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G.I.F-30 SEPT. 1976

GEOCRES No. 30 M12 - 116

W.P. No. -

CONT. No. -

W. O. No. -

STR. SITE No. _____

HWY. No. Q.E.W.

LOCATION Q.E.W. O'PASS AT
MISSISSAUGA ROAD

=====
OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. NONE

REMARKS: _____

B.A 434

RACEY, MacCALLUM AND ASSOCIATES LIMITED

A COMPANY OWNED, DIRECTED AND OPERATED BY

Directors:

- DONALD C. MACCALLUM, B.ENG., M.E.I.C., P.ENG.
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Consulting Engineers AND ASSOCIATED STAFF



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TORONTO: 33 BLOOR STREET EAST, WALNUT 2-9071

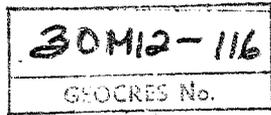
Affiliations:

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- ISOTOPE PRODUCTS LIMITED, RADIOGRAPHERS
- IRVING P. KRICK, PH.D., METEOROLOGIST
- JACQUES POULIN, QUEBEC LAND SURVEYOR
- THE VIBRATION ENGINEERING COMPANY

REPORT S-500-516/55/T-103-1

Suite 310,
20 Carlton St.,
Toronto, Ont.
June 20, 1955

Murray Associates Limited,
130 Queen's Quay E.,
Toronto, Ont.



Dear Sirs:

We are pleased to submit the attached report covering the soils investigation at the proposed overpass of the Queen Elizabeth Way at the Mississauga Road.

We understand, however, that the excavation for the Mississauga Road will be several feet deeper than the core drilling in bedrock was carried down. In this connection we wish to point out that it is our considered opinion that no noticeable change in the rock type and its properties will be met to the depth of the anticipated excavation.

Yours very truly,

RACEY, MacCALLUM AND ASSOCIATES LIMITED

K. Tubbesing

K. Tubbesing.

KT/jb
Encl.

- 3 copies - Murray Associates, Toronto
- 2 " - Montreal Office
- 1 " - Soils Engineer

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RACEY, MacCALLUM AND ASSOCIATES
LIMITED

30M12-116
CORPORATE NO.

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REPORT NO. S-500-516/55/T-103-1

Suite 310,
20 Carlton St.,
Toronto, Ont.
June 20, 1955

Murray Associates Limited,
130 Queen's Quay E.,
Toronto, Ont.

RE: SOILS INVESTIGATION,
QUEEN ELIZABETH WAY OVERPASS
AT MISSISSAUGA ROAD

Dear Sirs:

We have completed the drilling of four boreholes at the above site. The recovered soil and core samples have been studied and we wish to report on our findings, as follows:

The site is located at an approximate distance of one mile west of Port Credit, at the intersection of the Queen Elizabeth Way and the Mississauga Road, which will be underpassing the Queen Elizabeth Way by means of the proposed structure. The location of the site is shown on a topographical sketch on the upper part of enclosure No.1.

The four boreholes are located as shown on the lower sketch of enclosure No.1. The elevations of the boreholes were determined by our engineer in the field by levelling, referring to the given elevation of the intersection of the centre lines (Elevation ~~304.9~~
304.9
M.S.L.).

REPORT NO. S-500-516/55/T-103-1 cont'd

THE DRILLING WORK

The drilling equipment was sent to the site on May 12th, and the equipment set up and drilling began the same day. The fourth borehole was completed on May 19th, 1955, and the equipment consequently moved from the site and returned to the warehouse. The wash water required for diamond drilling had to be trucked from a pond at some distance from the site. This, and safety requirements, especially when drilling borehole No.1, where barriers and flares had to be used, caused unavoidable delay.

The drilling was performed with a standard diamond core drill, manufactured by Boyles Bros. The soil was penetrated with 3" extra heavy duty drive pipe, to refusal on bed rock with a 350 lb. drive hammer dropped 20". Sampling in the overburden was done at 2½' intervals in borehole No.1, and at 5' depth in boreholes Nos. 2 to 4. The standard 2" split barrel sampler was driven by a 140 lb. drive hammer dropped 30". Core drilling was done by a AXT diamond core bit, 8.5 to 11.5' in bedrock, respectively. The core recovery ranges between 48 and 100%.

The number of blows per foot of penetration on the split barrel samples, as well as on the drive pipe, was recorded and is shown by the diagrams on the enclosed Engineering Data Sheets.

DISCUSSION OF RESULTS

A thin, superficial layer of approximately 3' thickness, consisting of very fine, brown sand, with a trace of silt, is underlain

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REPORT NO. S-500-516/55/T-103-1 Cont'd

by a clay of very stiff to extremely stiff consistency, with angular mudstone gravel. The sand is fairly compact. The light brown, stiff clay is of low to medium plasticity. Consistency limits were determined on two samples taken in borehole No.1 at 6' depth, and in borehole No.3 at 5.5' depth. The liquid limit was found to be at 29%, the plastic limit at 15.1%, and the water content was 21.4%. In the second sample the liquid limit was 34.5%, the plastic limit 20.2%, and the water contents ranged between 14.2 and 17.4%, or below the plastic limit. Water contents determined at 0.5' depth in borehole No.1 were below the plastic limit (11.5 and 13.3%).

The clay is a residual soil, reflecting the character of the underlying shale.

The change to bedrock is indicated by the refusal of the drive pipe to penetrate further, even when applying several hundred hammer blows to the drive pipe. Thus the surface of bedrock was met at 316.8, 318.4, 317.7, 317.4' M.S.L. in the boreholes, in the sequence of the numbering.

Bedrock consists of a succession of clay shale and mudstone beds. The bedding is practically horizontal. The gray clay shale is slightly calcareous, but of relatively low resistivity and of relative softness, while the solid interbeds of grey mudstone show no, or little, fissility parallel to the bedding planes.

The allowable bearing value for this kind of shale, as stipulated by the 1953 edition of the National Building Code of Canada is 10 tons per square foot.

REPORT NO. S-500-516/55/T-103-1 cont'd

For cuts into rock the Highway Construction Standards require a maximum slope of $\frac{1}{4}$ to 1, or about 76° . With regard to the softness of the shale, however, we feel that a smaller gradient should be preferred. The slopes in soil are required to be not steeper than 2 to 1. The slopes are to be seeded and sodded.

We trust that this information is satisfactory and shall be pleased to consult further with you, if it is deemed desirable.

Yours very truly,

RACEY, MacCALLUM AND ASSOCIATES LIMITED

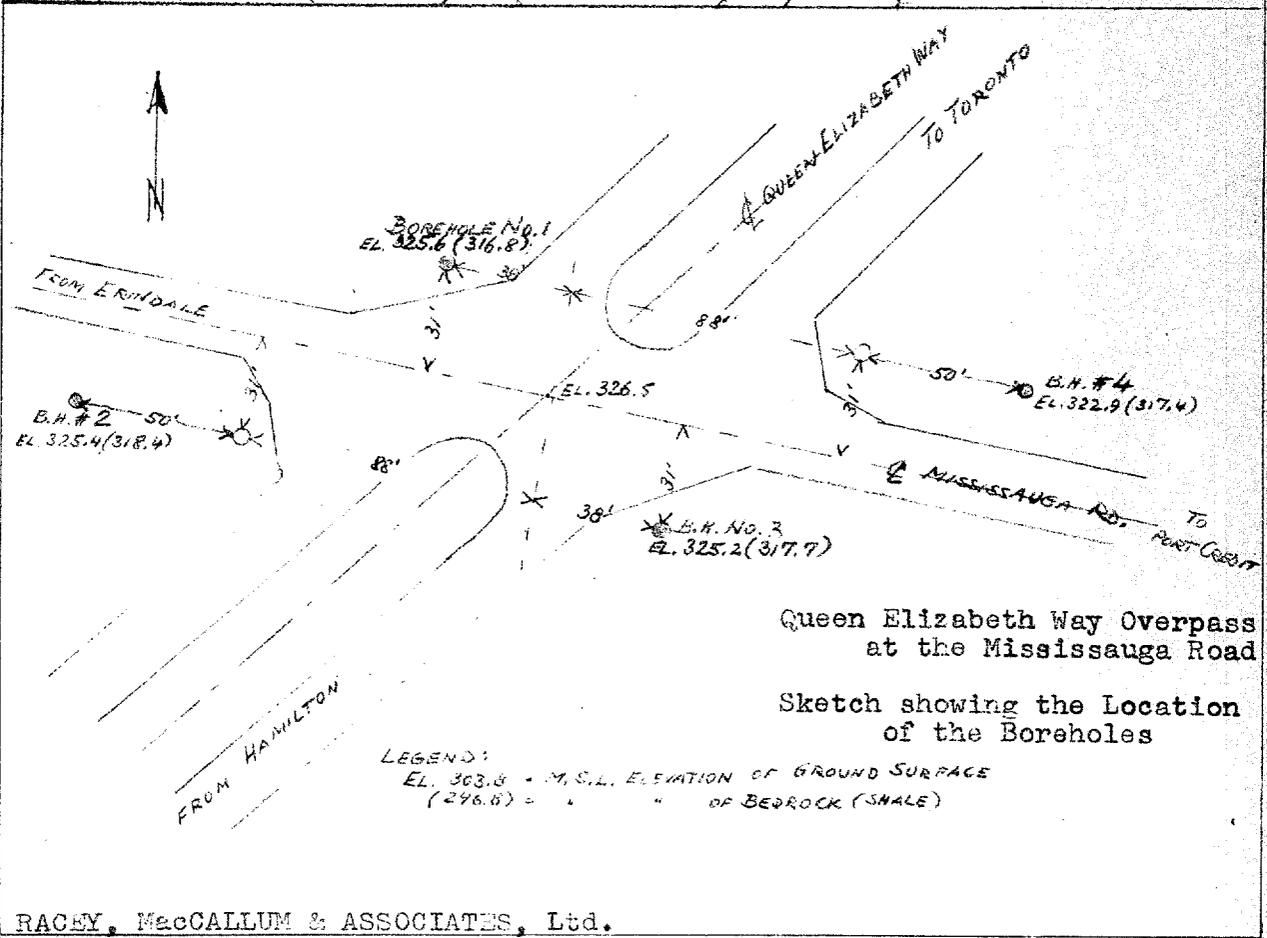
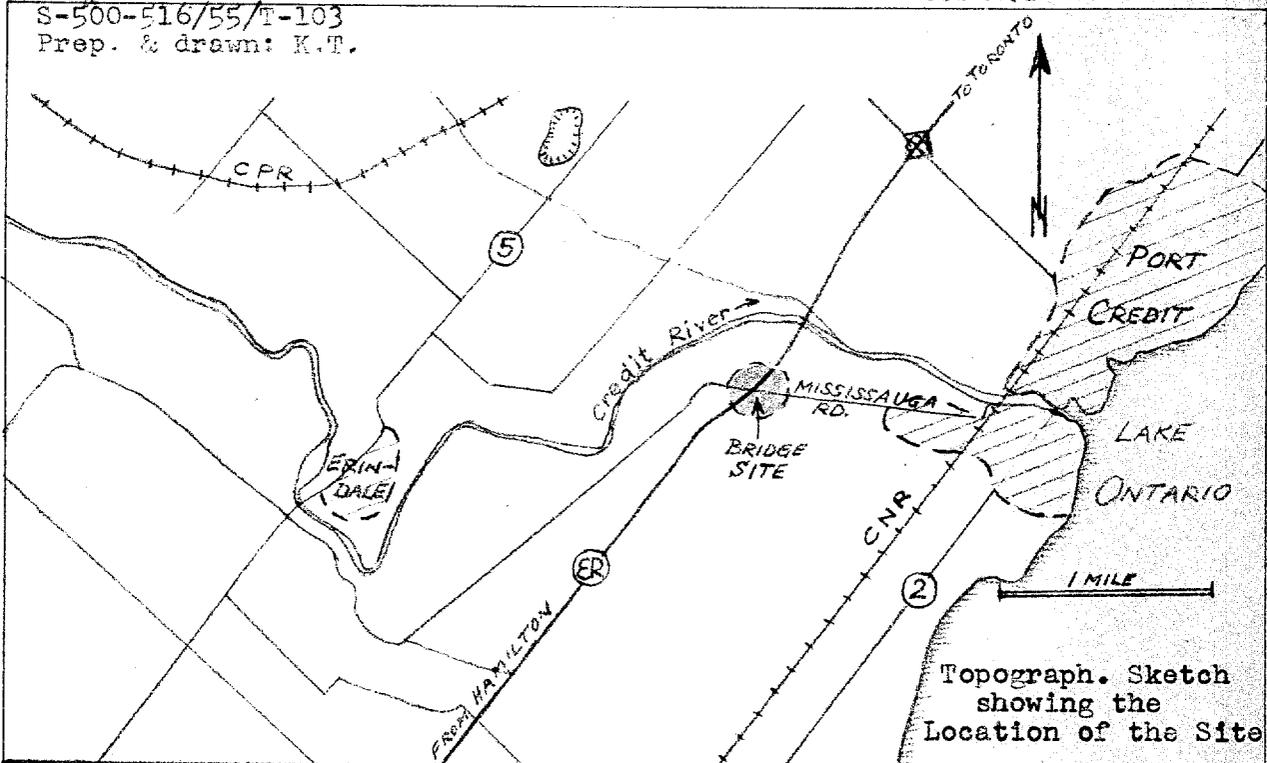
K. Tubbesing

K. Tubbesing, P. Eng.

KT/jb

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2 " - Racey, MacCallum and Assoc., Montreal
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S-500-516/55/T-103
 Prep. & drawn: K.T.



Order No.: S-520-516/55/7-103 RACEY, MACCALLUM AND ASSOCIATES

A. McCadden
Driller

LIMITED

Hole Begun 12/5/55

Foundation Engineering, Division

Hole Ended 14/5/55

Engineering Data Sheet for Borehole: 1

Helper

Job Name: Queen Elizabeth Way Overpass at Mississauga Road

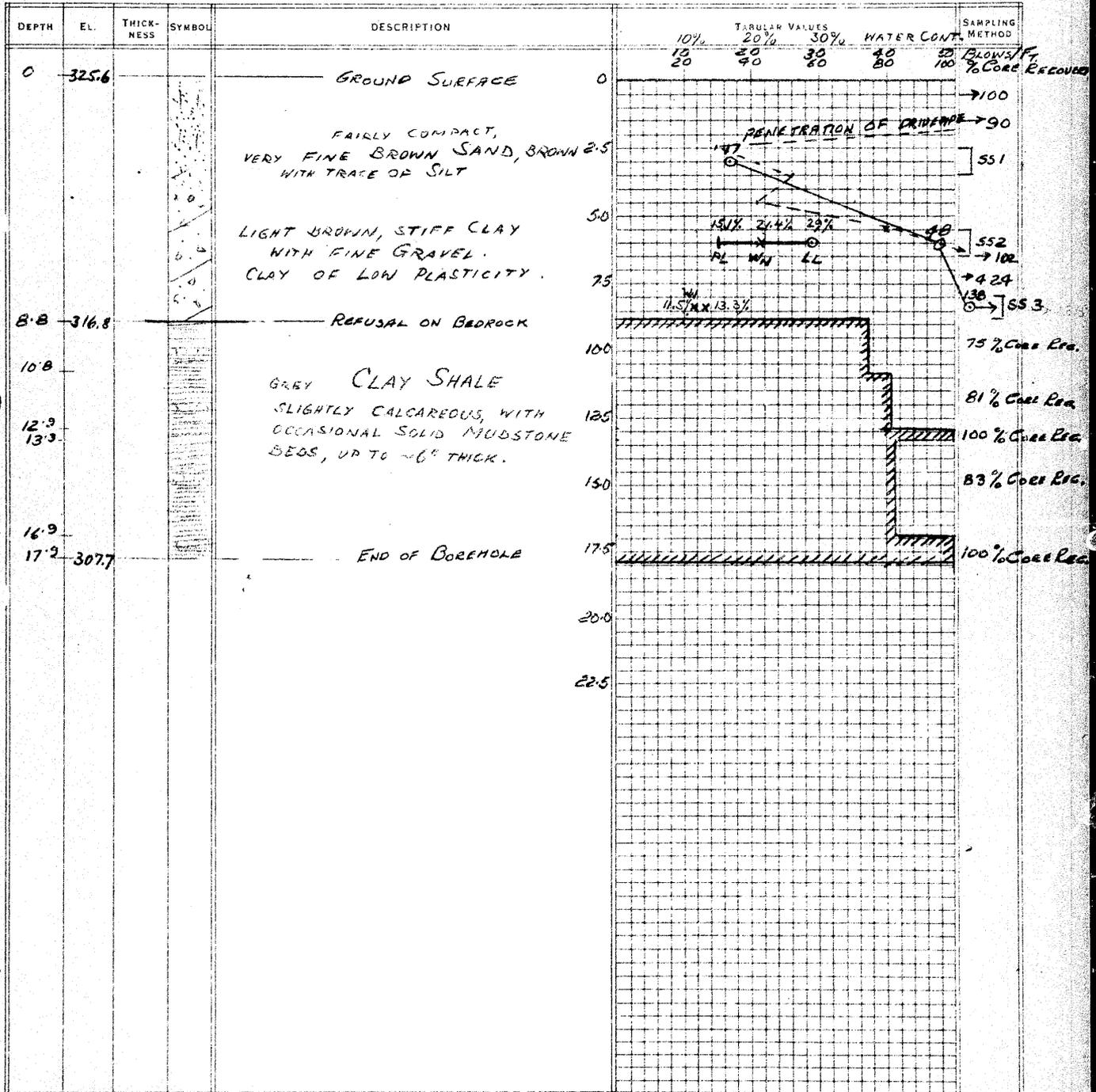
B.F.W. & K.T.
Checked by

Job Located: ON QUEEN ELIZABETH HWY. AT MISSISSAUGA RD.

Hole Located: AS SHOWN ON ATTACHED SKETCH PLAN

Hole Elevation: 325.6 Datum: M.S.L.

Day 6/6/55 Month Year



Order No.: S-500-76/55/103 RACEY, MACCALLUM AND ASSOCIATES
LIMITED

A. Mc CADDEN
Driller

Hole Begun 14/5/55 Foundation Engineering, Division

Hole Ended 17/5/55 Engineering Data Sheet for Borehole: 2

Helper

Job Name: Queen Elizabeth Way Overpass at Mississauga Road

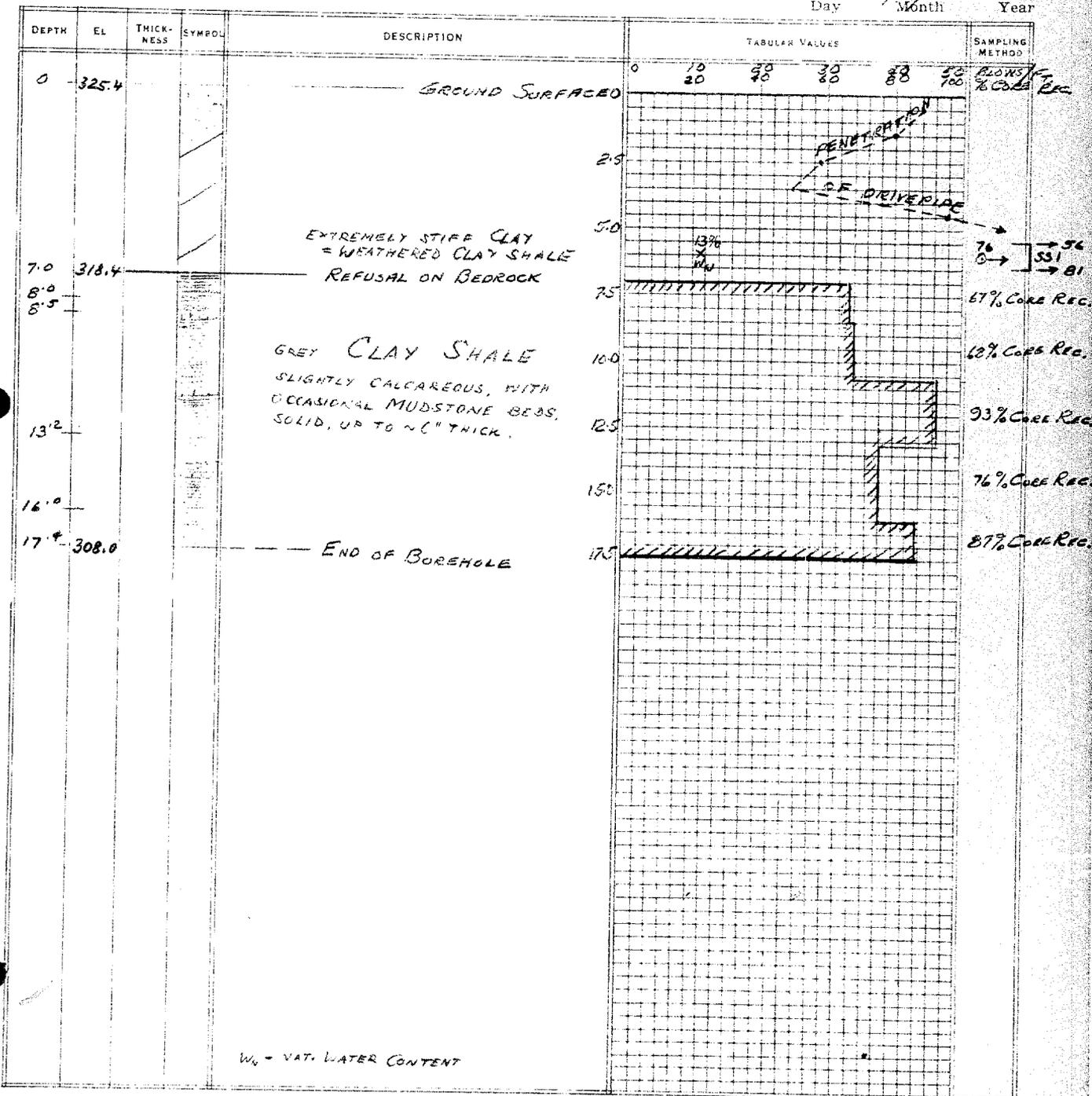
B.F.W. & K.T.
Checked by

Job Located: ON QUEEN ELIZABETH HWY. AT MISSISSAUGA RD.

Hole Located: AS SHOWN ON ATTACHED SKETCH PLAN

Hole Elevation: 325.4 Datum: M.S.L.

Day 6/6/55 Month Year



Hole Begun 17/5/55

Foundation Engineering Division

Hole Ended 18/5/55

Engineering Data Sheet for Borehole: 3

Helper

Job Name: Queen Elizabeth Way Overpass at Mississauga Road

B.F.W. I.K.T.

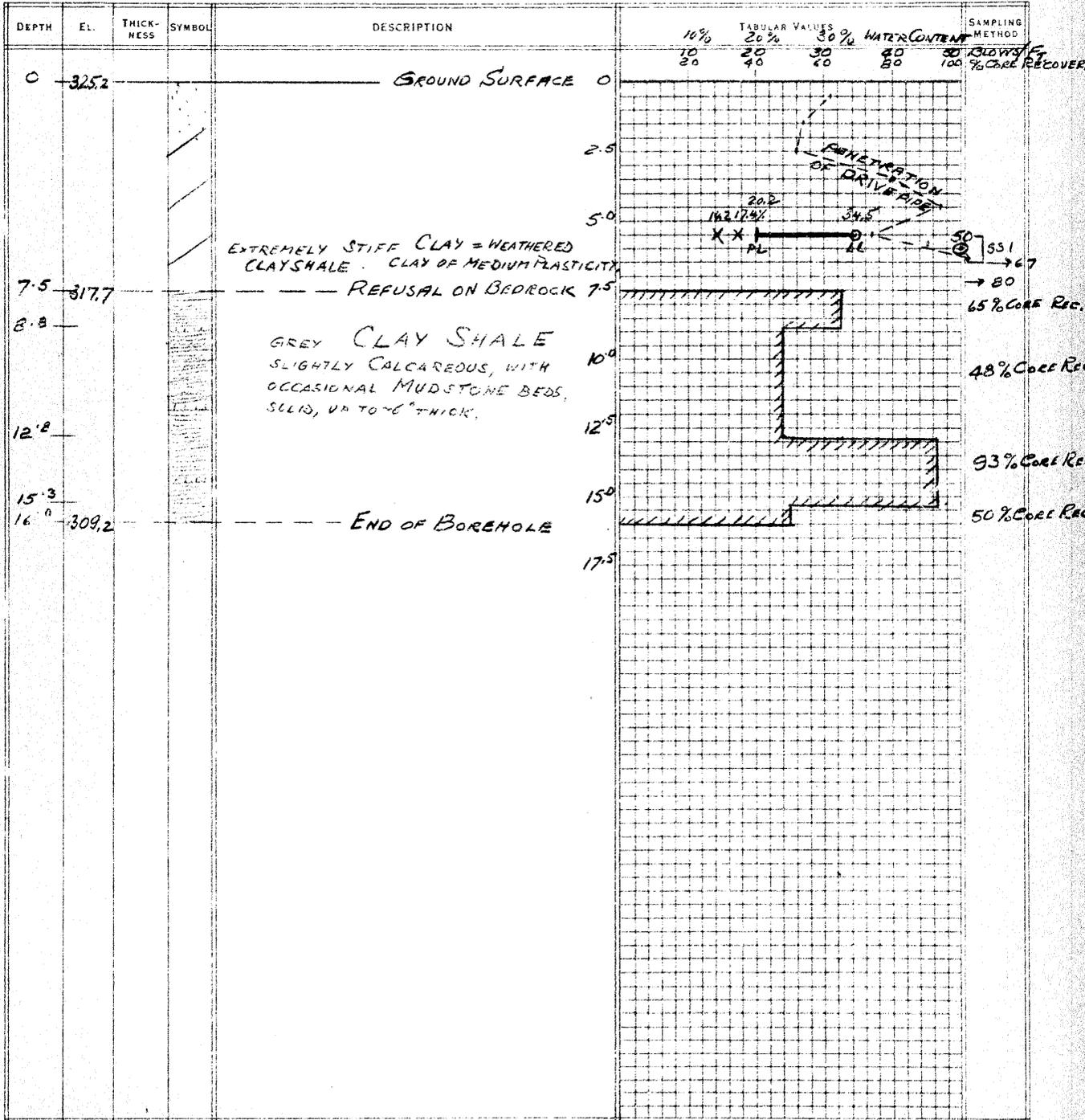
Job Located: ON QUEEN ELIZABETH HWY AT MISSISSAUGA RD.

Checked by

Hole Located: AS SHOWN ON ATTACHED SKETCH PLAN

Hole Elevation: 325.2 Datum: M.S.L.

Day 6/6/55 Month Year



Order No.: ~~S-500-S/55/1-103~~ RACEY, MacCALLUM AND ASSOCIATES
LIMITED

A. M. CADDEN
Driller

Hole Begun 18/5/55 Foundation Engineering Division

Hole Ended 19/5/55 Engineering Data Sheet for Borehole: 4

Helper

Job Name: Queen Elizabeth Way Overpass at Mississauga Road

B. F. W. E. K. T.
Checked by

Job Located: ON QUEEN ELIZABETH HWY. AT MISSISSAUGA RD.

Hole Located: AS SHOWN ON ATTACHED SKETCH PLAN

Hole Elevation: 322.9 Datum: M.S.L.

Day 6/6/55 Month Year

