

**GEOLOGY AND OBSERVATIONS OF THE SITE**

THE STRUCTURE SITE IS LOCATED IN THE GLACIATED MISSISSIPPI VALLEY PLAIN, ON THE FLOODPLAIN AND OVER WEST CREEK, IN AN AREA WHERE SHALLOW TO ABSENT SOIL COVER OVERLIES SHALE BEDROCK, OF DEVONIAN AGE. SEVERAL ROCK EXPOSURES WERE OBSERVED AND MEASURED AT THE SITE.

**EXPLORATION**

THE EXPLORATION CONSISTED OF ONE CORE BORING, MADE ON APRIL 16, 1970.

**INVESTIGATIONAL FINDINGS**

BORINGS ENCOUNTERED BEDROCK SURFACE AT 2-FOOT DEPTH, ELEVATION 657 FEET. THE BORING WAS TERMINATED AT 15-FOOT DEPTH, ELEVATION 644 FEET, AFTER PENETRATING 13 FEET BELOW BEDROCK SURFACE. BEDROCK WAS OBSERVED TO OCCUR AT GROUND SURFACE BETWEEN ELEVATIONS 661 AND 652 FEET, GENERALLY ALONG WEST CREEK.

IF IT IS THE INTENTION TO FOUND THE STRUCTURE ON BEDROCK, IT IS CONSIDERED ADVISABLE THAT THE OPEN EXCAVATION BE INSPECTED IN THE FIELD IN ORDER TO INSURE THAT THE EXCAVATION HAS BEEN EXTENDED TO ROCK THROUGHOUT THE ENTIRE FOUNDING AREA. IT IS FURTHER SUGGESTED THAT THE AREA OF THE FOOTING CONTACT NOT BE SUBJECTED TO PROLONGED ATMOSPHERIC EXPOSURE, AND THAT THE EXCAVATION BE WELL DRAINED AT ALL TIMES.

UNCONFINED COMPRESSION TESTS ON SIMILAR SHALE BEDROCK INDICATES A CRUSHING STRENGTH ON THE ORDER OF 100 TONS PER SQUARE FOOT.

**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.
- 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.

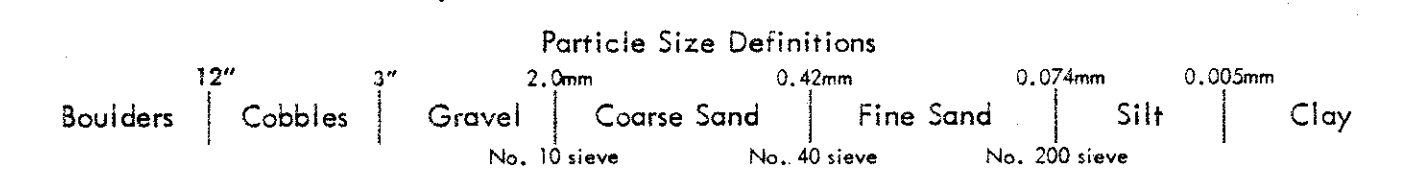
**Drive Sample Borings - Drive-Press Sample Borings**

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 4-16-70 Sampler Type SS Dia. 1 3/8" Water Elev. \_\_\_\_\_  
 Date Completed 4-16-70 Casing Length \_\_\_\_\_ Dia. \_\_\_\_\_  
 Boring No. B-1 Station & Offset 896+71, 267' Rt. (Rear Abutment) Surface Elev. 658.71

Elev.	Depth	Std. Pen (N)	Rec. ft.	Loss ft.	Description	Physical Characteristics								SHTL		
						Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PI		W.C.	Class.
658.7	0				Brown Clay											
656.7	2				TOP OF ROCK											
656.2	2	50			Gray Weathered Sand											
	4		2.3	0.2	Shale, gray, firm, argillaceous, slightly broken, contains thin clay seams. Core Loss 7%.											
	5															
	8		4.1	0.9												
	10															
	12															
643.7	14		5.0	0.0	BOTTOM OF BORING											

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. CUY-80-1654  
OVER WEST CREEK  
SEC. CUY-80-15.81

CHECKED BY R. D. R.	REVIEWED BY G. P. H.	DATE 4/28/70
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