

NOV 22 1969

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 DEPOSITS OVERLIE SANDSTONE BEDROCK, OF DEVONIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF ONE DRIVE SAMPLE BORING, ONE DRIVE SAMPLE-CORE BORING, AND THREE DRIVE ROD PENETRATION TESTS, MADE BETWEEN AUGUST 7 AND 12, 1969.

INVESTIGATIONAL FINDINGS

BORINGS DISCLOSED VERY DENSE SILTS AND VERY STIFF TO HARD CLAYS OVERLIE SLOPING BEDROCK SURFACE, ENCOUNTERED IN BORING B-3 AT 25-FOOT DEPTH, ELEVATION 755 FEET. BORING B-3 WAS TERMINATED AT 40-FOOT DEPTH, ELEVATION 740 FEET, AFTER PENETRATING 15 FEET OF BEDROCK. BORING B-1 WAS TERMINATED AT 32-FOOT DEPTH, ELEVATION 748 FEET, ON TOP OF BEDROCK SURFACE.

THE ROD SOUNDINGS ENCOUNTERED INCREASING RESISTANCE TO PENETRATION WITH INCREASING DEPTH AND WERE TERMINATED DUE TO NEAR-REFUSAL TO PENETRATION AT 14 AND 15-FOOT DEPTHS, ELEVATIONS 766 AND 765 FEET, CONSIDERED TO BE IN VERY DENSE SILTS, AS REVEALED BY THE BORINGS.

NO FREE WATER OBSERVATIONS WERE MADE 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.
- 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

Particle Size Definitions

Boulders	12"	Cobbles	3"	Gravel	2.0mm	Coarse Sand	0.42mm	Fine Sand	0.074mm	Silt	0.005mm	Clay
					No. 10 sieve		No. 40 sieve		No. 200 sieve			

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 8-12-69 Sampler Type SS Dia 1 3/8"
Date Completed 8-12-69 Casing Length Dia
Boring No. B-1 Station & Offset 3+60, CL. (Rear Abutment) Surface Elev. 780.0'

Elev	Depth	Std. Pen. (N)	Loss %	Description	Sample No.	Physical Characteristics					SHTL Class.			
						% Agg.	% C.S.	% F.S.	% Silt	% Clay		L.L.	P.I.	W.C.
780.0	0													
775.0	6	10/17		Brown Sandy Gravelly Silt	1	17	6	10	29	38	28	9	21	A-4a
770.0	10	11/17		Gray Gravelly Sandy Clay	2	15	9	13	23	40	26	11	15	A-6a
765.0	16	50*		Gray Sandy Silt	3	10	10	12	33	35	25	4	12	A-4a
760.0	20	15/20		Gray Gravelly Sandy Silt	4	15	11	20	28	26	20	8	11	A-4a
755.0	28	20/30		Gray Sandy Silt	5	3	4	47	30	16	NP	NP	22	A-4a
750.0	30	50* (0.8')		Gray Sandy Silt	6	8	12	15	31	34	20	5	13	A-4a
748.0	32			TOP OF ROCK										

LOG OF BORING
Date Started 8-7-69 Sampler Type SS Dia 1 3/8"
Date Completed 8-12-69 Casing Length 24' Dia 3 1/2"
Boring No. B-3 Station & Offset 4+62, CL. (Forward Abutment) Surface Elev. 780.0'

Elev	Depth	Std. Pen. (N)	Loss %	Description	Sample No.	Physical Characteristics					SHTL Class.			
						% Agg.	% C.S.	% F.S.	% Silt	% Clay		L.L.	P.I.	W.C.
780.0	0													
775.0	6	15/21		Brown Sandy Clay	1	14	8	12	30	36	28	11	17	A-6a
770.0	10	50* (0.6')		Gray Sandy Silt	2	8	10	12	39	31	22	8	12	A-4a
765.0	16	50* (0.1')		Gray Sandy Silt	3	11	5	21	27	36	21	9	10	A-4a
760.0	20	50* (0.4')		Gray Sandy Silt	4	13	6	17	23	41	23	8	12	A-4a
755.0	26			TOP OF ROCK										
750.0	30			Sandstone, gray, No Sample Recovered (Driller's Description)										
740.0	40		4.5 0.5	Sandstone, gray, medium-fine to fine, micaceous, friable in part, medium-grained, thin-bedded, broken. Core Loss 23%.										
			3.2 1.8											
				REFUSAL										

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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