

GEOLOGY OF THE SITE

The structure site is located on the relatively flat portion of the Mississippi Valley Plain, where moderately deep glacial-derived soils and lake deposits overlie shale and sandstone bedrock, of Mississippian age.

EXPLORATION

The exploration consisted of two drive sample-core borings, made between May 26 and 28, 1965, and four drive rod penetration tests, made on June 17, 1965.

INVESTIGATIONAL DISCLOSURES

The borings disclosed that gradually sloping bedrock surface is overlain by dense and very dense gravels and silts and medium-stiff, stiff gravelly sandy clays and boulders. The borings encountered bedrock surface at 34 and 37-foot depths, elevation 750 feet in the rear area, and elevation 746 feet in the forward area. The borings were terminated 10 feet below bedrock surface, elevations 741 and 738 feet.

Rod soundings encountered gradual increase in penetration resistance with increase in depth and were terminated at 16 to 19-foot depths, elevations 768 to 765 feet, upon encounter with rather abrupt refusal to penetration, considered to be in extremely dense gravelly sandy silts and boulders, as revealed by the borings.

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

- 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

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
- 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

LOG OF BORING

Date Started 5-27-65 Sampler Type BB Dia. 1 3/8" Water Elev. _____
 Date Completed 5-28-65 Casing Length 20' Dia. 3 1/2" Surface Elev. 784.0'
 Boring No. B-1 Station & Offset 523+32, 72' Lt (REAR ABUTMENT)

Elev.	Depth (ft.)	Sht. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics										SHTL Class.	
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PI	W.C.				
784.0	0																	
781.5	2	7/11			Brownish-Gray Gravelly Clay	1	13	3	10	34	40	32	11	21				
779.0	4	9/13			Brownish-Gray Sandy Clay	2	7	4	10	38	41	28	11	20				
776.5	6	11/18			Brown Sandy Clay	3	7	5	11	33	44	29	11	16				
774.0	8	18/26			Grayish-Brown Sandy Clay	4	13	6	9	32	40	31	13	16				
771.5	10	21/24			Gray Sandy Clay	5	12	5	9	27	47	29	11	17				
769.0	12	21/27			Gray Gravelly Sandy Silt	6	18	15	13	33	21	20	4	19				
766.5	14	32/40			Gray Gravelly Sandy Silt	7	15	13	8	44	20	28	7	14				
764.0	16	30/50			Red and Gray Gravelly Clay	8	28	3	7	20	42	27	11	17				
759.0	20	50* (0.4')			Grayish-Red Silty Sandy Gravel	9	41	12	9	23	15	22	4	8				
754.0	22	30/30			Red and Gray Silt with Stone Fragments	10	19	6	5	41	29	26	6	12				
750.3	32		1.3	0.7	Sandstone boulders, gray.													
749.9	34				TOP OF ROCK													
746.0	36		4.7	0.3	Sandstone, light-gray, firm, fine-grained, broken. No core loss.													
741.0	42		1.3	1.7	Shale, gray to dark gray, generally firm, carbonaceous, with clay seams throughout, badly broken and jointed. Core loss 90%.													

BOTTOM OF BORING **Core loss due to mechanical difficulties.

LOG OF BORING

Date Started 5-26-65 Sampler Type BB Dia. 1 3/8" Water Elev. _____
 Date Completed 5-27-65 Casing Length 20' Dia. 3 1/2" Surface Elev. 782.7'
 Boring No. B-4 Station & Offset 524+83, 72' Rt (FORWARD ABUTMENT)

Elev.	Depth (ft.)	Sht. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics										SHTL Class.	
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PI	W.C.				
782.7	0																	
780.2	2	6/11			Brown Sandy Clay	1	7	4	11	32	46	36	15	21				
777.7	4	7/12			Brownish-Gray Sandy Clay	2	11	7	11	34	37	28	11	16				
775.2	6	8/16			Brownish-Gray Sandy Clay	3	14	8	12	29	37	30	11	18				
772.7	8	10/20			Gray Sandy Clay	4	12	5	8	29	46	28	11	14				
770.2	10	13/20			Gray Sandy Clay	5	9	6	8	29	48	29	11	16				
767.7	12	30/50			Reddish-Gray Gravelly Sandy Silt	6	18	7	15	30	30	21	5	14				
765.2	14	50*			No Sample Recovered - Boulder.													
762.7	16	50* (0.6')			Gray Silty Sandy Gravel	7	47	15	7	18	13	FL*	19	12				
757.7	20	26/29			Gray Gravelly Clay	8	27	1	1	28	43	36	15	13				
752.7	22	50* (0.6')			Dark-Gray Silty Gravelly Sand	9	26	33	7	17	17	25	6	18				
747.7	30	50/32			Gray Silt with Shale Fragments	10	24	32	3	17	24	33	9	12				
745.7	32		3.6	1.4	TOP OF ROCK													
744.2	34				Shale, gray, firm, fissile, argillaceous, badly broken. Core loss 10%.													
741.2	40				Sandstone, gray, firm, fine grained, badly broken between 39.5' and 40.0'. Core loss 5%.													
737.7	44		3.6	1.4	Shale, dark gray, firm, argillaceous, carbonaceous, jointed and broken. No core loss.													

BOTTOM OF BORING

GENERAL INFORMATION

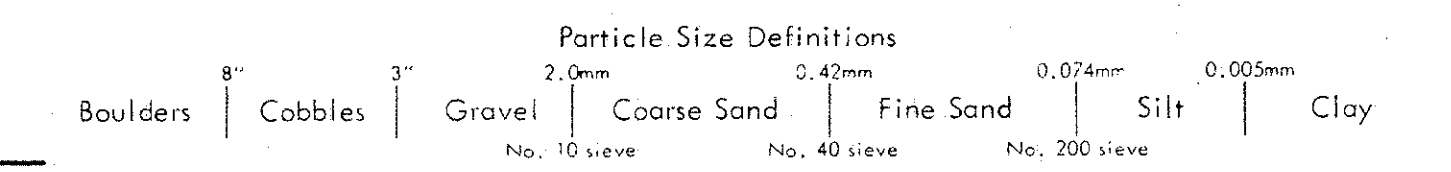
Drive Rod Penetration Sounding Tests
 Drive rod penetration resistance tests constitute driving a 1.315-inch diameter steel rod, with a 45° cone point, into the ground, using a 122-pound drop-hammer with a free fall of five feet. At one or two-foot depth intervals, a measurement is taken to determine 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 7 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.



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**
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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. CUY-IR80-0743
OVER W. 150 TH. STREET
SEC. CUY-IR80-8.54

CHECKED BY R.H.P.	REVIEWED BY R.D.R.	DATE 6/23/65
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