

INSPECTION SERVICES
LABORATORY TESTING
APPRAISALS, RESEARCH
SOIL INVESTIGATIONS

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REPORT

OF

SOIL INVESTIGATION

PROPOSED NEW BRIDGE OVER CARR RIVER

COUNTY ROAD NO. 17

HUNTLEY TOWNSHIP

FOR

A. J. GRAHAM, P. ENG.

CARLETON COUNTY ENGINEER

REPORT NO. S. 215-61.

Ottawa, August 8th, 1961.

Introduction:

At the request of Mr. A. J. Graham, County Engineer, Carleton County, a soil investigation was conducted at the site of a proposed new bridge over the Carp River on County Road No. 17, Lot 18, Concession 2 - 3, Huntley Township. The existing bridge is an old steel truss too light for present-day traffic.

Field Work Procedure:

Four test holes were put down at the locations shown on the test boring plan included in this report. Test Holes Nos. 1 and 3 consisted of a cone probe to refusal followed by soil sampling to a depth of 39 feet. Holes Nos. 2 and 4 consisted of cone probes only. The equipment used consisted of a standard diamond drilling rig fully equipped for soil testing and was supplied by the firm of F. S. Johnston Drilling Company. All field operations were directed and supervised by an engineer member of our staff.

Sampling and Testing:

Samples of the soil in Holes Nos. 1 and 3 were taken by means of the split spoon (granular soils) and by means of Shelby thin-walled sample tubes (cohesive soils). Samples from the split spoon were classified and retained in plastic bags and the Shelby tube samples were taken to the laboratory and tested for unconfined compressive strength. At the time the split spoon sampler was driven the standard penetration test was also conducted.

Observations:

(a) Soil Types

The soil conditions underlying the north bank of the Carp River were found to be completely different from the conditions on the south bank. The soil profile as found in Hole No. 1 is as follows: 3 feet of granular fill followed by a mixture of peat and fill to a depth of 11 feet which is underlain by more peat, shells and some coarse sand, to 18½ feet. Below this and to the depth sampled the soil is a loose, clayey, saturated, fine sand and gravel. Samples were taken to 38 feet but the cone probe in Hole No. 2 indicates that the same soil occurs to bedrock which was found at a depth of 92 feet. The bedrock was not drilled.

On the south bank of the river the following soil profile occurs: Approximately 10 feet of granular fill with some clay and peat to a depth of 12 feet. Underlying this is a soft, grey, silty clay occurring to the full depth of sampling which was 39 feet. The cone probe in Hole No. 4 indicates that fine sand with some gravel occurs to a depth of 9½ feet where bedrock was encountered.

(b) Water Levels

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(b) Water Levels

The river level at the time of this investigation was found to be at Elevation 87.7 and the river bottom at Elevation 83.4. These elevations refer to a bench mark located on the top of a stump at the southwest corner of the first house on a street running east from the County road on the north side of the river, which was given an assumed elevation of 100.0. (See test boring plan.)

(c) Test Results

The test results on the Shelby tube samples indicate that the clay is of medium consistency for the first 15 feet and of soft consistency to a depth of 39 feet. The standard penetration tests in the sand and fine gravel indicate a loose to very loose density.

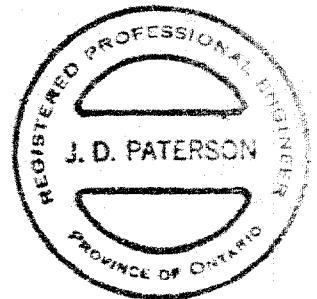
Conclusions and Recommendations:

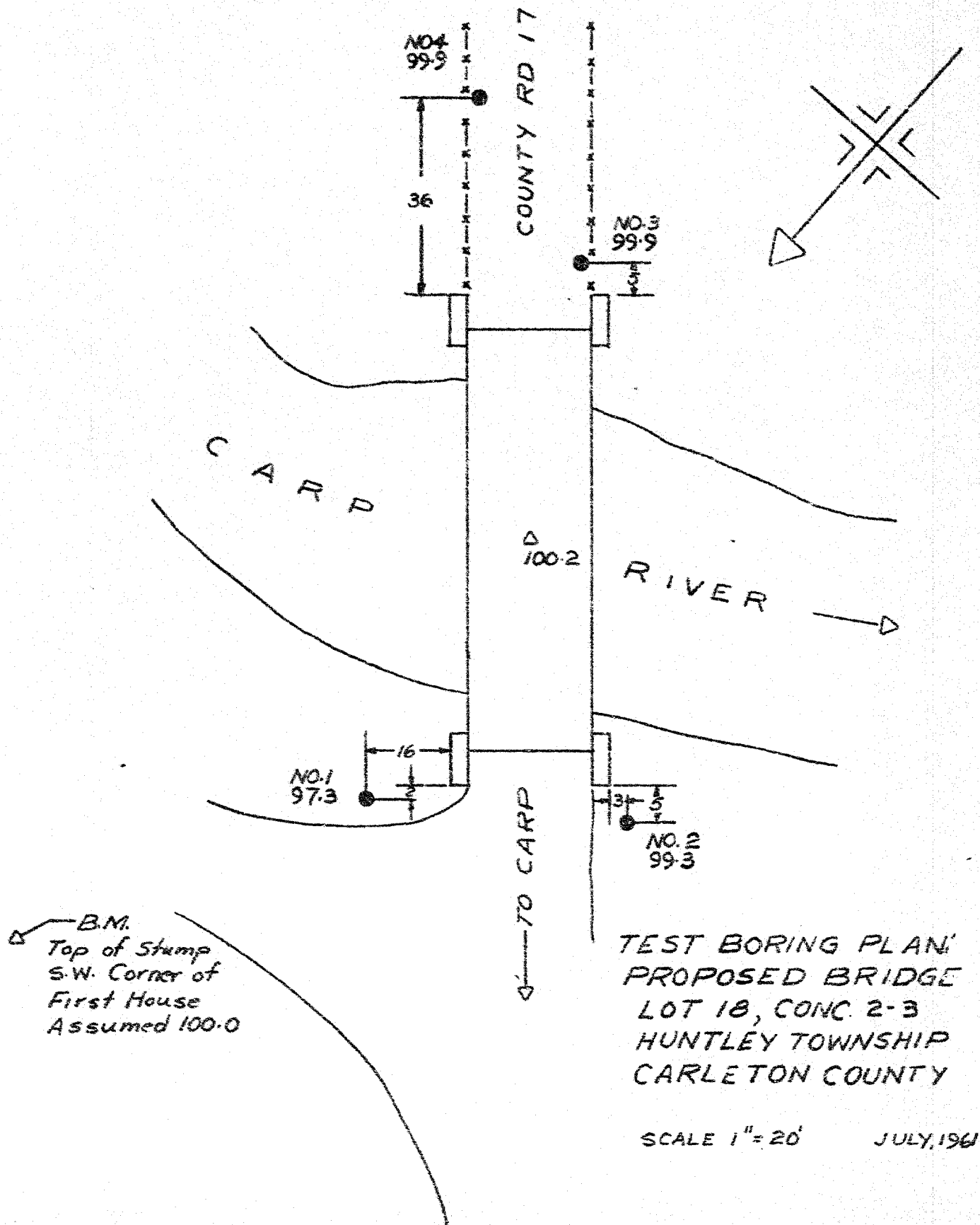
With the exception of the depth to bedrock the soil conditions underlying this bridge site have been found to vary considerably with completely different soils on each side of the river to a depth of at least 39 feet. In view of this and the test results obtained on the sand and clay samples spread footings are not considered suitable on which to place a bridge meeting present-day standards. Information was not available on the foundation of the existing bridge but, at any rate, a new bridge structure would be considerably heavier than the existing structure. It is, therefore, our recommendation that the new bridge structure be founded on piles driven to bedrock. Assuming the pile caps to be approximately at Elevation 80 the average length of the piles required would be 73 feet. Steel "H" piles would probably be the most suitable.

Ottawa, August 8th, 1961.

J. D. Paterson, P. Eng.

JDP/MMC.





SOIL PROFILE & LABORATORY TESTS

Sheet No: 1 of 4

Remarks: Cone Probe and Test Boring

Hole No: 1

Borings by: F. E. Johnston Drilling Company. Date: July 12, 1961.

BLOWS PER FOOT	SOIL DESCRIPTION	Samples	Uncorr. Comp. Strength Tons/Sq.Ft.	Depth in Feet	ELEV.	MOISTURE CONTENT PER CENT.				
						30	40	50	60	70
	Ground Surface									
2			and	0	97.3					
3	Granular Fill		Standard							
4			Pen. Test							
1			N. Values							
1	Probably Peat and / or									
1	Miscellaneous Fill			5						
33										
12										
10				10	87.3			River level	87.7	
4										
6	Black, Fibrous Peat, with									
7	Shells and some Coarse Sand.	SS	1 N = 3					River Bottom	84.4	
7		TW	2 Not tested	15						
10		TW	3 Not tested							
13										
15		TW	4 Not tested							
26										
11	Loose, Clayey, Saturated,	SS	5 N = 14	20	77.3					
11	Fine Sand to Fine Gravel.									
9										
9										
8										
10				25						
9		TW	6 Lost							
12										
13		SS	7 N = 3							
18										
23				30	67.3					
19										
11										
10										
21										
17				35						
15		SS	3 N = 7							
19										
20				38				Water Circulation		
21								Lost in Sand at		
								38 Feet.		

SOIL PROFILE & LABORATORY TESTS

Location:

County Road No. 17
Carleton County

ELEVATION (Zero Depth): 99.3

Remarks: Cone Probe only.

Sheet No:

2 of 4

Hole No:

2

Runings by: F. E. Johnston Drilling Company Date: July 13, 1961

[illegible]

SOIL PROFILE & LABORATORY TESTS

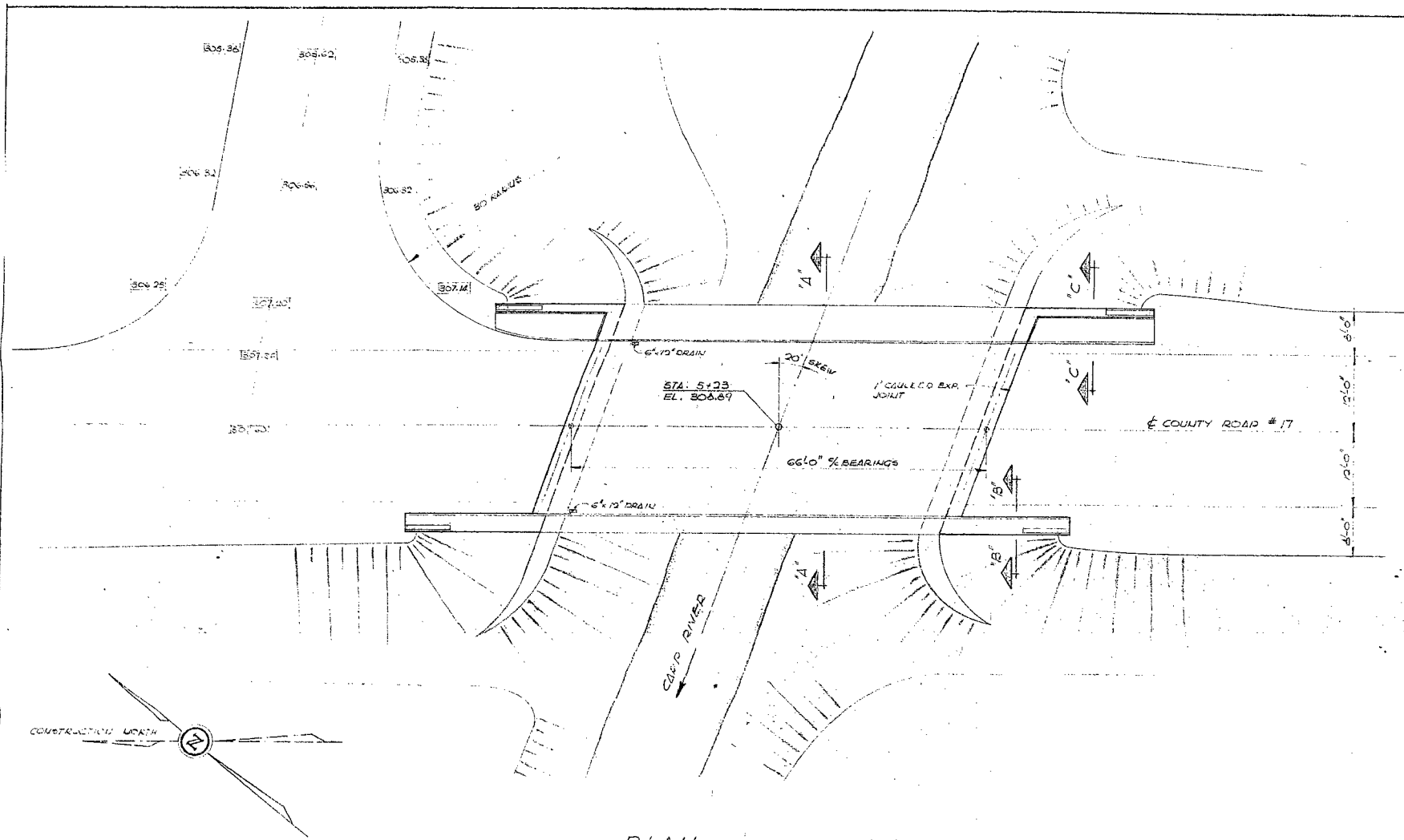
ELEVATION (Zero Depth): 92.9
Remarks: Test Boring Only.

Sheet No: 3 of 4
Hole No: 3

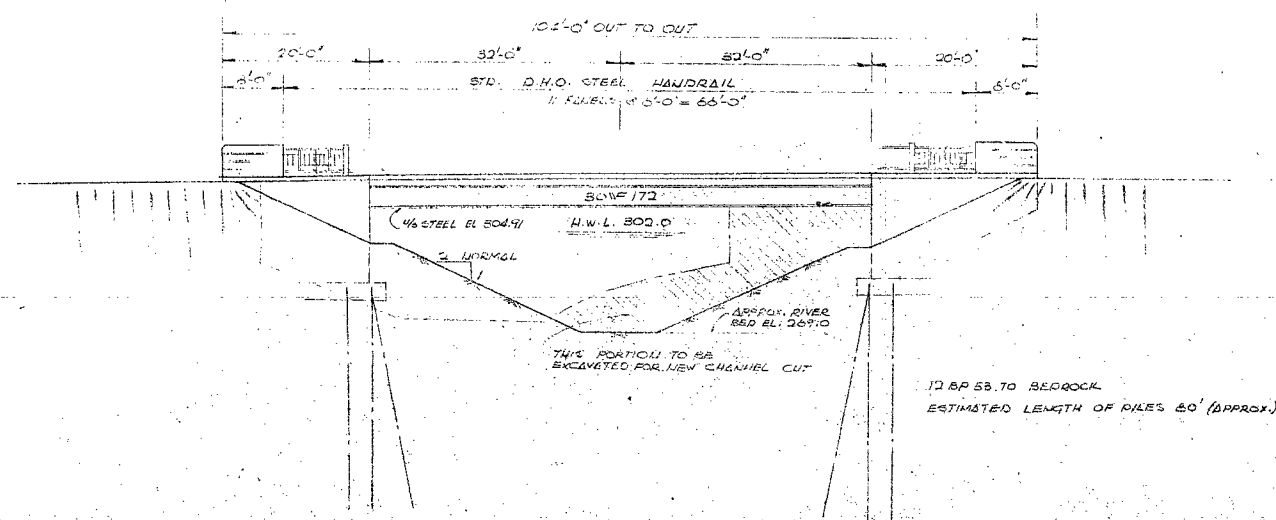
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NOTE: Above interpretation
based on cone blows
per foot.

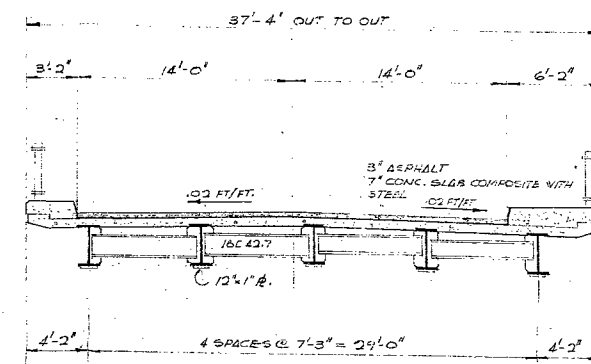
61-F-240M
COUNTY RD. #17
CARP RIVER
LOT 18, CON. 2-3



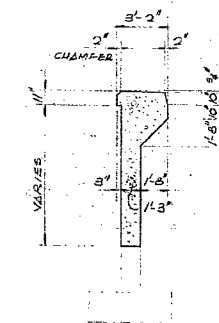
PLAN
SCALE: 1" = 10'-0"



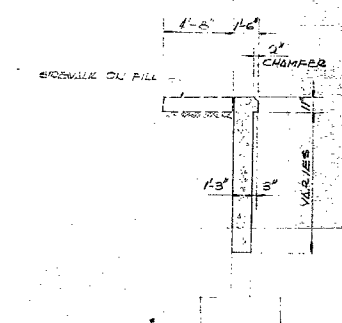
ELEVATION
SCALE: 1" = 10'-0"



SECTION "A-A"
SCALE: 1" = 5'-0"

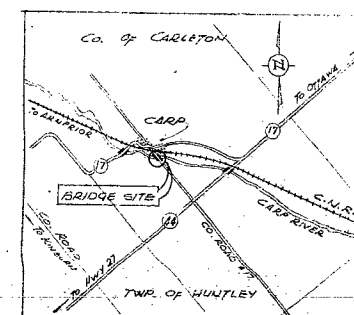


SECTION "B-B"
SCALE: 1" = 5'-0"



SECTION "C-C"
SCALE: 1" = 5'-0"

NOTE: BRIDGE TO BE SUPPORTED ON ELASTOMERIC BEARINGS.



KEY PLAN
SCALE: 1" = 1 MILE

b			
a			
No.	REVISION	Date	By
M. M. DILLON & CO. LTD. CONSULTING ENGINEERS LONDON TORONTO OTTAWA			
CARP RIVER BRIDGE CO. ROAD #17 COUNTY OF CARLETON TWP. OF HUNTLEY			
PRELIMINARY LAYOUT			
DRAWN MDR		DATE FEB. 6/62	
CHECKED JHK		JOB 5705-2	
APPROVED		DWG. NO. D-1	
SCALE AS NOTED		ISSUED FEB. 7/62	

