

GEOLOGY OF THE SITE

The structure site is located on the relatively flat portion of the glaciated Lake Plain Region, in an area where moderately deep glacial derived soil overlies shale bedrock, of Mississippian age.

EXPLORATION








The exploration consisted of two drive sample-core borings, made on June 9 and 10, 1965, and seven drive rod penetration tests, made between July 29 and August 3, 1965.







INVESTIGATIONAL FINDINGS

The borings disclose that gradually sloping bedrock surface, encountered at 14-foot depth, elevation 764 feet, in the right-center portion of the structure site, and 21-foot depth, elevation 759 feet, in the left-forward portion of the structure site, is overlain by very dense silty sand, stiff gravelly clays, and boulders. The borings were terminated 25 and 30 feet below bedrock surface, at elevations 753 and 750 feet.










Rod soundings met rapid increase in penetration resistance with increase in depth and were terminated upon encounter with near-refusal and refusal to penetration 12 to 17 feet below ground surface, elevations 766 to 761 feet, considered to be on or slightly above bedrock surface, as revealed by the borings.

Free water was observed in rod sounding holes numbers 3, 5, and 12 between elevations 778 and 775 feet.







-  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
-  Top of Rock

-  Coal
-  Weathered Indurated Clay
-  Indurated Clay
-  Weathered Shale
-  Shale
-  Bouldery Zone

LEGEND

-  Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
-  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.
-  Indicates Final Measurement of Penetration, in Inches.
-  Indicates Free Water Elevation.
-  Indicates Static Water Elevation.

SYMBOLS OF ROCK TYPES

-  Weathered Sandstone
-  Sandstone
-  Leached Dolomite
-  Dolomite
-  Leached Limestone
-  Limestone

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.

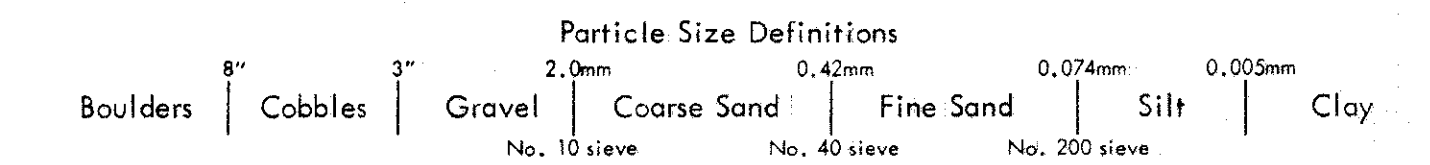
Drive Sample Borings - Drive-Press Sample Borings

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.



LOG OF BORING

Date Started 6-9-65 Sampler Type SB Dia. 1 3/8" Water Elev. _____
 Date Completed 6-9-65 Casing Length _____ Dia. _____
 Boring No. B-9 Station & Offset 543+45, 61' Rt (Forward Pier) Surface Elev. 778.8'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.			
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
778.8	0																
	2																
	4																
773.8	6	15/20			Mottled Brown and Gray Sandy Clay	1	12	13	7	31	37	35	16	20			
771.3	8	14/22			Brown and Gray Gravelly Clay	2	17	6	9	28	40	32	14	17			
768.8	10	15/22			Gray Gravelly Clay	3	18	6	3	34	29	29	11	15			
766.3	12	18/26			Gray Silt With Stone Fragments	4	19	2	2	39	38	31	10	18			
764.3	14				TOP OF ROCK												
762.8	16				Shale, gray, arenaceous, medium-firm, jointed and badly broken, fissile. No core loss.												
	18		5.0	0.0	Sandstone, gray, fine-grained, argillaceous, hard, with shale seams, (max. 0.5' thick). Core loss 6%.												
	20																
	22																
	24		4.0	1.0													
753.8	24				Shale, dark gray, arenaceous, poorly fissile, firm, jointed and broken. Core loss 33%.												

BOTTOM OF BORING

LOG OF BORING

Date Started 6-10-65 Sampler Type SB Dia. 1 3/8" Water Elev. _____
 Date Completed 6-10-65 Casing Length _____ Dia. _____
 Boring No. B-10 Station & Offset 544+35, 40' Lt (Forward Abutment) Surface Elev. 780.4'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics							SHTL Class.			
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.		W.C.		
780.4	0																
	2																
	4																
775.4	6	12/21			Brown and Gray Sandy Clay	1	12	5	8	36	39	33	13	17			
772.9	8	14/20			Brown and Gray Sandy Clay	2	9	6	7	30	40	30	11	17			
770.4	10	15/30			Gray and Brown Gravelly Clay	3	13	4	7	34	42	32	11	15			
767.9	12	15/32			Gray Clay With Stone Fragments	4	13	3	7	37	40	29	11	15			
765.4	14																
	16																
	18																
	20				Bouldery Zone												
759.4	22																
	24				TOP OF ROCK												
	26		3.1	1.9	Sandstone, gray, fine-grained, argillaceous, hard, with few clay seams, with shale in bottom 0.5'. Core loss 55%.												
	28																
	30																
750.4	30		1.0	4.0													

BOTTOM OF BORING

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-IR 80-0979
OVER ACCESS ROAD "C"
SEC. CUY-IR 80-8.54

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