

#62-F-260M

CASTOR RIVER

BRIDGE

CARLETON COUNTY

Mr. A. M. Toye,
Bridge Engineer.
Materials & Research Division,
(Foundation Section)

July 17, 1962.

REVIEW OF PRELIMINARY PLAN
BY ALEX. J. GRAHAM, CONSULTING
ENGR., and SOILS REPORT BY
J.D. PATERSON, CONSULTING ENGR.

Attention: Mr. K. L. Kleirsteiber,
Municipal Bridge Liaison Engr.

Re: Township of Osgoode,
Castor River Bridge,
Lot 25, Concession VII/VIII,
County of Carleton.

We have reviewed the above-mentioned soil report
and submit herewith, our comments for your consideration:

The Contractor should be made aware that dewatering
may present quite a problem. Because of the presence of
boulders, it is doubtful whether the driving of sheet piles
would be successful, and therefore, a much wider and longer
excavation will have to be carried out. It is difficult to
assess the permeability of the subsoil because so very often
there are seams and layers of either sand or gravel which are
very permeable, and the water entering the excavation via these
layers may sometimes cause difficulties.

AGS/MdeF


A. G. Stermac,
PRINCIPAL FOUNDATION ENGINEER

cc: Foundations Office
Gen. Files.

MEMORANDUM

TO: Mr. A. G. Stermac,
Principal Foundation Eng.,
Room 107, Lab. Building.

FROM: G. C. E. Burkhardt

DATE: July 17, 1962.

OUR FILE REF. BA 1461

IN REPLY TO

SUBJECT: Twp. of Osgoode
Castor River Bridge
Lot 25, Concession VII/VIII
County of Carleton

Attached please find one copy of the Preliminary Plan and one copy of the Foundation Report, by John D. Paterson, for your comments.

We hope to approve the plan before July 31st, 1962, and would appreciate it very much if we could have your comments prior to this date.

GCEB/ea

G. C. E. Burkhardt
for K. L. Kleinsteinber,
Municipal Bridge Liaison Engineer.

INSPECTION SERVICES
LABORATORY TESTING
APPRAISALS, RESEARCH
SOIL INVESTIGATIONS

JOHN D. PATERSON, B.Sc., P.ENG.

CONSULTING ENGINEERS & GEOLOGISTS

OTTAWA, CANADA

MEMBERS:

ASSOC. OF PROFESSIONAL ENGINEERS OF ONTARIO
AMERICAN CONCRETE INSTITUTE

Head Office:
250 BESSERER ST.
TEL. CE 4-4587

Laboratory:
818A BOYD AVE.
TEL. PA 9-3722

62-F-260M

REPORT OF SOIL INVESTIGATION

PROPOSED NEW BRIDGE

LOT 25, CONCESSIONS 7 and 8

TOWNSHIP OF OSGOODE

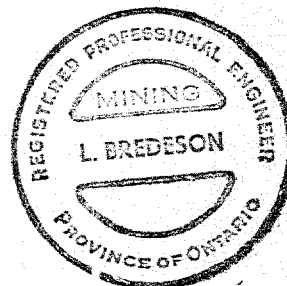
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A. J. GRAHAM, P. ENG.

DESIGN CONSULTANT

REPORT NO. S 264 - 62

OTTAWA, MAY 15, 1962



Introduction:

At the request of Mr. A. J. Graham, P. Eng., on behalf of the Township of Osgoode, a soil investigation was conducted at the site of a proposed bridge replacement over the Castor River.

The existing bridge is supported on concrete abutments and a central pier in the river.

It is understood that the new bridge will be constructed slightly to the west of the existing structure.

Fieldwork Procedure:

Two test holes were put down both to the west of the existing bridge. At each hole a cone probe was driven to refusal to check the uniformity of the soils. In addition casing was put down, the soils sampled and bedrock located.

The firm of F. E. Johnston Drilling Company was employed for all drilling operations and their work was supervised at all times by a member of our staff. The equipment used consisted of a standard drilling rig, fully equipped for soil testing and mounted on a trailer.

Sampling and Testing:

A sample of the clay was recovered by means of a Shelby thin-walled tube. It was taken to the laboratory, extruded and tested for unconfined compressive strength with a pocket penetrometer.

Samples of granular soils were recovered with the split spoon sampler. These were retained in plastic bags. With each split spoon sample taken the Standard Penetration Test was conducted, the results of which are recorded as "N" values.

Samples of bedrock were recovered by diamond drilling. These were classified and retained in core boxes.

Observations:

(a) Soil Types.

Below Elevation 85.6 (the bottom of the stream) the soil consists of glacial till which in general increases in density with depth. The till is underlain by bedrock.

Details of the bore holes are shown on the Soil Profile and Laboratory Test Sheets.

(b) Groundwater.

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(b) Groundwater.

The groundwater level at the completion of the investigation was 5 feet below ground surface in Hole 1 and at the surface in Hole 2, (approximately Elevation 90).

(c) Test Results.

The unconfined compressive strength of the clay determined by means of the pocket penetrometer was 2.2 tons per square foot. However, this clay occurs only on the north side of the river.

Conclusions and Recommendations:

The dense till which commences approximately at Elevation 80 is suitable material on which to place the footings for a new bridge, and, providing the till at this level is undisturbed, the recommended maximum safe loading is 4000 pounds per square foot. However, bedrock on the north side of the river is found at Elevation 77.5 and on the south side of the river at Elevation 74.

Unless the till at Elevation 80 can be kept relatively dry and undisturbed during excavation it may be desirable to continue the excavations to bedrock, which is only, approximately, two and one-half feet lower on the north side and six feet lower on the south side.

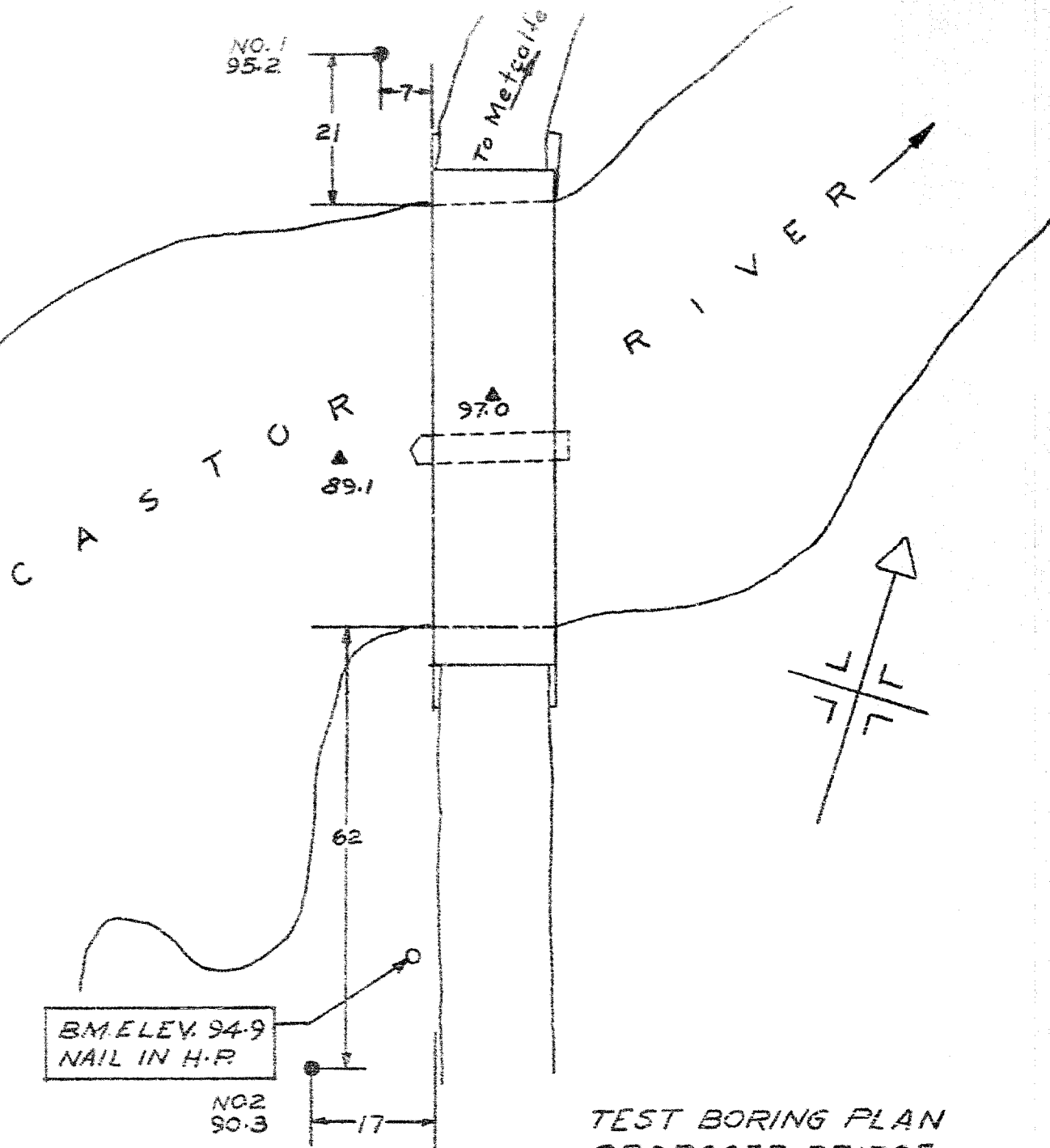
If the footings are extended to bedrock the allowable loading on the rock can be increased to 30,000 pounds per square foot. At any rate, provision should be made to keep water out of the excavations because of the danger of collapse of the walls if the till becomes saturated.

L. Bredeson

L. Bredeson, P. Eng.

Ottawa, May 15, 1962.

LB/MMC.



TEST BORING PLAN
PROPOSED BRIDGE
LOT 25 CON. 7 & 8
TOWNSHIP of OSGOODE

SCALE 1"=20'

MAY 1962

SOIL, WATER, AND ATMOSPHERIC TESTS

Location: Lot 25, Concession 7 & 8,
Township of Osgoode.

Elevation (Zero Depth): 95.2.

Remarks: Cone Probe and Test Boring.

Sheet No :
1 of 2

Hole No. 1

Bores by: F.E. Johnston Drilling Co., Ltd. Date: May 3, 1962.

Flows per Foot	Soil Description	Samples	U/c	N	Depth in Feet	Elev.	Moisture Content Per Cent.				
			T/m'				30	40	50	60	70
Cone	Ground Surface.										
3	Topsoil. 1				0	95.2					
6	Stiff, weathered sandy clay. BF 1				2						
8					4						
8					6						
6	Medium to stiff, silty, slightly weathered clay with minor free sand and minor organic inclusions to 7 feet.	SS 2		7	8						
10					10						
13					12						
15	10.2.	TW 3	2.2 pp		14	85.2					
24					16						
27	Medium dense, pinkish grey glacial till with an odd boulder.	SS 4		40 for 0.3'	18						
21		Boulder			20						
20					22						
23	15	SS 6		13	24						
38	Dense to very dense stony glacial till.				26						
110	17.6	SS 7		49	28						
	Bedrock				30						
	Good quality limestone.	Core 92% Recovery.			32	75.2					
	22.3				34						
					36						
					38						
					40						
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Note:
P.R. = Pocket
Penetrometer.

JOHN C. PATTERSON
CONSULTING ENGINEERS
OTTAWA CANADA

Elevation (Zero Depth): 90.3.
Remarks: Cone Probe and Test Boring.

Sheet No: 2 of 2

Drillings by: F. E. Johnston Drilling Co., Ltd. Date: May 4, 1962.

Hole No: 2

Blows per Foot	Soil Description	Samples	U'c T/m'	N	Depth in Feet	Elev.	Moisture Content Per Cent.				
							30	40	50	60	70
Cone	Ground Surface .										Ground Water Level at Surface May 4, 1962.
2	Topsoil. 1				0	90.3					
6	Loose, weathered glacial till. 3	BX	8		2						
31	Dense, pinkish grey glacial till with boulders. 4.1				4						
29		SS	9	38	6						Elev. Stream Bed 85.6.
28	6.5				8						
27	Medium dense, pinkish grey glacial till. 10.5	SS	10	16	10	80.3					
29					12						
35	Very dense, stony glacial till. 16.4	SS	11	40 for 0.13'	14						
56					16						
105	Bedrock. Good quality limestone.	Core	99% Recovery		18						
					20	70.3					
	21.4				22						