

FEB 12 1965

LAKE COUNTY
LAK-615-3.26

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GEOLOGY OF THE SITE

THE STRUCTURE SITE IS LOCATED ON THE GLACIATED, RELATIVELY FLAT LAKE PLAIN, IN AN AREA WHERE DEEP BEACH DEPOSITS AND LAGUNAINE DEPOSITS OVERLIE SHALE BEDROCK, OF DEVONIAN AGE.

EXPLORATION

THE EXPLORATION CONSISTED OF FIVE DRIVE SAMPLE BORINGS, MADE BETWEEN JUNE 22 AND 28, 1967, AND SIX DRIVE ROD PENETRATION TESTS, MADE ON AUGUST 28 AND 29, 1967.

INVESTIGATIONAL FINDINGS








BORINGS ENCOUNTERED LOOSE TO VERY DENSE GRAVELLY SANDY SILTS, SILTS AND GRAVELLY SILTY SANDS. THE BORINGS WERE TERMINATED AT 41 AND 46-FOOT DEPTHS, ELEVATIONS 611 AND 604 FEET, AFTER PENETRATING 30 FEET OF MATERIAL REQUIRING IN EXCESS OF 30 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST.

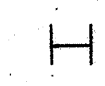
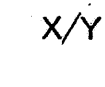



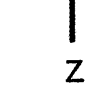
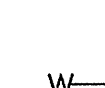


ROD SOUNDINGS ENCOUNTERED RELATIVELY RAPID INCREASE IN PENETRATION RESISTANCE WITH INCREASE IN DEPTH AND WERE TERMINATED DUE TO HIGH RESISTANCE TO PENETRATION AT 16 TO 27-FOOT DEPTHS, ELEVATIONS 633 TO 625 FEET, CONSIDERED TO BE IN VERY DENSE SILTS, AS REVEALED BY THE BORINGS.

FREE WATER WAS ENCOUNTERED IN THE MAJORITY ROD SOUNDING HOLES BETWEEN ELEVATIONS 649 AND 641 FEET.




NO FREE WATER TO BEDROCK.

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.
-  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" <math>< 10,000</math> 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 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.

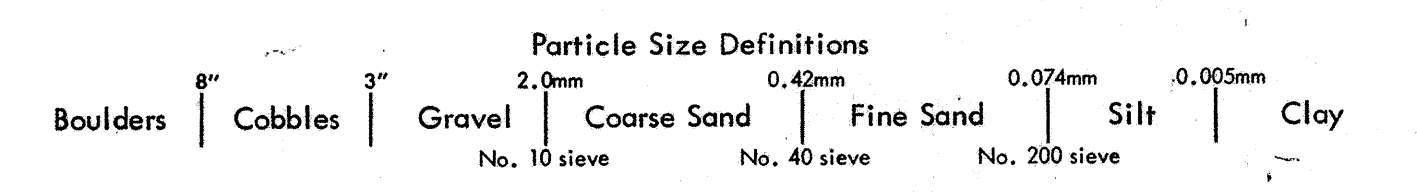
Drive Sample Borings - Drive-Press Sample Borings

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.



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
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STRUCTURE FOUNDATION INVESTIGATION
BRIDGE NO. LAK-615-0402
OVER N. & W. and N.Y.C. RR'S
SEC. LAK-615-3.26

CHECKED BY L.N.L.	REVIEWED BY R.D.R.	DATE 9/14/67
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