

OHIO DEPARTMENT OF TRANSPORTATION**OFFICE OF GEOTECHNICAL ENGINEERING****PLAN SUBGRADES
Geotechnical Bulletin GB1****SUM-77-9.77****102329****Pavement replacement over SUM - I.R. 77 from 9.77 to 11.54. Includes rehabilitation of several structures in the City of Akron, Summit County, Ohio.****ELR**

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NO. OF BORINGS: **52**

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
1	B-021-0-18	I.R. 77 - NB	520+31	32	RT	CME45 RENTAL	72	1056.6	1055.0	1.6 C
2	B-022-0-18	I.R. 77 - SB	524+33	28	LT	CME45 RENTAL	72	1070.4	1068.8	1.6 C
3	B-023-0-18	I.R. 77	526+65	44	LT	18 CME 55 404185	87	1075.5	1073.9	1.6 C
4	B-024-0-18	I.R. 77	325+90	56	RT	CME45 RENTAL	72	1078.5	1076.9	1.6 C
5	B-025-0-18	I.R. 77	329+90	63	RT	CME45 RENTAL	72	1088.1	1086.5	1.6 C
6	B-026-0-18	I.R. 77	333+90	63	LT	CME45 RENTAL	72	1097.8	1096.2	1.6 C
7	B-027-0-18	I.R. 77	337+80	7	RT	CME45 RENTAL	72	1106.9	1105.3	1.6 C
8	B-028-0-18	I.R. 77	342+68	8	LT	CME45 RENTAL	72	1112.1	1110.5	1.6 C
9	B-029-0-18	I.R. 77	346+84	49	RT	CME45 RENTAL	72	1110.5	1108.9	1.6 C
10	B-030-0-18	I.R. 77	350+86	52	LT	18 CME 55 404185	87	1104.2	1102.6	1.6 C
11	B-031-0-18	I.R. 77	354+95	7	RT	CME45 RENTAL	72	1103.9	1102.3	1.6 C
12	B-032-0-18	I.R. 77	358+81	7	LT	CME45 RENTAL	72	1109.6	1108.0	1.6 C
13	B-033-0-18	I.R. 77	362+81	68	RT	CME45 RENTAL	72	1115.8	1114.2	1.6 C
14	B-034-0-18	I.R. 77	367+64	64	LT	18 CME 55 404185	87	1124.8	1123.2	1.6 C
15	B-035-0-18	I.R. 77	374+73	6	RT	CME45 RENTAL	72	1131.0	1129.4	1.6 C
16	B-036-0-18	I.R. 77	381+04	6	LT	CME45 RENTAL	72	1124.1	1122.5	1.6 C
17	B-037-0-18	I.R. 77	382+88	49	RT	CME45 RENTAL	72	1120.4	1118.8	1.6 C
18	B-038-0-18	I.R. 77	386+88	48	LT	18 CME 55 404185	87	1111.6	1110.0	1.6 C
19	B-039-0-18	I.R. 77	391+90	7	RT	CME45 RENTAL	72	1100.4	1098.8	1.6 C
20	B-040-0-18	I.R. 77	394+85	75	LT	18 CME 55 404185	87	1093.8	1092.2	1.6 C
21	B-041-0-18	I.R. 77	398+62	64	RT	CME45 RENTAL	72	1088.1	1086.5	1.6 C
22	B-042-0-18	I.R. 77	401+90	63	LT	18 CME 55 404185	87	1085.4	1083.8	1.6 C
23	B-043-0-18	I.R. 77	406+10	8	RT	CME45 RENTAL	72	1083.9	1082.3	1.6 C
24	P-001-0-20	S.R. 8	4310+13	8	LT	19 CME 75 079797	84	1065.0	1063.4	1.6 C
25	P-002-0-20	S.R. 8	4310+80	38	RT	19 CME 75 079797	84	1062.6	1061.0	1.6 C
26	P-003-0-20	S.R. 8	4314+12	32	LT	19 CME 75 079797	84	1056.9	1055.3	1.6 C
27	P-004-0-20	S.R. 8	4314+82	29	RT	19 CME 75 079797	84	1056.0	1054.4	1.6 C
28	P-005-0-20	S.R. 8	4317+80	10	RT	19 CME 75 079797	84	1055.0	1053.4	1.6 C
29	P-006-0-20	S.R. 8	4318+19	35	LT	19 CME 75 079797	84	1054.8	1053.2	1.6 C
30	P-007-0-20	S.R. 8	4321+13	9	RT	19 CME 75 079797	84	1058.0	1056.4	1.6 C
31	P-008-0-20	S.R. 8	4322+19	8	LT	19 CME 75 079797	84	1059.8	1058.2	1.6 C
32	P-009-0-20	S.R. 8	4322+06	137	LT	19 CME 75 079797	84	1075.0	1073.4	1.6 C
33	P-010-0-20	S.R. 8	4325+18	35	RT	19 CME 75 079797	84	1066.1	1064.5	1.6 C
34	P-011-0-20	S.R. 8	4326+28	12	LT	19 CME 75 079797	84	1068.8	1067.2	1.6 C
35	P-012-0-20	S.R. 8	4326+01	91	LT	19 CME 75 079797	84	1069.9	1068.3	1.6 C
36	P-013-0-20	S.R. 8	4327+97	48	LT	19 CME 75 079797	84	1072.2	1070.6	1.6 C
37	P-014-0-20	S.R. 8	4329+22	31	RT	19 CME 75 079797	84	1075.0	1073.4	1.6 C
38	P-015-0-20	S.R. 8	327+44	9	RT	19 CME 75 079797	84	1077.7	1076.1	1.6 C
39	P-016-0-20	S.R. 8	328+48	42	LT	19 CME 75 079797	84	1076.9	1075.3	1.6 C
40	P-017-0-20	S.R. 8	331+43	8	RT	19 CME 75 079797	84	1070.3	1068.7	1.6 C
41	P-018-0-20	S.R. 8	332+50	11	LT	19 CME 75 079797	84	1067.0	1065.4	1.6 C
42	P-019-0-20	S.R. 8	334+68	61	RT	19 CME 75 079797	84	1060.5	1058.9	1.6 C
43	P-020-0-20	S.R. 8	336+52	50	LT	19 CME 75 079797	84	1056.0	1054.4	1.6 C
44	P-022-0-20	S.R. 8	340+04	43	LT	19 CME 75 079797	84	1048.3	1046.7	1.6 C
45	P-024-0-20	S.R. 8	344+04	55	LT	19 CME 75 079797	84	1044.9	1043.3	1.6 C

#	Boring ID	Alignment	Station	Offset	Dir	Drill Rig	ER	Boring EL.	Proposed Subgrade EL	Cut Fill
46	P-025-0-20	S.R. 8	347+84	59	RT	19 CME 75 079797	84	1042.7	1041.1	1.6 C
47	P-027-0-20	S.R. 8	351+75	80	RT	19 CME 75 079797	84	1039.1	1037.5	1.6 C
48	P-028-0-20	S.R. 8	352+04	72	LT	19 CME 75 079797	84	1039.3	1037.7	1.6 C
49	P-029-0-20	S.R. 8	354+06	85	LT	19 CME 75 079797	84	1038.0	1036.4	1.6 C
50	P-030-0-20	S.R. 8	355+21	111	RT	19 CME 75 079797	84	1033.1	1031.5	1.6 C
51	P-032-0-20	S.R. 8	360+05	53	LT	19 CME 75 079797	84	1034.6	1033.0	1.6 C
52	P-033-0-20	S.R. 8	360+37	139	RT	19 CME 75 079797	84	1045.3	1043.7	1.6 C

#	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 021-0 18	SS-1	1.0	2.5	-0.6	0.9	18	14		23	15	8	35	23	58	16	10	A-4a	5	660		Mc				
		SS-2	2.5	4.0	0.9	2.4	14			23	15	8	34	20	54	13	10	A-4a	4			N ₆₀ & Mc		12"		
		SS-3	4.0	5.5	2.4	3.9	26		4.5							17	10	A-4a	8							
		SS-4	5.5	7.0	3.9	5.4	29		3.25							16	16	A-6b	16							
2	B 022-0 18	SS-1	1.0	1.8	-0.6	0.2	50	30		25	21	4	15	7	22	20	6	A-1-b	0							
		SS-2	2.5	2.8	0.9	1.2	50									19	6	A-1-b	0							
3	B 023-0 18	SS-1	1.3	2.5	-0.3	0.9	15	7		28	18	10	28	17	45	12	13	A-4a	2	420						
		SS-2	2.5	4.0	0.9	2.4	10			27	18	9	27	14	41	10	13	A-4a	1			N ₆₀		12"		
		SS-3	4.0	5.5	2.4	3.9	7		0.5							11	10	A-4a	8							
		SS-4	5.5	7.0	3.9	5.4										16	10	A-4a	8							
4	B 024-0 18	SS-1	1.0	2.5	-0.6	0.9	11	11		NP	NP	NP	0			6	6	A-1-a	0	170						
		SS-2	2.5	4.0	0.9	2.4	36			22	15	7	29	15	44	13	10	A-4a	2			Mc				
		SS-3	4.0	5.5	2.4	3.9	17									15	16	A-6b	16							
		SS-4	5.5	7.0	3.9	5.4	11		1							13	16	A-6b	16							
5	B 025-0 18	SS-1	1.0	2.5	-0.6	0.9	10	4		NP	NP	NP	5		5	11	6	A-1-a	0	1900						
		SS-2	2.5	4.0	0.9	2.4	8			21	13	8	21	16	37	12	10	A-4a	0			N ₆₀		12"		
		SS-3	4.0	5.5	2.4	3.9	4									12	10	A-4a	8							
		SS-4	5.5	7.0	3.9	5.4	18									16	16	A-6b	16							
6	B 026-0 18	SS-1	1.1	2.5	-0.5	0.9	4	2		NP	NP	NP	4		4	9	6	A-1-a	0	200						
		SS-2	2.5	4.0	0.9	2.4	73			NP	NP	NP	8	3	11	12	6	A-1-b	0							
		SS-3	4.0	5.5	2.4	3.9	2									7	6	A-1-a	0							
		SS-4	5.5	6.0	3.9	4.4			2.5							5	0	Rock	0							
7	B 027-0 18	SS-1	1.0	2.5	-0.6	0.9	29	29								13	6	A-1-b	0	100						
		SS-2	2.5	4.0	0.9	2.4	32									12	8	A-3a	0							
		SS-3	4.0	4.8	2.4	3.2	50									9	8	A-3a	0							
		SS-4	5.5	5.8	3.9	4.2	50									10	8	A-3a	0							
8	B 028-0 18	SS-1	1.2	2.5	-0.4	0.9	71	30		NP	NP	NP	4	4	8	7	6	A-1-a	0	100						
		SS-2	2.5	3.2	0.9	1.6	50			NP	NP	NP	15		15	11	8	A-3a	0							
		SS-3	4.0	4.3	2.4	2.7	50									15	8	A-3a	0							
		SS-4	5.5	5.7	3.9	4.1										14	0	Rock	0							
9	B 029-0 18	SS-1	1.0	2.5	-0.6	0.9	28	28		NP	NP	NP	5		5	17	6	A-1-b	0	2100						
		SS-2	2.5	4.0	0.9	2.4				28	20	8	38	21	59	10	0	Rock	0		Rock	N ₆₀ & Mc	29"	0"		
		SS-3	4.0	4.8	2.4	3.2										6	0	Rock	0			N ₆₀ & Mc				
		SS-4	5.5	6.3	3.9	4.7										8	0	Rock	0							

#	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 030-0 18	SS-1	1.0	2.5	-0.6	0.9	19		31	21	10	44	20	64	8	0	Rock	0	680	Rock	Mc				
		SS-2	2.5	3.5	0.9	1.9	134		30	19	11	36	18	54	5	0	Rock	0		Rock	Mc	23"			
		SS-3	4.0	4.7	2.4	3.1									6	0	Rock	0			N ₆₀ & Mc				
11	B 031-0 18	SS-1	1.0	2.5	-0.6	0.9	12		28	23	5	17	9	26	10	10	A-2-4	0	100						
		SS-2	2.5	4.0	0.9	2.4	10		28	16	12	28	19	47	11	14	A-6a	3			N ₆₀		12"		
		SS-3	4.0	5.3	2.4	3.7	80								8	0	Rock	0							
		SS-4	5.5	6.3	3.9	4.7									6	0	Rock	0							
12	B 032-0 18	SS-1	1.0	2.5	-0.6	0.9	14		27	19	8	40	18	58	11	14	A-4a	5	240						
		SS-2	2.5	3.8	0.9	2.2	106		NP	NP	NP	12		12	8	6	A-1-b	0							
		SS-3	4.0	4.7	2.4	3.1									15	0	Rock	0			N ₆₀ & Mc				
		SS-4	5.5	5.8	3.9	4.2									4	0	Rock	0							
13	B 033-0 18	SS-1	1.1	2.5	-0.5	0.9	10		24	16	8	36	19	55	12	11	A-4a	4	260			N ₆₀		12"	
		SS-2	2.5	4.0	0.9	2.4	12		25	18	7	56	22	78	6	13	A-4b	8		A-4b		29"			
		SS-3	4.0	5.5	2.4	3.9	11								15	16	A-6b	16							
		SS-4	5.5	7.0	3.9	5.4	55		1.75						16	16	A-6b	16							
14	B 034-0 18	SS-1	1.0	2.5	-0.6	0.9	22		NP	NP	NP	6		6	5	6	A-1-b	0	100						
		SS-2	2.5	4.0	0.9	2.4	19		17	8	9	18	14	32	11	10	A-2-4	0							
		SS-3	4.0	5.5	2.4	3.9	17		2.25						17	10	A-4a	8							
		SS-4	5.5	7.0	3.9	5.4	32								11	10	A-4a	8							
15	B 035-0 18	SS-1	1.1	2.5	-0.5	0.9	7		27	15	12	22	18	40	12	14	A-6a	2	170			N ₆₀		15"	
		SS-2	2.5	4.0	0.9	2.4	10		24	14	10	41	23	64	13	10	A-4a	6			N ₆₀ & Mc		12"		
		SS-3	4.0	5.5	2.4	3.9	22		4.5						13	10	A-4a	8							
		SS-4	5.5	7.0	3.9	5.4	32		4.5						11	10	A-4a	8							
16	B 036-0 18	SS-1	1.0	1.3	-0.6	-0.3	50		NP	NP	NP	8		8	9	6	A-1-b	0	140						
		SS-2	2.5	4.0	0.9	2.4	8		NP	NP	NP	6		6	9	6	A-1-a	0							
		SS-3	4.0	5.5	2.4	3.9	29		4.5						14	14	A-6a	10							
		SS-4	5.5	7.0	3.9	5.4	30		4.5						12	14	A-6a	10							
17	B 037-0 18	SS-1	1.0	2.5	-0.6	0.9	12		NP	NP	NP	5		5	10	6	A-1-b	0	190						
		SS-2	2.5	4.0	0.9	2.4	5		NP	NP	NP	9		9	10	6	A-1-b	0							
		SS-3	4.0	5.5	2.4	3.9	7		4						11	14	A-6a	10							
		SS-4	5.5	7.0	3.9	5.4	2								16	8	A-3a	0							
18	B 038-0 18	SS-1	1.3	2.5	-0.3	0.9	13		18	12	6	20	11	31	12	8	A-3a	0	350						
		SS-2	2.5	4.0	0.9	2.4	10		27	18	9	56	30	86	19	13	A-4b	8		A-4b	N ₆₀ & Mc	29"	12"		
		SS-3	4.0	5.5	2.4	3.9	16		4.25						14	10	A-4b	8							
		SS-4	5.5	7.0	3.9	5.4	25		4.25						14	10	A-4b	8							

#	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	
19	B	SS-1	1.1	2.5	-0.5	0.9	20	20		28	20	8	41	20	61	11	15	A-4a	5	100						
		039-0	SS-2	2.5	4.0	0.9	2.4		46		25	17	8	18	11	29	8	10	A-2-4	0						
	18	SS-3	4.0	4.7	2.4	3.1										10	0	Rock	0			N ₆₀ & Mc				
		SS-4	5.5	5.8	3.9	4.2										16	0	Rock	0							
20	B	SS-1	1.0	2.5	-0.6	0.9	22	22		NP		NP	7		7	8	6	A-1-b	0	180						
		040-0	SS-2	2.5	3.7	0.9	2.1		118		29	20	9	42	22	64	4	0	Rock	0		Rock	Mc	25"		
	18	SS-3	4.0	5.2	2.4	3.6	122									4	0	Rock	0							
21	B	SS-1	1.2	2.5	-0.4	0.9	13	6		NP		NP	9	3	12	5	6	A-1-b	0	230						
		041-0	SS-2	2.5	4.0	0.9	2.4		22		NP		NP	9		9	5	6	A-1-a	0						
	18	SS-3	4.0	5.5	2.4	3.9	6									8	6	A-1-a	0							
		SS-4																								
22	B	SS-1	1.0	1.9	-0.6	0.3	13	13		NP		NP	8		8	7	6	A-1-a	0	220						
		042-0	SS-2	2.5	2.8	0.9	1.2		50							9	0	Rock	0		Rock	Mc	14"			
	18	SS-3	4.0	4.2	2.4	2.6	50									9	0	Rock	0			Mc				
		SS-4	5.5	5.8	3.9	4.2	50									7	0	Rock	0							
23	B	SS-1	1.1	2.5	-0.5	0.9	23	23		NP		NP	5		5	9	6	A-1-a	0	220						
		043-0	SS-2	2.5	3.1	0.9	1.5		50							12	0	Rock	0		Rock	Mc	18"			
	18	SS-3	4.0	4.3	2.4	2.7	50									11	0	Rock	0			Mc				
24	P	SS-1	1.1	2.6	-0.5	1.0	22	22		16	NP	NP	15	15	30	18	8	A-3a	0							
		001-0	SS-2	3.5	4.3	1.9	2.7				29	NP	NP	46	25	71	4	0	Rock	0		Rock	N ₆₀ & Mc			
	20	SS-3	6.0	6.8	4.4	5.2										4	0	Rock	0							
		SS-4	8.5	9.2	6.9	7.6										4	0	Rock								
25	P	SS-1	1.0	2.5	-0.6	0.9	32	30		15	NP	NP	27	5	32	10	8	A-3a	0							
		002-0	SS-2	3.5	4.4	1.9	2.8				28	21	7	54	23	77	5	0	Rock	0		Rock	N ₆₀ & Mc			
	20	SS-3	6.0	6.7	4.4	5.1										5	0	Rock	0							
		SS-4	8.5	9.1	6.9	7.5										4	0	Rock								
26	P	SS-1	1.3	2.6	-0.3	1.0	106	30		NP	NP	NP	2	10	12	14	6	A-1-b	0							
		003-0	SS-2	3.5	4.1	1.9	2.5				28	19	9	28	20	48	4	0	Rock	0		Rock	N ₆₀ & Mc			
	20	SS-3	6.0	6.4	4.4	4.8										4	0	Rock	0							
		SS-4	8.5	9.1	6.9	7.5										4	0	Rock								
27	P	SS-1	1.3	2.8	-0.3	1.2		0		18	NP	NP	26	2	28	11	8	A-3a	0							
		004-0	SS-2	3.5	4.1	1.9	2.5				26	19	7	33	16	49	4	0	Rock	0		Rock	N ₆₀ & Mc			
	20	SS-3	6.0	6.4	4.4	4.8										4	0	Rock	0							
		SS-4	8.5	8.9	6.9	7.3										4	0	Rock								

#	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	
37	P 014-0 20	SS-1	1.1	2.6	-0.5	1.0	50			NP	NP	NP	13	14	27	12	10	A-2-4	0							
		SS-2	3.5	4.4	1.9	2.8			28	22	6	28	41	69	7	0	Rock	0		Rock	N ₆₀ & Mc					
		SS-3	6.0	6.4	4.4	4.8									5	0	Rock	0								
		SS-4	8.5	9.2	6.9	7.6		30							4	0	Rock									
38	P 015-0 20	SS-1	1.0	1.8	-0.6	0.2			24	19	5	29	11	40	4	0	Rock	0		Rock	N ₆₀ & Mc			0"		
		SS-2	3.5	3.9	1.9	2.3						27	10	37	5	0	Rock	0		Rock	N ₆₀ & Mc	28"				
		SS-3	6.0	6.1	4.4	4.5		0							4	0	Rock	0								
		SS-4	8.5	8.8	6.9	7.2									4	0	Rock									
39	P 016-0 20	SS-1	1.2	2.7	-0.4	1.1	31		4	22	17	5	44	22	66	10	12	A-4a	6							
		SS-2	3.5	4.4	1.9	2.8			25	22	3	65	21	86	6	0	Rock	0		Rock	N ₆₀ & Mc					
		SS-3	6.0	6.9	4.4	5.3		30							6	0	Rock	0								
		SS-4	8.5	8.9	6.9	7.3									5	0	Rock									
40	P 017-0 20	SS-1	1.1	2.6	-0.5	1.0	43		4	25	18	7	52	34	86	13	13	A-4b	8		A-4b		12"			
		SS-2	3.5	4.9	1.9	3.3			4	27	14	13	39	25	64	11	14	A-6a	7			N ₆₀				
		SS-3	6.0	6.9	4.4	5.3		30							8	0	Rock	0								
		SS-4	8.5	9.3	6.9	7.7									6	0	Rock									
41	P 018-0 20	SS-1	1.0	2.5	-0.6	0.9	11		3.25	NP	NP	NP	4	9	13	8	6	A-1-b	0							
		SS-2	3.5	5.0	1.9	3.4	15			17	15	2	19	13	32	11	10	A-2-4	0							
		SS-3	6.0	7.5	4.4	5.9	42			21	14	7	26	35	61	11	10	A-4a	5							
		SS-4	8.5	10.0	6.9	8.4	67	11							9	0	Rock									
42	P 019-0 20	SS-1	1.0	2.5	-0.6	0.9	27			NP	NP	NP	21	16	37	8	11	A-4a	0							
		SS-2	3.5	5.0	1.9	3.4	8		1.25	21	16	5	30	16	46	12	11	A-4a	2			HP				
		SS-3	6.0	7.5	4.4	5.9	6			20	NP	NP	23	12	35	11	8	A-3a	0							
		SS-4	8.5	10.0	6.9	8.4	7	6							13	10	A-2-4									
43	P 020-0 20	SS-1	1.0	2.5	-0.6	0.9	29						18	12	30	11	10	A-4a	3							
		SS-2	3.5	5.0	1.9	3.4	14								4	10	A-2-4	0								
		SS-3	6.0	7.5	4.4	5.9	14			28	20	8	55	27	82	11	15	A-4b	8							
		SS-4	8.5	10.0	6.9	8.4	13	14			NP	NP	NP	31	7	38	15	11	A-4a							
44	P 022-0 20	SS-1	1.2	2.7	-0.4	1.1	36						18	15	3	28	19	47	13	10	A-4a	2			Mc	
		SS-2	3.5	5.0	1.9	3.4	35						17	15	2	39	16	55	11	10	A-4a	4				
		SS-3	6.0	7.5	4.4	5.9	45						16	14	2	32	12	44	10	10	A-4a	2				
		SS-4	8.5	10.0	6.9	8.4	15	30					15	15	0	28	14	42	11	10	A-4a					
45	P 024-0 20	SS-1	1.0	2.5	-0.6	0.9	31						18	17	1	28	10	38	9	12	A-4a	1				
		SS-2	3.5	5.0	1.9	3.4	39						21	18	3	56	23	79	13	13	A-4b	8		A-4b		
		SS-3	6.0	7.4	4.4	5.8	38						16	15	1	28	18	46	11	10	A-4a	2				
		SS-4	8.5	10.0	6.9	8.4	31	30			NP	NP	NP	11	3	14	5	8	A-3a							

#	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
46	P 025-0 20	SS-1	1.0	2.5	-0.6	0.9	36			NP	NP	NP	15	6	21	7	8	A-3a	0						
		SS-2	3.5	5.0	1.9	3.4	14		14	NP	NP	22	8	30	9	8	A-3a	0							
		SS-3	6.0	7.5	4.4	5.9	7								7	10	A-2-4	0							
		SS-4	8.5	10.0	6.9	8.4	6	7							9	10	A-2-4								
47	P 027-0 20	SS-1	1.0	2.5	-0.6	0.9	35					15	15	30	11	8	A-3a	0							
		SS-2	3.5	5.0	1.9	3.4	20		1.75			9	3	12	12	16	A-6b	0							
		SS-3	6.0	7.5	4.4	5.9	15		2.25	25	15	10	27	23	50	14	16	A-6b	3						
		SS-4	8.5	10.0	6.9	8.4	10	15		3.75						14	16	A-6b							
48	P 028-0 20	SS-1	1.2	2.7	-0.4	1.1	47			NP	NP	NP	17	12	29	11	8	A-3a	0						
		SS-2	3.5	5.0	1.9	3.4	10		1.25	20	16	4	25	15	40	14	11	A-4a	1			HP & Mc			
		SS-3	6.0	7.4	4.4	5.8			4	22	15	7	35	24	59	13	10	A-4a	5						
		SS-4	8.5	8.7	6.9	7.1		10								5	0	Rock							
49	P 029-0 20	SS-1	1.1	2.6	-0.5	1.0	33			NP	NP	NP	15	16	31	10	8	A-3a	0						
		SS-2	3.5	5.0	1.9	3.4	33		4	23	16	7	34	26	60	11	11	A-4a	5						
		SS-3	6.0	7.5	4.4	5.9	20			19	16	3	17	16	33	11	10	A-2-4	0						
		SS-4	8.5	10.0	6.9	8.4	71	20			17	16	1	18	17	35	9	8	A-3a						
50	P 030-0 20	SS-1	1.0	2.5	-0.6	0.9	28					5	2	7	8	8	A-3a	0							
		SS-2	3.5	5.0	1.9	3.4	29		4	20	18	2	34	7	41	13	18	A-7-6	1						
		SS-3	6.0	6.4	4.4	4.8										6	0	Rock	0						
		SS-4	8.5	8.9	6.9	7.3		28								6	0	Rock							
51	P 032-0 20	SS-1	1.0	2.5	-0.6	0.9	99			NP	NP	NP	13	14	27	9	8	A-3a	0						
		SS-2	3.5	3.7	1.9	2.1			1.75	20	17	3	20	15	35	12	8	A-3a	0						
		SS-3	6.0	6.4	4.4	4.8										9	10	A-2-4	0						
		SS-4	8.5	8.7	6.9	7.1		30								8	0	Rock							
52	P 033-0 20	SS-1	1.0	2.5	-0.6	0.9	63			18	NP	NP	38	10	48	8	11	A-4a	3						
		SS-2	3.5	5.0	1.9	3.4	15		3.25	27	16	11	49	26	75	16	14	A-6a	8						
		SS-3	6.0	7.5	4.4	5.9	27		3							16	14	A-6a	10						
		SS-4	8.5	10.0	6.9	8.4	22	15		4						16	14	A-6a							

PID: 102329

County-Route-Section: SUM-77-9.77

No. of Borings: 52

Geotechnical Consultant: ELR

Prepared By: Kevin Mihalcea

Date prepared: 2/19/2019

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

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

Design CBR	10
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% Samples within 6 feet of subgrade			
$N_{60} \leq 5$	3%	$HP \leq 0.5$	1%
$N_{60} < 12$	16%	$0.5 < HP \leq 1$	1%
$12 \leq N_{60} < 15$	8%	$1 < HP \leq 2$	3%
$N_{60} \geq 20$	40%	$HP > 2$	14%
M+	22%		
Rock	23%		
Unsuitable	39%		

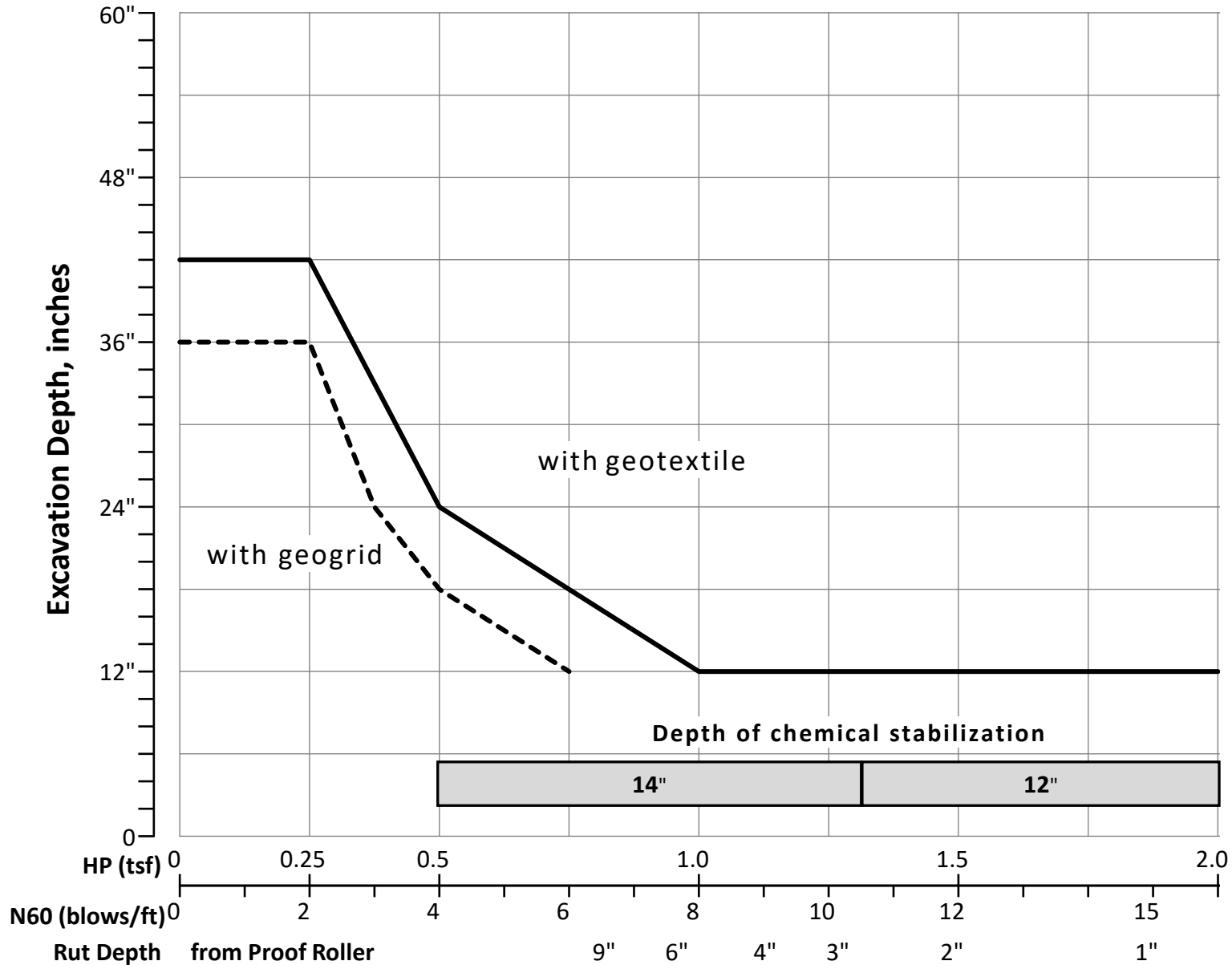
Excavate and Replace at Surface	
Average	0"
Maximum	0"
Minimum	0"

% Proposed Subgrade Surface	
Unstable & Unsuitable	56%
Unstable	36%
Unsuitable	20%

	N_{60}	N_{60L}	HP	LL	PL	PI	Silt	Clay	P 200	M_C	M_{OPT}	GI
Average	30	17	3.20	23	17	7	25	15	38	10	7	2
Maximum	134	30	4.50	37	25	17	65	41	86	20	18	16
Minimum	2	0	0.50	14	8	0	0	2	4	3	0	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	71	11	15	12	0	0	0	0	25	38	7	0	9	11	0	2	0	0	201
Percent	35%	5%	7%	6%	0%	0%	0%	0%	12%	19%	3%	0%	4%	5%	0%	1%	0%	0%	100%
% Rock Granular Cohesive	35%	50%					14%								100%				
Surface Class Count	29	11	16	7	0	0	0	0	18	29	5	0	6	4	0	1	0	0	126
Surface Class Percent	23%	9%	13%	6%	0%	0%	0%	0%	14%	23%	4%	0%	5%	3%	0%	1%	0%	0%	100%

GB1 Figure B – Subgrade Stabilization



OVERRIDE TABLE

Calculated Average	New Values	Check to Override
3.20	0.50	<input type="checkbox"/> HP
16.88	7.00	<input type="checkbox"/> N60L

Average HP —
Average N_{60L} —