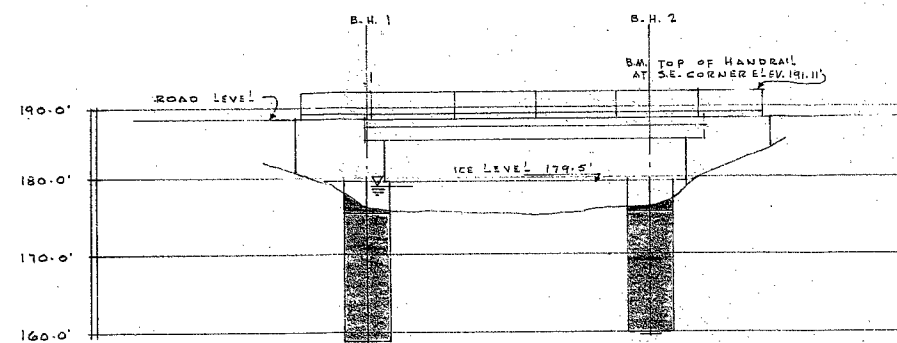
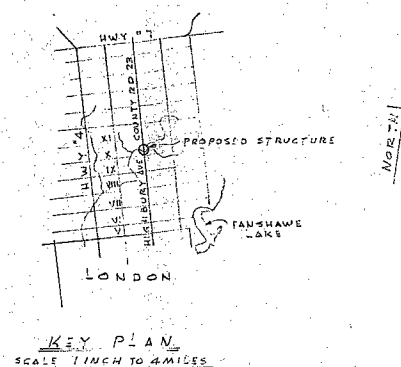


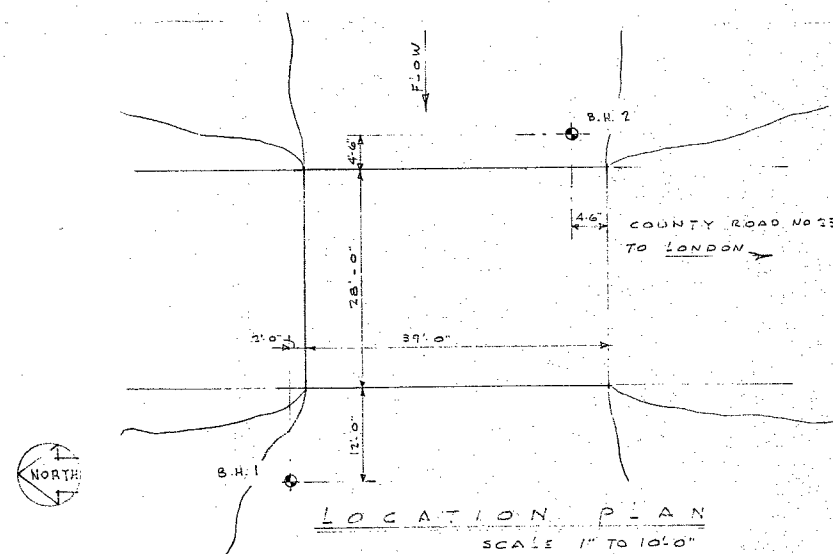
#62-F-296 M
CTY. RD.#23
ROAD BRIDGE
LOTS 8 & 9
CONC. X
LONDON TWP.



SUBSURFACE PROFILE
LOOKING EAST
SCALE 1" TO 10'-0"



KEY PLAN
SCALE 1 INCH TO 4 MILES



LOCATION PLAN
SCALE 1" TO 10'-0"

- LEGEND
- GRAVEL, CLAY AND SOFT SILT
 - HARD CLAYEY SILT TILL

REF. NO.	COUNTY OF MIDDLESEX COUNTY BUILDING
21-17	LONDON, ONTARIO
ENCLOSURE NO. 1	SOIL INVESTIGATION FOR ROAD BRIDGE ON COUNTY RD. #23 (Highbury Ave) LONDON TOWNSHIP, LOTS 849 CON. X
FSB. 1842	
PREP. BY J.T.	DOMINION SOIL INVESTIGATION LIMITED
CHECKED BY J.P.	LONDON 363 QUEENS AVE. ONTARIO

8A1402

19-167

COUNTY OF MIDDLESEX
MIDDLESEX COUNTY BUILDINGS
LONDON ONTARIO

Report on
SOIL INVESTIGATION

for

62-0-342M

ROAD BRIDGE

LOTS 8 & 9, CONCESSION X
COUNTY ROAD NO. 23
TOWNSHIP OF LONDON

by

DOMINION SOIL INVESTIGATION LIMITED
363 Queens Avenue
LONDON ONTARIO

Reference No. 2-1-L7

January, 1962

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II. FIELD WORK	1
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IV. BEARING CAPACITY AND SETTLEMENT.	2
V. SUMMARY.	2
VI. REFERENCES	2

ENCLOSURES

	<u>No.</u>
LOCATION PLAN, SUBSURFACE PROFILE ETC.	1
ENGINEERING DATA SHEETS2 and 3

I. INTRODUCTION

In accordance with verbal authorization from the Middlesex County Engineer's office, a soil investigation has been carried out at a site in the Township of London where it is proposed to replace an existing single-span road bridge with a new structure.

The new bridge is intended to be of rigid frame construction having a clear span of 40 to 44 feet and carried on spread footings at a depth of 4 or 5 feet below the stream bed.

The purpose of the investigation was to reveal the subsurface conditions and to determine the necessary soil properties for the design and construction of foundations.

II. FIELD WORK

Field work was carried out during the period 25th to 27th of January 1962 and consisted of two boreholes at the locations shown on enclosure 1. Dynamic cone penetration tests were made adjacent to each borehole and Standard Penetration tests were made at frequent intervals using a 2" O.D. split spoon. A constant driving energy was employed in the Standard Penetration and dynamic cone tests using a 140 pound hammer dropping 30 inches. The former test provided disturbed samples of the strata and the latter, a continuous record of soil density.

The stream was frozen for some depth and the drilling was done from the ice surface. The high density of the strata made it necessary to advance the holes by wash boring after a depth of 6' 6" had been reached in each hole. Bx casing was used to line the holes.

The results of the field tests are recorded on engineering data sheets comprising enclosures 2 and 3. Elevations have been referred to a benchmark on the southeast handrail of the existing bridge whose elevation was given as 191.11 feet.

III. SUBSURFACE CONDITIONS

A subsurface profile is shown on enclosure 1. Above a depth of 4 feet the holes encountered ice, water and the soft unconsolidated sediments of the creek bed. Below this depth in both holes a continuous stratum of hard clayey silt till was explored until a depth of 20 feet was reached and the holes were terminated. This material is very dense and contains sufficient clay at most elevations to possess cohesion. It contains a few percent of small rounded gravel particles and occasional thin seam (3 or 4 inches) of coarse sand.

IV. BEARING CAPACITY AND SETTLEMENT

The bed of the creek has an elevation of approximately 176 feet, so it is assumed that the footings will be at El. 172 or lower. At this level the density of the till is very high and soil pressures as great as 12,000 pounds per square foot may be used.

Very small settlements are expected in a material such as this where the void ratio is low. Even with a footing 10 feet wide and an average loading of 12,000 p.s.f. the settlement will be of the order of 1 inch. If lower soil pressures are used, the settlement can be estimated with sufficient accuracy by interpolation. The settlement will occur immediately, as the load is applied, and since the density of the soil on both sides of the creek is approximately the same, no differential deflection will occur if the footings are uniformly loaded.

The till possesses sufficient cohesion not to be sensitive to disturbance and no unusual construction problems are foreseen.

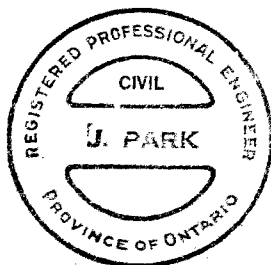
V. SUMMARY

- (1) The strata consist of a shallow layer of unconsolidated gravel and clay on the stream bed, and below this a very dense clayey silt till. The boreholes were terminated in this latter layer at a depth of 20 feet.
- (2) Working pressures up to 12,000 p.s.f. may be used with spread footings at El. 172 or lower.
- (3) Settlements will be immediate and are not expected to exceed 1 inch for the maximum recommended pressure.
- (4) No unusual construction problems are foreseen.

VI. REFERENCES

- (1) Procedures for Testing Soils, ASTM, April 1958, pp. 186 to 198. (Unified Soil Classification System - by A. A. Wagner)
- (2) Terzaghi and Peck: Soil Mechanics in Engineering Practice. John Wiley and Sons, New York 1948.

DOMINION SOIL INVESTIGATION LIMITED



James Park
James Park, M.Sc., P. Eng.

Dominion Soil Investigation Ltd.

Engineering Data Sheet for Borehole: 1

Date: 25/26 JAN 62

Project: ROAD BRIDGE

Location: - LONDON TOWNSHIP

Hole Location: SEE ENCLOSURE #1

Hole Elevation and Datum:

Field Supervisor: J. P. Prep.: J. T.

Driller: G. G. Checked: J. P.

LEGEND

Shear Strength (C)

Unconfined compression

Vane test and sensitivity (S)

Penetration Resistance (P)

2" Split tube

2" Dia. Cone

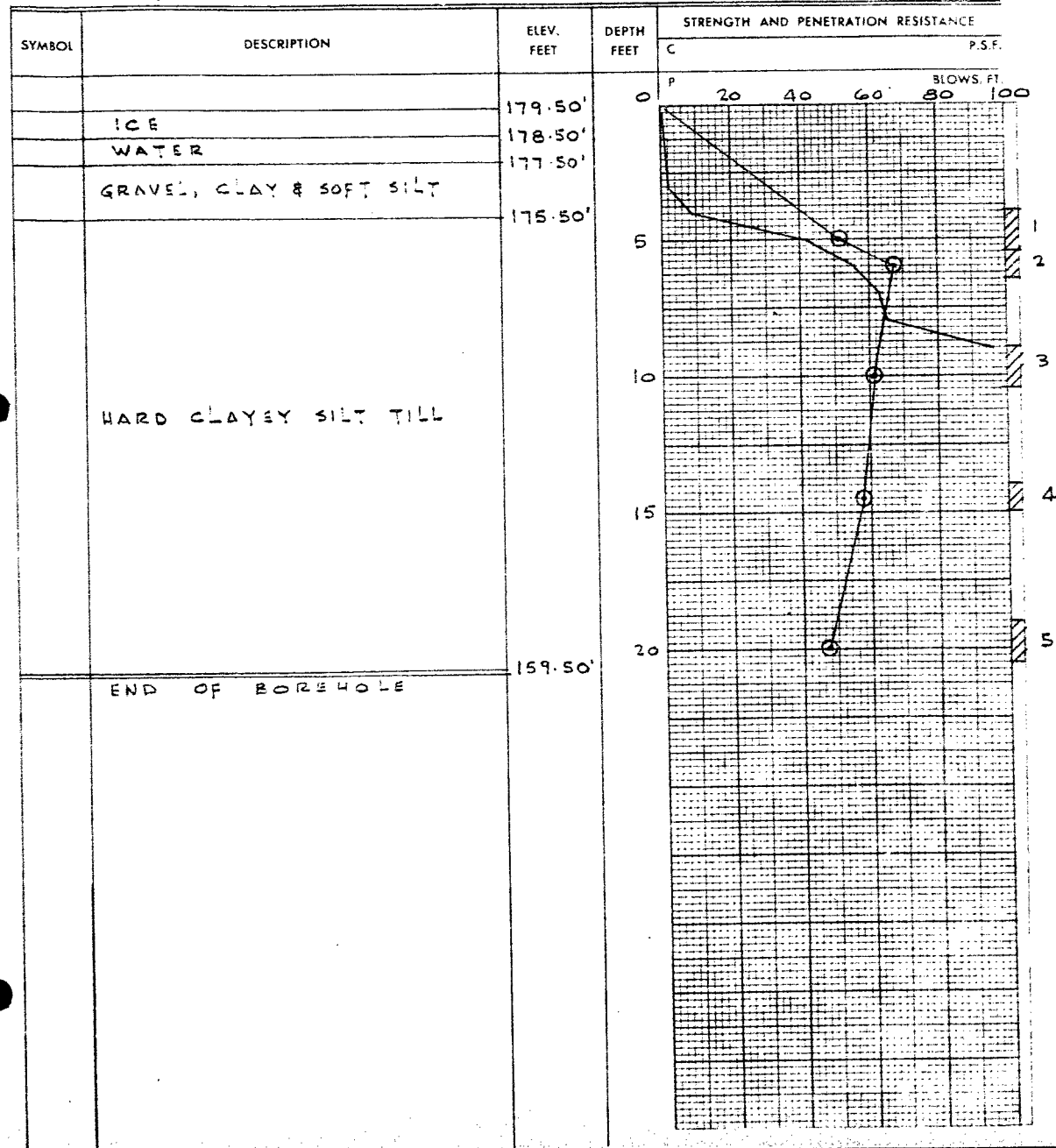
Casing

⊕
+s⊕
⊕
⊕

Sampling Method

2" Dia. split tube

2" Shelby tube



Dominion Soil Investigation Ltd.

Engineering Data Sheet for Borehole: 2

Date: 26 JAN. 62

Project: ROAD BRIDGE

Location: L O N D O N T O W N S H I P

Hole Location: SEE ENCLOSURE 1

Hole Elevation and Datum:

Field Supervisor: J. P. Prep.: J. T.

Driller: G G. Checked: J. P.

LEGEND

Shear Strength (C)

Unconfined compression

Vane test and sensitivity (S)

Penetration Resistance (P)

2" Split tube

2" Dia. Cone

Casing

Sampling Method

2nd Dia. spli. tube

2" Shelby tube

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				C	P.S.F.
		179.50'	0	<p>Blows Ft.</p>	
	ICE	178.84'			
	WATER				
	GRAVEL AND SOFT CLAYEY SILT	176.17' 175.50'			
	HARD CLAYEY SILT TILL				
	END OF BOREHOLE	160.00'	20		