

FOUNDATION REPORT - 59-F-128(1)

CHEDOKE EXPRESSWAY

Mercer Glen & Cootes Paradise Line 3.

District No. 4.

INTRODUCTION:

In order to decide upon the best line for the Chedoke Expressway across Cootes Paradise between Wolfe Island and the Hamilton City Dump in the West end of Hamilton, a series of foundation investigations have been carried out.

The proposed centre line of the Chedoke Expressway shown in the attached Drawing 59-F-125A, and labeled Line 1, was investigated during the winter of 1958-59 by W. A. Trow and Associates. The results of this investigation are presented in a report, "Preliminary Foundation Investigation - Expressway South from Wolfe Island Interchange, Hamilton West", designated Project J 319, and dated February 5, 1959.

In the spring of 1960, additional work was carried out along the shore of Cootes Paradise by Trow and Associates. The results of this additional work are presented in report 59-F-128(2).

Subsequent to the above, E. M. Peto and Associates who were working in the area immediately to the north of Cootes Paradise, were retained to extend and amplify the sections which had been investigated by Trow, and also, to investigate a possible alternative line shown in Drawing 59-F-128A, as Line 3.

In addition, E. M. Peto and Associates investigated sub-surface conditions in Mercer Glen. The results of this work and of the investigation of the alternative line (Line 3), are also presented in this report.

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INTRODUCTION: (cont'd.) ...

As a result of the investigations carried out in this area, it was decided that the best line across this area would be as close to the east shore of Cootes Paradise, as possible. This would put it on the edge of the Iroquois gravel bar on which Hwy. 8 crosses the area, and would minimize the quantity of fill required for the construction. This opinion was presented to the Chedoke Design Committee by Mr. A. Rutka, on March 2, 1960, and the inshore alignment was adopted.

On April 14, 1960, at a meeting of the Technical Committee, a study of the Wolfe Island alignment with a view to avoiding filling into Mercer's Glen, was discussed. Mercer's Glen was known to contain a considerable deposit of organic silt and clay. A realignment was adopted.

SOIL CONDITIONS:

1. Mercer Glen -

Logs of the borings carried out in Mercer Glen, are included under Appendix I of this report. The locations of borings referred to in this area are shown in Drawing 59-F-128B. This drawing also contains three sections showing subsurface conditions in Mercer Glen.

Conditions in Mercer Glen can be summarized as follows:-

The uppermost material is a dark, grey-brown, clayey silt containing organic matter, shells and at the edges, decayed wood. Its thickness is 48 feet in the centre of the Glen and about 30 feet at the edges. This material has water contents ranging between 48.5 and 180%, with an average of about 80%. It is in a very loose state; in many places a dynamic cone penetration test could be made to penetrate ten or more feet by hand pushing. In general, thirty feet of this material would possibly displace before an embankment could be built on it.

cont'd. /3 ...

SOIL CONDITIONS: (cont'd.) ...

1. Mercer Glen: (cont'd.) ...

Below the silt layer, on the West side of Mercer Glen, there is a wedge-shaped deposit of reddish-brown, shaley clay. This varies in thickness from 55 feet near the western shore, to zero between borings 'A' and 'G'. This material has an average water content of 23% and an average shear strength of 1600 lb./sq.ft. based on in-situ vane tests which gave results ranging between 860 and 3920 lb./sq.ft.

On the east side of the Glen, a layer of dark, grey-brown, silty sand with organic matter underlies the organic clayey silt. This material varies in thickness from six to ten feet, reducing to zero near boring 'B'. Its relative density is very loose to loose.

Overlying the bedrock is a layer of fine to medium grain sand. This material is rather erratic in depth, varying between twenty feet at boring 'L', and almost nothing at boring 'N' and 'C'. It is of loose to medium relative density.

The bedrock consists of reddish-brown shale with blue-grey bands.

2. Cootes Paradise - Line Three:

Logs of the borings carried out at Cootes Paradise, Line Three, are included under Appendix II of this report. The locations of borings referred to in this area, are shown in Drawing 59-F-128A, and in Drawing 59-E-128C, there is a section through the borings showing subsurface conditions in the middle of Cootes Paradise.

Conditions at Cootes Paradise, Line Three, can be summarized as follows:-

The uppermost material is a dark grey-brown, organic clayey silt. Its thickness varies from approximately 40 feet at

cont'd. /4 ...

SOIL CONDITIONS: (cont'd.) ...

2. Cootes Paradise - Line Three: (cont'd.) ...

the centre to almost nothing at either end of the line of holes. This material has water contents ranging between 53.6 and 206.0%, with an average of 113%. The material has a relative density in the 'very loose' range, and could be penetrated up to fifteen feet by the dynamic cone without hammering. It is uncertain how much of this material would displace under the load of an embankment, but it is possible that all of it would do so.

Underlying the organic clayey silt layer, there are a series of granular layers. At the north end of this line, these are shallow, stopping at twenty feet below water level datum in boring four. Here, there is first a thin layer of medium dense to dense, yellowish-brown, fine to coarse sand. At the south end of the line, in boring one, the stratification is as follows:- The first granular layer starts at eleven feet below water level datum; this is a pale brown, silty fine sand layer, five feet thick. Below this, there is a 40-foot layer of very dense, yellowish-brown, fine to coarse sand. The bottom granular layer consists of very dense, grey-brown, silty sand. This layer is 27 feet thick. The granular material at both ends of the line is underlain by grey-brown clay to silty clay with sand. This material is stiff and of undetermined depth.

CONCLUSIONS AND RECOMMENDATIONS:

Without an extensive program of testing, it was obvious that Line Three, through the centre of Cootes Paradise, offered no more attractive conditions than the line which had already been investigated inshore. For this reason, it was abandoned without detailed consideration.

cont'd. /5 ...

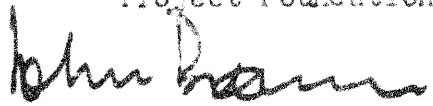
CONCLUSIONS AND RECOMMENDATIONS: (cont'd.) ...

Similarly, the work which was carried out in Mercer Glen showed that to put the line through this area, would introduce serious problems in designing a stable fill section, and that a large quantity of material would be required to displace the organic silt which was completely unconsolidated.

As an alternative line was available to the west of the Glen, this was chosen.

August, 1960.

REPORT PREPARED BY: John Brown,
Project Foundations Engr.



REPORT APPROVED BY: A. Sternac,
Foundations Office Engr.



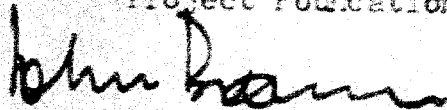
CONCLUSIONS AND RECOMMENDATIONS: (cont'd.) ...

Similarly, the work which was carried out in Mercer Glen showed that to put the line through this area, would introduce serious problems in designing a stable fill section, and that a large quantity of material would be required to displace the organic silt which was completely unconsolidated.

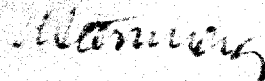
As an alternative line was available to the west of the Glen, this was chosen.

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APPENDIX I.

FOUNDATION REPORT - 59-F-128(1)
CHEDOKS EXPRESSWAY
Mercer Glen & Cootes Paradise, Line 3.

I N D E X

INTRODUCTION

SOIL CONDITIONS

CONCLUSIONS & RECOMMENDATIONS

APPENDIX I. -- Boring Logs -- Boring A

B

C

D

E

F

Probe Holes --

D

E

G

H

I

K

L

M

N

O

P

APPENDIX II. -- Boring Logs -- Boring 1

2

3

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DRAWINGS IN THE ENVELOPE:-

59-F-128A -- Plan showing borings in the Cootes
Paradise & Mercer Glen areas.

59-F-128B -- Profile & Plan -- Mercer Glen.

59-F-128C -- Profile & Plan -- Cootes Paradise, Line 3.

BOEING CO

659 (Norse Glen)

Keywords: *Self-esteem; self-worth; self-concept; self-identity*

Chas. Dept. of Highways of Ont. Canada BE

Call 800-368-6868

Expiry Date: 1.6.57

Client: _____

Copyright ©

Expiry Date Jan
Checked By B.

UNPLE CONDITION

SAMPLE TYPE

● 2010 年 10 月 1 日起实施

ADDITIONAL

姓名: _____ 性别: _____ 年龄: _____
 职业: _____ 住址: _____

W. E. 2000. *THE HISTORY OF THE UNITED STATES*.
New York: Oxford University Press.

Page 10

2.3 3" STANDARD PIPE FLOOR RAISED

WATER LEVEL IN CASINGS

DATE 10/11/2020

5. TWINNED POLYMER SAMPLE

U.S. BETTER THAN PLASTIC LIGHT

LSST 2

2.2. 2007.01.26

CONFIDENTIAL

[illegible]

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

e. m. peto associates ltd.
 SOIL ENGINEERING SERVICE - TORONTO, ONTARIO
 BODENLOH LOG

Job Name Chadoks Addressway Job No. 6009 (Morcor Glen) Borehole No. # 8
 Client D.N.O. Location 4" Pipe Boring Date Jan. 15th, 16th, 18th, 19th & 27th, 1968.
 Client Client Completed By SM Checked By SM

SAMPLE CONDITION		SAMPLE TYPE		ABBRVIATIONS	
<input type="checkbox"/> UNDISTURBED		A.S. AUGER SAMPLE		V.T.	NO TEST VANE MEAS. TEST
<input type="checkbox"/> FAK		G.S. CASING SAMPLE		C.	SOIL MEAS. FREQUENCY LOG/50 FT.
<input type="checkbox"/> DISTURBED		S.S. 7" STANDARD SPLIT TUBE SAMPLE		P.L.	WATER LEVEL IN CASING
<input type="checkbox"/> LOST		S.L. SPLIT BARREL WITH LINERS		G.T.	GROUND WATER TABLE IN SOIL
		S.T. THIN-WALLED SHEL BY TUBE SAMPLE		M.P.L.	WETTER THAN PLASTIC LIMIT
		V.S. VANE SAMPLE		S.T.P.L.	OTHER THAN PLASTIC LIMIT
		S.C. ROCK CORE			

SOIL DESCRIPTION	COLOR	Depth or Elevation	Depth Feet	Layer	Moisture Content	Specific Gravity	Unit Weight	WATER LEVEL	REMARKS
			0'0"				100.0		
Water			1'0"						
Peat	Grey-brown to very dk. brown	V. Soft	1'0"				101.0		See.
			2'0"						
			3'0"						
Clay, shells & organic matter	V. Wk. grey- brown	V. Loose	3'0"				101.0		See.
			4'0"						
Clay, slightly clayey, shells, As above organic matter	V. L. to	Soft	4'0"				101.0		See.
			5'0"						
Clay, silt, shells, organic matter, decayed wood	Grey-brown	Soft	5'0"				101.0		See.
			6'0"						
As above	As above	Soft	6'0"				101.0		See.
			7'0"						
Clay, silt, shells, decayed wood, fine sand	As above	V. Soft	7'0"				101.0		See sand - resistance contact 32.0
			8'0"						
			9'0"						
Clay, silt, shells, decayed wood	As above	Soft	9'0"				101.0		See.
			10'0"						
			11'0"						
			12'0"						
			13'0"						
			14'0"						
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			98'0"						
			99'0"						
			100'0"						

e. m. peto associates ltd.
 SOIL ENGINEERING SERVICES - TORONTO, ONTARIO
 BORING LOG

Job Name Chedoke Expressway	Job No. 6023	Borehole No. # 10E
Client Dept. of Highways of Ontario	Casing BX	Boring Date 11/10 - 13/11/1980
Owner Not yet determined	Completed By I. G. B.	Checked By C. F. F.

SAMPLE CONDITION <input checked="" type="checkbox"/> UNDISTURBED <input type="checkbox"/> FAIR <input checked="" type="checkbox"/> DISTURBED <input type="checkbox"/> LOSE	SAMPLE TYPE A.S. AUGER SAMPLE C.S. CONE SAMPLE S.S. 2" STANDARD SPLIT TUBE SAMPLE S.L. SPLIT BARREL WITH LINES S.T. THIN-WALLED CHISEL-TYPE SAMPLE S.A. RAIN SAMPLE S.C. ROCK CORE	ABBREVIATIONS V.T. IN BTU VANE SHEAR TEST C. SOIL SHEAR STRENGTH LBS/IN. ² W.L. WATER LEVEL IN CASING G.W.T. GROUND WATER TABLE IN SOIL S.P.L. BETTER THAN PLASTIC LIMIT O.T.P.L. OTHER THAN PLASTIC LIMIT
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SOIL DESCRIPTION	COLOR	Depth - or Elevation	Depth Extending	Sample Type	Moisture % (w)	WATER LEVELS & REMARKS	Depth
0.0'							
0.0' - 1.0' Mixed brown silty clay	Mixed brown		1.0'	C.S.		Moist	1.0'
1.0' - 2.0' Silty clay	Sienna brown		2.0'	C.S.		J. Moist	2.0'
2.0' - 3.0' Fine sand, pebbles & stones	Brown	Compact	3.0'	S.S.	21	J. Moist	3.0'
3.0' - 4.0' Fine sand, pockets of pale silty clay	Pale brown	Compact	4.0'	S.S.	18	Damp	4.0'
4.0' - 5.0' Fine sand	As above	Loose to compact	5.0'	S.S.	12	J. Moist	5.0'
5.0' - 6.0' Silty silt, pockets of silty clay	Yell-brown	Dense	6.0'	S.S.	46	Moist	6.0'
6.0' - 7.0' Silty silt, 1/2" layer of silty clay	As above	Dense to V. dense	7.0'	S.S.	30	Moist	7.0'
7.0' - 8.0' Fine sand, pebbles and stones	Pale brown	V. dense	8.0'	S.S.	75	Damp	8.0'
8.0' - 9.0' As above	As above	Compact to dense	9.0'	S.S.	20	Damp	9.0'
9.0' - 10.0' Silty clay	Pale brown	As above	10.0'			At plastic limit	10.0'
10.0' - 11.0' Silty clay	As above		11.0'			Damp	11.0'
11.0' - 12.0' Fine sand, some stones	Brown grey	Dense to V. dense	12.0'	S.S.	32	Moist	12.0'
12.0' - 13.0' As above	As above	V. dense	13.0'	S.S.	73	J. Moist	13.0'
13.0' - 14.0' V. silty fine sand	Yell-brown	Dense	14.0'	S.S.	36	Wet	14.0'
14.0' - 15.0' Silty fine sand, pockets of sandy silt	As above	Dense	15.0'	S.S.	38	Wet	15.0'
15.0' - 16.0' Silty fine sand	As above	Dense	16.0'	S.S.	47		16.0'
16.0' - 17.0' Silty fine sand	As above	Dense	17.0'	S.S.	53		17.0'
17.0' - 18.0' Silty fine sand	Brown	Ext. dense	18.0'	S.S.	101	Moist	18.0'
18.0' - 19.0' Silty fine sand	Pale brown	Ext. dense	19.0'	S.S.	57	Moist	19.0'
19.0' - 20.0' Silty fine sand	As above	Ext. dense	20.0'	S.S.	81	Moist	20.0'
20.0' - 21.0' Silty fine sand	Pale brown	V. dense	21.0'	S.S.	58		21.0'
21.0' - 22.0' Silty fine sand	Pale brown	Dense	22.0'	S.S.	43	Saturated	22.0'
22.0' - 23.0' Silty sand	Grey-brown	Ext. dense	23.0'	S.S.	72		23.0'
23.0' - 24.0' Silty sand	Grey-brown	Ext. dense	24.0'	S.S.	98	Wet	24.0'
24.0' - 25.0' Silty sand	Grey-brown	Ext. dense	25.0'	S.S.	72		25.0'
25.0' - 26.0' Silty sand	Grey-brown	Ext. dense	26.0'	S.S.	72		26.0'
26.0' - 27.0' Silty sand	Grey-brown	Ext. dense	27.0'	S.S.	72		27.0'
27.0' - 28.0' Silty sand	Grey-brown	Ext. dense	28.0'	S.S.	72		28.0'
28.0' - 29.0' Silty sand	Grey-brown	Ext. dense	29.0'	S.S.	72		29.0'
29.0' - 30.0' Silty sand	Grey-brown	Ext. dense	30.0'	S.S.	72		30.0'
30.0' - 31.0' Silty sand	Grey-brown	Ext. dense	31.0'	S.S.	72		31.0'
31.0' - 32.0' Silty sand	Grey-brown	Ext. dense	32.0'	S.S.	72		32.0'
32.0' - 33.0' Silty sand	Grey-brown	Ext. dense	33.0'	S.S.	72		33.0'
33.0' - 34.0' Silty sand	Grey-brown	Ext. dense	34.0'	S.S.	72		34.0'
34.0' - 35.0' Silty sand	Grey-brown	Ext. dense	35.0'	S.S.	72		35.0'
35.0' - 36.0' Silty sand	Grey-brown	Ext. dense	36.0'	S.S.	72		36.0'
36.0' - 37.0' Silty sand	Grey-brown	Ext. dense	37.0'	S.S.	72		37.0'
37.0' - 38.0' Silty sand	Grey-brown	Ext. dense	38.0'	S.S.	72		38.0'
38.0' - 39.0' Silty sand	Grey-brown	Ext. dense	39.0'	S.S.	72		39.0'
39.0' - 40.0' Silty sand	Grey-brown	Ext. dense	40.0'	S.S.	72		40.0'
40.0' - 41.0' Silty sand	Grey-brown	Ext. dense	41.0'	S.S.	72		41.0'
41.0' - 42.0' Silty sand	Grey-brown	Ext. dense	42.0'	S.S.	72		42.0'
42.0' - 43.0' Silty sand	Grey-brown	Ext. dense	43.0'	S.S.	72		43.0'
43.0' - 44.0' Silty sand	Grey-brown	Ext. dense	44.0'	S.S.	72		44.0'
44.0' - 45.0' Silty sand	Grey-brown	Ext. dense	45.0'	S.S.	72		45.0'
45.0' - 46.0' Silty sand	Grey-brown	Ext. dense	46.0'	S.S.	72		46.0'
46.0' - 47.0' Silty sand	Grey-brown	Ext. dense	47.0'	S.S.	72		47.0'
47.0' - 48.0' Silty sand	Grey-brown	Ext. dense	48.0'	S.S.	72		48.0'
48.0' - 49.0' Silty sand	Grey-brown	Ext. dense	49.0'	S.S.	72		49.0'
49.0' - 50.0' Silty sand	Grey-brown	Ext. dense	50.0'	S.S.	72		50.0'
50.0' - 51.0' Silty sand	Grey-brown	Ext. dense	51.0'	S.S.	72		51.0'
51.0' - 52.0' Silty sand	Grey-brown	Ext. dense	52.0'	S.S.	72		52.0'
52.0' - 53.0' Silty sand	Grey-brown	Ext. dense	53.0'	S.S.	72		53.0'
53.0' - 54.0' Silty sand	Grey-brown	Ext. dense	54.0'	S.S.	72		54.0'
54.0' - 55.0' Silty sand	Grey-brown	Ext. dense	55.0'	S.S.	72		55.0'
55.0' - 56.0' Silty sand	Grey-brown	Ext. dense	56.0'	S.S.	72		56.0'
56.0' - 57.0' Silty sand	Grey-brown	Ext. dense	57.0'	S.S.	72		57.0'
57.0' - 58.0' Silty sand	Grey-brown	Ext. dense	58.0'	S.S.	72		58.0'
58.0' - 59.0' Silty sand	Grey-brown	Ext. dense	59.0'	S.S.	72		59.0'
59.0' - 60.0' Silty sand	Grey-brown	Ext. dense	60.0'	S.S.	72		60.0'
60.0' - 61.0' Silty sand	Grey-brown	Ext. dense	61.0'	S.S.	72		61.0'
61.0' - 62.0' Silty sand	Grey-brown	Ext. dense	62.0'	S.S.	72		62.0'
62.0' - 63.0' Silty sand	Grey-brown	Ext. dense	63.0'	S.S.	72		63.0'
63.0' - 64.0' Silty sand	Grey-brown	Ext. dense	64.0'	S.S.	72		64.0'
64.0' - 65.0' Silty sand	Grey-brown	Ext. dense	65.0'	S.S.	72		65.0'
65.0' - 66.0' Silty sand	Grey-brown	Ext. dense	66.0'	S.S.	72		66.0'
66.0' - 67.0' Silty sand	Grey-brown	Ext. dense	67.0'	S.S.	72		67.0'
67.0' - 68.0' Silty sand	Grey-brown	Ext. dense	68.0'	S.S.	72		68.0'
68.0' - 69.0' Silty sand	Grey-brown	Ext. dense	69.0'	S.S.	72		69.0'
69.0' - 70.0' Silty sand	Grey-brown	Ext. dense	70.0'	S.S.	72		70.0'
70.0' - 71.0' Silty sand	Grey-brown	Ext. dense	71.0'	S.S.	72		71.0'
71.0' - 72.0' Silty sand	Grey-brown	Ext. dense	72.0'	S.S.	72		72.0'
72.0' - 73.0' Silty sand	Grey-brown	Ext. dense	73.0'	S.S.	72		73.0'
73.0' - 74.0' Silty sand	Grey-brown	Ext. dense	74.0'	S.S.	72		74.0'
74.0' - 75.0' Silty sand	Grey-brown	Ext. dense	75.0'	S.S.	72		75.0'
75.0' - 76.0' Silty sand	Grey-brown	Ext. dense	76.0'	S.S.	72		76.0'
76.0' - 77.0' Silty sand	Grey-brown	Ext. dense	77.0'	S.S.	72		77.0'
77.0' - 78.0' Silty sand	Grey-brown	Ext. dense	78.0'	S.S.	72		78.0'
78.0' - 79.0' Silty sand	Grey-brown	Ext. dense	79.0'	S.S.	72		79.0'
79.0' - 80.0' Silty sand	Grey-brown	Ext. dense	80.0'	S.S.	72		80.0'
80.0' - 81.0' Silty sand	Grey-brown	Ext. dense	81.0'	S.S.	72		81.0'
81.0' - 82.0' Silty sand	Grey-brown	Ext. dense	82.0'	S.S.	72		82.0'
82.0' - 83.0' Silty sand	Grey-brown	Ext. dense	83.0'	S.S.	72		83.0'
83.0' - 84.0' Silty sand	Grey-brown	Ext. dense	84.0'	S.S.	72		84.0'
84.0' - 85.0' Silty sand	Grey-brown	Ext. dense	85.0'	S.S.	72		85.0'
85.0' - 86.0' Silty sand	Grey-brown	Ext. dense	86.0'	S.S.	72		86.0'
86.0' - 87.0' Silty sand	Grey-brown	Ext. dense	87.0'	S.S.	72		87.0'
87.0' - 88.0' Silty sand	Grey-brown	Ext. dense	88.0'	S.S.	72		88.0'
88.0' - 89.0' Silty sand	Grey-brown	Ext. dense	89.0'	S.S.	72		89.0'
89.0' - 90.0' Silty sand	Grey-brown	Ext. dense	90.0'	S.S.	72		90.0'
90.0' - 91.0' Silty sand	Grey-brown	Ext. dense	91.0'	S.S.	72		91.0'
91.0' - 92.0' Silty sand	Grey-brown	Ext. dense	92.0'	S.S.	72		92.0'
92.0' - 93.0' Silty sand	Grey-brown	Ext. dense	93.0'	S.S.	72		93.0'
93.0' - 94.0' Silty sand	Grey-brown	Ext. dense	94.0'	S.S.	72		94.0'
94.0' - 95.0' Silty sand	Grey-brown	Ext. dense	95.0'	S.S.	72		95.0'
95.0' - 96.0' Silty sand	Grey-brown	Ext. dense	96.0'	S.S.	72		96.0'
96.0' - 97.0' Silty sand	Grey-brown	Ext. dense	97.0'	S.S.	72		97.0'
97.0' - 98.0' Silty sand	Grey-brown	Ext. dense	98.0'	S.S.	72		98.0'
98.0' - 99.0' Silty sand	Grey-brown	Ext. dense	99.0'	S.S.	72		99.0'
99.0' - 100.0' Silty sand	Grey-brown	Ext. dense	100.0'	S.S.	72		100.0'

DEFECTS IN NEGATIVE DUE TO
 CONDITION OF ORIGINAL DOCUMENT

Job No. Chetopa Expressway Job No. 5088

Client Dept. of Highways of Ontario City BR

Drawn Not yet determined Compiled By A.L.

Boring No. 12A

Boring Date Feb. 11-12th 1960

Checked By C.F.A.

SAMPLE CONDITION

☐ UNDISTURBED

☐ PAID

☐ DISTURBED

☐ LOST

SAMPLE TYPE

A.S. JIGGER SAMPLE

C.S. CORED SAMPLE

S.S. 3" STANDARD SPLIT TUBE SAMPLE

S.L. SPLIT BARREL WITH LINERS

S.T. THREADED SHELBY TUBE SAMPLE

S.S. BAGG SAMPLE

S.C. ROUGE CORE

OBSERVATIONS

IN SITU VANDER TEST

20% BEAR STRENGTH 15500 lb.

W.L. WATER LEVEL IN CASING

W.T. GROUPED WATER TABLE IN SOIL

S.T.P.A. BETTER THAN PLASTIC LIMIT

D.V.P.A. OTHER THAN PLASTIC LIMIT

Soil Description	Color	Moisture in Condition	Depth (ft.)	Length (ft.)	Sample Type	Wet Weight (lb.)	Wet Density (pcf)	WATER LEVELS & MOISTURE	Notes
Surface			0.0"						
Gravelly silty clay	Br. grey-brown to black	V. Soft	1.0"	1	S.S.	1.20			Casing pushed by hand
Gravelly silty clay	As above	V. soft	5.0"	2	S.S.	1.20			
Gravelly silty clay	As above	V. soft	10.0"	3	S.S.	1.20			
Gravelly silty clay	Br. grey-brown	V. soft	15.0"	4	S.S.	1.20			
Gravelly silty clay	As above	V. soft	20.0"	5	S.S.	1.20			
Gravelly silty clay	As above	V. soft	25.0"	6	S.S.	1.20			
Gravelly silty clay	As above	V. soft	30.0"	7	S.S.	1.20			
Gravelly silty clay	As above	V. soft	35.0"	8	S.S.	1.20			
Gravelly silty clay	As above	V. soft	40.0"	9	S.S.	1.20			
Gravelly silty clay	As above	V. soft	45.0"	10	S.S.	1.20			
Gravelly silty clay	As above	V. soft	50.0"	11	S.S.	1.20			
Gravelly silty clay	As above	V. soft	55.0"	12	S.S.	1.20			
Gravelly silty clay	As above	V. soft	60.0"	13	S.S.	1.20			
Gravelly silty clay	As above	V. soft	65.0"	14	S.S.	1.20			
Gravelly silty clay	As above	V. soft	70.0"	15	S.S.	1.20			
Gravelly silty clay	As above	V. soft	75.0"	16	S.S.	1.20			
Gravelly silty clay	As above	V. soft	80.0"	17	S.S.	1.20			
Gravelly silty clay	As above	V. soft	85.0"	18	S.S.	1.20			
Gravelly silty clay	As above	V. soft	90.0"	19	S.S.	1.20			
Gravelly silty clay	As above	V. soft	95.0"	20	S.S.	1.20			
Gravelly silty clay	As above	V. soft	100.0"	21	S.S.	1.20			
Gravelly silty clay	As above	V. soft	105.0"	22	S.S.	1.20			
Gravelly silty clay	As above	V. soft	110.0"	23	S.S.	1.20			
Gravelly silty clay	As above	V. soft	115.0"	24	S.S.	1.20			
Gravelly silty clay	As above	V. soft	120.0"	25	S.S.	1.20			
Gravelly silty clay	As above	V. soft	125.0"	26	S.S.	1.20			
Gravelly silty clay	As above	V. soft	130.0"	27	S.S.	1.20			
Gravelly silty clay	As above	V. soft	135.0"	28	S.S.	1.20			
Gravelly silty clay	As above	V. soft	140.0"	29	S.S.	1.20			
Gravelly silty clay	As above	V. soft	145.0"	30	S.S.	1.20			
Gravelly silty clay	As above	V. soft	150.0"	31	S.S.	1.20			
Gravelly silty clay	As above	V. soft	155.0"	32	S.S.	1.20			
Gravelly silty clay	As above	V. soft	160.0"	33	S.S.	1.20			
Gravelly silty clay	As above	V. soft	165.0"	34	S.S.	1.20			
Gravelly silty clay	As above	V. soft	170.0"	35	S.S.	1.20			
Gravelly silty clay	As above	V. soft	175.0"	36	S.S.	1.20			
Gravelly silty clay	As above	V. soft	180.0"	37	S.S.	1.20			
Gravelly silty clay	As above	V. soft	185.0"	38	S.S.	1.20			
Gravelly silty clay	As above	V. soft	190.0"	39	S.S.	1.20			

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

e. m. peto associates ltd.
 SOIL ENGINEERING SERVICE - TORONTO, ONTARIO
 BOREHOLE LOG

Job Name: Chesapeake Expressway Job No.: 9021 Borehole No.: 12B
 Client: Dept. of Highways of Ontario Casing: 4" and 5" Boring Date: Feb. 8-10th 1990
 Notes: To be determined interface is Completed By: L.O.B. Checked By: C.F.F.

SAMPLE CONDITION
☐ UNDISTURBED
☐ FAIR
☒ DISTURBED
☐ LOST

SAMPLE TYPE
 A.S. AUGER SAMPLE
 C.S. CLASS SAMPLE
 S.S. 3" STANDARD SPLIT TUBE SAMPLE
 S.L. SPLIT BARREL WITH LOGS
 S.T. WIDE-MOUTHED SHELBY TUBE SAMPLE
 V.S. VIBRO SAMPLE
 S.C. ROCK CORE

ABBREVIATIONS
 IN SITU VANE SHEAR TEST
 C. SOIL SHEAR STRENGTH LAB. TEST
 W.L. WATER LEVEL IN CASING
 W.T. GROUND WATER TABLE IN SOIL
 W.T.P.L. BETTER THAN PLASTIC LIMIT
 S.T.P.L. OTHER THAN PLASTIC LIMIT

SOIL DESCRIPTION	DEPTH	MOISTURE	WATER LEVEL	WATER LEVEL - REMARKS
Asphalt and fill	0'-0"			130.0
Clay	0'-0"			130.2
Silty sand	0'-0"			130.2
Silty fine sand	0'-0"			130.2
Silty fine sand	0'-0"			130.2
Silty fine sand	0'-0"			130.2
Silty fine sand, small stones	0'-0"			130.2
Med. and fine sand	0'-0"			130.2
Silty sand, pieces of wood	0'-0"			130.2
Med. and fine sand	0'-0"			130.2
Silty med. and fine sand	0'-0"			130.2
Med. and fine sand	0'-0"			130.2
Silty med. sand	0'-0"			130.2
Med. Sand, lumps of clayey silt	0'-0"			130.2
Med. and med. sand	0'-0"			130.2
Silty med. sand	0'-0"			130.2
Silty sand, layers of sandy silt	0'-0"			130.2
Silty sand	0'-0"			130.2
Silty sand, seams of fine gravel	0'-0"			130.2
Extr. dense	0'-0"			130.2
Fine sandy silt, some clay	0'-0"			130.2
Silty fine and med. sand	0'-0"			130.2
Silty fine sand, silt clay laminae	0'-0"			130.2

DEFECTS IN NEGATIVE DUE TO
 CONDITION OF ORIGINAL DOCUMENT

e. m. peto associates ltd.
SOIL ENGINEERING SERVICE - TORONTO, ONTARIO

BOREHOLE LOG

Job Name: Chedoke Expressway Job No.: 8022 Borehole No.: 12C
Client: Dept. of Highways of Ontario Casing: BX Boring Date: Feb. 8-10, 1960
Order: To be determined (surface is level with pavement, Longwood Rd) Compiled By: I. G. R. Checked By: C. F. E.

SOIL CONDITION
☐ UNDISTURBED
☒ FAIR
☐ DISTURBED
☐ LOOSE

SAMPLE TYPE
A.S. AUGER SAMPLE
C.S. CASING SAMPLE
S.S. 3" STANDARD SPLIT TUBE SAMPLE
S.L. SPLIT BARREL WITH LINER
S.T. THIN-WALLED SHELDY TUBE SAMPLE
W.S. WASH SAMPLE
R.C. ROCK CORE

ANALYSIS/TESTS
W.T. IN SITU WASH & SAN TEST
C. SOIL SHEAR STRENGTH LBS./SQ. FT.
P.L. WATER LEVEL IN CASING
W.T. GROUND WATER TABLE IN SOIL
W.T.P.L. BETTER THAN PLASTIC LIMIT
O.T.P.L. DRIER THAN PLASTIC LIMIT

SOIL DESCRIPTION	COLOR	Consistency	Depth (ft.)	Sample No.	Sample Type	Wt. of Sample (lb.)	Moisture Content (%)	WATER LEVEL & REMARKS	Depth (ft.)
			0'0"						10'0"
Sand	Grey-brown			1	S.S.	14.3	Proctor		30
Sand	Grey-brown		2'0"	2	S.S.	7.0			15
Medium sand	Li. brown	Compact			S.S.	18	6.2	Pamp	25
As above	Li. brown	Dense		4	S.S.	42	7.5	Pamp	35
Fine and medium sand	Li. brown	Dense to V. dense	4'0"	5	S.S.	51	17.9	Moist	45
Silty fine sand	Brown	V. dense	10'0"	6	S.S.	55	18.3	Saturated	55
Silty, med. fine sand	Brown	Dense to V. dense		7	S.S.	43	14.7	Moist	65
Med. & coarse sand, lumps of fine & med. sand	Brown	V. dense		8	S.S.	53	19.7	Moist	75
Med. & coarse sand, lumps of fine & med. sand, small stones	Brown	V. dense		9	S.S.	53	19.7	Moist	85
			20'0"						100
Med. fine sand	Brown	Ext. dense		9	S.S.	81	19.1	Saturated	110
Medium sand	Brown	Ext. dense		10	S.S.	112	17.3	Wet	120
								Penetration test stopped at 25 ft.	130
Coarse and med. sand, lumps of fine & med. sand	Brown	Dense to V. dense	30'0"	11	S.S.	51	18.6	Moist	140
Medium sand	Grey-brown	Ext. dense		12	S.S.	110	16.0	Wet	150
As above	Grey-brown	V. dense	40'0"	13	S.S.	60		S.S. sample lost, recovered as W.S.	160
Med. & coarse sand, lumps of fine & med. sand	Brown	Ext. dense		14	S.S.	105	12.1	Wet	170
Silty fine sand	Olive brown	Ext. dense		15	S.S.	105	10.6	Wet	180
			50'0"						190
Sand	Brown	Ext. dense		16	S.S.	150		S.S. sample lost, recovered as W.S.	200
Silty fine sand	Brown	Ext. dense		17	S.S.	13.1		Wet	210
Sand	Brown	Ext. dense		18	S.S.	13.1		Wet	220
			60'0"						230
Silty fine sand	Brown	Ext. dense		17	S.S.	145		Wet	240
			70'0"						250
Silty fine sand, gr. s.	Grey-brown	V. dense		18	S.S.	60		Saturated	260
			80'0"						270
Silty fine & med. sand	Grey-brown	Ext. dense		19	S.S.	130	15.4	Saturated	280
			90'0"						290
								Borehole terminated at 91'0"	300

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

e. m. peto associates ltd.
SOIL ENGINEERING SERVICE - TORONTO, ONTARIO
APPROVAL LOG

Job Name: Chedoke Expressway Job No. 5322 Bar Code No. 113
Client: Dept. of Highways of Ontario Casing: BT Starting Date: Feb. 11 & 12th 1960
Depth: Not yet determined Completed By: E. L. Checked By: E. F. F.

SAMPLE CONDITION
☒ UNDISTURBED
☐ FAS
☐ DISTURBED
☐ LOOSE

SAMPLE TYPE
A.S. AUGER SAMPLE
C.S. CHAIN SAMPLE
S.S. 2" STANDARD SPLIT TUBE SAMPLE
S.L. SPLIT BARREL WITH LINERS
T.V. TRENCHER TUBE SAMPLE
S.S. SHOT SAMPLE
S.C. ROCK CORE

REMARKS
IN SITU MOISTURE TEST:
C. SOIL MOISTURE TEST (SPT)
W.L. WATER LEVEL IN CASING
W.T. WETTED WATER TABLE IN CAS.
D.T.P.L. DEEPER THAN PLASTIC LIMIT

SOIL DESCRIPTION	COLOR	Consistency	Depth (ft)	Depth (m)	Sample No.	Sample Type	Wet Weight (lb)	Wet Weight (kg)	Moisture (%)	Notes
			0'0"							Dynamic cone
Steady loam, organic matter.	Brown to Black	-es-e	1'0"	0.3	1	C.S.				2. Moist
Steady sand	Yk. yell. - brown				2	C.S.				3. Moist
Steady sand, some stones	As above	Loose			3	S.S.	8	10.1		4. Moist
			5'0"							
Loose to med. sand, pebbles	Brown	Loose to med.			4	S.S.	2	5.8		Moist
Steady sand, some pebbles and stones	As above	Loose to med.			5	S.S.	11	6.0		Moist
			10'0"							
As above	As above	V. loose			6	S.S.	6	6'0"		Moist
Very fine sand	Brownish-yellow	V. loose			7	S.S.	5	2.2		Damp
			15'0"							
Steady sand, some stones	Brown	V. loose			8	S.S.	5	8.2		Damp
			18'0"							Stiffened at 18'0"
			20'0"							
Steady silt, pockets of silty clay	Yell-brown	Dense			9	S.S.	46	18.5		Silt between 20'0" & 25'0"
			25'0"							
V. silty fine sand	Brown	Dense to V. dense			10	S.S.	50	16.8		Wet
			28'0"							Sand back up into the casing V. wet
Steady silt, some clay content	Yell-brown				11	S.S.				
			30'0"							
Fine to medium sand	Grey-brown	Loose to med.			12	S.S.	11	23.4		V. wet
			35'0"							
Fine sand	As above	Dense			13	S.S.	41	12.2		Seam of silt at 35'0" and the casing closed - test at 35'0"
			40'0"							
As above	As above	V. dense			14	S.S.	73	17.6		V. wet
			45'0"							
As above	As above	Extremely dense			15	S.S.	104			S.S. sample lost - Material recovered at 45'0" sand backed up into the casing
			50'0"							
Steady silt (interbedded sandy silt and fine to medium sand in this zone)	Pale brown	Dense			16	S.S.	42	10.2		Wet
			55'0"							
Fine to medium sand	Grey-brown	Ext. dense			17	S.S.	118			2. Moist
			60'0"							Starting sample ahead of casing
Coarse sand	DK. grey									
As above	As above	V. dense			18	S.S.	55			Wet
Steady silt and silty fine sand										
			65'0"							
Fine sand, increasing content of medium sand	Brown	Ext. dense			19	S.S.	87			Moist
			70'0"							
Fine to medium sand	As above	V. dense			20	S.S.	78			
			75'0"							Test logs terminated at 75'0"

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

FORMERLY LON

Barcode No. #14
 Boring Date February 16 to 20, 1960
 Checked By

ASSASSINATIONS

V.T. IN SITU VANE SHEAR TEST
C SOIL SHEAR STRENGTH LBS/SQ.FT
W.L WATER LEVEL IN CASING
S.T. GROUNDWATER TABLE IN SOIL
W.T.P.L BETTER THAN PLASTIC LIMIT
S.T.P.L WORSE THAN PLASTIC LIMIT

[illegible]

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

ZANESVILLE, N. C.

Barabara M. 25

Expiry Date February 16-18, 1960

Checked by CFS

Abstract

V.T. IN SITU VIBRE PRESSURE TEST
 C. SOIL BEARING STRENGTH: 12,000 PSF
 U.L. WATER LEVEL IN COORD
 U.T. GROUND WATER TABLE IN SOIL
 U.T.P.L. BETTER THAN PLASTIC LANT
 U.T.P.L. GREATER THAN PLASTIC LANT

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

e. m. peto associates ltd.
 SOIL ENGINEERING SERVICE - TORONTO, ONTARIO
 CONSULTING LOG

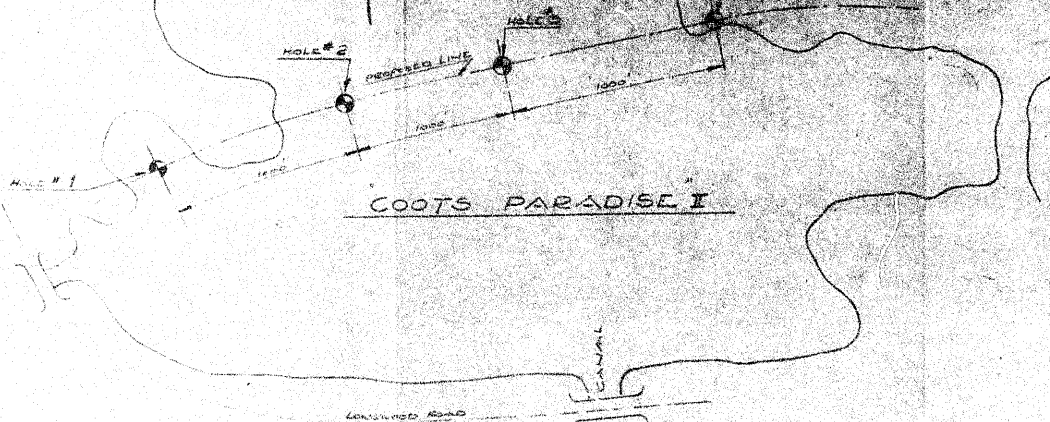
Job Name: **Chedoke Expressway** Job No.: **6022** Borehole No.: **16**
 Client: **Department of Highways of Ontario** Design: **4" Pipe & Box** Spring Date: **February 23-27, 1960.**
 Notes: **See log for description of borehole in** Coded By: **I. G. B.** Checked By: **C.F.F.**

SAMPLE CONDITION **SAMPLE TYPE** **ABBRVIATIONS**
 UNDISTURBED A.S. AUGER SAMPLE C. IN SITU VANE SHEAR TEST
 FINE C.S. CASINO SAMPLE C. SOX. SHEAR STRENGTH LOG/SOFT.
 TYPICAL S.S. STANDARD SPLIT TUBE SAMPLE S.L. SPLIT TUBE, IN CHAINS
 TYPICAL S.T. THERMOLOG SPLIT TUBE SAMPLE S.T. GROUND WATER TABLE IN SOIL
 S.S. SPLIT TUBE, IN CHAINS S.T.P.L. BETTER THAN PLASTIC LIMIT
 S.S. SPLIT TUBE, IN CHAINS S.T.P.L. BETTER THAN PLASTIC LIMIT
 S.S. SPLIT TUBE, IN CHAINS S.T.P.L. BETTER THAN PLASTIC LIMIT

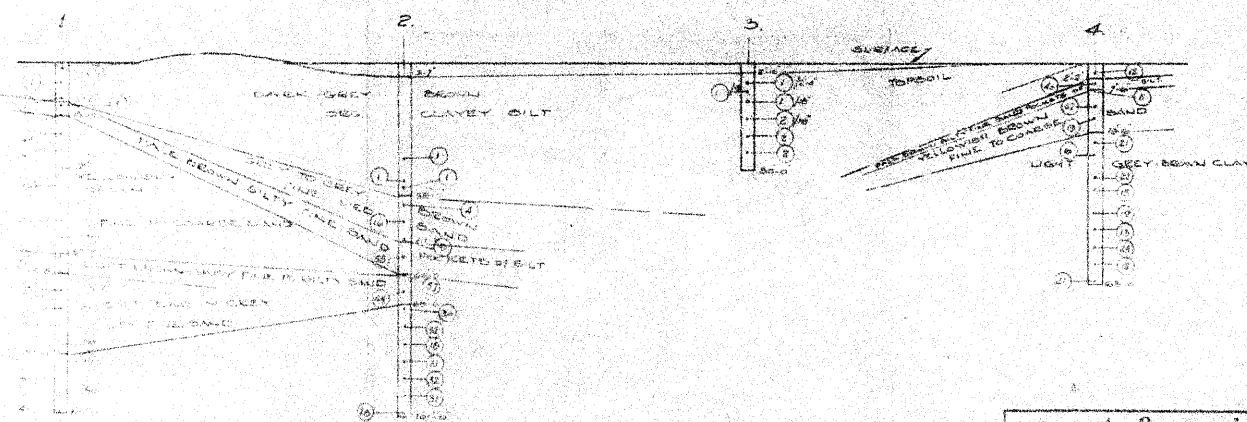
SOIL DESCRIPTION	COLOR	Moisture - Consistency	Depth - Feet	Depth - Meters	Depth - Feet	Depth - Meters	WATER LEVELS & REMARKS	Depth - Feet
Light silty fill	Brown	27.1	0'0"					22
Light brown sand	Light brown	1.0	1'0"				Moist	23
Medium and fine sand	Brown	Very loose						24
Medium and fine sand	Greyish brown	Loose						25
As above	Brown	Very loose						26
As above	Brown	Very loose	10'0"				Moist	27
As above	Brown	Very loose					HI Foot of tree	28
As above	Brown	Very loose						29
As above	Brown	Very loose						30
As above	Brown	Very loose						31
As above	Brown	Very loose						32
As above	Brown	Very loose						33
As above	Brown	Very loose						34
As above	Brown	Very loose						35
As above	Brown	Very loose						36
As above	Brown	Very loose						37
As above	Brown	Very loose						38
As above	Brown	Very loose						39
As above	Brown	Very loose						40
As above	Brown	Very loose						41
As above	Brown	Very loose						42
As above	Brown	Very loose						43
As above	Brown	Very loose						44
As above	Brown	Very loose						45
As above	Brown	Very loose						46
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As above	Brown	Very loose						136
As above	Brown	Very loose						137
As above	Brown	Very loose						138
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As above	Brown	Very loose						197
As above	Brown	Very loose						198
As above	Brown	Very loose						199
As above	Brown	Very loose						200

DEFECTS IN NEGATIVE DUE TO
 CONDITION OF ORIGINAL DOCUMENT

LEGEND



SKETCH PLAN
NOT TO SCALE



SECTION ON SITE THROUGH HOLES 1, 2, 3, 4

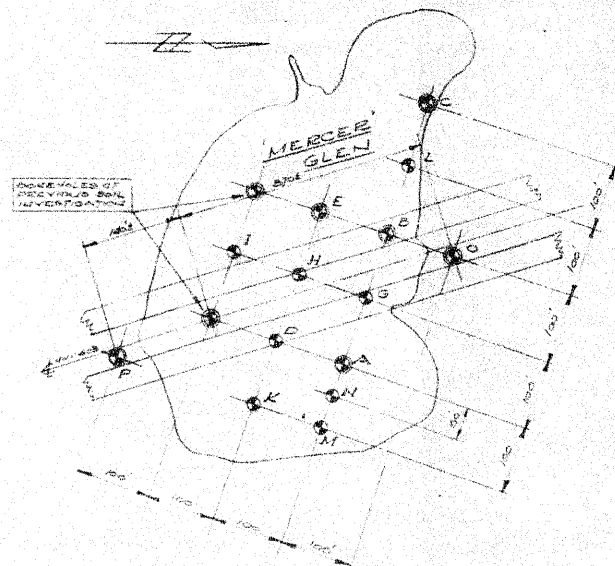
SECTION SCALE - { VER. 1" = 10' HORIZ. 1" = 10' }

e.m. peto & associates ltd.

SOIL SITE INVESTIGATION
AT
CHEDoke EXPRESSWAY
LOCATION
FOR
DEPT. OF HIGHWAYS OF ONT.

OUR P.O. NO. 6516 (CHEDoke EXPRESSWAY) DATE 11/16/60
CLIENT'S PLAN NO. 59 F128 C. PER C.J.V.

9-KUL2EC

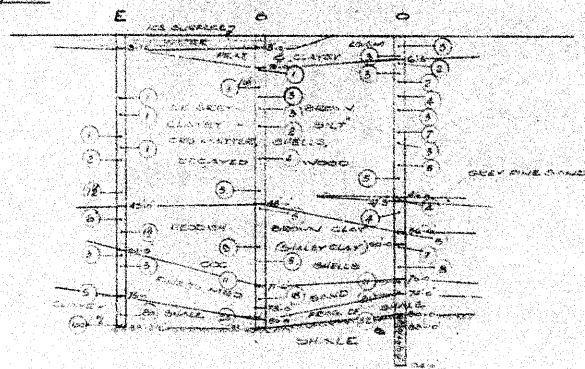


SITE PLAN

SCALE 1" = 100'

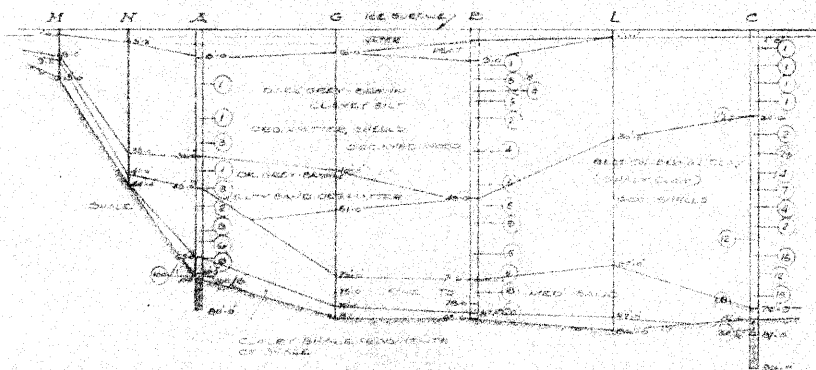
LEGEND

- 1. BORING LOGS
- 2. BORING LOGS
- 3. BLOW LOGS



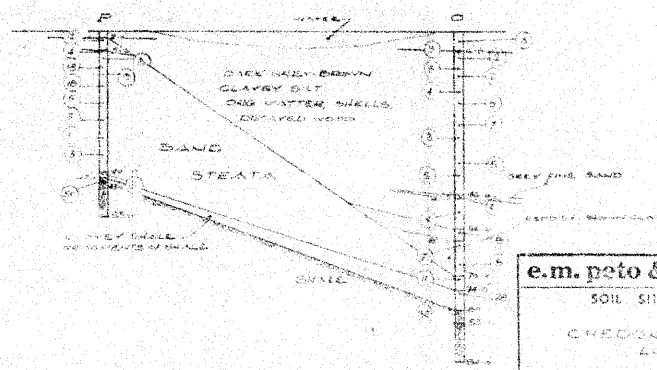
SECTION ON HOLES E, O, P

SECTION SCALE: VERTICAL 1" = 10'



SECTION ON HOLES M, N, A, G, K, L, C

SECTION SCALE: VERTICAL 1" = 10'



SECTION ON HOLES P, O, P

SECTION SCALE: VERTICAL 1" = 10'

e.m. peto & associates ltd.

SOIL SITE INVESTIGATION

AT

CHECKER EXPRESSWAY

LOCATION

FOR

DEPARTMENT OF HIGHWAYS

OUR 13 No. 6100 (CHARTERED) DATE: 8 APR. 1960

CLIENTS PLAN No. 59F128B PER: C.J.W.



ONTARIO
DEPARTMENT OF HIGHWAYS

BA 1114 A

30M5-14
GEOCRES No.

Memo to Mr. A. M. Toye, **Date** September 13, 1960.
Bridge Engineer. **Subject** D.H.O. FOUNDATION REPORT -
From Materials & Research Section. W.J. 59-128(2) - W.P. 231-58-2

Attention: Mr. S. McCombie.

Re: Cootes Paradise Inshore Line
Chedoke Expressway - Dist. 4.

30M5-14

Attached, we are forwarding to you, the foundation investigation report the inshore line (Line 2) of Cootes Paradise.

This report has been prepared in our Section and is based on the factual data provided by consultants (E.M. Peto & Associates, and W. A. Trow & Associates), as well as ourselves. This information and data are given, or referred to in the report.

We believe that the report will prove adequate for your future design work; however, should there be any queries concerning the above project that you would like to discuss, please do not hesitate to contact our Office.

L. G. Soderman,
PRINCIPAL FOUNDATIONS ENGR.
Per:

AS/MdeF

Attach.

cc: Messrs. A. M. Toye (2)
H. A. Tregaskes
D. G. Ramsay
I. C. Campbell
R. E. Richardson
T. J. Kovich
A. Watt
C. C. Parker & Assoc. (4)
Foundations Office
Gen. Files.

Stermac
(A. Stermac,
FOUNDATIONS OFFICE ENGR.)

FOUNDATION REPORT - 59-F-128(2)

CHEDOKE EXPRESSWAY

Cootes Paradise Inshore Line

I N D E X

1. INTRODUCTION.
2. SOIL CONDITIONS.
 - 2.1 The Inshore Line.
 - 2.2 Chainage 344+00 to 349+00.
3. DESIGN CONSIDERATIONS & RECOMMENDATIONS.
 - 3.1 The Inshore Line.
 - 3.2 Embankment Construction Between Ch. 344+00 and
Ch. 349+00.
 - 3.3 Embankment Construction Between Ch. 383+00 and
Ch. 389+00.
4. SUMMARY.

cont'd.

I N D E X - (cont'd.) ...

APPENDIX I. -- Peto Boring Logs -- Borings 9C, 10D, 10E, 12A,
12B, 12C, 13, 14, 15, 16.

APPENDIX II. -- Trow Boring Logs -- Borings 8A, 8B, 9A, 9B, 10A,
10B, 10C, 11A, 11B, 11C.

APPENDIX III. -- Results of Tests.

APPENDIX IV. -- Peto Boring Logs -- Boring 1

Probe Holes --	1
	2
	3
	4
	5
	6
	7
	8

DRAWINGS IN THE ENVELOPE:-

59-F-128A -- Plan showing borings in the Cootes Paradise and
Mercer Glan Areas.

59-F-128D -- Sections showing Soil Profile along the shore of
Cootes Paradise.

59-F-128E -- Section on holes in proximity of Centreline -
Proposed Expressway.

59-F-128F -- Plan and Section of borings, chainage 344. to 349.

59-F-128G -- Section showing slopes and dimensions to be used for
estimating dredging quantities.

Cootes Paradise Inshore Line

1. INTRODUCTION:

The report on soil conditions in the centre of Cootes Paradise and Mercer Glen, 59-F-128(1), discusses the possibility of a line across the centre of Cootes Paradise and concludes that no advantage is assured from this change of location. A recommendation that the line be kept as close to the eastern shore of Cootes Paradise as practicable is reported. This recommendation was adopted at a meeting of the Chedoke design committee on March 2, 1960.

This report discussed soil conditions along the inshore line (Line Two) which was finally adopted.

2. SOIL CONDITIONS:

2.1 The Inshore Line:

In Drawing 59-F-128A all the borings which have been made along the East shore of Cootes Paradise are shown. Drawings 59-F-128D and 59-F-128E show a series of sections which summarize the soil profile along the shore. These sections contain information from the work done by E. M. Peto and Associates and described in the boring logs attached in Appendix I; information from the original investigation by W. A. Trow and Associates and contained in the report, "Preliminary Foundation Investigation, Expressway South from Wolfe Island Interchange, Hamilton West, Ontario"; and information from a subsequent Trow investigation and described in the boring logs attached in Appendix II.

cont'd. /2 ...

2. SOIL CONDITIONS: (cont'd.) ...

2.1 The Inshore Line: (cont'd.) ...

It will be seen that the soil conditions along the shore line can be summarized as follows:-

In general, the uppermost layer on the water side of the line consists of very soft compressible organic silt with variable amounts of organic matter. In two holes (10C and 10D) local layers of peat were found. The organic silt has water contents often above 200% and could be penetrated from five to fifteen feet by a three-inch casing pushed by hand. Some strength tests were attempted in this material but the results were inconclusive. Two pressure/void ratio curves have been obtained for this material; they are included in Appendix III. Two grain size distribution test results are also included in Appendix III. The bottom of this layer of silt is at about elevation 210 to 230 feet, and it is thought that most of this material would be displaced under an embankment load. Special consideration is given to this problem in the conclusions referring to the embankment between Chainage 344+00 and Chainage 349+00.

The organic silt described above, overlies a layer of rather variable granular material which extends in the Cootes Paradise area to about elevation 200 to 210 feet. This is derived from the Lake Iroquois gravel bar which forms the eastern shore of Cootes Paradise. This material is medium to very dense and varies from fine silty sand to gravelly sand. In general, it becomes more dense with increasing depth and further inshore. It is locally loose near the surface as in Borings 13, 14 and 15.

The bottom layer below elevation 200 to 210 feet is stiff to very stiff grey silty clay.

In Borings Series 11, there is an exception to the above generalized soil profile. In this location the organic silt layer continues to about elevation 200 feet, both below the water and on the shore where it is overlain by granular fill material: clay and sand mixed in a dense condition. Below about elevation 220 feet and

2. SOIL CONDITIONS: (cont'd.) ...

2.1 The Inshore Line: (cont'd.) ...

inshore below the granular fill the silt is denser than that below the water in Cootes Paradise. At this location, the organic silt is underlain by a layer of dense to very dense silty sand to silty sand with gravel. The lower limit of this layer was not determined.

2.2 Chainage 344+00 to 349+00:

The uppermost material in this section of Cootes Paradise is essentially the same organic silt as is found elsewhere below this body of water. Except near the shores, this material has a depth of about 27 feet below water line datum. Here, the organic silt can possibly be displaced entirely, as it is in a very loose state throughout its depth.

Underlying this organic silt is a five-foot layer of fine organic sand and below this, organic clayey silt again extends down to about 50 feet below water level datum.

At this depth, there is another layer of silty sand. This material is in a very loose state and has a water content of about 23%. From approximately 60 feet below water level datum to about 70 feet below water level datum, there is a layer of clayey sand.

Below this, and immediately overlying bedrock at approximately 80 feet depth, there is a layer of clayey shale and clay with fragments of shale. This material has a water content of approximately thirteen per cent and is stiff to very stiff.

The bedrock is red shale with laminae of grey shale.

cont'd. /4 ...

3. DESIGN CONSIDERATIONS & RECOMMENDATIONS:

3.1 The Inshore Line:

The inshore line which has been adopted by the Design Committee, requires no comment in this report. The embankment has been plotted on the section in Drawing 59-F-128D and its position relative to the shoreline and to the displaceable silt can readily be ascertained by reference to this.

3.2 Embankment Construction between Ch. 344+00 and 349+00:

Construction in this section of the Expressway involves the placing of an embankment of varying height on the very loose organic silt material.

The construction procedures which could be followed to effect this, are as follows:-

1. Displacement of the base by a surcharge.
2. Displacement of the base by explosives.
3. Removal of the base before construction by a dredging operation.
4. Carrying of the highway over the soft area on a bridge or trestle.

At this location, alternative No. 3 is considered the most appropriate and is recommended. Reference to Drawing - 59-F-128F will show that the hard bottom dips towards the centre of the area where Boring No. 7 was put down. Examination of the boring logs and samples indicates that it will be necessary to dredge to a maximum depth of 50 ft.

For the purposes of making an estimate of the quantities involved in this dredging operation, the section shown in Drawing - 59-F-128G should be used. This implies excavation to the clayey or silty fine sand layer shown below 49 feet in Boring No. 7 and rising towards the North and South shores of the area in question.

cont'd. /5 ...

3. DESIGN CONSIDERATIONS & RECOMMENDATIONS: (cont'd.) ...

3.2 Embankment Construction between Ch.344+00 & 349+00,(cont'd.)..

It is anticipated that some of the material below the dredged depth may push up during placing of the embankment. Should this happen, the displaced material will be removed by dredging so as to maintain the dredged shape. The decision to carry out additional dredging will be taken in the field by the resident engineer.

It is proposed to carry out some additional borings and soundings in this area shortly before construction is started. In this way, it will be possible to give accurate directions to the dredging contractor as to the depth required at the various sections.

3.3 Embankment Construction between Ch. 383+00 and Ch.389+00:

Embankment construction in this section gives rise to the same problem as in the previous section. In this case, only one side of the embankment has to be placed on the highly compressible material.

It is considered that the same solution will be effective in this location. It is suggested that the organic silt be excavated completely for a distance from the shore as outlined in Drawing 59-F-128G. This means that dredging will be carried out until a one to one slope from the outer edge of the Expressway shoulder meets the firm base, in this case, a definite granular layer.

Additional exploration will be carried out at this location also to determine the exact limits of dredging. This will be done immediately prior to construction.

cont'd. /6 ...

4. SUMMARY:

In general, the proposed embankment can be constructed without the danger of stability failures or appreciable settlements as the route crosses the medium dense to granular material of the Iroquois gravel bar.

Two sections must be built wholly or partially on highly compressible organic silt. In each case, the silt must be removed by dredging to a depth not exceeding 50 feet.

August 1960

REPORT PREPARED BY:

M. Devata
.....
for John Brown,
Project Foundation Engr.

REPORT APPROVED BY: *A. Stermac*
.....

A. Stermac,
Foundation Office Engr.

APPENDIX II.

PROJECT NO.

WILLIAM A. TROW & ASSOCIATES LTD.

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT Chelate Expressway
 LOCATION Cootes Paradise
 HOLE LOCATION _____
 HOLE ELEVATION AND DATUM 745.0

BOREHOLE NO. CA
 FIELD SUPERVISOR _____
 DRILLER _____
 PREP. _____

DRAWING NO.

LEGEND

2" DIA. SPLIT TUBE
 2" SHELBY TUBE
 2" SPLIT TUBE
 2" DIA. CONE
 CASING
 2" SHELBY
 1/2 UNCONFINED COMPRESSION [Qu]
 VANE TEST [C] AND SENSITIVITY [S]
 NATURAL MOISTURE AND
 LIQUIDITY INDEX
 LIQUID LIMIT
 PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE			
				Str.	1000	P.S.F.	
	Ice surface water	245.0	0	20	40	60	BLOWS/FT.
	Soft dark brown organic silt	244.4		+s=2.5			
	Brown silty fine sand with gravel sises-some root fibres, cohesive	239.5		X Push			
	Coarse brown sand and gravel up to 1/2 in.	237.0	10	+s=3			
		232.5		X			
	Stiff gray silty clay with fine gravel sises.			X			
			20			+s=2.4	
				X			
						+s=2.8	
	End of hole	217.		X			
	NOTES: 1) Boring by wet auguring method.		30			+s=2.2	
	2) Hole cased with 2-in. pipe to 20 ft.; wash ahead with A-1 pipe below this level to advance hole.						
	3) All Shelby tubes lowered into ground except where noted.						

CONSISTENCY	SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT- % DRY WT.		
	1	
	2	
	3	125.3
	4	128.0
	5	123.6

PROJECT NO. 100-100-100

WILLIAM A. TROW & ASSOCIATES LTD.

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT Chadwick DamLOCATION Boates Park, N.C.

HOLE LOCATION

HOLE ELEVATION AND DATUM 245.0 same lake level
= 245.00 (level Jan. 19/60)BOREHOLE NO. 103

FIELD SUPERVISOR

DRILLER

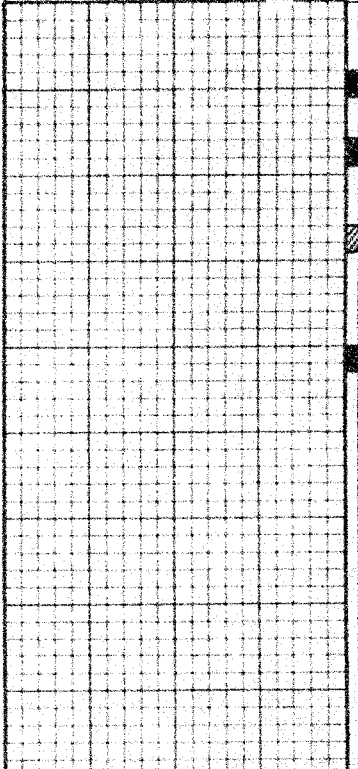
PREP.

DRAWING NO.

LEGEND

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
CASING
2" SHELBY
1/2 UNCONFINED COMPRESSION (Qu)
VANE TEST (C) AND SENSITIVITY (S)
NATURAL MOISTURE AND
LIQUIDITY INDEX
LIQUID LIMIT
PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE		
				Blows	1000	P.S.F.
	Ice surface	245.0	0			
	Ice					
	Ice bed	247.0				
	Dark brown soft organic silt					
		236.3	10			
	Coarse sand and fine gravel	230.0				
	Very silty grayish brown fine sand silty clay with up to 1/4" gravel gravel sizes.					
	End of hole	221.0				
	Notes: 1) As in Hole 101 2) Hole is 10 ft. dia. 3 in. dia; with 1/4" dia. AX line holes. 3) Samples taken every 12 30 ft. 1/2 per blow. except where noted.					

CONSISTENCY		SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT- % DRY WT.			
		1	83.4
		2	
		3	
		4	131.1

WILLIAM A. TROW & ASSOCIATES LTD.

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

LEGEND

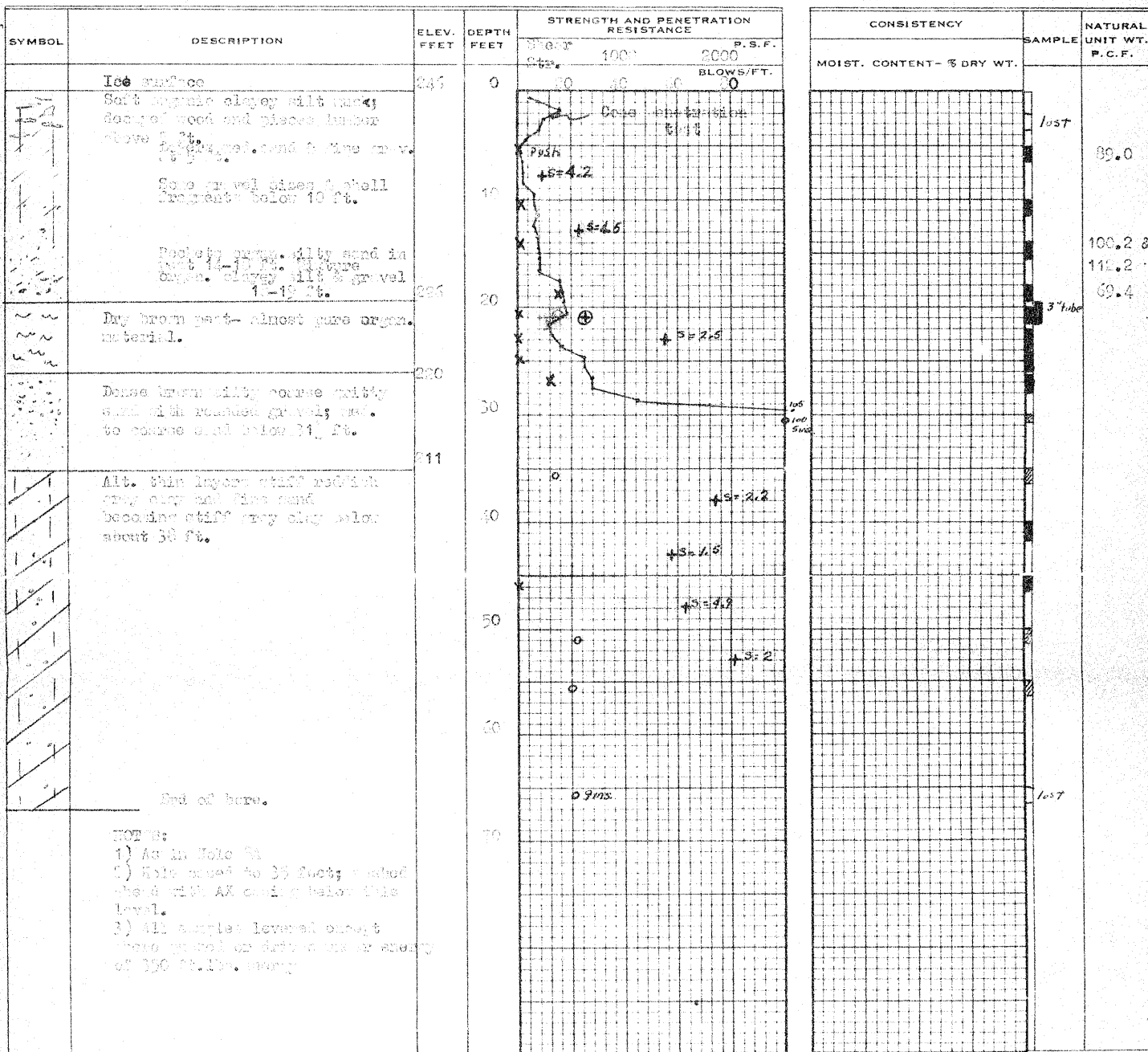
2" DIA. SPLIT TUBE	
2" SHELBY TUBE	
2" SPLIT TUBE	
2" DIA. CONE	
CASING	
2" SHELBY	
1/2 UNCONFINED COMPRESSION (Qu)	
VANE TEST (C) AND SENSITIVITY (S)	
NATURAL MOISTURE AND LIQUIDITY INDEX	
LIQUID LIMIT	
PLASTIC LIMIT	

PROJECT Chedoke Embankment
 LOCATION Cootes Paradise

BOREHOLE NO. 9A

HOLE LOCATION 246.0 (estimated)
 HOLE ELEVATION AND DATUM

FIELD SUPERVISOR
 DRILLER
 PREP.



DRAWING NO.

LEGEND

2000

BOREHOLE NO. 33
FIELD SUPERVISOR
DRILLER
PREP

2. 1/2 DIA. SPLIT TUBE
3. SHELBY TUBE
4. SPLIT TUBE
5. 3/4 DIA. CONE
6. CASING
7. SHELBY
8. 1/2 UNCONFINED COMPRESSION (Cu)
9. VANE TEST (C) AND SENSITIVITY (S)
10. NATURAL MOISTURE AND
11. LIQUIDITY INDEX
12. LIQUID LIMIT
13. PLASTIC LIMIT

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12

DRAWING NO. _____

LEGEND

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

BOREHOLE NO. 10A
FIELD SUPERVISOR
DRILLER
PREP.

LEGEND

2" DIA. SPLIT TUBE	.....
2" SHELBY TUBE	.....
2" SPLIT TUBE	.....
2" DIA. CONE	.....
CASING	.....
2" SHELBY	.....
1/2 UNCONFINED COMPRESSION (QU)	.....
VANE TEST (C) AND SENSITIVITY (S)	.....
NATURAL MOISTURE AND LIQUIDITY INDEX	.....
LIQUID LIMIT	.....
PLASTIC LIMIT	.....

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE		CONSISTENCY	SAMPLE	NATURAL UNIT WT. P.C.F.
				One Trip	P.S.F.			
	Ice surface	245	0	1000	5000			
	Lake bed, water	242						
	Very soft organic silt with rotted vegetation. Silty medium sand & gravel 3-8 ft.							
		221	10					
		217	20					
	Stiff brown sandy clay with fine to coarse gravel		30					
	Dense brown silty fine sand, gravel above 30 ft.		40					
			50					
	Cohesive below 46 ft.		60					
	Stiff gray silty clay with embedded gravel; intrusions and partings of sand above 51 ft.	195	50					
			60					
	End of bore.	181						
<p>NOTES: 1) As in Hole "A"</p> <p>2) Hole cased to 34 ft., advanced below this depth by washing around with AK casing.</p> <p>3) All samples driven under energy of 350 ft.-lbs. per blow except where noted.</p>								

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

BOREHOLE NO. 10B
FIELD SUPERVISOR
DRILLER
PREP.

LEGEND

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
CASING
2" SHELBY
1/2 UNCONFINED COMPRESSION [Qu]
VANE TEST [C] AND SENSITIVITY [Si]
NATURAL MOISTURE AND
LIQUIDITY INDEX
LIQUID LIMIT
PLASTIC LIMIT



SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE		
				Sheet Strength	1000 BLOWS/FT.	P.S.F. 3000 BLOWS/FT.
	Ice surface	245	0	20	40	60
	Water Lake Duluth	242.3				
	Very soft organic cohesive silt.					
			10	X Push		
				+3F=5		
				X Push		
				+5F=10		
				X Push		
				+5F=10		
			20	X Push		
				+5F=10		
		221.5		X Push		
				+5F=10		
	Loose sandy silt and gravel changing to dense silty brown fine sand below 30 ft.					
			30			
			40			
	Slightly cohesive below 43 ft.					
			50			
	Stiff gray silty clay with embedded gravel; sandy seams above 47 ft.	200.0				
			60			
			70			
	End of bore	181				
	NOTES: (1) As in Hole 1A					
	(2) Hole cased to 53 ft; washed ahead with AX casing below 4 in depth					
	(3) All samples driven with 350 lb. lbs. energy except where noted.					

[illegible]

PROJECT NO.

WILLIAM A. TROW & ASSOCIATES LTD.

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT Chad's DrivewayLOCATION Cougar Paradise

HOLE LOCATION

HOLE ELEVATION AND DATUM Assume 245BOREHOLE NO. 100

FIELD SUPERVISOR

DRILLER

PREP.

DRAWING NO.

LEGEND

2" DIA. SPLIT TUBE
 2" SHELBY TUBE
 2" SPLIT TUBE
 2" DIA. CONE
 CASING
 2" SHELBY
 1/2 UNCONFINED COMPRESSION (Qu)
 VANE TEST (C) AND SENSITIVITY (S)
 NATURAL MOISTURE AND
 LIQUIDITY INDEX
 LIQUID LIMIT
 PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE		
				STRENGTH	1000	P.S.F.
	Surface of ice	245	0			
	Water					
	Very soft dark brown organic clayey silt					
	Dense brown silty fine sand with fine gravel above 27 ft., some clay noted below 42 feet	224	20			
	Very stiff grey silty clay with some embedded gravel; numerous intrusions of brown sand and silt above 46 feet.	192	50			
	End of bore	186	60			

NOTES: 1) and 3) as in hole 11A
 2) Hole cased to 40 feet; with AX casing below this depth.

CONSISTENCY	SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT- % DRY WT.		
		70.2
		127.9
		128.2

PROJECT NO.

WILLIAM A. TROW & ASSOCIATES LTD.

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT Chadale Hydrography
LOCATION Contee Park, Ill.
HOLE LOCATION 50' E. of S.E. of Longwood Rd.
HOLE ELEVATION AND DATUM Not obtained. Estimated

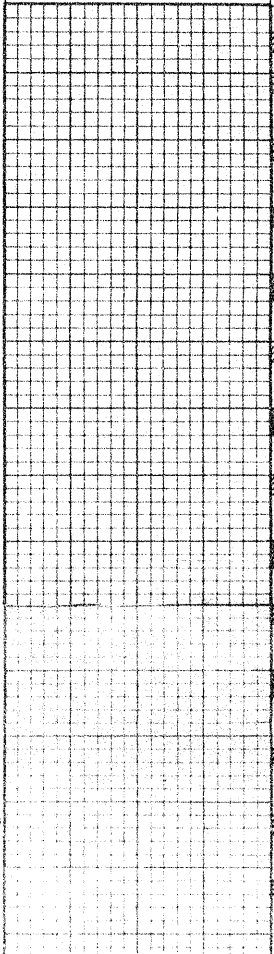


BOREHOLE NO. 11A
FIELD SUPERVISOR
DRILLER
PREP.

DRAWING NO..

LEGEND

2" DIA. SPLIT TUBE
2" SHELBY TUBE
2" SPLIT TUBE
2" DIA. CONE
CASING
2" SHELBY
1/2 UNCONFINED COMPRESSION [QUI
VANE TEST (C) AND SENSITIVITY (S)
NATURAL MOISTURE AND
LIQUIDITY INDEX
LIQUID LIMIT
PLASTIC LIMIT

SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE		
				Q ₁₀ 1000	Q ₂₀ 2000	P.S.F. BLOWS/FT.
		251	0	20	40	60
	Medium silty sand fill. Gravel noted 2-3'. Pieces of brick and compressed paper noted 9-6'.	243	10			
	Clay & sand fill. Pieces of brick noted at 13'.	233	20			
	Stiff sandy clay with silt partings showing from brown to grey at 25' approx. (probably fill)	200	30			
	Stiff dark brown organic clayey silt with pieces of wood and soft shell.	195	40			
	Dense silty med. to coarse sand with fine to coarse gravel sizes.	184	50			
	End of Hole	174	60			
	NOTES: 1) As in hole 2A 2) Hole cased to 50 ft.; wash ahead with AX casing below. 3) All samples driven under energy of 250 ft. lbs. per blow except where noted.		70			

CONSISTENCY		SAMPLE	NATURAL UNIT WT. P.C.F.
MOIST. CONTENT- % DRY WT.			
			

PROJECT NO.

WILLIAM A. TROW & ASSOCIATES LTD.

SITE INVESTIGATIONS AND SOIL MECHANICS CONSULTATION

PROJECT C-60-C "X" POSITIVE

Costas Perdikis

HOLE LOCATION _____ West C.L. 1000' tool RC.

HOLE ELEVATION AND DATUM 245 Estimated

BOREHOLE NO. 113

FIELD SUPERVISOR

DRILLER

PREF.

DRAWING NO.

LEGEND

2" DIA. SPLIT TUBE

2" SHELBY TUBE

2" SPLIT TUBE

21 DIA. CONE

CASING

2" SHELBY

1/2 UNCONF

1/2 UNCONFINED COMPRESSION [C] VANE TEST [C] AND SENSITIVITY [S]

VANE TEST (C) AND SENSITIVITY (S).
NATURAL MOISTURE AND

NATURAL MOISTURE AND LIQUIDITY INDEX

LIQUID LIMIT

LIQUID LIMIT
FLUIDITY INDEX

PLASTIC LIMIT

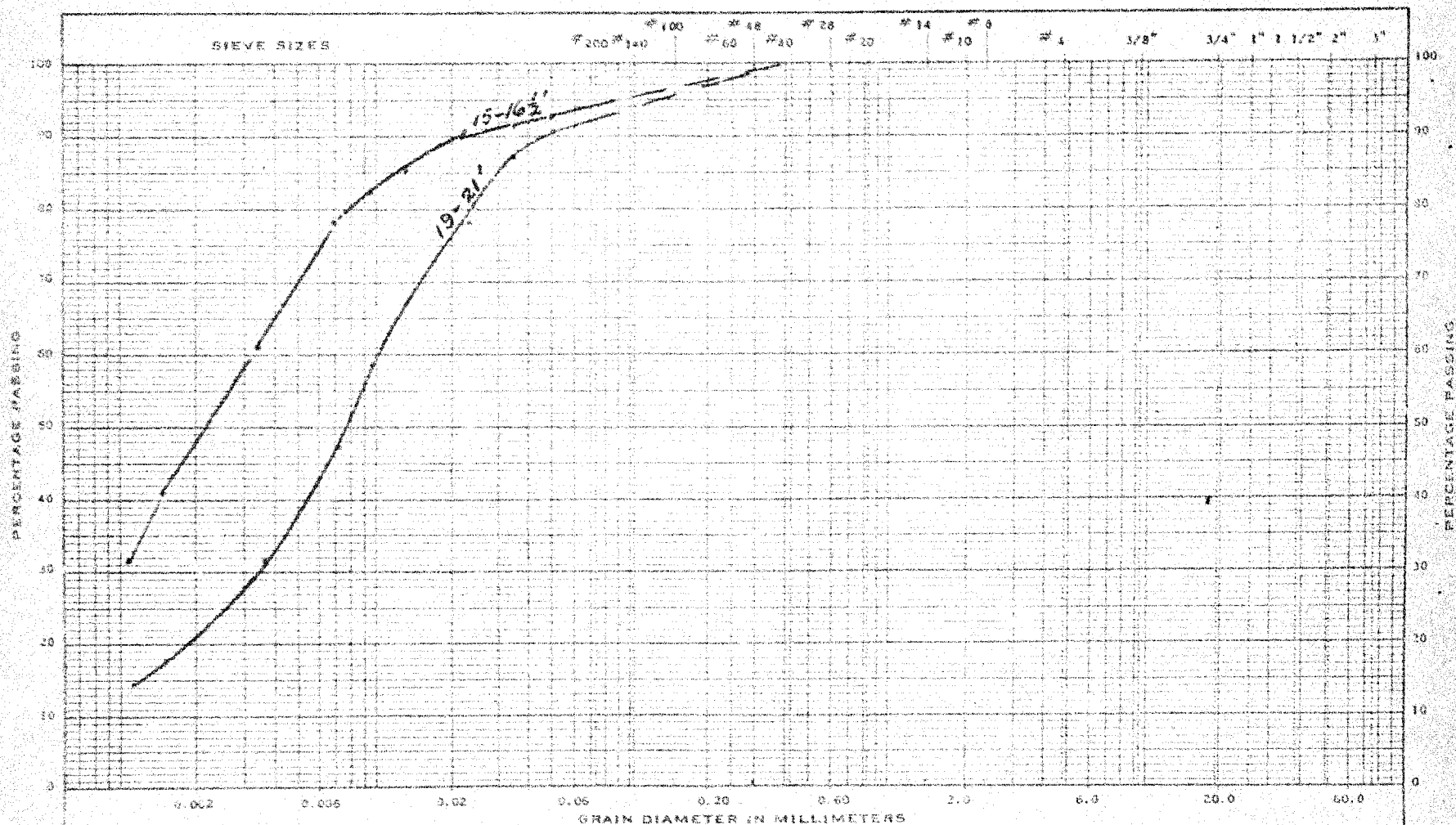
SYMBOL	DESCRIPTION	ELEV. FEET	DEPTH FEET	STRENGTH AND PENETRATION RESISTANCE	
				Q (BL)	P.S.F. BLOWS/FT.
	Ground surface	246	0	35	1000
	Medium stiff, moist, brown clay with some fine sand			30	40
	stiff at 35'.			60	1000
	Decayed and rotted between 30' and 35'.				
			10		
			20		
			30		
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			890		
			900		
			910		
			920		</

[illegible]

CONSISTENCY		SAMPLE	NATURAL UNIT WT P.C.F.
MOIST. CONTENT - % DRY WT.			
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APPENDIX III.

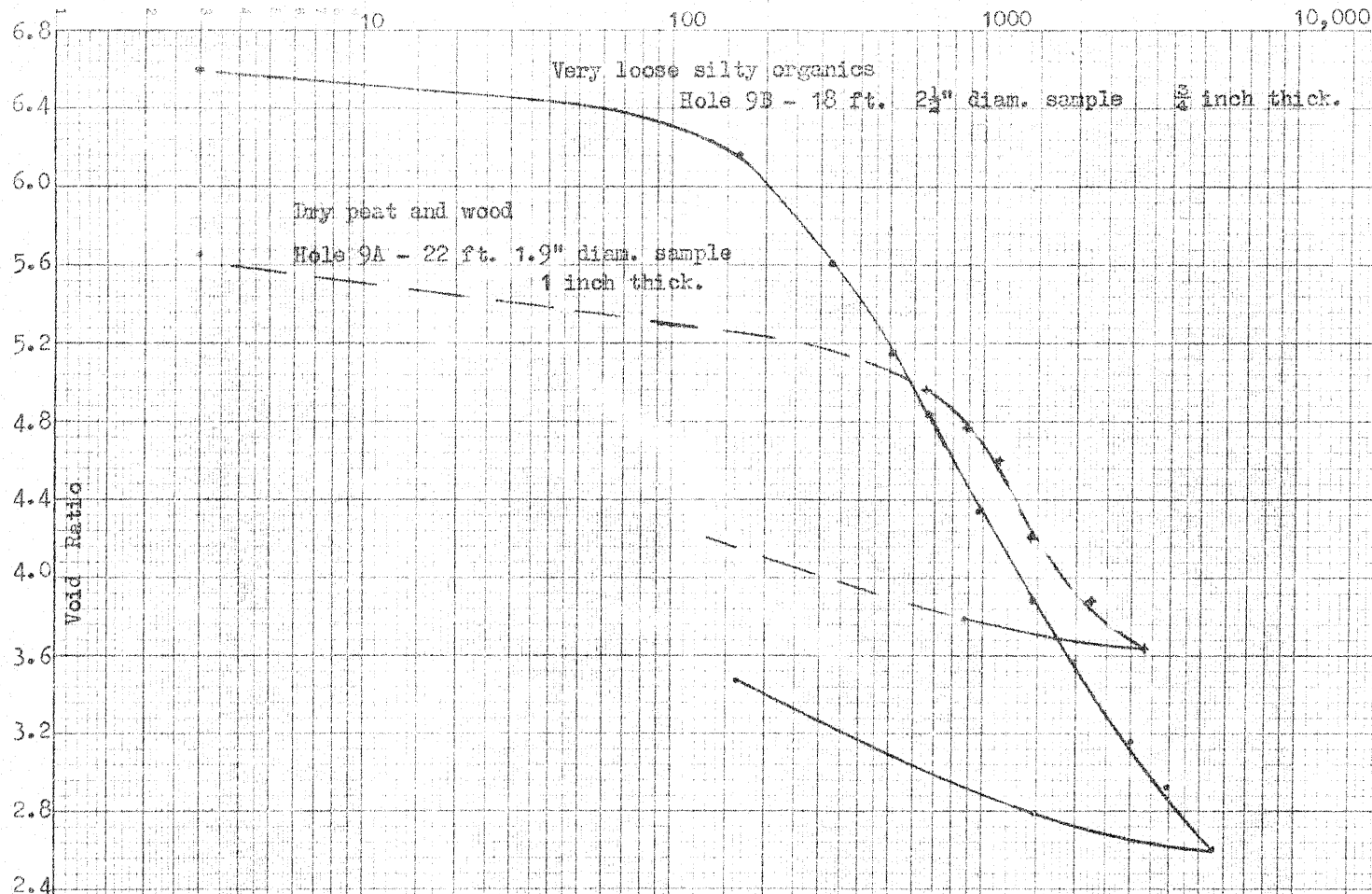
J465



CLAY	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE
	SILT			SAND			GRAVEL		
MODIFIED M.I.T. CLASSIFICATION									
GRAIN SIZE DISTRIBUTION CURVES - ORGANIC SILT, HOLE 9B									
Chedoke Expressway (Organics removed by peroxide over a period of 2 wks)						WILLIAM A. TROW AND ASSOCIATES			

PRESSURE pef

J465



PRESSURE VOID RATIO CURVES TWO SAMPLES OF ORGANIC DEPOSITS
 VICINITY OF HOLE 9 - CHIDOKE EXPRESSWAY.





APPENDIX IV

e. m. peto associates ltd.
 SOIL ENGINEERING SERVICE - TORONTO, ONTARIO
 BOREHOLE LOG

Chedoke Expressway,
 Job Name Section Coote's Paradise Job No. 6012
 Client D.H.O. Soil & Foundation Eng Casing DX
 Datum Client's Branch Compiled By J.N.

Borehole No. # 1
 Boring Date Jan. 25-29/60
 Checked By B.L.

SAMPLE CONDITION

-  UNDISTURBED
 FAIR
 DISTURBED
 LOST

SAMPLE TYPE

- A.S. AUGER SAMPLE
 C.S. CASING SAMPLE
 S.S. 2" STANDARD SPLIT TUBESAMPLE
 S.L. SPLIT BARREL WITH LINERS
 S.T. THIN-WALLED SHELBY TUBE SAMPLE
 W.S. WASH SAMPLE
 R.C. ROCK CORE

ABBREVIATIONS

- V.T. IN SITU VANE SHEAR TEST
 C. SOIL SHEAR STRENGTH LBS/SQ.FT.
 W.L. WATER LEVEL IN CASING
 W.T. GROUND WATER TABLE IN SOIL
 W.T.P.L. WETTER THAN PLASTIC LIMIT
 D.T.P.L. DRIER THAN PLASTIC LIMIT

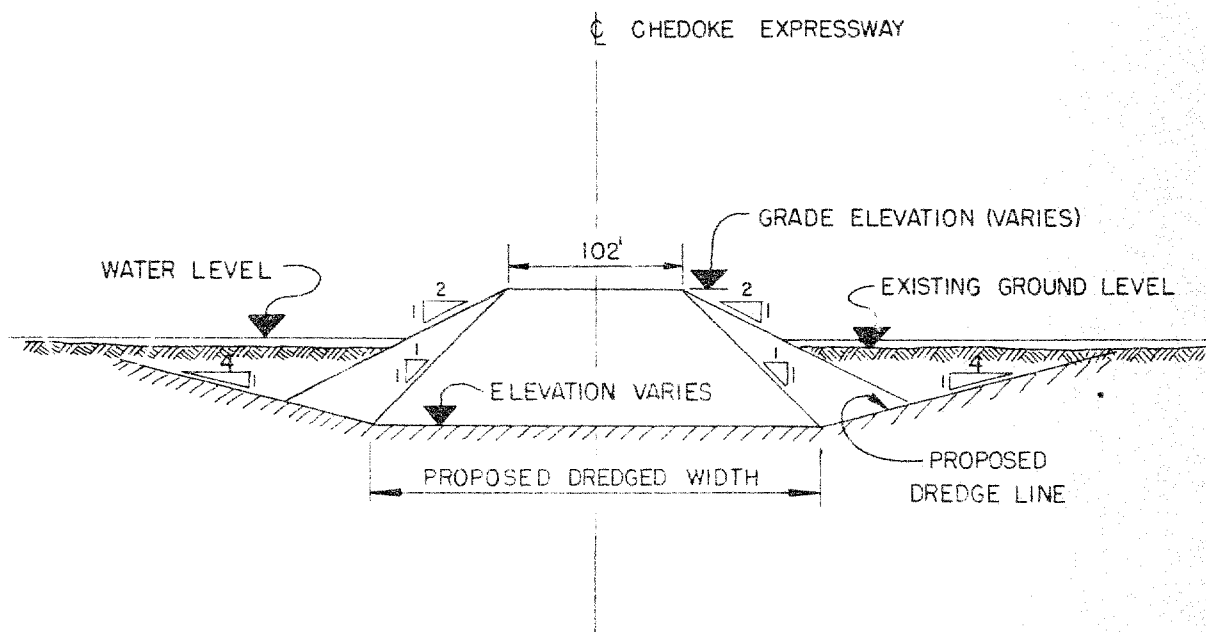
SOIL DESCRIPTION	COLOUR	Density or Consistency	Depth Elevation	Legend	Sample No. and Condition	Sample Type	No. of Blows per Ft.	Notes	WATER LEVELS & REMARKS
			0'0"					Cone pen. Test	
7 inches of ice water			2'0"						
			5'0"						
			10'0"						
			15'0"						
			20'0"						
			25'0"						
			27'0"						
			30'0"						
			32'0"						
			33'0"						
Clayey silt, organic matter	DK Gr. Brown	Soft to firm			1 2" S.L. Pushed		9		
					2 S.S.	4	7		Sat.
							7		
							12		
Fine sand slightly silty	DK Grey	V. loose to loose			3 S.S.		11		26'0"-26'6" V.T. = 860 psf
							9		26'6"-27'0" V.T. = 934 psf
							9		m/c = 37.5% V. wet
					4 2" S.L. Pushed		15		
							12		m.c. =
Clayey silt some organic matter, shells	Dk. grey-brown	Firm			5 S.S.	5	12		58.7% Wet
							12		
							13		
							12		36'0"-36'6" V.T. = 1230 psf
							12		36'6"-37'0" V.T. = 1230 psf
Clayey silt organic matter							12		m/c = 30.0% V. wet
Seam of dk. grey fine sand	As above	V. soft			6 S.S.	2	12		
							12		
							10		
					7 2" S.L. Pushed		12		
							14		
Clayey silt (darker and lighter interbedded seams, organic matter, shells)	Lt. brown grey to dk. brown-gr.	Soft to firm			8 S.S.	4	14		m/c = 62.6% V. wet
							13		
							24		
							22		45'6"-46'0" V.T. = 1840 psf
							23		46'0"-46'6" V.T. = 2210 psf
Clayey silt, layer of grey fine sand, organic matter, shells	Dk. grey-brn.	Firm to stiff			9 S.S.	8	21		m/c = 26.8% V. wet
							19		
							24		
							22		
					10 2" S.L.		16		m.c. = (after driving casing to 52' depth sand)
Silty sand, some clay cont. organic matter, shells	Brownish-grey	V. loose to loose				4	14		24.2%

		50'0"			24	
					22	
Silty sand, some clay cont.	Brownish-grey	V. loose	to	10	2"S.L.	m.c. = (after driving casing to 52'
organic matter, shells					S.S.	4
						14
						14
		55'0"				16
Fine sand, slightly silty	As above	V. loose		11	S.S.	1
organic matter, shells						20
						18
						17
		59'0"				10
						17
Clayey sand, some shells	Reddish brown				2"S.L. Pushed	22
organic matter						20
						19
						20
		65'0"				26
		V. loose to loose			S.S.	5
						26
						23
		68'0"				21
						19
		70'0"				19
						50
Clayey shale, frags. of reddish-brown and grey shale	Reddish-brown	V. stiff to hard		13	S.S.	28
						8
						27
		75'0"				29
Clay frags of red-brown and grey shale; seam of brownish-grey fine sand	As above	V. hard		14	S.S.	79
organic matter						21
						49
		79'6"				82
Soft shale	As above				S.S.	107/1
						128
Shale with laminae of grey shale	Reddish-brown					140
		82'0"				100/0"
						82'0"
		85'0"				12'0"-82'4" recov. 100%
						Recovery 32%
		87'4"				
						No recovery
		90'0"				
						Test hole terminated at 90'10"

COOTE'S PARADISE I
PROBE HOLES

DEPTH N FEET	NUMBER OF BLOWS / FOOT PENETRATION							
	1	2	3	4	5	6	7	8
0 - 1	2'0" OF WATER	3'0" OF WATER	2'6" OF WATER	2'0" OF WATER	3'6" OF WATER	2'6" OF WATER	2'6" OF WATER	2'6" OF WATER
1 - 2	PUSHED BY HAND	PUSHED BY HAND	PUSHED BY HAND	2	PUSHED BY HAND	PUSHED BY HAND	PUSHED BY HAND	PUSHED BY HAND
2 - 3				5				
3 - 4				9				
4 - 5				23				
5 - 6				17				
6 - 7				9				
7 - 8				12				
8 - 9				19				
9 - 10								
10 - 11	2	1	1	25	1	1	1	1
11 - 12	3	1	1	41	1	1	1	1
12 - 13	4	1	1	60	2	2	1	1
13 - 14	5	1	2	87	2	2	1	1
14 - 15	4	1	2	75	3	2	1	1
15 - 16	3	2	2	94	4	3	2	2
16 - 17	4	2	3	104	6	4	2	2
17 - 18	4	2	4	120	8	5	2	2
18 - 19	4	2	5	130	15	4	3	2
19 - 20	4	3	6	115	15	3	3	3
20 - 21	9	7	7	85	21	12	11	3
21 - 22	7	5	7	98	39	11	7	3
22 - 23	7	4	7	84	64	9	7	4
23 - 24	7	4	7	210/11"	84	8	6	4
24 - 25	7	6	11	REFUSAL AT 23' 11"	94	8	6	4
25 - 26	12	8	10	100/10"	9	13	5	
26 - 27	11	7	10	REFUSAL AT 25' 10"	10	11	7	
27 - 28	11	8	10		11	11	7	
28 - 29	9	7	9		9	12	7	
29 - 30	9	7	11		11	16	7	
30 - 31	15	9	12			9	16	11
31 - 32	12	9	13			8	16	10
32 - 33	12	9	12			7	17	10
33 - 34	12	9	11			12	15	9
34 - 35	13	11	14			12	22	17
35 - 36	12	11	14			12	19	15
36 - 37	12	11	14			9	15	15
37 - 38	12	10	14			11	15	14
38 - 39	12	9	15			12	17	14
39 - 40	10	11	16			13	21	13
40 - 41	12	14	15			16	19	21
41 - 42	14	14	16			15	18	18
42 - 43	14	16	16			13	19	18
43 - 44	13	18	17			14	21	17
44 - 45	24	18	19			13	21	19
45 - 46	22	17	20			22	22	20
46 - 47	23	16	21			21	18	21
47 - 48	21	18	19			19	19	23
48 - 49	19	15	20			18	21	21
49 - 50	24	16	22			18	29	22
50 - 51	22	17	21			20	27	27
51 - 52	16	18	23			19	27	31

42-43	14	16	18			14	19	18	
43-44	13	18	17			14	21	17	
44-45	24	18	19			13	21	19	
45-46	22	17	20			22	22	20	
46-47	23	16	21			21	18	21	
47-48	21	18	19			19	19	23	
48-49	19	15	20			18	21	21	
49-50	24	16	22			18	29	22	
50-51	22	17	21			20	27	27	
51-52	16	18	23			19	27	31	
52-53	14	19	22			19	26	46	
53-54	14	20	23			19	29	57	
54-55	15	23	25			18	45	88	
55-56	20	26	26			21	36	100/3"	
56-57	18	26	26			35	35	REFUSAL	
57-58	17	24	27			41	31	AT	
58-59	16	24	28			39	29	56'3"	
59-60	17	22	28			42	40		
60-61	22	29	28			54	36		
61-62	20	27	30			56	38		
62-63	19	27	29			58	40		
63-64	20	32	29			64	42		
64-65	26	27	36			120	45		
65-66	26	38	37			100/1"	42		
66-67	23	36	41			REFUSAL	51		
67-68	21	34	31			AT	60		
68-69	19	34	36			65'1"	70		
69-70	19	34	39				76		
70-71	50	43	56				78		
71-72	59	44	69				81		
72-73	32	57	58				78		
73-74	27	80	57				87		
74-75	29	80	64				105		
75-76	21	57	69				89		
76-77	21	78	66				89		
77-78	49	96	81				140		
78-79	82	117	105				100/0"		
79-80	110	98	135				REFUSAL		
80-81	128	82	5'				AT		
81-82	140	85	100/10"				78'0"		
82-83	REFUSAL	90	REFUSAL						
83-84	AT	91	AT						
84-85	81'9"	110	81'10"						
85-86		93							
86-87		94							
87-88		138							
88-89		100/2"							
89-90		REFUSAL							
90-		AT							
		88'2"							



TYPICAL CROSS-SECTION
CHAINAGE 344-349

ORGN'TD	J. BROWN	DEPARTMENT OF HIGHWAYS — ONTARIO	SCALE 1" = 100'
DRWN	T. Sz.	MATERIALS & RESEARCH SECTION	W.P. NO. 231-58-2
CHCKD	J.B.	CHEDOKE EXPRESSWAY	JOB NO. 59 F128
APPRVD	FOR RESEARCH SECTION	SECTION SHOWING SLOPES AND DIMENSIONS TO BE USED FOR ESTIMATING DREDGING QUANTITIES	DRWG. NO. 59 F128 G
DATE	31 AUGUST 1960		

#59-F-128-1

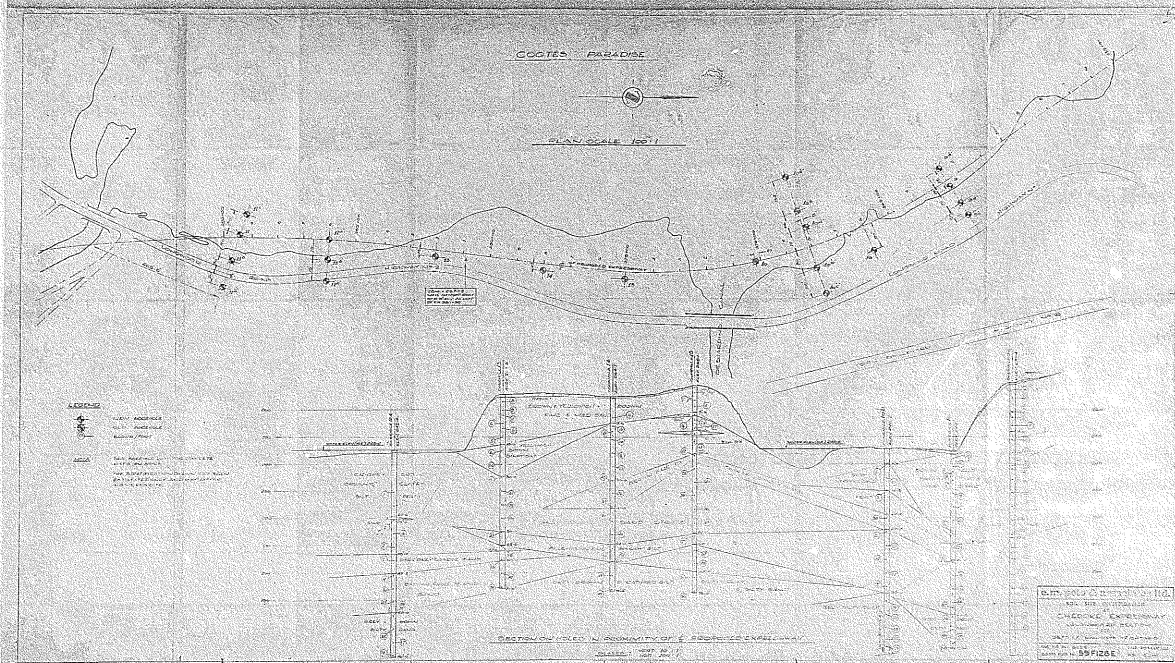
WP #231-58-2

Hwy. #403

MERCER GLEN

COOTES PARADISE

LINE #3



SOME DEFECTS IN NEGATIVE DUE

TO CONDITION OF ORIGINAL DOCUMENTS