were encountered at 1.0'.	1										Est. A-3a	
			2/3/3				2											Est. A-3a
			3/5/9				3	6	16	55	23				13			Est. A-3a
656.0	10		6/6/4				4											Est. A-3a
654.4			4/4/8	3.75-4.5+		10.5												
			6/7/7			12.1	5A	0	0	6	69	25	24	6	19		A-4b(8)	
	15		3/7/7			FINE SAND: Medium-dense becoming dense brown fine sand, trace coarse sand, trace fine gravel, trace silt, trace clay.	5B										Est. A-3	
			5/9/13				6											Est. A-3
	20		5/17/23				7	1	1	91	3	4	NP	NP	24		A-3(0)	
			10/13/15				8										Est. A-3	
643.5			4/6/10			23.0	9										Est. A-3	
	25		4/6/10			29.5	10										Est. A-3	
			4/12/15			33.5	11A										Est. A-3	
637.0	30		6/7/6	2.0-3.5		37.5	11B	0	0	71	22	7	NP	NP	23		A-3a(0)	
						40.0	12										Est. A-3a	
633.0	35						13										Est. A-4a	
629.0	40																	
626.5	45																	

**NOTES:**  
 - Encountered seepage at 4.0'.  
 - Encountered water at 16.0'.  
 - Water was added inside augers at 20.0' to prevent heave.

WATER LEVEL: 16.0  
 WATER NOTE: Encountered During Drilling  
 DATE: 9/11/06

WATER LEVEL: 14.6  
 WATER NOTE: Augers Removed  
 DATE: 9/11/06

WATER LEVEL:           
 WATER NOTE:           
 DATE:         

PLATE 6

**LOG OF BORING NO. W-007-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 186+55 COMPLETION DEPTH: 40.0'  
2" O.D. Split-barrel Sampler 223' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 669.2  
N - 667796.879; E - 2193498.850 DATE: 9/12/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class			
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC		
668.9	0					0.3' BRICK - 3 1/2 INCHES												
668.7			1/2/2			0.5' GRANULAR BASE - 2 1/2 INCHES	1											Est. A-3a
663.7	5		2/1/2			COARSE AND FINE SAND (FILL): Very-loose brown fine to coarse sand, little fine gravel, little clay, trace silt, contains few brick fragments, and many silty clay seams from 3.8' to 4.4'.	2	11	22	47	9	11	NP	NP	9			A-3a(0)
662.7			1/2/2			6.5' FINE SAND: Very-loose brown fine sand, trace coarse sand, trace silt.	3A 3B											Est. A-3 Est. A-1-b
658.7	10		2/2/3			10.5' GRAVEL WITH SAND: Very-loose to loose brown fine to coarse sand, "and" fine to coarse gravel, trace silt, trace clay, contains few shale fragments.	4	44	34	15	7				8			Est. A-1-b
			3/3/3				5											Est. A-3a
	15		2/3/3				6											Est. A-3a
			4/4/4				7											Est. A-3a
	20		5/4/6				8	3	25	59	7	6	NP	NP	14			A-3a(0)
647.2			3/4/6				9A											Est. A-3a
645.7						22.0' SILT: Loose brown silt, little clay, trace fine to coarse sand.	9B											Est. A-4b
	25		11/11/11				10											Est. A-3a
	30		8/9/12				11										23	Est. A-3a
	35		9/15/18				12	1	1	85	8	5	NP	NP	22			A-3a(0)
629.2	40		4/8/14				13											Est. A-3a
	45																	
						<b>NOTES:</b>												
						- Encountered seepage at 19.6'.												
						- Encountered water at 21.0'.												
						- Water was added inside augers at 22.5' to prevent heave.												
<b>WATER LEVEL:</b>			<u>21.0</u>	<u>13.4</u>	<u></u>													
<b>WATER NOTE:</b>			<u>Encountered During Drilling</u>	<u>Augers Removed</u>	<u></u>													
<b>DATE:</b>			<u>9/12/06</u>	<u>9/12/06</u>	<u></u>													

PLATE 7

**LOG OF BORING NO. W-008-0-06**  
**CUY-90-14.52 MAINLINE**  
**CUYAHOGA COUNTY, OHIO**



TYPE: 3-1/4" I.D. Hollow-stem Auger LOCATION: Sta. 173+76 COMPLETION DEPTH: 40.0'  
2" O.D. Split-barrel Sampler 104' Lt. of Proposed W.B. I-90 Centerline ELEVATION: 671.2  
N - 667142.129; E - 2192441.664 DATE: 9/18/06

Elev. (feet)	Depth (feet)	Samp.	Std. Pen. / RQD	Hand Pen. (tsf)	Rec./Loss (feet)	CLASSIFICATION: Description	Samp. No.	Physical Characteristics							ODOT Class				
								% AGG.	% C.S.	% F.S.	% SILT	% CLAY	LL	PI		WC			
670.9	0		3/7/12			0.3' TOPSOIL - 4 INCHES													
	5		6/7/8			GRAVEL (FILL): Loose to medium-dense brown fine to coarse gravel, some fine to coarse sand, trace silt, trace clay, contains many brick fragments, and few concrete and sandstone fragments.	1											Est. A-1-a	
			8/3/4				2	57	18	14								15	Est. A-1-a
			6/11/5				3												Est. A-1-a
660.7	10		8/3/1				4												Est. A-1-a
659.4			SD/ SH-12" SH-18"			11.8	GRAVEL WITH SAND (FILL): Very-loose brown fine to coarse gravel, "and" fine to coarse sand, trace silt, trace clay, contains many brick fragments.	5A	53	12	29		6					15	Est. A-1-b
658.2				13.0	5B	6		54	15	17		14						40	Est. A-1-b
	15		SH-12"/2			19.0	COARSE AND FINE SAND (FILL): Very-loose brown fine to coarse sand, trace fine to coarse gravel, trace silt, trace clay.	7											Est. A-1-b
652.2				20.5	8A														
650.7	20		4/8/13			20.5	GRAVEL WITH SAND (FILL): Very-loose brown fine gravel, some fine to coarse sand, trace to little silt, trace clay, contains many slag and brick fragments.	8B											Est. A-3
			7/11/13			9		0	14	77		9						15	Est. A-3
	25		6/13/13				FINE SAND: Very-loose brown fine sand, little coarse sand, trace silt, trace clay, contains few silty clay pockets.	10											Est. A-3
	30		3/5/12			11													Est. A-3
	35		12/19/18				FINE SAND: Medium-dense to dense brown fine sand, little coarse sand, trace silt, trace clay, contains few silty clay pockets.	12											Est. A-3
631.2	40					13													Est. A-3

NOTES:  
 - Encountered seepage at 19.0'.  
 - Encountered water at 23.2'.  
 - Water was added inside augers at 28.5' to prevent heave.

WATER LEVEL: ▽ 23.2      ▽ 15.7      ▽      ▽  
 WATER NOTE: Encountered During Drilling      Augers Removed  
 DATE: 9/18/06      9/18/06

PLATE 8