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GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED ON A PORTION OF THE GLACIATED LAKE PLAIN, IN AN AREA WHERE SHALLOW GLACIAL TILL OVERLIES SHALE BEDROCK, OF DEVONIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE-CORE BORINGS AND THREE DRIVE ROD PENETRATION TESTS, MADE BETWEEN FEBRUARY 7 AND 21, 1968.

INVESTIGATIONAL FINDINGS

BORINGS DISCLOSED MEDIUM-DENSE TO VERY DENSE SILTS AND SANDS, AND VERY STIFF CLAYS TO BEDROCK SURFACE, ENCOUNTERED AT 30 TO 32-FOOT DEPTHS, ELEVATIONS 729 AND 724 FEET. THE BORINGS WERE TERMINATED AT 40 AND 45-FOOT DEPTHS, ELEVATIONS 717 TO 714 FEET, AFTER PENETRATING 8 TO 15 FEET OF BEDROCK.

THE ROD SOUNDINGS ENCOUNTERED RAPID INCREASE IN PENETRATION RESISTANCE WITH INCREASING DEPTH, AND WERE TERMINATED DUE TO REFUSAL AND NEAR-REFUSAL TO PENETRATION AT 24 TO 27-FOOT DEPTHS, ELEVATIONS 732 TO 731 FEET, CONSIDERED TO BE IN THE VERY DENSE MATERIAL ABOVE BEDROCK SURFACE, AS REVEALED BY THE BORINGS.

NO FREE WATER WAS OBSERVED IN ANY OF THE ROD SOUNDING HOLES.

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
- Top of Rock

- 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

- 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.

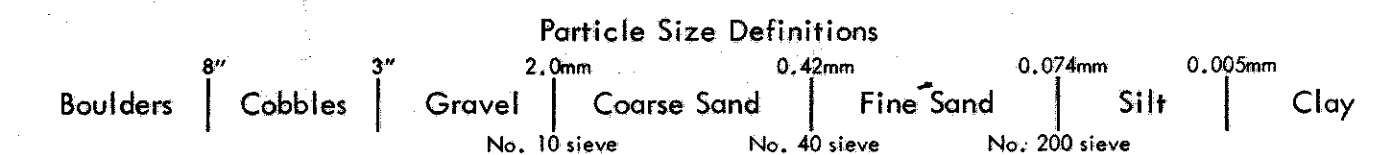
Drive Sample Borings - Drive-Press Sample Borings

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.



LOG OF BORING

Date Started 2-7-68 Sampler Type SS Dia. 1 3/8" Water Elev. _____
Date Completed 2-8-68 Casing Length 25' Dia. 2 1/2"
Boring No. B-4 Station & Offset 9+39.33' Rt. (Rear Pier) Surface Elev. 758.6'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Physical Characteristics										SHTL Class.		
						Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.				
758.6	0																	
753.6	5	2/3			Brown Silt and Clay	1	4	3	5	33	55	37	15	23				A-6a
748.6	10	2/3			Gray Silt and Clay	2	0	0	0	24	76	37	14	31				A-6a
743.6	16	6/7			Gray Silt	3	3	3	6	53	35	21	3	17				A-4b
738.6	20	6/11			Gray Sandy Silt	4	13	6	11	23	47	26	10	15				A-4a
733.6	26	11/20			Gray Sandy Silt	5	8	7	11	31	43	25	8	13				A-4a
731.1	28	50/*			Gray Sandy Gravelly Silt	6	30	16	10	24	20	24	7	11				A-4a
728.6	30				TOP OF ROCK													
727.9	32				Gray Weathered Shale	7	42	13	11	12	22	27	6	8				Visual
721.6	34		2.4	0.9	Shale, dark-gray, medium-firm and weathered, carbonaceous with thick clay seams, fissile, very badly broken and jointed. Core Loss 32%.													
721.6	38		3.9	1.1	Shale, dark-gray, carbonaceous, hard, fissile, broken. Core Loss 9%.													
713.6	44		4.3	0.7														

LOG OF BORING

Date Started 2-8-68 Sampler Type SS Dia. 1 3/8" Water Elev. _____
Date Completed 2-8-68 Casing Length 25' Dia. 2 1/2"
Boring No. B-7 Station & Offset 10+84.33' Lt. (Forward Pier) Surface Elev. 756.8'

Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Physical Characteristics										SHTL Class.		
						Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.				
756.8	0																	
751.8	5	3/5			Brownish-Gray Sandy Clay	1	10	14	14	15	47	32	13	20				A-6a
746.8	10	7/12			Gray Clayey Silt	2	2	2	5	43	48	24	8	16				A-4a
741.8	16	12/14			Gray Sandy Silt	3	7	6	13	41	33	21	7	13				A-4a
736.8	20	8/12			Gray Sandy Clay	4	10	6	11	20	53	31	15	15				A-6a
731.8	26	50/*			Gray Silty Gravelly Sand	5	23	19	22	16	20	22	6	10				A-4a
729.3	28	50*			Gray Gravelly Sandy Silt	6	25	16	13	27	19	20	4	13				A-4a
726.8	30	(0.3')			Gray Gravelly Sandy Silt	7	21	18	12	26	23	22	5	12				A-4a
724.3	32	(0.6')			TOP OF ROCK													
721.8	34	50/*			Gray Weathered Shale	8	32	17	11	16	24	29	9	11				Visual
716.8	40		4.3	0.7	Shale, dark-gray, carbonaceous, firm, fissile, broken. Core Loss 14%.													

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.

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BRIDGE NO. CUY-80-0612
UNDER WEST 220th ST.
SEC. CUY-80-4.84

CHECKED BY L.N.L. REVIEWED BY R.D.R. DATE 3/6/68