

# 68 - F - 211M

CULVERT C-77

CTY. RD. 26 A

W. MISSOURI TWP.



**DOMINION SOIL INVESTIGATION LIMITED**  
CONSULTING SOIL & FOUNDATION ENGINEERS

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London  
March 6, 1968.

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

Report  
8-1-L11

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

68-F-211M

Attention: Mr. D.H. Husson P.Eng.,  
Assistant County Engineer.

Dear Sir,

Soil Investigation for Culvert C-77  
County Road 25A, Township of W. Nissouri.

We have completed this project in accordance with your letter of authorization dated January 23, 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 two dynamic cone penetration tests, was carried out on February 14, 1968, at the locations shown on Enclosure 1.

The borehole was advanced to the sampling depths by washboring methods and was lined with Bx size casing. Standard penetration tests were performed at frequent intervals of depth to obtain an indication of the consistency of the clay subsoil and to recover representative samples for classification purposes.

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The dynamic cone penetration tests were performed to compare relative properties of the soil at each location.

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

#### SUBSURFACE CONDITIONS.

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

The soil profile revealed by the borehole consists of silty clay fill, which extends to a depth of 8 feet, overlying silty clay till. The consistency of the silty clay till is described as 'very stiff' to 'hard' as indicated by 'N' values ranging from 32 to 55 blows per foot.

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.

#### GROUNDWATER CONDITIONS.

The water level in the borehole reached equilibrium at El.90.8 which was 4-inches below the ice level in the creek at the time the field

work was carried out.

DEFECTS IN NEGATIVE DUE TO  
CONDITION OF ORIGINAL DOCUMENT

DISCUSSION.

It is understood that the proposed culvert is a concrete cast in place structure with conventional spread footings.

The creek bed extends down to El.90.4 therefore, allowing 4 feet of cover for frost protection, consideration should be given to a footing grade at or below El.86.5. This level lies within the stratum of hard silty clay till and on the basis of the borehole results a maximum net soil pressure of 8000 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,

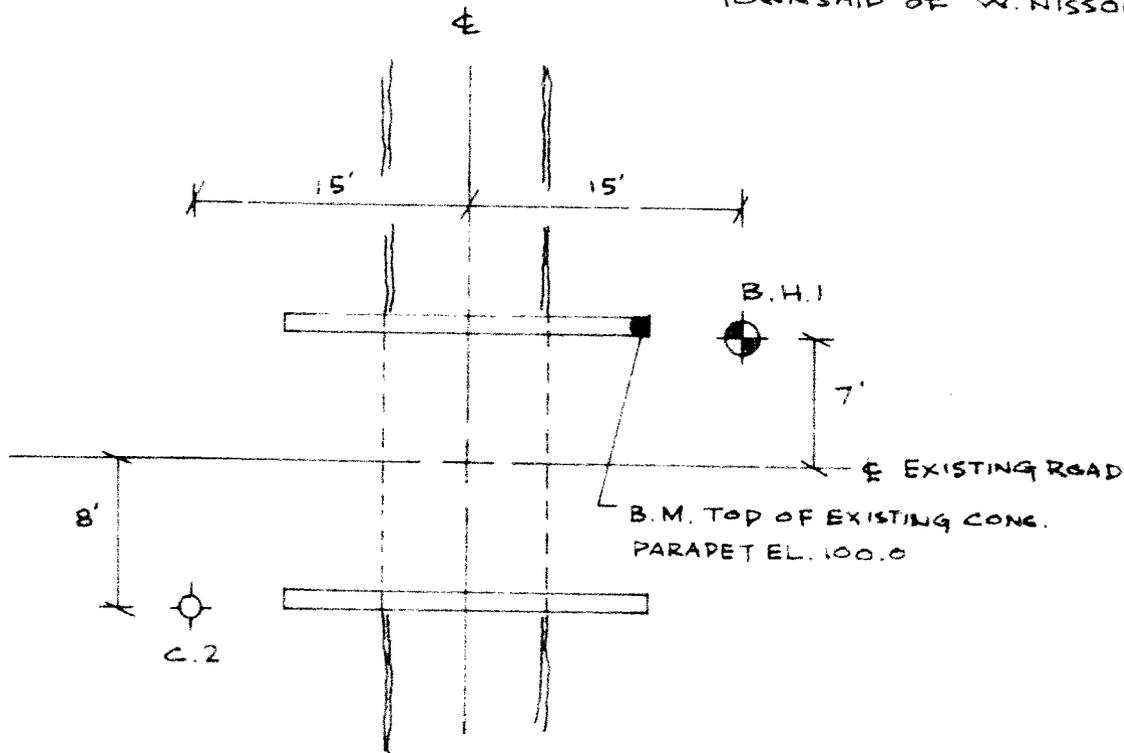
DOMINION SOIL INVESTIGATION LIMITED.

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

CJWA/jb

Prep. By

CULVERT C-77  
LOTS 25 & 26 CON IV  
TOWNSHIP OF W. MISSOURI



LOCATION OF BOREHOLE  
SCALE 1" = 10'

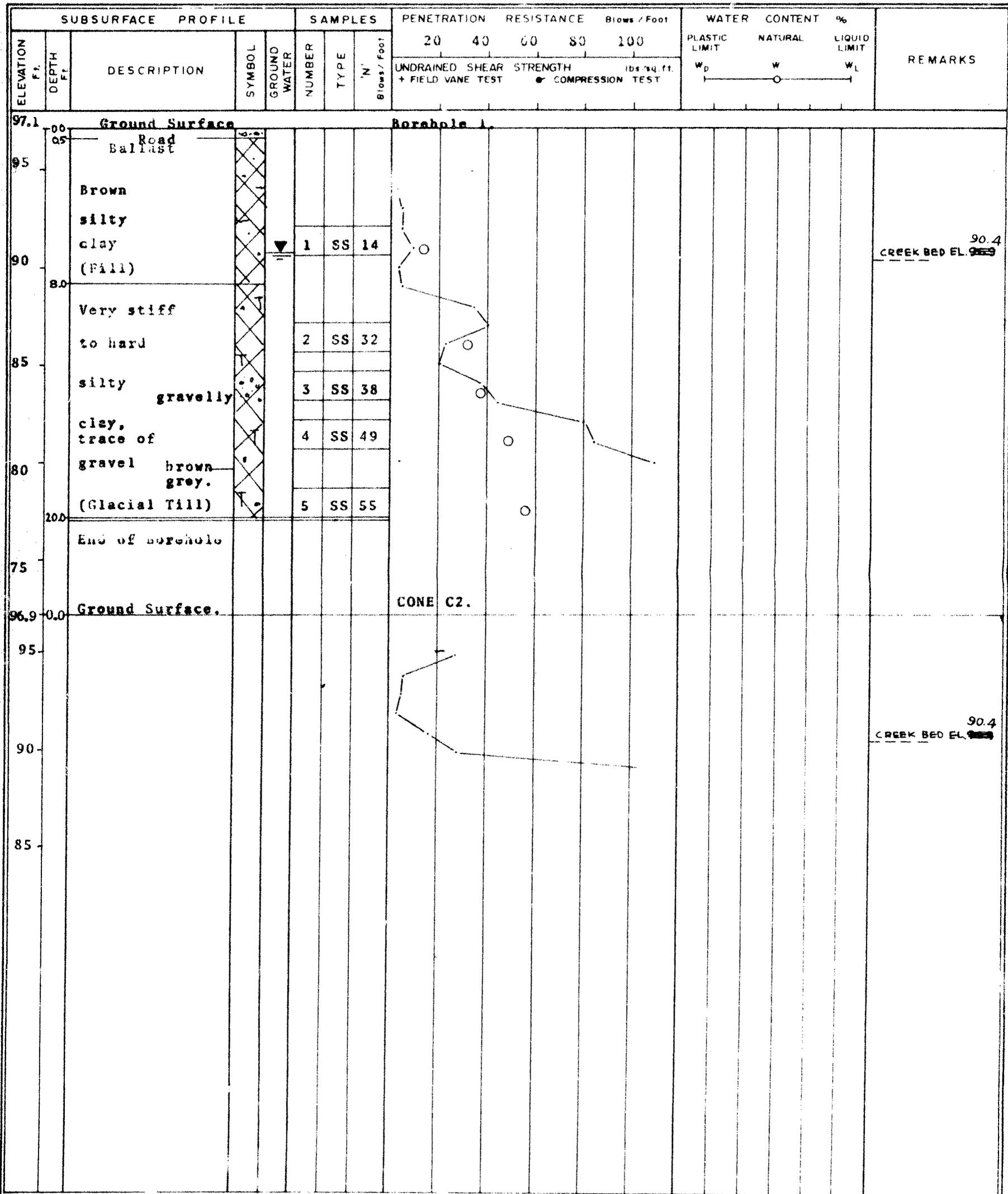
# LOG OF BOREHOLE

Our Reference No. **8-1-L11**

Enclosure No. **2.**

CLIENT: **County of Middlesex.**  
 PROJECT: **Culvert C-77.**  
 LOCATION: **Township of West Missouri.**  
 DATUM ELEVATION: **100 feet (see Enclosure 1.)**

DRILLING DATA  
 Method: **Washboring.**  
 Diameter: **Bx (3-inch)**  
 Date: **February 14, 1968**



VERTICAL SCALE: 1 inch to 5 feet

DOMINION SOIL INVESTIGATION LIMITED

MADE \_\_\_\_\_ CHECKED: \_\_\_\_\_