MICROFILMED
JUL 31 1986

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CLA - 40 - 17.87

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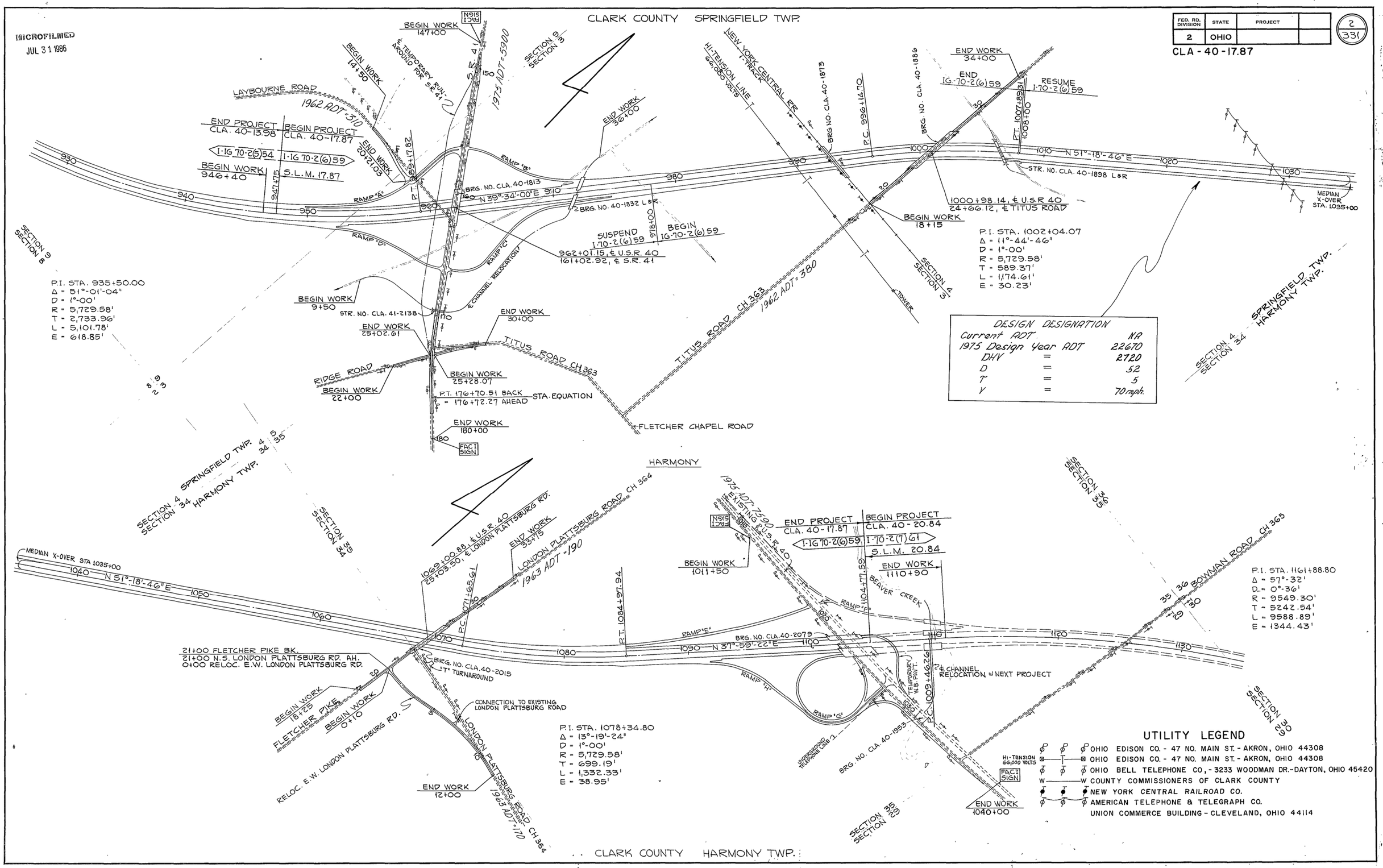


SCHEMATIC LAYOUT

GENERAL INFORMATION

INTRODUCTION

The project consists of the construction of the SR 41 and Proposed USR 40 Interchange, located at the SR 41 and Laybourne Road intersection and the existing USR 40 and Proposed USR 40 Interchange, located approximately 0.5 mile east of the existing USR 40 and Fletcher Pike intersection. Included in this report are soil profiles of the intersecting roads: Ridge-Titus Road, Titus Road, London-Plattsburg Road, Fletcher Pike, and Relocated London-Plattsburg Road.

For maximum proposed cuts and fill embankments, see the Project Index on this sheet

GEOLOGY OF THE PROJECT

The project is located on a flat to rolling portion of the Mississippi Valley Plain, where moderately deep to deep outwash deposits and glacial drift overlie bedrock, of Silurian and Ordovician ages.

EXPLORATION

Exploratory borings were made by means of truck-mounted mechanical soil auger and hand auger (in areas of difficult access), on December 7, 8, and 9, 1964. Included in this report are logs of borings made for the mainline and structure foundation investigation in the area of the interchanges.

INVESTIGATIONAL FINDINGS

Materials occurring immediately below proposed grades are predominantly comprised of sandy silts (A-4a), with some sandy gravels, silt clays, and clays, generally having moisture contents in the lower portion of the plastic range.

Frost susceptible sandy silt was encountered within three feet below proposed grade at station 32+50, Proposed London-Plattsburg Road.

Elastic clay containing organic matter was encountered Ramp E station 99+25.

In the embankment foundation areas, materials are predominantly comprised of gravels (A-1-a and A-1-b) with sandy silts (A-4a) silt clays (A-6a), and clays (A-7-6), generally having low moisture contents and moisture contents in the lower portion of the plastic range.

Wet materials were encountered at Ramp B stations 71+04 and 73+92, Ramp C station 64+90, Ramp D station 57+00, Proposed London-Plattsburg Road station 29+12, and Ramp G stations 89+00 and 99+00.

Materials containing organic matter were encountered at SR 41 stations 166+00, 169+00, and 177+00, Ramp C station 59+40, Ramp D station 57+00, Ramp E stations 95+50 and 99+25, Ramp G stations 89+00 and 99+00, and Ramp H station 100+00.

Gravel	A-1-a(0)	A-1-a	72	14	6		8	NP	NP	10	10
Gravel and stone fragments with sand	A-1-b(0)	A-1-b	54	16	11	12	7	NP	NP	15	12
Coarse and fine sand	---	A-3a	14	10	60	8	8	NP	NP	15	1
Gravel and stone fragments with sand and silt	A-2-4(0)	A-2-4	48	10	13	17	12	NP	NP	12	8
Sandy silt	A-4(2)	A-4a	32	8	16	27	17	23	5	16	18
Silt and clay	A-6(8)	A-6a	10	5	14	42	29	32	12	18	9
Silty clay	A-6(8)	A-6b	29	4	10	32	25	39	20	25	2
Elastic clay	A-7-5(20)	A-7-5	0	5	12	54	29	89	42	67	3
Clay	A-7-6(13)	A-7-6	10	4	7	36	43	45	21	26	7

Various other materials

VISUAL CLASSIFICATION

Sod or Topsoil = X' = Approximate depth.

Auger boring - plan view

Drive sample boring - plan view

Auger boring plotted to vertical scale only.

Drive sample boring plotted to vertical scale only

Water content nearly equal to or greater than liquid limit.

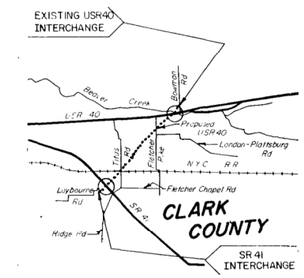
Indicates a non-plastic material with a high water content.

Free water.

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

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

Fed. No. I-70-2(6)



Recon- P.D.B.-11-25-64
Drilling-Auger-A.J.P., T.R.S.-3-12-64 to 12-7-64
Drafting-C.L.I., B.G.W., R.E.L.-1-8-64

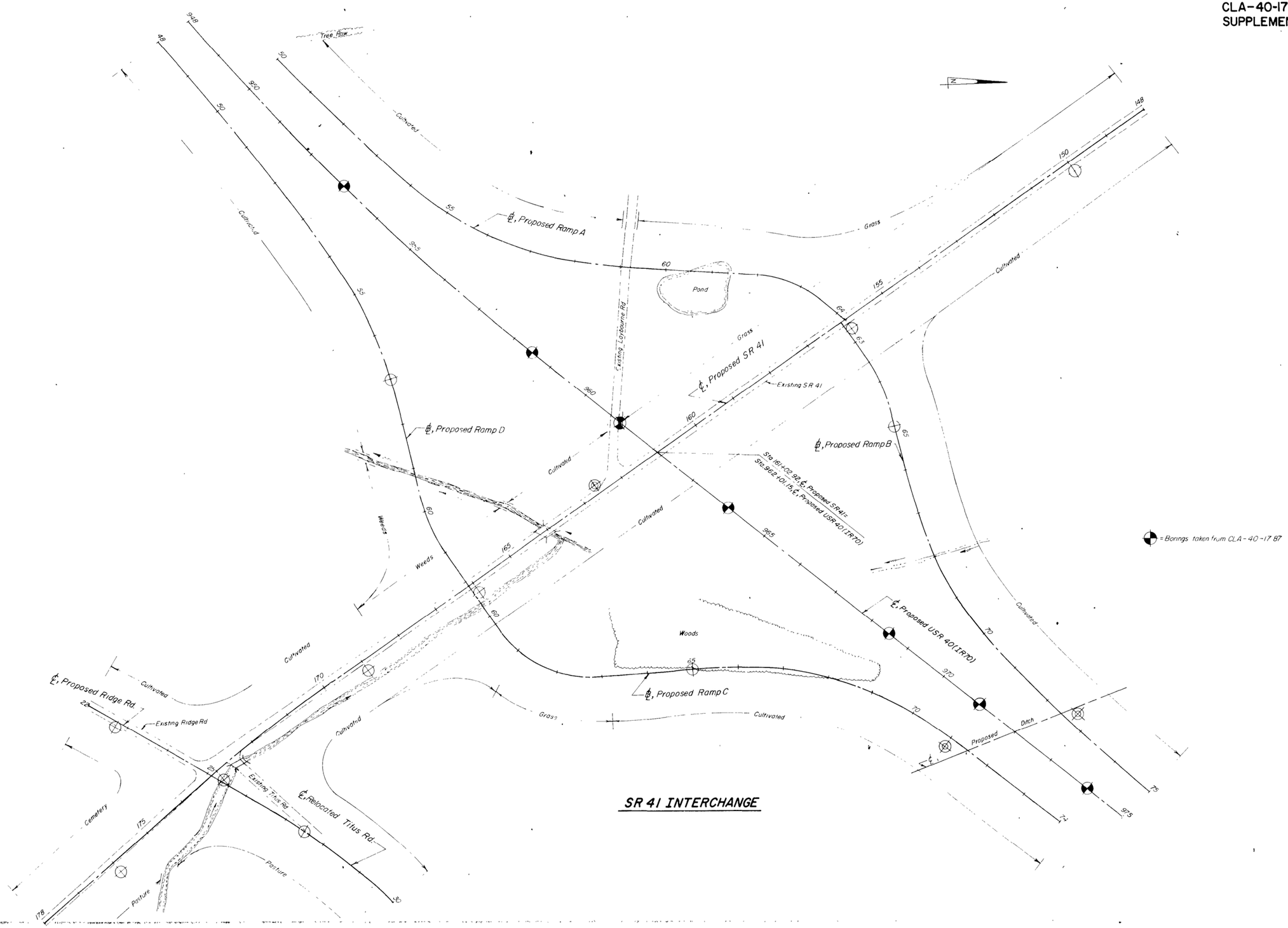
PROJECT INDEX

STATIONS FROM - TO	PLAN VIEW SHEET	PROFILE SHEET	CUT (MAX.)	FILL EMB. (MAX.)
SR 41 INTERCHANGE				
Proposed SR 41				
148+00 - 178+00	3	4	-	24'
Ramp A				
50+00 - 64+00	3	5	-	21'
Ramp B				
62+00 - 76+00	3	5	-	19'
Ramp C				
56+00 - 74+00	3	5	-	25'
Ramp D				
48+00 - 61+00	3	5	-	22'
Proposed Ridge - Titus Road				
22+00 - 30+00	3	6	1'	7'
Proposed Titus Road				
18+00 - 34+00	6	6	-	15'
Proposed London - Plattsburg Road				
21+00 - 34+00	7	7	-	21'
Proposed Fletcher Pike				
18+00 - 21+00	7	7	-	9'
Relocated London - Plattsburg Road				
0+00 - 10+00	7	7	2'	10'
EXISTING USR 40 INTERCHANGE				
Ramp E				
85+00 - 100+00	8	9	17'	9'
Ramp G				
86+00 - 102+00	8	10	-	26'
Ramp H				
91+00 - 108+00	8	10	-	21'
Temp. Eastbound Ramp				
5+00 - 10+00	8	9	-	5'
Temp. Westbound Ramp				
5+00 - 13+00	8	9	-	25'

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.

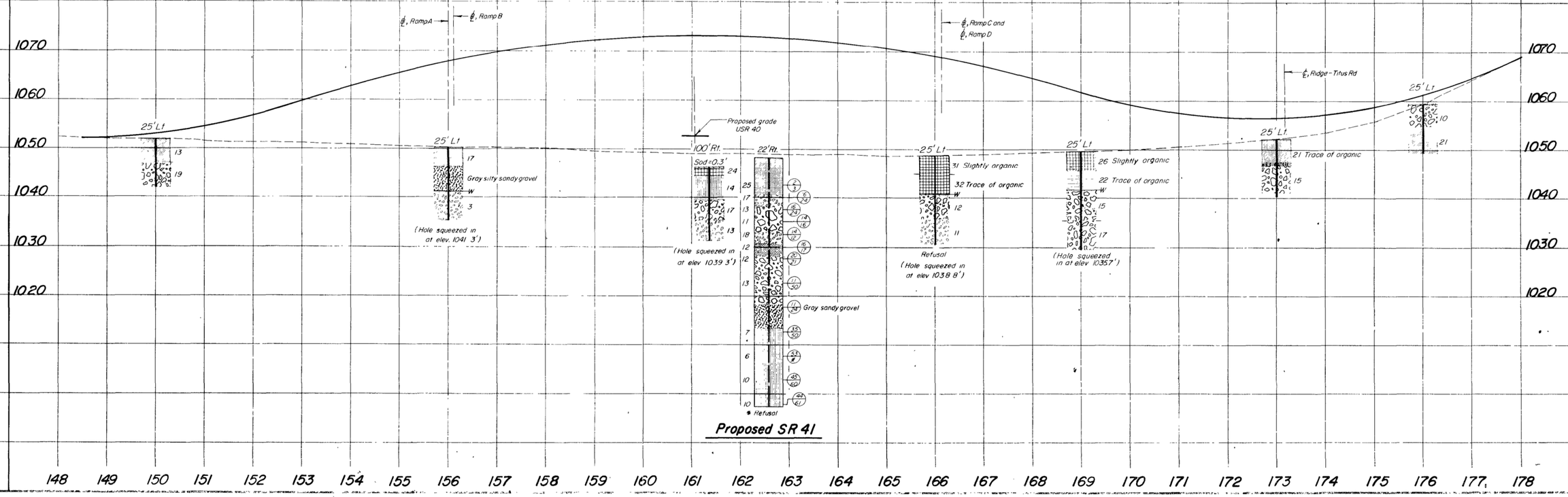
STATION & OFFSET		DEPTH FROM-TO	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	% W.C.	SHTL CLASS.
					SR 41						
150+00	25'Lt	0.0-5.0	0	6	9	52	33	31	12	13	A-6a *
		5.0-10.0	32	37	13	10	8	NP	NP	19	A-1-b
156+00	25'Lt	0.0-4.0	14	5	13	41	27	28	11	17	A-6a
		4.0-9.0	Gray Silty Sandy Gravel								Visual
		9.0-15.0	57	32	6	- 5 -		NP	NP	3	A-1-a
166+00	25'Lt	0.0-4.0	0	6	13	44	37	51	24	31	A-7-6
		4.0-8.0	0	5	9	39	47	47	34	32	A-7-6
		8.0-13.0	50	11	17	14	8	NP	NP	12	A-1-b
		13.0-18.0	69	17	9	- 5 -		NP	NP	11	A-1-a
169+00	25'Lt	0.0-4.0	0	2	10	54	34	43	16	26	A-7-6
		4.0-8.0	24	2	11	33	30	40	21	22	A-6b
		8.0-14.0	47	18	19	12	4	NP	NP	15	A-1-b
		14.0-20.0	43	27	16	10	4	NP	NP	17	A-1-b
173+00	25'Lt	0.0-5.5	33	8	16	26	17	33	11	21	A-6a
		5.5-12.0	74	6	4	10	6	-	-	15	A-1-b
176+00	25'Lt	0.0-5.0	58	11	9	15	7	21	5	10	A-1-b *
		5.0-10.0	16	6	20	32	26	30	15	21	A-6a
					Ramp B						
65+00	BL	0.6-5.0	52	11	11	17	9	NP	NP	9	A-2-4
		5.0-10.0	70	12	6	7	5	—	—	7	A-1-a
		10.0-15.0	72	14	5	5	4	NP	NP	10	A-1-a
					Ramp C						
64+90	BL	1.0-6.0	26	5	15	37	17	26	6	25	A-4a
		6.0-10.0	18	8	27	31	16	NP	NP	22	A-4a
		10.0-15.0	47	25	12	9	7	NP	NP	16	A-1-b
					Ramp D						
57+00	BL	3.0-9.0	36	13	22	18	11	NP	NP	20	A-2-4
		9.0-15.0	70	18	6	- 6 -		NP	NP	11	A-1-a
					Fletcher Pike						
20+00	12'Rt	0.0-6.0	24	11	17	22	26	23	7	12	A-4a
		6.0-12.0	24	11	14	32	19	22	7	12	A-4a
					Ridge - Titus Road						
22+75	12'Rt	0.0-5.0	33	8	23	17	19	29	4	22	A-4a *
		5.0-10.0	37	16	20	17	10	NP	NP	14	A-2-4
27+50	CL	0.0-6.0	30	6	26	19	19	24	7	14	A-4a *
		6.0-12.0	30	9	20	28	13	NP	NP	12	A-4a
					Titus Road						
20+00	35'Lt	0.6-4.5	0	0	6	56	38	32	11	22	A-6a
28+90	12'Rt	0.0-7.0	32	6	8	43	11	31	13	20	A-6a
33+00	12'Rt	0.0-4.0	33	8	10	19	30	41	12	20	A-7-6 *
					Proposed London - Plattsburg Road						
29+12	12'Rt	0.0-5.0	39	16	12	19	14	NP	NP	13	A-2-4
		5.0-10.0	34	7	14	26	19	22	4	16	A-4a
		10.0-15.0	41	9	10	27	13	18	2	20	A-4a
		15.0-20.0	39	9	17	21	14	17	2	10	A-2-4
32+50	12'Rt	0.0-5.0	25	6	14	34	21	25	6	19	A-4a *
		5.0-10.0	49	8	11	16	16	23	6	12	A-2-4
					Relocated London - Plattsburg Road						
4+00	CL	0.0-5.0	0	3	10	46	41	34	15	21	A 6a *
9+00	15'Lt	0.0-5.0	35	7	15	26	17	24	8	11	A-4a *
		5.0-10.0	37	9	15	22	17	21	6	14	A-4a
					Ramp E						
91+25	BL	0.0-5.0	39	9	13	23	16	22	7	10	A-4a
		5.0-10.0	63	3	8	14	12	20	3	8	A-2-4 *
		10.0-15.0	30	11	17	24	18	19	3	10	A-4a *
		15.0-20.0	38	9	14	26	13	19	2	10	A-4a
95+50	BL	0.0-5.0	0	8	28	33	31	29	11	20	A-6a
		5.0-9.0	54	11	11	17	7	NP	NP	18	A-1-b
		9.0-15.0	75	10	5	6	4	NP	NP	7	A-1-a
99+25	BL	0.0-5.0	0	2	10	70	18	104	69	76	A-7-5 *
		5.0-7.5	0	12	18	40	30	87	44	67	A-7-5
		7.5-11.0	72	10	5	5	8	—	—	14	A-1-a
					Ramp G						
89+00	BL	0.0-4.0	41	4	7	28	20	30	7	34	A-4a
		4.0-10.0	71	14	7	- 8 -		NP	NP	11	A-1-a
99+00	BL	0.0-4.0	0	2	9	50	39	75	12	57	A-7-5
		4.0-11.5	88	6	2	- 4 -		NP	NP	20	A-1-a
					Ramp H						
96+00	BL	0.0-4.0	0	4	12	46	38	36	13	22	A-6a
		4.0-10.0	65	7	7	15	6	NP	NP	19	A-1-b
		10.0-14.0	0	0	0	32	68	41	14	20	A-7-6
100+00	BL	0.8-3.5	35	7	8	31	19	39	19	29	A-6b
		3.5-9.0	66	9	8	9	8	NP	NP	18	A-1-b
		9.0-14.0	34	7	13	26	20	23	8	13	A-4a
105+00	BL	0.8-3.0	0	1	3	50	46	48	27	30	A-7-6
		3.0-8.0	67	6	5	16	6	NP	NP	11	A-1-b
		8.0-12.0	45	18	16	13	8	NP	NP	8	A-1-b
					Temp. W.B. Ramp						
10+00	BL	0.0-6.0	38	7	5	13	37	44	17	21	A-7-6
		6.0-12.0	35	6	19	30	10	NP	NP	19	A-4a
					Temp E.B Ramp						
7+90	BL	0.0-3.0	66	2	6	14	12	-	-	8	A-2-4 *
		3.0-6.0	14	10	60	8	8	NP	NP	15	A-3a
		6.0-11.5	71	11	8	6	4	NP	NP	8	A-1-a
					DRIVE SAMPLE SOIL TEST DATA						
					SR 41						
162+58	22'Rt	5.0-6.0	19	7	10	40	24	30	12	25	A-6a
		7.5-8.5	69	12	6	8	5	-	-	17	A-1-a
		10.0-11.0	40	32	14	- 14 -		NP	NP	13	A-1-b
		12.5-13.5	33	35	15	- 17 -		NP	NP	11	A-1-b
		15.0-16.0	65	20	7	- 8 -		NP	NP	18	A-1-a
		17.5-18.5	9	71	11	- 9 -		NP	NP	12	A-3a
		20.0-21.0	19	52	12	- 17 -		NP	NP	12	A-1-b
		25.0-26.0	28	47	14	- 11 -		NP	NP	13	A-1-b
		30.0-31.0	Gray Sandy Gravel							-	Visual
		35.0-36.0	20	5	20	34	21	21	7	7	A-4a
		40.0-41.0	20	8	19	34	19	NP	NP	6	A-4a
		45.0-46.0	23	7	17	28	25	21	7	10	A-4a
		50.0-51.0	27	16	11	19	27	21	5	18	A-4a
					Ramp B						
72+70	24'Lt	5.0-6.0	29	5	12	43	11	NP	NP	14	A-4a
		7.5-8.5	63	16	11	5	5	NP	NP	12	A-1-a
		10.0-11.0	Brown and Gray Gravelly Sand							-	Visual
		12.5-13.5	65	20	8	- 7 -		NP	NP	9	A-1-a
		15.0-16.0	80	11	4	- 5 -		NP	NP	9	A-1-a
		17.5-18.5	57	26	9	- 8 -		NP	NP	10	A-1-a
		20.0-21.0	Brown Sand							-	Visual
		22.5-23.5	Brown Sand							-	Visual
		25.0-26.0	Brown Sand							-	Visual
		30.0-31.0	43	26	26	- 5 -		NP	NP	17	A-1-b
		35.0-36.0	43	3	7	22	25	22	6	13	A-4a
		40.0-40.4	55	6	7	16	15	25	6	14	A-2-4
		45.0-45.5	41	7	13	19	20	23	8	10	A-4a
		50.0-50.4	35	8	12	25	20	23	8	10	A-4a
		55.0-55.5	28	5	12	30	25	25	9	13	A-4a
					Ramp C						
71+00	23'Rt	5.0-6.0	47	19	18	9	7	NP	NP	11	A-1-b
		7.5-8.5	37	25	22	- 16 -		NP	NP	12	A-1-b
		10.0-11.0	68	16	6	- 10 -		NP	NP	7	A-1-a
		12.5-13.5	70	16	6	- 8 -		NP	NP	8	A-1-a
		15.0-16.0	13	21	33	25	8	NP	NP	16	A-3a
		17.5-18.5	22	26	39	- 13 -		NP	NP	15	A-3a
		20.0-21.0	45	24	26	- 5 -		NP	NP	12	A-1-b
		22.5-23.5	38	26	25	- 11 -		NP	NP	12	A-1-b
		25.0-26.0	2	31	47	10	10	NP	NP	16	A-3a
		30.0-31.0	48	8	11	17	16	19	6	10	A-2-4
		35.0-36.0	38	7	16	20	19	21	6	9	A-4a
		40.0-41.0	28	7	23	22	20	NP	NP	10	A-4a
		45.0-46.0	31	7	15	25	22	25	8	10	A-4a
		50.0-51.0	33	6	12	27	22	22	6	10	A-4a
					Proposed London - Plattsburg Road						
26+28	12'Rt	5.0-6.0	36	8	15	28	13	19	2	13	A-4a
		10.0-11.0	42	9	9	25	15	18	3	13	A-4a
		12.5-13.5	40	10	15	21	14	18	3	8	A-2-4
		15.0-16.0	76	16	4	- 4 -		NP	NP	12	A-1-a
		17.5-18.5	Gray Silty Sandy Gravel							-	Visual
		20.0-21.0	43	7	13	23	14	-	-	9	A-4a
		22.5-23.5	Gray Sandy Clayey Silt and Gravel								Visual
		25.0-26.0	52	18	13	8	9	NP	NP	12	A-1-b
		27.5-28.5	57	19	13	- 11 -		NP	NP	5	A-1-a
		30.0-31.0	Gray Fine Sandy Clayey Silt with Some Gravel								Visual
		35.0-36.0	60	16	11	- 13 -		NP	NP	3	A-1-a
		40.0-40.3	36	11	21	23	9	NP	NP	10	A-2-4
		45.0-45.6	79	12	5	- 4 -		NP	NP	2	A-1-a
		50.0-50.6	Gray Clayey Silty Sand and Gravel								Visual
		55.0-55.6	Gray Silty Sand and Gravel								Visual
					SOIL TEST DATA OF BORINGS PREVIOUSLY TRANSMITTED						
					USR 40						
953+00	CL	0.4-4.0	0	2	16	41	41	38	17	22	A-6b
		4.0-6.0	51	24	5	- 20 -		NP	NP	13	A-1-b
960+95	CL	0.3-2.0	0	4	18	31	47	44	25	24	A-7-6
		2.0-7.0	48	8	6	23	15	NP	NP	14	A-4a
		7.0-11.0	47	35	12	- 6 -		NP	NP	17	A-1-b
		11.0-15.0	55	25	14	- 6 -		NP	NP	13	A-1-a
971+00	CL	0.0-5.0	0	1	2	43	54	53	25	57	A-7-6
		5.0-5.5	71	6	9	7	7	23	0	10	A-2-4
974+00	CL	0.5-5.0	21	0	1	33	45	59	38	41	A-7-6
		5.0-6.0	55	6	7	15	17	29	0	29	A-2-4
1000+80	CL	0.3-6.0	28	10	16	22	24	22	7	16	A-4a
		6.0-12.0	11	11	24	27	27	19	4	12	A-4a
		12.0-16.0	30	14	19	20	17	NP	NP	15	A-4a
		16.0-18.0	1	2	74	10	13	NP	NP	10	A-3a
		18.0-20.0	67	20	7	- 6 -		NP	NP	5	A-1-a
1069+15	CL	0.0-3.0	0	6	8	50	36	28	6	22	A-4b
		3.0-5.0	14	2	7	30	47	49	30	26	A-7-6
		5.0-9.0	0	5	9	50	36	27	8	23	A-4b
		9.0-12.0	33	9	18	21	19	18	3	15	A-4a
1085+00	CL	0.3-5.0	0	6	14	29	51	42	22	23	A-7-6
		5.0-9.0	13	5	46	25	11	NP	NP	18	A-4a
		9.0-13.0	36	37	20	- 7 -		NP	NP	4	A-1-b
		13.0-15.0	2	10	63	16	9	NP	NP	3	A-3a
1091+00	CL	0.3-3.0	14	7	19	21	39	42	24	22	A-7-6
		3.0-4.5	17	10	32	19	22	NP	NP	19	A-4a
		4.5-12.0	20	10	14	36	20	NP	NP	15	A-4a
		12.0-16.0	68	20	7	- 5 -		NP	NP	7	A-1-a
1102+00	30'Rt	0.0-3.0	31	4	9	37	19	28	7	36	A-4a
		3.0-5.0	15	2	13	34	36	38	19	23	A-6b
		5.0-8.5	66	17	3	- 14 -		NP	NP	15	A-1-a
		8.5-12.0	0	0	0	43	57	34	11	26	A-6a
1106+00	CL	0.4-1.5	Black Loamy Peat							41	Visual
		1.5-4.0	37	2	5	27	29	64	39	52	A-7-6
		4.0-10.0	61	10	6	13	10	-	-	22	A-1-b
		10.0-15.0	61	22	7	- 10 -		NP	NP	14	A-1-a


SR 41 INTERCHANGE
℄, Proposed Ramp A
℄, Proposed Ramp B
℄, Proposed Ramp C
℄, Proposed Ramp D
℄, Proposed SR 41
Existing SR 41
Sta 161+02.92 ℄ Proposed SR 41 =
Sta 962+01.15 ℄ Proposed USR 40 (LRPD)
℄, Proposed USR 40 (LRPD)
℄, Proposed Ridge Rd.
Existing Ridge Rd
℄, Relocated Titus Rd.
Existing Titus Rd
Existing Lorbourne Rd
Pond
Woods
Weeds
Cemetery
Pasture
Grass
Cultivated
Tree Row
Proposed Ditch
= Borings taken from CLA-40-17.87

SOIL PROFILE
CLARK COUNTY
CLA-40-17.87
SUPPLEMENT

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W. BROAD ST. COLUMBUS 23, OHIO

11
49

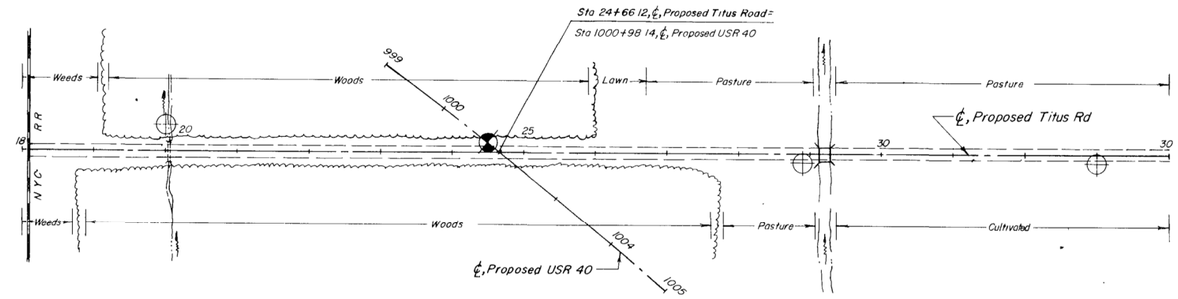


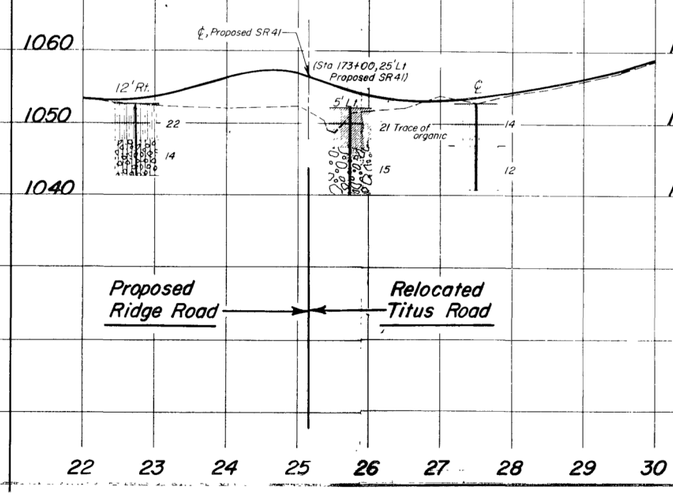
SOIL PROFILE

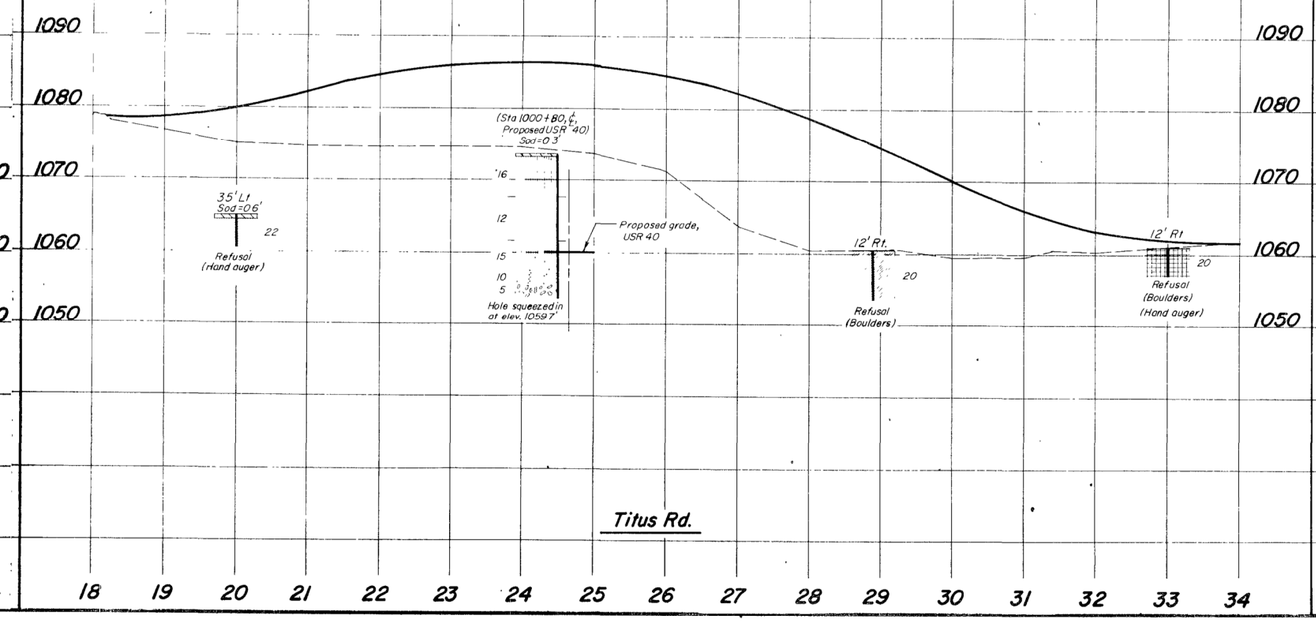
CLARK COUNTY
CLA-40-17.87
SUPPLEMENT

OHIO STATE HIGHWAY TESTING LABORATORY
1620 W BROAD ST COLUMBUS 15 OHIO

13
49







GEOLOGY OF THE SITE

The structure site is located on the relatively flat glaciated Mississippi Valley Plain, in an area where deep glacial-derived soils overlie bedrock, of Silurian age.

EXPLORATION

The exploration consisted of two drive sample borings, made between September 13 and 19, 1964, and five drive rod penetration tests, made on August 14 and 25, 1964.

INVESTIGATIONAL FINDINGS

Borings encountered dense to very dense unstratified gravels, sands, and silts. The borings were terminated at 46 and 51-foot depths, elevations 1009 and 997 feet, after penetrating in excess of 30 feet of material requiring in excess of 50 blows per foot in the standard penetration test.

Rod soundings met very gradual increase in penetration resistance with increase in depth and were terminated upon encounter with refusal to penetration at 9 to 30-foot depths, elevations 1015 to 1014 feet, considered to be in dense or very dense intervals of gravels or silts, as revealed by the borings.

No free water was observed in any of the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

Auger Boring

Proportional Drive Sample Boring

Standard Penetration Test Boring

Electrical Resistivity Probe

Rod Penetration Test

Rod Sounding

Electrical Resistivity Profile

Horizontal Bar Graph

Rod Penetration Resistance

Rock Quality Designation

Water Level

Water Level Before Test

Water Level After Test

SYMBOLS FOR ROCK TYPES

Shale

Limestone

Dolomite

Sandstone

Chert

Coal

Weathered Rock

Rock Fill

Rock Fill

GENERAL INFORMATION

[illegible]

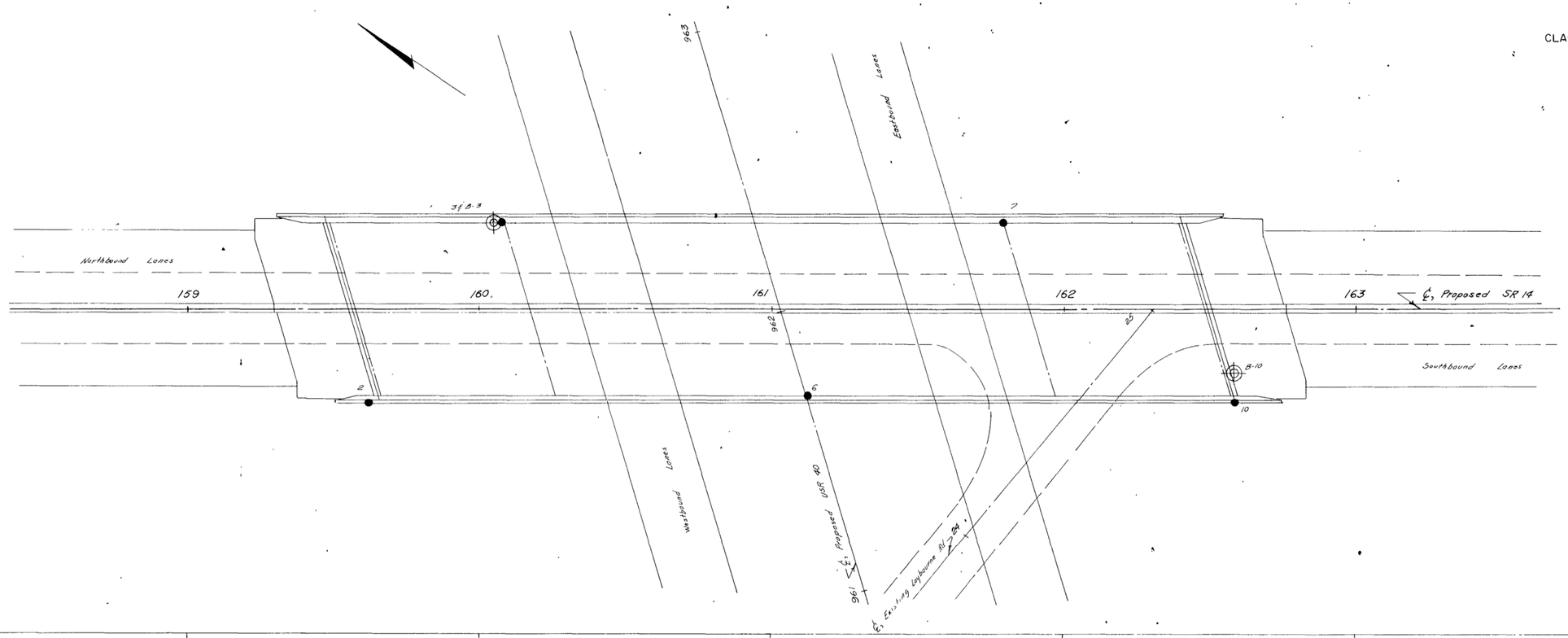
[illegible]

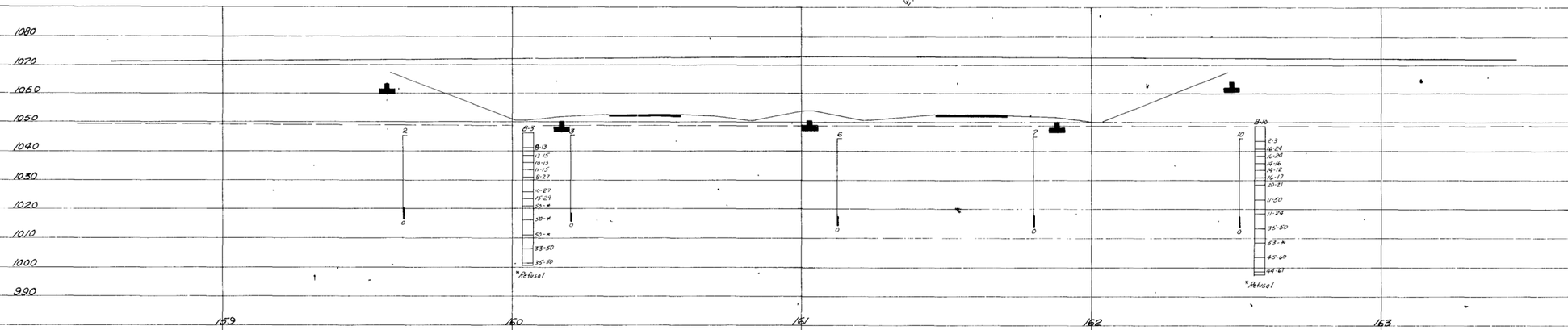
[illegible]

CLA-40-17.87

19/49

2/4





SCALE: 1" = 20'

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST., COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. CLA-40-1813
UNDER SR 41
SEC CLA-40-17.87

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.F.	R.H.P	R.D.R.	10/23/64

CLA-40-1787

3/4

LOG OF BORING

Date Started 9-23-64 | Sampler Type SB | Dia. 1 3/8" | Water Elev.
Date Completed 9-23-64 | Casing: Length 30' | Dia. 3 1/2"
Boring No. B-3 | Station & Offset 164+05, 30' Lt. (NEAR PIER) | Surface Elev. 1046.2

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
1046.2	0														
	2														
	4														
1041.2	6	8/13			Brown Silty Sandy Gravel	1	48	23	12	10	7	NP	NP	9	
1038.7	8	13/15			Brown Silty Sandy Gravel	2	46	32	9	7	6	NP	NP	10	
1036.2	10	18/13			Brown & Gray Sandy Gravel	3	52	29	9	-10-		NP	NP	11	
1033.7	12	11/15			Gray Silty Sandy Gravel	4	50	29	8	-13-		NP	NP	12	
1031.2	14														
	16	8/27			Gray Sand (Wash Sample)	5		V I S U A L							
	18														
1026.2	20														
	22	10/27			Gray Sand	6	9	35	53	-3-		NP	NP	15	
1023.7	24	15/29			Gray Sand (Wash Sample)	7		V I S U A L							
1021.2	26	50/*			Gray Sandy Gravel	8	71	17	6	-6-		NP	NP	10	
	28														
1016.2	30														
	32	50/*			Gray & Brown Sandy Gravelly Silt	9	32	8	14	28	18	22	7	8	
	34														
1011.2	36	50/*			Brown Sandy Gravelly Silt	10	35	6	17	23	19	20	6	10	
	38														
1006.2	40														
	42	33/50			Gray Sandy Silt	11	9	4	73	7	7	NP	NP	18	
	44														
1001.2	46	35/50			Gray Gravelly Sand	12	34	25	33	-8-		NP	NP	13	
1000.2					BOTTOM OF BORING										

*Refusal

LOG OF BORING

Date Started 9-24-64 | Sampler Type SB | Dia. 1 3/8" | Water Elev.
Date Completed 9-24-64 | Casing: Length 35' | Dia. 3 1/2"
Boring No. B-10 | Station & Offset 162+58, 22' Rt (FORWARD ABUTMENT) | Surface Elev. 1048.2'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
1048.2	0														
	2														
	4														
1043.2	6	2/3			Brown & Gray Sandy Gravelly Clay	1	19	7	10	40	24	30	12	23	
1040.7	8	16/24			Gray & Brown Silty Sandy Gravel	2	69	12	6	8	5	PL-18		17	
1038.2	10	16/24			Gray & Brown Silty Gravelly Sand	3	40	32	14	-14-		NP	NP	13	
1035.7	12	14/16			Gray & Brown Silty Gravelly Sand	4	33	35	15	-17-		NP	NP	11	
1033.2	14	14/12			Gray Sandy Gravel	5	65	20	7	-8-		NP	NP	18	
1030.7	16	16/17			Gray Sand	6	9	71	11	-9-		NP	NP	12	
1028.2	18	20/21			Gray Silty Gravelly Sand	7	19	52	12	-17-		NP	NP	12	
	20														
1023.2	22	11/50			Gray Silty Gravelly Sand	8	28	47	14	-11-		NP	NP	13	
1018.2	24														
	26	11/24			Gray Sandy Gravel	9		V I S U A L						9	
1013.2	28	35/50			Gray Gravelly Sandy Silt	10	20	5	20	34	21	21	7	7	
1008.2	30	53/*			Gray Gravelly Sandy Silt	11	20	8	19	34	19	NP	NP	6	
1003.2	32	45/60			Gray Gravelly Sandy Silt	12	23	7	17	28	25	21	7	10	
998.2	34	44/61			Gray Gravelly Sandy Silt	13	27	16	11	19	27	21	5	18	
997.2					BOTTOM OF BORING										

*REFUSAL

OHIO STATE HIGHWAY
TESTING LABORATORY
870 WEST BROAD ST. COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. CLA-40-1813
UNDER "R 4"
SEC CLA-40-1787

BORING DATA

TYPED BY	CHECKED BY	REVIEWED BY	DATE
J A C	R H R	R D R	10/23/64

CLARK COUNTY
CLA-40-17.87

GEOLOGY OF THE SITE

The structure site is located on the relatively flat glaciated Mississippi Valley Plain, over a buried Teays age tributary valley presently being incised by intermittent drainage. Deep glacial-derived soils overlie bedrock, of Silurian age.

EXPLORATION

The exploration consisted of two drive sample borings, made between October 21 and 27, 1964, and two drive rod penetration tests, made on September 4, 1964.

INVESTIGATIONAL FINDINGS

Borings encountered dense to extremely dense unstratified gravels, sands, and silts. The borings were terminated at 51-foot depth, elevation 997 feet, after penetrating in excess of 30 feet of material requiring in excess of 30 blows per foot in the standard penetration test.

Rod soundings met very gradual increase in penetration resistance with increase in depth and were terminated upon encounter with refusal to penetration at 24 to 27-foot depths, elevations 1023 to 1020 feet, considered to be in dense or very dense intervals of gravels or silts, as revealed by the borings.

No free water was observed in any of the rod sounding holes.

No test penetrated to bedrock surface.

LEGEND

- Auger Boring Location - Plan View.
- Press and/or Drive Sample and/or Core Boring Location - Plan View.
- Drive Rod Penetration Resistance Sounding Location - Plan View.
- Capped Pile
- Footing
- Footing on Pile
- TR — Top of Rock
- Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
- X/Y — Figures Beside the Boring Log in Profile Indicate the Number of Blows For Standard Penetration Test.
  X = Number of Blows for First 6 Inches.
  Y = Number of Blows for Second 6 Inches.
- Drive Rod Penetration Resistance Sounding Log - Profile.
- Casing
- Resistance "R" < 10,000 lbs.
- Resistance "R" > 10,000 lbs.
- Z — Indicates Final Measurement of Penetration, in Inches.
- W — Indicates Free Water Elevation
- Indicates Static Water Elevation

SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale
- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

GENERAL INFORMATION

Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine the amount of penetration achieved in three hammer drops. This reading is converted to an empirical value for capacity "R", in thousands of pounds (which is a measure of both the point resistance and frictional resistance on the rod), by using charts prepared by the Ohio Department of Highways, Bureau of Bridges, on the basis of correlation study of rod penetration with past performance of pile driving. For interpretation, a graph is prepared by plotting the value "R" against the depth at which the reading was taken, and connecting the plotted points. The curve so obtained reflects the density of subsurface materials in a manner that can be readily compared with data from similar tests at other locations on the structure site. From this comparison, the overall uniformity of subsurface condition may be evaluated.

Drive Sample Borings – Drive-Press Sample Borings

Drive sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. sampler, at 2-1/2 and/or 5-foot depth intervals, driven by means of a 140-pound drop-hammer, with a free fall of 30 inches. The number of blows required to drive the sampler 12 inches is considered the standard penetration test.

Drive-press sample borings are made by means of a rotary-type drill rig, employing a 2" O.D., 1-3/8" I.D. drive sampler, and 3" O.D. thin-wall press sampler. The press sampler is advanced by continuous uniform pressure, applied by the drill rig.

The boring log sheets show a graphic plot of the information obtained, including depth and elevation of the sample, number of blows for the standard penetration tests in two 6-inch increments, depth of press samples, field sample number, sample description – based on laboratory tests and the Casagrande AC classification system - and gradation, plasticity, and moisture content determinations. Results of strength and consolidation testing, if performed, appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler can not be driven, a wash sample is procured for visual classification, in order to determine the general character of the material. These samples are not considered sufficiently representative to warrant laboratory testing.

Particle Size Definitions

Boulders	8"	Cobbles	3"	Gravel	2.0mm	Coarse Sand	0.42mm	Fine Sand	0.074mm	Silt	0.005mm	Clay
					No 10 sieve			No 40 sieve		No 200 sieve		

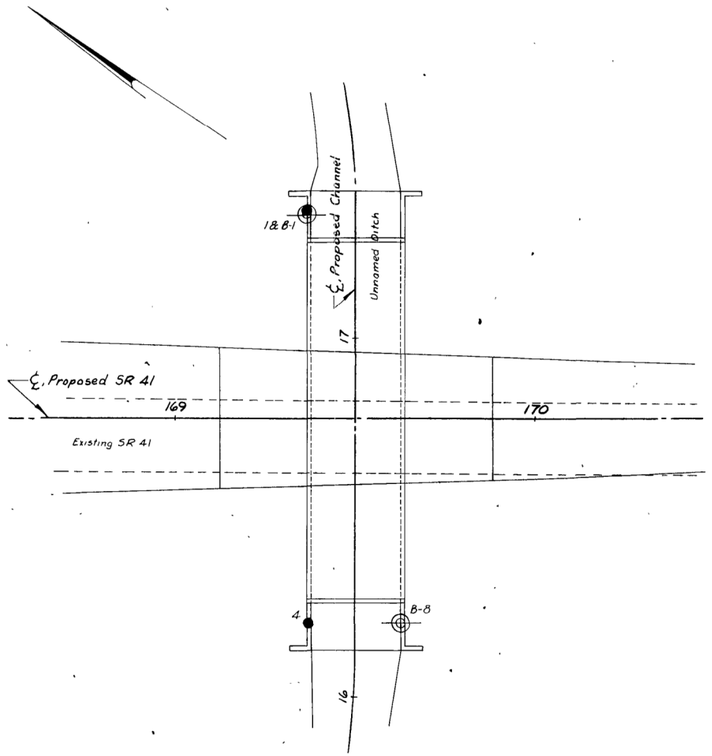
NOTE Information shown by this subsurface investigation was obtained solely for the use in establishing design controls for the project. The State of Ohio does not guarantee the accuracy of this data and it is not to be construed as a part of the plans governing construction of the project.

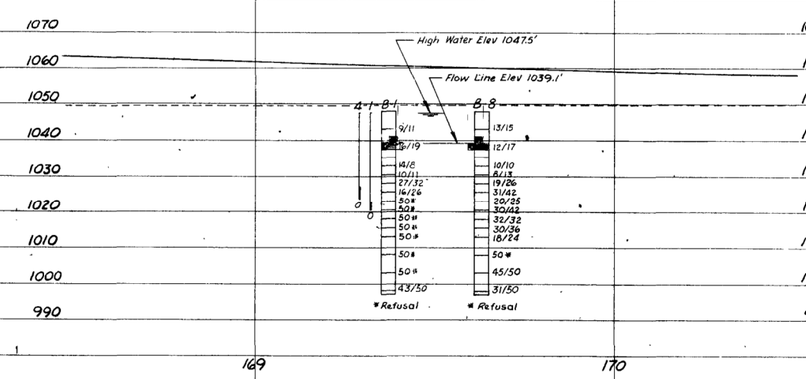
OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO CLA-41-2138
OVER UNNAMED DITCH
SEC CLA-40-17.87

CHECKED BY	REVIEWED BY	DATE
L.N.L.	R.D.R.	11/9/64

CLA-40-17.87





SCALE: 1" = 20'

OHIO STATE HIGHWAY
TESTING LABORATORY
1620 WEST BROAD ST., COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. CLA-41-2138
OVER UNNAMED DITCH
SEC CLA-40-17.87

PLAN AND PROFILE

DRAWN BY	CHECKED BY	REVIEWED BY	DATE
R.L.C.	L.N.L.	R.D.R.	11/9/64

CLA-40-17.87

LOG OF BORING

Date Started 10-27-64 Sampler Type SS Dia 1 3/8"
Date Completed 10-28-64 Casing Length 25' Dia. 3 1/2"
Boring No. B-1 Station & Offset 169+37, 57' Lt (REAR ABUTMENT)

Water Elev. ____
Surface Elev. 1048.1'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
1048.1	0														
	2														
	4														
1043.1	6	9/11			Brown Silty Sandy Gravel	1	47	8	19	19	7	NP	NP	11	
	8														
1038.1	10	16/19			Brown Silty Gravelly Sand	2	31	17	29	16	7	NP	NP	14	
	12														
	14														
1033.1	16	14/8			Brown Silty Gravelly Sand	3	36	26	17	14	7	NP	NP	18	
1030.6	18	10/11			Brown Silty Sandy Gravel	4	54	20	6	13	7	NP	NP	17	
1028.1	20	27/32			Brown Sandy Gravel	5	73	14	7	-6 -		NP	NP	11	
1025.6	22	16/26			Brown Silty Sandy Gravel	6	69	15	6	-1 0-		NP	NP	17	
1023.1	24	50/*			Gray Sandy Gravelly Silt	7	33	6	14	25	22	23	7	10	
1020.6	26	50/*			Gray Gravelly Sandy Silt	8	28	7	21	25	19	20	5	10	
1018.1	28	50/*			Gray Sandy Gravelly Silt	9	32	6	14	28	20	18	3	9	
1015.6	30	50/*			Gray Sandy Gravelly Silt	10	32	5	16	26	21	21	5	11	
1013.1	32	50/*			Gray Gravelly Silt	11	25	3	11	47	14	NP	NP	17	
	34														
	36														
1008.1	38	50/*			Gray Gravelly Sandy Silt	12	23	7	21	29	20	19	4	7	
	40														
	42														
1003.1	44	50/*			Gray Sandy Gravelly Silt	13	32	5	16	23	24	22	7	11	
	46														
	48														
998.1	50	43/50			Gray Sandy Gravelly Silt BOTTOM OF BORING	14	37	4	13	23	23	21	5	10	
997.1															

*REFUSAL

LOG OF BORING

Date Started 10-21-64 Sampler Type SS Dia 1 3/8"
Date Completed 10-23-64 Casing Length 35' Dia 3 1/2"
Boring No. B-8 Station & Offset 169+63, 57' Rt (FORWARD ABUTMENT)

Water Elev ____
Surface Elev. 1048.0'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	Pl.	W.C.	SHTL Class.
1048.0	0														
	2														
	4														
1043.0	6	13/15			Brown Silty Sandy Gravel	1	55	11	12	17	5	NP	NP	11	
	8														
1038.0	10	12/17			Brown Silty Gravelly Sand	2	16	23	32	21	8	NP	NP	15	
	12														
	14														
1033.0	16	10/10			Brown Silty Gravelly Sand	3	35	30	15	14	6	NP	NP	14	
1030.5	18	8/13			Brown Silty Sandy Gravel	4	51	26	10	8	5	NP	NP	10	
1028.0	20	19/26			Brown Silty Gravel	5	56	6	8	17	13	23	7	13	
1025.5	22	31/42			Brown Silty Sandy Gravel	6	45	5	12	21	17	25	10	10	
1023.0	24	20/25			Gray Gravelly Sandy Silt	7	V	I	S	U	A	L	26	9	11
1020.5	26	30/42			Gray Sandy Gravelly Silt	8	37	6	13	27	17	22	6	11	
1018.0	28	32/32			Gray Gravelly Sandy Silt	9	16	6	21	32	25	21	6	15	
1015.5	30	30/36			Gray Sandy Gravelly Silt	10	38	9	10	28	15	19	4	14	
1013.0	32	18/24			Gray Sandy Gravelly Silt	11	40	5	15	23	17	PL=	15	10	
	34														
	36														
1008.0	38	50* (0.4')			Gray Silty Gravelly Sand	12	28	5	30	26	11	NP	NP	10	
	40														
	42														
1003.0	44	45/50			Gray Silty Gravelly Sand	13	26	5	32	24	13	NP	NP	12	
	46														
	48														
998.0	50	31/50			Gray Sandy Gravelly Silt BOTTOM OF BORING	14	32	5	14	29	20	21	5	12	
997.0															

*REFUSAL

OHIO STATE HIGHWAY
TESTING LABORATORY
670 WEST BROAD ST COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. CLA-40-0176
OVER UNNAMED CRITTER
SEC CLA-40-17.87

BORING DATA

MADE BY	CHECKED BY	REVIEWED BY	DATE
J.A.G.	R.C.	R.D.R.	1/9/64