

67-F- 281 M

NEW BRIDGE

RIVIERE AU BAUDET

LOTS 12/13, CON. VIII

CHARLOTTENBURGH TWP.

28. 2548
S/E. 31-117

McROSTIE SETO GENEST

& ASSOCIATES LTD. - CONSULTING ENGINEERS - 393 BELL ST., OTTAWA, ONTARIO
& ASSOCIÉS LTÉE - INGÉNIEURS CONSEILS - 393, RUE BELL - TEL. 232-5334



1. TERMS OF REFERENCE

We were requested by Mr. R. M. Kostuch, Consulting Civil Engineer, to carry out a foundation investigation for a proposed new bridge over Riviere au Baudet, on the road between lots 12 and 13 in Concession VIII, Township of Charlottenburgh.

The type of bridge being considered is a concrete rigid frame structure having a 50 foot clear span.

2. RECOMMENDATIONS

2.1 Foundation Type

A footing type foundation is recommended to support both abutments of the proposed bridge structure at this site. The abutment foundations could bear on the underlying natural dense till layer at convenient depths. However suitable scour or erosion protection should be provided.

2.2 Soil Strengths

An allowable bearing pressure for the soils recommended to support both abutments can be stated as follows:-

Abutment bases bearing	6,000 POUNDS
on the dense till layer	PER
below elevation 70	SQUARE FOOT

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

The above bearing pressure is a conservative value for the very dense soils encountered. However, the choice of allowable bearing pressure was made recognizing possible variations undetected in the investigation and also possible construction difficulties in the preparation of footing bases.

2.3 Lateral Stability of Embankment

Since the proposed bridge will be widened it is reasonable to assume that the approach embankments will correspondingly be widened. Hence an approximate analysis of the stability of the embankment was made considering an increase in width of about 10 feet with 2:1 side slopes. The results showed that the stability of the embankment with this geometry was marginal, although the existing embankment slopes appear stable at present. By providing side slopes of 3:1 the stability of the embankment would be increased and this remedial measure would likely be more economical than the cost of carrying out a more refined slope stability analysis. Furthermore even with 3:1 side slopes some localized sloughing of the slopes may occur during construction due to possible weaker soil strata undetected at borehole locations; hence some refilling and reshaping of the slopes would then be required at these locations.

2.4 Consolidation Settlement of Embankment

Consolidation settlements of the compressible overburden beneath the embankment due to increase in load were

examined. It was felt that the amount of settlement would not be significant with the new embankment proposed.

2.5 Construction Precautions

Variation in soil conditions between boreholes can be expected at this site, since the boreholes could not be made at the exact location of the proposed abutments (boreholes were made 15' to 20' from proposed location of abutments).

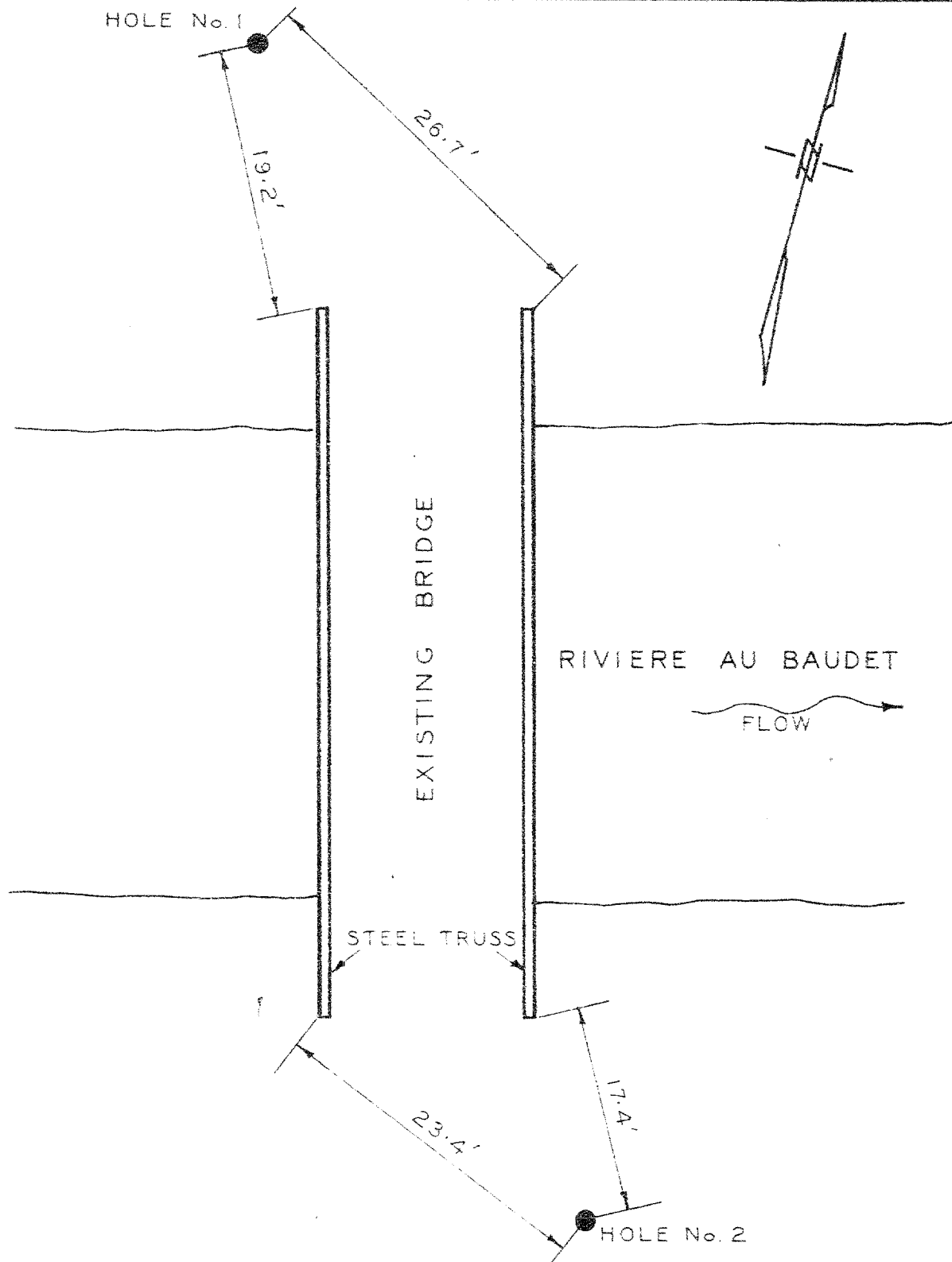
Finally, variations in depth to the dense till stratum can also be expected at this site and contract payment procedures should make clear which party is to bear the cost of these variations.

3. SITE INVESTIGATION

Two boreholes were made at the site with our test drilling equipment in the locations shown on Plate No. 1. Two inch split barrel samples were recovered from the overburden generally at 2½ foot intervals from 1 foot below surface down to the bedrock surface. The Standard Penetration Resistance Test was carried out with the split barrel sampling. Borehole vane tests were made in between the sampling in the cohesive soil to determine the in-situ shear strength of the clay soil. Bedrock beneath the site was diamond drilled in both boreholes and cores were recovered for inspection and logging. A careful watch was kept during the drilling for drop of drill rods or loss of drill water since these help to indicate the soundness of the rock. All soil and rock samples were field classified, logged and then brought to our laboratory for further study.

Moisture content and visual classification tests were made on all samples. The rock cores were logged and examined in an effort to estimate the structural properties of the rock formation.

The soils and rock encountered at borehole locations are described in detail on the accompanying Plates No. 2 and No. 3. The subsoil can be generalized as consisting of a layer of fill about 10 feet thick (which is the existing approach fill) underlain by a layer of clay 4' to 6.5' thick varying in consistency from medium soft to soft. Below the clay is a layer of dense glacial till (mixture of clay, silt, sand, gravel and boulders) about 5 feet thick which overlies bedrock. Bedrock is predominantly limestone rock which appears to be somewhat fractured in the upper layers.



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BOREHOLE LOCATIONS - POSITIONS DES FORAGES

GLENROY BRIDGE

SCALE
ÉCHELLE

1" = 10'

PLATE
PLAQUE

1

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OTTAWA CANADA

SOIL PROFILE & TEST SUMMARIES PROFIL SOUTERRAIN ET RÉSUMÉ DES ESSAIS

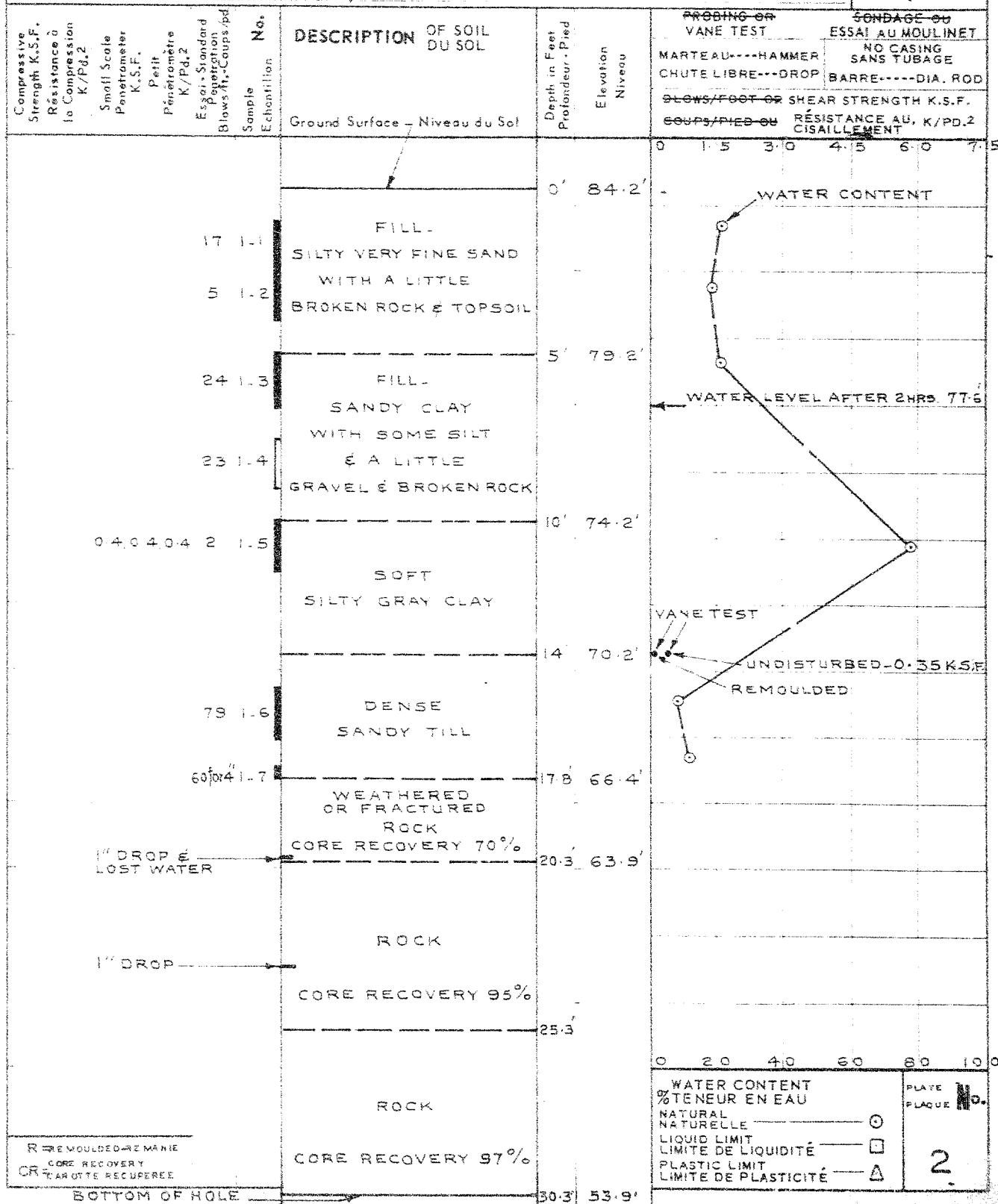
GLENROY BRIDGE

ELEVATION OF GROUND SURFACE (ZERO DEPTH) 84.2'
NIVEAU DU SOL (PROFONDEUR ZERO)

DATE MAR. 28, 1967

HOLE FORAGE No. 1

NOTES ELEVATIONS OBTAINED FROM R.M. KOSTUCH CONSULTING CIVIL
ENGINEER, BROCKVILLE, ONT.



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SOIL PROFILE & TEST SUMMARIES

PROFIL SOUTERRAIN ET RÉSUMÉ DES ESSAIS

GLENROY BRIDGE

ELEVATION OF GROUND SURFACE (ZERO DEPTH) 85.7'
NIVEAU DU SOL (PROFONDEUR ZERO)

DATE MAR 27, 1967

HOLE FORAGE No. 2

NOTES SEE PLATE No. 2

