

MICROFILMED  
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CUYAHOGA COUNTY  
CUY- 480-18.43 P.T.1

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**GEOLOGY OF THE SITE**

THE STRUCTURE SITE IS LOCATED ACROSS THE WIDE VALLEY OF THE CUYAHOGA RIVER, EXTENDING FROM THE MID-PORTION OF THE WEST VALLEY WALL OF THE CUYAHOGA RIVER, CROSSING THE WIDE FLOODPLAIN AND TERMINATING ON THE UPPER PORTION OF THE EAST VALLEY WALL. IN THE VICINITY OF THE STRUCTURE SITE, THE CUYAHOGA RIVER IS IN A DEEP STAGE VALLEY, WHERE VERY DEEP TO SHALLOW OUTWASH AND INTERBEDDED DRIFT OVERLIES SHALE AND SANDSTONE BEDROCK, OF UPPER DEVONIAN AND LOWER MISSISSIPPIAN AGES.

**EXPLORATION**

THE EXPLORATION CONSISTED OF ELEVEN DRIVE SAMPLE-CORE BORINGS, TWO CORE BORINGS, SEVEN DRIVE-PRESS SAMPLE BORINGS, EIGHT DRIVE SAMPLE BORINGS, AND FORTY-ONE DRIVE ROD PENETRATION TESTS, MADE BETWEEN AUGUST 17 AND SEPTEMBER 29, 1965, AND JULY 18 AND 31, 1968.

**INVESTIGATIONAL FINDINGS**

BORINGS BETWEEN APPROXIMATELY STATIONS 997+00 AND 1031+00 GENERALLY ENCOUNTERED AT-SURFACE, SOFT TO MEDIUM-STIFF CLAYS AND LOOSE TO MEDIUM-DENSE SILTS, WITH OCCASIONAL INTERVALS OF SANDS AND GRAVELS, GENERALLY CONTAINING VARIOUS AMOUNTS OF ORGANIC MATERIAL TO APPROXIMATELY 20 TO 60 FEET BELOW GROUND SURFACE; BELOW THIS, GENERALLY INTERBEDDED OUTWASH AND DRIFT, COMPRISED OF GRAVELS, SANDS, SILTS, AND CLAYS. BEDROCK SURFACE WAS NOT ENCOUNTERED BETWEEN THESE STATIONS AND MOST OF THE BORINGS WERE TERMINATED AFTER PENETRATING IN EXCESS OF 30 FEET OF 30 BLOW MATERIAL REQUIRING 30 BLOWS PER FOOT IN THE STANDARD PENETRATION TEST, AT DEPTHS RANGING FROM 75 TO 321 FEET, ELEVATIONS 569 TO 274 FEET.








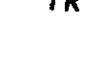
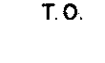
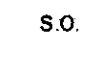
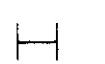
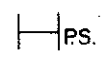
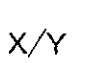

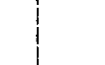
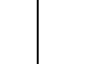

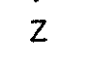
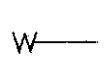

BORINGS BETWEEN APPROXIMATELY STATIONS 1031+00 AND 1041+00 DISCLOSED SLOPING BEDROCK SURFACE, ENCOUNTERED AT 4 TO 71-FOOT DEPTHS, ELEVATIONS 753 TO 550 FEET, IS OVERLAIN BY MEDIUM-STIFF AND STIFF SLAYS AND MEDIUM-DENSE AND DENSE GRAVELS AND SILTS WITH SOME SAND. THE BORINGS WERE TERMINATED 10 TO 52 FEET BELOW BEDROCK SURFACE, ELEVATIONS 763 TO 540 FEET.

AT-SURFACE RANDOM FILL, COMPRISED OF GRAVELS, SANDS, CINDERS, SLAG, BRICKBRATS, AND GLASS, AS WELL AS BOULDERS, WAS ENCOUNTERED IN BORING B-17.

ROD SOUNDINGS GENERALLY MET GRADUAL INCREASE IN PENETRATION RESISTANCE WITH INCREASE IN DEPTH. SOUNDINGS BETWEEN APPROXIMATELY STATIONS 997+00 AND 1031+50 WERE TERMINATED UPON ENCOUNTER WITH HIGH RESISTANCE AND NEAR-REFUSAL TO PENETRATION, AT 36 TO 72-FOOT DEPTHS, ELEVATIONS 628 TO 535 FEET, CONSIDERED TO BE IN DENSE GRAVELS AND SANDS, AS REVEALED BY THE BORINGS. BETWEEN STATIONS 1031+50 AND 1040+60, THE SOUNDINGS WERE TERMINATED DUE TO ENCOUNTER WITH NEAR-REFUSAL AND REFUSAL TO PENETRATION, CONSIDERED TO BE ON OR SLIGHTLY ABOVE BEDROCK SURFACE, AS REVEALED BY THE BORINGS.

FREE WATER WAS ENCOUNTERED IN THE MAJORITY OF THE ROD SOUNDING HOLES LOCATED ON THE FLOODPLAIN BETWEEN ELEVATIONS 612 AND 589 FEET.

**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
-  T.O. Trace of Organic
-  S.O. Slightly Organic
-  O. Organic
-  Horizontal Bar on Boring Log Indicates the Depth the Sample Was Taken.
-  Indicates depth at which Press 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 Indurated Clay
-  Indurated Clay
-  Weathered Shale
-  Shale
-  Boulders
-  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.

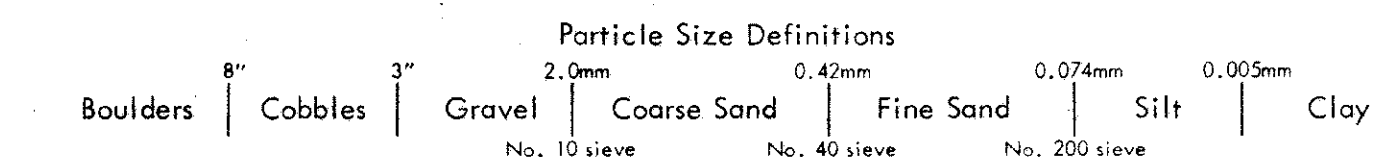
**Drive Sample Borings - Drive-Press Sample Borings**

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 AG 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.



Revised 8/23/68

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 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. CUY-IR 80-1843 L/R  
OVER CUYAHOGA RIVER VALLEY  
SEC. CUY-IR 80-18.43

CHECKED BY R. D. R.	REVIEWED BY G. P. H.	DATE 10/27/65
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