

#68-F-212 M

CULVERT C-177

SUBURBAN

ROAD #28

MIDDLESEX CTY.



DOMINION SOIL INVESTIGATION LIMITED
CONSULTING SOIL & FOUNDATION ENGINEERS

HEAD OFFICE
104 CROCKFORD BLVD.
SCARBOROUGH, ONT.
CANADA
TELEPHONE: 751-6565

BRANCH OFFICE
369 QUEENS AVE.
LONDON, ONT.
TELEPHONE: 433-3851

ASSOCIATED COMPANY
SOIL TESTING AND ENGINEERING LTD.
39 BRENTFORD ROAD
KINGSTON 5, JAMAICA
WEST INDIES

London,
January 26th, 1968.

Report
6-1-L3.

68-F-212M

Mr. F.D.S. Arnold, P.Eng.,
Middlesex County Engineer,
County Buildings,
London, Ontario.

Attention: Mr.D.M. Huxson, P.Eng.,
Assistant County Engineer.

Dear Sir,

Report on Soil Investigation for
Culvert C-177, Suburban Road No.28
County of Middlesex.

We have completed this project in accordance with your letter,
dated January 5th 1968. This report contains a record of our
findings and presents our recommendations for the design and
construction of foundations.

FIELD WORK.

The field work, consisting of one borehole and one dynamic cone
penetration test was carried out on 16th January 1968 at the
location specified on the sketch plan supplied to us.

The hole was advanced to the sampling depths by washboring methods
and was lined with 8x size casing. Standard penetration tests were
performed at frequent intervals of depth to obtain an indication
of the consistency of the clay material and to recover representative

S

samples. The dynamic cone penetration test was performed adjacent to the borehole location to obtain an indication of soil density and strata changes with depth.

The results of the field tests are recorded on the borehole log sheet, comprising Enclosure 2. Elevations were referred to the concrete curb of the existing culvert at the location indicated on Enclosure 1. The benchmark was given the assumed El.100 feet.

SUBSURFACE CONDITIONS.

Detailed descriptions of the strata encountered are given on the borehole log. The following notes are intended only to amplify this data.

The general profile consists of silty clay fill extending to a depth of 5.5 feet, overlying a very stiff to hard silty clay till deposit which was penetrated 14.5 feet.

From a visual and tactile examination of the soil samples it is estimated that the clay till has a low plasticity and compressibility and that the natural moisture content is close to the Plastic Limit of the soil.

Due to the impervious nature of the clay till it was not possible to observe directly the free-standing groundwater table, but it can be assumed to be slightly above the water level in the stream (94.9 feet at the time of the field work).

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

8

DISCUSSION.

The stream bed extends down to El.94.1 therefore, allowing 4 feet of cover for frost protection, consideration should be given to a footing grade at or below El.90. This level lies within the stratum of very stiff to hard silty clay till and on the basis of the borehole results a maximum net soil pressure of 6000 p.s.f. is appropriate for the design of footings.

Total settlement of a 4 foot wide footing mobilizing the above soil pressure is estimated to be about 0.5 inch.

Construction.

It is anticipated that seepage into excavations will be controlled by pumping from sumps dug below the footing grade. Excavations in the clay till can be made with vertical sides which will require a minimum of bracing.



Yours very truly,

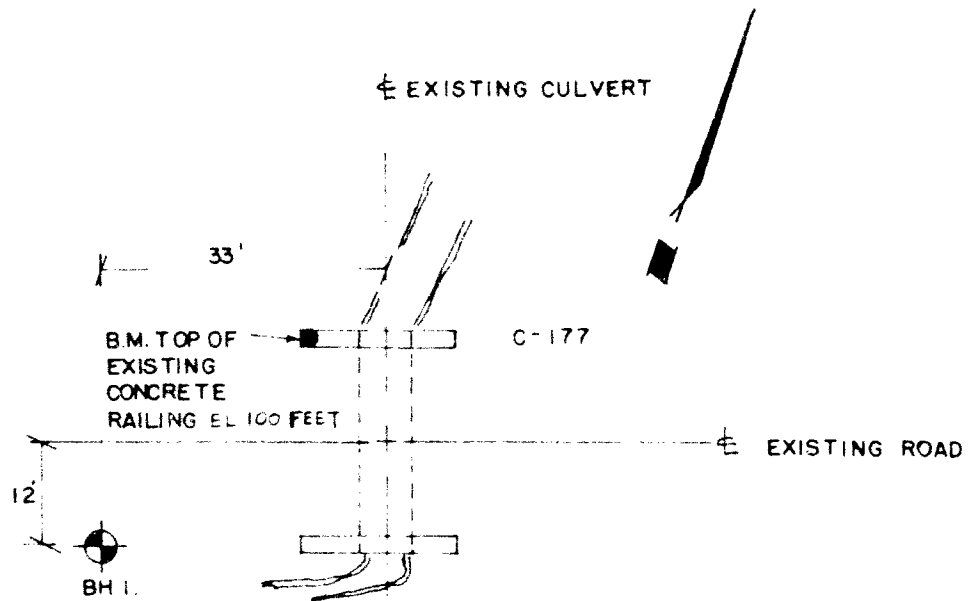
DOMINION SOIL INVESTIGATION LIMITED.

A handwritten signature in dark ink, appearing to read "C.J.W. Atkinson", written over the printed name.

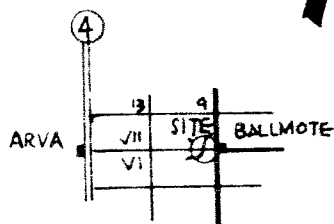
C.J.W. Atkinson, M.Sc., P.Eng.,
Branch Manager.,

CJWA/jb

Prep. By



LOCATION OF BOREHOLES
SCALE 1"=20'



KEYPLAN

LOG OF BOREHOLE.....1.....

Our Reference No 8-1-L3

Enclosure No 2

CLIENT: County of Middlesex

PROJECT Culvert C-177

LOCATION Suburban Road No. 28, County of Middlesex

DATUM ELEVATION: Top of concrete curb, El. 100 feet

DRILLING DATA

Method Washboring

Diameter 8x(5-inch)

Date January 16, 1968

| SUBSURFACE PROFILE | | | | SAMPLES | | | PENETRATION RESISTANCE | | | | | WATER CONTENT % | | | REMARKS | |
|--------------------|--------------|---------------------------------------|--------|-----------------|--------|------|------------------------|---|----|----|----|-----------------|------------------------------------|--------------|---------|-----------------------------------|
| ELEVATION Ft. | DEPTH Ft. | DESCRIPTION | SYMBOL | GROUND WATER | NUMBER | TYPE | 'N' Blows / Foot | Blows / Foot | | | | | PLASTIC LIMIT W _p | NATURAL W | | LIQUID LIMIT W _L |
| | | | | | | | | 20 | 40 | 60 | 80 | 100 | | | | |
| | | | | | | | | UNDRAINED SHEAR STRENGTH + FIELD VANE TEST • COMPRESSION TEST | | | | | | | | |
| 98.6 | 0.0 | Ground Surface | | | | | | | | | | | | | | |
| 96.5 | 0.5 | Sand & gravel | | | | | | | | | | | | | | |
| 95.5 | 5.5 | Silty clay (Fill) | | | 1 | SS | 12 | | | | | | | | | |
| 90 | | brown grey | | | 2 | SS | 24 | | | | | | | | | |
| | | Very stiff to hard | | | 3 | SS | 29 | | | | | | | | | |
| 85 | | silty clay with a trace of sand | | | 4 | SS | 42 | | | | | | | | | |
| 80 | | and seams of silt. | | | 5 | SS | 75 | | | | | | | | | |
| 20.0 | | End of Borehole | | | | | | | | | | | | | | |

2-inch diameter
cone

W.L. IN CREEK
EL. 94.9

CREEK BED
EL. 94.1

Vert. Scale 1-inch = 5 feet.

2-inch diameter
cone

W.L. IN CREEK
Elev. 94.9

CREEK BED
EL. 94.1

Vert. Scale 1-inch = 5 feet.