

#

60-F328M

BRIDGE OVER

CREDIT RIVER

MAIN STREET

STREETSVILLE

BA-1316

RACEY, MACCALLUM AND ASSOCIATES
LIMITED

A COMPANY OWNED, DIRECTED AND OPERATED BY

Consulting Engineers
AND ASSOCIATED STAFF

MONTREAL  VANCOUVER
TORONTO

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TORONTO DIVISION
27 CARLTON STREET

Reference: S-610/T-2130
- Report -

2nd March, 1960

County of Peel,
County Buildings,
BRAMPTON - Ontario.

60 - F - 328M

Attention: Mr. J. Hubicki.

RE: SOIL INVESTIGATION FOR PROPOSED
BRIDGE OVER CREDIT RIVER - MAIN
STREET - STREETSVILLE - ONTARIO.

Dear Sirs,

In accordance with your instructions we have proceeded with a subsoil investigation for the proposed new bridge site at the junction of Main Street and the Credit River in Streetsville, Ontario.

Drilling was undertaken by advancing a steel casing and sampling was accomplished by a standard 2-inch diameter split- spoon driven by means of a 140 lbs hammer dropping from a height of 30 inches. Frequently, where the split spoon did not penetrate, wash samples were obtained together with rock cores. Two drill holes were sunk and a 2-inch diameter cone having a 60-degree point angle was utilised for penetration tests adjacent to each drill hole.

The location of the holes and the related data are shown on Enclosures No 1 to 3.

Borings were only felt necessary on the West shore, because on the East side limestone bedrock could be observed out-cropping.

/ Continued : NOV 16 1961

D. H. O.
TORONTO
RECEIVED
BRIDGE
OFFICE

Reference: S-610/T-2130
- Report - Continued.

2nd March, 1960

FIELD CONDITIONS :

Geology of the site represents a relatively shallow bedrock overlain by its weathered fragments. The overburden is composed of frequent boulders, together with angular to rounded forms of coarse gravel separated by a matrix mainly composed of medium to coarse brown sand. In connection with Borehole No 2, some occasional silt and traces of clay were encountered. It appears, however, that bedrock lies at the very proximity of Elevation 77.0 feet, as it has been observed in both holes. The penetration data in connection with Borehole No 2 indicated a low reading at the proximity of Elevation 80.5 feet which would confirm that the layer of fine-grained material extends close to this level. The topsoil is greyish to brown medium sand, and appears to be transported material.

The ground water level was higher in Borehole No 1 which stood at Elevation 89.0 feet, whereas in Borehole No 2 it was observed at Elevation 87.3 feet. It must be added that both readings were obtained two days after the drilling operations, during which time the level of the river had risen about one foot.

DISCUSSION AND RECOMMENDATIONS :

The profile of both holes is quite identical as to the depth of surface material, the overburden, and the position of limestone bedrock. The sole difficulty is in respect of seasonal fluctuations of the ground water table, which are undoubtedly related to variations of the river level. Therefore, the excavation would be more advantageously handled during the dry season.

Regarding the type of foundation, the relatively high bearing capacity of the subsoil and the shallowness of the bedrock may offer possibilities. However, the fact that the overburden was composed of large boulders would indicate difficulties concerning installation of an ordinary pile foundation; (80% boulder core was recovered at Borehole No 1 from 5 to 10 feet).

Concerning the possibility of footings, difficulties with excavation in a completely saturated condition and the scour of the material below foundation level are the chief factors to be considered. Provided separate scour protection measures could be taken,

Reference: S-610/T-2130
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2nd March, 1960

a safe bearing capacity of the subsoil should be based on 6,000 psf at Elevation 85.0 feet, as an absolute maximum. Alternatively, an open type caisson extending to bedrock may be recommended: accordingly, excavation and pouring would be undertaken in the wet.

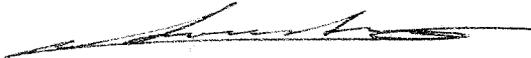
SUMMARY :

The above discussion and related recommendations may be summarised as follows :

1. The soil profile at the site is composed of a transported topsoil of greyish to brown medium to coarse sand. This material is underlain by a stratum of frequent boulders together with angular to rounded coarse gravel and sand, representing the weathered portion of limestone bedrock that lies at Elevation 77.0 feet.
2. The ground water table is at a shallow depth corresponding with the river level. This must be considered as a definite factor with regard to excavation, which should preferably be undertaken during a dry season.
3. Recommended foundations :
 - a. Footings at Elevation 84.5 feet must be based on a maximum of 6,000 psf as allowable safe bearing capacity. Separate scour protection would be needed in this case.
 - b. Installation of open type caisson preceded by excavating and pouring in the wet is suggested as an alternative.

We trust the above information is satisfactory to you. If you have any further queries, please contact the writer.

Yours very truly,
RACEY, MacCALLUM AND ASSOCIATES LIMITED,

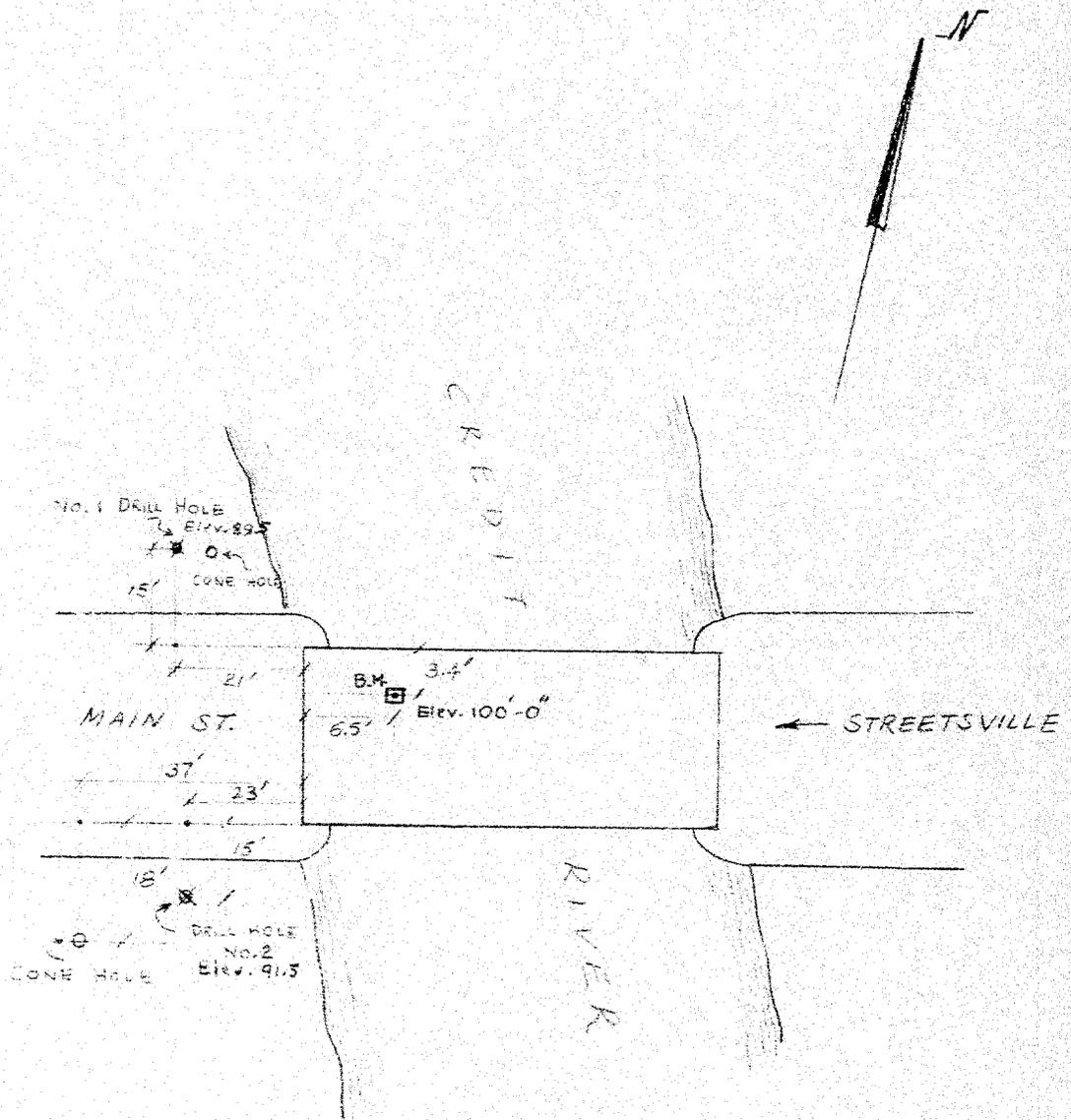


A. S. Yalcin, P.Eng.,
Project Engineer.

Order No. 5-600/T-2130

Enclosure No. 1

Prep. By A.S.Y.



LOCATION SKETCH

STREETSVILLE, ONT.

NOT TO SCALE

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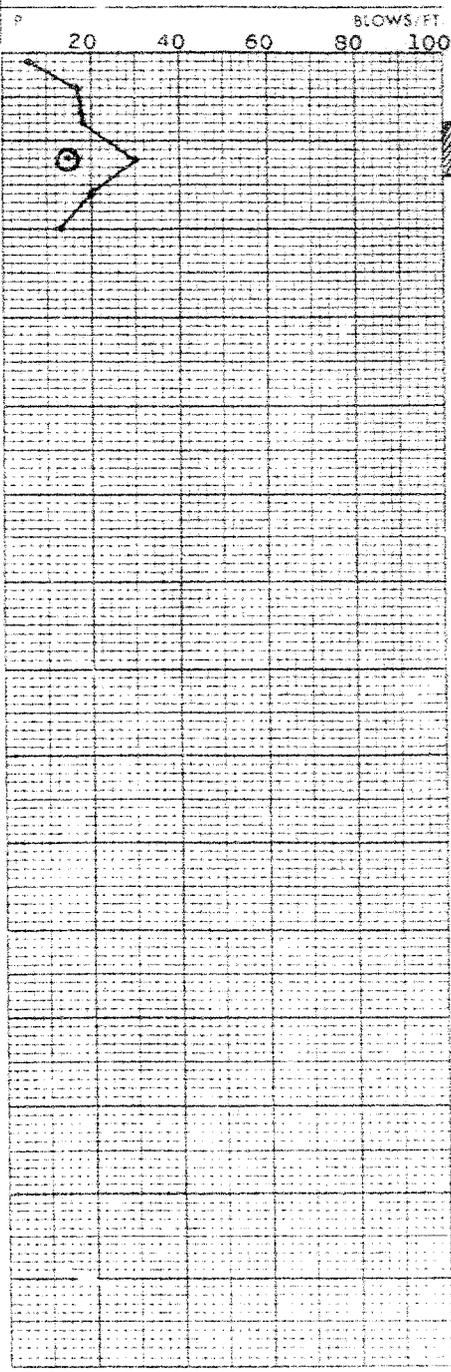
Engineering Data Sheet for Borehole: 1

Project: BRIDGE AT MAIN ST. & CREDIT RIVER.
 Location: STREETSVILLE, ONTARIO.
 Hole Location: See Enclosure No 1.
 Hole Elevation and Datum: 89.5 feet (B.M. Elev. 100'-0" ; see site plan)
 Field Supervisor: H.G. Prep: A.S.Y.
 Driller: K. Checked: Date: 18.2.60

LEGEND

Shear Strength (C) \oplus
 Unconfined compression \oplus
 Vane test and sensitivity (S) \oplus
 Penetration Resistance (P) \oplus
 2" Split tube \oplus
 2" Dia. Cone \oplus
 Casing \oplus

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				C	P.S.F.
	Ground Surface	89.5	0		
	Greyish brown medium to coarse sand.	87.5	0		
	Coarse sand and angular to rounded gravel.	84.5	5		
	Angular to rounded gravel, some boulders. 4 feet of boulder core recovered from 5 - 10 feet.		10		
	Boulders (limestone) Some black shale.	77.4	15		
	End of Drilling				
	(Bedrock)				



SS-1

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Engineering Data Sheet for Borehole: 2

Project: BRIDGE AT MAIN ST. & CREDIT RIVER.
 Location: STREETSVILLE, ONTARIO.
 Hole Location: See Enclosure No 1.
 Hole Elevation and Datum: 91.5 feet (F.M. Elev. 100'-0"; see site plan.)
 Field Supervisor: H.G. Prep.: A.S.Y.
 Driller: K. Checked: Date: 18.2.60.

LEGEND

Shear Strength (C)

Unconfined compression
 Vane test and sensitivity (S)

Penetration Resistance (P)

2" Split tube

2" Dia. Cone

Casing

