

G.I.-30 SEPT. 1976

GEOCRES No. 40P16-14

DIST. 3 REGION southwestern

W.P. No. _____

CONT. No. _____

W. O. No. _____

STR. SITE No. _____

HWY. No. _____

LOCATION CHARLES STREET BRIDGE,
ERIN

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. _____

REMARKS: TO BE MICROFILMED ~~ON~~ SIDEWAYS

Plot on LIP P 16

REPORT

UNIVERSAL
GEOTECHNIQUE

LIMITED



3A 1735



REPORT

on

FOUNDATION INVESTIGATION

at

CHARLES STREET BRIDGE

VILLAGE OF ERIN

ONTARIO

Report N° T.530/63

100 University Avenue,
Toronto 1, Ontario.

REPORT

on

FOUNDATION INVESTIGATION

at

CHARLES STREET BRIDGEVILLAGE OF ERINONTARIOINTRODUCTION

The single-span timber bridge which carries Charles Street over the West Credit River in the Village of Erin, Ontario, is in a deteriorated condition and consideration is being given to its replacement.

On behalf of the Municipality of Erin Village, the Consulting Engineers for the bridge, McCormick & Rankin Limited of Port Credit, Ontario, requested Universal GEOTECHNIQUE Limited to carry out a foundation investigation which of necessity would have to be limited in extent in order to be economically justifiable, and this Report contains the results of the subsurface exploration.

The object of the investigation was to ascertain information enabling an opinion to be given as the possibility of using the existing concrete abutments to carry the new bridge.

THE SITE

The site of the bridge is on lot 14, concession 9, in the Township of Erin in Wellington County.

SUBSURFACE EXPLORATION

Subsurface exploration was carried out on the 15th of August, 1963, and comprised an exploratory boring and 2 penetration tests in positions as shown on drawing N°1 accompanying this Report.

The location of the borehole and penetration tests were decided after examination of the site and elevations of the strata were related to the top of the existing timber deck of the bridge.

During the operation of soil boring, soil samples were obtained and where a noticeable change of strata occurred, the depths of such changes were recorded.

The state of compaction of the strata was determined by standard penetration tests taken during the operation of soil sampling. (The standard penetration test, as referred to in this Report, involves the recording of the number of blows (N) of a 140 lb. hammer falling 30 inches that are required to drive a 2 inch diameter split barrel sampler 1 foot into the soil at the bottom of the borehole).

The penetration tests were carried out by jetting drill rods to refusal in the bed of the river.

Visual examination and classification of the soil samples was carried out in the laboratory and the descriptions of the strata obtained from the foregoing examination together with the results of standard penetration tests are given on the borehole log included with this Report.

Subsurface conditions given in this Report are those indicated by material encountered in the boreholes. The accuracy of extrapolation to obtain the soil profile should be associated directly with the geological conditions and inversely with the spacing of the boreholes.

GEOLOGICAL FEATURES

The Village of Erin lies in the Valley of the West Credit River which rises in the Hillsburgh district to the West and descends through a gulch at Belfountain into the lower valley of the main Credit River.

Erin is located in an old glacial spillway within the physiographic region known as the Guelph Drumlin Field. This area is underlain by Lockport dolomite bedrock covered for the most part by glacial drift with conspicuous drumlins furrowed by sand and gravel terraces and valleys which in lowlying areas are often swampy. In some of these valleys bedrock is exposed.

The information obtained from the exploratory borehole located at the bridge site and the refusal condition obtained in this borehole and in penetration tests PT. 1 & 2 at depths of 14'-8", 14'-3", and 14'-5" from the top of the existing bridge deck, together with other evidence, indicates that the bedrock is covered by only a few feet of overburden below the bed of the river at this locality.

CONCLUSIONS

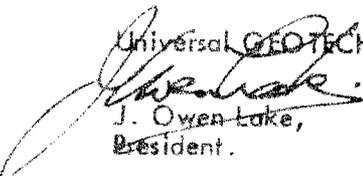
The results of the limited subsurface exploration together with other evidence indicates that there is little doubt that the concrete abutments of the existing bridge are founded on the bedrock which is known to be a dolomite.

Generally it could be expected that the safe bearing capacity on the dolomite bedrock in this area would be at least 20 tons/sq.ft., but even allowing a much lower value for the bearing capacity, the bearing area of the existing concrete abutments is likely to provide a considerable margin over the anticipated loading.

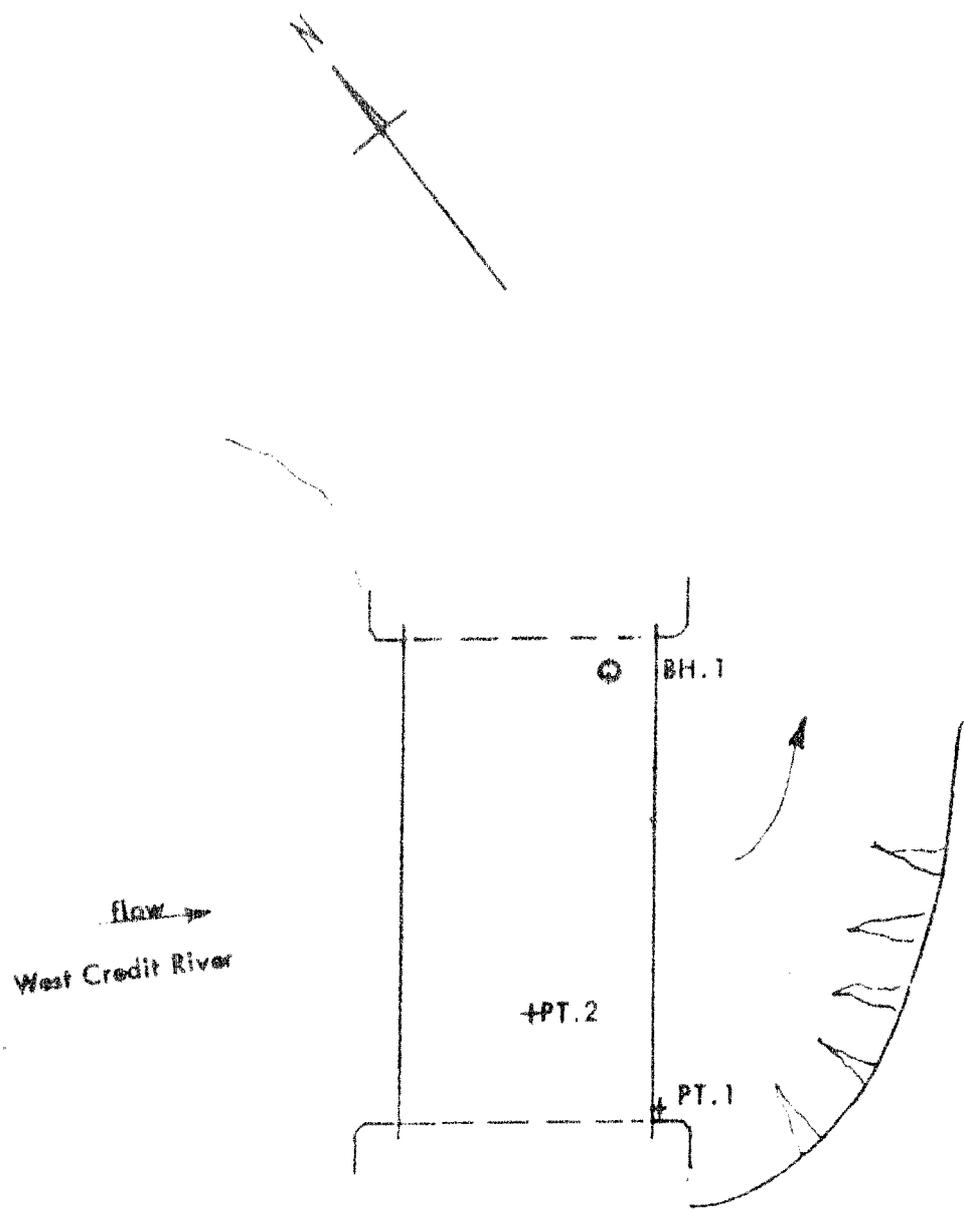
The existing overburden between the abutments of the existing bridge exists in a loose state as shown by the results of the exploratory borehole and it would appear extremely improbable that the existing bridge abutments are founded on such material as no apparent signs of instability can be discerned in the abutments exposed above water level.

Within the scope of this limited investigation we are of the opinion that it is justifiable to assume the existing concrete abutments can be utilized and incorporated as part of the new structure.

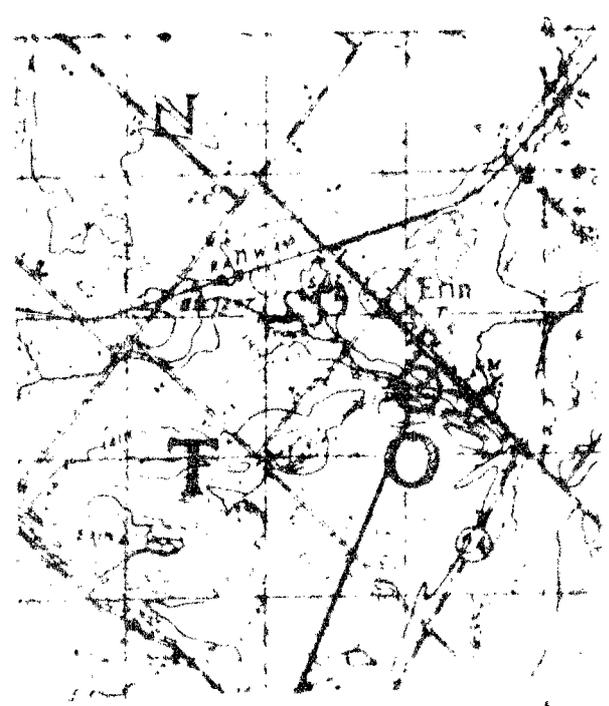
Universal GEOTECHNIQUE Limited,


J. Owen Lake,
President.

PROJECT 8-3-60
UNIVERSAL GEOTECHNIQUE LTD.



Scale: 1" = 10'



Borehole shown as BH.1
Penetration tests shown as PT.1 & PT.2

PROJECT Charles Street Bridge, Erin, Ontario.
 TITLE Borehole location
 DRG. NO. 1 ORDER NO. T.530/63



UNIVERSAL
GEOTECHNIQUE
 LIMITED

SOIL MECHANICS LABORATORY

BOREHOLE LOG

PROJECT Charles Street Bridge, Erin, Ontario. ORDER NO. T.530/63

CLIENT Village of Erin, Ontario (McCormick & Rankin Limited, Consulting Engineers)

BOREHOLE NO. BH.1 DIAMETER 2-1/2" Ø CASING EX

BOREHOLE LOCATION See Plan INCLINATION Vertical BEARING

| DESCRIPTION OF STRATA | ELEVATION | LEGEND | SAMPLE | DEPTH | THICKNESS | N | REMARKS |
|--|-----------|--------|--------|-----------------|-----------|----|------------------------|
| Top of Bridge Deck | | | | Zero | | | |
| Water Level | | ▽ | | 3'-5" | | | |
| Loose blackish brown silty fine SAND with fine to medium rounded & subrounded gravel. Piece of wood. | | | * 1 | 8'-2" | | 14 | Wet; Low dry strength. |
| Loose blackish brown organic SILT with some medium to coarse angular to subangular gravel; trace of broken rock. | | | * 2 | 14'-8" | | 4 | Wet do |
| | | | | End of Borehole | | | Refusal Conditions. |

FORM G.T.A. 700
REVISED SEPTEMBER 1961