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Established 1927

September 3, 2009

WD Transportation
7007 Discovery Blvd.
Dublin, Ohio 43017

Attention: Mr. Kevin Carpenter, P.E., P.S.
Roadway Division Manager

Reference: Recommended Laboratory Permeability Testing
MAD-70-10.27
PID No. 83245
Madison County, Ohio
CTL Project No. 09050096COL

Dear Mr. Carpenter:

The purpose of this letter is to provide WD Transportation and ODOT District 6 with the results of Classification Testing performed on Shelby Tube samples obtained from the offset holes on the above reference project.

A total of sixteen (16) Shelby Tubes were collected from eight (8) offset holes at the site. The offset holes were drilled adjacent to the boring locations identified on the attached *Summary of Laboratory Testing on Shelby Tube Samples*. A plan showing the approximate boring locations is attached to this letter along with a draft copy of the applicable boring logs.

The predominant soil type encountered in the Shelby tube samples was Sandy Silt (A-4a). Other soil types encountered included Silt (A-4b), Silt and Clay (A-6a), Silty Clay (A-6b) and Clay (A-7-6).

In addition to the classification testing, some of the samples are to be subjected to Laboratory Hydraulic Conductivity (Permeability) Testing. The samples recommended by CTL for permeability testing are identified on the attached *Summary of Laboratory Testing on Shelby Tube Samples*.

It is our understanding that this information will be reviewed by ODOT District 6 personnel who will ultimately decide which samples will be subjected to laboratory permeability testing. A copy of this letter was forwarded to ODOT District 6 personnel for their review and comment.

We appreciate the opportunity to be of service to you on this project. If you have any questions or need further information, please do not hesitate to contact us.

Respectfully submitted,

CTL Engineering, Inc.

Joe Grani, P.E.
Project Engineer

Roger Evans, P.E.
Project Engineer

cc: Mr. Ferzan Ahmed, P.E, ODOT District 6 (via email)

SR 29 INTERCHANGE

ROUNDABOUT

EXISTING STRUCTURE

PROPOSED STRUCTURE

ROUNDABOUT

Ex R/W

Ex LA-R/W

SH 70

B-001 B-002 B-003 B-004 B-005 B-006 B-007 B-008 B-009 B-010 B-011 B-012 B-013 B-014 B-015 B-016 B-017 B-018

B-101 B-102 B-103 B-104 B-105 B-106 B-107 B-108 B-109

B-201 B-202 B-203 B-204 B-205 B-206 B-207

LeB MIE2 MIC2 CsB CrA Ko CsA

MAD-70-10.27 PID 83245

KEY

PROPOSED BORING LOCATION

PROPOSED BORING LOCATION WITH OFFSET BORING TO COLLECT UNDISTURBED SAMPLES FOR PERMEABILITY TESTING

SCALE: 1"=300'

...\Design\boring locations.dgn 8/31/2009 4:02:18 PM

Summary of Laboratory Testing on Shelby Tube Samples

Boring No.	NRCS Soil Type	Sample No.	Depth (feet)	ODOT Class	Gradation (%)					Atterberg			Moisture Content (%)	Recommended Permeability Testing*
					Agg	CS	FS	Silt	Clay	LL	PL	PI		
B-002	Ko	ST-4	4'-6'	A-4a	10	10	14	40	26	26	16	10	13	X
		ST-6	8'-10'	A-4a	15	10	13	38	24	25	16	9	13	--
B-003	LeB	ST-2	1'-3'	A-4a	11	11	14	39	25	24	15	9	10	X
		ST-10	16'-18'	A-4a	28	9	13	35	15	23	15	8	12	X
B-004	MIC2	ST-3	2'-4'	A-4a	8	10	31	38	13	NP	NP	NP	12	--
		ST-5	4'-6'	A-4b	6	8	16	54	16	22	17	5	14	X
B-012	CsB	ST-3	3'-5'	A-6a	14	11	14	42	19	28	17	11	13	X
		ST-7	8'-10'	A-4a	9	9	13	44	25	25	16	9	14	--
B-014	CsB	ST-2	2.5'-4.5'	A-6b	0	1	6	49	44	39	21	18	24	X
		ST-5	5'-7'	A-7-6	9	8	6	43	34	42	23	19	26	--
B-017	CsA	ST-2	2'-4'	A-4a	10	10	16	49	15	24	15	9	12	X
B-106	CsB	ST-5	5'-7'	A-7-6	0	2	4	50	44	51	24	27	25	X
		ST-6	8'-10'	A-6b	4	6	13	51	26	34	18	16	24	--
		ST-9	12'-14'	A-6a	10	8	13	45	24	28	17	11	13	X
B-207	Ko	ST-2	1'-3'	A-4a	42	11	10	26	11	26	16	10	13	X
		ST-5	3'-5'	A-6a	23	9	11	34	23	30	18	12	15	--

* "X" denotes samples recommended by CTL Engineering for Laboratory Permeability Testing

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MK	DRILL RIG: CME 75 T-296	STATION / OFFSET:	EXPLORATION ID B-002
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MK	HAMMER: CME AUTOMATIC	ALIGNMENT:	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 100.0 (MSL) EOB: 20.0 ft.	PAGE 1 OF 1
START: 8/10/09 END: 8/10/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 20.000 N, 20.000 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 100.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INST.
Asphalt concrete (12")	99.0	1																
Portland cement concrete (9")	98.6																	
Base course (7")	97.7	2																
MEDIUM STIFF, BROWN, **SILT AND CLAY**, SOME GRAVEL, LITTLE SAND, FILL, MOIST	96.5	3	2 3 4	10	56	SS-1	3.50	28	4	15	34	19	28	16	12	22	A-6a (4)	
MEDIUM STIFF, BROWN, **CLAY**, AND SILT, TRACE SAND, DAMP	95.0	4	2 3 3	9	44	SS-2	3.50	0	0	7	43	50	55	25	30	25	A-7-6 (19)	
BROWN, **SILT AND CLAY**, SOME SAND, TRACES OF GRAVEL, MOIST	94.5	5	3 4 5	13	94	SS-3	4.00	6	13	16	39	26	30	18	12	23	A-6a (7)	
@6.5'; STIFF, BROWN, **SANDY SILT**, STONE FRAGMENTS, DAMP		6			-	ST-4	-	10	10	14	40	26	26	16	10	13	A-4a (6)	
ST-6 Obtained in offset hole from 8' to 10'		7																
		8	4 4 5	13	83	SS-5	4.00	10	11	15	38	26	24	16	8	14	A-4a (6)	
		9			-	ST-6	-	15	10	13	38	24	25	16	9	13	A-4a (5)	
@10.0'; MEDIUM STIFF, TILL		10																
		11	3 3 4	10	89	SS-7	4.00	-	-	-	-	-	-	-	-	15	A-4a (V)	
	87.5	12																
VERY STIFF, GRAY, **SANDY SILT**, LITTLE CLAY, TRACES OF GRAVEL WITH COBBLES, TILL, DAMP		13	7 7 12	28	94	SS-8	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)	
▼ 0 hr		14																
@15.0'; HARD		15																
		16	9 15 16	46	89	SS-9	4.50	6	10	29	39	16	17	12	5	8	A-4a (4)	
	83.0	17																
GRAVEL AND/OR STONE FRAGMENTS WITH SAND	81.5	18					-	-	-	-	-	-	-	-	-	-	A-1-b (V)	
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, LITTLE SAND, TILL, DAMP	80.0	19	9 11 15	39	94	SS-10	4.50	0	11	28	39	22	19	12	7	8	A-4a (5)	
EOB		20																

NOTES: GROUNDWATER ENCOUNTERED @ 17.0' DURING DRILLING, 14.0' AT COMPLETION. ST-4 OBTAINED IN OFFSET HOLE FROM 4' TO 6'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 9/3/09 13:20 - J:\DEPT5\09 PROJECTS\09050096COL-WD TRANSPORTATION-MAD-70-10.27\REPORTS\LOGS\09050096COL.GPJ

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MF	DRILL RIG: CME 75 T-349	STATION / OFFSET:	EXPLORATION ID B-003
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MF	HAMMER: CME AUTOMATIC	ALIGNMENT:	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 100.0 (MSL) EOB: 20.0 ft.	PAGE 1 OF 1
START: 7/20/09 END: 7/20/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85	COORD: 30.000 N, 30.000 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 100.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INST.
Topsoil (3")	99.8																	
STIFF, BROWN, **SANDY SILT**, SOME CLAY, LITTLE GRAVEL, FILL, DAMP		1	4 6 9	21	56	SS-1	4.50	11	12	15	40	22	29	17	12	9	A-6a (6)	
ST-2 Obtained in offset hole from 1' to 3'	97.5	2			-	ST-2	-	11	11	14	39	25	24	15	9	10	A-4a (6)	
HARD, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, FILL, DAMP	96.0	3	13 17 17	48	67	SS-3	4.50	17	21	15	34	13	33	22	11	14	A-6a (3)	
HARD, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, FILL, DAMP		4																
		5	13 17 16	47	67	SS-4	4.50	-	-	-	-	-	-	-	-	10	A-4a (V)	
@5.5' Very stiff		6	11 13 11	34	72	SS-5	4.00	3	11	18	45	23	24	15	9	11	A-4a (7)	
		7																
		8																
@ 8.5' Very stiff		9	11 11 13	34	67	SS-6	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
	89.0	10																
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP		11	6 9 11	28	72	SS-7	3.50	9	13	15	39	24	25	16	9	12	A-4a (6)	
		12																
		13																
		14	9 15 14	41	61	SS-8	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
		15																
		16																
@16' Stiff, Moist		17	10 5 7	17	33	SS-9	4.50	14	11	20	38	17	20	13	7	11	A-4a (4)	
ST-10 Otained in offset hole from 16' to 18'	82.0				-	ST-10	-	28	9	13	35	15	23	15	8	12	A-4a (3)	
		18																
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, TRACE SILT, TRACE CLAY, WET	80.0	19	2 5 11	23	50	SS-11	-	12	39	40	7	2	NP	NP	NP	25	A-1-b (0)	
		EOB 20																

NOTES: GROUNDWATER ENCOUNTERED @ 19.0' DURING DRILLING, DRY AT COMPLETION.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MF	DRILL RIG: CME 75 T-349	STATION / OFFSET:	EXPLORATION ID B-004
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MF	HAMMER: CME AUTOMATIC	ALIGNMENT:	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 100.0 (MSL) EOB: 25.0 ft.	PAGE 1 OF 1
START: 7/20/09 END: 7/20/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85	COORD: 40.000 N, 40.000 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INST.
Topsoil (3")	100.0																	
STIFF, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL WITH ORGANICS, DAMP	99.8		8 7 5	17	67	SS-1	4.00	8	12	21	39	20	23	15	8	9	A-4a (5)	
MEDIUM DENSE, BROWN, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, AND SILT, TRACE CLAY, DAMP	98.0		3 5 6	16	67	SS-2	4.00	45	17	16	14	8	19	13	6	8	A-1-b (0)	
	97.0				-	ST-3	-	8	10	31	38	13	NP	NP	NP	12	A-4a (3)	
MEDIUM DENSE, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, DAMP	96.5		4 5 10	21	72	SS-4	4.50	2	5	29	51	13	NP	NP	NP	11	A-4b (6)	
	95.0				-	ST-5	-	6	8	16	54	16	22	17	5	14	A-4b (7)	
MEDIUM DENSE, GRAY, **SILT**, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP			9 6 9	21	61	SS-6	4.00	16	8	18	41	17	23	15	8	11	A-4a (5)	
STIFF, GRAY, **SANDY SILT**, LITTLE CLAY, LITTLE GRAVEL, TILL, DAMP @6.5'; VERY STIFF, WITH COBBLES			9 14 14	40	39	SS-7	4.50	-	-	-	-	-	-	-	-	10	A-4a (V)	
@8.5'; HARD, WITH COBBLES			11 14 17	44	78	SS-8	4.50	-	-	-	-	-	-	-	-	8	A-4a (V)	
			10 13 19	45	72	SS-9	4.50	10	10	20	42	18	23	14	9	9	A-4a (5)	
			11 18 21	55	72	SS-10	4.50	-	-	-	-	-	-	-	-	8	A-4a (V)	
			11 18 26	62	72	SS-11	4.50	-	-	-	-	-	-	-	-	8	A-4a (V)	
	81.5																	
HARD, GRAY, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, DAMP			18 25 40	92	67	SS-12	4.50	6	10	18	40	26	25	14	11	8	A-6a (7)	
			47 50/4"	-	40	SS-13	-	-	-	-	-	-	-	-	-	6	A-6a (V)	
			37 50/4"	-	40	SS-14	-	-	-	-	-	-	-	-	-	6	A-6a (V)	
	75.0	EOB																

NOTES: NO GROUNDWATER ENCOUNTERED DURING DRILLING, DRY AT COMPLETION. ST-3 OBTAINED OFFSET HOLE FROM 2' TO 4'. ST-5 OBTAINED IN OFFSET HOLE FROM 4' TO 6'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 9/3/09 13:43 - J:\DEPT5\09 PROJECTS\09050096COL-WD TRANSPORTATION-MAD-70-10.27\REPORTS\LOGS\09050096COL.GPJ

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MF	DRILL RIG: CME 75 T-349	STATION / OFFSET:	EXPLORATION ID B-012	
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MF	HAMMER: CME AUTOMATIC	ALIGNMENT:		
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 100.0 (MSL) EOB: 20.0 ft.		PAGE 1 OF 1
START: 8/10/09 END: 8/10/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85	COORD: 60.000 N, 60.000 E		

MATERIAL DESCRIPTION AND NOTES	ELEV. 100.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INST.
Topsoil (4")	99.7																	
STIFF, BROWN, **CLAY**, SOME SILT, LITTLE SAND, TRACES OF GRAVEL, FILL, DAMP	98.0	1	3 4 7	16	56	SS-1	4.00	2	4	9	35	50	62	27	35	24	A-7-6 (20)	
MEDIUM DENSE, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, TRACE ORGANICS, FILL, DAMP	96.5	2 3	11 12 12	34	67	SS-2	3.00	8	15	17	37	23	24	15	9	10	A-4a (5)	
					-	ST-3	-	14	11	14	42	19	28	17	11	13	A-6a (6)	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, LITTLE GRAVEL, TILL, DAMP	93.5	4 5	9 10 10	28	61	SS-4	4.50	-	-	-	-	-	-	-	-	11	A-6a (V)	
		6	9 9 10	27	72	SS-5	4.50	-	-	-	-	-	-	-	-	13	A-6a (V)	
@8.0'; VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	89.0	7 8	5 8 11	27	67	SS-6	4.00	10	8	13	39	30	25	16	9	12	A-4a (7)	
					-	ST-7	-	9	9	13	44	25	25	16	9	14	A-4a (7)	
		9	7 8 13	30	72	SS-8	4.00	30	7	8	47	8	24	20	4	13	A-4a (4)	
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, SOME GRAVEL, STONE FRAGMENTS, LITTLE SILT, DAMP		11 12	15 9 9	26	56	SS-9	-	49	21	12	14	4	-	-	-	11	A-3a (V)	
@13.5'; WET		14 15	7 6 8	20	61	SS-10	-	-	-	-	-	-	-	-	-	19	A-3a (V)	
		16 17 18																
▼																		
@18.5'; WET	80.0	19	7 12 12	34	56	SS-11	-	-	-	-	-	-	-	-	-	14	A-3a (V)	
EOB		20																

NOTES: GROUNDWATER ENCOUNTED @ 18.5' DURING DRILLING. ST-3 OBTAINED IN OFFSET HOLE FROM 3' TO 5', ST-7 OBTAINED IN OFFSET HOLE FROM 8' TO 10'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 9/3/09 14:41 - J:\DEPT5\09 PROJECTS\09050096COL-WD TRANSPORTATION-MAD-70-10.27\REPORTS\LOGS\09050096COL.GPJ

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MK	DRILL RIG: CME 75 T-296	STATION / OFFSET:	EXPLORATION ID B-014
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MK	HAMMER: CME AUTOMATIC	ALIGNMENT:	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 100.0 (MSL) EOB: 20.0 ft.	PAGE 1 OF 1
START: 8/11/09 END: 8/11/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 20.000 N, 20.000 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 100.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INST.
Asphalt concrete (8")	99.3																	
Brick (3")	99.1																	
Portland cement concrete (8")	98.4																	
Base course (7")	97.8																	
LOOSE, BROWN, **SANDY SILT**, LITTLE CLAY, TRACE GRAVEL, FILL, DAMP	97.0		3 4 4	12	78	SS-1	-	5	22	22	37	14	22	14	8	14	A-4a (3)	
	96.5				-	ST-2	-	0	1	6	49	44	39	21	18	24	A-6b (11)	
BROWN, **SILTY CLAY**, TRACES OF SAND, FILL, MOIST	95.0		4 3 2	7	67	SS-3	3.50	2	2	10	39	47	52	26	26	28	A-7-6 (17)	
MEDIUM STIFF, GRAY, **CLAY**, AND SILT, LITTLE SAND, TRACES OF GRAVEL, FILL, MOIST			2 2 3	7	83	SS-4	4.00	1	1	9	40	49	50	25	25	26	A-7-6 (16)	
MEDIUM STIFF, BROWN, **CLAY**, AND SILT, TRACE SAND, TRACE GRAVEL, DAMP @6.5' little sand					-	ST-5	-	9	8	6	43	34	42	23	19	26	A-7-6 (12)	
			3 3 4	10	89	SS-6	3.50	-	-	-	-	-	-	-	-	30	A-7-6 (V)	
	90.0	▼ 0 hr																
LOOSE, BROWN, **COARSE AND FINE SAND**, SOME SILT AND STONE FRAGMENTS WITH COBBLES, DAMP	87.5	▼	3 4 5	13	44	SS-7	-	42	14	9	25	10	-	-	-	14	A-3a (V)	
MEDIUM DENSE, GRAY, **COARSE AND FINE SAND**, SOME GRAVEL, TRACE CLAY WITH COBBLES, WET			5 5 6	16	72	SS-8	-	-	-	-	-	-	-	-	-	19	A-3a (V)	
			4 5 6	16	67	SS-9	-	59	28	7	- 6 -		-	-	-	17	A-3a (V)	
	81.5																	
STIFF, GRAY, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, TILL, DAMP	80.0	EOB	4 5 5	15	39	SS-10	-	22	11	17	36	14	19	13	6	12	A-4a (3)	

NOTES: GROUNDWATER ENC @ 12.5 DURING DRILLING, 10.2' AT COMPLETION. ST-2 OBTAINED IN OFFSET HOLE FROM 2.5' TO 4.5'. ST-5 OBTAINED IN OFFSET HOLE FROM 5' TO 7'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 9/3/09 14:13 - J:\DEPT5\09 PROJECTS\09050096COL-WD TRANSPORTATION-MAD-70-10.27\REPORTS\LOGS\09050096COL.GPJ

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MK	DRILL RIG: CME 75 T-296	STATION / OFFSET:	EXPLORATION ID B-017	
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MK	HAMMER: CME AUTOMATIC	ALIGNMENT:		
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 100.0 (MSL) EOB: 20.0 ft.		PAGE 1 OF 1
START: 8/10/09 END: 8/10/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 50.000 N, 50.000 E		

MATERIAL DESCRIPTION AND NOTES	ELEV. 100.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INST.
Asphalt concrete (17")	98.6																	
Base course (8")	97.9																	
MEDIUM STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, FILL, DAMP	96.0		3 4 4	12	78	SS-1	4.00	6	8	15	44	27	25	16	9	13	A-4a (7)	
					-	ST-2	-	10	10	16	49	15	24	15	9	12	A-4a (6)	
STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL, FILL, DAMP			5 6 6	18	39	SS-3	4.50	1	19	23	37	20	27	15	12	9	A-6a (5)	
No recovery	92.5		5 7 9	24	0	SS-4	-	-	-	-	-	-	-	-	-	-		
STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, TILL, DAMP		0 hr	5 6 6	18	83	SS-5	4.00	12	16	17	34	21	22	14	8	13	A-4a (4)	
			5 6 8	21	94	SS-6	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)	
MEDIUM DENSE, GRAY, **COARSE AND FINE SAND**, SOME GRAVEL, WET	87.5		6 8 12	30	94	SS-7	-	22	23	38	14	3	NP	NP	NP	15	A-3a (0)	
			7 9 11	30	89	SS-8	-	-	-	-	-	-	-	-	-	13	A-3a (V)	
	80.0	EOB	5 6 7	19	78	SS-9	-	-	-	-	-	-	-	-	-	11	A-3a (V)	

NOTES: GROUNDWATER ENCOUNTERED @ 12.5' DURING DRILLING, 10.0' AT COMPLETEION. ST-2 OBTAINED IN OFFSET HOLE FROM 2' TO 4'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / CG	DRILL RIG: CME 75 T-296	STATION / OFFSET:	EXPLORATION ID B-106
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / CG	HAMMER: CME AUTOMATIC	ALIGNMENT:	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 100.0 (MSL) EOB: 20.0 ft.	PAGE 1 OF 1
START: 7/14/09 END: 7/14/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 60.000 N, 60.000 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 100.0	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%) GR	CS	FS	SI	CL	ATTERBERG LL	PL	PI	WC	ODOT CLASS (GI)	INST.
VERY STIFF, BROWN, **SILTY CLAY**, SOME SAND, LITTLE GRAVEL, FILL, DAMP	98.0	1	6 11 14	37	89	SS-1	4.00	16	10	12	34	28	35	19	16	9	A-6b (8)	
VERY STIFF, BROWN, **CLAY**, AND SILT, LITTLE SAND, TRACE GRAVEL, FILL, DAMP	96.5	2 3	10 11 10	31	94	SS-2	4.50	5	4	7	36	48	45	23	22	15	A-7-6 (14)	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME SAND, TRACE GRAVEL WITH ROCK FRAGMENTS, FILL, DAMP	95.0	4	6 11 12	34	78	SS-3	4.50	8	9	14	39	30	29	17	12	7	A-6a (8)	
STIFF, BROWN, **CLAY**, AND SILT, TRACE SAND, TRACE GRAVEL, DAMP	93.0	5 6	7 5 8	19	94	SS-4	4.50	-	-	-	-	-	-	-	-	23	A-7-6 (V)	
		7			-	ST-5	-	0	2	4	50	44	51	24	27	25	A-7-6 (17)	
BROWN, **SILTY CLAY**, LITTLE SAND, TRACE GRAVEL, MOIST	91.5	8			-	ST-6	-	4	6	13	51	26	34	18	16	24	A-6b (10)	
MEDIUM STIFF, BROWN, **SILT AND CLAY**, LITTLE SAND, TRACE GRAVEL, DAMP	86.5	9 10	6 3 4	10	100	SS-7	2.50	5	5	14	48	28	28	17	11	16	A-6a (8)	
		11 12	7 8 9	25	100	SS-8	4.00	10	8	14	38	30	27	16	11	12	A-6a (7)	
		13			-	ST-9	-	10	8	13	45	24	28	17	11	13	A-6a (7)	
STIFF, BROWN, **SANDY SILT**, SOME CLAY, TRACE GRAVEL, DAMP	84.0	14 15	8 8 10	27	94	SS-10	4.00	8	10	16	39	27	25	16	9	11	A-4a (6)	
LOOSE, GRAY, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, WET	80.0	16 17	4 5 5	15	67	SS-11	-	-	-	-	-	-	-	-	-	17	A-1-b (V)	
	EOB	18 19 20	5 5 5	15	44	SS-12	-	48	23	9	15	5	NP	NP	NP	18	A-1-b (0)	

NOTES: GROUNDWATER ENC. @ 15.0' ST-5 OBTAINED IN OFFSET HOLE FROM 5' TO 7'. ST-6 IN OFFSET HOLE FROM 8' TO 10'. ST-9 IN OFFSET HOLE FROM 12' TO 14'

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 9/3/09 15:41 - J:\DEPTS\09 PROJECTS\09050096COL-WD TRANSPORTATION-MAD-70-10.27\REPORTS\LOGS\09050096COL.GPJ

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / JD	DRILL RIG: CME 75 R-25	STATION / OFFSET:	EXPLORATION ID B-207
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / JD	HAMMER: CME AUTOMATIC	ALIGNMENT:	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 971.9 (MSL) EOB: 20.0 ft.	PAGE 1 OF 1
START: 6/29/09 END: 6/29/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 40.000 N, 40.000 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. 971.9	DEPTHS	SPT/ RQD	N_{60}	REC (%)	SAMPLE ID	HP (tsf)	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	INST.
Topsoil (8")	971.2																	
STIFF, BROWN, **SANDY SILT**, SOME GRAVEL, LITTLE CLAY, DRY	969.9	1	5 7 7	20	67	SS-1	-	25	10	20	30	15	24	16	8	9	A-4a (2)	
		2			-	ST-2	-	42	11	10	26	11	26	16	10	13	A-4a (0)	
VERY STIFF, BROWN, **CLAY**, AND SILT, LITTLE SAND, TRACE GRAVEL, DAMP	968.4	3	5 8 8	22	72	SS-3	-	5	4	15	39	37	43	22	21	21	A-7-6 (13)	
VERY STIFF, BROWN, **SILT AND CLAY**, SOME GRAVEL, LITTLE SAND WITH COBBLES, DAMP	966.9	4	5 8 13	29	67	SS-4	-	-	-	-	-	-	-	-	-	10	A-6a (V)	
		5			-	ST-5	-	23	9	11	34	23	30	18	12	15	A-6a (5)	
VERY STIFF, BROWN, **SANDY SILT**, SOME CLAY, DAMP	963.9	6	11 17 12	41	72	SS-6	4.50	1	12	16	45	26	26	16	10	13	A-4a (7)	
		7																
		8																
MEDIUM DENSE, BROWN, **COARSE AND FINE SAND**, SOME SILT, TRACE CLAY, DAMP		9	13 11 9	28	67	SS-7	-	14	32	21	28	5	NP	NP	NP	12	A-3a (0)	
		10																
@11.0'; LITTLE SILT, MOIST		11																
		12	7 9 9	25	67	SS-8	-	15	25	39	18	3	NP	NP	NP	15	A-3a (0)	
		13																
NO RECOVERY		14	7 8 10	25	0	SS-9	-	-	-	-	-	-	-	-	-	-		
		15																
@16.0'; WET		16																
	954.4	17	14 12 12	34	67	SS-10	-	-	-	-	-	-	-	-	-	10	A-3a (V)	
MEDIUM DENSE, GRAY, **GRAVEL AND/OR STONE FRAGMENTS WITH SAND**, TRACE CLAY WITH COBBLES, WET		18																
	951.9	19	10 12 17	41	72	SS-11	-	50	18	15	14	3	NP	NP	NP	9	A-1-b (0)	
		EOB 20																

▼ 0 hr

NOTES: GROUNDWATER ENC @ 11.0' DURING DRILLING, 13.0 AT COMPLETION. ST-2 OBTAINED IN OFFSET HOLE FROM 1' TO 3'. ST-5 OBTAINED IN OFFSET HOLE FROM 3' TO 5'.

ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED