TE-54-A
200.4-60

GENERAL INFORMATION

LOCATION

The project consists of a section of the Youngstown Expressway System, designated MAH-11-8.70, approximately 7.00 miles in length, located approximately 0.5 miles west of Youngstown, beginning approximately 2400 feet south of USR 224, approximately 0.5 miles east of Canfield, extending in a generally northerly direction and terminating approximately 1.0 miles north of SR 18, 0.75 mile east of SR 11. Also included in this report are the profiles of the associated ramps of the major interchanges at USR 224 and SR 11.

The proposed grades indicate the following:

Mainline - cuts, ranging between 0 and 25 feet in depth, and fill embankments, ranging between 0 and 20 feet in height.

USR 224 Interchange

Ramp A - cuts, ranging between 0 and 3 feet in depth, and fill embankments, ranging between 0 and 2 feet in height.

Ramp B - cuts, ranging between 0 and 11 feet in depth, and fill embankments, ranging between 0 and 7 feet in height.

Ramp C - cuts, ranging between 0 and 9 feet in depth, and fill embankments, ranging between 0 and 11 feet in height.

Ramp D - cuts, ranging between 0 and 10 feet in depth, and fill embankments, ranging between 0 and 9 feet in depth.

Ramp E - cuts, ranging between 0 and 7 feet in depth, and fill embankments, ranging between 0 and 6 feet in height.

SR 11 Interchange

Ramp A - cuts, ranging between 0 and 10 feet in depth, and fill embankments, ranging between 0 and 1 foot in height.

Ramp B - cuts, ranging between 0 and 20 feet in depth.

Ramp C - cuts, ranging between 0 and 3 feet in depth, and fill embankments, ranging between 0 and 10 feet in height.

Ramp D - fill embankment, ranging between 0 and 23 feet in height.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

The project is located on the glaciated gently rolling Allegheny Plateau, presently being dissected by several streams and creeks. Bedrock, composed of shale, sandstone, indurated clay and associated coal and underclay, of Pennsylvanian age, is overlain by moderately thick glacial-derived soils. Several localized areas of poor surface drainage were observed along the project.

EXPLORATION

Exploratory roadway borings were made by means of truck-mounted mechanical earth auger, hand auger (in areas of difficult access) and rotary type drilling between October 31 and November 15, 1961. Also included in this report are the logs of drive sample-core borings made in conjunction with the structure foundation investigations.

INVESTIGATIONAL DISCUSSIONS

Mainline

Materials occurring immediately below proposed grade consist predominantly of sandy silts and silt clays, in the A-4a and A-6a classifications, generally having moisture contents in the lower portion of the plastic range, as well as shale bedrock, occurring at grade and both ditchlines, between approximately stations 746+00 and 754+00.

Frost susceptible silts were found to occur within three feet of grade at the following stations:

455+00	536+00	597+00	690+50
460+00	555+00	610+00	695+00
465+50	560+00	636+00	697+55
479+00	565+00	645+00	700+00
484+00	575+00	650+00	713+00
490+00	580+00	659+50	716+00
494+30	591+00	671+00	745+00
511+00	598+00	677+50	786+00
			794+00

Embankment foundation materials are largely comprised of sandy silts and silt clays, in the A-4a and A-6a classifications generally having moisture contents in the lower portion of the plastic range. In three areas, between approximately stations 797+00 to 799+00, at station 800+75 and at station 813+15, soft, wet, low strength organic soils and sediments occur at-surface, ranging between 0 and 5 feet thick.

USR 224 Interchange (Ramps A, B, C, D, and E)

Materials occurring immediately below grade and in the embankment foundation area consist of sandy silt, silt and silt clays, in the A-4 and A-6a classifications, having moisture contents in the lower portion of the plastic range. Frost susceptible silts were encountered within three feet of grade at Ramp A; stations 13+45 and 17+00; Ramp B; stations 5+25, 8+77, 13+90 and 18+00; Ramp C; stations 10+13 15+07 and 20+07; Ramp D; stations 2+26, 5+45, and 18+55; and Ramp E; stations 7+85 and 11+40.

SR 11 Interchange (Pamps A, B, C, and D)

Embankment foundation materials and materials occurring immediately below proposed grade consist of sandy silts, silt clays and clays, in the A-4a, A-6a, and A-7-6 classifications, having moisture contents in the lower portion of the plastic range. Frost susceptible silts were found to occur within three feet of proposed grade at Ramp A; stations 11+60 and 19+05; and Ramp B; station 16+45.

LEGEND FOR PROJECT-AVERAGE RESULTS OF TESTS- 481 SAMPLES TESTED

DESCRIPTION	H. R. B. CLASS	OHIO CLASS	% AGG.	% C. SAND	% F. SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
Gravel	A-1-a(0)	A-1-a	67	19	6	- 9 -		NP	NP	15	1
Gravel and/or stone fragments with sand	A-1-b(0)	A-1-b	56	15	20	10	9	NP	NP	21	2
Coarse and fine sand	------	A-3a	20	19	35	12	12	NP	NP	15	3
Gravel and/or stone fragments with sand and silt	A-2-4(0)	A-2-4	36	10	15	17	12	23	3	13	15
Sandy silt	A-4(5)	A-4a	15	8	18	34	25	23	5	14	252
Silt	A-4(8)	A-4b	3	3	8	57	29	26	4	10	27
Silt and clay	A-6(9)	A-6a	10	5	10	35	40	30	12	17	151
Silty clay	A-6(11)	A-6b	5	2	8	32	51	38	17	17	11
Plastic clay without organic material unless otherwise noted	A-7-5(20)	A-7-5	0	3	15	29	53	60	33	35	2
Clay	A-7-6(15)	A-7-6	4	2	7	32	53	47	23	25	15
Sediments			VISUAL CLASSIFICATION								
Under clay			VISUAL CLASSIFICATION								
Coal			VISUAL CLASSIFICATION								
Weathered shale			VISUAL CLASSIFICATION								
Weathered sandstone			VISUAL CLASSIFICATION								
Indurated clay			VISUAL CLASSIFICATION								
Shale			VISUAL CLASSIFICATION								
Sandstone			VISUAL CLASSIFICATION								
Various other materials			VISUAL CLASSIFICATION								

Sod and/or Topsoil=X'=Approximate depth.

Perm material.

Auger boring - plan view.

Drive sample and/or core boring - plan view.

Auger boring plotted to vertical scale only.

Drive sample and/or core boring plotted to vertical scale only.

Number of blows for "Standard Penetration" test.
X=number of blows for the first 6 inches.
Y=number of blows for the second 6 inches.

Water content nearly equal to or greater than liquid limit.

Indicates a non-plastic material with high water content.

W Free water.

Static water level.

B Indicates broken rock interval.

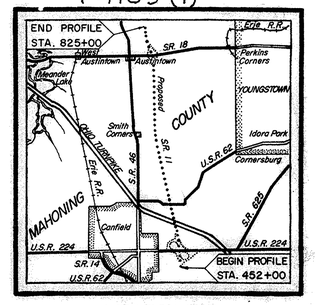
NOTE: Figures beside borings indicate water content in percent. e.g. 15

SOIL PROFILE
MAHONING COUNTY
MAH — 11 — 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

1/21

NOTE: INFORMATION SHOWN BY THIS SUBGRADE PROFILE WAS OBTAINED SOLELY FOR USE IN ESTABLISHING DESIGN CONTROLS FOR THE PROJECT. THE STATE OF OHIO DOES NOT GUARANTEE THE ACCURACY OF THIS DATA AND IT IS NOT TO BE CONSTRUED AS A PART OF THE PLANS GOVERNING CONSTRUCTION OF THE PROJECT.

F-1109 (1)



LOCATION MAP

Recon—J.T.B., F.L.R.—10/14/61

Drilling— Auger—L.M.D., A.J.P., C.M.C., F.S.—10/31/61 to 11/9/61
Core—C.S.C., J.H.S., C.P.—10/26/61 to 11/15/61

Drafting—R.A.W., R.C.B.—12/7/61

TE 54 B
500 10 60

SOIL PROFILE
MAHONING COUNTY
MAH – 11 – 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

SUMMARY OF SOIL TEST DATA

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION	OFFSET	DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
455+00	55'Rt	0.7-4.0	9	6	17	39	29	23	7	11	A-4a *
		4.0-10.0	23	6	22	33	16	23	4	8	A 4a *
460+00	55'Lt	0.7-4.0	10	11	15	35	29	26	6	10	A-4a *
		4.0-8.0	0	1	3	63	33	29	8	12	A-4b
		8.0-12.0	18	10	6	35	31	30	11	13	A-6a
465+00	55'Rt	0.7-3.0	0	6	13	44	37	27	11	13	A-6a *
		3.0-5.0	27	10	27	24	12	NP	NP	17	A-4a *
		5.0-7.0	16	9	20	28	27	24	6	15	A-4a
		7.0-8.0	16	10	28	18	28	22	4	15	A-4a
470+00	55'Lt	0.7-5.0	0	2	4	44	50	36	14	15	A-6a
		5.0-9.0	9	6	12	38	35	26	11	14	A-6a *
		9.0-12.0	7	6	39	22	26	21	5	21	A-4a
475+50	CL	0.7-3.0	11	5	12	36	36	30	11	14	A-6a
		3.0-8.0	7	5	15	41	32	27	7	14	A-4a *
		8.0-13.0	16	6	18	36	24	18	2	16	A-4a *
		13.0-16.0	16	5	25	28	26	20	3	14	A-4a
479+00	55'Rt	0.6-4.0	28	17	20	22	13	20	3	10	A-2-4
		4.0-7.0	0	7	17	45	31	26	11	18	A-6a
		7.0-12.0	7	8	16	40	29	21	6	13	A-4a *
		12.0-16.0	2	2	5	42	49	27	11	22	A-6a *
		16.0-20.0	21	3	5	59	31	NP	NP	19	A-4b
484+00	55'Lt	0.0-5.0	9	6	18	40	27	22	6	13	A-4a
		5.0-7.0	15	15	36	17	17	NP	NP	12	A-3a *
		7.0-10.0	6	8	21	37	28	24	8	15	A-4a *
		10.0-15.0	5	8	15	37	35	22	6	14	A-4a
		15.0-17.0	16	7	18	31	28	21	7	14	A-4a
490+00	55'Rt	0.7-5.0	21	6	8	43	22	26	7	12	A-4a *
		5.0-9.0	17	11	22	30	20	19	2	14	A-4a
		9.0-14.0	9	9	19	35	28	22	5	16	A-4a
494+30	CL	0.7-5.0	16	5	19	34	26	25	6	14	A-4a *
		5.0-10.0	15	10	20	32	23	22	5	10	A-4a
500+00	CL	0.7-5.0	21	10	22	21	26	21	6	12	A-4a
		5.0-10.0	15	7	15	38	25	23	7	13	A-4a
		10.0-14.0	8	12	24	33	23	18	4	10	A-4a
504+50	CL	0.7-5.0	12	8	17	35	28	24	8	15	A-4a
		5.0-10.0	6	7	17	39	31	24	11	16	A-6a
		10.0-15.0	14	11	22	32	21	18	3	13	A-4a
		15.0-20.0	12	7	23	35	23	19	6	12	A-4a
511+00	CL	0.7-5.0	6	3	10	57	24	31	9	19	A-4b *
		5.0-10.0	7	10	24	34	25	22	5	14	A-4a *
		10.0-15.0	6	10	24	36	24	19	3	11	A-4a
		15.0-20.0	13	9	21	34	23	21	6	12	A-4a
517+10	CL	0.7-5.0	36	10	18	20	16	23	4	8	A-4a
		5.0-8.0	49	10	15	13	13	NP	NP	9	A-2-4
519+00	CL	0.7-6.0	17	15	17	32	19	24	5	8	A-4a
524+70	65'Lt	0.7-2.0	61	8	13	13	5	NP	NP	30	A-1-b
524+70	CL	0.7-3.0	58	8	16	9	9	NP	NP	23	A-1-b
524+70	65'Rt	1.5-2.5	Brown Broken Stone Fragments								Visual
530+00	CL	0.0-5.0	29	11	16	28	16	22	5	14	A-4a
		5.0-10.0	25	5	12	31	27	26	7	12	A-4a
		10.0-17.0	7	7	17	41	28	NP	NP	16	A-4a
		17.0-20.0	Brown Sandy Silt W/Stone Fragments							14	Visual
536+00	CL	0.0-5.0	7	8	17	43	25	24	3	14	A-4a
		5.0-10.0	15	7	16	38	24	25	7	13	A-4a
		10.0-14.0	8	5	17	38	32	25	5	13	A-4a *
		14.0-19.0	11	1	20	43	25	23	7	12	A-4a *
541+00	CL	0.0-5.0	6	6	19	38	31	28	7	12	A-4a *
		5.0-9.0	17	7	14	37	25	25	6	13	A-4a
		9.0-14.0	7	6	16	33	38	29	11	16	A-6a
		14.0-18.0	12	10	20	36	22	22	5	10	A-4a
543+50	CL	0.0-4.0	0	3	17	48	32	29	5	27	A-4a
550+00	CL	0.0-5.0	8	5	12	37	38	29	11	15	A-6a *
		5.0-10.0	11	8	17	34	30	25	6	14	A-4a
		10.0-12.0	11	7	14	34	34	28	11	14	A-6a
555+00	CL	0.0-5.0	10	5	12	34	39	33	11	15	A-6a *
		5.0-10.0	28	7	13	28	24	23	5	13	A-4a *
		10.0-14.0	20	8	11	39	22	25	5	12	A-4a
		14.0-18.0	20	8	14	35	23	23	5	12	A-4a
560+00	CL	0.0-5.0	23	4	8	26	39	34	12	22	A-6a
		5.0-10.0	9	8	15	40	28	23	5	16	A-4a *
		10.0-14.0	10	9	16	39	26	27	8	11	A-4a *
		14.0-18.0	7	10	19	36	28	22	6	12	A-4a
565+00	55'Rt	0.0-4.0	7	4	8	31	50	37	16	18	A-6b
		4.0-7.0	3	4	7	33	53	40	17	17	A-6b *
		7.0-10.0	8	8	10	44	30	24	5	14	A-4a *
		10.0-13.0	7	8	17	40	28	26	8	14	A-4a
		13.0-16.0	9	9	14	37	31	21	4	11	A-4a
570+00	55'Lt	0.0-5.0	14	7	12	32	35	29	11	12	A-6a
		5.0-10.0	17	10	15	35	23	17	5	11	A-4a
575+00	55'Lt	0.0-5.0	8	6	15	35	36	28	11	13	A-6a *
		5.0-9.0	8	8	24	29	31	25	7	11	A-4a *
		9.0-11.0	Gray Broken Sandstone								Visual
580+00	55'Rt	0.0-4.0	8	8	12	39	33	26	11	13	A-6a *
		4.0-9.0	11	8	17	37	27	22	5	15	A-4a *
		9.0-11.0	25	8	11	40	16	24	8	11	A-4a
		11.0-15.0	56	7	9	16	12	21	5	15	A-2-4
584+00	CL	0.0-5.0	11	7	13	31	38	30	11	20	A-6a *
		5.0-10.0	19	13	13	26	29	24	9	14	A-4a *
		10.0-15.0	26	9	5	33	27	30	11	12	A-6a
588+00	CL	0.0-5.0	12	7	18	29	34	24	6	11	A-4a *
		5.0-10.0	16	8	1	50	25	24	7	11	A-4b
		10.0-14.0	14	10	11	29	36	24	5	15	A-4a
		14.0-16.0	Black Coal W/Shale Fragments								Visual
590+20	65'Rt	2.0-5.0	31	2	29	16	22	22	6	17	A-4a
		5.0-10.0	17	2	3	41	37	31	11	15	A-6a
		10.0-14.5	15	3	6	36	40	29	11	12	A-6a
590+50	65'Lt	1.0-4.0	7	7	38	21	27	23	7	21	A-4a
		4.0-9.0	22	11	10	35	22	NP	NP	6	A-4a
		9.0-12.0	32	12	10	24	22	26	5	11	A-4a
595+00	CL	0.0-4.0	6	4	8	38	44	34	11	17	A-6a *
		4.0-9.0	6	9	25	29	31	27	11	13	A-6a
		9.0-12.0	10	5	4	42	39	29	11	17	A-6a
		12.0-18.0	Gray Broken Shale							6	Visual
597+00	CL	0.0-5.0	35	3	10	32	20	23	6	18	A-4a *
		5.0-11.0	36	10	27	16	11	NP	NP	13	A-2-4 *
		11.0-15.0	21	11	16	31	21	NP	NP	14	A-4a
601+00	CL	0.0-4.0	30	8	18	28	16	23	5	15	A-4a *
		4.0-9.0	12	8	14	35	31	26	6	15	A-4a
		9.0-11.0	19	8	16	31	26	24	6	13	A-4a
605+00	CL	1.5-7.0	10	5	18	42	25	24	5	19	A-4a
		7.0-9.0	21	9	19	32	19	19	3	11	A-4a
		9.0-12.0	19	10	26	28	17	17	2	18	A-4a
610+00	40'Lt	0.0-5.0	16	6	13	33	32	26	6	11	A-4a *
		5.0-7.0	13	19	32	23	13	NP	NP	11	A-4a *
		7.0-10.0	19	8	17	37	19	22	3	14	A-4a
		10.0-15.0	14	7	20	26	33	21	3	13	A-4a
615+00	CL	1.2-5.0	39	7	22	23	9	NP	NP	11	A-2-4
		5.0-8.0	18	9	37	21	15	NP	NP	15	A-4a
		8.0-14.0	15	12	34	29	10	NP	NP	6	A-4a
		14.0-17.0	12	9	36	13	30	NP	NP	8	A-4a
620+00	55'Rt	0.0-2.0	9	9	19	39	24	24	6	12	A-4a
		2.0-7.0	31	12	15	27	15	29	5	19	A-4a
		7.0-12.0	10	10	30	27	23	NP	NP	10	A-4a
624+00	55'Lt	0.0-2.0	13	10	20	26	31	35	11	34	A-6a *
		2.0-4.0	1	10	26	21	42	40	11	31	A-6a
		4.0-8.0	3	7	16	38	36	30	11	20	A-6a
		8.0-12.0	14	9	9	39	29	24	4	11	A-4a
		12.0-15.0	32	1	3	40	24	NP	NP	12	A-4a
630+00	55'Rt	0.0-5.0	10	8	18	48	16	25	7	10	A-4a
		5.0-8.0	32	7	16	32	13	20	3	13	A-4a *
		8.0-10.0	6	7	25	42	20	NP	NP	16	A-4a *
		10.0-12.0	0	2	3	57	38	37	11	30	A-6a
636+00	55'Lt	0.0-3.0	7	4	12	38	39	30	11	19	A-6a
		3.0-7.0	4	7	14	49	26	29	11	15	A-6a *
		7.0-10.0	15	8	18	38	21	19	2	15	A-4a *
		10.0-11.5	10	8	22	39	21	NP	NP	16	A-4a
		11.5-15.0	5	10	12	40	33	24	6	16	A-4a
641+73	CL	0.6-2.0	0	1	9	51	39	34	14	24	A-6a
		2.0-8.0	20	4	10	28	38	30	11	16	A-6a *
		8.0-13.0	8	6	15	40	31	23	7	13	A-4a
		13.0-14.0	22	5	16	41	16	19	3	16	A-4a
		14.0-16.0	8	7	17	33	35	21	5	14	A-4a
645+55	55'Rt	0.6-5.0	17	5	14	36	28	26	7	9	A-4a *
		5.0-8.0	3	6	16	48	27	20	3	15	A-4a *
		8.0-12.0	7	7	12	33	41	24	11	15	A-6a
650+00	55'Lt	0.6-3.5	18	6	14	33	29	26	7	11	A-4a *
650+50	55'Lt	0.6-5.0	11	7	16	36	30	NP	NP	12	A-4a *
		5.0-7.0	29	6	10	30	25	27	7	14	A-4a
		7.0-11.0	9	7	13	39	32	21	3	15	A-4a
655+00	55'Lt	0.6-5.0	24	5	13	35	23	23	5	11	A-4a
		5.0-10.0	34	12	25	18	11	18	2	12	A-2-4
		10.0-12.0	15	9	15	33	28	21	4	13	A-4a
658+00	55'Lt	0.6-3.0	14	4	15	42	25	22	4	11	A-4a
		3.0-6.0	27	5	9	35	24	28	11	13	A-6a
		6.0-10.5	28	3	3	41	25	27	4	7	A-4a
663+00	55'Rt	0.6-3.0	0	0	1	41	58	53	29	25	A-7-6
		3.0-6.0	3	3	10	53	31	29	11	25	A-6a
		6.0-8.0	7	7	20	38	28	24	7	13	A-4a
		8.0-14.0	27	5	16	32	20	21	5	14	A-4a
667+00	55'Lt	0.6-5.0	27	3	13	34	23	25	11	10	A-6a *
		5.0-7.0	13	8	15	30	25	25	7	11	A-4a
		7.0-8.0	1	2	39	45	13	NP	NP	17	A-4a
		8.0-10.0	21	7	18	32	22	NP	NP	12	A-4a
671+00	CL	0.6-5.5	17	8	18	32	25	25	5	13	A-4a *
674+50	CL	0.6-5.0	4	1	15	37	43	28	11	9	A-6a
		5.0-10.5	0	1	20	42	37	26	6	10	A-4a
677+50	55'Rt	0.6-5.0	7	9	21	35	28	26	8	10	A-4a *
		5.0-11.0	29	8	19	30	14	NP	NP	13	A-4a
680+50	55'Lt	0.6-5.0	13	8	15	37	27	25	8	10	A-4a *
		5.0-8.0	8	8	18	40	26	26	5	12	A-4a
		8.0-10.0	20	6	7	31	36	30	11	13	A-6a
684+00	55'Rt	0.6-4.0	12	5	11	42	30	28	11	15	A-6a *
		4.0-10.0	25	4	8	40	23	25	2	12	A-4a *
		10.0-12.0	26	10	12	17	35	33	11	14	A-6a
688+00	55'Rt	0.6-3.0	7	7	14	36	36	27	11	10	A-6a
691+55	CL	0.6-4.0	13	9	19	30	29	26	6	9	A-4a *
		4.0-6.0	6	5	8	42	39	28	11	12	A-6a
		6.0-8.0	5	10	15	43	27	29	8	12	A-4a
		8.0-10.0	31	1	1	33	34	31	11	15	A-6a
695+47	CL	0.6-3.0	9	8	12	39	32	25	11	11	A-6a *
		3.0-5.0	4	6	12	50	28	26	8	15	A-4b
		5.0-9.0	10	11	21	36	22	NP	NP	12	A-4a
		9.0-10.0	8	10	20	33	29	22	5	12	A-4a
700+00	55'Lt	0.7-4.0	26	5	13	32	24	29	10	12	A-4a *
705+00	55'Rt	0.7-4.0	41	3	11	26	19	32	12	16	A-6a
709+00	35'Lt	0.7-2.0	5	1	5	42	47	44	23	25	A-7-6
		2.0-5.0	0	1	4	52	43	34	13	17	A-6a
		5.0-7.5	37	19	18	16	10	NP	NP	15	A-2-4
713+00	55'Lt	0.7-2.5	0	3	8	54	35	30	8	21	A-4b *
		2.5-4.0	28	10	16	26	20	25	7	13	A-4a *
718+00	55'Rt	0.6-2.0	0	1	7	36	56	40	18	19	A-6b *
		2.0-8.0	10	8	14	41	27	24	5	10	A-4a *
		8.0-10.0	8	9	17	36	30	21	5	12	A-4a
		10.0-12.0	4	9	25	39	23	18	3	15	A-4a
723+00	55'Lt	0.6-5.0	6	8	13	41	32	26	11	13	A-6a *
		5.0-7.0	5	8	14	37	36	27	11	15	A-6a
		7.0-10.0	6	11	38	30	15	NP	NP	19	A-4a
		10.0-14.0	17	10	18	38	17	17	2	13	A-4a
727+60	50'Rt	0.6-5.0	17	4	11	38	30	25	11	11	A-6a *
		5.0-9.0	15	5	10	44	26	25	11	13	A-6a
733+00	55'Lt	0.6-3.0	2	6	22	47	23	26	7	20	A-4a
		3.0-7.5	8	9	15	38	30	23	6	15	A-4a
738+00	55'Rt	0.6-2.0	6	6	7	46	35	35	11	19	A-6a *
		2.0-9.0	31	10	9	34	16	30	9	11	A-4a
		9.0-11.0	24	7	12	35	22	25	7	15	A-4a
741+10	55'Rt	0.6-5.0	5	3	5	33	54	37	14	15	A-6a *
		5.0-7.0	4	4	8	38	46	35	14	17	A-6a
		7.0-9.0	52	14	8	17	9	26	5	19	A-2-4
		9.0-10.0	23	7	5	24	41	33	12	25	A-6a
745+00	55'Lt	0.6-5.0	7	4	6	34	49	31	11	16	A-6a
		5.0-7.0	21	6	8	37	28	27	11	14	A-6a
		7.0-12.0	21	8	16	30	25	21	6	12	A-4a
		12.0-14.5	15	8	18	35	24	24	6	13	A-4a
		14.5-20.0	10	5	7	58	20	NP	NP	16	A-4b *
749+00	55'Rt	0.6-5.0	4	5	8	39	44	29	11	13	A-6a
		5.0-7.0	6	8	16	40	30	23	6	11	A-4a
		7.0-12.0	Brown Sandy Silt W/Shale Fragments							8	Visual
		12.0-14.0	Brown Broken Shale							9	Visual
753+27	36'Rt	0.4-5.0	6	7	11	32	44	30	11	17	A-6a
		5.0-10.0	14	3	5	28	50	34	13	17	A-6a
		10.0-13.0	6	4	6	30	54	35	14	17	A-6a
		13.0-14.0	Brownish-Gray Silty Clay W/Shale Fragments							12	Visual
		14.0-16.0	Brownish-Gray Broken Shale							12	Visual
756+50	CL	0.4-6.0	5	2	5	46	42	37	16	14	A-6b
		6.0-11.0	5	5	8	32	50	37	16	15	A-6b
		11.0-12.0	45	7	14	19	15	20	5	12	A-2-4
		12.0-15.0	18	6	13	34	29	25	11	13	A-6a
761+00	25'Rt	0.4-6.0	3	4	6	27	60	35	15	18	A-6a *
		6.0-11.0	5	7	15	37	36	25	11	13	A-6a
766+80	CL	0.4-2.0	0	22	14	34	30	28	7	24	A-4a
		2.0-4.0	7	2	7	33	51	35	13	18	A-6a
		4.0-8.0	22	5	10	32	31	26	11	15	A-6a
		8.0-10.0	6	8	15	37	34	23	4	16	A-4a
		10.0-14.0	11	7	13	34	35	23	6	12	A-4a
		14.0-17.0	0	1	1	52	46	30	9	23	A-4b
		17.0-22.0	13	10	16	35	26	21	6	12	A-4a
769+50	65'Lt	0.3-5.0	4	4	6	29	57	36	13	18	A-6a
		5.0-7.0	9	3	6	31	51	35	13	19	A-6a
		7.0-8.5	19	10	11	19	41	28	11	15	A-6a
		8.5-13.0	14	9	15	34	28	25	7	16	A-4a
		13.0-17.5	22	8	16	29	25	21	6	13	A-4a
		17.5-23.0	24	11	18	32	15	NP	NP	12	A-4a
773+00	65'Lt	0.3-3.0	12	2	9	26	51	49	24	34	A-7-6
		3.0-8.0	10	5	14	37	34	26	11	14	A-6a
		8.0-12.0	9	6	12	40	33	NP	NP	15	A-4a
		12.0-15.0	0	0	1	44	55	36	15	23	A-6a
		15.0-20.0	7	11	21	26	35	18	2	13	A-4a
		20.0-26.0	23	4	13	41	19	20	6	11	A-4a
773+00	CL	0.2-3.0	0	4	15	40	41	35	13	30	A-6a
		3.0-8.0	14	6	13	37	30	26	11	12	A-6a
		8.0-11.0	31	9	12	27	21	21	6	13	A-4a
		11.0-14.0	5	6	13	45	31	21	5	17	A-4a
		14.0-20.0	30	6	13	31	20	20	4	14	A-4a
		20.0-23.0	10	9	20	36	25	NP	NP	14	A-4a
		23.0-27.0	23	6	16	30	25	NP	NP	14	A-4a
773+00	65'Rt	0.3-2.5	3	1	6	36	54	47	25	30	A-7-6
		2.5-8.0	4	7	17	36	36	24	11	15	A-6a
		8.0-12.0	17	6	13	35	29	21	4	13	A-4a
		12.0-16.0	0	0	1	56	43	25	6	20	A-4b
		16.0-22.0	12	17	22	37	12	NP	NP	16	A-4a
		22.0-27.0	12	7	19	41	21	19	4	13	A-4a
777+44	8'Rt	0.3-4.0	4	3	6	28	59	37	15	18	A-6a
		4.0-9.0	8	8	13	41	30	26	11	12	A-6a
		9.0-12.0	10	7	13	37	33	27	11	13	A-6a
		12.0-17.0	15	8	18	37	22	19	4	12	A-4a
		17.0-21.0	7	5	16	55	17	NP	NP	19	A-4b
		21.0-25.0	17	9	19	32	23	19	3	13	A-4a
779+90	CL	0.3-2.0	5	5	17	39	34	29	11	21	A-6a
		2.0-6.0	22	7	13	31	27	24	7	10	A-4a
		6.0-12.0	22	6	13	31	28	23	6	14	A-4a
		12.0-17.0	17	6	14	38	25	21	6	13	A-4a
		17.0-21.0	7	9	15	44	25	19	3	13	A-4a
		21.0-24.0	20	8	15	35	22	23	7	18	A-4a
782+05	CL	0.0-4.5	0	6	29	33	32	28	9	23	A-4a
		4.5-7.5	7	10	14	42	27	28	11	13	A-6a
		7.5-10.0	4	2	9	67	18	NP	NP	17	A-4a
		10.0-12.0	8	9	20	23	40	33	17	16	A-6b
		12.0-16.0	3	8	14	42	33	22	5	16	A-4a
		16.0-21.0	8	10	19	37	26	22	5	14	A-4a
		21.0-25.0	44	8	8	25	15	21	4	18	A-4a
786+00	CL	0.3-3.0	19	12	15	27	27	29	9	16	A-4a *
		3.0-7.0	23	3	4	19	51	35	11	19	A-6a *
		7.0-10.0	22	31	26	8	13	NP	NP	18	A-1-b
		10.0-12.0	5	10	17	34	34	24	6	15	A-4a
790+00	55'Lt	0.3-3.5	10	16	9	35	30	30	11	14	A-6a
		3.5-9.0	8	3	5	37	47	35	14	20	A-6a *
		9.0-11.5	6	7	38	35	14	NP	NP	21	A-4a *
		11.5-13.0	15	6	14	33	32	24	7	12	A-4a
794+00	55'Rt	0.6-2.0	25	8	11	31	25	23	6	16	A-4a
		2.0-7.0	10	3	5	32	50	38	17	17	A-6b *
		7.0-10.0	26	6	9	36	23	23	4	12	A-4a *
		10.0-12.0	18	17	20	30	15	NP	NP	15	A-4a
		12.0-17.0	19	13	18	31	19	20	5	14	A-4a
795+55	CL	0.6-4.0	0	3	4	31	62	37	14	20	A-6a *
		4.0-7.5	9	12	39	23	17	NP	NP	20	A-4a
797+00	CL	0.6-3.0	8	27	27	26	12	68	41	38	A-7-6
		3.0-4.0	12	7	14	38	29	26	7	20	A-4a
799+00	80'Rt	0.6-2.0	0	3	26	41	30	102	61	92	A-7-5
		2.0-3.0	Brown Broken Stone Fragments								Visual
803+00	45'Lt	0.6-5.0	23	6	10	27	34	29	11	14	A-6a *
		5.0-10.0	24	10	21	11	34	NP	NP	14	A-4a *
		10.0-15.0	11	7	10	41	31	23	6	13	A-4a
		15.0-18.0	9	8	14	33	36	30	12	16	A-6a
806+73	CL	0.0-3.0	Black Sediments								Visual
		3.0-4.0	28	3	10	38	21	25	6	16	A-4a
806+75	60'Lt	0.0-2.0	Gray to Black Sediments							154	Visual
806+75	60'Rt	0.0-2.0	Gray to Black Sediments							100	Visual
810+00	55'Rt	0.3-3.5	0	10	9	33	48	34	14	20	A-6a
		3.5-7.0	15	5	15	44	21	22	3	15	A-4a
		7.0-10.5	6	10	16	36	32	22	5	12	A-4a
		10.5-12.0	25	6	11	33	25	23	4	14	A-4a
813+15	50'Lt	1.0-3.0	16	2	12	36	34	27	11	25	A-6a
813+15	CL	0.0-5.0	Black Sediments							157	Visual
		5.0-9.0	18	6	14	27	35	26	11	21	A-6a
813+15	65'Rt	0.0-4.5	Black Sediments							105	Visual
818+00	55'Lt	0.3-2.0	0	1	6	32	61	43	18	24	A-7-6
		2.0-7.0	15	4	6	27	48	34	13	16	A-6a *
		7.0-11.0	7	3	6	34	50	31	11	17	A-6a *

SOIL PROFILE
MAHONING COUNTY
MAH-11-8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

3/21

SUMMARY OF SOIL TEST DATA (Cont'd)

NOTE: NP shown in Liquid Limit and Plasticity Index columns indicates that the material is non-plastic.
*Denotes sample taken at or near grade.

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SH'TL CLASS.
022+00	55'Rt	0.3-1.5	3	2	6	36	37	35	15	25	A-6a *
		1.5-6.0	7	5	8	39	37	33	11	17	A-6a
		6.0-12.0	14	1	12	45	28	25	11	15	A-6a
025+00	CL	0.2-2.5	0	2	3	17	78	57	25	28	A-7-5 *
		2.5-5.0	7	3	3	28	59	38	12	18	A-6a
		5.0-8.0	2	2	7	55	34	22	5	16	A-4b
		8.0-11.0	38	16	19	15	12	21	7	14	A-2-4
						USR 224 INTERCHANGE					
						Ramp "A"					
2+00	7'Lt	0.0-5.0	8	7	15	36	34	28	11	13	A-6a
		5.0-8.0	6	5	10	50	29	28	8	11	A-4b
6+03	RL	0.0-5.0	14	2	15	40	29	26	11	10	A-6a *
		5.0-10.0	3	6	13	45	33	28	11	13	A-6a
10+03	RL	0.7-5.0	8	6	12	38	36	29	11	12	A-6a *
		5.0-8.0	35	6	20	18	21	23	7	17	A-1a
13+15	9'Lt	0.0-5.0	25	8	13	27	27	25	5	11	A-1a *
		5.0-8.0	7	8	21	35	29	23	5	16	A-1a
17+80	23'Lt	0.0-5.0	3	5	9	50	33	28	8	13	A-1b *
		5.0-10.0	15	10	16	35	24	25	8	18	A-1a *
						Ramp "P"					
2+02	RL	0.4-4.0	3	5	18	34	40	28	11	16	A-6a
		4.0-7.0	12	10	19	33	27	23	5	17	A-1a
		7.0-10.0	15	9	28	33	23	19	3	12	A-1a
		10.0-12.0	35	17	16	21	11	NP	NP	12	A-1a
		12.0-14.0	12	9	18	42	19	NP	NP	13	A-1a
5+25	13'Lt	0.0-3.0	11	7	12	32	38	33	12	16	A-6a *
		3.0-7.0	13	12	26	23	26	23	21	14	A-1a *
		7.0-10.0	11	9	33	24	23	NP	NP	16	A-1a
8+77	7'Lt	0.0-4.0	16	9	11	38	23	23	4	10	A-1a *
		4.0-6.0	31	14	17	23	15	21	4	11	A-1a *
		6.0-12.0	9	9	18	45	29	20	2	12	A-1a
		12.0-15.0	7	9	32	20	32	20	5	13	A-1a
13+00	12'Lt	0.0-4.0	24	12	22	22	20	26	7	15	A-1a *
		4.0-7.5	13	12	20	32	23	26	6	17	A-1a
18+92	15'Lt	0.0-4.0	8	2	12	40	38	29	11	15	A-6a
		4.0-8.0	23	11	15	28	23	28	9	13	A-1a
		8.0-11.0	6	6	20	39	29	21	4	13	A-1a *
		11.0-15.0	8	8	6	50	28	NP	NP	12	A-1b *
23+70	RL	0.4-4.0	5	4	13	40	38	29	11	13	A-6a *
		4.0-6.0	15	4	10	26	15	22	5	15	A-1a *
		6.0-7.5	2	6	10	45	37	29	11	17	A-6a
						Ramp "C"					
0+90	8'Lt	0.0-4.0	6	10	17	37	30	30	11	23	A-6a
		4.0-8.0	6	22	20	21	31	24	4	21	A-1a
		8.0-11.0	23	22	31	12	10	NP	NP	18	A-3a
		11.0-15.0	3	7	13	37	40	25	11	17	A-6a
6+50	17'Lt	0.0-5.0	6	7	13	38	36	32	11	13	A-6a *
		5.0-10.0	0	7	13	50	30	24	6	17	A-1b
10+13	5'Lt	0.0-5.0	3	5	11	46	35	26	6	17	A-1a *
		5.0-7.0	4	3	10	52	31	24	7	20	A-1b *
		7.0-11.0	8	6	15	41	30	25	11	16	A-6a
		11.0-12.0	14	3	17	17	19	22	7	22	A-1a
15+07	7'Lt	0.0-6.0	0	10	28	31	31	27	8	19	A-1a *
		6.0-9.0	22	16	25	20	17	23	6	17	A-1a *
		9.0-12.0	3	10	43	35	9	NP	NP	18	A-1a
		12.0-14.0	5	9	17	41	28	23	10	13	A-1a
20+07	30'Lt	0.0-3.0	28	8	14	30	20	28	6	12	A-1a
		3.0-6.0	7	6	14	45	31	23	4	15	A-1a
		6.0-8.0	0	1	4	69	26	21	3	20	A-1b *
		8.0-13.0	10	8	22	41	19	19	3	12	A-1a *
		13.0-17.0	18	9	17	35	21	20	4	14	A-1a
						Ramp "D"					
2+26	18'Lt	0.4-5.0	9	6	14	47	27	32	11	14	A-6a *
		5.0-8.5	11	5	13	40	31	25	5	12	A-1a *

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SH'TL CLASS.
						Ramp "D"(Cont'd)					
5+85	33'Lt	0.0-5.0	14	4	11	33	38	32	11	16	A-6a
		5.0-10.0	9	5	17	53	16	NP	NP	17	A-1b *
		10.0-12.5	57	7	7	15	14	25	3	10	A-2-4
9+25	26'Lt	0.3-4.0	8	7	13	40	32	30	11	14	A-6a
		4.0-8.0	18	15	23	24	20	22	3	16	A-1a *
		8.0-12.0	8	8	20	37	27	21	5	15	A-1a
		12.0-16.0	26	7	17	29	21	21	5	11	A-1a
13+53	16'Lt	0.0-5.0	8	8	18	37	29	28	8	11	A-1a
		5.0-7.0	0	1	5	52	12	NP	NP	21	A-1b
		7.0-12.0	0	0	1	65	15	NP	NP	21	A-1b *
		12.0-16.0	0	0	2	58	15	25	5	22	A-1b *
		16.0-18.0	0	2	10	65	23	NP	NP	22	A-1b
		18.0-20.0	14	9	17	45	20	NP	NP	13	A-1a
18+55	23'Lt	0.0-5.0	10	7	16	36	32	27	11	15	A-6a
		5.0-11.0	14	9	21	35	21	NP	NP	14	A-1a *
23+53	22'Lt	0.0-5.0	8	5	13	40	34	28	11	14	A-6a
		5.0-10.0	9	7	16	36	32	28	11	16	A-6a *
						Ramp "F"					
1+03	35'Rt	0.8-6.0	7	6	16	51	20	22	2	21	A-1b
		6.0-8.0	15	18	31	23	13	20	4	16	A-1a
		8.0-10.0	33	11	14	24	18	26	3	16	A-1a
		10.0-14.0	6	10	20	38	26	21	4	13	A-1a
4+07	7'Lt	0.0-2.0	0	2	19	52	27	NP	NP	12	A-1b
		2.0-5.0	5	2	7	45	38	28	11	17	A-6a *
		5.0-8.0	10	16	32	23	13	NP	NP	18	A-1a
		8.0-11.0	22	17	38	13	10	NP	NP	18	A-3a
		11.0-14.0	12	7	14	36	32	25	11	14	A-6a
7+85	8'Lt	0.0-5.0	16	4	15	19	16	27	7	13	A-2-4
		5.0-8.0	0	3	12	12	50	25	20	25	A-1b *
		8.0-12.0	0	2	7	26	25	NP	20	25	A-1b *
		12.0-16.0	14	7	10	24	36	25	11	20	A-6a
11+40	15'Lt	0.0-4.0	5	6	14	34	31	27	6	12	A-1a
		4.0-8.0	5	7	14	14	33	24	7	13	A-1a *
		8.0-11.0	12	13	33	31	11	NP	NP	13	A-1a *
		11.0-13.0	11	11	29	35	23	NP	NP	13	A-1a
		13.0-17.0	30	6	15	28	21	22	5	13	A-1a
20+60*	5'Lt	0.0-5.0	14	9	11	22	17	31	11	16	A-6a
		5.0-10.0	13	8	23	31	25	22	6	14	A-1a
		10.0-15.0	12	8	17	41	22	16	3	13	A-1a
		15.0-18.0	6	8	30	29	27	19	5	10	A-1a
						SR 18 INTERCHANGE					
						Ramp "A"					
2+25	12'Lt	0.3-3.0	5	1	4	42	48	49	26	25	A-7-6
		3.0-6.0	6	4	28	28	34	31	11	21	A-6a
		6.0-10.0	7	5	28	34	26	24	6	13	A-1a
		10.0-12.0	7	5	14	38	36	25	11	11	A-6a
6+32	15'Lt	0.3-2.0	14	3	6	37	40	40	14	22	A-6a
		2.0-4.0	32	1	2	28	37	33	11	17	A-6a
9+46	7'Lt	0.3-4.0	4	2	4	30	60	45	20	15	A-7-6 *
		4.0-6.0	24	3	6	32	55	38	11	17	A-6a
		8.0-10.0	61	5	5	14	12	27	6	15	A-2-4
14+60	10'Lt	0.3-6.0	9	3	7	26	55	39	15	16	A-6a
		6.0-9.0	6	7	14	43	30	22	4	13	A-1a *
		9.0-11.0	17	8	16	34	25	22	8	14	A-1a *
		11.0-18.0	15	5	15	38	27	23	1	14	A-1a
19+05	5'Lt	0.0-5.0	27	9	6	36	23	30	4	9	A-1a *
		5.0-8.0	36	7	3	33	21	32	11	7	A-6a
21+03	10'Lt	0.3-3.5	8	4	8	36	44	39	14	25	A-6a *
		3.5-10.0	10	4	5	29	52	36	13	16	A-6a
						Ramp "B"					
4+30	13'Lt	0.3-6.5	9	4	7	24	65	44	20	21	A-7-6
		6.5-13.5	5	3	6	29	57	45	17	17	A-6a *
		13.5-18.0	6	12	11	27	44	38	11	17	A-6a

STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SH'TL CLASS.
						Ramp "R"(Cont'd)					
8+47	13'Lt	0.3-4.0	4	3	6	28	61	41	19	16	A-7-6
		4.0-8.0	6	7	8	30	49	33	13	15	A-6a
		8.0-12.5	22	6	16	32	24	20	4	13	A-1a
12+35	7'Lt	0.3-4.0	6	4	7	30	53	38	15	14	A-6a
		4.0-8.0	8	3	6	27	56	34	15	16	A-6a *
		8.0-10.5	0	5	6	28	61	32	11	15	A-6a *
		10.5-15.0	0	2	4	28	66	38	16	21	A-6b
16+45	16'Lt	0.0-2.0	16	2	6	28	48	33	11	27	A-6a *
		2.0-6.0	12	6	12	29	41	27	5	10	A-1a *
		6.0-7.0	3	6	9	29	53	34	12	20	A-6a
		7.0-8.5	14	6	8	29	43	28	11	13	A-6a
		8.5-11.0	57	5	6	18	14	24	4	17	A-2-4
20+00	7'Lt	0.3-1.5	0	8	16	35	39	35	22	23	A-7-6
		1.5-5.0	14	12	16	38	20	28	8	13	A-1a
		5.0-8.0	23	16	16	27	18	28	6	13	A-1a
		8.0-12.0	24	8	18	29	21	18	3	9	A-1a
						Ramp "C"					
2+07	5'Lt	0.4-5.0	5	2	2	28	63	45	18	18	A-7-6 *
		5.0-10.0	19	5	12	35	29	24	6	13	A-1a
8+93	15'Lt	0.2-4.0	0	1	2	35	62	58	32	29	A-7-6 *
		4.0-10.0	20	2	5	23	50	37	14	18	A-6a
14+04	10'Lt	0.3-3.0	8	5	10	25	52	45	17	20	A-7-6
		3.0-8.0	0	5	7	26	62	41	18	18	A-7-6
		8.0-13.0	18	5	13	30	34	27	11	16	A-6a
		13.0-18.0	2	5	12	45	36	24	11	16	A-6a
		18.0-22.5	0	3	1	55	41	23	11	25	A-6a
		22.5-29.0	14	11	11	21	16	19	3	8	A-1a
17+05	10'Lt	0.0-5.0	6	3	2	35	54	39	12	16	A-6a
		5.0-11.0	11	5	9	21	54	37	15	19	A-6a
		11.0-13.0	28	17	12	21	22	28	10	18	A-1a
		13.0-16.0	13	7	14	24	42	23	5	15	A-6a
		16.0-22.0	9	4	8	45	34	23	11	16	A-6a
		22.0-28.0	17	8	12	37	26	21	5	11	A-1a
						Ramp "D"					
9+40	53'Lt	0.3-3.0	7	3	17	27	46	37	14	30	A-6a
		3.0-7.0	7	8	9	34	42	36	11	15	A-6a
		7.0-11.0	8	6	9	34	43	36	11	13	A-6a
		11.0-13.5	12	9	15	27	37	26	11	15	A-6a
		13.5-16.0	0	2	10	26	62	NP	NP	19	A-1a
		16.0-19.5	0	1	2	45	52	30	11	24	A-6a
		19.5-24.0	0	10	16	41	30	19	5	13	A-1a
		24.0-28.0	19	8	18	31	24	19	3	12	A-1a
13+17	6'Lt	0.3-3.0	38	13	10	16	23	29	8	12	A-1a
		3.0-10.0	2	2	6	27	63	36	12	17	A-6a
		10.0-11.5	15	12	24	12	9	NP	NP	14	A-1-a
		11.5-15.0	18	8	12	41	21	20	4	16	A-1a
17+25	10'Lt	0.3-6.0	16	2	5	26	52	35	11	16	A-6a *
		6.0-11.0	10	4	8	23	55	35	13	16	A-6a
21+15	12'Lt	0.3-3.0	13	6	12	32	37	31	11	17	A-6a *
		3.0-4.0	5	5	9	34	47	31	11	20	A-6a
		4.0-6.0	23	16	15	28	18	NP	NP	13	A-1a
		6.0-11.0	9	5	10	40	36	28	11	15	A-6a

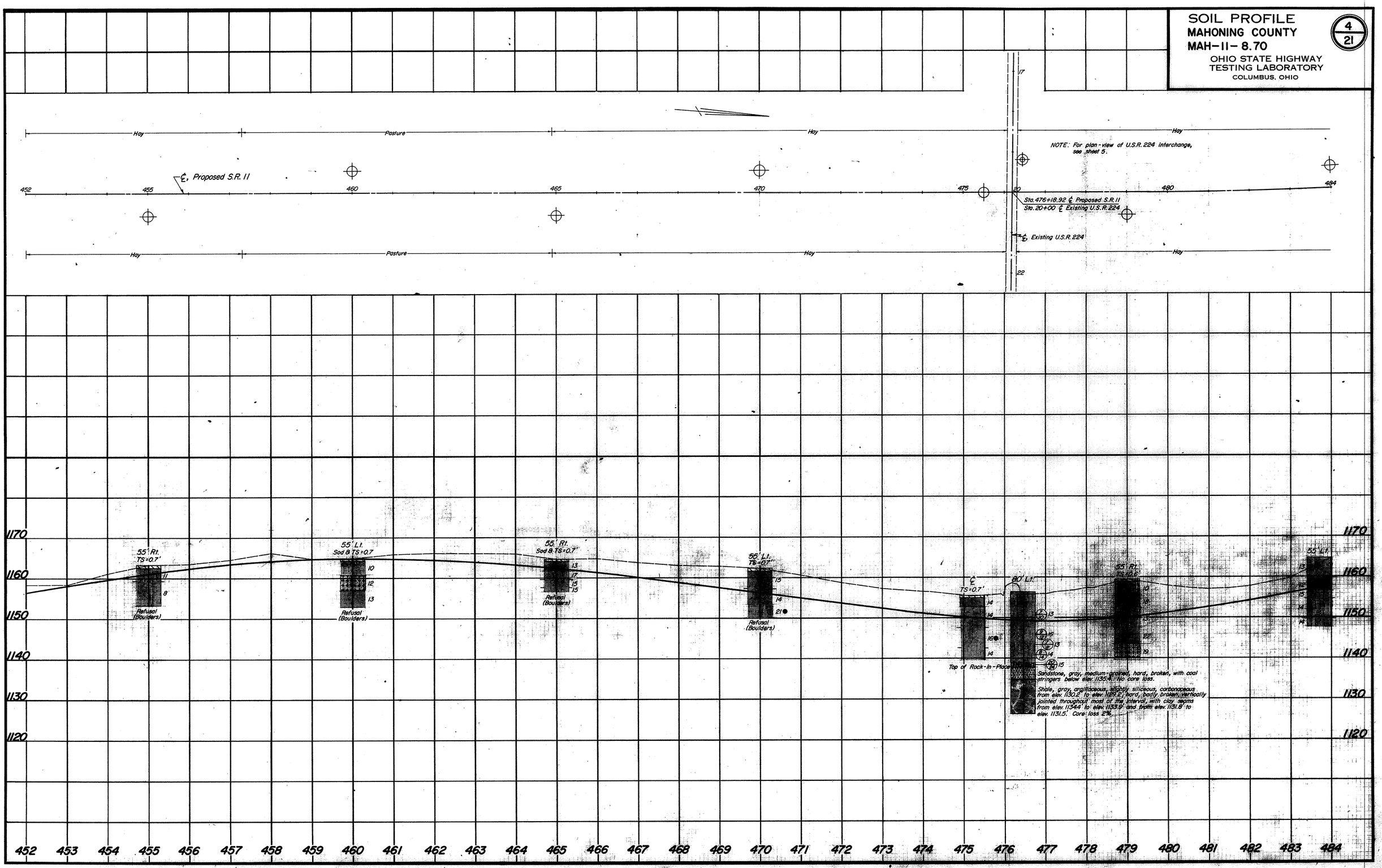
STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SH'TL CLASS.
						DRIVE SAMPLE SOIL TEST DATA					
1176+15	80'Lt	5.0-6.0	32	12	15	25	16	23	7	13	A-1a
		10.0-11.0	12	5	14	47	22	NP	NP	16	A-1a
		12.5-13.5	9	11	26	31	23	NP	NP	13	A-1a
		15.0-16.0	34	8	15	32	9	NP	NP	14	A-1a
		17.5-18.5	26	14	28	24	9	NP	NP	15	A-2-4
505+61	77'Rt	5.0-6.0	34	10	21	16	19	18	1	10	A-2-4
		7.5-8.5	6	10	22	37	25	NP	NP	11	A-1a
		10.0-11.0	8	6	23	37	27	19	2	12	A-1a
		12.5-13.5	19	5	20	33	23	21	4	9	A-1a
		15.0-16.0	8	7	32	31	32	NP	NP	13	A-1a
		17.5-18.5	20	6	16	38	18	NP	NP	10	A-1a
		20.0-21.0	6	11	20	37	17	NP	NP	10	A-1a
542+69	77'Rt	2.0-3.0	0	6	14	47	33	38	9	34	A-1a
		12.5-13.5	5	8	22	45	20	26	19	2	16	A-1a
		15.0-16.0	0	2	20	52	26	NP	NP	20	A-1a
		17.5-18.0	Gray Sandstone Fragments							15	Visual
642+00	133'Lt	2.5-3.5	1	1	3	54	41	32	10	19	A-1b
		5.0-6.0	10	9	15	45	21	NP	NP	13	A-1a
		7.5-8.5	7	7	13	45	31	26	5	15	A-1a
		10.0-11.0	25	16	11	16	NP	NP	NP	22	A-3a
		12.5-13.5	9	11	15	33	32	25	7	14	A-1a
		15.0-16.0	9	12	20	33	26	19	3	16	A-1a
		17.5-18.5	17	10	15	38	20	32	5	14	A-1a
		20.0-21.0	22	9	8	43	18	NP	NP	13	A-1a
		25.0-26.0	18	5	7	42	28	30	5	11	A-1a
695+62	83'Rt	2.5-3.5	0	3	2	54	41	31	7	20	A-1b
		5.0-6.0	0	4	2	51	43	30	7	19	A-1b
		7.5-8.5	0	13	18	32	37	28	6	14	A-1a
		10.0-11.0	10	12	18	31	29	27	8	13	A-1a
751+85	150'Lt	2.5-3.5	9	5	7	29	50	39	17	21	A-6a
		5.0-6.0	3	6	9	34	48	35	13	18	A-6a
		7.5-8.5	5	4	4	31	56	43	20	24	A-7-6
		10.0-11.0	3	4	4	43	46	36	10	20	A-1a
		12.5-13.5	7	7	11	37	38	29	9	17	A-1a
		15.0-16.0	12	11	14	32	31	23	6	11	A-1a
		17.5-18.5	11	9	18	40	22	26	7	11	A-1a
777+15	65'Rt	2.5-3.5	12	29	20	16	23	21	5	15	A-1a
		5.0-6.0	8	6	10	35	41	28	9	18	A-1a
		7.5-8.5	18	9	14	30	29	45	28	24	A-7-6
		10.0-11.0	9	9	17	19	46	22	5	14	A-1a
		12.5-13.5	6	7	22	41	24	18	2	14	A-1a
		15.0-16.0	0	5	55	25	15	NP	NP	16	A-1a
		17.5-18.5	21	7	18	30	24	18	3	14	A-1a
		20.0-21.0	34	7	10	28	21	21	4	14	A-1a
		25.0-26.0	30	23	20	16	11	NP	NP	14	A-2-4
* 514+70	75'Rt	5.0-6.0	5	9	22	35	29	22	5	16	A-1a
		10.0-11.0	6	7	26	37	24	19	4	14	A-1a
		15.0-16.0	22	3	35	29	11	NP	NP	15	A-1a
		20.0-21.0	9	8	28	39	16	NP	NP	10	A-1a
		25.0-26.0	64	19	8	9	- 9 -	NP	NP	15	A-1-a
		30.0-31.0	0	4	28	52	16	NP	NP	17	A-1b
		35.0-36.0	11	6	19	44	20	NP	NP	14	A-1a
		40.0-41.0	0	1	6	35	58	36	15	28	A-6a
		45.0-46.0	22	13	30	18	17	21	6	16	A-2-4
		50.0-51.0	7	12	28	32	21	NP	NP	11	A-1a
		55.0-56.0	Brown Clayey Silt W/Gravel							14	Visual
		60.0-61.0	0	4	21	62	13	NP	NP	17	A-1b

TE.54.8
1500.10 60

SOIL PROFILE
MAHONING COUNTY
MAH-11-8.70

OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

4
21



TE-54:B
1500-10 60

SOIL PROFILE
MAHONING COUNTY
MAH – 11 – 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

5
21

Hay
Pasture
℄ Ramp 'D'
℄, Proposed S.R.11
MATCH LINE
℄ Ramp 'A'
Fairground Boulevard
℄ Existing U.S.R. 224
NOTE: For profiles of Ramps A, B, C, D and E, see sheets 18 and 19.
℄ Ramp 'B'
Apple Orchard
Mowed Field
Sta. 476+18.92 ℄ Proposed S.R.11
Sta. 20+00 ℄ Existing U.S.R. 224
℄ Ramp 'C'
℄ Ramp 'E'
Wooded
Brush
Field
℄ Existing Raccoon Road

TE.54.8
1500-10 60

SOIL PROFILE

MAHONING COUNTY
MAH — 11 — 8.70

OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

6
21

Hay | Pasture | Apple Orchard | Field | Wooded & Brush | Field | Wooded

℄ Proposed S.R. 11

484 485 490 495 500 505

Slope Ditch
Max. 10' cut
TURNPIKE
OHIO
Max. 80' cut
Slope Ditch

510 515 516

Field | Wooded | Hay

Hay | Pasture | Apple Orchard | Field | Wooded & Brush | Field | Brush | Field

Field | Wooded

1220 1210 1200 1190 1180 1170 1160 1150 1140 1130 1120

55' Lt.
13 12 15 14 14

55' Rt.
TS=0.7'
12 14 16

℄
TS=0.7'
13 10

(Sta. 2+02, ℄ Ramp "B")
80' Lt.
Sod=0.4'
10 17 12 W 12 13

℄
TS=0.7'
12 13 10

℄
TS=0.7'
15 16 13 12

77' Rt.
10 11 12 13 15 10 10

Top of Rock-In-Place

Shale, gray, argillaceous, fissile, hard, badly broken, vertically jointed, with a clay seam from elev. 1140.4 to elev. 1140.0' and clay seams (small) at irregular intervals throughout the interval. Core loss 8%.

℄
TS=0.7'
10 14 11 12

75' Lt.
16 14 15 10 15 11 14 20 16 14 17

Brown clayey silt and gravel

484 485 486 487 480 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516

TE.54.8
1500-10-60

SOIL PROFILE

MAHONING COUNTY
MAH — 11 — 8.70

OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

7
21

Hay | Wooded & Brush | Field | Wooded | Field | Apple Orchard | Wooded & Brush | Lawn | U.S.R. 62 | Wooded

℄, Proposed S.R. 11

516 520 525 530 535 540 545 548

Existing

Pasture | Wooded | Field | Apple Orchard | Corn | Lawn | Pasture | Wooded

Cross Section
Sta. 524+70

Proposed grade

Approximate ground line

TS=0.7'
Sta. 30 → Slightly organic
Refusal (Boulders) (Hand auger)

TS=0.7'
Sta. 23 → Trace of organic
Refusal (Boulders) (Hand auger)

TS=1.5'
Sta. 13 Brown broken
Refusal stone fragments (Boulders) (Hand auger)

℄ TS=0.7' 8 9 Refusal (Boulders)

℄ TS=0.7' 8 Refusal (Boulders)

℄ TS=0.7' Trace of organic 22 23 Refusal (Boulders) (Hand auger)

℄ 14 W 12 16 W 14 Brown sandy silt with stone fragments. Refusal (Boulders)

℄ 14 13 13 12 Refusal (Boulders)

Southbound Lanes
Northbound Lanes

Sod @ TS=0.3'

Revised Grade Lines

℄ 12 13 15 10 Refusal

77' Rt. 7/9 34

℄ 27 W Refusal

Top of Rock-In-Place

4/6 Trace of organic
5/6 20 Trace of organic
50/4" 15 Gray sandstone fragments.
tr Coal, black, blocky, broken to badly broken. No core loss.
Underclay, gray, soft, crumbly. Core loss 83%.

Indurated Clay, gray, siliceous, hard, very broken, with soft and crumbly at approximate elev. 1115.0 to 1112.7'. Core loss 55%.

Shale, gray, argillaceous, carbonaceous, siliceous and micaceous from elev. 1099.3' to elev. 1096.0', fissile, hard, broken, very broken from elev. 1109.5' to elev. 1107.0'. Core loss 17%.

* Penetration = 5"

1210 1200 1190 1180 1170 1160 1150 1140 1130 1120 1110 1100 1090

90 80 70 60 50 40 30 20 10 ℄ 10 20 30 40 50 60 70 80 90

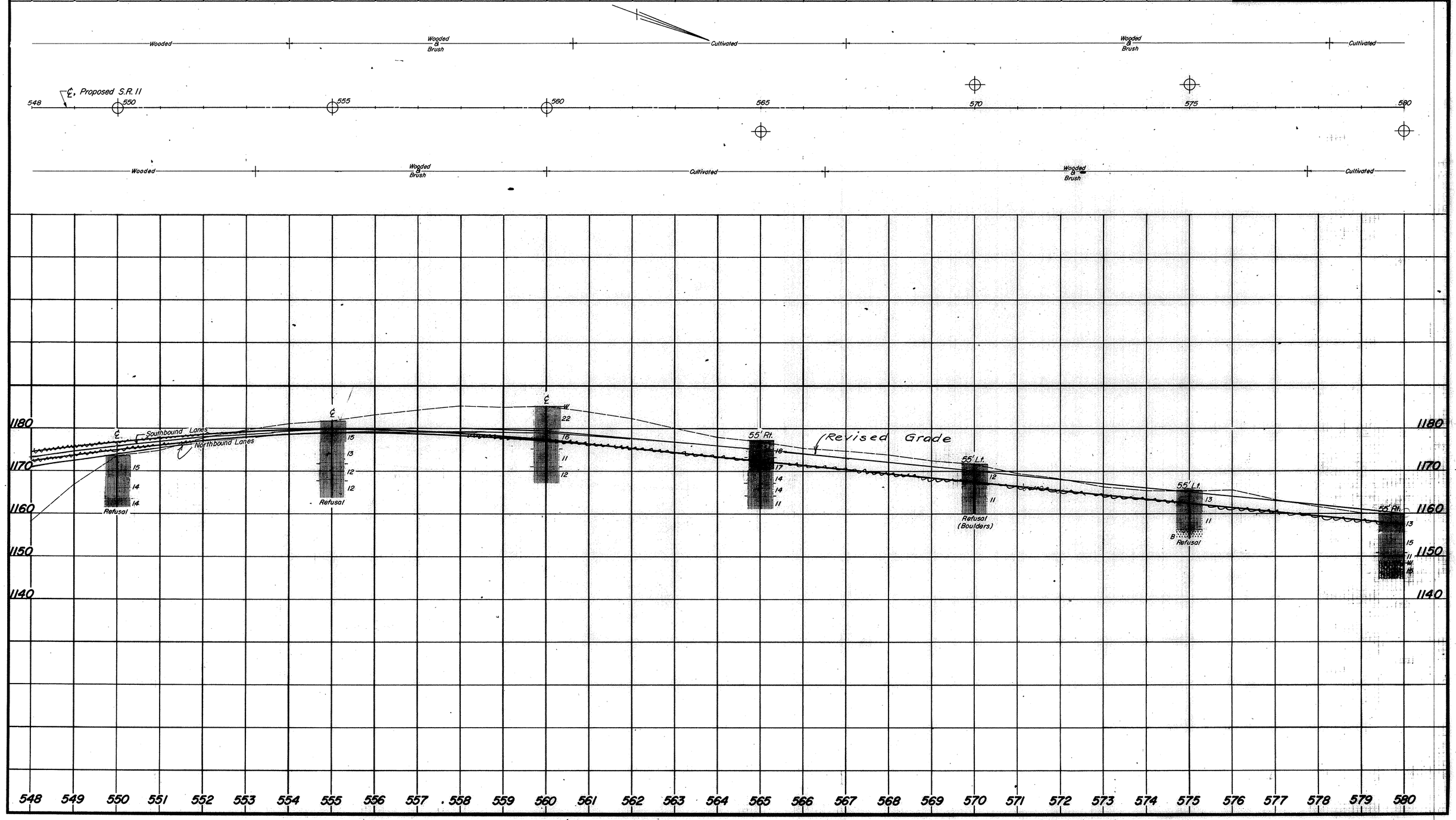
516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548

TE.54.8
1500.10 60

SOIL PROFILE
MAHONING COUNTY
MAH – 11 – 8.70

OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

8
21



TE-54-B
1500-10-60

SOIL PROFILE

MAHONING COUNTY
MAH-11-8.70

OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

9
21

Cultivated

Wooded & Brush

℄, Proposed S.R. 11

580 585 590 595 600 605 610 612

Cultivated

Wooded & Brush

Revised Grade

55' Rt.
13
15
11
W
15

℄
20
14
12

℄
11
11
15
W
Refusal

Black coal with shale fragments.

65' Rt.
TS = 2.0'
17
15
12
Refusal

65' Lt.
TS = 0.7'
W
21
6
11
Refusal

℄
17
13
W
17
8
6
Refusal

℄
18
13
W
14

℄
15
15
13
Refusal

℄
Swamp soil
B.T.S.=1.5'
19
11
W
18
Refusal (Boulders)

40' Lt.
TS = 0.3'
11
11
14
13
Refusal

1160
1150
1140
1130
1120
1110

580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612

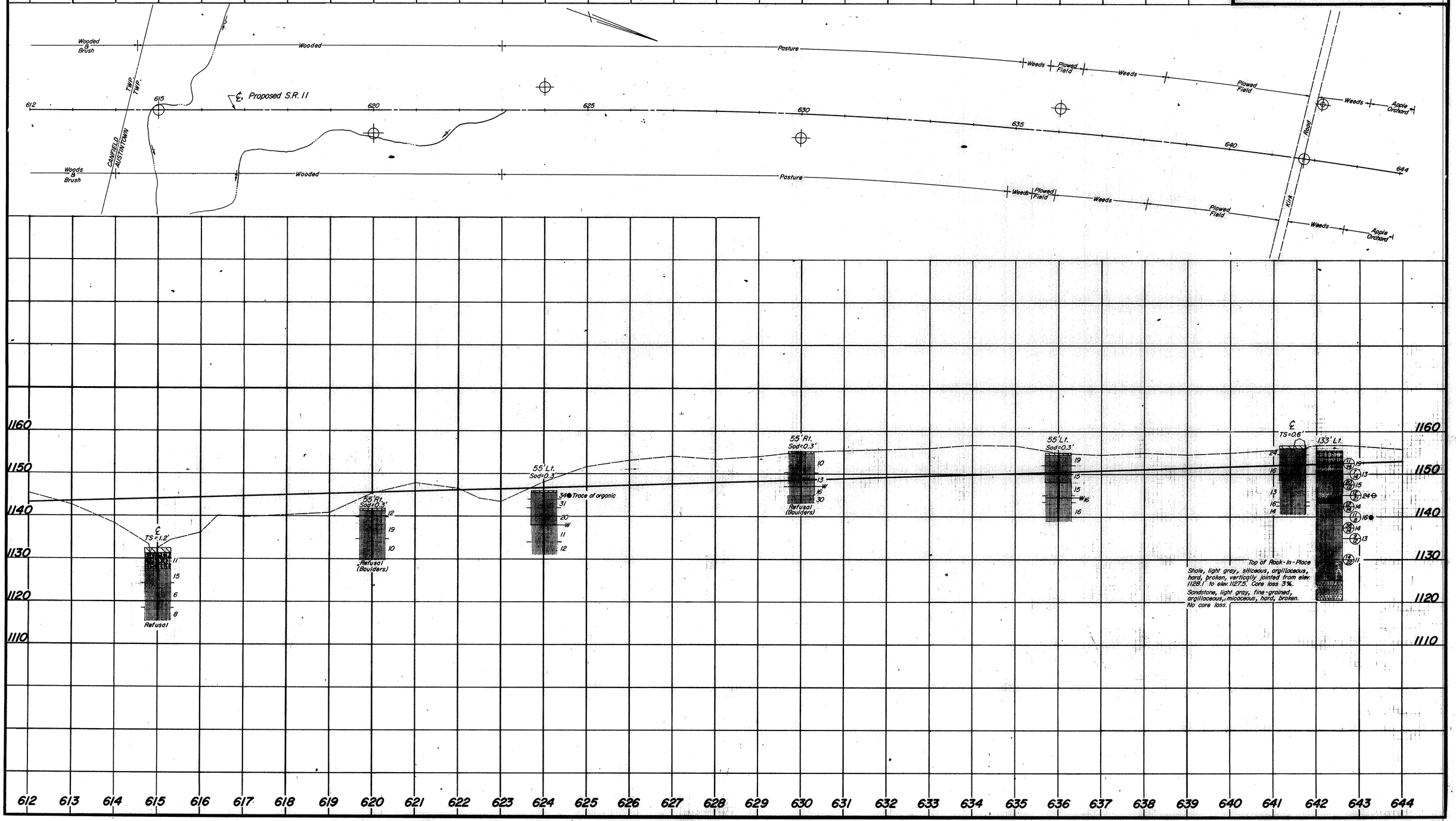
TE-54-B
1500-10-60

SOIL PROFILE

MAHONING COUNTY
MAH-11-8.70

OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

10
21



TE-54.8
1500-10 60

SOIL PROFILE
MAHONING COUNTY
MAH – 11 – 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

11
21

Garden | Apple Orchard | Mowed Field | Weeds | Wooded & Brush | Hay | Wooded & Brush

Pond

℄, Proposed S.R. 11

644 645 650 655 660 665 670 675 676

Garden | Apple Orchard | Garden | Cultivated | Wooded | Hay | Wooded

1170
1160
1150
1140
1130

55' Rt. TS+0.6' — 9, 15, 1, 15 — Refusal (Boulders)

55' Lt. TS+0.6' — 11 — Refusal (Boulders)

55' Lt. TS+0.6' — 12, 14, 15

55' Lt. TS+0.6' — 11, 12, 13

55' Lt. TS+0.6' — 11, 13, 7 — Refusal

55' Rt. TS+0.6' — 25, 25, 13, 14

55' Lt. TS+0.6' — 10, 11, 17, 12

℄ TS+0.6' — 13 — Refusal (Boulders)

℄ TS+0.6' — 9, 10 — Refusal

644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676

TE-54.8
1500-10-60

SOIL PROFILE
MAHONING COUNTY
MAH—11—8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

12
21

℄, Proposed S.R. 11

℄, Proposed New Rd.

Existing New Rd.

Wooded
Weeds & Brush
Lawn
Weeds & Brush
Lawn
Wooded & Brush
Weeds
Wooded
Wooded & Brush
Weeds & Brush
Lawn
Lawn
Wooded & Brush
Weeds

676 680 685 690 695 10 700 705 708

6
14

55' Rt. TS=0.6' — 10, 13
55' Lt. TS=0.6' — 10, 10, 12, 13 — Refusal
55' Rt. TS=0.6' — 15, 12, 14
55' Rt. TS=0.6' — 10 — Refusal (Boulders)
℄ TS=0.6' — 9, 12, 12, 15 W
83' Rt. ℄ — 11, 15, 12, 12 — 8/18, 20, 8/15, 19, 11/13, 14, 7/14, 13
Top of Rock-In-Place
Shale, gray, extremely weathered
Shale, gray, argillaceous, siliceous, slightly micaceous, fissile, hard, badly broken, with clay seams from elev. 1133.8 to elev. 1132.8' and from elev. 1131.5' to elev. 1131.3, and sandstone lenses at irregular intervals throughout. Core loss 15%.
55' Lt. TS=0.7' — 12 — Refusal (Boulders)
55' Rt. Sod & TS=0.7' — 16 — Refusal (Hand auger)

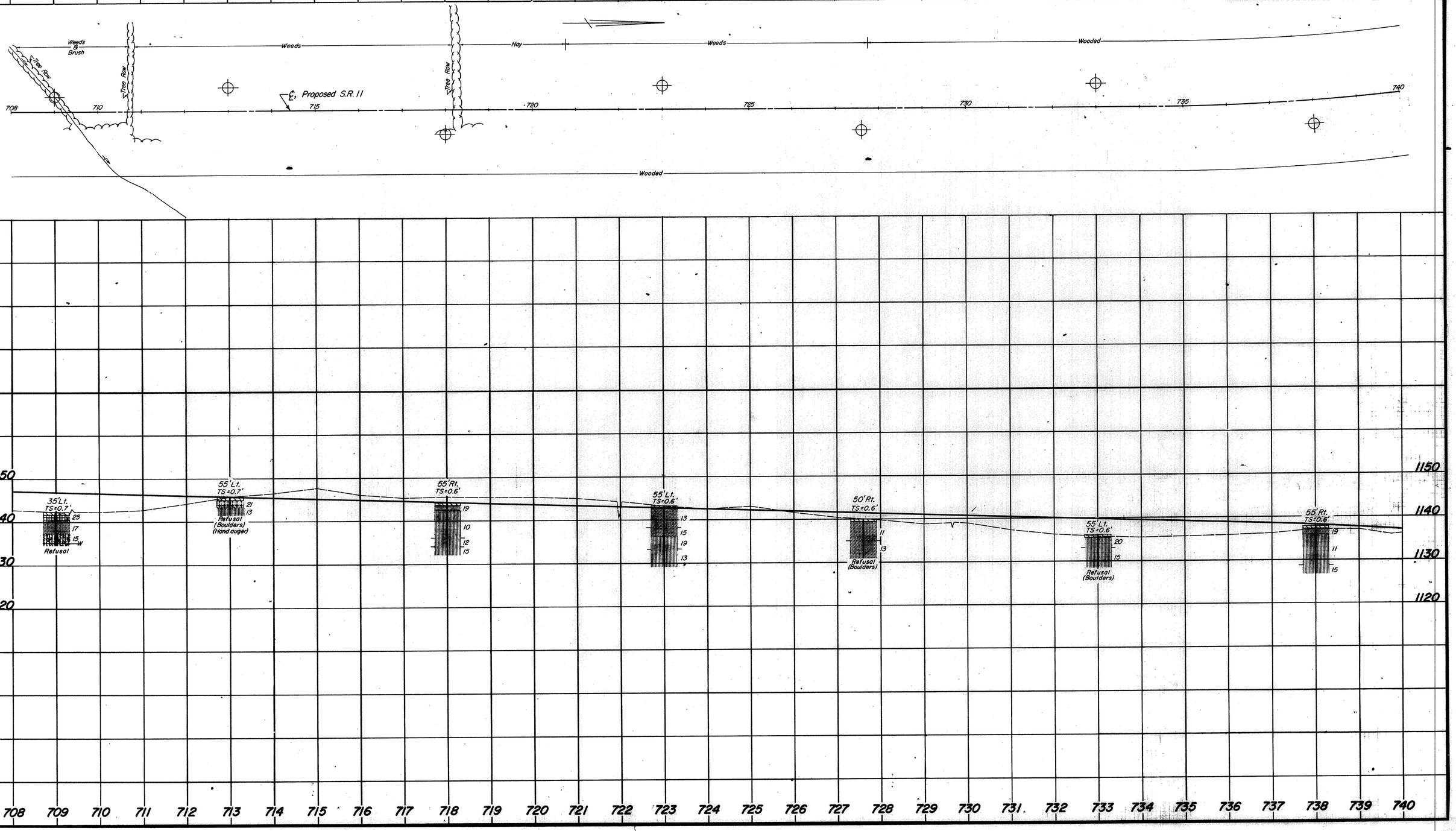
1160
1150
1140
1130
1120

676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708

TE.54 B
1500.10 60

SOIL PROFILE
MAHONING COUNTY
MAH – 11 – 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

13
21



TE 54 B
1500-10 60

SOIL PROFILE
MAHONING COUNTY
MAH — 11 — 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

14
21

Wooded
Brush & Weeds
Weeds
Lawn
Ingelwood Ave.
740
745
750
℄ Proposed S.R. 11
735
10
Sta. 754+01.41 ℄ Proposed S.R. 11
Sta. 9+71.16 ℄ Existing S.R. 18
℄ Existing S.R. 18
13
S
NOTE: For plan view of S.R. 18 INTERCHANGE, see sheet 15.
Restaurant
Lawn
Brush & Weeds
760
765
770
772
Grass & Weeds
Lawn
Lawn
Brush & Weeds

1150
1140
1130
1120
1110
1100
1090
1080
1070

55' Lt. TS=0.6'
55' Rt. TS=0.6'
55' Rt. TS=0.6'
Brown sandy silt with shale fragments.
Refusal
36' Rt.
137' Rt.
150' Lt.
℄ TS=0.4'
Brownish-gray silty clay with stone fragments 12" to 8.12'
Refusal
Top of Rock-In-Place
Shale, brown grading to gray, siliceous, argillaceous, micaceous, carbonaceous from elev. 1107.5' to elev. 1105.5', fissile, hard, badly to very badly broken. Core loss 29%.
Indurated clay, gray, siliceous, micaceous, slickensided, hard, broken; badly broken from elev. 1094.2' to elev. 1092.5'; very badly broken from elev. 1105.5' to elev. 1101.8' and from elev. 1100.3' to elev. 1098.8', soft and crumbly from elev. 1101.9' to elev. 1100.3', with coal stringers from elev. 1095.5' to elev. 1094.2'. Core loss 22%.
Shale, gray, argillaceous, siliceous, micaceous, fissile, hard, broken. No core loss.
*=6" penetration
Refusal (Boulders)
Top of Rock-In-Place
Shale, brown grading to gray, siliceous, argillaceous, micaceous, fissile, hard, broken; soft and crumbly from elev. 1105.2' to elev. 1103.9'. Core loss 44%.
Coal, black, blocky, broken to badly broken. No core loss.
Indurated clay, gray, slickensided, hard, badly broken. Core loss 21%.
Shale, gray, very siliceous, micaceous, slightly argillaceous, fissile, hard, broken. No core loss.
25' Rt. Sod & TS=0.4'
Revised Grade
Northbound Lanes
Southbound Lanes
℄ Sod=0.4'
Refusal (Boulders)
65' Lt. Sod=0.3'
Refusal

DRIVE SAMPLE SOIL TEST DATA

STATION & OFFSET	DEPTH FROM—TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL. CLASS
754+20 137'Rt.	2.5'—3.5'	4	5	4	35	52	41	20	17	A-7-6
	5.0'—6.0'	0	4	6	27	63	37	15	18	A-6a
	7.5'—8.5'	8	5	4	32	51	39	16	20	A-6b
	10.0'—11.0'	0	5	7	34	54	40	15	19	A-6a
	12.5'—13.5'	10	5	6	32	47	38	13	25	A-6a
	15.0'—15.5'	27	11	8	33	21	28	5	12	A-4a

740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772

TE-54.8
1500-10-60

SOIL PROFILE
MAHONING COUNTY
MAH-11-8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

15
21

MATCH LINE
Wooded
Weeds & Brush
℄ Ramp 'B'
Lawn
Ingelwood Ave.
Hunmore Ave.
Marcia Ave.
℄ Existing S.R. 18
Orchard
℄ Ramp 'D'
MATCH LINE
℄ Proposed S.R. 11
℄ Ramp 'A'
Restaurant Parking area
Gross Weeds
Sta. 754+01.41 ℄ Proposed S.R. 11
Sta. 9+71.16 ℄ Existing S.R. 18
℄ Ramp 'C'
℄ Ramp 'B'
℄ Proposed S.R. 11
℄ Ramp 'A'
MATCH LINE
NOTE: For profiles of Ramps A, B, C, D, see sheets 20 and 21.
℄ Ramp 'D'
℄ Proposed S.R. 11
℄ Ramp 'C'
MATCH LINE
Boulevard
Ingelwood Ave.

TE-54.8
1500-10-60

SOIL PROFILE
MAHONING COUNTY
MAH – 11 – 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

16
21

Weeds & Brush
Lawn
Wooded
Boulevard
℄, Proposed S.R. 11
Rockwell Road
Northeast
Lawn & Wooded
Weeds
Lawn
Weeds & Brush
Wooded & Brush
Wooded & Brush

772 775 780 785 790 795 800 804

Cross Section Sta. 773+00
Southbound grade
Northbound grade
Approximate ground line

Revised Grade
Northbound Lanes
Southbound Lanes

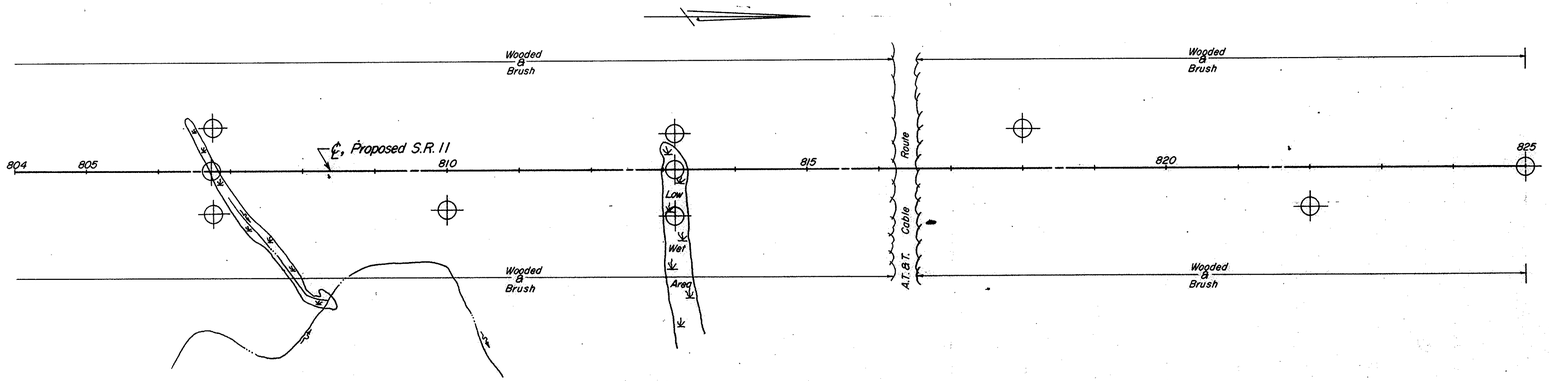
℄ Sod=0.2' — Refusal
65' Rt. 8' Rt. Sod=0.3' — Top of Rock-In-Place; Sandstone, weathered, broken.; Sandstone, gray, medium-grained, hard, broken; vertically jointed from elev. 1061.5' to elev. 1060.8', with traces of coal in places. Core loss 11%.
℄ Sod=0.3' — Refusal
℄ Sod=0.3' — Refusal
℄ Sod=0.3' — Hole squeezed in at elev. 1083.9'.
55' Lt. Sod=0.3' — Refusal (Boulders)
55' Rt. TS=0.6' — Refusal (Boulders)
℄ TS=0.6' — Refusal (Boulders)
℄ TS=0.6' — Refusal (Boulders) (Hand auger)
80' Rt. TS=0.6' — Refusal (Boulders) (Hand auger)
45' Lt. TS=0.6' — Brown broken sandstone fragments

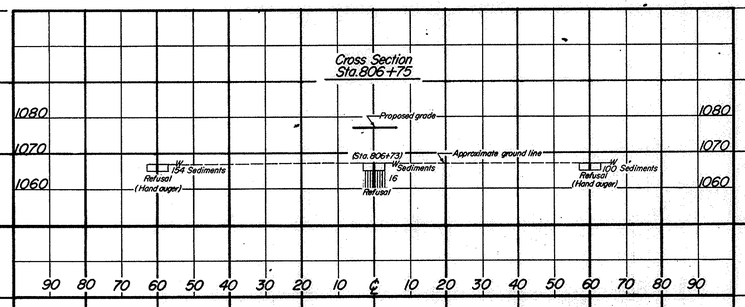
772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804

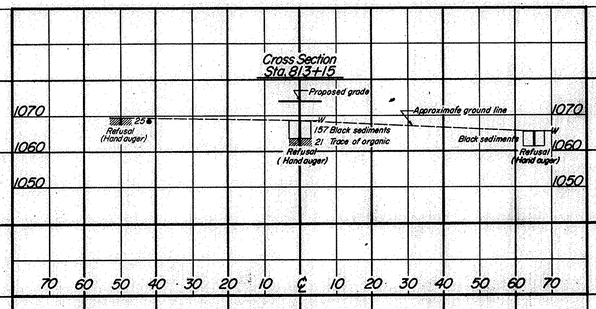
TE-54.8
1500-10 60

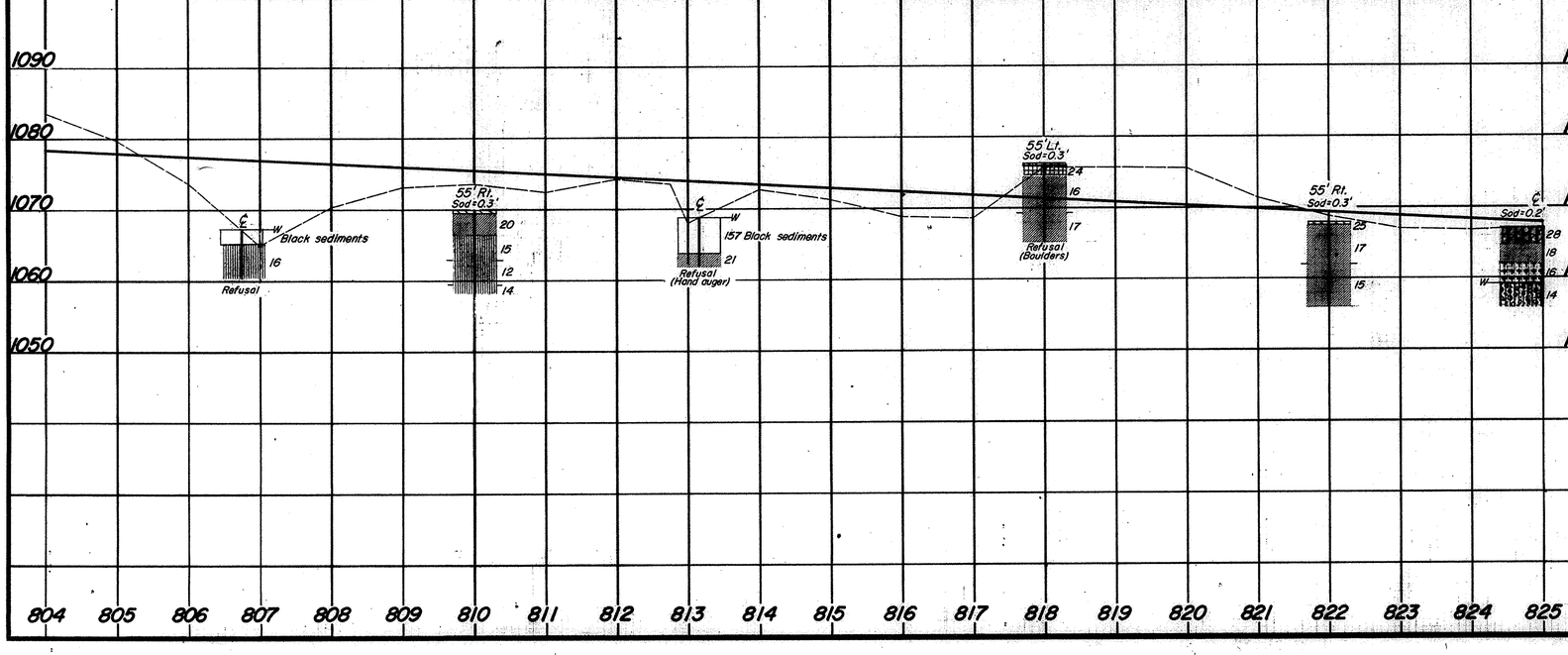
SOIL PROFILE
MAHONING COUNTY
MAH — 11 — 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

17
21







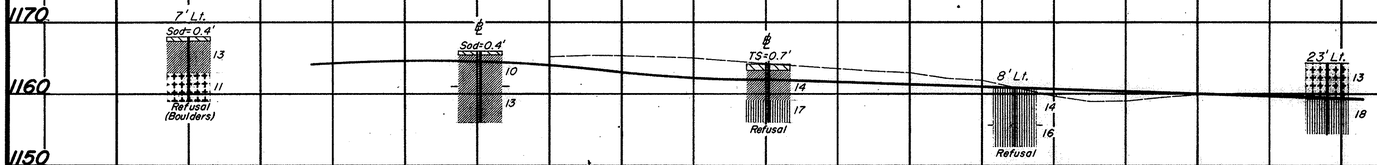


TE-54-B
1500-10-60

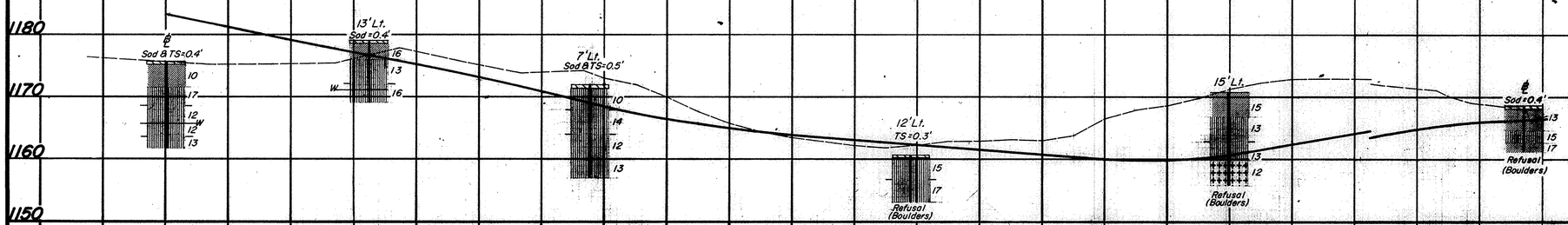
SOIL PROFILE
MAHONING COUNTY
MAH-11-8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

18
21

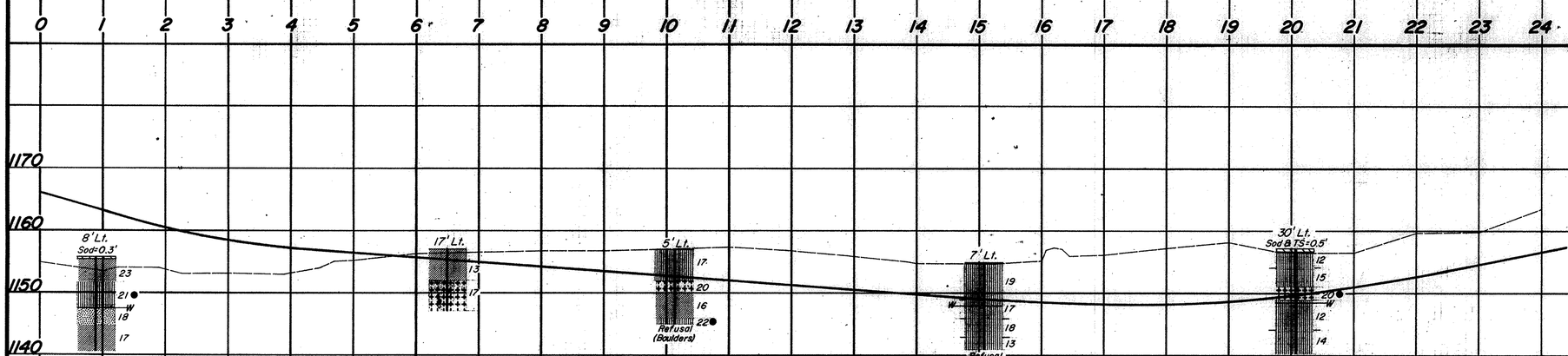
U.S.R. 224 INTERCHANGE



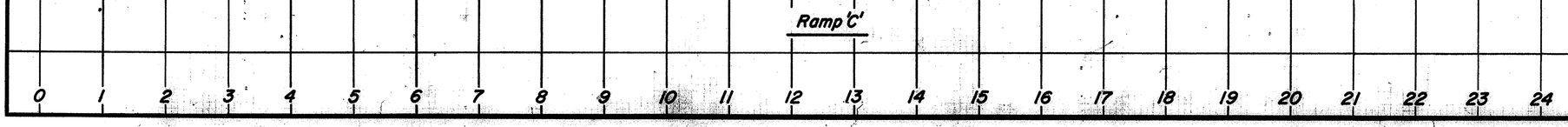
Ramp 'A'



Ramp 'B'



Ramp 'C'



TE-54.8
1500-10 60

SOIL PROFILE
MAHONING COUNTY
MAH — 11 — 8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

19
21

U.S.R. 224 INTERCHANGE

1180
1170
1160
1150
1140

18' Lt. Sod=0.4' — 14, 12 — Refusal (Boulders)
33' Lt. — 16, 17, 10 — Refusal (Boulders)
26' Lt. Sod=0.3' — 14, 16, 15, 11 — Refusal (Boulders)
16' Lt. Sod=0.3' — 11, 21, 23, 22, 13 — W
23' Lt. Sod=0.3' — 15, 14 — Refusal
22' Lt. — 14, 18 — Refusal

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Ramp 'D'

1180
1170
1160
1150
1140

35' Rt. — 21, 16, 16, 13 — W
7' Lt. Sod=0.3' — 12, 17, 18, 14, 14
8' Lt. TS=0.5' — 13, 25, 20, 20 — W
15' Lt. TS=0.4' — 12, 13, 13, 11, 13

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

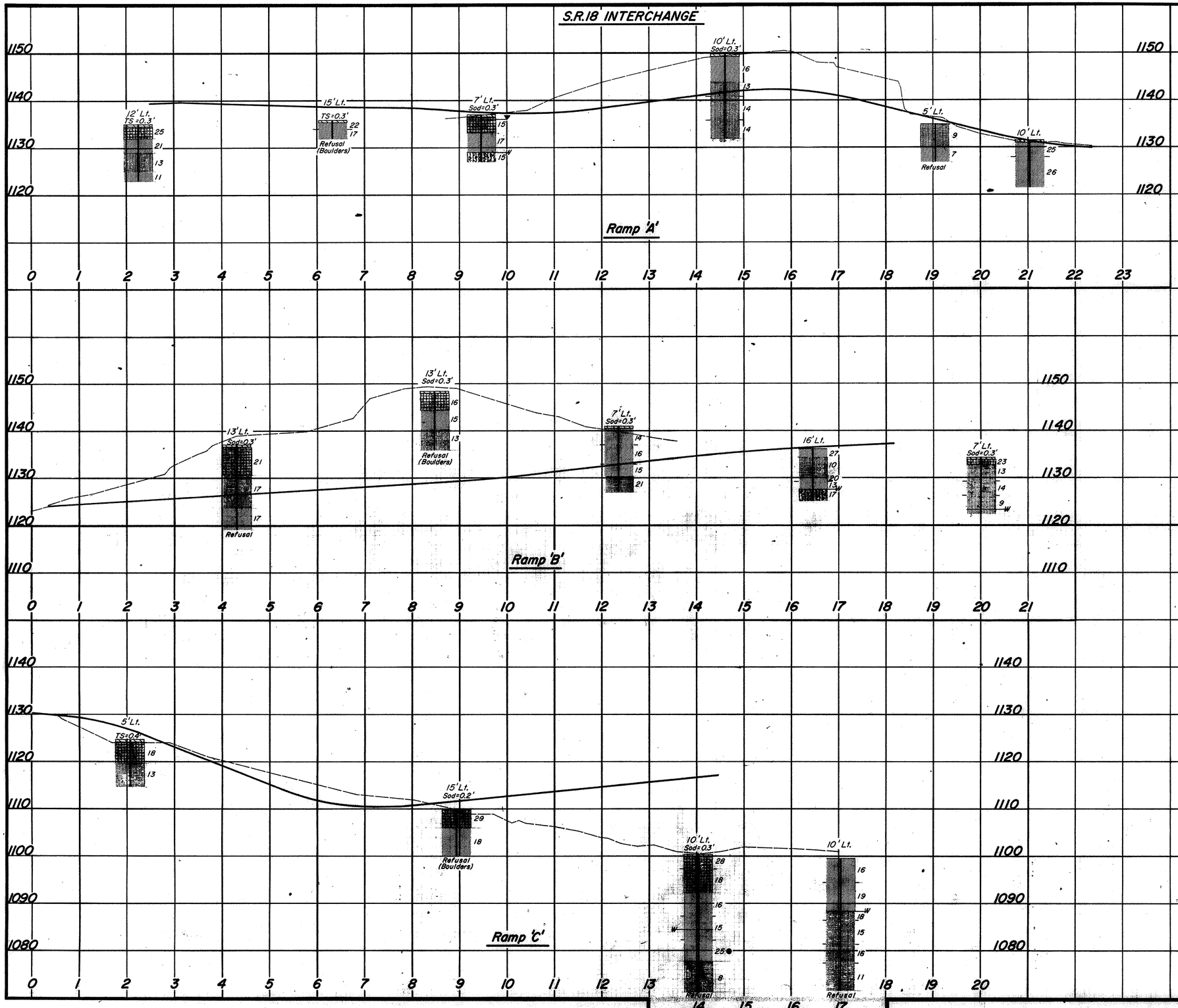
Ramp 'E'

TE-54-B
1500-10 60

SOIL PROFILE
MAHONING COUNTY
MAH—11—8.70
OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

20
21

S.R.18 INTERCHANGE



TE.54.8
1500-10 60

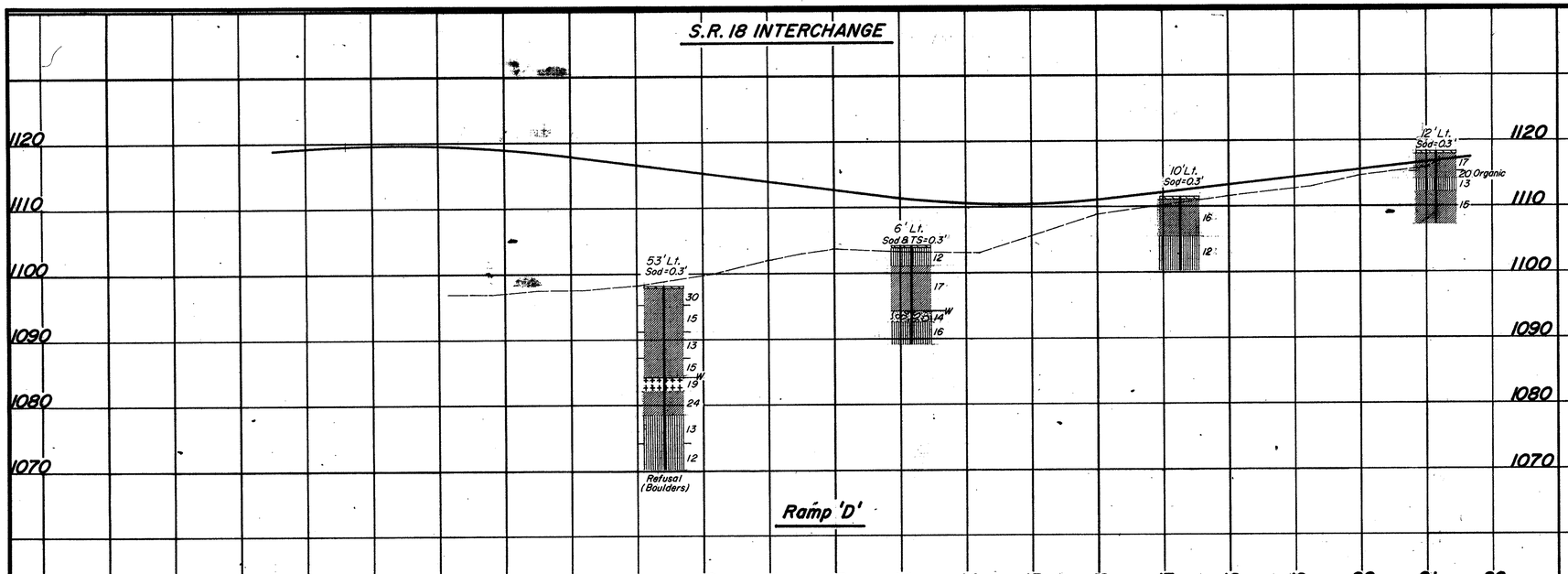
SOIL PROFILE
MAHONING COUNTY
MAH – 11 – 8.70

OHIO STATE HIGHWAY
TESTING LABORATORY
COLUMBUS, OHIO

21
21

S.R. 18 INTERCHANGE

Ramp 'D'



Drawn by	
Checked by	
Recom. Cleared by	
Reviewed by	
Signature	
Date	12/61