GEOLOGY OF THE SITE
The structure site is located on the glaciated, gently rolling, dissected Allegheny Plateau Region, in an area where shallow glacial-derived soils overlie shale and sandstone bedrock, of Mississippian age.

EXPLORATION
The exploration consisted of two drive sample-core borings, made between July 9 and 14, 1965, and four drive rod penetration tests, made on November 29 and 30, 1965.

INVESTIGATIONAL FINDINGS
The borings disclosed stiff clays and dense to very dense gravelly silt and silts, with some sands and gravels, overlie sloping bedrock surface, encountered at 30 and 33-foot depths, elevations 863 and 858 feet. The borings were terminated 10 and 22 feet below bedrock surface, elevations 848 and 841 feet.

Rod soundings met rapid increase in penetration resistance with increase in depth and were terminated upon encounter with high resistance and refusal to penetration at 31 and 41-foot depths, elevations 863 and 849 feet, considered to be on or slightly below bedrock surface, as revealed by the borings.

Free water was encountered in the rod sounding holes, between elevations 889 and 876 feet.

LOG OF BORING

Date Started 7-9-65 — Sampler Type SS — Dia. 1 3/8" — Water Elev. ———
Date Completed 7-13-65 — Casing: Length 46' — Dia. 3 1/2"
Boring No. B-6 — Station & Offset 1207+03, 65' Lt.(Rear Abutment) — Surface Elev. 895.7'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
895.7	0														
	2														
	4														
890.7	6	18/15			Brown Sandy Gravelly Silt	1	20	7	8	37	28	25	7	20	
	8														
885.7	10	7/8			Gray Clay	2	0	14	1	19	66	41	21	39	
	12														
	14														
880.7	16	2/3			Gray Silty Clay	3	0	0	0	31	69	38	18	32	
878.2	18	4/4			Gray Silt and Clay	4	0	1	0	45	54	34	13	32	
875.7	20	3/4			Gray Silty Clay	5	11	2	4	28	55	35	17	31	
873.2	22	4/5			Gray Clayey Silt	6	V	I	S	U	A	L	23	8	19
870.7	24	4/5			Gray Clayey Silt	7	9	4	6	41	40	25	8	22	
868.2	26	8/10			Gray Sandy Gravelly Silt	8	18	6	10	39	27	20	7	17	
865.7	28	7/11			Gray Silt	9	0	0	1	53	46	24	6	23	
863.2	30				TOP OF ROCK										
	32		0.0	2.5	Sandstone, gray, medium-grained, friable, slightly weathered, very badly broken. Core Loss 80%										
	34														
	36		0.5	4.5											
	38														
	40														
	42		0.7	4.3											
850.7	44														
	46		0.0	2.5	Clay shale, reddish-brown, fissile, medium-firm, very badly broken. Core Loss 76%										
	48														
	50		0.6	1.9											
	52		0.6	1.9											
842.2	54		1.3	1.2	Indurated clay, brown to gray, soft and crumbly, very badly broken. Core Loss 40%										
840.7					BOTTOM OF BORING										

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

Coal

Weathered Indurated Clay

Indurated Clay

Weathered Shale

Shale

LEGEND

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

Weathered Sandstone

Sandstone

Leached Dolomite

Dolomite

Leached Limestone

Limestone

LOG OF BORING

Date Started 7-14-65 — Sampler Type SS — Dia. 1 3/8" — Water Elev. ———
Date Completed 7-14-65 — Casing: Length 31.5' — Dia. 3 1/2"
Boring No. B-7 — Station & Offset 1208+83, 60' Rt. (Forward Abutment) — Surface Elev. 887.9'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	SHTL Class.
887.9	0														
	2														
	4														
882.9	6	5/5			Gray Silt and Clay	1	0	1	2	40	57	34	15	26	
880.4	8	5/6			Gray Gravelly Silt	2	15	2	4	34	45	29	10	27	
877.9	10	5/9			Gray and Brown Gravelly Silt	3	16	3	5	55	21	NP	NP	14	
	12														
875.4	14	5/9			Gray Gravelly Sandy Silt	4	19	9	11	50	11	NP	NP	16	
872.9	16	9/10			Gray Silty Sandy Gravel	5	46	22	7	17	8	23	7	10	
870.4	18	11/15			Gray Silty Sandy Gravel	6	39	20	12	19	10	NP	NP	10	
867.9	20	7/5			Gray Gravelly Silt	7	20	6	6	36	32	24	9	18	
865.4	22	7/8			Gray Silty Gravelly Sand	8	24	27	22	18	9	NP	NP	14	
862.9	24	20/26			Gray Silty Sandy Gravel	9	39	5	31	18	7	NP	NP	10	
	26														
	28				TOP OF ROCK										
857.9	30														
	32		3.4	1.3	Sandstone, gray, fine-grained, firm, with few thin shale stringers, slightly weathered and broken in top 2.0'. Core Loss 13%										
	34														
	36														
	38		5.0	0.0											
847.9	40				BOTTOM OF BORING										

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

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 DEPARTMENT OF HIGHWAYS
TESTING LABORATORY
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. CUY-480-2242
OVER LEE RD.
SEC. CUY-480-22.16

CHECKED BY	REVIEWED BY	DATE
L. N. L.	R. D. R.	12/8/65

NOV 3 1970