GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED ON THE GLACIATED LAKE PLAIN REGION, IN AN AREA WHERE MODERATELY DEEP GLACIAL DRIFT AND LACUSTRINE MATERIALS OVERLIE SANDSTONE BEDROCK, OF DEVONIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF TWO DRIVE SAMPLE-CORE BORINGS AND TEN DRIVE ROD PENETRATION TESTS, MADE BETWEEN MARCH 11 AND 13, 1969.

INVESTIGATIONAL FINDINGS

BORINGS DISCLOSED VERY STIFF TO HARD CLAYS AND VERY DENSE SILTS AND SOME COBBLES TO BEDROCK SURFACE, ENCOUNTERED AT 29-FOOT DEPTHS, ELEVATIONS 755 AND 754 FEET. THE BORINGS WERE TERMINATED AT 40-FOOT DEPTHS, ELEVATION 744 FEET, AFTER PENETRATING 11 FEET OF BEDROCK.

THE ROD SOUNDINGS ENCOUNTERED RAPID INCREASE IN PENETRATION RESISTANCE WITH INCREASE IN DEPTH, AND WERE TERMINATED DUE TO REFUSAL TO PENETRATION AT 11 TO 14-FOOT DEPTHS, ELEVATIONS 772 TO 769 FEET, CONSIDERED TO BE UPON ENCOUNTER WITH THE VERY DENSE SILTS REVEALED BY THE BORINGS.

NO FREE WATER WAS ENCOUNTERED IN 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
- 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 Siltstone, Mudstone, or Claystone
- Siltstone, Mudstone, or Claystone
- Weathered Shale
- Shale
- Boulders or Cobbles
- 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 3-12-69
Date Completed 3-13-69
Boring No B-5
Sampler Type SS Dia 1 3/8"
Casing: Length 29' Dia 3 1/2"
Station & Offset 108+60, 43' Lt. (Rear Pier)
Water Elev. —
Surface Elev 783.6'

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.
783.6	0														
	2														
	4														
778.6	6	11/12			Brown Silt and Clay	1	0	2	11	25	62	36	12	32	A-6a
776.1	8	12/15			Brown Silt and Clay	2	0	2	13	26	59	37	12	34	A-6a
773.6	10	19/24			Gray Gravelly Sandy Clay	3	15	9	10	22	44	30	11	18	A-6a
771.1	12	24/26			Gray Gravelly Sandy Clay	4	15	7	11	25	42	30	12	16	A-6a
768.6	14	23/27			Gray Sandy Silt	5	11	8	10	32	39	23	6	10	A-4a
766.1	16	23/30			Gray Sandy Silt	6	9	8	11	31	41	21	6	12	A-4a
763.6	18	50*/			Gray Silty Sand	7	13	9	43	-35	-	NP	NP	7	A-3a
	20														
	22														
758.6	24														
	26	50*/ (0.4')			Gray Gravelly Sandy Silt	8	-	-	-	-	-	-	-	13	Visual
754.1	28				TOP OF ROCK										
753.6	30				Sandstone (Driller's Description)										
	32														
	34		4.7	0.3	Sandstone, gray, medium-firm, friable, fine-grained, micaceous in part, thin-bedded. Core Loss 3%.										
	36														
	38		5.0	0.0											
743.6	40				BOTTOM OF BORING *Refusal										

LOG OF BORING

Date Started 3-11-69
Date Completed 3-11-69
Boring No B-16
Sampler Type SS Dia 1 3/8"
Casing: Length 20' Dia 3 1/2"
Station & Offset 110+50, 25' Rt. (Forward Pier)
Water Elev. —
Surface Elev 784.4'

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.
784.4	0														
	2														
	4														
779.4	6	11/19			Brown Sandy Clay	1	9	8	12	23	48	35	13	27	A-6a
776.9	8	12/22			Brown Sandy Clay	2	-	-	-	-	-	33	13	16	Visual
774.4	10	23/24			Gray Sandy Clay	3	13	10	11	26	40	29	11	17	A-6a
771.9	12	20/30			Gray Sandy Clay	4	8	8	12	26	46	29	11	14	A-6a
769.4	14	50* (0.7')			Gray Sandy Gravelly Silt	5	26	7	9	26	32	25	7	12	A-4a
766.9	16	50/*			Gray Sandy Silt	6	8	7	11	37	37	24	9	10	A-4a
764.4	18	30/*			Gray Clayey Silt with Cobbles	7	-	-	-	-	-	21	7	13	Visual
	20														
761.9	22				No Sample Recovered - Cobbles(Driller's Des.)		V	I	S	U		A	L		
759.4	24														
	26	50*/ (0.3')			No Sample Recovered (Driller's Description)		V	I	S	U		A	L		
754.9	28		0.5	4.5	TOP OF ROCK										
	30														
	32		4.7	0.3											
	34				Sandstone, gray, medium-firm, friable, fine-grained, micaceous in part, thin-bedded. Core Loss 2%.										
	36														
	38		5.0	0.0											
744.4	40				BOTTOM OF BORING *Refusal										

Particle Size Definitions

Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt	Clay
12"	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, OHIO 43223

STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. CUY-480-0150
UNDER STEARNS ROAD
SEC. CUY-480-0.00

CHECKED BY	REVIEWED BY	DATE
L N L	R D R	3/25/69