

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO RECONSTRUCT THE WESTBOUND EXIT RAMP FROM I-70 AT ITS TERMINUS WITH SR-29 BY DESIGNING AND CONSTRUCTING A ROUNDABOUT. THE EASTBOUND EXIT RAMP WILL BE WIDENED TO TWO LANES TO ACCEPT FUTURE TRAFFIC DEMAND. SR-29 WILL BE WIDENED TO FIVE LANES FOR APPROXIMATELY 1000 FEET NORTH OF THE ROUNDABOUT AND SNYDER LANE WILL BE RELOCATED TO THE NORTH OF ITS CURRENT INTERSECTION WITH SR-29.

HISTORIC RECORDS

THE BORINGS PRESENTED IN THIS REPORT ARE THE HISTORICAL RECORD BORINGS THAT WERE PROVIDED BY THE DISTRICT. NO ADDITIONAL BORINGS WERE ADVANCED.

GEOLOGY

THE PROJECT SITE IS LOCATED IN THE DARBY PLAIN PHYSIOGRAPHIC REGION OF OHIO. THIS REGION IS CHARACTERIZED BY GLACIAL FEATURES INCLUDING BROAD, HUMMOCKY, GROUND MORAINES AND BROAD, INDISTINCT, RECESSIONAL MORAINES. THE GLACIAL SOIL IS POORLY DRAINING, CREATING MANY WETLAND PRAIRIES. THE SOIL IS KNOWN FOR HAVING HIGH TO MEDIUM LIME CONTENT. THE BEDROCK LARGELY CONSISTS OF UPPER SILURIAN CALCAREOUS STRATA (DOLOMITE AND SOME LIMESTONE) AND SHALE.

RECONNAISSANCE

GANNETT FLEMING PERFORMED A SITE RECONNAISSANCE ON MARCH 18, 2013 TO OBSERVE CURRENT CONDITIONS. THE SITE VISIT WAS PERFORMED DURING A RAIN EVENT AND THE ROADWAY DRAINAGE DITCHES WERE OBSERVED TO BE FULL WITH POSITIVE DRAINAGE. THE PAVEMENT WAS OBSERVED TO BE IN GOOD REPAIR AND THE EMBANKMENT SLOPES APPEARED TO BE STABLE.

SUBSURFACE EXPLORATION

THE HISTORICAL GEOTECHNICAL EXPLORATION WAS PERFORMED BETWEEN JUNE 30 AND AUGUST 11, 2009. THE BORINGS WERE ADVANCED WITH A TRUCK MOUNTED ROTARY DRILL RIG, USING 3/4-INCH I.D. HOLLOW STEM AUGERS TO ADVANCE THE HOLES THROUGH SOIL. DISTURBED SAMPLES WERE COLLECT CONTINUOUSLY TO 5.0 FOOT INTERVALS. THREE AUTOMATIC HAMMERS WERE UTILIZED TO COLLECT SPLIT SPOON SAMPLES. THE HAMMERS HAD ENERGY RATIOS OF 89, 85, AND 84. ALL THREE HAMMERS WERE CALIBRATED JUNE 27, 2007

EXPLORATION FINDINGS

COHESIVE SOILS ARE PREDOMINANT, CLASSIFIED AS ODOT A-4a, A-4b, A-6a, A-6b, A-7-5, A-7-6. GRANULAR SOILS WERE CLASSIFIED AS A-1-a AND A-1-b.

FREE GROUNDWATER WAS ENCOUNTERED IN B-002 AND B-006 AT A DEPTH OF 17 AND 33 FEET RESPECTIVELY

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED JANUARY 2009.

AVAILABLE INFORMATION

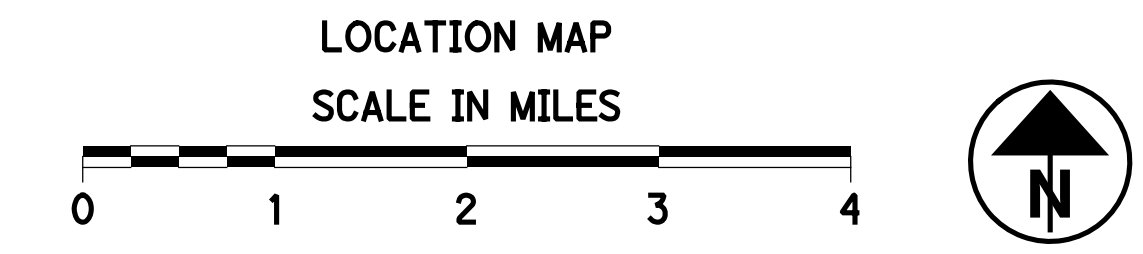
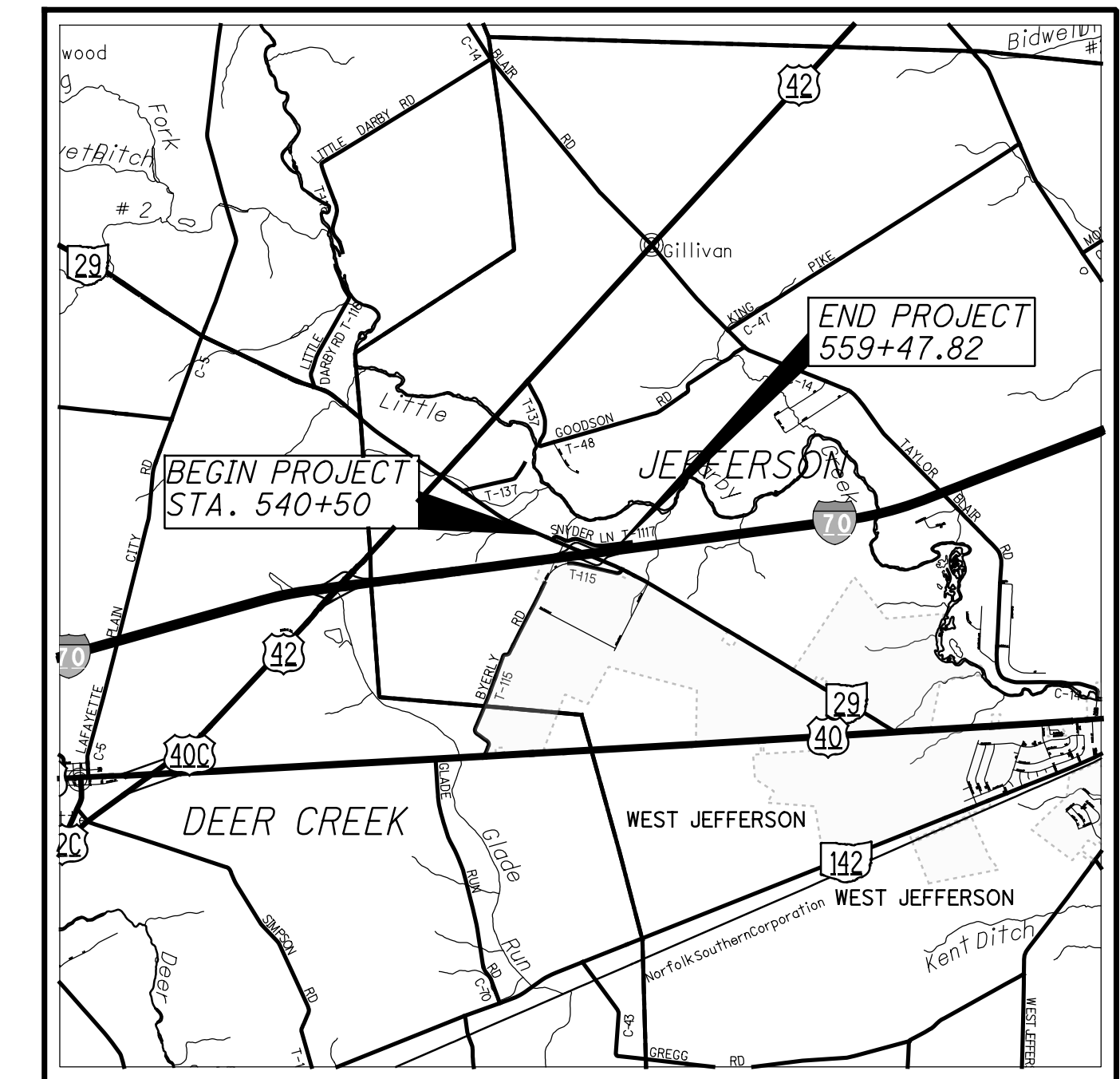
ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.

LEGEND

DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
GRAVEL AND/OR STONE FRAGMENTS	A-1-a (0)	1	0
GRAVEL AND/OR STONE FRAGMENTS WITH SAND	A-1-b (0)	3	0
SANDY SILT	A-4a (5)	22	18
SILT	A-4b (6)	1	0
SILT AND CLAY	A-6a (6)	12	4
SILTY CLAY	A-6b (11)	3	2
ELASTIC CLAY	A-7-5 (20)	1	0
CLAY	A-7-6 (17)	6	3
	TOTAL	49	27

PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	<u>VISUAL</u>
SOD AND TOPSOIL = X = APPROXIMATE THICKNESS	<u>VISUAL</u>
BORING LOCATION - PLAN VIEW.	
DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.	
WC	INDICATES WATER CONTENT IN PERCENT.
N ₆₀	INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.
X/Y/Z	NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (SPT): X= NUMBER OF BLOWS FOR FIRST 6 INCHES. Y= NUMBER OF BLOWS FOR SECOND 6 INCHES. Z= NUMBER OF BLOWS FOR THIRD 6 INCHES.
W—	INDICATES FREE WATER ELEVATION.
SS	INDICATES A SPLIT SPOON SAMPLE.
NP	INDICATES A NON-PLASTIC SAMPLE.
⊕	INDICATES A NON-PLASTIC MATERIAL WITH A MOISTURE CONTENT GREATER THAN 25 % OR GREATER THAN 19 % WITH A WET APPEARANCE.
*	INDICATES A SAMPLE TAKEN WITHIN 3 FT OF PROPOSED GRADE.

THE DATA CONTAINED IN THESE GEOTECHNICAL SOIL PROFILE, LABORATORY TESTING, AND BORING LOGS, PLAN SHEETS 1 THROUGH 32 WERE SUPPLIED TO GANNETT FLEMING BY OTHERS. GANNETT FLEMING WAS NOT IN RESPONSIBLE CHARGE FOR THE DEVELOPMENT OF THE GEOTECHNICAL DATA CONTAINED HEREIN.
THIS GEOTECHNICAL DATA IS BEING PROVIDED FOR INFORMATION ONLY.



PARTICLE SIZE DEFINITIONS

BOULDERS	COBBLES	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY
12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm	
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE		

INDEX OF SHEETS

LOCATION FROM STA. TO STA.	PLAN VIEW SHEET	PROFILE SHEET	CROSS-SECTION SHEET	CUT MAX.	FILL EMB. MAX.
SR-29 533+00 547+00	3	3	-	<1 FT	<1 FT
547+00 561+00	4	5	-	<1 FT	<1 FT
SNYDER ROAD 10+00 15+25	6	6	-	1 FT	3 FT
RAMP A 20+27 26+50	7	7	-	2 FT	11 FT
RAMP B 40+89 48+00	8	8	-	<1 FT	3 FT
RAMP D 540+00 549+16	9	9	-	<1 FT	<1 FT

RECON. - TLM 03/18/13
 DRILLING - CTL 08/11/09
 DRAWN - TLM 03/20/13
 REVIEWED - MWW 03/20/13

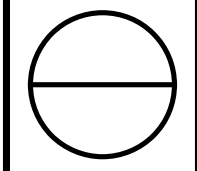
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DESIGN AGENCY
 GANNETT FLEMING ENGINEERS AND ARCH. PC
 SUITE 104 300 N. CLEVELAND MASSILLON RD.
 AKRON, OHIO 44333

PID NO.
83245

SOIL PROFILE

MAD-70-10.27



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SUMMARY OF SOIL TEST DATA
SR 29

EXPLORATION. NO STATION & OFFSET	FROM - TO	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-001-0-09 STA 543+00, 6.7' RT. NORTHING = 715484.441 EASTING = 1729956.386	02.00 - 03.50 03.50 - 05.00 05.00 - 06.50	SS-1 SS-2 SS-3	67 56 72	0 0 0	1 1 1	6 7 8	44 43 37	49 49 54	61 52 53	32 24 23	29 28 30	35 25 29	A-7-5 (20) A-7-6 (18) A-7-6 (19)
B-002-0-09 STA 546+83, 5.1' RT. NORTHING = 715347.376 EASTING = 1730313.226	02.00 - 03.50 03.50 - 05.00 05.00 - 06.50 07.50 - 09.00 10.00 - 11.50 12.50 - 14.00 15.00 - 16.50 18.50 - 20.00	SS-1 SS-2 SS-3 SS-5 SS-7 SS-8 SS-9 SS-10	56 44 94 83 89 94 86 94	28 0 6 10	4 0 13 11	15 7 16 15	34 43 39 38	19 50 26 26	28 55 30 24	16 25 18 16	12 30 12 8	22 25 23 14 15 11 8 8	A-6a (4) A-7-6 (19) A-6a (7) A-4a (6) A-4a (VISUAL) A-4a (VISUAL) A-4a (4) A-4a (5)
B-003-09 STA 550+64, 52.0' RT. NORTHING = 715347.376 EASTING = 1730313.226	01.00 - 02.00 02.50 - 04.00 04.10 - 05.50 05.50 - 07.00 08.50 - 10.00 11.00 - 12.50 13.50 - 15.00 16.00 - 17.50 18.50 - 20.00	SS-1 SS-3 SS-4 SS-5 SS-6 SS-7 SS-8 SS-9 SS-11	56 67 67 72 67 72 61 33 50	11 17 3 9	12 21 11 13	15 15 18 15	40 34 45 39	22 13 23 24	29 33 24 15	17 22 15 9	12 11 9 9	9 14 12 12 12 12 11 11 25	A-6a (6) A-6a (3) A-4a (VISUAL) A-4a (7) A-4a (VISUAL) A-4a (6) A-4a (VISUAL) A-4a (4) A-1-b (0)
B-004-09 STA 553+58, 85.0' LT. NORTHING = 715158.206 EASTING = 1730968.539	00.50 - 02.00 02.00 - 03.50 03.50 - 04.50 05.00 - 06.50 06.50 - 08.00 08.50 - 10.00 11.00 - 12.50 13.50 - 15.00 16.00 - 17.50 18.50 - 20.00 21.00 - 22.00 23.50 - 25.00	SS-1 SS-2 SS-4 SS-6 SS-7 SS-8 SS-9 SS-10 SS-11 SS-12 SS-13 SS-14	67 67 72 61 39 78 72 72 72 67 40 40	8 45 2 16	12 17 5 8	21 16 29 18	39 14 51 41	20 8 13 17	23 19 NP 23	15 13 NP 15	8 6 NP 8	9 12 11 11 10 8 8 6 6	A-4a (5) A-1-b (0) A-4b (6) A-4a (5) A-4a (VISUAL) A-4a (VISUAL) A-4a (5) A-4a (VISUAL) A-6a (7) A-6a (VISUAL) A-6a (VISUAL) A-6a (VISUAL)
B-005-09 STA 557+34, 27.0' LT. NORTHING = 714909.593 EASTING = 1731269.345	00.00 - 01.50 01.50 - 03.00 03.00 - 04.50 04.50 - 06.00 06.00 - 07.50 08.50 - 10.00	SS-1 SS-2 SS-3 SS-4 SS-5 SS-6	67 56 44 67 61 67	21 13 0 1	11 10 3 2	12 14 12 8	34 37 47 44	22 26 38 45	29 26 37 48	17 16 20 22	12 10 17 26	16 11 19 24 24 10	A-6a (5) A-4a (6) A-6b (11) A-6b (VISUAL) A-7-6 (16) A-7-6 (VISUAL)

SUMMARY OF SOIL TEST DATA
SR 29 - CON'T.

EXPLORATION. NO STATION & OFFSET	FROM - TO	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-006-09 STA 559+67, 22.0' LT. NORTHING = 714864.169 EASTING = 1731503.364	00.50 - 02.00 02.00 - 03.50 03.50 - 05.00 05.00 - 06.50 07.50 - 09.00 10.00 - 11.50 12.50 - 14.00 15.00 - 16.50 22.50 - 24.00 25.00 - 26.50 27.50 - 29.00 30.00 - 31.50 33.50 - 35.00 38.50 - 40.00 43.50 - 45.00 48.50 - 50.00 53.50 - 55.00 58.50 - 59.50 63.50 - 64.50 73.50 - 74.25	SS-1 SS-2 SS-3 SS-4 SS-5 SS-6 SS-7 SS-8 SS-11 SS-12 SS-13 SS-14 SS-15 SS-16 SS-17 SS-18 SS-19 SS-20 SS-21 SS-23	78 89 94 100 94 100 89 94 94 89 67 89 72 56 72 56 83 83 73 78	0 6 8 0 2 4 4 4 4 4 13 53 6 27 5 4	6 8 2 6 6 6 6 6 4 4 34 21 15 31 7 11	19 50 39 43 47 46 28 23 23 36 4 11 3 42 12 40 24 42 20	25 25 31 47 42 28 23 28 23 4 22 18 NP NP NP NP NP 24 24 24	30 32 32 42 42 29 17 28 28 28 22 18 NP NP NP NP NP 24 24 24	18 12 15 21 21 17 12 18 10 18 4 NP NP NP NP NP 14 15 15 9	12 15 11 23 18 14 19 15 15 5 12 14 10 9 10 7 6	10 12 11 23 18 13 14 12 15 12 14 10 9 10 7 6	A-6a (9) A-6a (9) A-6a (VISUAL) A-7-6 (13) A-7-6 (VISUAL) A-7-6 (VISUAL) A-6a (9) A-6a (VISUAL) A-4a (7) A-4a (VISUAL) A-4a (VISUAL) A-4a (1) A-1-a (0) A-4a (4) A-1-b (0) A-4a (6) A-4a (VISUAL) A-4a (VISUAL) A-4a (5) A-4a (VISUAL)	

SUMMARY OF SOIL TEST DATA
SNYDER ROAD

EXPLORATION. NO STATION & OFFSET	FROM - TO	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-201-09 STA 10+96, 2.4' LT. NORTHING = 715478.510 EASTING = 1730373.996	00.50 - 02.00 02.00 - 03.50 03.50 - 05.00 05.00 - 06.50 08.50 - 10.00	SS-1 SS-2 SS-3 SS-4 SS-5	67 72 67 67 44	0 6 10 -	1 5 13 -	8 13 16 -	50 42 42 -	41 34 19 -	56 34 26 -	26 18 16 -	30 16 10 -	27 23 16 13 11	A-7-6 (19) A-6b (10) A-4a (5) A-4a (VISUAL) A-4a (6)

SUMMARY OF SOIL TEST DATA
RAMP B

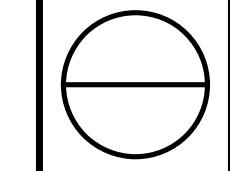
EXPLORATION. NO STATION & OFFSET	FROM - TO	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-104-0-09 STA 44+72, 6.9' LT. NORTHING = 715105.975 EASTING = 1731534.075	00.50 - 02.00 02.00 - 03.50 03.50 - 05.00 05.00 - 06.50 08.50 - 010.00	SS-1 SS-2 SS-3 SS-4 SS-5	94 100 100 100 100	32 6 14 5	13 11 10 14	11 16 14 18	27 42 39 40	17 25 23 23	27 23 23 25	16 16 15 15	11 7 8 10	12 11 13 12 11	A-6a (2) A-4a (6) A-4a (5) A-4a (VISUAL) A-4a (VISUAL)

SUMMARY OF SOIL TEST DATA
RAMP D

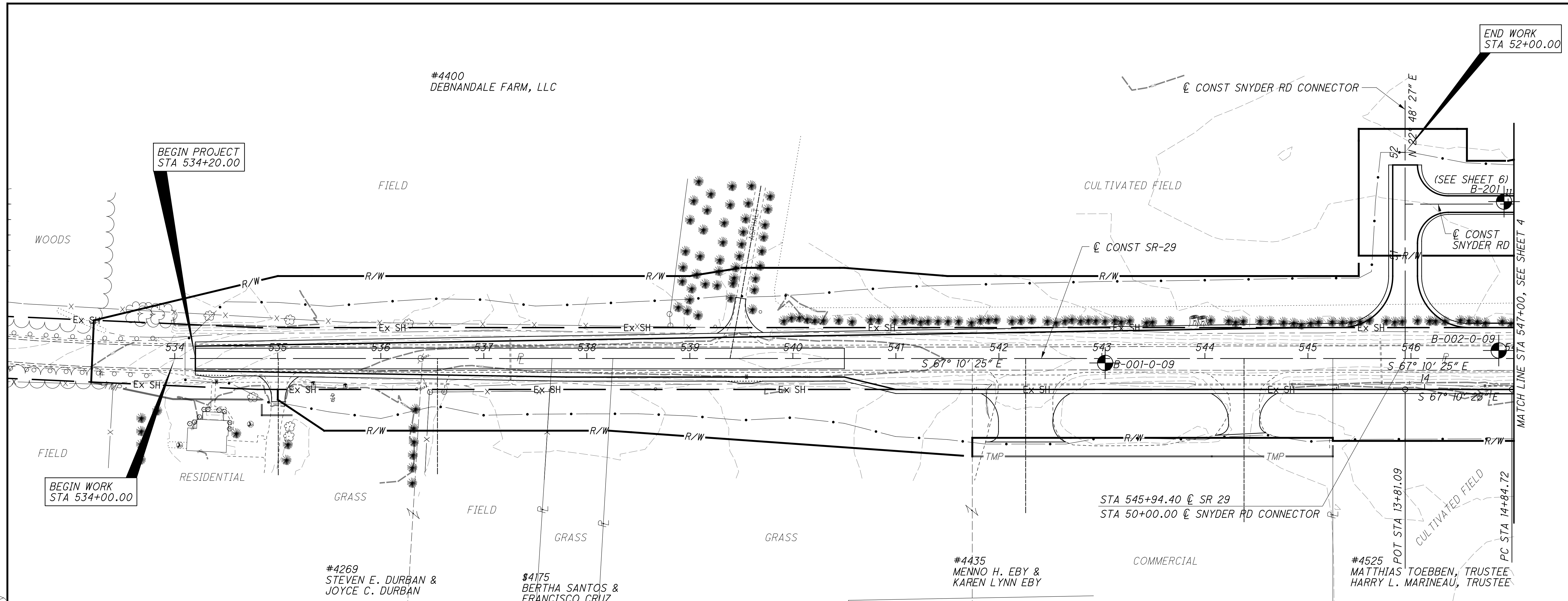
EXPLORATION. NO STATION & OFFSET	FROM - TO	SAMPLE ID	% REC	% AGG	% CS	% FS	% SILT	% CLAY	LL	PL	PI	% WC	ODOT CLASS (GI)
B-107-09 STA 546+10, 23.2' LT. NORTHING = 714368.265 EASTING = 1732082.568	00.50 - 02.00 02.00 - 03.50 03.50 - 05.00 05.00 - 06.50 08.50 - 010.00	SS-1 SS-2 SS-3 SS-4 SS-5	61 67 72 72 61	5 4 5	6 6 14	22 20 18	41 42 40	26 28 23	24 27 25	15 16 15	9 11 10	8 13 11 10 19	A-4a (6) A-6a (7) A-4a (VISUAL) A-4a (6) A-4a (VISUAL)
B-011-09 STA 548+72, 63' LT. NORTHING = 714498.061 EASTING = 1732259.954	00.50 - 02.00 02.00 - 03.50 03.50 - 05.00 05.00 - 06.50 08.50 - 010.00	SS-1 SS-2 SS-3 SS-4 SS-5	56 100 94 100 100	0 0 0	11 1 5	21 18 19	48 55 47	20 26 29	25 28 36	16 17 18	9 11 18	11 10 16 16 12	A-4a (7) A-4a (VISUAL) A-6a (8) A-6b (11) A-6b (VISUAL)

SOIL PROFILE SUMMARY OF SOIL TEST DATA
MAD-70-10.27

DRAWN
WKB
CHECKED
MWW



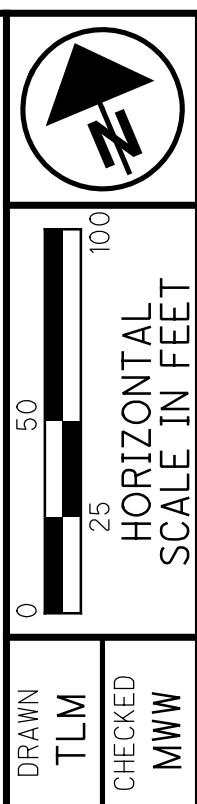
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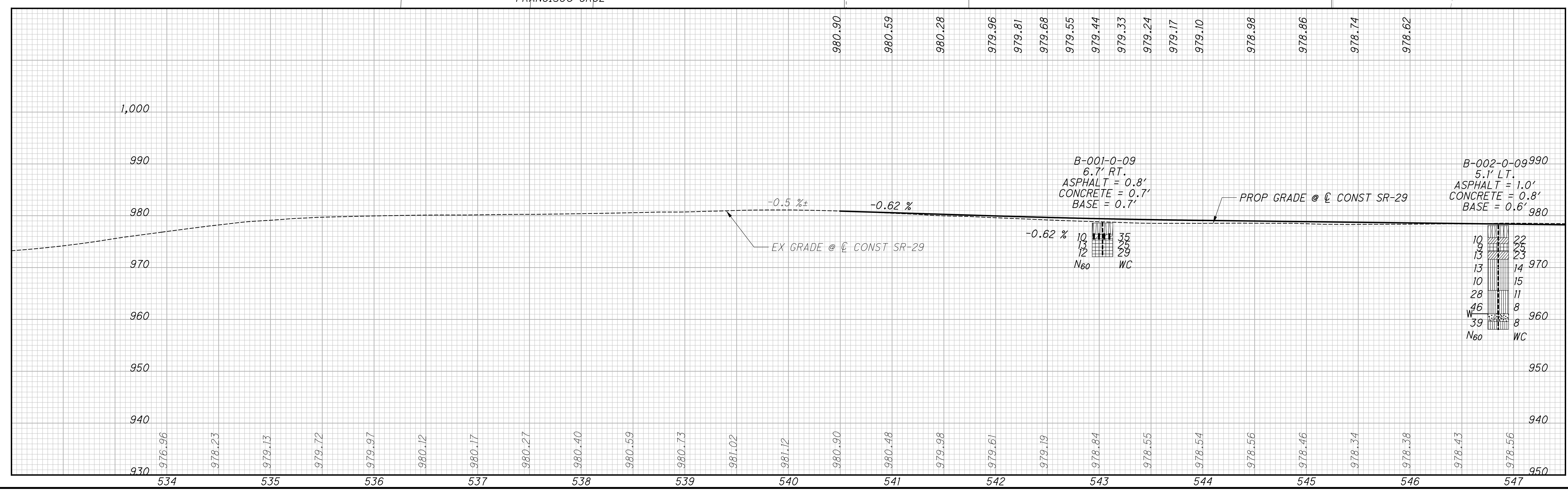
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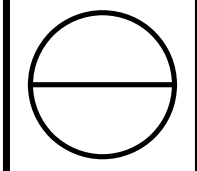
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SOIL PROFILE
STA 533+00 TO STA 547+00 SR 29



MAD-70-10.27



#4600
JOHN W. SNYDER JR.
AND DEBRA SNYDER

#4400
DEBNANDALE FARM, LLC

#4525
MATTHIAS TOEBBEN, TRUSTEE
HARRY L. MARTINEAU, TRUSTEE

#4545
DONNA M. TANNER



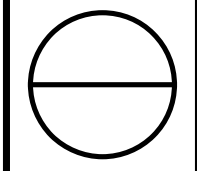
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HORIZONTAL
SCALE IN FEET

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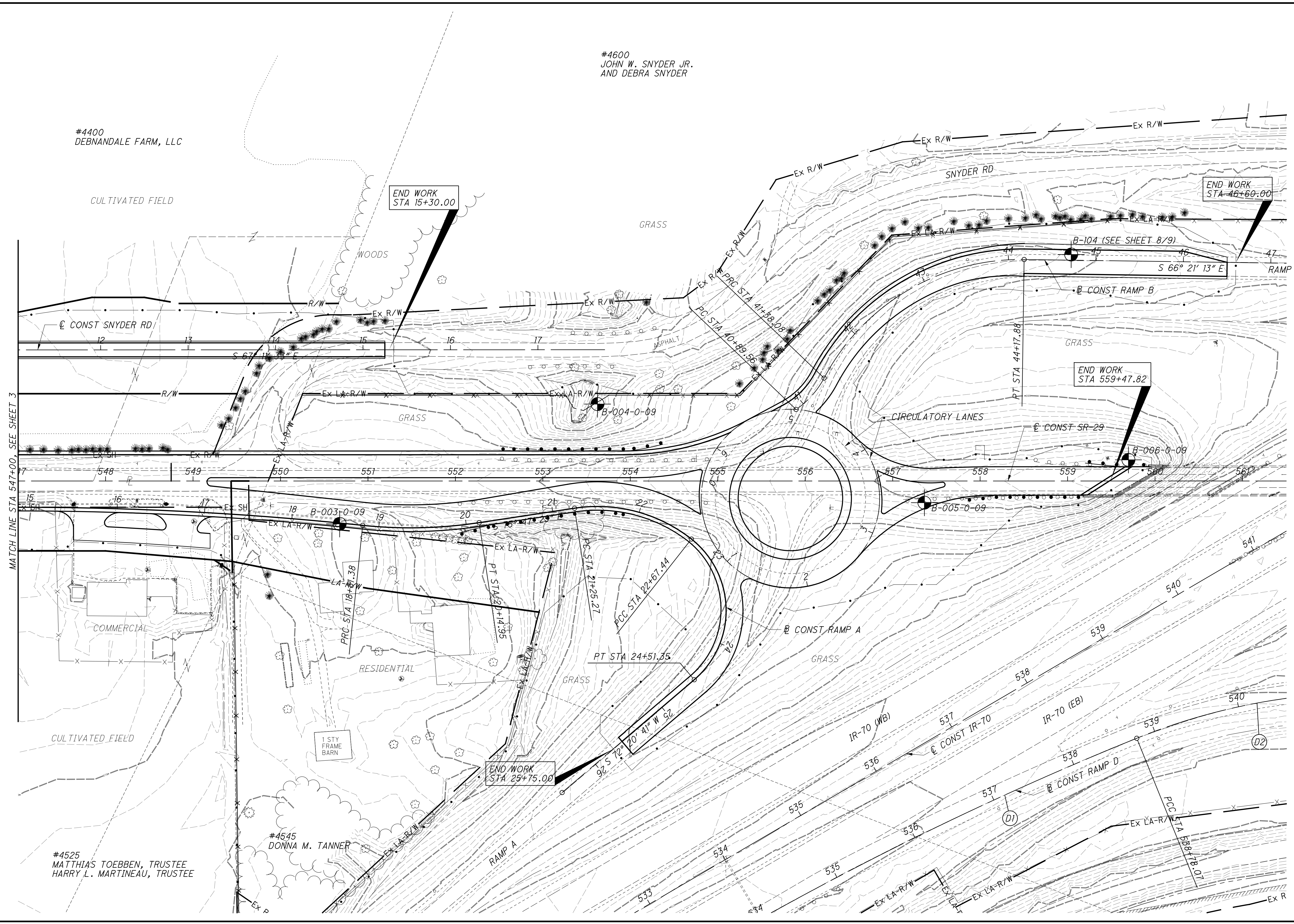
SOIL PROFILE
STA 547+00 TO STA 561+50 SR 29

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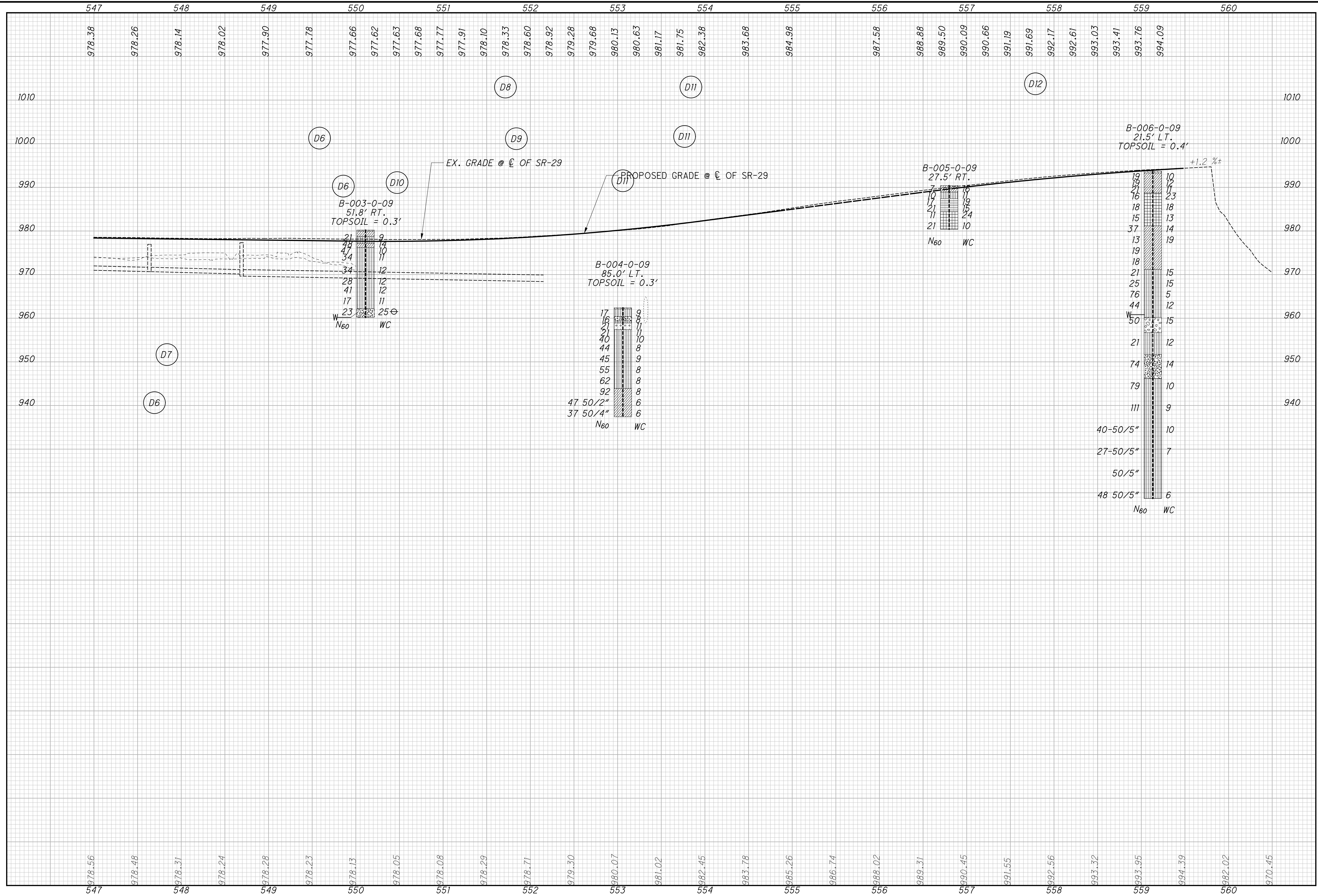


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MATCH LINE STA 547+00, SEE SHEET 3

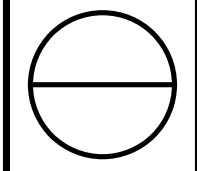
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MMW

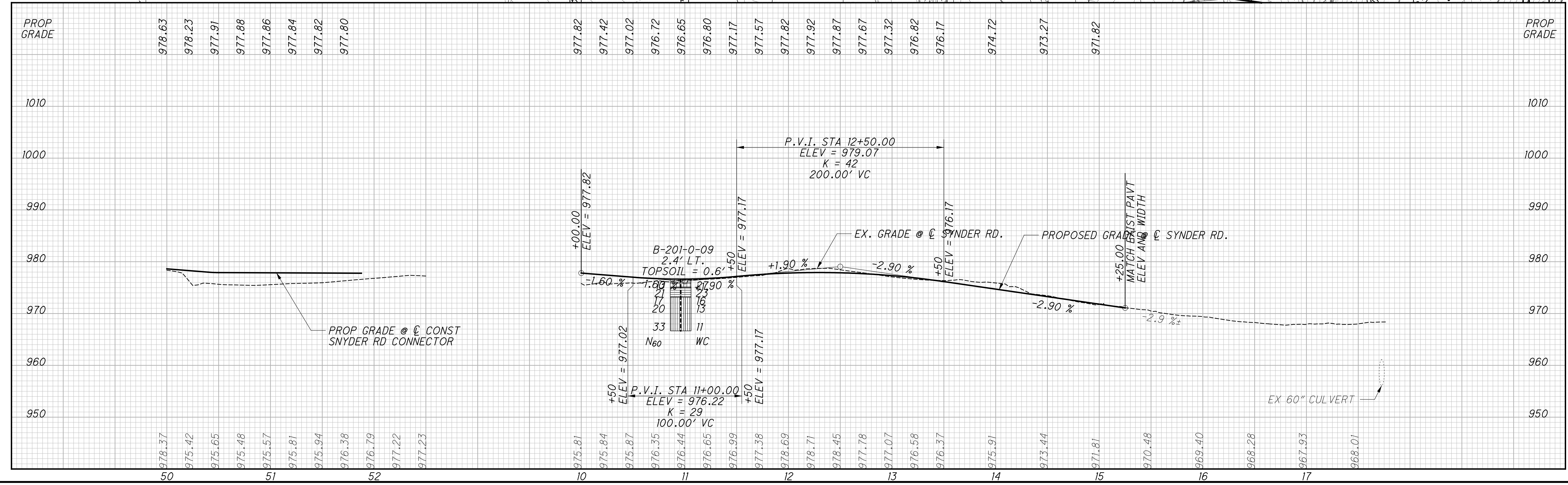
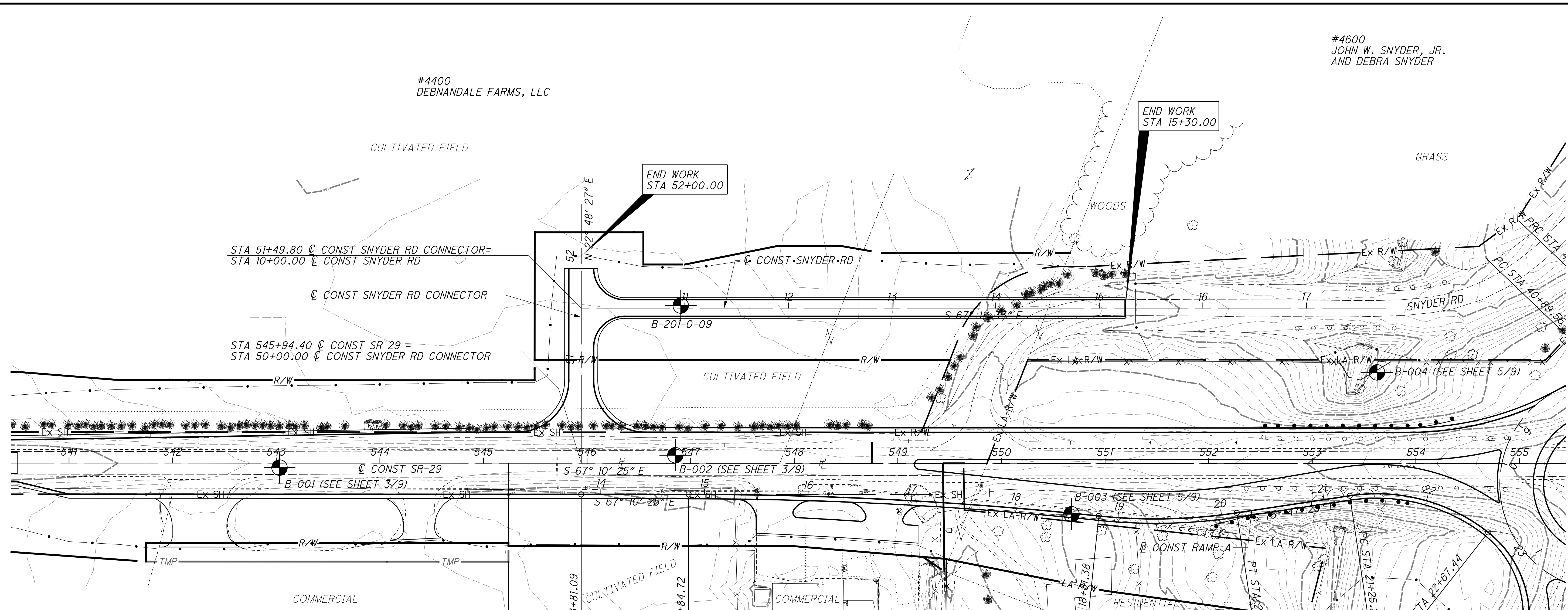
SOIL PROFILE
STA 547+00 TO STA 561+50 SR 29

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#4600
JOHN W. SNYDER, JR.
AND DEBRA SNYDER

#4400
DEBNANDALE FARMS, LLC



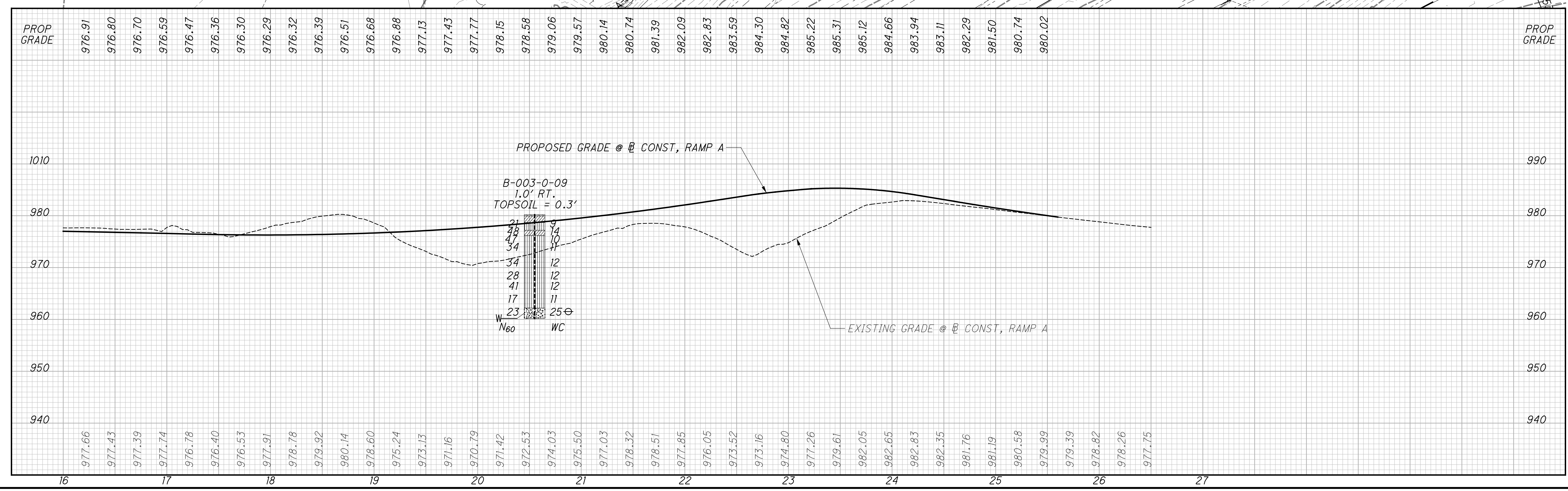
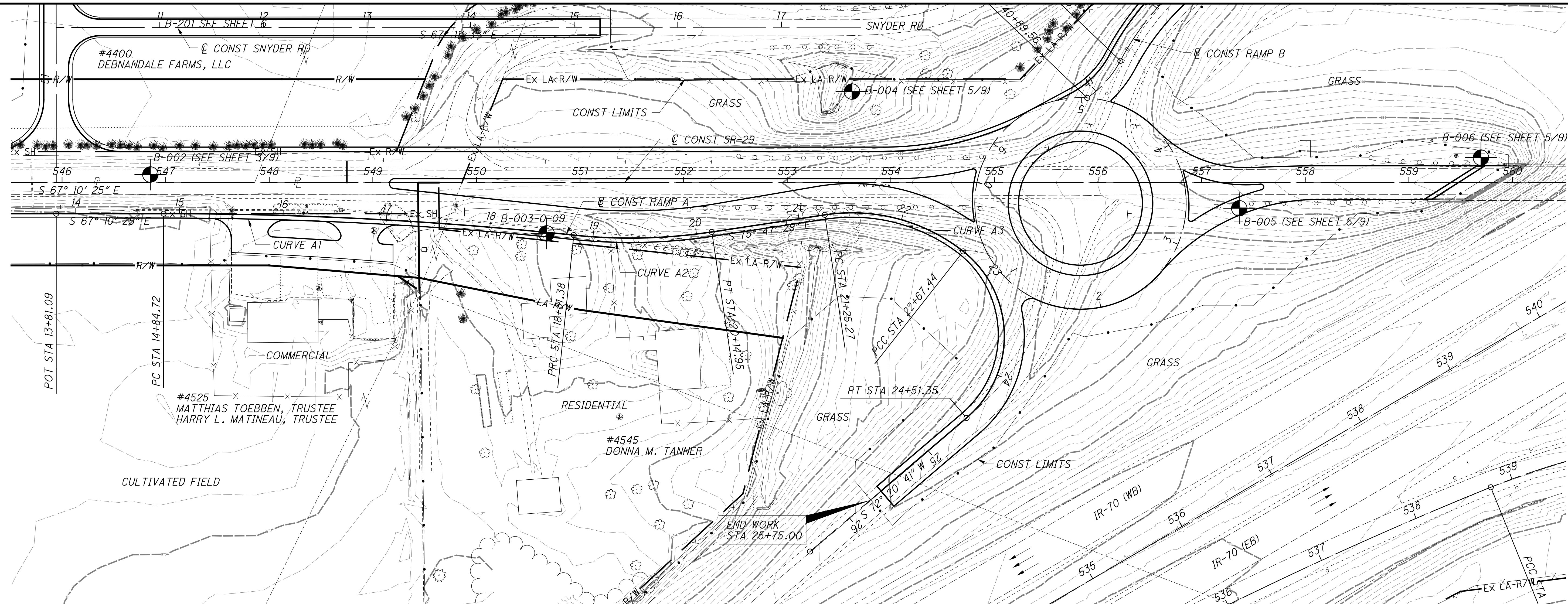
SOIL PROFILE
SNYDER ROAD

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HORIZONTAL SCALE IN FEET

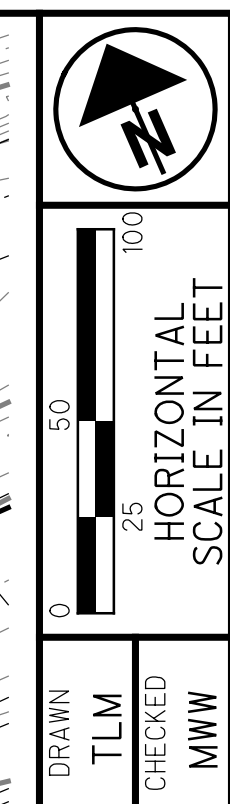
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SOIL PROFILE
RAMP A

MAD-70-10.27

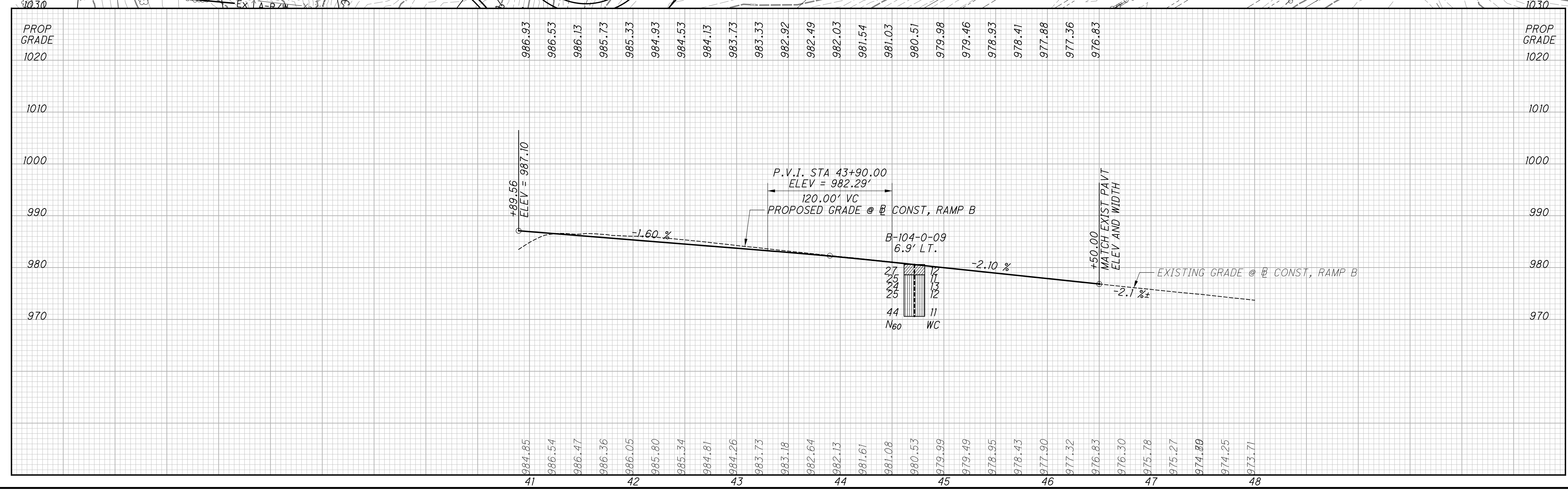
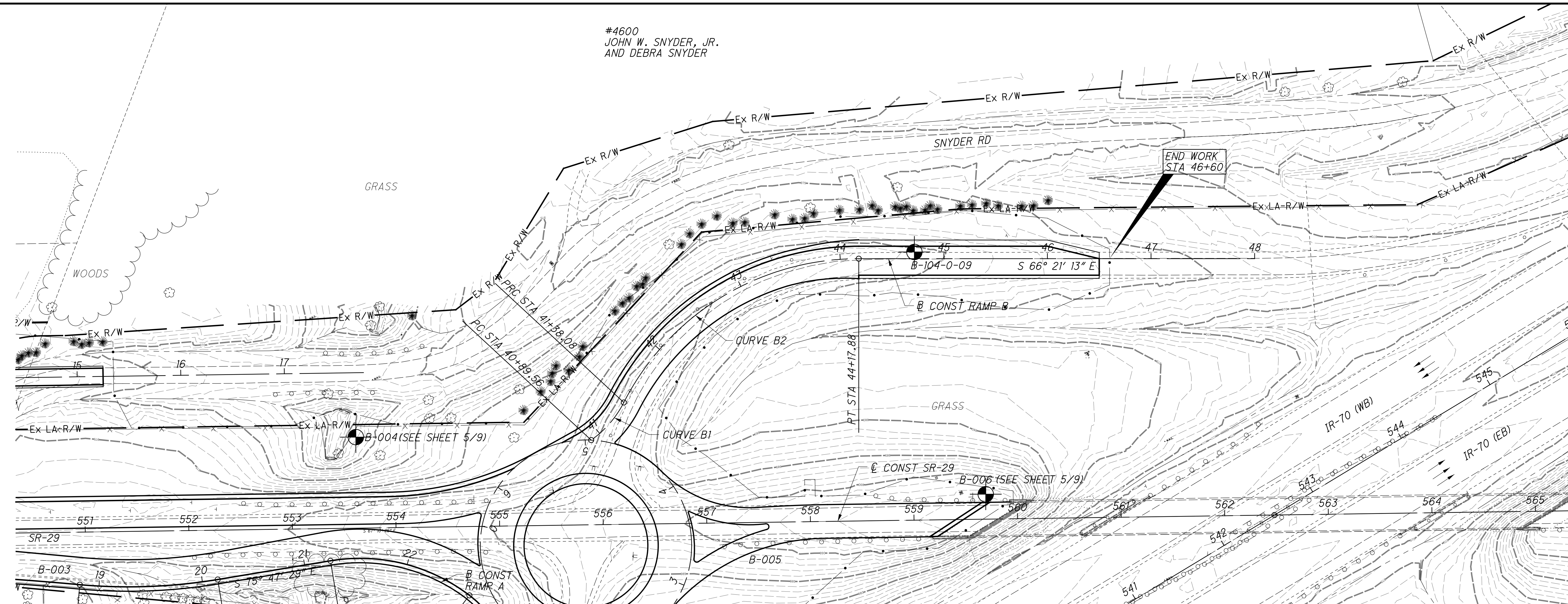
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#4600
JOHN W. SNYDER, JR.
AND DEBRA SNYDER

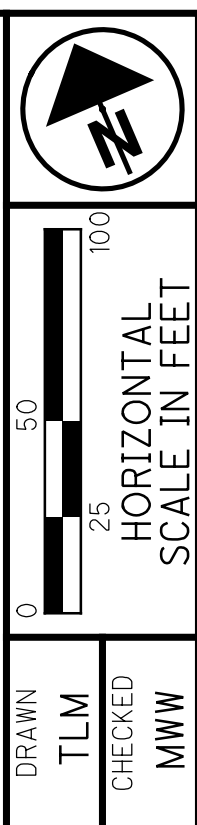
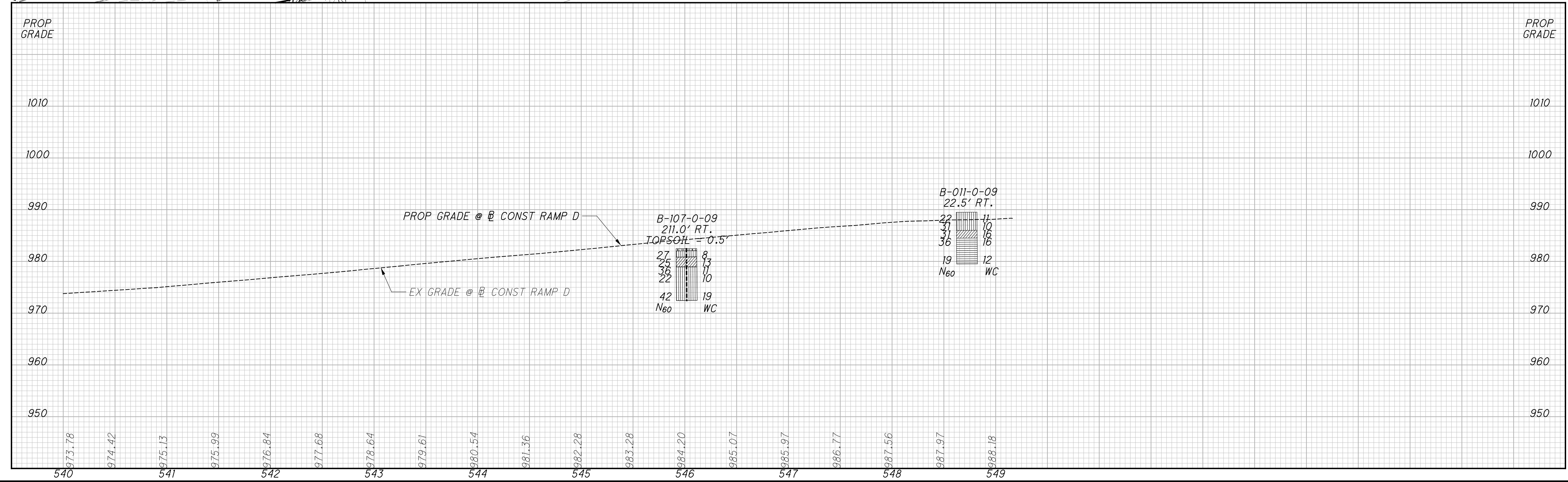
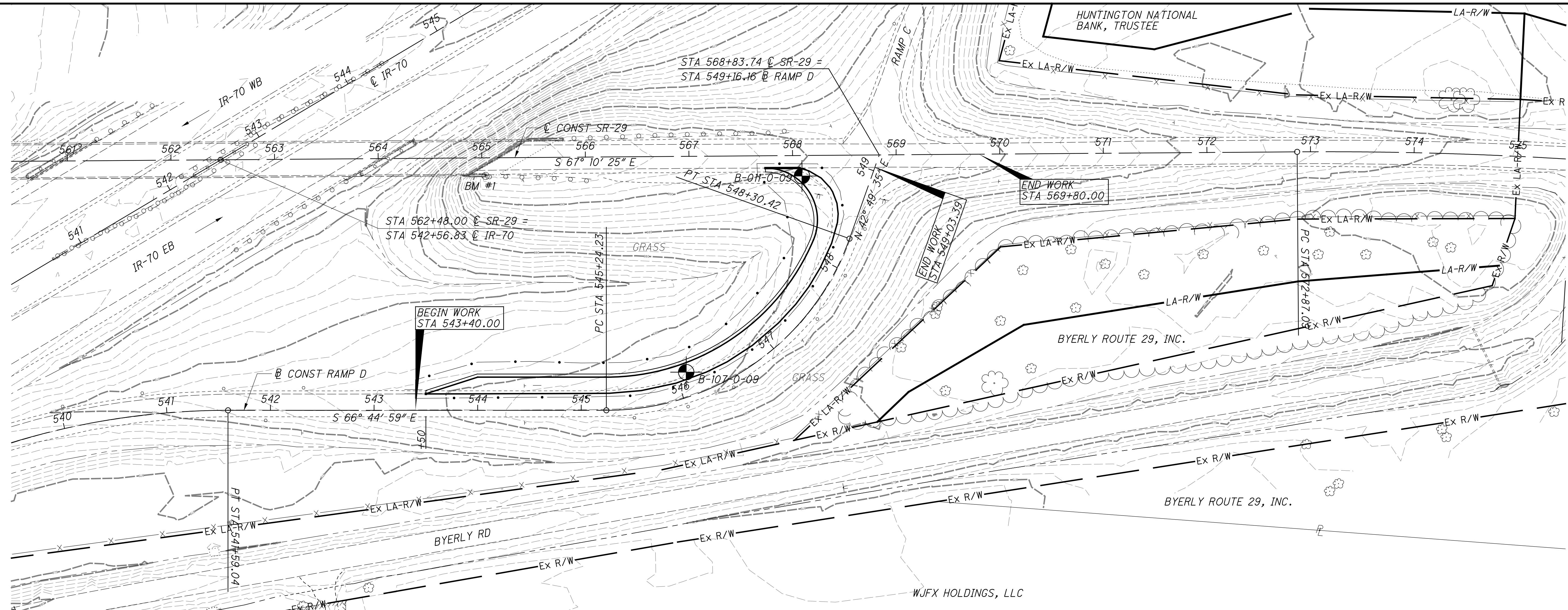


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SOIL PROFILE
RAMP B



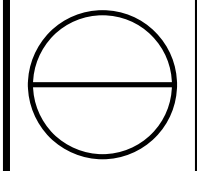
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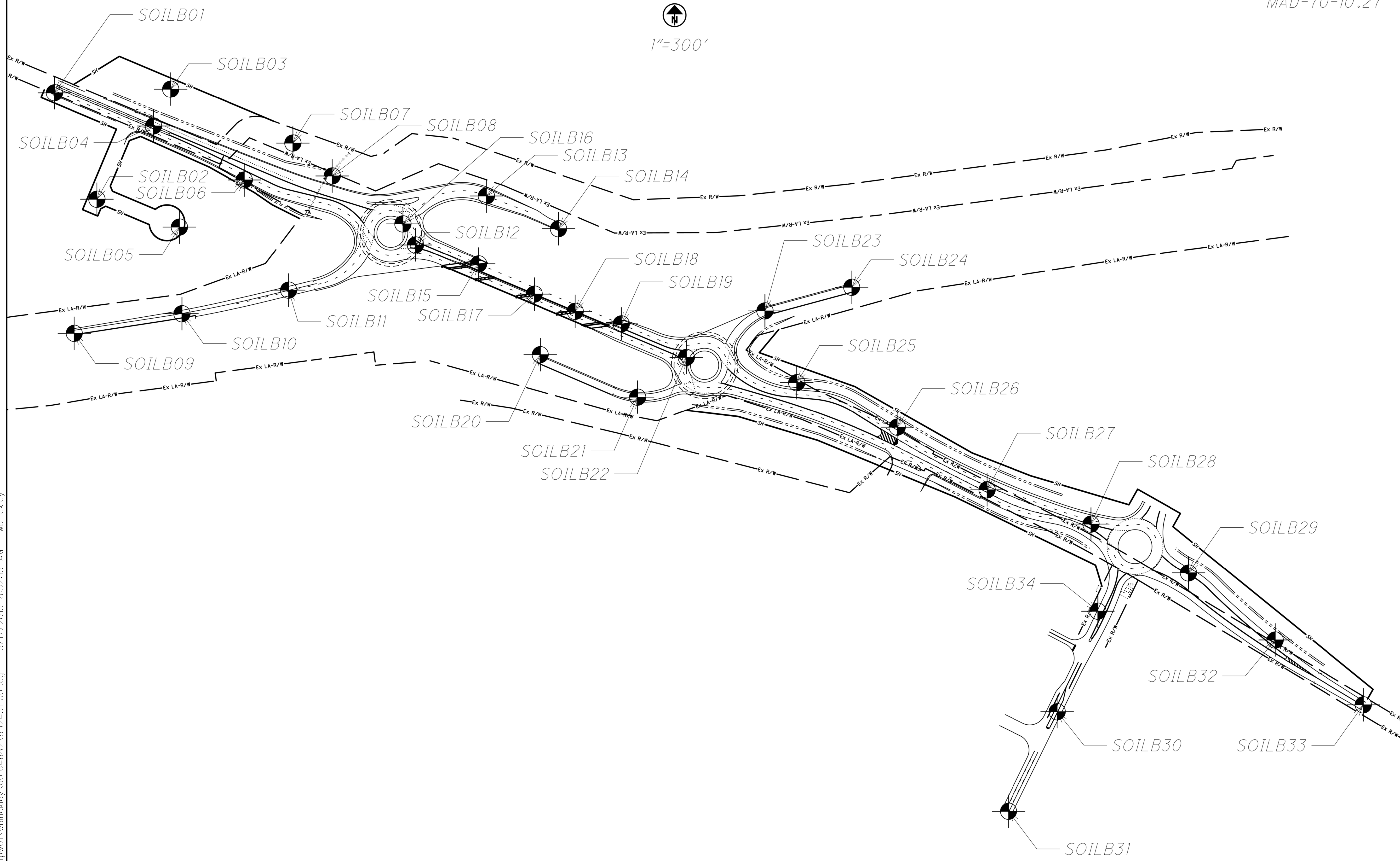


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**SOIL PROFILE
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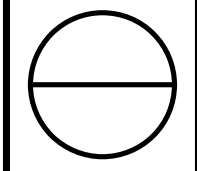
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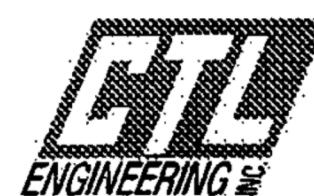


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BORING LOG SCHEMATIC PLAN



CTL Engineering, Inc.
 2860 Fisher Road, PO Box 44548
 Columbus, Ohio 43204
 Phone: 614/276-8123 Fax: 614/276-6377



AN EMPLOYEE OWNED COMPANY

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Established 1927

Hydraulic Conductivity - Method C - ASTM D 5084

Client: WD Transportation	Date Tested: 9/14-9/15/2009
Project: MAD-70-10.27	Project #: 09050096COL
Sample: B-002 ST-4, 4'-6'	Technician(s): AC/SM
	Reviewed by: JG

Confining Pressure, Cp =	60 psi	or	4220 cm water
Head Pressure (air), Hp =	58 psi	or	4080 cm water
Back Pressure (air), Bp =	56 psi	or	3939 cm water
Pipette Area, a =	0.869 cm ²	(0.869(pipette), 3.476(annulus) or 4.345(both))	
Pipette Length, Lp =	28.77 cm		
Pipette Volume, Vp =	25 cm ³	Vo = Pipette reading out	
Sample Length, L =	7.491 cm	Vi = Pipette reading in	
Sample Area, A =	40.434 cm ²	t = Time in seconds	
Temperature, T =	23.7 deg.C		

$$K = (aL/2At) * \frac{\ln[(Hp - Bp + ((Vo - Vi) * Lp / Vp))]}{(Hp - Bp + ((Vo - Vi) * Lp / Vp))} \quad (t = 1)$$

$$(t = 2)$$

Permeation									
Date	Time	t (sec)	Vi*	dVi	Vo*	dVo	dVo/dVi	K	Notes
09/14/09	11:46	0	6.7	---	23.4	---	---	---	INITIAL
	11:51	300	7.3	0.6	22.9	0.5	0.83	2.1E-06	
	11:59	480	8.2	0.9	22.1	0.8	0.89	2.1E-06	
	12:09	540	9.2	1.0	21.2	0.9	0.90	2.1E-06	
	12:18	540	10.1	0.9	20.3	0.9	1.00	2.0E-06	FINAL

* Inner Pipette

Specimen Information:

Type of Permeant: Distilled Water

Average of four consecutive readings: 2.1E-06 cm/sec
 Corrected permeability (K₂₀): 1.9E-06 cm/sec

Weight (lbs): 1.473	Initial Moisture Content (%): 12.3
Height (in): 2.949	Initial Dry Unit Weight (pcf): 122.6
Diameter (in): 2.825	Initial Volume (ft ³): 0.0107
Height-to-Diameter Ratio: 1.044	Initial Saturation (%): 88.6
Specific Gravity (assumed): 2.7	Final Moisture Content (%): 14.8
β: 1	Final Dry Unit Weight (pcf): 120.4
	Final Volume(ft ³): 0.0107
	Final Saturation (%): 100.2

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Hydraulic Conductivity - Method C - ASTM D 5084

Client: WD Transportation	Date Tested: 9/14-9/18/2009
Project: MAD-70-10.27	Project #: 09050096COL
Sample: B-002, 8'-10'	Technician(s): AC/SM
	Reviewed by: JG

Confining Pressure, Cp =	60 psi	or	4220 cm water
Head Pressure (air), Hp =	54 psi	or	3798 cm water
Back Pressure (air), Bp =	52 psi	or	3658 cm water
Pipette Area, a =	0.869 cm ²	(0.869(pipette), 3.476(annulus) or 4.345(both))	
Pipette Length, Lp =	28.77 cm		
Pipette Volume, Vp =	25 cm ³	Vo = Pipette reading out	
Sample Length, L =	7.006 cm	Vi = Pipette reading in	
Sample Area, A =	41.510 cm ²	t = Time in seconds	
Temperature, T =	23.5 deg.C		

$$K = (aL/2At) * \frac{\ln[(Hp - Bp + ((Vo - Vi) * Lp / Vp))]}{(Hp - Bp + ((Vo - Vi) * Lp / Vp))} \quad (t = 1)$$

$$(t = 2)$$

Permeation									
Date	Time	t (sec)	Vi*	dVi	Vo*	dVo	dVo/dVi	K	Notes
09/16/09	10:50	0	0.4	---	22.4	---	---	---	INITIAL
	15:48	18300	1.0	0.6	21.7	0.7	1.17	3.6E-08	
09/17/09	08:22	59220	2.7	1.7	19.8	1.9	1.12	3.2E-08	
	16:32	29400	3.4	0.7	19.2	0.6	0.86	2.3E-08	
09/18/09	07:52	55200	4.6	1.2	18.0	1.2	1.00	2.3E-08	FINAL

* Inner Pipette

Specimen Information:

Type of Permeant: Distilled Water

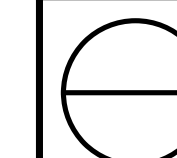
Average of four consecutive readings: 2.9E-08 cm/sec
 Corrected permeability (K₂₀): 2.6E-08 cm/sec

Weight (lbs): 1.441	Initial Moisture Content (%): 13.2
Height (in): 2.758	Initial Dry Unit Weight (pcf): 123.9
Diameter (in): 2.862	Initial Volume (ft ³): 0.0103
Height-to-Diameter Ratio: 0.964	Initial Saturation (%): 99.1
Specific Gravity (assumed): 2.7	Final Moisture Content (%): 13.0
β: 0.98	Final Dry Unit Weight (pcf): 127.3
	Final Volume(ft ³): 0.0100
	Final Saturation (%): 108.5

c:\pwworking\gfpw01\wbncnkley\40164682\832451L003.dgn 5/17/2013 8:34:37 AM wbncnkley

LABORATORY TEST RESULTS

MAD-70-10.27



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Hydraulic Conductivity - Method C - ASTM D 5084

Client: WD Transportation	Date Tested: 10/21- 10/30/2009
Project: MAD-70-10.27	Project #: 09050096COL
Sample: B-003, 1'-3'	Technician(s): SM/MW/AC
	Reviewed by: JG

Confining Pressure, Cp = 54 psi or 3798 cm water
 Head Pressure (air), Hp = 52 psi or 3658 cm water
 Back Pressure (air), Bp = 50 psi or 3517 cm water
 Pipette Area, a = 0.869 cm² (0.869(pipette), 3.476(annulus) or 4.345(both))
 Pipette Length, Lp = 28.77 cm
 Pipette Volume, Vp = 25 cm³ Vo = Pipette reading out
 Sample Length, L = 7.150 cm Vi = Pipette reading in
 Sample Area, A = 41.360 cm² t = Time in seconds
 Temperature, T = 22.9 deg.C

$$K = (aL/2At) * \frac{\ln[(Hp - Bp + ((Vo - Vi) * Lp / Vp))]}{(Hp - Bp + ((Vo - Vi) * Lp / Vp))} \quad (t = 1)$$

$$(t = 2)$$

Permeation									
Date	Time	t (sec)	Vi*	dVi	Vo*	dVo	dVo/dVi	K	Notes
10/27/09	13:11	0	4.0	---	23.9	---	---	---	INITIAL
	15:49	9480	4.9	0.9	23.2	0.7	0.78	9.0E-08	
10/28/09	08:34	60300	7.9	3.0	20.2	3.0	1.00	5.4E-08	
	17:09	30900	9.1	1.2	18.8	1.4	1.17	4.7E-08	
10/29/09	08:31	55260	11.3	2.2	16.5	2.3	1.05	4.7E-08	
	13:57	19560	12.1	0.8	15.9	0.6	0.75	4.2E-08	FINAL

* Inner Pipette

Specimen Information:
Type of Permeant: Distilled Water

Average of four consecutive readings: 4.8E-08 cm/sec
 Corrected permeability (K₂₀): 4.5E-08 cm/sec

Weight (lbs): 1.408	Initial Moisture Content (%): 12.1
Height (in): 2.815	Initial Dry Unit Weight (pcf): 120.3
Diameter (in): 2.857	Initial Volume (ft ³): 0.0104
Height-to-Diameter Ratio: 0.985	Initial Saturation (%): 81.5
Specific Gravity (assumed): 2.7	Final Moisture Content (%): 13.4
β: 1.0	Final Dry Unit Weight (pcf): 119.2
	Final Volume(ft ³): 0.0104
	Final Saturation (%): 87.5

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Hydraulic Conductivity - Method C - ASTM D 5084

Client: WD Transportation	Date Tested: 10/21- 10/30/2009
Project: MAD-70-10.27	Project #: 09050096COL
Sample: B-003, 3'-5'	Technician(s): SM/MW/AC
	Reviewed by: JG

Confining Pressure, Cp = 54 psi or 3798 cm water
 Head Pressure (air), Hp = 52 psi or 3658 cm water
 Back Pressure (air), Bp = 50 psi or 3517 cm water
 Pipette Area, a = 0.869 cm² (0.869(pipette), 3.476(annulus) or 4.345(both))
 Pipette Length, Lp = 28.77 cm
 Pipette Volume, Vp = 25 cm³ Vo = Pipette reading out
 Sample Length, L = 7.545 cm Vi = Pipette reading in
 Sample Area, A = 42.175 cm² t = Time in seconds
 Temperature, T = 22.3 deg.C

$$K = (aL/2At) * \frac{\ln[(Hp - Bp + ((Vo - Vi) * Lp / Vp))]}{(Hp - Bp + ((Vo - Vi) * Lp / Vp))} \quad (t = 1)$$

$$(t = 2)$$

Permeation									
Date	Time	t (sec)	Vi*	dVi	Vo*	dVo	dVo/dVi	K	Notes
10/27/09	13:10	0	6.2	---	21.8	---	---	---	INITIAL
	15:48	9480	6.8	0.6	21.3	0.5	0.83	6.6E-08	
	08:33	60300	10.2	3.4	17.8	3.5	1.03	6.7E-08	
	17:10	31020	11.8	1.6	16.3	1.5	0.94	6.1E-08	
10/29/09	08:30	55200	14.6	2.8	13.5	2.8	1.00	6.4E-08	FINAL

* Inner Pipette

Specimen Information:
Type of Permeant: Distilled Water

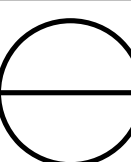
Average of four consecutive readings: 6.4E-08 cm/sec
 Corrected permeability (K₂₀): 6.1E-08 cm/sec

Weight (lbs): 1.541	Initial Moisture Content (%): 12.5
Height (in): 2.97	Initial Dry Unit Weight (pcf): 121.9
Diameter (in): 2.885	Initial Volume (ft ³): 0.0112
Height-to-Diameter Ratio: 1.03	Initial Saturation (%): 88.4
Specific Gravity (assumed): 2.7	Final Moisture Content (%): 12.8
β: 0.99	Final Dry Unit Weight (pcf): 125.3
	Final Volume(ft ³): 0.0109
	Final Saturation (%): 100.4

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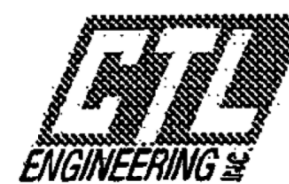
LABORATORY TEST RESULTS

MAD-70-10.27



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Hydraulic Conductivity - Method C - ASTM D 5084

Client: WD Transportation	Date Tested: 9/14-9/15/2009
Project: MAD-70-10.27	Project #: 09050096COL
Sample: B-004, 4'-6'	Technician(s): AC/SM
	Reviewed by: JG

Confining Pressure, Cp = 60 psi or 4220 cm water
 Head Pressure (air), Hp = 58 psi or 4080 cm water
 Back Pressure (air), Bp = 56 psi or 3939 cm water
 Pipette Area, a = 0.869 cm² (0.869(pipette), 3.476(annulus) or 4.345(both))
 Pipette Length, Lp = 28.77 cm
 Pipette Volume, Vp = 25 cm³ Vo = Pipette reading out
 Sample Length, L = 7.512 cm Vi = Pipette reading in
 Sample Area, A = 39.499 cm² t = Time in seconds
 Temperature, T = 23.7 deg. C

$$K = (aL/2At) * \frac{\ln[(Hp - Bp + ((Vo - Vi) * Lp / Vp))]}{(Hp - Bp + ((Vo - Vi) * Lp / Vp))} \quad (t = 1)$$

$$(t = 2)$$

Permeation									
Date	Time	t (sec)	Vi*	dVi	Vo*	dVo	dVo/dVi	K	Notes
09/14/09	11:44	0	2.4	---	22.2	---	---	---	INITIAL
	11:48	240	2.6	0.2	22.0	0.2	1.00	9.7E-07	
	12:08	1200	3.0	0.4	21.7	0.3	0.75	3.4E-07	
	12:18	600	3.2	0.2	21.5	0.2	1.00	3.9E-07	
	12:31	780	3.4	0.2	21.3	0.2	1.00	3.0E-07	
	12:47	960	3.6	0.2	21.1	0.2	1.00	2.5E-07	FINAL

* Inner Pipette

Specimen Information:
Type of Permeant: Distilled Water

Average of four consecutive readings: 3.2E-07 cm/sec
 Corrected permeability (K₂₀): 2.9E-07 cm/sec

Weight (lbs): 1.527	Initial Moisture Content (%): 8.6
Height (in): 2.958	Initial Dry Unit Weight (pcf): 134.1
Diameter (in): 2.792	Initial Volume (ft ³): 0.0105
Height-to-Diameter Ratio: 1.059	Initial Saturation (%): 90.8
Specific Gravity (assumed): 2.7	Final Moisture Content (%): 12.0
β: 1	Final Dry Unit Weight (pcf): 129.4
	Final Volume(ft ³): 0.0105
	Final Saturation (%): 106.6

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Hydraulic Conductivity - Method C - ASTM D 5084

Client: WD Transportation	Date Tested: 9/14-9/15/2009
Project: MAD-70-10.27	Project #: 09050096COL
Sample: B-014 ST-2, 2.5'-4.5'	Technician(s): AC/SM
	Reviewed by: JG

Confining Pressure, Cp = 60 psi or 4220 cm water
 Head Pressure (air), Hp = 58.5 psi or 4115 cm water
 Back Pressure (air), Bp = 57 psi or 4009 cm water
 Pipette Area, a = 0.869 cm² (0.869(pipette), 3.476(annulus) or 4.345(both))
 Pipette Length, Lp = 28.77 cm
 Pipette Volume, Vp = 25 cm³ Vo = Pipette reading out
 Sample Length, L = 7.231 cm Vi = Pipette reading in
 Sample Area, A = 38.669 cm² t = Time in seconds
 Temperature, T = 22.2 deg. C

$$K = (aL/2At) * \frac{\ln[(Hp - Bp + ((Vo - Vi) * Lp / Vp))]}{(Hp - Bp + ((Vo - Vi) * Lp / Vp))} \quad (t = 1)$$

$$(t = 2)$$

Permeation									
Date	Time	t (sec)	Vi*	dVi	Vo*	dVo	dVo/dVi	K	Notes
09/14/09	11:45	0	2.3	---	22.0	---	---	---	INITIAL
	14:27	9720	2.7	0.4	21.7	0.3	0.75	5.3E-08	
	16:27	7200	3.0	0.3	21.4	0.3	1.00	6.1E-08	
09/15/09	07:59	55920	4.8	1.8	19.5	1.9	1.06	5.0E-08	
	13:20	19260	5.5	0.7	18.9	0.6	0.86	5.2E-08	FINAL

* Inner Pipette

Specimen Information:
Type of Permeant: Distilled Water

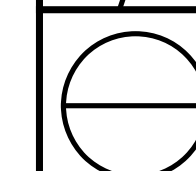
Average of four consecutive readings: 5.4E-08 cm/sec
 Corrected permeability (K₂₀): 5.1E-08 cm/sec

Weight (lbs): 1.206	Initial Moisture Content (%): 10.8
Height (in): 2.847	Initial Dry Unit Weight (pcf): 110.3
Diameter (in): 2.763	Initial Volume (ft ³): 0.0099
Height-to-Diameter Ratio: 1.031	Initial Saturation (%): 55.1
Specific Gravity (assumed): 2.7	Final Moisture Content (%): 30.6
β: 1	Final Dry Unit Weight (pcf): 93.1
	Final Volume(ft ³): 0.0099
	Final Saturation (%): 101.8

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LABORATORY TEST RESULTS

MAD-70-10.27



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Hydraulic Conductivity - Method C - ASTM D 5084

Client: WD Transportation	Date Tested: 9/14-9/18/2009
Project: MAD-70-10.27	Project #: 09050096COL
Sample: B-106, 5'-7'	Technician(s): AC/SM
	Reviewed by: JG

Confining Pressure, Cp =	60 psi	or	4220 cm water
Head Pressure (air), Hp =	57.5 psi	or	4045 cm water
Back Pressure (air), Bp =	55 psi	or	3869 cm water
Pipette Area, a =	0.869 cm ²	(0.869(pipette), 3.476(annulus) or 4.345(both))	
Pipette Length, Lp =	28.77 cm		
Pipette Volume, Vp =	25 cm ³	Vo = Pipette reading out	
Sample Length, L =	7.084 cm	Vi = Pipette reading in	
Sample Area, A =	40.134 cm ²	t = Time in seconds	
Temperature, T =	23.5 deg.C		

$$K = (aL/2At) * \frac{\ln[(Hp - Bp + ((Vo - Vi) * Lp / Vp))]}{(Hp - Bp + ((Vo - Vi) * Lp / Vp))} \quad (t = 1)$$

$$(t = 2)$$

Permeation									
Date	Time	t (sec)	Vi*	dVi	Vo*	dVo	dVo/dVi	K	Notes
09/16/09	10:52	0	1.0	---	23.3	---	---	---	INITIAL
	13:51	10740	1.8	0.8	23.1	0.2	0.20	3.9E-08	
	15:49	7080	2.0	0.2	22.9	0.2	1.20	2.7E-08	
09/17/09	08:24	59700	3.5	1.5	21.7	1.2	0.80	2.0E-08	
	14:59	23700	4.4	0.9	21.0	0.7	0.78	3.0E-08	
09/18/09	08:00	61260	5.8	1.4	19.9	1.1	0.79	1.9E-08	FINAL

* Inner Pipette

Specimen Information:
Type of Permeant: Distilled Water

Average of four consecutive readings: 2.4E-08 cm/sec
Corrected permeability (K₂₀): 2.2E-08 cm/sec

Weight (lbs): 1.245	Initial Moisture Content (%): 19.1
Height (in): 2.789	Initial Dry Unit Weight (pcf): 104.1
Diameter (in): 2.814	Initial Volume (ft ³): 0.0100
Height-to-Diameter Ratio: 0.991	Initial Saturation (%): 83.1
Specific Gravity (assumed): 2.7	Final Moisture Content (%): 28.5
β: 1	Final Dry Unit Weight (pcf): 93.9
	Final Volume(ft ³): 0.0106
	Final Saturation (%): 96.7

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Hydraulic Conductivity - Method C - ASTM D 5084

Client: WD Transportation	Date Tested: 9/14-9/18/2009
Project: MAD-70-10.27	Project #: 09050096COL
Sample: B-106 12'-14'	Technician(s): AC/SM
	Reviewed by: JG

Confining Pressure, Cp =	60 psi	or	4220 cm water
Head Pressure (air), Hp =	51 psi	or	3587 cm water
Back Pressure (air), Bp =	49 psi	or	3447 cm water
Pipette Area, a =	0.869 cm ²	(0.869(pipette), 3.476(annulus) or 4.345(both))	
Pipette Length, Lp =	28.77 cm		
Pipette Volume, Vp =	25 cm ³	Vo = Pipette reading out	
Sample Length, L =	6.804 cm	Vi = Pipette reading in	
Sample Area, A =	39.944 cm ²	t = Time in seconds	
Temperature, T =	23.5 deg.C		

$$K = (aL/2At) * \frac{\ln[(Hp - Bp + ((Vo - Vi) * Lp / Vp))]}{(Hp - Bp + ((Vo - Vi) * Lp / Vp))} \quad (t = 1)$$

$$(t = 2)$$

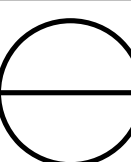
Permeation									
Date	Time	t (sec)	Vi*	dVi	Vo*	dVo	dVo/dVi	K	Notes
09/16/09	10:48	0	3.3	---	22.1	---	---	---	INITIAL
	13:49	10860	9.0	5.7	21.7	0.4	0.07	3.0E-07	
	15:47	7080	9.2	0.2	21.5	0.2	0.80	2.8E-08	
09/17/09	08:21	59640	10.5	1.3	20.0	1.5	1.18	2.6E-08	
	11:41	12000	10.8	0.3	19.7	0.3	1.00	2.8E-08	
09/18/09	07:51	72600	12.2	1.4	18.0	1.7	1.21	2.4E-08	FINAL

* Inner Pipette

Specimen Information:
Type of Permeant: Distilled Water

Average of four consecutive readings: 2.7E-08 cm/sec
Corrected permeability (K₂₀): 2.5E-08 cm/sec

Weight (lbs): 1.345	Initial Moisture Content (%): 13.1
Height (in): 2.679	Initial Dry Unit Weight (pcf): 123.9
Diameter (in): 2.808	Initial Volume (ft ³): 0.0096
Height-to-Diameter Ratio: 0.954	Initial Saturation (%): 98.0
Specific Gravity (assumed): 2.7	Final Moisture Content (%): 15.2
β: 0.96	Final Dry Unit Weight (pcf): 118.6
	Final Volume(ft ³): 0.0099
	Final Saturation (%): 97.5



PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MK	DRILL RIG: CME 75 T-296	STATION / OFFSET: 543+00.7 RT	EXPLORATION ID: B-001-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MK	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 980.5 (MSL) EOB: 6.5 ft.	PAGE: 1 OF 1
START: 8/10/09 END: 8/10/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 715484.441 N, 1729956.386 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Asphalt concrete (10")	979.7	1															
Portland Cement concrete (8")	979.0	2															
Base course (8")	978.3	3	3	10	67	SS-1	2.50	0	1	6	44	49	61	32	29	35	A-7-5 (20)
STIFF, BLACK, ELASTIC CLAY, AND SILT, TRACE SAND, FILL, MOIST	977.5	4	4	13	56	SS-2	3.00	0	1	7	43	49	52	24	28	25	A-7-6 (18)
STIFF, BROWN, CLAY, AND SILT, TRACE SAND, MOIST		5	3	4	12	SS-3	2.00	0	1	8	37	54	53	23	30	29	A-7-6 (19)
	974.0	6	4														

EOB

NOTES: NO GROUNDWATER ENCOUNTERED DURING DRILLING. DRY AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:46 - C:\USER\STMONAC\DESKTOP\0650960\COL (2).GDT

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MK	DRILL RIG: CME 75 T-296	STATION / OFFSET: 546+83.5 LT	EXPLORATION ID: B-002-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MK	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 980.2 (MSL) EOB: 20.0 ft.	PAGE: 1 OF 1
START: 8/10/09 END: 8/10/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 715347.376 N, 1730313.226 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Asphalt concrete (12")	979.2	1															
Portland cement concrete (9")	978.8	2															
Base course (7")	977.9	3	2	10	56	SS-1	3.50	28	4	15	34	19	28	16	12	22	A-6a (4)
STIFF, BROWN, SILT AND CLAY, SOME GRAVEL, LITTLE SAND, FILL, MOIST	976.7	4	3	9	44	SS-2	3.50	0	0	7	43	50	55	25	30	25	A-7-6 (19)
STIFF, BROWN, CLAY, AND SILT, TRACE SAND, DAMP	975.2	5	3	4	13	SS-3	4.00	6	13	16	39	26	30	18	12	23	A-6a (7)
STIFF, BROWN, SILT AND CLAY, SOME SAND, TRACE GRAVEL, MOIST	973.7	6	4	5		ST-4	-	10	10	14	40	26	26	16	10	13	A-4a (6)
		7															
		8	4	4	13	SS-5	4.00	10	11	15	38	26	24	16	8	14	A-4a (6)
		9	5			ST-6	-	15	10	13	38	24	25	16	9	13	A-4a (5)
		10	3	3	10	SS-7	4.00	-	-	-	-	-	-	-	-	15	A-4a (V)
		11	3	4													
	967.7	12															
VERY STIFF, GRAY, SANDY SILT, LITTLE CLAY, TRACE GRAVEL WITH COBBLES, TILL, DAMP		13	7	7	28	SS-8	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)
@ 15.0'; HARD		14															
		15	9	15	46	SS-9	4.50	6	10	29	39	16	17	12	5	8	A-4a (4)
GRAVEL AND/OR STONE FRAGMENTS WITH SAND	963.2	16	16														
HARD, BROWN, SANDY SILT, SOME CLAY, TILL, DAMP	961.7	17															
		18															
		19	9	11	39	SS-10	4.50	0	11	28	39	22	19	12	7	8	A-4a (5)
	960.2	20	15														

EOB

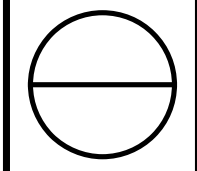
NOTES: GROUNDWATER ENCOUNTERED @ 17.0' DURING DRILLING. 14.0' AT COMPLETION
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:46 - C:\USER\STMONAC\DESKTOP\0650960\COL (2).GDT

c:\pwworking\gfpw01\wbinkley\d0164682\83245\1L002.dgn 5/17/2013 8:40:57 AM wbinkley

BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MF	DRILL RIG: CME 75 T-349	STATION / OFFSET: 557+34, 27 RT	EXPLORATION ID: B-005-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MF	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 1000.2 (MSL) EOB: 10.0 ft.	PAGE: 1 OF 1
START: 7/21/09 END: 7/21/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 85	COORD: 714986.459 N, 1731223.435 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. (ft)	DEPTHS (ft)	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				INST.	
								GR	CS	FS	SI	CL	LL	PL	PI	WC		ODOT CLASS (GI)
MEDIUM STIFF, BROWN, SILT AND CLAY, SOME CLAY, SOME GRAVEL, FILL, DAMP	998.7	1	3	2	7	67	SS-1	3.50	21	11	12	34	22	29	17	12	16	A-6a (5)
STIFF, BROWN, SANDY SILT, SOME CLAY, LITTLE GRAVEL, FILL, DAMP	997.2	2	4	4	10	56	SS-2	3.50	13	10	14	37	26	26	16	10	11	A-4a (6)
VERY STIFF, BROWN, SILTY CLAY, LITTLE SAND, DAMP	994.2	3	3	5	17	44	SS-3	4.00	0	3	12	47	38	37	20	17	19	A-6b (11)
		4	4	6	21	67	SS-4	4.00	-	-	-	-	-	-	-	-	15	A-6b (V)
STIFF, BROWN, CLAY, AND SILT, TRACE SAND, TRACE GRAVEL, MOIST	990.2	5	2	4	11	61	SS-5	4.00	1	2	8	44	45	48	22	26	24	A-7-6 (16)
@8.5'; VERY STIFF, DAMP		6	6	8	21	67	SS-6	4.00	-	-	-	-	-	-	-	-	10	A-7-6 (V)
		7																
		8																
		9																
		10																

NOTES: NO GROUNDWATER ENCOUNTERED DURING DRILLING, DRY AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:46 - C:\USERS\TMONACO\DESKTOP\09060906COL.GPJ

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MK	DRILL RIG: CME 75 T-296	STATION / OFFSET: 559+67, 22 LT	EXPLORATION ID: B-006-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MK	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 1001.9 (MSL) EOB: 75.0 ft.	PAGE: 1 OF 1
START: 6/30/09 END: 6/30/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 714864.169 N, 1731503.364 E	

MATERIAL DESCRIPTION AND NOTES	ELEV. (ft)	DEPTHS (ft)	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)					ATTERBERG				INST.		
								GR	CS	FS	SI	CL	LL	PL	PI	WC		ODOT CLASS (GI)	
Topsail (5")	1001.5																		
VERY STIFF, BROWN, SILT AND CLAY, SOME SAND, FILL, DAMP		2.5	5	6	19	78	SS-1	4.50	0	6	19	50	25	30	18	12	10	A-6a (9)	
@2.0'; TRACE GRAVEL		5.0	6	6	19	89	SS-2	4.50	6	8	16	39	31	32	17	15	12	A-6a (9)	
		7.5	7	8	21	94	SS-3	3.50	-	-	-	-	-	-	-	-	-	11	A-6a (V)
STIFF TO VERY STIFF, GRAY, CLAY, AND SILT, TRACE SAND, POSSIBLE FILL, MOIST	996.9	5.0	5	6	16	100	SS-4	3.50	0	2	8	43	47	42	21	21	23	A-7-6 (13)	
@7.5'; COBBLES, DAMP		7.5	5	6	18	94	SS-5	3.50	-	-	-	-	-	-	-	-	-	18	A-7-6 (V)
		10.0	4	5	15	100	SS-6	3.00	-	-	-	-	-	-	-	-	-	13	A-7-6 (V)
VERY STIFF, BROWN AND GRAY, SILT AND CLAY, SOME SAND, TRACE GRAVEL WITH COBBLES, DAMP	989.4	12.5	15	15	37	89	SS-7	4.00	4	6	16	46	28	29	17	12	14	A-6a (9)	
@15.0'; STIFF		15.0	5	5	13	94	SS-8	3.50	-	-	-	-	-	-	-	-	-	19	A-6a (V)
No recovery		17.5	6	7	19	0	SS-9	-	-	-	-	-	-	-	-	-	-		
No recovery		20.0	5	5	18	0	SS-10	-	-	-	-	-	-	-	-	-	-		
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL WITH COBBLES, DAMP	979.4	22.5	5	6	21	94	SS-11	3.25	4	4	22	47	23	28	18	10	15	A-4a (7)	
@27.5'; HARD, WITH COBBLES AND BOULDERS, DRY		25.0	7	8	25	89	SS-12	4.00	-	-	-	-	-	-	-	-	-	15	A-4a (V)
@30.0'; HARD, TRACE CLAY, LITTLE GRAVEL, WITH COBBLES AND BOULDERS, DRY		27.5	18	19	76	67	SS-13	-	-	-	-	-	-	-	-	-	-	5	A-4a (V)
		30.0	18	10	44	89	SS-14	-	13	34	13	36	4	22	18	4	12	A-4a (1)	
DENSE, GRAY, GRAVEL AND/OR STONE FRAGMENTS, SOME SAND, LITTLE SILT, TRACE CLAY WITH COBBLES AND BOULDERS, WET	968.4	32.5	11	16	50	72	SS-15	-	53	21	12	11	3	NP	NP	NP	15	A-1-a (0)	
VERY STIFF, GRAY, SANDY SILT, LITTLE CLAY, TRACE GRAVEL, TILL, MOIST	964.9	37.5	7	7	21	56	SS-16	3.50	6	15	25	42	12	18	13	5	12	A-4a (4)	
VERY DENSE, GRAY, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, MOIST	959.9	42.5	17	18	74	72	SS-17	-	27	31	30	11	1	NP	NP	NP	14	A-1-b (0)	
HARD, GRAY, SANDY SILT, SOME CLAY, TRACE GRAVEL WITH COBBLES, TILL, DAMP	954.4	47.5	24	24	79	56	SS-18	4.50	5	7	24	40	24	24	14	10	10	A-4a (6)	
		50.0	21	25	111	83	SS-19	4.50	-	-	-	-	-	-	-	-	-	9	A-4a (V)
		52.5	42	50	-	83	SS-20	4.50	-	-	-	-	-	-	-	-	-	10	A-4a (V)
@63.5'; DRY		63.5	27	50	-	73	SS-21	4.00	4	11	23	42	20	24	15	9	7	A-4a (5)	
No recovery		67.5	50	4	-	0	SS-22	-	-	-	-	-	-	-	-	-	-		
@73.5'; DRY		73.5	48	50	-	78	SS-23	4.50	-	-	-	-	-	-	-	-	-	6	A-4a (V)
		75.0																	

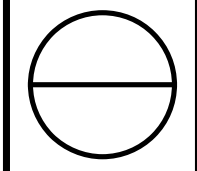
NOTES: GROUNDWATER ENCOUNTERED @ 33.0' DURING DRILLING, 20.0' AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (11 X 17) - OH.DOT.GDT - 4/11/13 12:43 - C:\USERS\TMONACO\DESKTOP\09060906COL.GPJ

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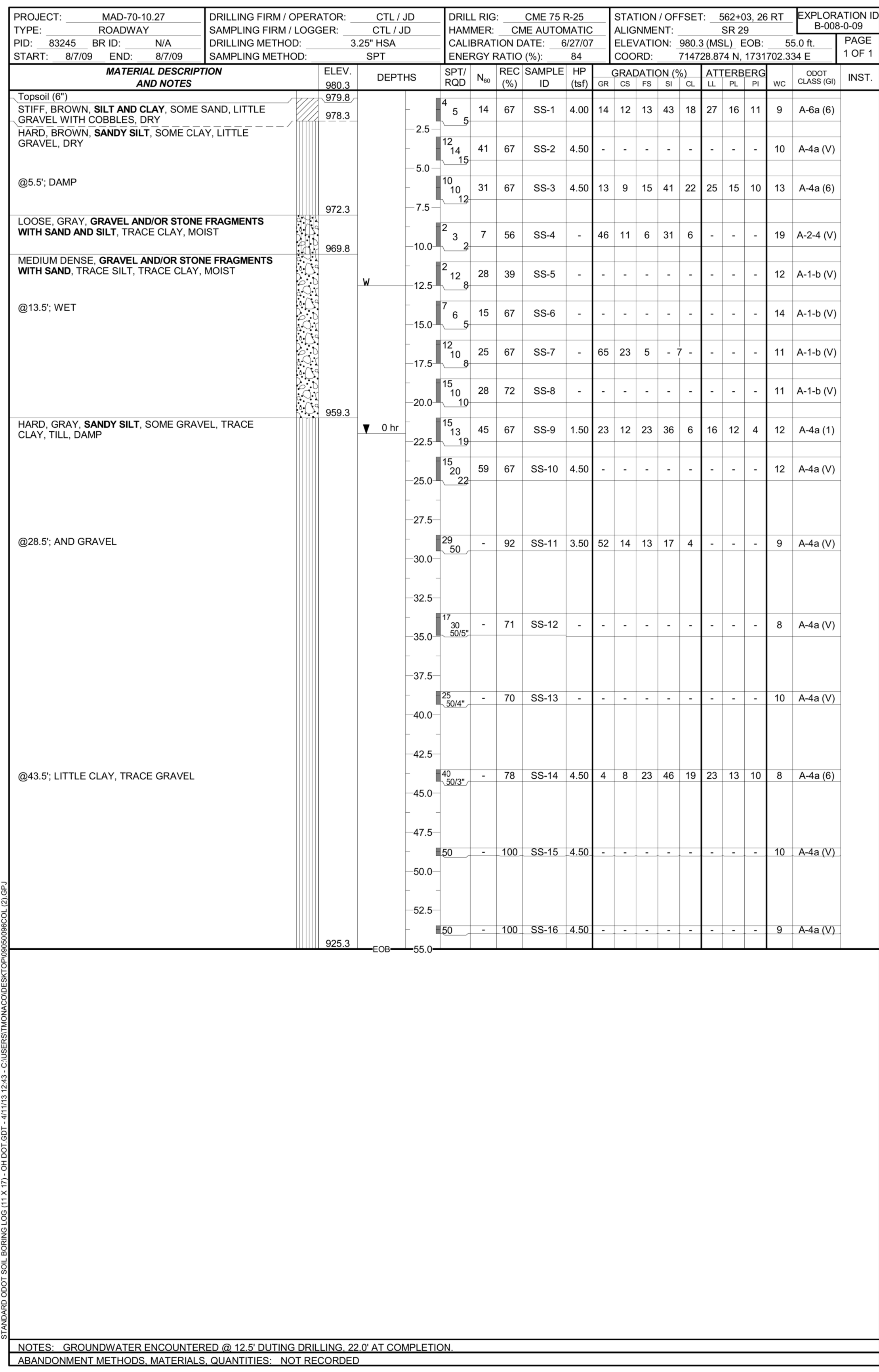
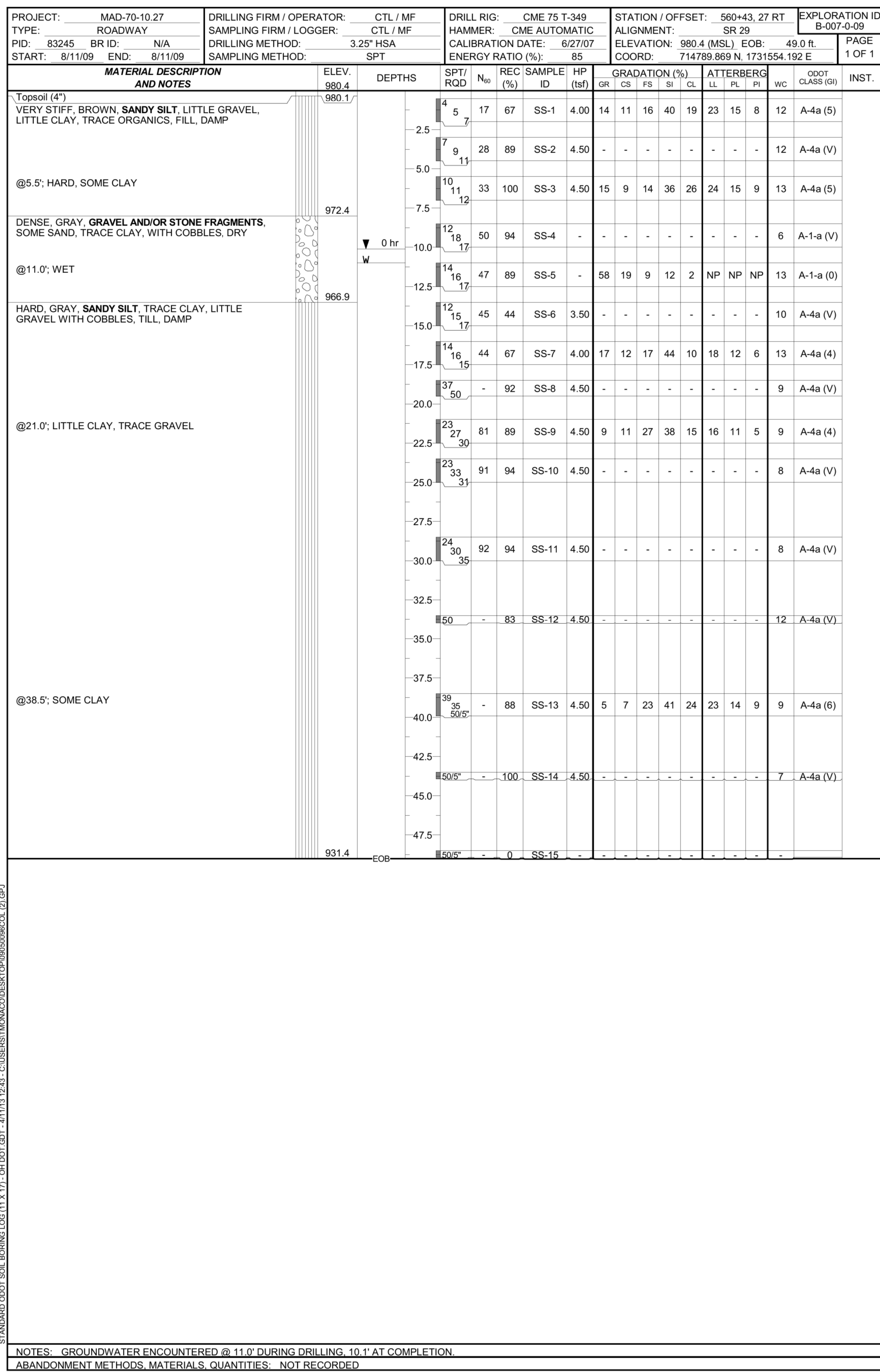
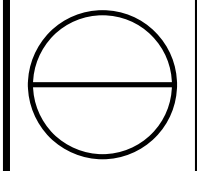
BORING LOGS

MAD-70-10.27



BORING LOGS

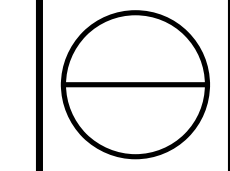
MAD-70-10.27



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BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / MF		DRILL RIG: CME 75 T-349		STATION / OFFSET: 564+00, 25 RT		EXPLORATION ID: B-009-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MF		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		ELEVATION: 979.5 (MSL) EOB: 50.0 ft	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 979.5 (MSL) EOB: 50.0 ft		PAGE: 1 OF 1	
START: 7/21/09 END: 7/21/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 85		COORD: 714666.465 N, 1731853.801 E			
MATERIAL DESCRIPTION AND NOTES									
Topsoil (5') VERY STIFF, BROWN, SANDY SILT, SOME GRAVEL, LITTLE CLAY									
@3.5'; HARD, LITTLE GRAVEL									
MEDIUM DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, WET									
@11.0'; DENSE, WITH COBBLES									
@13.5'; TRACE SILT, TRACE CLAY									
@16.0'; MEDIUM DENSE									
@18.5'; VERY DENSE, WITH COBBLES									
HARD, GRAY, SILT AND CLAY, SOME SAND, TRACE GRAVEL, TILL, DAMP									
HARD, GRAY, SANDY SILT, LITTLE CLAY, TRACE GRAVEL, DAMP									
HARD, GRAY, SANDY SILT, SOME CLAY, TRACE GRAVEL, TILL, DAMP									
@33.5'; DENSE									
@38.5'; GRAY									
HARD, GRAY, SANDY SILT, SOME CLAY, TRACE GRAVEL, TILL, DAMP									
@50.4'; - - - - - SS-14 4.50 - - - - - 7 A-4a (V)									
@50.5'; - - - - - SS-15 4.50 - - - - - 7 A-4a (V)									

NOTES: GROUNDWATER ENCOUNTERED @ 9.0' DURING DRILLING, HOLE GROUTED AFTER 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: 565+17, 26 RT		EXPLORATION ID: B-010-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MF		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		ELEVATION: 1002.5 (MSL) EOB: 60.0 ft	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 1002.5 (MSL) EOB: 60.0 ft		PAGE: 1 OF 1	
START: 7/23/09 END: 7/23/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 85		COORD: 714666.804 N, 1731992.095 E			
MATERIAL DESCRIPTION AND NOTES									
Topsoil (2') STIFF TO VERY STIFF, BROWN, SILT AND CLAY, AND SAND, LITTLE GRAVEL, FILL, DAMP									
@2.0'; VERY STIFF, SOME SAND, SOME GRAVEL									
@6.5'; TRACE GRAVEL									
STIFF TO VERY STIFF, GRAY, SILTY CLAY, TRACE SAND, TRACE GRAVEL, DAMP									
@11.0'; STIFF									
@16.0'; LITTLE SAND									
STIFF, GRAY, CLAY, AND SILT, LITTLE SAND, TRACE GRAVEL, DAMP									
MEDIUM DENSE TO DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, DAMP									
@23.5'; DENSE									
DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS, SOME SAND, TRACE SILT, TRACE CLAY, WET									
@33.5'; DENSE									
@38.5'; GRAY									
HARD, GRAY, SANDY SILT, SOME CLAY, TRACE GRAVEL, TILL, DAMP									
@50.4'; - - - - - SS-14 4.50 - - - - - 7 A-4a (V)									
@50.5'; - - - - - SS-15 4.50 - - - - - 7 A-4a (V)									

NOTES: GROUNDWATER ENCOUNTERED @ 28.5' DURING DRILLING, GROUTED AT COMPLETION.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

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STANDARD CDDT SOIL BORING LOG (11 X 17) - OH.DDT.GDT - 4/11/13 12:43 - C:\USERST\MONACOD\DESKTOP\06060606\COL (2).GPI

STANDARD CDDT SOIL BORING LOG (11 X 17) - OH.DDT.GDT - 4/11/13 12:43 - C:\USERST\MONACOD\DESKTOP\06060606\COL (2).GPI

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 568+06, 23 RT		EXPLORATION ID: B-011-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 997.7 (MSL) EOB: 10.0 ft.		PAGE: 1 OF 1	
START: 7/14/09 END: 7/14/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 714498.061 N, 1732259.954 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
VERY STIFF, BROWN, SANDY SILT, LITTLE CLAY, WITH ROCK FRAGMENTS, DAMP	997.7	1	5	22	56	SS-1	4.50	0	11	21	48	20	25	16	9	11	A-4a (7)
@2.0'; HARD	994.2	3	10	31	100	SS-2	4.50	-	-	-	-	-	-	-	-	10	A-4a (V)
HARD, BROWN, SILT AND CLAY, LITTLE SAND, DAMP	992.7	4	8	31	94	SS-3	4.50	0	1	18	55	26	28	17	11	16	A-6a (8)
HARD, BROWN, SILTY CLAY, SOME SAND, WITH ROCK FRAGMENTS, DAMP	992.7	5	10	36	100	SS-4	3.50	0	5	19	47	29	36	18	18	16	A-6b (11)
@8.5'; VERY STIFF	987.7	9	5	19	100	SS-5	3.00	-	-	-	-	-	-	-	-	12	A-6b (V)

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:46 - C:\USERS\TMONACODESKTOP\065096COL (2).GDT

NOTES: NONE
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / MF		DRILL RIG: CME 75 T-349		STATION / OFFSET: 572+12, 49 LT		EXPLORATION ID: B-012-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MF		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 982.2 (MSL) EOB: 20.0 ft.		PAGE: 1 OF 1	
START: 8/10/09 END: 8/10/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 85		COORD: 714405.837 N, 1732663.556 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Topsil (4')	982.2																
VERY STIFF, BROWN, CLAY, SOME SILT, LITTLE SAND, TRACE GRAVEL, FILL, DAMP	981.9	1	3	16	56	SS-1	4.00	2	4	9	35	50	62	27	35	24	A-7-6 (20)
HARD, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, TRACE ORGANICS, FILL, DAMP	980.2	2	11	34	67	SS-2	3.00	8	15	17	37	23	24	15	9	10	A-7-6 (20)
VERY STIFF, BROWN, SILT AND CLAY, SOME SAND, LITTLE GRAVEL, TILL, DAMP	978.7	3	12	28	61	SS-3	4.50	14	11	14	42	19	28	17	11	13	A-6a (6)
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, DAMP	975.7	4	9	27	72	SS-4	4.50	-	-	-	-	-	-	-	-	13	A-6a (V)
@8.5'; TRACE CLAY, SOME GRAVEL	971.2	6	9	27	67	SS-5	4.00	10	8	13	39	30	25	16	9	12	A-4a (7)
MEDIUM DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, DAMP	971.2	7	8	30	72	SS-6	4.00	9	9	13	44	25	25	16	9	14	A-4a (7)
@13.5'; WET	962.2	8	7	20	61	SS-7	-	-	-	-	-	-	-	-	-	19	A-4a (4)
@18.5'; DENSE, WET	962.2	10	7	12	34	SS-8	4.00	30	7	8	47	8	24	20	4	13	A-4a (4)
		11	15	26	56	SS-9	-	49	21	12	14	4	-	-	-	11	A-1-b (V)
		12	9	20	61	SS-10	-	-	-	-	-	-	-	-	-	19	A-1-b (V)
		13															
		14	7	6	20	61	SS-10	-	-	-	-	-	-	-	-	19	A-1-b (V)
		15															
		16															
		17															
		18															
		19	7	12	34	SS-11	-	-	-	-	-	-	-	-	-	14	A-1-b (V)
		20	12	12	34	SS-11	-	-	-	-	-	-	-	-	-	14	A-1-b (V)

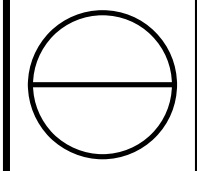
STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:46 - C:\USERS\TMONACODESKTOP\065096COL (2).GDT

NOTES: GROUNDWATER ENCOUNTERED @ 18.5' DURING DRILLING.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

c:\pwworking\gfpw01\wbinkley\d0164682\83245\1002.dgn 5/17/2013 8:47:25 AM wbinkley

BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / MF		DRILL RIG: CME 75 T-349		STATION / OFFSET: 576+15.55 LT		EXPLORATION ID: B-013-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MF		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 976.4 (MSL) EOB: 10.0 ft.		PAGE 1 OF 1	
START: 8/10/09 END: 8/10/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 85		COORD: 714242.887 N, 1733031.332 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Topsoil (5")	976.4	1	3														
VERY STIFF, BROWN, CLAY, AND SILT, SOME SAND, FILL, DAMP	974.4	2	4	16	67	SS-1	2.50	0	0	21	42	37	43	21	22	18	A-7-6 (13)
VERY STIFF, BROWN, SILTY CLAY, LITTLE SAND, TRACE GRAVEL, DAMP		3	5	17	72	SS-2	3.00	1	5	15	47	32	37	20	17	18	A-6b (11)
@3.5' STIFF		4	3	13	61	SS-3	4.50	-	-	-	-	-	-	-	-	16	A-6b (V)
HARD, SILT AND CLAY, SOME SAND, TRACE GRAVEL, TILL, DAMP	971.4	5	4	10	33	SS-4	4.00	2	4	17	52	25	27	16	11	18	A-6a (8)
		6	7	13													
	967.9	7															
DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS, SOME SAND, TRACE SILT, TRACE CLAY, DRY	966.4	8	10	38	67	SS-5	-	61	17	10	10	2	-	-	-	7	A-1-a (V)
		9	15	12													
		10															

NOTES: NO GROUNDWATER ENCOUNTERED DURING DRILLING, DRY AT COMPLETION.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / MK		DRILL RIG: CME 75 T-296		STATION / OFFSET: 580+09.1 RT		EXPLORATION ID: B-014-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MK		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 973.2 (MSL) EOB: 20.0 ft.		PAGE 1 OF 1	
START: 8/11/09 END: 8/11/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 714014.321 N, 1733359.879 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
Asphalt concrete (8") over Brick (3")	973.2	1																
Portland cement concrete (8")	971.6	2																
Base course (7")	971.0	3	3	4	12	78	SS-1	-	5	22	22	37	14	22	14	8	14	A-4a (3)
STIFF, BROWN, SANDY SILT, LITTLE CLAY, SOME GRAVEL, FILL, DAMP	970.2	4	4	4	-	-	ST-2	-	0	1	6	49	44	39	21	18	24	A-6b (11)
BROWN, SILTY CLAY, TRACE SAND, MOIST	969.7	5	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, TRACE GRAVEL, FILL, MOIST	968.2	6	2	2	7	83	SS-4	4.00	1	1	9	40	49	50	25	25	26	A-7-6 (16)
MEDIUM STIFF TO STIFF, BROWN, CLAY, AND SILT, TRACE SAND, TRACE GRAVEL, DAMP		7	3				ST-5	-	9	8	6	43	34	42	23	19	26	A-7-6 (12)
		8	3	3	10	89	SS-6	3.50	-	-	-	-	-	-	-	-	30	A-7-6 (V)
	963.2	9	4															
MEDIUM DENSE, BROWN, COARSE AND FINE SAND AND GRAVEL, SOME SILT, TRACE CLAY WITH COBBLES, DAMP	960.7	10	3	4	13	44	SS-7	-	42	14	9	25	10	-	-	-	14	A-3a (V)
MEDIUM DENSE, GRAY, GRAVEL AND/OR STONE FRAGMENTS, SOME SAND, TRACE SILT, TRACE CLAY, WET		11	5	5	16	72	SS-8	-	-	-	-	-	-	-	-	-	19	A-1-a (V)
		12	4	5	16	67	SS-9	-	59	28	7	-	6	-	-	-	17	A-1-a (V)
	954.7	13																
STIFF, GRAY, SANDY SILT, SOME CLAY, SOME GRAVEL, TILL, DAMP	953.2	14	4	5	15	39	SS-10	-	22	11	17	36	14	19	13	6	12	A-4a (3)
		15																
		16																
		17																
		18																
		19																
		20																

NOTES: GROUNDWATER ENC @ 12.5 DURING DRILLING, 10.2' AT COMPLETION.
 ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

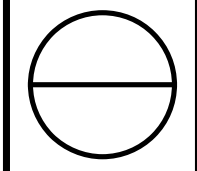
STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:46 - C:\USERS\TMONAC\DESKTOP\06060906COL (2).GDT

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:46 - C:\USERS\TMONAC\DESKTOP\06060906COL (2).GDT

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BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / MF		DRILL RIG: CME 75 T-349		STATION / OFFSET: 584+02.61 LT		EXPLORATION ID: B-015-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MF		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		PAGE: 1 OF 1	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 969.1 (MSL) EOB: 10.0 ft.		COORD: 713889.292 N, 1733740.191 E	
START: 8/10/09 END: 8/10/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 85					

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Topsoil (4")	968.8																
STIFF, BROWN, CLAY, AND SILT, LITTLE SAND, TRACE GRAVEL, DAMP	967.1	1	2	14	56	SS-1	4.50	1	3	11	37	48	52	26	26	21	A-7-6 (17)
HARD, GRAY, SANDY SILT, SOME CLAY, TRACE GRAVEL, DAMP	965.6	2	13	52	61	SS-2	4.50	5	11	15	43	26	27	17	10	11	A-4a (7)
MEDIUM DENSE, BROWN AND GRAY, COARSE AND FINE SAND, SOME GRAVEL, LITTLE SILT, TRACE CLAY, WITH COBBLES, DAMP @5.0', DENSE, MOIST		3	7	24	56	SS-3	-	23	28	23	19	7	NP	NP	NP	10	A-3a (0)
		4	8	42	67	SS-4	-	-	-	-	-	-	-	-	-	15	A-3a (V)
		5	12														
		6	18														
		7	12														
		8															
STIFF, GRAY, SILT AND CLAY, TRACE SAND, TRACE GRAVEL, MOIST	960.6	9	5	11	44	SS-5	1.00	1	1	6	51	41	30	18	12	22	A-6a (9)
	959.1	10	3	5													

0 hr

W

EOB

NOTES: GROUNDWATER ENCOUNTERED @ 8.5' DURING DRILLING, 6.0' 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: 588+00.85 LT		EXPLORATION ID: B-016-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MF		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		PAGE: 1 OF 1	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 971.8 (MSL) EOB: 12.5 ft.		COORD: 713710.531 N, 1734097.310 E	
START: 8/11/09 END: 8/11/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 85					

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Topsoil (6")	971.3																
VERY STIFF, BROWN, SILTY CLAY, SOME SAND, TRACE GRAVEL, DAMP	969.8	1	3	17	56	SS-1	4.50	4	9	14	42	31	35	19	16	15	A-6b (10)
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, DAMP		2	8	26	67	SS-2	4.50	8	11	17	39	25	26	16	10	14	A-4a (6)
No recovery		3	9														
		4	11	27	0	SS-3	-	-	-	-	-	-	-	-	-	-	
		5	8														
@5.0' Little gravel		6	4	16	72	SS-4	4.00	16	10	15	36	23	25	16	9	15	A-4a (5)
		7	6														
		8															
No recovery	963.3	9	14	35	0	SS-5	-	-	-	-	-	-	-	-	-	-	
		10	13														
@11.0' MEDIUM DENSE, GRAY, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, TRACE SILT, TRACE CLAY, WET	959.3	11	4	14	33	SS-6	-	30	38	19	9	4	-	-	-	15	A-1-b (V)
		12	5														

0 hr

W

EOB

NOTES: GROUNDWATER ENCOUNTERED @ 11.0 DURING DRILLING, 6.0' AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

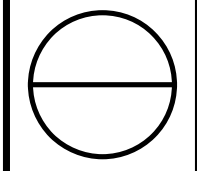
STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:46 - C:\USER\STMONACODESKTOP\0609096COL (2).GPJ

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:46 - C:\USER\STMONACODESKTOP\0609096COL (2).GPJ

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BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MK	DRILL RIG: CME 75 T-296	STATION / OFFSET: 591+96.2 LT	EXPLORATION ID: B-017-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MK	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 975.4 (MSL) EOB: 20.0 ft.	PAGE: 1 OF 1
START: 8/10/09 END: 8/10/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 713435.230 N, 1734395.858 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Asphalt concrete (17")	974.0	1															
Base course (8")	973.3	2															
STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, FILL, DAMP	971.9	3	4	12	78	SS-1	4.00	6	8	15	44	27	25	16	9	13	A-4a (7)
VERY STIFF, BROWN, SILT AND CLAY, AND SAND, TRACE GRAVEL, FILL, DAMP		4	5	18	39	SS-3	4.50	1	19	23	37	20	27	15	12	9	A-6a (5)
No recovery		5	6														
		6	7	24	0	SS-4	-	-	-	-	-	-	-	-	-	-	
		7	8														
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, LITTLE GRAVEL, TILL, DAMP	967.9	8	5	18	83	SS-5	4.00	12	16	17	34	21	22	14	8	13	A-4a (4)
		9	6														
		10	7														
		11	8	21	94	SS-6	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)
		12	9														
MEDIUM DENSE, GRAY, COARSE AND FINE SAND, SOME GRAVEL, LITTLE SILT, TRACE CLAY, WET	962.9	13	6	30	94	SS-7	-	22	23	38	14	3	NP	NP	NP	15	A-3a (0)
		14	8														
		15	7														
		16	9	30	89	SS-8	-	-	-	-	-	-	-	-	-	13	A-3a (V)
		17	10														
		18	11														
		19	5	19	78	SS-9	-	-	-	-	-	-	-	-	-	11	A-3a (V)
		20	6														
	955.4	EOB															

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:46 - C:\USERS\TIMONAC\DESKTOP\09050960COL (2).GDT

NOTES: GROUNDWATER ENCOUNTERED @ 12.5' DURING DRILLING, 10.0' AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / MK	DRILL RIG: CME 75 T-296	STATION / OFFSET: 595+95. CL	EXPLORATION ID: B-018-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / MK	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 977.9 (MSL) EOB: 6.5 ft.	PAGE: 1 OF 1
START: 8/10/09 END: 8/10/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 713228.662 N, 1734736.197 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Asphalt concrete (18")	976.4	1															
Base course (7")	975.8	2															
MEDIUM STIFF, BROWN, SILT AND CLAY, TRACE SAND, TRACE ORGANICS, FILL, DAMP		3	2	7	67	SS-1	3.00	0	0	5	61	34	32	20	12	17	A-6a (9)
@ 3.5 Stiff, some sand, trace gravel		4	3														
		5	4	13	83	SS-2	4.00	1	5	24	35	35	33	20	13	16	A-6a (8)
STIFF, BROWN, CLAY, AND SILT, TRACE SAND, FILL, MOIST	972.9	6	3														
		7	4														
		8	5	15	89	SS-3	4.50	0	0	2	45	53	52	24	28	27	A-7-6 (18)
		9	6														
	971.4	EOB															

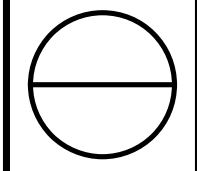
STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USERS\TIMONAC\DESKTOP\09050960COL (2).GDT

NOTES: NO GROUNDWATER ENCOUNTERED DURING DRILLING, DRY AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

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BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / MF		DRILL RIG: CME 75 T-349		STATION / OFFSET: 547+31, 794 RT		EXPLORATION ID: B-101-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MF		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 988.4 (MSL) EOB: 10.0 ft.		PAGE: 1 OF 1	
START: 7/13/09 END: 7/13/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 85		COORD: 714604.160 N, 1730020.913 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
Topsoil (3") STIFF, GRAY, SILT AND CLAY, LITTLE SAND, TRACE GRAVEL WITH ORGANICS, FILL, DAMP @2.0'; MOIST	988.2	1	16	5	14	33	SS-1	4.00	2	3	9	49	37	31	18	13	18	A-6a (9)
	984.9	2	3	4	14	61	SS-2	4.00	-	-	-	-	-	-	-	-	25	A-6a (V)
VERY STIFF, BLACK, ELASTIC CLAY, SOME SILT, LITTLE SAND, TRACE GRAVEL WITH ORGANICS, FILL, DAMP	983.4	3	5	6	20	44	SS-3	4.00	1	2	9	34	54	56	31	25	28	A-7-5 (17)
VERY STIFF, GRAY, CLAY, AND SILT, TRACE SAND, TRACE GRAVEL, DAMP	983.4	4	7	10	23	56	SS-4	3.00	1	1	9	42	47	58	29	29	23	A-7-6 (19)
	978.4	5	3	4	10	67	SS-5	2.50	-	-	-	-	-	-	-	-	18	A-7-6 (V)
@8.5'; STIFF	978.4	6																
	EOB	10																

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\065096COL (2).GPJ

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 550+34, 583 RT		EXPLORATION ID: B-102-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 984.9 (MSL) EOB: 10.0 ft.		PAGE: 1 OF 1	
START: 7/13/09 END: 7/13/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 714666.657 N, 1730415.104 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
Limestone gravel (6") VERY STIFF, BROWN AND GRAY, SILT AND CLAY, SOME SAND, LITTLE GRAVEL, DAMP	984.4	1	7	6	19	28	SS-1	4.00	13	16	14	35	22	-	-	-	16	A-6a (V)
DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND AND SILT, TRACE CLAY, DAMP	982.9	2	8	10	36	67	SS-2	-	33	23	12	24	8	-	-	-	7	A-2-4 (V)
VERY STIFF, BROWN, SILT, SOME CLAY, TRACE SAND, TRACE GRAVEL, MOIST	981.4	3	12	10	22	33	SS-3	3.50	1	0	1	67	31	25	17	8	20	A-4b (8)
	976.4	4	5	5	18	-	SS-4	3.50	-	-	-	-	-	-	-	-	18	A-4b (V)
	974.9	5	5	6	19	-	SS-5	4.00	-	-	-	-	-	-	-	-	14	A-6a (V)
VERY STIFF, BROWN, SILT AND CLAY, LITTLE SAND, TRACE GRAVEL, DAMP	974.9	6																
	EOB	10																

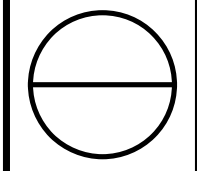
NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\065096COL (2).GPJ

c:\pwworking\gfpw01\wbinckley\40164682\83245\L002.dgn 5/17/2013 8:50:55 AM wbinckley

BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / CG	DRILL RIG: CME 75 T-296	STATION / OFFSET: 553+58, 361 RT	EXPLORATION ID: B-103-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / CG	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 985.6 (MSL) EOB: 10.0 ft.	PAGE: 1 OF 1
START: 7/13/09 END: 7/13/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 714743.058 N, 1730806.054 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Topsoil (3")	985.4	1	4														
VERY STIFF, BROWN, CLAY, AND SILT, TRACE SAND, FILL, DAMP	983.6	2	5	18	56	SS-1	4.50	0	1	9	54	36	45	23	22	21	A-7-6 (14)
VERY STIFF, GRAY, SILT AND CLAY, LITTLE SAND, TRACE GRAVEL, DAMP		3	9	22	44	SS-2	4.50	3	5	13	51	28	30	19	11	15	A-6a (8)
@3.5'; MOIST		4	7	16	50	SS-3	3.50	1	2	12	49	36	35	20	15	22	A-6a (10)
HARD, GRAY, SANDY SILT, SOME CLAY, TRACE GRAVEL, DAMP	980.6	5	7	5													
		6	17	50	67	SS-4	3.00	5	10	19	45	21	25	16	9	13	A-4a (6)
		7	17														
@8.5'; VERY STIFF		8															
		9	6	22	61	SS-5	-	-	-	-	-	-	-	-	-	14	A-4a (V)
	975.6	10	7	8													

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\06050906COL (2).GDT

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / CG	DRILL RIG: CME 75 T-296	STATION / OFFSET: 558+93, 236 LT	EXPLORATION ID: B-104-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / CG	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 988.6 (MSL) EOB: 10.0 ft.	PAGE: 1 OF 1
START: 7/14/09 END: 7/14/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 89	COORD: 715105.975 N, 1731534.075 E	

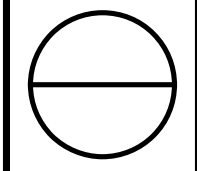
MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
VERY STIFF, BROWN, SILT AND CLAY, SOME SAND, SOME GRAVEL, DAMP	988.6	1	6	27	94	SS-1	4.50	32	13	11	27	17	27	16	11	12	A-6a (2)	
		2	9	10	25	100	SS-2	4.50	6	11	16	42	25	23	16	7	11	A-4a (6)
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, DAMP		3	9	8	25	100	SS-2	4.50	6	11	16	42	25	23	16	7	11	A-4a (6)
@3.5'; LITTLE GRAVEL		4	9	7	24	100	SS-3	4.00	14	10	14	39	23	23	15	8	13	A-4a (5)
		5	5	9	25	100	SS-4	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)
		6	9	8	25	100	SS-4	4.00	-	-	-	-	-	-	-	-	12	A-4a (V)
		7																
		8																
@8.5'; HARD		9	17	16	44	100	SS-5	4.50	-	-	-	-	-	-	-	-	11	A-4a (V)
	978.6	10	16	14														

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\06050906COL (2).GDT

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

BORING LOGS

MAD-70-10.27



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PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 561+96, 229 LT		EXPLORATION ID: B-105-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		PAGE: 1 OF 1	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 983.0 (MSL) EOB: 10.0 ft.			
START: 7/14/09 END: 7/14/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 714968.392 N, 1731791.946 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
STIFF, BROWN, SILTY CLAY, SOME SAND, SOME GRAVEL, DAMP	983.0		3	4	13	94	SS-1	3.50	28	18	12	25	17	-	-	-	12	A-6b (V)
@2.0'; HARD, LITTLE SAND, TRACE GRAVEL			9	12	34	56	SS-2	4.50	9	7	11	39	34	37	21	16	16	A-6b (10)
@3.5'; VERY STIFF			9	8	27	94	SS-3	-	-	-	-	-	-	-	-	-	-	
VERY STIFF, BROWN, CLAY, AND SILT, LITTLE SAND, DAMP	978.0		9	9	28	100	SS-4	3.00	0	2	16	36	46	44	20	24	28	A-7-6 (14)
VERY STIFF, BROWN, SILT AND CLAY, LITTLE SAND, DAMP	975.5		7	9	28	100	SS-5	4.00	-	-	-	-	-	-	-	-	13	A-6a (V)
	973.0	EOB																

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 563+14, 231 RT		EXPLORATION ID: B-106-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		PAGE: 1 OF 1	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 985.9 (MSL) EOB: 20.0 ft.			
START: 7/14/09 END: 7/14/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 714498.784 N, 1731720.188 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
HARD, BROWN, SILTY CLAY, SOME SAND, LITTLE GRAVEL, FILL, DAMP	985.9		6	11	37	89	SS-1	4.00	16	10	12	34	28	35	19	16	9	A-6b (8)
HARD, BROWN, CLAY, AND SILT, LITTLE SAND, TRACE GRAVEL, FILL, DAMP	983.9		10	11	31	94	SS-2	4.50	5	4	7	36	48	45	23	22	16	A-7-6 (14)
HARD, BROWN, SILT AND CLAY, SOME SAND, TRACE GRAVEL WITH ROCK FRAGMENTS, FILL, DAMP	982.4		6	11	34	78	SS-3	4.50	8	9	14	39	30	29	17	12	7	A-6a (8)
VERY STIFF, BROWN, CLAY, AND SILT, TRACE SAND, DAMP	980.9		7	5	19	94	SS-4	4.50	-	-	-	-	-	-	-	-	23	A-7-6 (V)
BROWN, SILTY CLAY, LITTLE SAND, TRACE GRAVEL, MOIST	978.9		7	8	-	-	ST-5	-	0	1	4	51	44	51	24	27	25	A-7-6 (17)
STIFF, BROWN, SILT AND CLAY, LITTLE SAND, TRACE GRAVEL, DAMP	977.4		6	3	10	100	SS-7	2.50	5	5	14	48	28	28	17	11	16	A-6a (8)
@11.0'; VERY STIFF, SOME SAND	972.4		7	8	25	100	SS-8	4.00	10	8	14	38	30	27	16	11	12	A-6a (7)
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, DAMP	969.9		8	8	27	94	SS-10	4.00	8	10	16	39	27	25	16	9	11	A-4a (6)
MEDIUM DENSE, GRAY, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, WET	965.9	EOB	4	5	15	67	SS-11	-	-	-	-	-	-	-	-	-	17	A-1-b (V)
			5	5	15	44	SS-12	-	48	23	9	15	5	NP	NP	NP	18	A-1-b (0)

NOTES: GROUNDWATER ENC. @ 15.0'
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

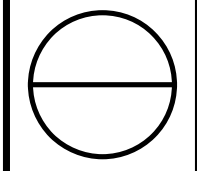
STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:47 - C:\USERS\TMONACOD\DESKTOP\06090960COL (2).GDT

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:47 - C:\USERS\TMONACOD\DESKTOP\06090960COL (2).GDT

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BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 566+92.211 RT		EXPLORATION ID: B-107-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 990.7 (MSL) EOB: 10.0 ft.		PAGE: 1 OF 1	
START: 7/13/09 END: 7/13/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 714368.265 N, 1732082.568 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
Limestone gravel (6")	990.7																	
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, DRY	988.7	1	4	14	27	61	SS-1	4.00	5	6	22	41	26	24	15	9	8	A-4a (6)
VERY STIFF, BROWN, SILT AND CLAY, SOME SAND, TRACE GRAVEL, DAMP	987.2	2	7	8	25	67	SS-2	4.50	4	6	20	42	28	27	16	11	13	A-6a (7)
HARD, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, DAMP		3	10	11	36	72	SS-3	4.50	-	-	-	-	-	-	-	-	-	A-4a (V)
@5.0'; VERY STIFF		4	11	13														
		5	5	6	22	72	SS-4	-	5	14	18	40	23	25	15	10	10	A-4a (6)
		6	6	9														
		7																
		8																
@8.5'; HARD		9	10	10	42	61	SS-5	-	-	-	-	-	-	-	-	-	19	A-4a (V)
	980.7	10	10	18														

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:47 - C:\USERS\TIMONAC\DESKTOP\0650986COL (2).GDT

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 570+13.227 LT		EXPLORATION ID: B-108-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 986.8 (MSL) EOB: 10.0 ft.		PAGE: 1 OF 1	
START: 7/14/09 END: 7/14/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 714645.356 N, 1732552.404 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
VERY STIFF, BROWN, SANDY SILT, LITTLE CLAY, TRACE GRAVEL, MOIST	986.8																	
		1	3	7	21	89	SS-1	3.00	10	15	21	39	15	22	16	6	7	A-4a (4)
VERY STIFF, BROWN, SILTY CLAY, SOME SAND, TRACE GRAVEL, MOIST		2	5	7	25	100	SS-2	3.50	1	3	17	48	31	36	18	18	18	A-6b (11)
@3.5'; HARD		3	15	10														
		4	15	15	44	100	SS-3	4.50	-	-	-	-	-	-	-	-	11	A-6b (V)
@5.0'; VERY STIFF		5	5	7	21	44	SS-4	4.00	1	7	17	48	27	34	17	17	12	A-6b (11)
		6	7	7														
		7																
		8																
@8.5'; HARD		9	11	12	36	100	SS-5	4.50	-	-	-	-	-	-	-	-	17	A-6b (V)
	976.8	10	12	12														

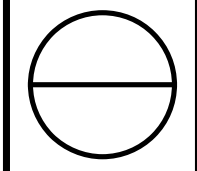
NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:47 - C:\USERS\TIMONAC\DESKTOP\0650986COL (2).GDT

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BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 572+71, 442 LT		EXPLORATION ID: B-109-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		PAGE: 1 OF 1	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 976.1 (MSL) EOB: 10.0 ft.			
START: 7/14/09 END: 7/14/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 714746.709 N, 1732866.556 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
VERY STIFF, BROWN, SILT AND CLAY, AND SAND, TRACE GRAVEL, DRY	976.1																
@2.0'; SOME SAND, DAMP	972.6																
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, DAMP	966.1																

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\0650986COL (2).GPJ

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / MF		DRILL RIG: CME 75 T-349		STATION / OFFSET: 546+90, 150 LT		EXPLORATION ID: B-201-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / MF		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		PAGE: 1 OF 1	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 978.5 (MSL) EOB: 10.0 ft.			
START: 8/12/09 END: 8/12/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 85		COORD: 715478.510 N, 1730373.996 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
Topsoil (7")	978.5																
STIFF, BROWN, CLAY, AND SILT, TRACE SAND, MOIST	977.9																
VERY STIFF, BROWN, SILTY CLAY, LITTLE SAND, TRACE GRAVEL, MOIST	976.5																
VERY STIFF, BROWN, SANDY SILT, LITTLE CLAY, TRACE GRAVEL, MOIST	975.0																
@5.0'; WITH STONE FRAGMENTS, DAMP																	
HARD, GRAY, SANDY SILT, LITTLE CLAY, TRACE GRAVEL, DAMP	970.0																
	968.5																

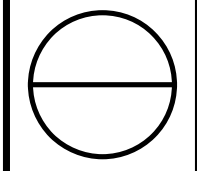
NOTES: NO GROUNDWATER ENCOUNTERED DURING DRILLING, DRY AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\0650986COL (2).GPJ

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BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / JD		DRILL RIG: CME 75 R-25		STATION / OFFSET: 550+64, 52 RT		EXPLORATION ID: B-202-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / JD		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 971.5 (MSL) EOB: 10.0 ft.		PAGE: 1 OF 1	
START: 6/29/09 END: 6/29/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 84		COORD: 715281.312 N, 1730821.082 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)								ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
Chip & seal (3")	971.3																	
Base course (7")	970.7																	
STIFF, BROWN, SILT, SOME CLAY, SOME SAND, TRACE GRAVEL, DAMP	969.0	1	3	4	11	67	SS-1	4.50	6	11	10	52	21	24	15	9	13	A-4b (8)
STIFF, BROWN, SANDY SILT, LITTLE CLAY, LITTLE GRAVEL, DAMP	967.5	2	4	4	13	67	SS-2	4.50	13	11	15	41	20	25	16	9	13	A-4a (5)
STIFF, BROWN, SILT AND CLAY, AND SAND, TRACE GRAVEL, DAMP	967.5	3	4	4	11	67	SS-3	4.50	-	-	-	-	-	-	-	-	-	A-6a (6)
@5.5'; MEDIUM STIFF, MOIST	967.5	4	3	4	11	67	SS-3	4.50	-	-	-	-	-	-	-	-	-	A-6a (6)
	967.5	5	2	2	6	67	SS-4	-	1	13	29	36	21	31	17	14	31	A-6a (6)
	967.5	6	2	2	6	67	SS-4	-	1	13	29	36	21	31	17	14	31	A-6a (6)
	967.5	7	2	2	6	67	SS-4	-	1	13	29	36	21	31	17	14	31	A-6a (6)
	967.5	8	2	2	6	67	SS-4	-	1	13	29	36	21	31	17	14	31	A-6a (6)
	967.5	9	4	7	20	67	SS-5	-	12	18	22	33	15	21	14	7	8	A-4a (3)
VERY STIFF, BROWN, SANDY SILT, LITTLE CLAY, LITTLE GRAVEL, DAMP	961.5	10	4	7	20	67	SS-5	-	12	18	22	33	15	21	14	7	8	A-4a (3)

NOTES: NONE
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 545+98, 324 RT		EXPLORATION ID: B-203-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29			
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		ELEVATION: 978.0 (MSL) EOB: 10.0 ft.		PAGE: 1 OF 1	
START: 7/13/09 END: 7/13/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89		COORD: 715076.445 N, 1730104.464 E			

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)								ODOT CLASS (GI)	INST.	
								GR	CS	FS	SI	CL	LL	PL	PI			WC
Topsoil (6")	977.5																	
VERY STIFF, BROWN, SILT AND CLAY, LITTLE SAND, MOIST @2.0'; STIFF	974.5	1	4	6	18	67	SS-1	3.00	0	4	12	52	32	35	20	15	24	A-6a (10)
	974.5	2	6	5	15	39	SS-2	3.00	-	-	-	-	-	-	-	-	-	A-6a (V)
VERY STIFF, BROWN, SANDY SILT, SOME CLAY, TRACE GRAVEL, MOIST	973.0	3	6	5	22	39	SS-3	3.50	2	8	18	49	23	24	15	9	18	A-4a (7)
VERY STIFF, BROWN TO GRAY, SILT AND CLAY, LITTLE SAND, WET	969.5	4	6	7	24	-	SS-4	3.00	-	-	-	-	-	-	-	-	-	A-6a (V)
	969.5	5	6	7	24	-	SS-4	3.00	-	-	-	-	-	-	-	-	-	A-6a (V)
	969.5	6	6	7	24	-	SS-4	3.00	-	-	-	-	-	-	-	-	-	A-6a (V)
	969.5	7	6	7	24	-	SS-4	3.00	-	-	-	-	-	-	-	-	-	A-6a (V)
	969.5	8	6	7	24	-	SS-4	3.00	-	-	-	-	-	-	-	-	-	A-6a (V)
	969.5	9	4	6	27	56	SS-5	-	41	21	13	22	3	18	15	3	11	A-1-b (0)
MEDIUM DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, SOME SILT, TRACE CLAY, DAMP	968.0	10	4	6	27	56	SS-5	-	41	21	13	22	3	18	15	3	11	A-1-b (0)

NOTES: GROUNDWATER ENCOUNTERED @ 7.0' DURING DRILLING, 5.0' AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

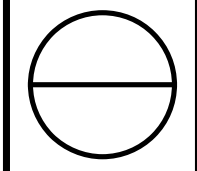
STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\0609096COL (2).GPJ

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH.DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\0609096COL (2).GPJ

c:\pwworking\gfpw01\wbinkley\d0164682\83245\L002.dgn 5/17/2013 8:54:48 AM wbinkley

BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / CG		DRILL RIG: CME 75 T-296		STATION / OFFSET: 549+06, 303 RT		EXPLORATION ID: B-204-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / CG		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		ELEVATION: 976.1 (MSL) EOB: 10.0 ft.	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		COORD: 714974.800 N, 1730405.812 E		PAGE 1 OF 1	
START: 7/13/09 END: 7/13/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 89					

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.		
								GR	CS	FS	SI	CL	LL	PL	PI			WC	
Topsoil (6")	975.6																		
STIFF, BROWN, CLAY, AND SILT, LITTLE SAND, TRACE GRAVEL, DAMP	974.1	1	2	4	15	67	SS-1	4.00	1	1	10	66	22	48	24	24	23	A-7-6 (15)	
VERY STIFF, BROWN, SILT AND CLAY, SOME SAND, TRACE GRAVEL, DAMP		2	2	8	27	78	SS-2	4.00	2	9	14	45	30	29	18	11	13	A-6a (8)	
@3.5'; HARD		3	8	10															
VERY STIFF, BROWN, SILT, SOME SAND, LITTLE CLAY, TRACE GRAVEL, DAMP	971.1	4	8	11	31	50	SS-3	3.50	-	-	-	-	-	-	-	-	-	9	A-6a (V)
		5	4	5	16	61	SS-4	4.00	4	10	19	51	16	23	16	7	15	A-4b (6)	
		6																	
		7																	
		8																	
HARD, BROWN, SANDY SILT, TRACE CLAY, TRACE GRAVEL, TILL, MOIST	967.6	9	11	25	65	33	SS-5	3.00	-	-	-	-	-	-	-	-	-	14	A-4a (V)
	966.1	10																	

W 0 hr

EOB

NOTES: GROUNDWATER ENCOUNTERED @ 7.0' DURING DRILLING, 7.5' AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

PROJECT: MAD-70-10.27		DRILLING FIRM / OPERATOR: CTL / JD		DRILL RIG: CME 75 R-25		STATION / OFFSET: 586+82, 600 RT		EXPLORATION ID: B-205-0-09	
TYPE: ROADWAY		SAMPLING FIRM / LOGGER: CTL / JD		HAMMER: CME AUTOMATIC		ALIGNMENT: SR 29		ELEVATION: 973.3 (MSL) EOB: 10.0 ft.	
PID: 83245 BR ID: N/A		DRILLING METHOD: 3.25" HSA		CALIBRATION DATE: 6/27/07		COORD: 712839.084 N, 1733438.543 E		PAGE 1 OF 1	
START: 6/29/09 END: 6/29/09		SAMPLING METHOD: SPT		ENERGY RATIO (%): 84					

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.		
								GR	CS	FS	SI	CL	LL	PL	PI			WC	
ASPHALT / BASE (9")	973.3																		
VERY DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, FILL, DAMP		1																	
@3.0'; DENSE		2	11	14	50	67	SS-1	-	47	20	10	19	4	-	-	-	7	A-1-b (V)	
		3	28	10															
@4.5'; MEDIUM DENSE, SOME SILT		4	10	14	34	72	SS-2	-	-	-	-	-	-	-	-	-	6	A-1-b (V)	
		5	13	5	14	67	SS-3	-	47	15	10	22	6	-	-	-	9	A-1-b (V)	
		6																	
STIFF, BROWN, SANDY SILT, LITTLE CLAY, LITTLE GRAVEL, DAMP	967.3	7	4	5	14	72	SS-4	3.50	12	13	17	40	18	23	16	7	13	A-4a (5)	
		8																	
@8.5'; VERY STIFF		9	7	7	24	67	SS-5	4.50	-	-	-	-	-	-	-	-	-	10	A-4a (V)
	963.3	10																	

EOB

NOTES: NO GROUNDWATER ENCOUNTERED DURING DRILLING, DRY AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

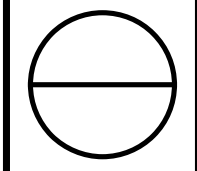
STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\0609096COL (2).GDT

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:47 - C:\USER\STMONACODESKTOP\0609096COL (2).GDT

c:\pwworking\gfpw01\wbinkley\d0164682\83245\L002.dgn 5/17/2013 8:55:32 AM wbinkley

BORING LOGS

MAD-70-10.27



PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / JD	DRILL RIG: CME 75 R-25	STATION / OFFSET: 586+66, 598 RT	EXPLORATION ID: B-206-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / JD	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
PID: 83245 BR ID: N/A	DRILLING METHOD: 3.25" HSA	CALIBRATION DATE: 6/27/07	ELEVATION: 971.5 (MSL) EOB: 10.0 ft.	PAGE: 1 OF 1
START: 6/29/09 END: 6/29/09	SAMPLING METHOD: SPT	ENERGY RATIO (%): 84	COORD: 713203.411 N, 1733616.749 E	

MATERIAL DESCRIPTION AND NOTES	ELEV.	DEPTHS	SPT/RQD	N ₆₀	REC (%)	SAMPLE ID	HP (tsf)	GRADATION (%)				ATTERBERG				ODOT CLASS (GI)	INST.
								GR	CS	FS	SI	CL	LL	PL	PI		
ASPHALT CONCRETE (7")	971.5	1															
BASE COURSE (8")	970.9	2	8	4	11	SS-1	2.50	4	1	11	49	35	52	25	27	24	A-7-6 (17)
STIFF, BROWN, CLAY, AND SILT, LITTLE SAND, TRACE GRAVEL, DAMP	970.3	3	4	4													
		4	4	5	13	SS-2	2.50	0	6	13	36	45	49	25	24	25	A-7-6 (15)
@4.5" WITH COBBLES		5	3	4	13	SS-3	-	-	-	-	-	-	-	-	-	19	A-7-6 (V)
	965.0	6	4	5	13	SS-3	-	-	-	-	-	-	-	-	-	-	
VERY STIFF, BROWN, SILT, SOME SAND, LITTLE GRAVEL, DAMP	963.0	7	6	6	20	SS-4	-	15	9	14	55	7	25	16	9	12	A-4b (5)
	961.5	8	6	8													
MEDIUM DENSE, BROWN, GRAVEL AND/OR STONE FRAGMENTS WITH SAND, LITTLE SILT, TRACE CLAY, WET	961.5	9	12	10	29	SS-5	-	31	31	17	18	3	NP	NP	NP	8	A-1-b (0)
		10	10	11													

0 hr

EOB

NOTES: GROUNDWATER ENCOUNTERED @ 9.5' DURING DRILLING AND AT COMPLETION.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:47 - C:\USER\STMONAC\DESKTOP\0609096COL (2).GDT

PROJECT: MAD-70-10.27	DRILLING FIRM / OPERATOR: CTL / JD	DRILL RIG: CME 75 R-25	STATION / OFFSET: 585+96, 206 RT	EXPLORATION ID: B-207-0-09
TYPE: ROADWAY	SAMPLING FIRM / LOGGER: CTL / JD	HAMMER: CME AUTOMATIC	ALIGNMENT: SR 29	
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: 713570.580 N, 1733765.546 E	

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

0 hr

EOB

NOTES: GROUNDWATER ENC @ 11.0' DURING DRILLING, 13.0 AT COMPLETION. ST-2 OBTAINED IN OFFSET HOLE FROM 1' TO 3'.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: NOT RECORDED

STANDARD ODOT SOIL BORING LOG (8.5 X 11) - OH DOT.GDT - 4/11/13 12:47 - C:\USER\STMONAC\DESKTOP\0609096COL (2).GDT

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BORING LOGS

MAD-70-10.27

