OHIO DEPARTMENT OF TRANSPORTATION

OFFICE OF GEOTECHNICAL ENGINEERING

PLAN SUBGRADES
Geotechnical Bulletin GB1

MOE-7-2.21
109278

Full depth pavement replacement along State Route 7 in Monroe County, Ohio from Milepost 2.21 to Milepost 8.65

HDR

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Date prepared: Thursday, February 18, 2021

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NO. OF BORINGS: 84

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
1	B-001-0-20	SR 7			Right	CME 55 Truck Rig	84	625.0	623.6	1.4 C
2	B-002-0-20	SR 7			Left	CME 55 Truck Rig	84	623.4	621.6	1.8 C
3	B-003-0-20	SR 7			Right	CME 55 Truck Rig	84	622.0	620.7	1.3 C
4	B-004-0-20	SR 7			Left	CME 55 Truck Rig	84	621.2	619.4	1.8 C
5	B-005-0-20	SR 7			Right	CME 55 Truck Rig	84	623.0	621.2	1.8 C
6	B-006-0-20	SR 7			Left	CME 55 Truck Rig	84	625.1	623.3	1.8 C
7	B-007-0-20	SR 7			Right	CME 55 Truck Rig	84	627.0	625.3	1.7 C
8	B-008-0-20	SR 7			Left	CME 55 Truck Rig	84	630.2	628.4	1.8 C
9	B-009-0-20	SR 7			Right	CME 55 Truck Rig	84	634.7	633.0	1.7 C
10	B-010-0-20	SR 7			Left	CME 55 Truck Rig	84	639.7	638.0	1.7 C
11	B-011-0-20	SR 7			Right	CME 55 Truck Rig	84	642.0	640.2	1.8 C
12	B-012-0-20	SR 7			Left	CME 55 Truck Rig	84	641.6	639.8	1.8 C
13	B-013-0-20	SR 7			Right	CME 55 Truck Rig	84	640.5	638.9	1.6 C
14	B-014-0-20	SR 7			Left	CME 55 Truck Rig	84	638.1	636.4	1.7 C
15	B-015-0-20	SR 7			Right	CME 55 Truck Rig	84	636.6	634.6	2.0 C
16	B-016-0-20	SR 7			Left	CME 55 Truck Rig	84	635.6	633.4	2.2 C
17	B-017-0-20	SR 7			Right	CME 55 Truck Rig	84	635.5	633.9	1.6 C
18	B-018-0-20	SR 7			Left	CME 55 Truck Rig	84	637.1	635.3	1.8 C
19	B-019-0-20	SR 7			Right	CME 55 Truck Rig	84	638.7	637.2	1.5 C
20	B-020-0-20	SR 7			Left	CME 55 Truck Rig	84	641.6	639.8	1.8 C
21	B-021-0-20	SR 7			Right	CME 55 Truck Rig	84	645.8	644.3	1.5 C
22	B-022-0-20	SR 7			Left	CME 55 Truck Rig	84	650.6	648.9	1.7 C
23	B-023-0-20	SR 7			Right	CME 55 Truck Rig	84	650.4	648.8	1.6 C
24	B-024-0-20	SR 7			Left	CME 55 Truck Rig	84	648.8	647.0	1.8 C
25	B-025-0-20	SR 7			Right	CME 55 Truck Rig	84	646.8	645.2	1.6 C
26	B-026-0-20	SR 7			Left	CME 55 Truck Rig	84	641.8	640.2	1.6 C
27	B-027-0-20	SR 7			Right	CME 55 Truck Rig	84	637.6	636.3	1.3 C
28	B-028-0-20	SR 7			Left	CME 55 Truck Rig	84	638.8	636.8	2.0 C
29	B-029-0-20	SR 7			Right	CME 55 Truck Rig	84	645.5	644.1	1.4 C
30	B-030-0-20	SR 7			Left	CME 55 Truck Rig	84	653.4	651.8	1.6 C
31	B-031-0-20	SR 7			Right	CME 55 Truck Rig	84	658.0	656.4	1.6 C
32	B-032-0-20	SR 7			Left	CME 55 Truck Rig	84	654.6	652.9	1.7 C
33	B-033-0-20	SR 7			Right	CME 55 Truck Rig	84	647.5	646.0	1.5 C
34	B-034-0-20	SR 7			Left	CME 55 Truck Rig	84	644.4	642.8	1.6 C
35	B-035-0-20	SR 7			Right	CME 55 Truck Rig	84	641.2	639.6	1.6 C
36	B-036-0-20	SR 7			Left	CME 55 Truck Rig	84	638.2	636.7	1.5 C
37	B-037-0-20	SR 7			Right	CME 55 Truck Rig	84	635.6	634.1	1.5 C
38	B-038-0-20	SR 7			Left	CME 55 Truck Rig	84	635.3	633.8	1.5 C
39	B-039-0-20	SR 7			Right	CME 55 Truck Rig	84	637.4	635.9	1.5 C
40	B-040-0-20	SR 7			Left	CME 55 Truck Rig	84	639.0	637.3	1.7 C
41	B-041-0-20	SR 7			Right	CME 55 Truck Rig	84	637.2	635.6	1.6 C
42	B-042-0-20	SR 7			Left	CME 55 Truck Rig	84	637.7	636.4	1.3 C
43	B-043-0-20	SR 7			Right	CME 55 Truck Rig	84	637.1	635.8	1.3 C
44	B-044-0-20	SR 7			Left	CME 55 Truck Rig	84	633.5	632.2	1.3 C

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
45	B-045-0-20	SR 7			Right	CME 55 Truck Rig	84	628.9	627.5	1.4 C
46	B-046-0-20	SR 7			Left	CME 55 Truck Rig	84	626.2	624.8	1.4 C
47	B-047-0-20	SR 7			Right	CME 55 Truck Rig	84	627.4	626.1	1.3 C
48	B-048-0-20	SR 7			Left	CME 55 Truck Rig	84	629.1	627.7	1.4 C
49	B-049-0-20	SR 7			Right	CME 55 Truck Rig	84	629.0	627.8	1.3 C
50	B-050-0-20	SR 7			Left	CME 55 Truck Rig	84	627.8	626.5	1.3 C
51	B-051-0-20	SR 7			Right	CME 55 Truck Rig	84	625.8	624.6	1.3 C
52	B-052-0-20	SR 7			Left	CME 55 Truck Rig	84	623.8	622.6	1.2 C
53	B-053-0-20	SR 7			Right	CME 55 Truck Rig	84	627.1	625.8	1.3 C
54	B-054-0-20	SR 7			Left	CME 55 Truck Rig	84	632.7	631.4	1.3 C
55	B-055-0-20	SR 7			Right	CME 55 Truck Rig	84	636.2	634.9	1.3 C
56	B-056-0-20	SR 7			Left	CME 55 Truck Rig	84	635.3	633.9	1.4 C
57	B-057-0-20	SR 7			Right	CME 55 Truck Rig	84	630.9	629.6	1.3 C
58	B-058-0-20	SR 7			Left	CME 55 Truck Rig	84	628.4	627.1	1.3 C
59	B-059-0-20	SR 7			Right	CME 55 Truck Rig	84	631.2	630.4	0.8 C
60	B-060-0-20	SR 7			Left	CME 55 Truck Rig	84	635.8	634.3	1.5 C
61	B-061-0-20	SR 7			Right	CME 55 Truck Rig	84	640.2	638.7	1.5 C
62	B-062-0-20	SR 7			Left	CME 55 Truck Rig	84	645.2	643.8	1.4 C
63	B-063-0-20	SR 7			Right	CME 55 Truck Rig	84	646.3	645.3	1.0 C
64	B-064-0-20	SR 7			Left	CME 55 Truck Rig	84	642.4	641.2	1.3 C
65	B-065-0-20	SR 7			Right	CME 55 Truck Rig	84	636.3	634.9	1.4 C
66	B-066-0-20	SR 7			Left	CME 55 Truck Rig	84	630.3	629.1	1.3 C
67	B-067-0-20	SR 7			Right	CME 55 Truck Rig	84	628.4	627.0	1.4 C
68	B-068-0-20	SR 7			Left	CME 55 Truck Rig	84	632.3	631.0	1.3 C
69	B-069-0-20	SR 7			Right	CME 55 Truck Rig	84	639.9	638.5	1.4 C
70	B-070-0-20	SR 7			Left	CME 55 Truck Rig	84	642.9	641.4	1.5 C
71	B-071-0-20	SR 7			Right	CME 55 Truck Rig	84	640.9	639.6	1.3 C
72	B-072-0-20	SR 7			Left	CME 55 Truck Rig	84	632.6	631.3	1.3 C
73	B-073-0-20	SR 7			Right	CME 55 Truck Rig	84	628.4	626.9	1.5 C
74	B-074-0-20	SR 7			Left	CME 55 Truck Rig	84	629.4	628.0	1.4 C
75	B-075-0-20	SR 7			Right	CME 55 Truck Rig	84	632.2	630.8	1.4 C
76	B-076-0-20	SR 7			Left	CME 55 Truck Rig	84	632.4	631.1	1.3 C
77	B-077-0-20	SR 7			Right	CME 55 Truck Rig	84	630.5	629.2	1.3 C
78	B-078-0-20	SR 7			Left	CME 55 Truck Rig	84	629.3	627.8	1.5 C
79	B-079-0-20	SR 7			Right	CME 55 Truck Rig	84	627.4	626.0	1.4 C
80	B-080-0-20	SR 7			Left	CME 55 Truck Rig	84	627.4	626.1	1.3 C
81	B-081-0-20	SR 7			Right	CME 55 Truck Rig	84	634.1	632.4	1.8 C
82	B-082-0-20	SR 7			Left	CME 55 Truck Rig	84	650.8	649.3	1.5 C
83	B-083-0-20	SR 7			Right	CME 55 Truck Rig	84	662.1	660.7	1.4 C
84	B-084-0-20	SR 7			Left	CME 55 Truck Rig	84	667.1	665.6	1.5 C

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
1	B	SS-1	1.5	3.0	0.1	1.6	14									13	18	A-7-6	16						
	001-0	SS-2	3.0	4.5	1.6	3.1	15		3	44	23	21	34	39	73	20	20	A-7-6	13						
	20	SS-3	4.5	6.0	3.1	4.6	17		2							19	18	A-7-6	16						
		SS-4	6.0	7.5	4.6	6.1	14	14	2.5	43	21	22	30	42	72	20	18	A-7-6	13	100					
2	B	SS-1	2.1	3.6	0.3	1.8	8		2	41	21	20	28	33	61	19	18	A-7-6	9	100		N_{60}		12"	
	002-0	SS-2	3.6	5.1	1.8	3.3	4		1.5							18	18	A-7-6	16			HP			
	20	SS-3	5.1	6.6	3.3	4.8	7		1							24	18	A-7-6	16						
		SS-4	6.6	8.1	4.8	6.3	11	4	4	38	21	17	37	46	83	21	16	A-6b	11						
3	B	SS-1	1.3	2.8	0.0	1.5	22									16	14	A-6a	10						
	003-0	SS-2	2.8	4.3	1.5	3.0	21		2.5	34	22	12	28	24	52	14	17	A-6a	4	100					
	20	SS-3	4.3	5.8	3.0	4.5	42									15	16	A-6b	16						
		SS-4	5.8	7.3	4.5	6.0	22	21	1.5	33	16	17	23	35	58	20	16	A-6b	7						
4	B	SS-1	1.8	3.3	0.0	1.5	15		3							18	18	A-7-6	16						
	004-0	SS-2	3.3	4.8	1.5	3.0	14		3	55	29	26	48	48	96	26	26	A-7-6	17	100					
	20	SS-3	4.8	6.3	3.0	4.5	17		2.5							23	14	A-6a	10						
		SS-4	6.3	7.8	4.5	6.0	14	14	2	37	22	15	50	32	82	23	17	A-6a	10						
5	B	SS-1	2.0	3.5	0.2	1.7	18		1	39	22	17	49	32	81	22	17	A-6b	11			HP & Mc		12"	
	005-0	SS-2	3.5	5.0	1.7	3.2	10		2							19	16	A-6b	16			N_{60} & Mc			
	20	SS-3	5.0	6.5	3.2	4.7	14		2	44	21	23	29	39	68	22	18	A-7-6	12	100					
		SS-4	6.5	8.0	4.7	6.2	14	10	1.5							19	18	A-7-6	16						
6	B	SS-1	2.0	3.5	0.2	1.7	10		4							16	18	A-7-6	16			N_{60}		12"	
	006-0	SS-2	3.5	5.0	1.7	3.2	10		2.5	43	21	22	28	32	60	18	18	A-7-6	10	100		N_{60}			
	20	SS-3	5.0	6.5	3.2	4.7	11		3							19	16	A-6b	16						
		SS-4	6.5	8.0	4.7	6.2	11	10	1.5	39	19	20	25	26	51	17	16	A-6b	7						
7	B	SS-1	2.0	3.5	0.3	1.8	6									17	18	A-7-6	16	130		N_{60}		18"	
	007-0	SS-2	3.5	4.9	1.8	3.2	30		2.5	45	23	22	33	39	72	20	20	A-7-6	13						
	20	SS-3	5.5	5.7	3.8	4.0	30									7	6	A-1-b	0						
		SS-4	6.5	6.6	4.8	4.9	30	6								6	6	A-1-b	0						
8	B	SS-1	2.0	3.5	0.2	1.7	20		3	40	20	20	28	37	65	18	16	A-6b	10	100					
	008-0	SS-2	3.5	5.0	1.7	3.2	15		3							23	16	A-6b	16			Mc			
	20	SS-3	5.0	6.5	3.2	4.7	15		2.5	41	22	19	28	37	65	18	19	A-7-6	10						
		SS-4	6.5	8.0	4.7	6.2	15	15	2							19	18	A-7-6	16						
9	B	SS-1	2.0	3.5	0.3	1.8	17		3	41	22	19	29	31	60	19	19	A-7-6	9	100					
	009-0	SS-2	3.5	5.0	1.8	3.3	10									16	18	A-7-6	16			N_{60}			
	20	SS-3	5.0	6.5	3.3	4.8	11		2.5							18	18	A-7-6	16						
		SS-4	6.5	8.0	4.8	6.3	11	10	3	44	23	21	31	43	74	21	20	A-7-6	13						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
10	B	SS-1	1.7	3.2	0.0	1.5	7									13	10	A-2-4	0			N_{60} & Mc		**15"**	
	010-0	SS-2	3.2	4.7	1.5	3.0	11		1.5	43	22	21	28	34	62	19	19	A-7-6	10	140		HP			
	20	SS-3	4.7	6.2	3.0	4.5	18		3.5	45	24	21	33	41	74	20	21	A-7-6	13						
		SS-4	6.2	7.7	4.5	6.0	14	7	3.5							16	18	A-7-6	16						
11	B	SS-1	2.0	3.5	0.2	1.7	25		3	41	22	19	32	30	62	17	19	A-7-6	9	100					
	011-0	SS-2	4.0	5.5	2.2	3.7	13		2							21	18	A-7-6	16						
	20	SS-3	5.5	7.0	3.7	5.2	18		3.5	48	24	24	33	49	82	21	21	A-7-6	15						
		SS-4	7.0	8.5	5.2	6.7	22	13	4							19	18	A-7-6							
12	B	SS-1	1.8	3.3	0.0	1.5	20									13	18	A-7-6	16						
	012-0	SS-2	3.3	4.8	1.5	3.0	14		2	45	23	22	37	42	79	24	20	A-7-6	14	100		N_{60} & Mc			
	20	SS-3	4.8	6.3	3.0	4.5	10		2.5							26	18	A-7-6	16						
		SS-4	6.3	7.8	4.5	6.0	17	10		46	23	23	32	39	71	21	20	A-7-6	13						
13	B	SS-1	2.0	3.5	0.4	1.9	22		1.5	46	23	23	33	37	70	23	20	A-7-6	13	100		HP & Mc		**12"**	
	013-0	SS-2	3.5	5.0	1.9	3.4	15		2							22	18	A-7-6	16			Mc			
	20	SS-3	5.0	6.5	3.4	4.9	17		3.5	47	23	24	33	51	84	19	20	A-7-6	15						
		SS-4	6.5	8.0	4.9	6.4	13	13								15	18	A-7-6	16						
14	B	SS-1	1.7	3.2	0.0	1.5	25		2.5							15	16	A-6b	16						
	014-0	SS-2	3.2	4.7	1.5	3.0	25		2	37	20	17	28	23	51	15	16	A-6b	6	100					
	20	SS-3	4.7	6.2	3.0	4.5	14		2	50	29	21	36	32	68	28	26	A-7-6	13						
		SS-4	6.2	7.7	4.5	6.0	15	14	3							25	18	A-7-6	16						
15	B	SS-1	2.0	3.5	0.0	1.5	14		3	51	25	26	28	48	76	23	22	A-7-6	17	100					
	015-0	SS-2	3.5	5.0	1.5	3.0	15									21	18	A-7-6	16			Mc			
	20	SS-3	5.0	6.5	3.0	4.5	13		3.5	37	20	17	36	35	71	19	16	A-6b	10						
		SS-4	6.5	8.0	4.5	6.0	21	13	3.5							20	16	A-6b	16						
16	B	SS-1	2.2	3.7	0.0	1.5	25									8	10	A-2-4	0						
	016-0	SS-2	3.7	5.2	1.5	3.0	36			NP	NP	NP	18	8	26	7	10	A-2-4	0	100					
	20	SS-3	5.2	6.7	3.0	4.5	17			NP	NP	NP	16	10	26	9	10	A-2-4	0						
		SS-4	6.7	8.2	4.5	6.0	13	13								12	10	A-2-4	0						
17	B	SS-1	2.0	3.5	0.4	1.9	13		2	38	23	15	49	39	88	22	18	A-6a	10	100		N_{60} & Mc		**12"**	
	017-0	SS-2	3.5	5.0	1.9	3.4	8		1.5							20	14	A-6a	10			HP & Mc			
	20	SS-3	5.0	6.5	3.4	4.9	8		0.5	36	21	15	51	33	84	22	16	A-6a	10						
		SS-4	6.5	8.0	4.9	6.4	11	8	2							21	14	A-6a	10						
18	B	SS-1	2.0	3.5	0.2	1.7	8		2	36	21	15	38	34	72	20	16	A-6a	9	100		N_{60} & Mc		**12"**	
	018-0	SS-2	3.5	5.0	1.7	3.2	11		3.5							18	14	A-6a	10			N_{60} & Mc			
	20	SS-3	5.0	6.5	3.2	4.7	14		1.5							20	14	A-6a	10						
		SS-4	6.5	8.0	4.7	6.2	10	8	1.5	35	19	16	47	33	80	22	16	A-6b	10						
19	B	SS-1	2.0	3.5	0.5	2.0	11		2.5							19	16	A-6b	16			N_{60} & Mc		**12"**	
	019-0	SS-2	3.5	5.0	2.0	3.5	13		2							18	16	A-6b	16						
	20	SS-3	5.0	6.5	3.5	5.0	10		2	38	20	18	39	38	77	21	16	A-6b	11	100					
		SS-4	6.5	8.0	5.0	6.5	15	10	3	38	23	15	39	38	77	20	18	A-6a	10						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
20	B	SS-1	2.0	3.5	0.2	1.7	10		2.5	44	24	20	41	51	92	25	21	A-7-6	13			N_{60} & Mc		12"	
	020-0	SS-2	3.5	5.0	1.7	3.2	15		3	37	21	16	34	41	75	20	16	A-6b	10	100		Mc			
	20	SS-3	5.0	6.5	3.2	4.7	14		2.5							19	16	A-6b	16						
		SS-4	6.5	8.0	4.7	6.2	20	10	4							20	16	A-6b	16						
21	B	SS-1	1.5	3.0	0.0	1.5	11									21	14	A-6a	10			N_{60} & Mc		12"	
	021-0	SS-2	3.0	4.5	1.5	3.0	13		1.5	31	19	12	32	25	57	17	14	A-6a	5	100		HP & Mc			
	20	SS-3	4.5	6.0	3.0	4.5	13		0.5							21	14	A-6a	10						
		SS-4	6.8	7.5	5.3	6.0		11	0.5	32	17	15	40	30	70	24	14	A-6a							
22	B	SS-1	1.7	3.2	0.0	1.5	24									10	14	A-6a	10						
	022-0	SS-2	3.2	4.7	1.5	3.0	10		1	34	21	13	35	24	59	19	16	A-6a	6	100		HP & Mc			
	20	SS-3	4.7	6.2	3.0	4.5	13		1.5							24	14	A-6a	10						
		SS-4	6.2	7.7	4.5	6.0	17	10		28	18	10	15	8	23	11	10	A-2-4	0						
23	B	SS-1	1.6	3.1	0.0	1.5	21		3.5							14	18	A-7-6	16						
	023-0	SS-2	3.1	4.6	1.5	3.0	27		3.5	43	20	23	47	45	92	21	18	A-7-6	14	100		Mc			
	20	SS-3	4.6	6.1	3.0	4.5	25		3	29	18	11	62	26	88	18	14	A-6a	8						
		SS-4	6.1	7.6	4.5	6.0	18	18								13	10	A-4a	8						
24	B	SS-1	2.0	3.5	0.2	1.7	17		4.5							18	16	A-6b	16						
	024-0	SS-2	3.5	5.0	1.7	3.2	6		1	37	21	16	41	30	71	20	16	A-6b	10	100		HP & Mc			
	20	SS-3	5.0	6.5	3.2	4.7	7		1.5	38	22	16	44	36	80	25	17	A-6b	10						
		SS-4	6.5	8.0	4.7	6.2	11	6	1							22	16	A-6b	16						
25	B	SS-1	1.6	3.1	0.0	1.5	11		3							21	14	A-6a	10			N_{60} & Mc		12"	
	025-0	SS-2	3.1	4.6	1.5	3.0	14		2	34	19	15	59	29	88	23	14	A-6a	10	120		N_{60} & Mc			
	20	SS-3	4.6	6.1	3.0	4.5	10		1.5							25	14	A-6a	10						
		SS-4	6.1	7.6	4.5	6.0	8	8		24	20	4	63	18	81	27	15	A-4b	8						
26	B	SS-1	1.6	3.1	0.0	1.5	8		1							18	18	A-7-6	16			HP		12"	
	026-0	SS-2	3.1	4.6	1.5	3.0	10		2.5	35	19	16	48	32	80	20	16	A-6b	10	120		N_{60} & Mc			
	20	SS-3	4.6	6.1	3.0	4.5	14		2							20	14	A-6a	10						
		SS-4	6.1	7.6	4.5	6.0	11	8	1	30	18	12	41	28	69	23	14	A-6a	8						
27	B	SS-1	1.5	3.0	0.2	1.7	15		1.5	29	18	11	41	27	68	18	14	A-6a	7			HP & Mc		12"	
	027-0	SS-2	3.0	4.5	1.7	3.2	14			NP	NP	NP	20	13	33	13	10	A-2-4	0	100		N_{60} & Mc			
	20	SS-3	4.5	6.0	3.2	4.7	22									14	10	A-2-4	0						
		SS-4	6.0	7.5	4.7	6.2	18	14								12	10	A-2-4	0						
28	B	SS-1	2.0	3.5	0.0	1.5	21		3	29	18	11	24	25	49	12	14	A-6a	3						
	028-0	SS-2	3.5	5.0	1.5	3.0	10		1	36	20	16	34	28	62	21	16	A-6b	8	100		HP & Mc			
	20	SS-3	5.0	6.5	3.0	4.5	13		2							16	10	A-2-6	4						
		SS-4	6.5	8.0	4.5	6.0	13	10								16	10	A-2-6	4						
29	B	SS-1	1.5	3.0	0.1	1.6	11									14	14	A-6a	10			N_{60}		12"	
	029-0	SS-2	3.0	4.5	1.6	3.1	17		2	35	20	15	32	26	58	20	15	A-6a	7	120		Mc			
	20	SS-3	4.5	6.0	3.1	4.6	17		1	31	22	9	77	17	94	25	17	A-4b	8						
		SS-4	6.0	7.5	4.6	6.1	14	11	1							26	10	A-4b	8						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
30	B	SS-1	1.6	3.1	0.0	1.5	11		2	33	19	14	44	40	84	18	14	A-6a	10			N_{60} & Mc		12"	
	030-0	SS-2	3.1	4.6	1.5	3.0	20		3.5							15	14	A-6a	10						
	20	SS-3	4.6	6.1	3.0	4.5	15		3	43	22	21	42	41	83	23	19	A-7-6	13	100					
		SS-4	6.1	7.6	4.5	6.0	14	11	3								18	A-7-6	16						
31	B	SS-1	1.6	3.1	0.0	1.5	18									13	14	A-6a	10						
	031-0	SS-2	3.1	4.6	1.5	3.0	17			30	19	11	21	16	37	13	14	A-6a	1	140					
	20	SS-3	4.6	6.1	3.0	4.5	17									14	10	A-4a	8						
		SS-4	6.1	7.6	4.5	6.0	15	15	2	29	19	10	22	25	47	17	14	A-4a	2						
32	B	SS-1	1.7	3.2	0.0	1.5	14		2	30	19	11	37	27	64	17	14	A-6a	6	100		N_{60} & Mc		12"	
	032-0	SS-2	3.2	4.7	1.5	3.0	7		1							19	14	A-6a	10			HP & Mc			
	20	SS-3	4.7	6.2	3.0	4.5	14		1.5							18	14	A-6a	10						
		SS-4	6.2	7.7	4.5	6.0	17	7	3	34	20	14	35	44	79	30	15	A-6a	10						
33	B	SS-1	1.5	3.0	0.0	1.5	21			NP	NP	NP	35	12	47	16	11	A-4a	2	100		Mc			
	033-0	SS-2	3.0	4.5	1.5	3.0	15		2							19	10	A-4a	8			Mc			
	20	SS-3	4.5	6.0	3.0	4.5	17		1.5							28	18	A-7-6	16						
		SS-4	6.0	7.5	4.5	6.0	14	14	2.5	43	22	21	35	54	89	24	19	A-7-6	13						
34	B	SS-1	1.6	3.1	0.0	1.5	11		2							19	18	A-7-6	16			N_{60}		12"	
	034-0	SS-2	3.1	4.6	1.5	3.0	14		2	43	21	22	38	44	82	19	18	A-7-6	13	100					
	20	SS-3	4.6	6.1	3.0	4.5	22		3.5							20	14	A-6a	10						
		SS-4	6.1	7.6	4.5	6.0	20	11	2	34	20	14	29	39	68	16	15	A-6a	8						
35	B	SS-1	1.6	3.1	0.0	1.5	11		3.5	43	22	21	32	35	67	20	19	A-7-6	11	100		N_{60}		12"	
	035-0	SS-2	3.1	4.6	1.5	3.0	13									18	18	A-7-6	16						
	20	SS-3	4.6	6.1	3.0	4.5	11		1							27	18	A-7-6	16						
		SS-4	6.1	7.6	4.5	6.0	13	11	1.5	46	23	23	34	59	93	27	20	A-7-6	14						
36	B	SS-1	1.5	3.0	0.0	1.5	8		3.5							19	18	A-7-6	16			N_{60}		12"	
	036-0	SS-2	3.0	4.5	1.5	3.0	17		2.5	43	22	21	41	43	84	21	19	A-7-6	13	100					
	20	SS-3	4.5	6.0	3.0	4.5	17		1.5							18	14	A-6a	10						
		SS-4	6.0	7.5	4.5	6.0	18	8	2	34	20	14	31	39	70	16	15	A-6a	9						
37	B	SS-1	1.5	3.0	0.0	1.5	24									25	10	A-4b	8		A-4b	Mc			
	037-0	SS-2	3.0	4.5	1.5	3.0	13		0.5	26	20	6	53	18	71	22	15	A-4b	7	100	A-4b	HP & Mc	36"		
	20	SS-3	4.5	6.0	3.0	4.5	4		0.5							14	10	A-4a	8						
		SS-4	6.0	7.5	4.5	6.0	6	4	0.5	23	17	6	38	20	58	25	12	A-4a	5						
38	B	SS-1	1.5	3.0	0.0	1.5	13		2							17	14	A-6a	10			N_{60} & Mc		12"	
	038-0	SS-2	3.0	4.5	1.5	3.0	11		1.5	34	20	14	28	24	52	16	15	A-6a	5	100		HP			
	20	SS-3	4.5	6.0	3.0	4.5	15		2							16	14	A-6a	10						
		SS-4	6.0	7.5	4.5	6.0	17	11		NP	NP	NP	39	13	52	15	11	A-4a	3						
39	B	SS-1	1.5	3.0	0.0	1.5	24			NP	NP	NP	39	13	52	15	11	A-4a	3			Mc			
	039-0	SS-2	3.0	4.5	1.5	3.0	17									20	14	A-6a	10			Mc			
	20	SS-3	4.5	6.0	3.0	4.5	14		2.5	34	20	14	32	23	55	16	15	A-6a	6	100					
		SS-4	6.0	7.5	4.5	6.0	14	14								12	14	A-6a	10						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
40	B	SS-1	1.7	3.2	0.0	1.5	13		3							19	16	A-6b	16			N_{60} & Mc		12"	
	040-0	SS-2	3.2	4.7	1.5	3.0	10		1	31	19	12	32	26	58	15	14	A-6a	5	100		HP			
	20	SS-3	4.7	6.2	3.0	4.5	6		0.5	30	18	12	37	36	73	21	14	A-6a	8						
		SS-4	6.2	7.7	4.5	6.0	14	6	2.5							19	14	A-6a	10						
41	B	SS-1	1.6	3.1	0.0	1.5	11		3	26	16	10	35	28	63	16	11	A-4a	6			N_{60} & Mc		12"	
	041-0	SS-2	3.1	4.6	1.5	3.0	18			22	17	5	47	14	61	15	12	A-4a	5	100		Mc			
	20	SS-3	4.6	6.1	3.0	4.5	20									14	10	A-4a	8						
		SS-4	6.1	7.6	4.5	6.0	14	11								16	10	A-4a	8						
42	B	SS-1	1.5	3.0	0.2	1.7	29			NP	NP	NP	50	13	63	14	11	A-4b	6	100	A-4b	Mc			
	042-0	SS-2	3.0	4.5	1.7	3.2	18									20	10	A-4b	8		A-4b	Mc	38"		
	20	SS-3	4.5	6.0	3.2	4.7	7		2	35	21	14	35	38	73	25	16	A-6a	9						
		SS-4	6.0	7.5	4.7	6.2	6	6	1							24	14	A-6a	10						
43	B	SS-1	1.5	3.0	0.2	1.7	17		3.5	40	21	19	31	36	67	18	16	A-6b	10	100					
	043-0	SS-2	3.0	4.5	1.7	3.2	25									17	16	A-6b	16						
	20	SS-3	4.5	6.0	3.2	4.7	21		4	28	20	8	27	18	45	12	15	A-4a	2						
		SS-4	6.0	7.5	4.7	6.2	13	13	3							15	10	A-4a	8						
44	B	SS-1	1.5	3.0	0.2	1.7	11		3							25	18	A-7-6	16			N_{60} & Mc		12"	
	044-0	SS-2	3.0	4.5	1.7	3.2	21		2	41	22	19	37	31	68	21	19	A-7-6	10	100					
	20	SS-3	4.5	6.0	3.2	4.7	22			NP	NP	NP	36	10	46	18	11	A-4a	2						
		SS-4	6.0	7.5	4.7	6.2	8	8								19	10	A-4a	8						
45	B	SS-1	1.5	3.0	0.1	1.6	11		3							21	14	A-6a	10			N_{60} & Mc		12"	
	045-0	SS-2	3.0	4.5	1.6	3.1	21			NP	NP	NP	54	10	64	19	11	A-4b	6	100	A-4b	Mc	37"		
	20	SS-3	4.5	6.0	3.1	4.6	32		4							4	14	A-6a	10						
		SS-4	6.0	7.5	4.6	6.1	10	10	1	37	23	14	35	53	88	26	18	A-6a	10						
46	B	SS-1	1.5	3.0	0.1	1.6	29		1.5							16	14	A-6a	10			HP		12"	
	046-0	SS-2	3.0	4.5	1.6	3.1	14		4	33	21	12	47	24	71	17	16	A-6a	8	100					
	20	SS-3	4.5	6.0	3.1	4.6	8		1.5	52	26	26					21	A-6b	16						
		SS-4	6.0	7.5	4.6	6.1	11	8	2.5							24	16	A-6b	16						
47	B	SS-1	1.5	3.0	0.2	1.7	21		3	40	21	19	32	29	61	17	16	A-6b	9	100					
	047-0	SS-2	3.0	4.5	1.7	3.2	13									16	16	A-6b	16						
	20	SS-3	4.5	6.0	3.2	4.7	15		3	42	23	19	26	47	73	20	20	A-7-6	12						
		SS-4	6.0	7.5	4.7	6.2	11	11	3.5							20	18	A-7-6	16						
48	B	SS-1	1.5	3.0	0.1	1.6	7		3	39	22	17	46	36	82	21	17	A-6b	11	140		N_{60} & Mc		15"	
	048-0	SS-2	3.0	4.5	1.6	3.1	13		3							20	16	A-6b	16			N_{60} & Mc			
	20	SS-3	4.5	6.0	3.1	4.6	18		3	41	21	20	42	46	88	19	18	A-7-6	12						
		SS-4	6.0	7.5	4.6	6.1	25	7	4.5							23	18	A-7-6	16						
49	B	SS-1	1.5	3.0	0.3	1.8	10		2	45	23	22	42	43	85	24	20	A-7-6	14	100		N_{60} & Mc		12"	
	049-0	SS-2	3.0	4.5	1.8	3.3	14		2.5							25	18	A-7-6	16			N_{60} & Mc			
	20	SS-3	4.5	6.0	3.3	4.8	20		3.5	49	24	25	39	54	93	23	21	A-7-6	16						
		SS-4	6.0	7.5	4.8	6.3	22	10	3.5							21	18	A-7-6	16						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
50	B	SS-1	1.5	3.0	0.2	1.7	20		4							20	16	A-6b	16			Mc			
	050-0	SS-2	3.0	4.5	1.7	3.2	20		4	36	19	17	50	33	83	18	16	A-6b	11	120					
	20	SS-3	4.5	6.0	3.2	4.7	29		4							15	16	A-6b	16						
		SS-4	6.0	7.5	4.7	6.2	28	20		26	18	8	41	25	66	15	13	A-4a	6						
51	B	SS-1	1.5	3.0	0.3	1.8	13		3.5	35	18	17	27	27	54	14	16	A-6b	7						
	051-0	SS-2	3.0	4.5	1.8	3.3	20		3.5							22	16	A-6b	16			Mc			
	20	SS-3	4.5	6.0	3.3	4.8	22		3	30	19	11	49	25	74	18	14	A-6a	8	100					
		SS-4	6.0	7.5	4.8	6.3	15	13	1.5							21	14	A-6a	10						
52	B	SS-1	1.5	3.0	0.3	1.8	11		3	37	20	17	24	30	54	16	16	A-6b	7	100		N_{60}		12"	
	052-0	SS-2	3.0	4.5	1.8	3.3	11		1.5							17	16	A-6b	16			HP			
	20	SS-3	4.5	6.0	3.3	4.8	13		1.5	47	24	23	23	48	71	24	21	A-7-6	14						
		SS-4	6.0	7.5	4.8	6.3	11	11	1.5							19	18	A-7-6	16						
53	B	SS-1	1.5	3.0	0.2	1.7	13		2							17	18	A-7-6	16						
	053-0	SS-2	3.0	4.5	1.7	3.2	13			48	22	26	27	43	70	22	19	A-7-6	15	100		N_{60} & Mc			
	20	SS-3	4.5	6.0	3.2	4.7	13		2							24	14	A-6a	10						
		SS-4	6.0	7.5	4.7	6.2	8	8	1	33	18	15	18	31	49	14	14	A-6a	5						
54	B	SS-1	1.5	3.0	0.2	1.7	14		3.5	45	22	23	25	40	65	20	19	A-7-6	12	160					
	054-0	SS-2	3.0	4.5	1.7	3.2	22		1.5							17	18	A-7-6	16			HP			
	20	SS-3	4.5	6.0	3.2	4.7	15		2.5	45	23	22	23	52	75	22	20	A-7-6	14						
		SS-4	6.0	7.5	4.7	6.2	14	14	2							29	18	A-7-6	16						
55	B	SS-1	1.5	3.0	0.2	1.7	7		2							10	18	A-7-6	16			N_{60}		15"	
	055-0	SS-2	3.0	4.5	1.7	3.2	6			44	22	22	24	36	60	19	19	A-7-6	10	100		N_{60}			
	20	SS-3	4.5	6.0	3.2	4.7	13		2.5							19	16	A-6b	16						
		SS-4	6.0	7.5	4.7	6.2	18	6	2.5	37	21	16	31	34	65	17	16	A-6b	8						
56	B	SS-1	1.5	3.0	0.1	1.6	15		2							16	16	A-6b	16						
	056-0	SS-2	3.0	4.5	1.6	3.1	13		4	39	21	18	32	33	65	16	16	A-6b	9	100					
	20	SS-3	4.5	6.0	3.1	4.6	17		3.5							17	16	A-6b	16						
		SS-4	6.0	7.5	4.6	6.1	17	13	3	40	21	19	31	47	78	17	16	A-6b	12						
57	B	SS-1	1.5	3.0	0.2	1.7	22		4							20	16	A-6b	16			Mc			
	057-0	SS-2	3.0	4.5	1.7	3.2	20			38	20	18	28	28	56	14	16	A-6b	7	100					
	20	SS-3	4.5	6.0	3.2	4.7	13		1.5	29	19	10	41	30	71	19	14	A-4a	7						
		SS-4	6.0	7.5	4.7	6.2	18	13	3							19	10	A-4a	8						
58	B	SS-1	1.5	3.0	0.2	1.7	63									12		A-7-5	16		A-7-5				
	058-0	SS-2	3.0	4.5	1.7	3.2	29		3	59	30	29	26	46	72	25		A-7-5	19	100	A-7-5		38"		
	20	SS-3	4.5	6.0	3.2	4.7	21		3.5							24	18	A-7-6	16						
		SS-4	6.0	7.5	4.7	6.2	18	18	3	43	23	20	24	39	63	21	20	A-7-6	10						
59	B	SS-1	1.5	3.0	0.7	2.2	10			43	20	23	27	32	59	14	18	A-7-6	10	100		N_{60}		12"	
	059-0	SS-2	3.0	4.5	2.2	3.7	13		3							15	16	A-6b	16						
	20	SS-3	4.5	6.0	3.7	5.2	11		3	40	21	19	20	35	55	21	16	A-6b	8						
		SS-4	6.0	7.5	5.2	6.7	13	10	2.5							17	16	A-6b							

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
60	B	SS-1	1.5	3.0	0.0	1.5	13		2	47	22	25	29	37	66	19	19	A-7-6	13	100					
	060-0	SS-2	3.0	4.5	1.5	3.0	8		2							15	16	A-6b	16			N_{60}			
	20	SS-3	4.5	6.0	3.0	4.5	8		2	40	22	18	27	40	67	20	17	A-6b	10						
		SS-4	6.0	7.5	4.5	6.0	13	8	2.5							18	16	A-6b	16						
61	B	SS-1	1.5	3.0	0.0	1.5	10		3	45	22	23	27	35	62	18	19	A-7-6	11	100		N_{60}		12"	
	061-0	SS-2	3.0	4.5	1.5	3.0	13									15	18	A-7-6	16						
	20	SS-3	4.5	6.0	3.0	4.5	17		2.5	41	23	18	23	42	65	17	20	A-7-6	9						
		SS-4	6.0	7.5	4.5	6.0	18	10	2							17	18	A-7-6	16						
62	B	SS-1A	1.5	2.5	0.1	1.1	70		2	46	21	25	21	48	69	18	18	A-7-6	14						
	062-0	SS-2	3.0	4.5	1.6	3.1	18									10	6	A-1-b	0						
	20	SS-3	4.5	6.0	3.1	4.6	15		2	43	21	22	25	43	68	17	18	A-7-6	12	100					
		SS-4	6.0	7.5	4.6	6.1	15	15	2.5							14	18	A-7-6	16						
63	B	SS-1	1.0	2.5	0.0	1.5	15									15	16	A-6b	16						
	063-0	SS-2	2.5	4.0	1.5	3.0	14		4	38	19	19	25	33	58	14	16	A-6b	8	100					
	20	SS-3	4.0	5.5	3.0	4.5	15		4.5	42	21	21	17	43	60	17	18	A-7-6	10						
		SS-4	5.5	7.0	4.5	6.0	14	14	2.5							17	18	A-7-6	16						
64	B	SS-1	1.5	3.0	0.3	1.8	10		2.5	48	23	25	28	47	75	19	20	A-7-6	16	100		N_{60}		12"	
	064-0	SS-2	3.0	4.5	1.8	3.3	10		1.5							23	18	A-7-6	16			HP & Mc			
	20	SS-3	4.5	6.0	3.3	4.8	11		2.5	42	22	20	22	47	69	17	19	A-7-6	11						
		SS-4	6.0	7.5	4.8	6.3	8	8	2.5							20	18	A-7-6	16						
65	B	SS-1	1.5	3.0	0.1	1.6	17		3	45	24	21	31	40	71	20	21	A-7-6	13	200					
	065-0	SS-2	3.0	4.5	1.6	3.1	15									17	18	A-7-6	16						
	20	SS-3	4.5	6.0	3.1	4.6	50									6	10	A-2-4	0						
		SS-4	6.0	7.5	4.6	6.1	13	13		25	19	6	17	16	33	7	10	A-2-4	0						
66	B	SS-1	1.5	3.0	0.3	1.8	10		2	40	20	20	26	30	56	14	16	A-6b	8	1400		N_{60}		12"	
	066-0	SS-2	3.0	4.5	1.8	3.3	11		3							14	16	A-6b	16			N_{60}			
	20	SS-3	4.5	6.0	3.3	4.8	6		1.5							19	14	A-6a	10						
		SS-4	6.0	7.5	4.8	6.3	10	6	2	34	19	15	35	36	71	17	14	A-6a	9						
67	B	SS-1	1.5	3.0	0.1	1.6	24									15	10	A-4a	8			Mc			
	067-0	SS-2	3.0	4.5	1.6	3.1	14		2	27	21	6	31	14	45	16	16	A-4a	2	100					
	20	SS-3	4.5	6.0	3.1	4.6	24									11	14	A-6a	10						
		SS-4	6.0	7.5	4.6	6.1	20	14	3.5	34	21	13	29	36	65	16	16	A-6a	7						
68	B	SS-1	1.5	3.0	0.2	1.7	13		2							20	18	A-7-6	16						
	068-0	SS-2	3.0	4.5	1.7	3.2	10		1.5	45	24	21	28	28	56	21	21	A-7-6	9	100		HP			
	20	SS-3	4.5	6.0	3.2	4.7	4		0.25	37	24	13	34	28	62	28	19	A-6a	7						
		SS-4	6.5	7.5	5.2	6.2	6	4	1.5							24	16	A-6b							
69	B	SS-1	1.5	3.0	0.1	1.6	20			49	23	26	28	45	73	20	20	A-7-6	16	100					
	069-0	SS-2	3.5	4.5	2.1	3.1	29									6	10	A-2-4	0						
	20	SS-3	4.5	6.0	3.1	4.6	15			41	21	20	23	42	65	15	18	A-7-6	10						
		SS-4	6.0	7.5	4.6	6.1	14	14	3							15	18	A-7-6	16						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
70	B	SS-1	1.5	3.0	0.0	1.5	11		2.5	47	23	24	27	37	64	19	20	A-7-6	12	160		N_{60}		12"	
	070-0	SS-2	3.0	4.5	1.5	3.0	15		3							15	18	A-7-6	16						
	20	SS-3	4.5	6.0	3.0	4.5	14		1.5							22	18	A-7-6	16						
		SS-4	6.0	7.5	4.5	6.0	7	7	1.5	44	20	24	20	41	61	19	18	A-7-6	11						
71	B	SS-1	1.5	3.0	0.2	1.7	11		1.5	42	22	20	28	33	61	17	19	A-7-6	9	100		HP		12"	
	071-0	SS-2	3.0	4.5	1.7	3.2	15		2							16	18	A-7-6	16						
	20	SS-3	4.5	6.0	3.2	4.7	11		3	46	22	24	27	55	82	20	19	A-7-6	15						
		SS-4	6.0	7.5	4.7	6.2	13	11	2							18	18	A-7-6	16						
72	B	SS-1	1.5	3.0	0.2	1.7	18		2							16	18	A-7-6	16						
	072-0	SS-2	3.0	4.5	1.7	3.2	7		1	47	22	25	28	39	67	21	19	A-7-6	14	100		HP			
	20	SS-3	4.5	6.0	3.2	4.7	13		2							22	18	A-7-6	16						
		SS-4	6.0	7.5	4.7	6.2	10	7	1.5	42	21	21	24	50	74	22	18	A-7-6	13						
73	B	SS-1	1.5	3.0	0.0	1.5	13		2	35	20	15	29	21	50	15	15	A-6a	5	100					
	073-0	SS-2	3.0	4.5	1.5	3.0	10		2							13	14	A-6a	10			N_{60}			
	20	SS-3	4.5	6.0	3.0	4.5	18		2.5							11	14	A-6a	10						
		SS-4	6.0	7.5	4.5	6.0	17	10	2.5	35	20	15	29	37	66	19	15	A-6a	8						
74	B	SS-1	1.5	3.0	0.1	1.6	18		2.5							30	18	A-7-6	16			Mc			
	074-0	SS-2	3.0	4.5	1.6	3.1	20		3	55	25	30	33	48	81	25	22	A-7-6	19	100		Mc			
	20	SS-3	4.5	6.0	3.1	4.6	13		2.5							21	16	A-6b	16						
		SS-4	6.0	7.5	4.6	6.1	14	13	1	38	20	18	30	48	78	20	16	A-6b	11						
75	B	SS-1	1.5	3.0	0.1	1.6	10		2.5							18	18	A-7-6	16			N_{60}		12"	
	075-0	SS-2	3.0	4.5	1.6	3.1	11		2	47	24	23	33	36	69	22	21	A-7-6	13	100		N_{60}			
	20	SS-3	4.5	6.0	3.1	4.6	14		3	37	19	18	31	42	73	19	16	A-6b	11						
		SS-4	6.0	7.5	4.6	6.1	20	10	3							20	16	A-6b	16						
76	B	SS-1	1.5	3.0	0.2	1.7	15		3	46	23	23	32	35	67	21	20	A-7-6	13	100					
	076-0	SS-2	3.0	4.5	1.7	3.2	20		3.5							24	18	A-7-6	16			Mc			
	20	SS-3	4.5	6.0	3.2	4.7	17		2.5	49	24	25	32	53	85	23	21	A-7-6	16						
		SS-4	6.0	7.5	4.7	6.2	20	15	3							24	18	A-7-6	16						
77	B	SS-1	1.5	3.0	0.2	1.7	11		3	38	19	19	23	24	47	14	16	A-6b	5	100		N_{60}		12"	
	077-0	SS-2	3.0	4.5	1.7	3.2	18		2							15	16	A-6b	16						
	20	SS-3	4.5	6.0	3.2	4.7	14		3.5							17	16	A-6b	16						
		SS-4	6.0	7.5	4.7	6.2	21	11	2	37	20	17	20	39	59	17	16	A-6b	8						
78	B	SS-1	1.5	3.0	0.0	1.5	13		2	45	21	24	71	5	76	20	18	A-7-6	15	140					
	078-0	SS-2	3.0	4.5	1.5	3.0	28		1							19	18	A-7-6	16			HP			
	20	SS-3	4.5	6.0	3.0	4.5	24		4							22	16	A-6b	16						
		SS-4	6.0	7.5	4.5	6.0	15	13	3	38	20	18	26	41	67	20	16	A-6b	10						
79	B	SS-1	1.5	3.0	0.1	1.6	22			NP	NP	NP	18	5	23	6	8	A-3a	0	100					
	079-0	SS-2	3.0	4.5	1.6	3.1	13									9	8	A-3a	0						
	20	SS-3	4.5	6.0	3.1	4.6	13									14	16	A-6b	16						
		SS-4	6.0	7.5	4.6	6.1	14	13	3	40	20	20	34	40	74	18	16	A-6b	12						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

#	Boring	Sample	Sample Depth		Subgrade Depth		Standard Penetration		HP (tsf)	Physical Characteristics						Moisture		Ohio DOT		Sulfate Content (ppm)	Problem		Excavate and Replace (Item 204)		Recommendation (Enter depth in inches)
			From	To	From	To	N_{60}	N_{60L}		LL	PL	PI	% Silt	% Clay	P200	M_C	M_{OPT}	Class	GI		Unsuitable	Unstable	Unsuitable	Unstable	
80	B	SS-1	1.5	3.0	0.2	1.7	24		3.5							17	16	A-6b	16						
	080-0	SS-2	3.0	4.5	1.7	3.2	18			37	19	18	30	31	61	15	16	A-6b	8	100					
	20	SS-3	4.5	6.0	3.2	4.7	15		2							18	18	A-7-6	16						
		SS-4	6.0	7.5	4.7	6.2	15	15	3.5	48	24	24	36	47	83	23	21	A-7-6	15						
81	B	SS-1	2.0	3.5	0.3	1.8	18			NP	NP	NP	12	3	15	7	6	A-1-b	0	100					
	081-0	SS-2	3.5	5.0	1.8	3.3	17									7	6	A-1-b	0						
	20	SS-3	5.0	6.5	3.3	4.8	55									9	10	A-2-4	0						
		SS-4	6.5	8.0	4.8	6.3	11	11		20	15	5	15	9	24	10	10	A-2-4	0						
82	B	SS-1	1.5	3.0	0.0	1.5	29			NP	NP	NP	9	3	12	4	8	A-3a	0	100					
	082-0	SS-2	3.0	4.5	1.5	3.0	11									5	8	A-3a	0						
	20	SS-3	4.5	6.0	3.0	4.5	10			NP	NP	NP	8	1	9	5	6	A-1-b	0						
		SS-4	6.0	7.5	4.5	6.0	14	10								9	6	A-1-b	0						
83	B	SS-1	1.5	3.0	0.1	1.6	21			NP	NP	NP	12	3	15	5	6	A-1-b	0	320					
	083-0	SS-2	3.0	4.5	1.6	3.1	13									7	6	A-1-b	0						
	20	SS-3	4.5	6.0	3.1	4.6	17									5	6	A-1-b	0						
		SS-4	6.0	7.5	4.6	6.1	14	13		NP	NP	NP	8	2	10	6	6	A-1-b	0						
84	B	SS-1	1.5	3.0	0.0	1.5	14									14	6	A-1-b	0						
	084-0	SS-2	3.0	4.5	1.5	3.0	15			NP	NP	NP	11	4	15	7	6	A-1-b	0	100					
	20	SS-3	4.5	6.0	3.0	4.5	14									9	6	A-1-b	0						
		SS-4	6.0	7.5	4.5	6.0	18	14		NP	NP	NP	9	4	13	9	6	A-1-b	0						

OHIO DEPARTMENT OF TRANSPORTATION

Subgrade Analysis

V. 14.5 1/18/2019

PID: 109278

County-Route-Section: MOE-7-2.21
No. of Borings: 84

Geotechnical Consultant: HDR
Prepared By: Darren Matchison
Date prepared: 2/18/2021

Chemical Stabilization Options		
320	Rubblize & Roll	No
206	Cement Stabilization	Option
	Lime Stabilization	Option
206	Depth	14''

Excavate and Replace Stabilization Options	
Global Geotextile Average(N60L):	12''
Average(HP):	0''
Global Geogrid Average(N60L):	0''
Average(HP):	0''

Design CBR	6

% Samples within 6 feet of subgrade			
$N_{60} \leq 5$	1%	HP ≤ 0.5	2%
$N_{60} < 12$	29%	0.5 < HP ≤ 1	6%
$12 \leq N_{60} < 15$	25%	1 < HP ≤ 2	28%
$N_{60} \geq 20$	22%	HP > 2	39%
M+	17%		
Rock	0%		
Unsuitable	3%		

Excavate and Replace at Surface	
Average	0''
Maximum	0''
Minimum	0''

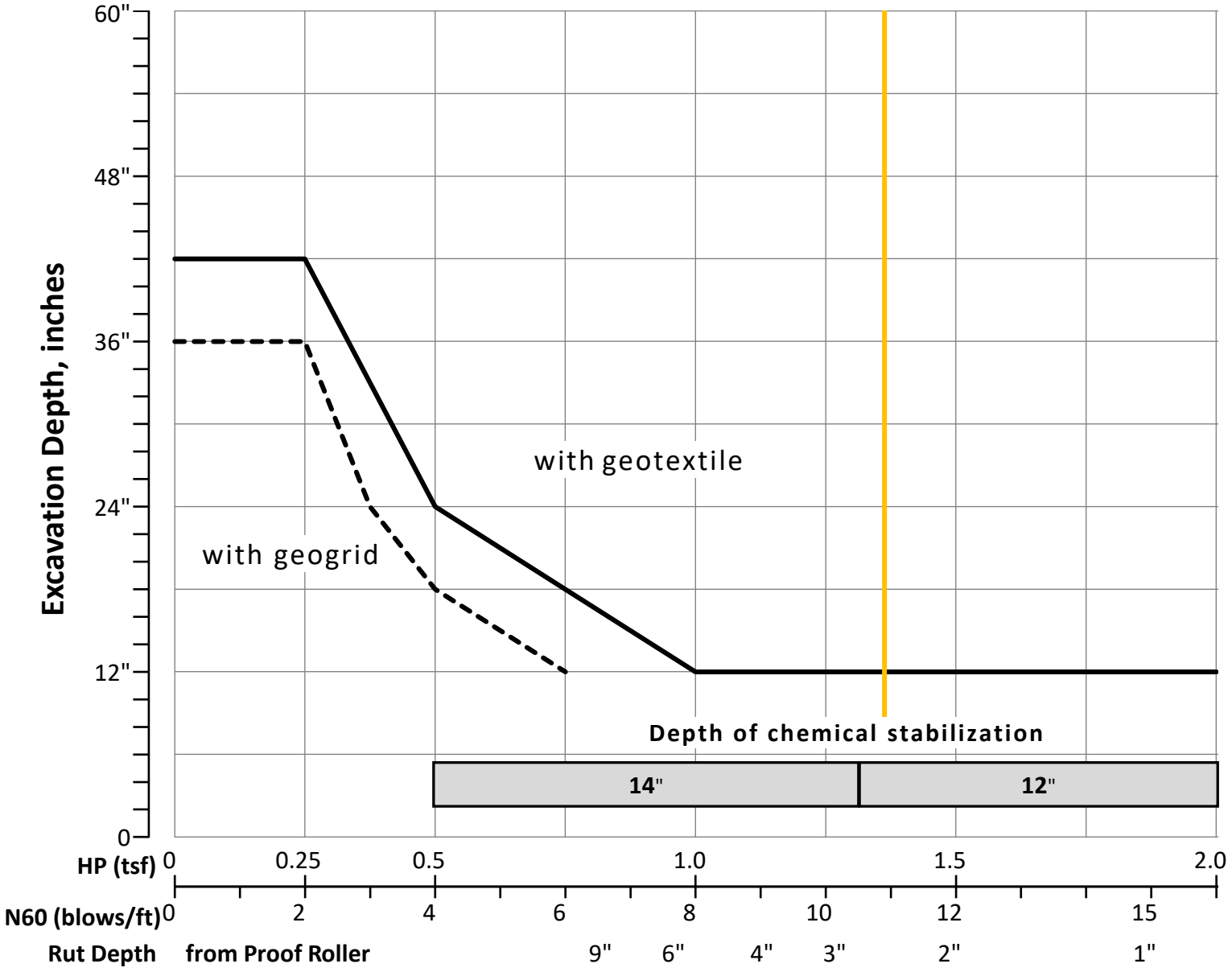
% Proposed Subgrade Surface	
Unstable & Unsuitable	60%
Unstable	55%
Unsuitable	4%

	N_{60}	N_{60L}	HP	LL	PL	PI	Silt	Clay	P 200	M_C	M_{OPT}	GI
Average	16	11	2.38	39	21	18	32	32	65	18	16	11
Maximum	70	21	4.50	59	30	30	77	59	96	30	26	19
Minimum	4	4	0.25	20	15	4	8	1	9	4	6	0

Classification Counts by Sample

ODOT Class	Rock	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7	A-3	A-3a	A-4a	A-4b	A-5	A-6a	A-6b	A-7-5	A-7-6	A-8a	A-8b	Totals
Count	0	0	15	14	0	2	0	0	4	22	8	0	70	75	2	124	0	0	336
Percent	0%	0%	4%	4%	0%	1%	0%	0%	1%	7%	2%	0%	21%	22%	1%	37%	0%	0%	100%
% Rock|Granular|Cohesive	0%	17%									83%								100%
Surface Class Count	0	0	7	5	0	0	0	0	4	7	5	0	31	40	2	67	0	0	168
Surface Class Percent	0%	0%	4%	3%	0%	0%	0%	0%	2%	4%	3%	0%	18%	24%	1%	40%	0%	0%	100%

GB1 Figure B – Subgrade Stabilization



OVERRIDE TABLE

Calculated Average	New Values	Check to Override
2.38	0.50	☐ HP
10.95	6.00	☐ N60L

Average HP
Average N_{60L}