

# FIELD DATA - SOIL LOG

Location No. 85 County: YANWERT-224  
REAR Pier 1152 Bridge No. 1152  
 Station: 1608+74 Over: PENIN. R. R.  
 Offset: 55 RT  
 Started: 8-4-64 Equipment: Cable Drill  
 Completed: 8-4-64 Diameter \_\_\_\_\_

Proposed Footer: \_\_\_\_\_

Water Level: \_\_\_\_\_

Depth Feet	Log	Samples	Elevation	Ground Line
0			773.6	
5			1768.6	BROWN SILTY CLAY BLOWS 8/12
10			763.6	BROWN SILTY CLAY BLOWS 10/15 GRAY TILL BLOWS 12/20
15			758.6	GRAY TILL BLOWS 16/19 GRAY TILL BLOWS 18/24
20			753.6	GRAY TILL BLOWS 17/27 GRAY TILL BLOWS 20/34
25			748.6	GRAY TILL BLOWS 20/39 GRAY TILL & BOULDER BLOWS 19/44 TOP ROCK 26.45

26	748.6	
30	743.6	LIMESTONE DRILL 5 ft REC 5.75
35	738.6 737.6	LIMESTONE DRILL 5 ft REC 5.1 BOTTOM HOLE 36 ft
40		
45		
50		
55		
60		

Remarks: \_\_\_\_\_

Party

R. Gammell L. Grove

Chief of Party Phillips

# FIELD DATA - SOIL LOG

Location NB 12 County: VAN WERT 224

FORWARD Pier-2 Bridge No. 1152

Station: 610+12 Over: PENIN R.R.

Offset: 53-LT

Started: 8-4-64 Equipment: Core Drill

Completed: 8-5-64 Diameter \_\_\_\_\_

Proposed Footer: \_\_\_\_\_

Water Level: \_\_\_\_\_

Depth Feet	Log	Samples Elevation	Ground Line
0		773.1	
5		1768.1	BROWN SILTY CLAY BLOWS 10-15
		27.5	BROWN SILTY CLAY BLOWS 13-14
10		3763.1	GRAY SILT BLOWS 10-12
		412.5	GRAY SILT BLOWS 12-12
15		5758.1	GRAY TILL BLOWS 12-16
		612.5	GRAY TILL BLOWS 15-20
20		7753.1	GRAY TILL BLOWS 22-32
25		8748.1	HARD PAN & BOULDERS BLOWS 30-48 TOP ROCK 26.4

26	748.1	
		BROKEN LIMESTONE DRILL 5 ft
30	743.1	Rec 5 ft
		BROKEN LIMESTONE DRILL 5 ft
35	738.1	Rec 5 ft
		BOTTOM HOLE 36.4
40		
45		
50		
55		
60		

Remarks: \_\_\_\_\_

Party R. Gonnell L. Straus

Chief of Party Phillips


Bridge No. VAN-224. #1152 (PHILLIPS)

90-7

1
1

Bridge No.

(FILLIPS)

50-7













DEPARTMENT OF HIGHWAYS

*Test Lab*

April 30, 1964

Memo to: R. M. Williams, Engineer of Tests

Div. #1

Attention: R. E. Calvin, Foundation  
Exploration Engineer

County: VanWert

From: D. H. Overman, Engineer of Bridges

Sec. VAN-224-9.70

By: R. E. Johnson, Assistant Designing  
Engineer

Bridge No. VAN-224-1152 L  
over Penna R.R.  
Fund: 67F-  
Job # (02)01267(3)

Subject: REQUEST FOR INVESTIGATION OF  
BRIDGE FOUNDATION CONDITIONS

The Foundation Exploration Section of the Testing Laboratory is hereby requested to make test borings and soundings to determine the subsoil conditions existing at the above structure site.

The approximate limits of the proposed structure are shown by the limiting stations on the enclosed site plans.

*Russell E. Johnson*  
Russell E. Johnson

REJ:bn  
Encl. 4 Site Plans.  
cc: Phil Hall  
M. F. Ward  
B. F. I. File



September 3, 1964

Martin F. Ward, Asst. Engr. of  
Bridges--Preliminary Design

#1

Van Wert

D. H. Sparks, Foundation Engineer

VAN-224-9.70

Bridge Foundation Design  
Recommendations

VAN-224-1152LAR  
over Penna. R. R.  
67, F-  
Job No. (02) 01267 (3)

The foundation investigation report for this structure, prepared by the State Highway Testing Laboratory, will be attached to the project plans.

Foundation design recommendations are as follows:

1. Abutments shall be founded on spread footings in the proposed embankment with a maximum allowable bearing pressure of 2.5 tons per square foot.
2. The piers shall be founded on spread footings in the existing subsoil by lowering the footing elevation to 766.0 with a maximum allowable bearing pressure of 2.5 tons per square foot.

D. H. Sparks

DHS:rm

cc: R. E. Calvin  
B. F. I. File



STATE OF OHIO  
DEPARTMENT OF HIGHWAYSCounty of VAN WERT Div. 1S. H. 224 Sec. 9.70

## INTER-OFFICE COMMUNICATION

Date August 26, 1964To Mr. Charles H. Altwater, Engineer of Bridges Attention: R. GroverFrom F. M. Williams Per: G. P. HallSubject Report of Bridge Foundation Investigation  
VAN-224-1152 I/R over Pennsylvania Railroad  
F-File: 13-4-1  
Van Wert

Transmitted herewith is the report of the bridge foundation investigation made at the subject structure site.

Enclosures consist of a set of reproducible cloths, which are to be attached to the plans, and a set of reproducible sepia-line vellum sheets for your file.

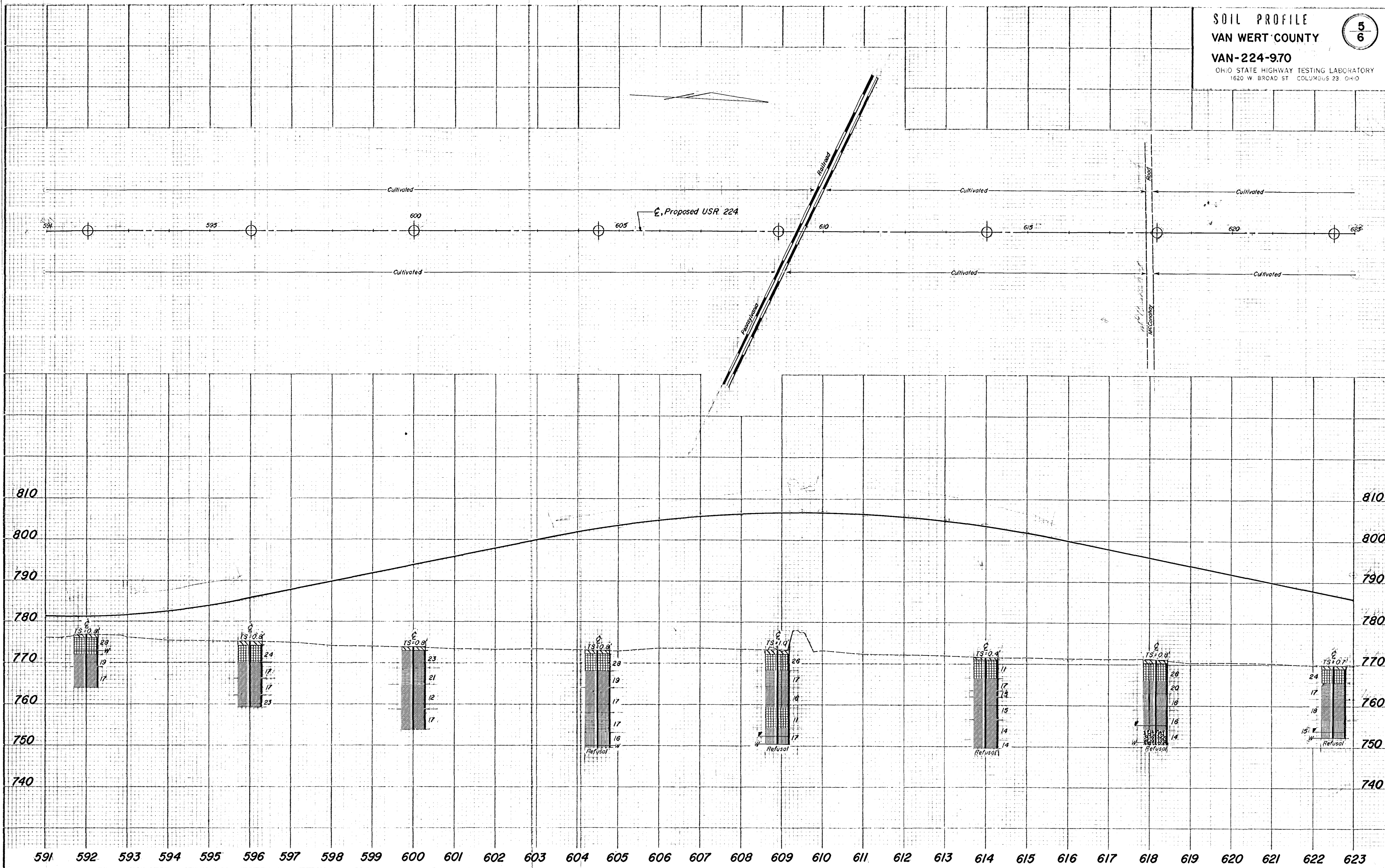
F. M. Williams  
Engineer of TestsPer: *George P. Hall*  
George P. Hall  
Assistant EngineerRDR:jag  
Encl.cc: Norman R. Conn, Attn: W. R. Fessler (no encl.)  
Attn: G. W. Meacham (no encl.)Ohio State Geological Survey, Attn: Karl Hoover and J. L. Forsyth  
R. E. Calvin (4) ✓

SOIL PROFILE  
VAN WERT COUNTY

5  
6

VAN-224-970

OHIO STATE HIGHWAY TESTING LABORATORY  
1620 W. BROAD ST. COLUMBUS 23 OHIO



## GENERAL INFORMATION

## Drive Rod Penetration Sounding Tests

Drive rod penetration resistance tests constitute driving a 1 3/8-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 drilling 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, porosity, and moisture content determinations. Results of strength and consolidation testing appear on separate enclosures.

At depths where materials are bouldery or gravelly to the extent that the sampler cannot 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.

Particle Size Definitions					
	2.0 mm	0.425 mm	0.075 mm	0.0075 mm	
Boulders	Cobbles	Gravel	Coarse Sand	Fine Sand	Silt Clay
No. 10 sieve	No. 40 sieve	No. 200 sieve			

## 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
- Electrical Resistivity Probe Location - Plan View
- Footing
- Capped Pile
- Footing on Pile
- Electrical Resistivity Probe - Profile
- Top of Rock
- Interval of Relatively High Moisture
- Total Depth

## SYMBOLS OF ROCK TYPES

- Coal
- Weathered Indurated Clay
- Indurated Clay
- Weathered Shale
- Shale

- 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.
- Indicates Final Measurement of Penetration, in Inches.
- Indicates Free Water Elevation.
- Indicates Static Water Elevation.

- Weathered Sandstone
- Sandstone
- Leached Dolomite
- Dolomite
- Leached Limestone
- Limestone

## GEOLOGY OF THE SITE

The structure site is located on the glacial lake plain, north of the Lake Maumee Beach Ridge. Glacial drift, found to be 25 feet deep, overlies dolomitic limestone bedrock, of Silurian age.

## EXPLORATION

The exploration consisted of two drive sample-core borings, made on August 5 and 5, 1964, and eight drive rod penetration tests, made on May 27, 28, and 29, 1964.

## INVESTIGATIONAL FINDINGS

Borings disclosed very stiff silts and clays and medium dense to very dense silts and sandy silts to bedrock surface, encountered at 25-foot depth, elevation 747 feet. The borings were terminated at 36-foot depth, elevation 737 feet, after penetrating 10 feet of dolomitic limestone bedrock.

Rod soundings met with increasing resistance to penetration with increasing depth and were terminated due to refusal or near refusal to penetration at 13 to 25-foot depths, elevations 757 to 750 feet, on the basis of the borings, considered to be in the very dense materials above bedrock surface.

On the basis of the borings, bedrock surface is considered to be flat-lying across the site at elevation 747 feet.

No free water was observed in the rod sounding holes.

LOG OF BORING																	
Date Started <u>8-4-64</u>		Sampler Type <u>SS</u>		Dia. <u>1 3/8"</u>		Water Elev. _____											
Date Completed <u>8-4-64</u>		Casing Length <u>15'</u>		Dia. <u>3 1/2"</u>		Surface Elev. <u>773.6'</u>											
Boring No. <u>B-5</u>		Station & Offset <u>600+74, 55' Rt (REAR PIER)</u>															
Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description	Sample No.	Physical Characteristics										SHTL Class.
							% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PL	W.C.			
773.6	0																
	2																
	4																
768.6	6	8/12			Brownish-Gray Gravelly Clay	1	18	4	8	30	40	37	17	21			
766.1	8	10/15			Brown Silt and Clay	2	0	5	8	35	52	32	12	18			
763.6	10	12/20			Gray Silt and Clay	3	0	4	6	43	47	33	14	16			
761.1	12	16/19			Gray Silt and Clay	4	0	4	8	41	47	32	13	16			
758.6	14	18/24			Gray Gravelly Silt	5	17	6	8	39	30	25	7	14			
756.1	16	17/27			Gray Clayey Silt	6	0	6	14	43	37	27	9	13			
753.6	20	20/34			Gray Silt and Clay	7	0	5	11	46	38	31	15	14			
751.1	22	20/39			Gray Sandy Clay	8	V	I	S	U	A	L	31	13	14		
748.6	24	19/46			Gray Sandy Silt	9	V	I	S	U	A	L	19	5	6		
747.6					TOP OF ROCK												
	28		5.0	0.0													
	30				Dolomitic Limestone, gray, hard. No core loss.												
	32																
	34		5.0	0.0													
727.6	36				BOTTOM OF BORING												

LOG OF BORING																			
Date Started		8-4-64		Sampler Type		SS		Dia.		1 3/8"		Water Elev.							
Date Completed		8-5-64		Casing Length		20'		Dia.		3 1/2"									
Boring No.		B-12		Station & Offset		610+12, 53' Lt		(FORWARD PIER)				Surface Elev. 773.1'							
Elev.	Depth	Std. Pen. (N)	Rec. ft.	Loss ft.	Description					Sample No.	% Agg.	% C.S.	% F.S.	% Silt	% Clay	LL	PI	W.C.	SHT Class
773.1	0																		
	2																		
	4																		
768.1	6	10/15			Brown Silty Clay					1	0	6	12	37	45	30	9	17	
765.6	8	13/16			Gray Sandy Clay					2	11	4	10	32	43	32	13	17	
763.1	10	10/12			Gray Clayey Sand					3	V	I	S	U	A	L	NP	NP	22
760.6	12	12/12			Gray Silt					4	0	1	2	72	25	NP	NP	16	
758.1	14	12/16			Gray Sandy Silt					5	11	6	12	36	35	25	9	14	
755.6	16	15/20			Gray Sandy Silt					6	14	6	12	35	33	24	7	14	
753.1	20	22/32			Gray Sandy Silt					7	V	I	S	U	A	L	30	13	20
	22																		
	24																		
748.1	26	30/48			Gray Sandy Silt					8	V	I	S	U	A	L			9
746.7																			
	28				TOP OF ROCK														
	30		5.0	0.0															
	32				Dolomitic Limestone, gray, hard, slightly broken. No core loss.														
	34																		
	36		5.0	0.0															
736.7					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 STATE HIGHWAY  
TESTING LABORATORY  
1620 WEST BROAD STREET, COLUMBUS 23, OHIO

STRUCTURE FOUNDATION INVESTIGATION  
BRIDGE NO. VAN - 224-1152 L/R  
OVER PENNA. RR  
SEC. VAN - 224-9.70

CHECKED BY R.L.C. REVIEWED BY G.P.H. DATE 8/26/64

### GEOLOGY OF THE SITE

The structure site is located on the glaciated lake plain, north of the Lake Maumee Beach Ridge. Glacial drift, found to be 26 feet deep, overlies dolomitic limestone bedrock, of Silurian age.

### EXPLORATION

The exploration consisted of two drive sample-core borings, made on August 4 and 5, 1964, and eight drive rod penetration tests, made on May 27, 28, and 29, 1964.

### INVESTIGATIONAL FINDINGS

Borings disclosed very stiff silts and clays and medium dense to very dense silts and sandy silts to bedrock surface, encountered at 26-foot depth, elevation 757 feet. The borings were terminated at 36-foot depth, elevation 737 feet, after penetrating 10 feet of dolomitic limestone bedrock.












Rod soundings met with increasing resistance to penetration with increasing depth and were terminated due to refusal or near refusal to penetration at 18 to 24-foot depths, elevations 757 to 750 feet, on the basis of the borings, considered to be in the very dense materials above bedrock surface.


On the basis of the borings, bedrock surface is considered to be flat-lying across the site at elevation 747 feet.


No free water was observed 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.
-  Electrical Resistivity Probe Location - Plan View.
-  Footing
-  Capped Pile
-  Footing on Pile
-  Electrical Resistivity Probe - Profile.
-  Top of Rock
-  Interval of Relatively High Moisture.
-  Total Depth

 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.

Indicates Final Measurement of Penetration, in Inches.

 Z







 W







Indicates Free Water Elevation.

 V

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.

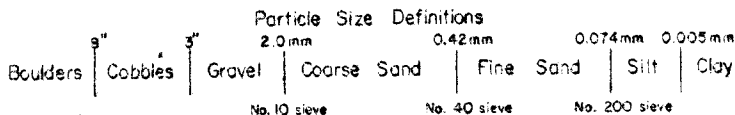
### Drive Sample Borings - Drive-Press Sample Borings

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 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 8-4-64

Sampler Type SS Dia. 1 3/8"

Water Elev. \_\_\_\_\_

Date Completed 8-4-64

Casing: Length 15' Dia. 3 1/2"

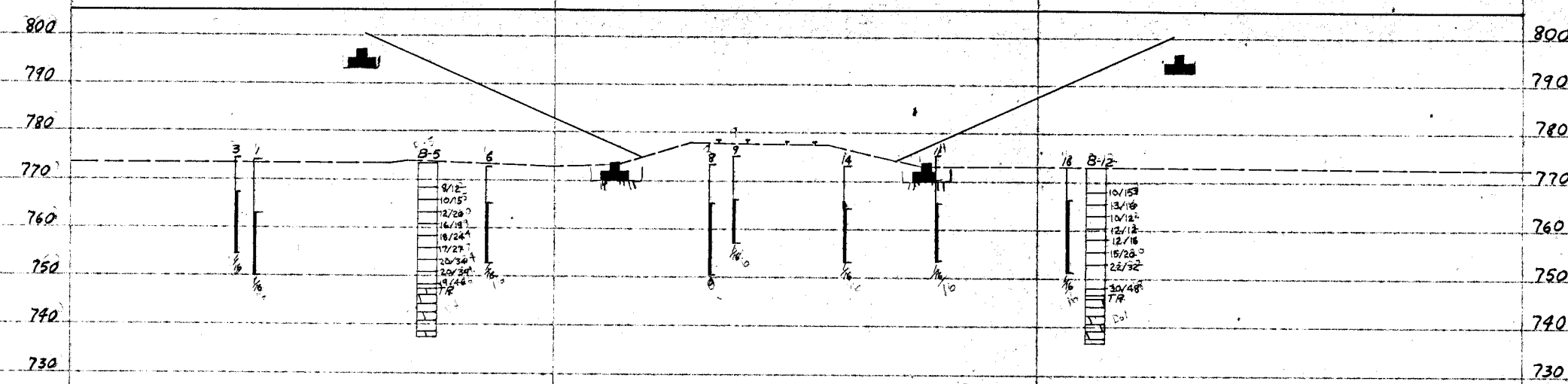
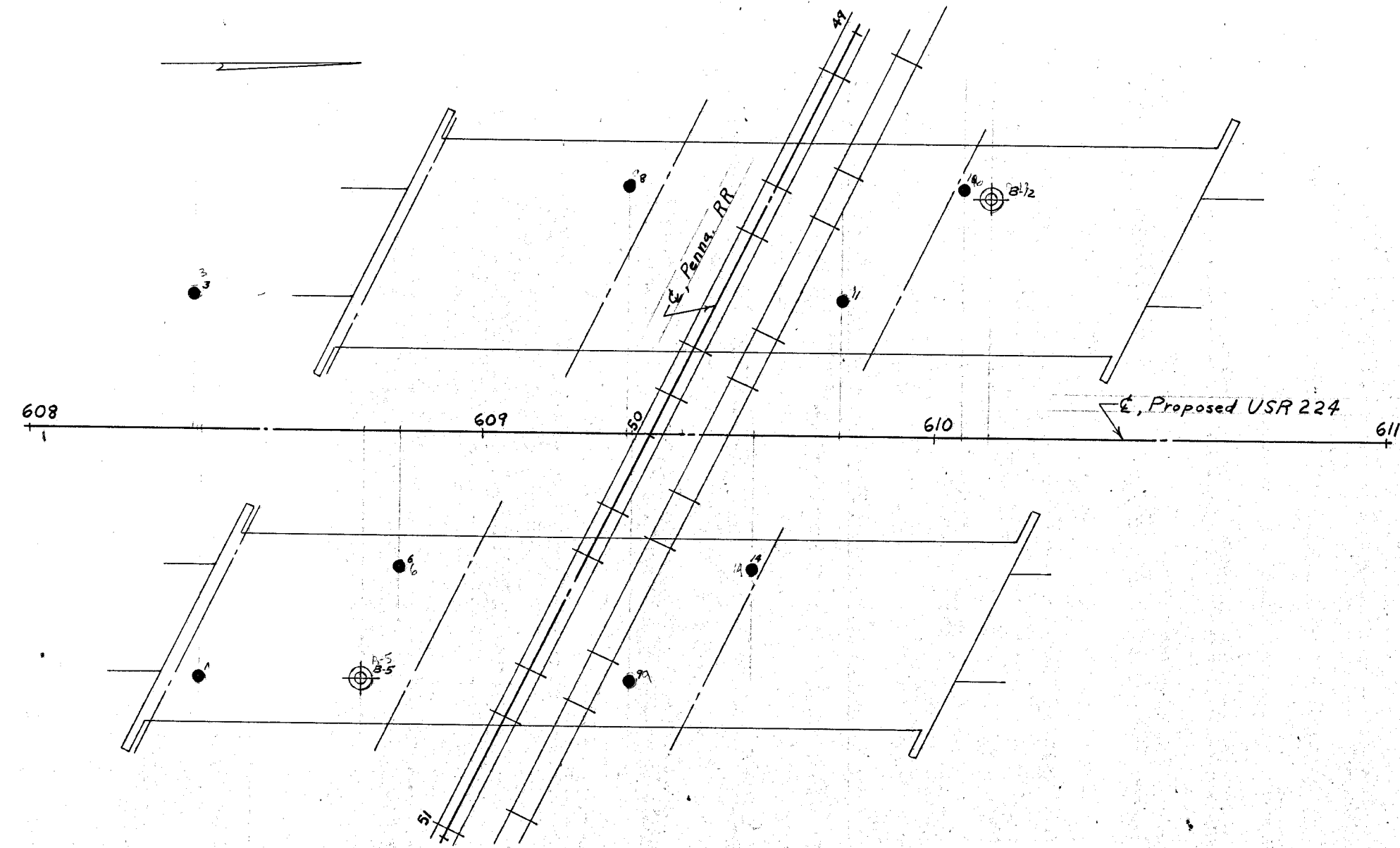
Surface Elev. 773.6'

Boring No. B-5

Station & Offset 608+74, 55' Rt (REAR PIER)[illegible]







OHIO STATE HIGHWAY TESTING LABORATORY 1620 WEST BROAD ST., COLUMBUS 23, OHIO			
STRUCTURE FOUNDATION INVESTIGATION BRIDGE NO. VAN-224-1152 L/R OVER PENNA. RR SEC. VAN-224-9.70			
PLAN AND PROFILE			
DRAWN BY L.N.L.	CHECKED BY R.L.C.	REVIEWED BY G.P.H.	DATE 8/26/64

SCALE: 1"=20'