

#

55-F-212C

Hwy # 402

COLBORNE ST.

OVERPASS



DEPARTMENT OF HIGHWAYS

55F212C

Memo to Mr. A. Toye,  
Bridge Engineer.  
From Materials & Research Section

Date April 23, 1956.  
Subject Re: Hwy. 402, Contract  
55-288, Colborne Street Overpass  
Foundation Report.

ATTENTION: Mr. S. McCombie

We are returning herewith the above mentioned foundation report which was borrowed in case we had to carry out the load test.

A subsequent letter from Proctor, Redfern & Laughlin dated April 17 indicated that a load test was not necessary.

F. C. Brownridge,  
Materials & Research Engr.

Per:

(A. Rutka)

AR/fh

EDWARD M. PROCTOR W. BLAINE REDFERN W. H. M. LAUGHLIN

11 JORDAN STREET  
TORONTO 1  
CANADA

April 7th., 1955.

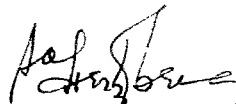
Mr. H. N. Lamont, P. Eng.,  
Chief Bridge Engineer,  
Ontario Department of Highways,  
Parliament Buildings,  
Queen's Park,  
TORONTO, Ont.

Dear Sir: Re: Colborne Road Overpass C.A.H.#402  
our project number E.O.556

Further to our letter of April 7th., we enclose in triplicate the second sheet of the Log Boring Profile for Hole #4 giving data from 40' to 95'.

Yours very truly,

PROCTOR, REDFERN & LAUGHLIN,



P. A. Hertzberg.

PAH/DO  
Encls.

APR 11 1955

5 YONGE STREET SOUTH  
XXXXXXXXXXXXXXXXXX  
BOX 747  
RICHMOND HILL, ONTARIO

Order No. 51-55/9

Corehole No. 4 Diameter 2½" Date MARCH 28th - 30th/55

CONTINUED

Borehole Location Refer to plot plan.

Elevation 601.0'

[illegible]

Scale 1" = 6'-0"

### ● Disturbed Sample

### ■ Undisturbed Sample

### 1 Water Sample

Toronto 2, April 12th, 1955.

Memorandum for Mr. F. Brownridge,  
Soils Engineer,  
Department of Highways.

Re: Calborne Road Structure  
Highway 402 - Sarnia.

D1

Attached is a letter from Messrs. Proctor, Redfern & Laughlin, the Consulting Engineer on this project, dated April 6th, 1955 enclosing copy of the report on soil conditions from Soil Investigations & Testing Limited.

You will note that the two parties are not in agreement with the recommended length of piles and we request your opinion on the matter.

Mr. Laughlin informs me that it is their intention to design the pile for a load not in excess of 20 tons, and it would appear to me that nothing would be gained by using concrete piles in preference to timber piles at say 15 tons.

Would you please discuss the matter as soon as possible with either Mr. Laughlin or Mr. Hertzberg of the consulting firm as we are being pressed to call this contract as soon as possible, and the footing design cannot be completed until the matter is settled.

H. W. LAMONT  
BRIDGE ENGINEER.

HWL/DW.

Copy sent to Mr. H. L. Main, B. Davis, J. Walter  
Division Eng. Chatham. Proctor Redfern & Laughlin and  
H. Adcock.

*April 22/55. Mr. Brownridge reports by telephone that  
he approves of timber piles not less than 35' long.  
Verbal Report from T. Hanson that plans are  
being revised accordingly. H. W. Lamont.*

PROCTOR, REDFERN & LAUGHLIN

CIVIL AND CONSULTING ENGINEERS

TELEPHONES: EM 3-5375  
SCARBORO OFFICE GR 9883  
ETOBICOKE OFFICE BE 1-7991

EDWARD M. PROCTOR    W. BLAINE REDFERN    W. H. M. LAUGHLIN

11 JORDAN STREET  
TORONTO 1  
CANADA

April 6th, 1955.

Mr. H. N. Lamont, P. Eng.,  
Chief Bridge Engineer,  
Ontario Department of Highways,  
Parliament Buildings,  
Queen's Park,  
Toronto, Ontario.

Re: Colborne Road Overpass C.A.H. 402,  
Sarnia, Ontario  
Our Project No. E.O. 556

Dear Sir:

We have received the report on soil conditions for the above project from Soil Investigations and Testing Limited, and enclose herewith the report with supporting documents in triplicate:

- 1) Letter and Report dated April 4th, 1955
- 2) Plan showing location of bore holes
- 3) Test Borings Data Sheets - Holes 1 to 4
- 4) Bore hole log sheets, Holes 1 to 4 (less last half Hole No. 4)

Holes Nos. 1 and 4 were advanced to depths of 87 and 95 feet respectively, and holes No. 2 and 3 to about 40 feet.

From an examination of this report, we feel that there is no alternative to the use of piles and we are completing the design of the foundations accordingly. Rather than use the short 12' to 15' piles recommended in the report, we are basing our design on piles of about 35 feet in length which would extend to firmer ground below the first soft stratum. When a contract for pile work is let, it will be necessary to drive a test pile to determine exact lengths. We propose to use the monotube type tapered pile.

.....2

Mr. H. N. Lamont

April 6th, 1955.

Re the bridge girders proper, would you please advise if it will be necessary to splice the main girders as presently proposed.

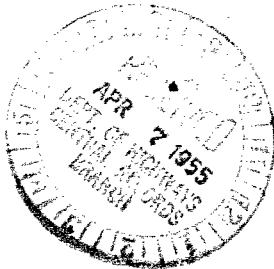
We trust you will find the above in order and remain

Yours very truly,

PROCTOR, REDFERN & LAUGHLIN,

*F. A. Hertzberg*  
F. A. Hertzberg

PAH/cmm  
Encls.



*7th Apr 1955.  
The Laughlin action has been  
will be used only for load of 20 tons.  
mt.*

5 YONGE STREET SOUTH

~~100-00000000000000000000~~

(TORONTO ONLY)  
BUSINESS PHONE DIAL 110  
ASK FOR ZENITH 33100  
NO LONG DISTANCE CHARGE

BOX 747 RICHMOND HILL

## SOIL INVESTIGATIONS AND TESTING LTD.

RICHMOND HILL, ONTARIO

E. H. WILSON  
MANAGING DIRECTOR

April 4th 1955

Proctor, Redfern & Laughlin, Consulting Engineers,  
11 Jordan Street,  
Toronto, Ontario.

Attention: Mr. P. Hertzberg

Re: Soil Investigations for the Colborne Road Overpass,  
Sarnia, Ontario

Dear Sir:

We now submit our report on soil conditions encountered at the above named site.

From the bore hole collar to depths of 6' to 7' is a sand and gravel strata with indicated load values of approximately 2000 lbs. per square foot. Immediately underlying this is a fine silty sand. This formation varies considerably in thickness throughout the tested area, ranging in depths from 16' to 24' from ground surface. Taken on an average basis its degree of density is classified as medium. The water content of samples varies from wet to highly saturated. There are layers of decayed vegetation throughout the area which are from a few inches to 7' in thickness and are mixed with silt and clayey silt.

The degree of settlement under excessive loads is regarded as a major factor. We would not recommend load values under such adverse conditions as peat, though we suggest that a very soft clay should not exceed that of 200 lbs. per square foot.

Basing our knowledge on results derived from the standard penetration tests, moisture content of soil, free water tables and determination of soil settlement we recommend that piles be used at this site.

We suggest a Monotube "Y" type pile of 12' to 15' in length. This pile is cone shaped, having a 0'-8" tip and 1'-2" butt. According to information obtained from Mr. Stuart McKenzie of Monotube Piling Limited, this pile is capable of supporting loads up to 20 to 30 tons. We advise that the piles do not penetrate into the soft formations as shown on bore hole log profiles.

The bore hole log profile for the continuation of Hole #1 will be forwarded to your office immediately upon completion.

Yours very truly,



E. H. Wilson  
Managing Director

EHW/iw



# SOIL INVESTIGATIONS AND TESTING LTD.

## TEST BORINGS DATA SHEET

FILE NO.:

ORDER NO.: SI-55/9

CLIENT: PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E.O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

HOLE NO.: 1.

NAME OF JOB: COLBORNE ROAD OVERPASS CAH #402, SARNIA, ONTARIO.

HOLE LOCATION: Refer to plot plan.

ELEVATION OF SURFACE: 600.3'

FEET USED... 81'... OF 2 1/2" CASING.

FEET USED..... OF..... DRIVE PIPE.

DATE STARTED: MARCH 15th/55

DATE COMPLETED: MARCH 18th/55

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
0'-0"	3'	Fine to coarse grey sand & fine to coarse gravel (moist)			
3'	4'	Drove 2" split-tube sampler Medium dense grey fine to coarse sand & fine to coarse gravel (wet)	24	1	
4'	7'	As sample #1			
7'	8'	Drove 2" split-tube sampler Medium grey fine silty sand (wet)	18	2	

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

J. McDonald

# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 2.

ORDER NO.: S1-55/9

HOLE NO.: 1.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
7'	8'	Drove 2½" casing	16		
8'	9'	" " "	35		
9'	10'	" " "	41		
10'	11'	" " "	50		
8'	11'	As sample #2			
11'	12'	Drove 2" split-tube sampler	42	3	
		Dense grey fine silty sand			
		(wet)			
11'	12'	Drove 2½" casing	38		
12'	13'	" " "	45		
13'	14'	" " "	56		
14'	15'	" " "	47		
15'	16'	" " "	41		
12'	16'	As sample #3			
16'	17'	Drove 2" split-tube sampler	19	4	
		Medium dense grey fine silty			
		sand containing decayed			
		vegetation (wet)			

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 3.

ORDER NO.: SI-55/9

HOLE NO.: 1.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
16'	17'	Drove 2½" casing	28		
17'	18'	" " "	28		
18'	19'	" " "	30		
19'	20'	" " "	39		
17'	20'	As sample #4			
20'	21'	Drove 2" split-tube sampler	18	5	
		Medium grey fine silty sand			
		(wet)			
20'	21'	Drove 2½" casing	27		
21'	22'	" " "	29		
22'	23'	" " "	30		
23'	24'	" " "	30		
21'	22'	As sample #5			
22'	24'	Grey silt slight clay content			
		(moist)			
24'	25'	Drove 2" split-tube sampler	4	6	

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 4.

ORDER NO.: SI-55/9

HOLE NO.: 1.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
24'	25'	Very soft grey silt slight clay content & decayed vegetation (moist)		6	
24'	25'	Drove 2½" casing	37		
25'	26'	Drove 2½" casing	40		
26'	27'	" " "	40		
27'	28'	" " "	45		
25'	28'	As sample #6			
28'	31'	Pushed 2" split-tube sampler			
		As sample #6			
31'	32'	Drove 2" split-tube sampler	9	7	
		Medium stiff grey peat with slight clay content & decayed vegetation (moist)			
28'	29'	Drove 2½" casing	40		
29'	30'	" " "	40		
30'	31'	" " "	41		

HAMMERS:—(A) For Casing ..... 350 lbs. with 24 inches—drop.....

(B) Sampling..... 110 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 5.

ORDER NO.: S1-55/9

HOLE NO.: 1.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
31'	32'	Drove 2½" casing	39		
32'	33'	" " "	38		
33'	34'	" " "	38		
32'	34'	Soil grey silty clay (moist)			
34'	35'	Drove 2" split-tube sampler	40	8	
		Hard greyish brown silty clay			
		containing fine to medium			
		gravel (slightly moist)			
35'	36'	Drove 2" split-tube sampler	45		
		As sample #8			
34'	35'	Drove 2½" casing	75		
35'	36'	" " "	70		
36'	38'	As sample #8			
38'	39'	Drove 2" split-tube sampler	15	9	
		Stiff grey clay containing			
		coarse sand (moist)			

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop

(B) Sampling 110 lbs. with 30 inches—drop

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION  
PAGE: 6.

ORDER NO.: SI-55/9

HOLE NO.: 1

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
39'	42'	As sample #9			
42'	43'	Drove 2" split-tube sampler	10		
		Medium stiff grey clay con-			
		taining coarse sand (moist)			
36'	37'	over casing	44		
37'	38'	"	40		
38'	39'	"	40		
39'	40'	" " "	40		
40'	41'	" " "	40		
41'	42'	" " "	43		
42'	43'	" " "	49		
43'	44'	" " "	56		
44'	45'	" " "	68		
45'	46'	" " "	70		
43'	46'	Grey clay containing coarse			
		sand (moist)			
46'	47'	Drove 2" split-tube sampler	14	10	

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop  
(B) Sampling 140 lbs. with 30 inches—drop

WATER  
LEVELS:—Depth of Hole.....Time.....Depth to Water.....  
Depth of Hole.....Time.....Depth to Water.....

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 7.

ORDER NO.: SI-55/9

HOLE NO.: 1.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
46'	47'	Stiff grey plastic clay con-		10	
		taining fine gravel (moist)			
46'	47'	Drove 2½" casing	100		
47'	48'	" " "	90		
48'	49'	" " "	120		
49'	50'	" " "	100		
50'	51'	" " "	100		
47'	51'	As sample #10			
51'	52'	Drove 2" split-tube sampler	15	11	
		Stiff grey plastic clay con-			
		taining 2" seam of fine grey			
		silty sand (moist)			
51'	52'	Drove 2½" casing	160		
52'	53'	" " "	158		
53'	54'	" " "	130		
54'	55'	" " "	114		
55'	56'	" " "	100		
52'	56'	Grey plastic clay (moist)			

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop  
 (B) Sampling 140 lbs. with 30 inches—drop

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....  
 Depth of Hole.....Time.....Depth to Water.....

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION  
PAGE: 8.

ORDER NO.: SI-55/9

HOLE NO.: 1.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
56'	57'	Drove 2" split-tube sampler	2	12	
		Very soft grey clay with			
		slight silt content (moist)			
56'	57'	Drove 2½" casing	120		
57'	58'	" " "	96		
58'	59'	" " "	99		
59'	60'	" " "	98		
60'	61'	" " "	90		
57'	61'	As sample #12			
61'	62'	Drove 2" split-tube sampler	3		
		As sample #12			
61'	62'	Drove 2½" casing	110		
62'	63'	" " "	96		
63'	64'	" " "	84		
64'	65'	" " "	84		
65'	66'	" " "	84		
62'	66'	As sample #12			

HAMMERS:—(A) For Casing 320 lbs. with 24 inches—drop.....  
(B) Sampling 140 lbs. with 30 inches—drop.....

WATER  
LEVELS:—Depth of Hole.....Time.....Depth to Water.....  
Depth of Hole.....Time.....Depth to Water.....

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J. McDonald



# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 9.

ORDER NO.: SI-55/9

HOLE NO.: 1.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
66'	67'	Drove 2" split-tube sampler	12	13	
		Medium stiff grey clay with			
		slight silt content (moist)			
66'	67'	Drove 2 1/2" casing	305		
67'	68'	" " "	220		
68'	69'	" " "	180		
69'	70'	" " "	164		
70'	71'	" " "	150		
67'	71'	As sample #13			
71'	72'	Drove 2" split-tube sampler	14	14	
		Stiff greyish blue clay (moist)			
71'	72'	Drove 2 1/2" casing	128		
72'	73'	" " "	116		
73'	74'	" " "	120		
74'	75'	" " "	130		
75'	76'	" " "	141		
76'	77'	" " "	141		
77'	78'	" " "	143		

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....  
 (B) Sampling 140 lbs. with 30 inches—drop.....

WATER  
 LEVF —Depth of Hole.....Time.....Depth to Water.....  
 Depth of Hole.....Time.....Depth to Water.....

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J. McDonald

# SOIL INVESTIGATIONS AND TESTING LTD.

**FILE NO.**

## TEST BORINGS DATA SHEET

**CONTINUATION**

**PAGE:** 10.

**ORDER NO.:** SI-55/9

HOLE NO.: 1.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
78'	79'	Drove 2½" casing	181		HOLE COMPLETED
79'	80'	" " "	210		
30'	81'	" " "	215		
72'	81'	As sample #14			
81'	82'	Drove 2" split-tube sampler	13	15	
		Stiff greyish blue clay,			
		slight silt content containing			
		fine gravel (moist)			
82'	86'	As sample #15			
86'	87'	Drove 2" split-tube sampler	14		
		As sample #15			

HAMMERS:—(A) For Casing ..... 350 ..... lbs. with ..... 24 ..... inches—drop.....

(B) Sampling.....140 lbs. with 30 inches—drop.....

WATER LEVELS.—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

## BORING STOPPED BY

DRILLER FOREMAN

J. McDonald

# SOIL INVESTIGATIONS AND TESTING LTD.

## TEST BORINGS DATA SHEET

FILE NO.:

ORDER NO.: SI-55/9

CLIENT: PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E.O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

HOLE NO.: 2.

NAME OF JOB: COLBORNE ROAD OVERPASS CAH #402, SARNIA, ONTARIO.

HOLE LOCATION: Refer to plot plan.

ELEVATION OF SURFACE: 600.2'

FEET USED...36'...OF...22<sup>1</sup>/<sub>2</sub>'...CASING.

FEET USED.....OF.....DRIVE PIPE.

DATE STARTED: MARCH 12th/55

DATE COMPLETED: MARCH 14th/55

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
0'-0"	7'	Fine to coarse gravel (moist)			THERE IS A BED OF GRAVEL HERE, TRIED WITH THE SHOVEL A FEW FEET AWAY AND SAND STARTS AT SURFACE, HAD TO SET UP THE DRILL HERE BECAUSE THERE ARE GAS LINES UNDERGROUND. THE GRAVEL WAS TOO DENSE TO DRIVE THROUGH SO WASHED THE CASING DOWN TO 7'.
7'	8'	Drove 2" split-tube sampler	25	1	
		Medium dense grey fine silty			
		sand (highly saturated)			
7'	8'	Drove 2 <sup>1</sup> / <sub>2</sub> " casing	19		
8'	9'	" " "	30		
9'	10'	" " "	46		
10'	11'	" " "	53		
8'	11'	As sample #1			
11'	12'	Drove 2" split-tube sampler	35		

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER

LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

J. McDonald

# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 2.

ORDER NO.: S1-55/9

HOLE NO.: 2.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
11'	12'	Dense grey fine silty sand (highly saturated)		2	
11'	12'	Drove 2½" casing	18		
12'	13'	" " "	36		
13'	14'	" " "	45		
14'	15'	" " "	50		
12'	15'	As sample #2			
15'	16'	Drove 2" split-tube sampler Medium dense grey fine silty sand (wet)	24	3	
15'	16'	Drove 2½" casing	22		
16'	17'	" " "	26		
17'	18'	" " "	37		
18'	19'	" " "	40		
16'	19'	As sample #3			
19'	20'	Drove 2" split-tube sampler As sample #3	22		

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole 12' Time 8 AM Depth to Water 6'

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

J. McDonald

# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 3.

ORDER NO.: S1-55/9

HOLE NO.: 2.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
19'	20'	Drove 2½" casing	28		
20'	21'	" " "	36		
21'	22'	" " "	36		
22'	23'	" " "	37		
20'	24'	As sample #3			
24'	25'	Drove 2" split-tube sampler	5	4	
		Soft grey clayey silt (moist)			
23'	24'	Drove 2½" casing	18		
24'	25'	" " "	20		
25'	26'	" " "	21		
25'	30'	Pushed cleaning tube			
		Very soft grey silty clay			
		(moist)			
30'	33'	Split-tube sampler dropped in			
		with weight of "A" rods			
		Very soft grey silty clay			
		(moist)			

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....  
 (B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....  
 Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

J. McDonald

# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 4.

ORDER NO.: S1-55/9

HOLE NO.: 2.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
33'	34'	Drove 2" split-tube sampler	7	5	
		Soft brown peat containing			
		thin seams of fine grey silty			
		sand (moist)			
26'	27'	Drove 2 1/2" casing	29		
27'	28'	" " "	30		
28'	29'	" " "	30		
29'	30'	" " "	30		
30'	31'	" " "	30		
31'	32'	" " "	27		
32'	33'	" " "	28		
33'	34'	" " "	28		
34'	35'	" " "	29		
35'	36'	" " "	30		
34'	38'	As sample #5			
38'	39'	Drove 2" split-tube sampler	10		
39'	40'	" " " " "	8		
38'	40'	Medium stiff grey silty clay			
		containing seams of coarse grey sand (moist)			HOLE COMPLETED

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

J. McDonald.....

# SOIL INVESTIGATIONS AND TESTING LTD.

## TEST BORINGS DATA SHEET

FILE NO.:

ORDER NO.: S1-55/9

CLIENT: PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E.O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

HOLE NO.: 3.

NAME OF JOB: COLBORNE ROAD OVERPASS CAH #402, SARNIA, ONTARIO.

HOLE LOCATION: Refer to plot plan.

ELEVATION OF SURFACE: 601.3'

FEET USED... 26' OF 2 1/2" CASING.

FEET USED..... OF ..... DRIVE PIPE.

DATE STARTED: MARCH 10th/55

DATE COMPLETED: MARCH 11th/55

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
0'-0"	3'	Grey fine to coarse sand & coarse gravel (moist)			
3'	4'	Drove 2" split-tube sampler Dense grey fine to medium sand & coarse gravel (moist)	35	1	
4'	7'	As sample #1			
7'	8'	Drove 2" split-tube sampler Loose grey fine sand contain- ing fine to coarse gravel (wet)	5	2	

HAMMERS:—(A) For Casing ..... 350 lbs. with ..... 24 inches—drop.....  
(B) Sampling ..... 140 lbs. with ..... 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION  
PAGE: 2.

ORDER NO.: S1-55/9

HOLE NO.: 3.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
8'	11'	Grey fine silty sand (highly saturated)			
11'	12'	Drove 2" split-tube sampler	20	3	
		Medium dense grey fine silty sand (highly saturated)			
11'	12'	Drove 2½" casing	15		
12'	13'	" " "	26		
13'	14'	" " "	37		
14'	15'	" " "	37		
12'	15'	Grey fine silty sand (wet)			
15'	16'	Drove 2" split-tube sampler	12	4	
		Medium grey fine silty sand (wet)			
15'	16'	Drove 2½" casing	11		
16'	17'	" " "	11		
17'	18'	" " "	12		
18'	19'	" " "	11		

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole 10' Time NOON Depth to Water BAILED HOLE DRY

Depth of Hole 10' Time 12:30 PM Depth to Water 9'

BORING STOPPED BY

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 3.

ORDER NO.: SI-55/9

HOLE NO.: 3.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
16'	19'	Same as sample #4			
19'	20'	Drove 2" split-tube sampler	19	5	
		Very stiff grey silty clay			
		containing decayed vegetation			
		(moist)			
20'	22'-6"	Grey silty clay (moist)			
22'-6"	23'-6"	Drove 2" shelby tube	27		
23'-6"	24'-4"	" " " " (10" recovery), put sample in jar.	33 for 10"		
		Grey silty clay containing		6	
		decayed vegetation (moist)			
24'-4"	25'	Same as sample #6			
25'	26'	Drove 2" split-tube sampler	31	7	
		Hard greyish brown silty clay			
		containing fine gravel			
		(slightly moist)			

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION  
PAGE: 4.

ORDER NO.: 51-55/9

HOLE NO.: 3.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
21'	22'	Drove 2½" casing	31		
22'	23'	" " "	27		
23'	24'	" " "	29		
24'	25'	" " "	20		
25'	26'	" " "	21		
26'	27'	Drove 2" split-tube sampler	24		
27'	28'	" " " " "	24		
28'	29'	" " " " "	20		
29'	30'	" " " " "	21		
30'	31'	" " " " "	18		
31'	32'	" " " " "	19		
26'	32'	Very stiff greyish brown clay containing coarse sand & fine gravel (moist)		8	
32'	33'	Drove 2" split-tube sampler	18		
33'	34'	" " " " "	16		
34'	35'	" " " " "	14		
35'	36'	" " " " "	12		

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop  
(B) Sampling 140 lbs. with 30 inches—drop

WATER LEVELS:—Depth of Hole 26' Time 8 AM Depth to Water 19'  
Depth of Hole Time Depth to Water

BORING STOPPED BY

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## SOIL INVESTIGATIONS AND TESTING LTD.

**FILE NO.**

## TEST BORINGS DATA SHEET

**CONTINUATION**

**PAGE:** 5.

**ORDER NO.:** SI-55/9

HOLE NO.: 3.

[illegible]

HAMMERS:—(A) For Casing ..... 350 ..... lbs. with 24 ..... inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

**BORING STOPPED BY**

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# SOIL INVESTIGATIONS AND TESTING LTD.

## TEST BORINGS DATA SHEET

FILE NO.:

ORDER NO.: S1-55/9

CLIENT:

PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E.O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

HOLE NO.: 4.

NAME OF JOB:

COLBORNE ROAD OVERPASS CAH #402, SARNIA, ONTARIO.

HOLE LOCATION:

Refer to plot plan.

ELEVATION OF SURFACE: 601.0'

FEET USED 22' OF 2 1/2" CASING.

FEET USED OF DRIVE PIPE.

DATE STARTED: MARCH 11th/55

DATE COMPLETED: MARCH 12th/55

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
0'-0"	3'	Fine grey sand (moist)			
3'	4'	Drove 2" split-tube sampler	17	1	
		Medium grey fine to coarse			
		sand & fine to medium gravel			
		(wet)			
4'	6'	As sample #1			
6'	7'	Fine grey silty sand (wet)			
7'	8'	Drove 2" split-tube sampler	31	2	
		Dense grey fine silty sand (wet)			

HAMMERS:—(A) For Casing 350 lbs. 24 inches—drop

(B) Sampling 140 lb 30 inches—drop

WATER

LEVELS:—Depth of Hole Time Depth to Water

Depth of Hole Time Depth to Water

BORING STOPPED BY

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION  
PAGE: 2.

ORDER NO.: S1-55/9

HOLE NO.: 4

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
7'	8'	Drove 2½" casing	17		
8'	9'	" " "	22		
9'	10'	" " "	34		
10'	11'	" " "	34		
11'	12'	" " "	35		
8'	12'	As sample #2			
12'	13'	Drove 2" split-tube sampler	31	3	
		Dense grey fine silty sand			
		(highly saturated)			
12'	13'	Drove 2½" casing	11		
13'	14'	" " "	17		
14'	15'	" " "	34		
15'	16'	" " "	35		
13'	16'	As sample #3			
16'	17'	Drove 2" split-tube sampler	28		
		Lost sample.			
16'	17'	Drove 2½" casing	12		

HAMMERS:—(A) For Casing ..... 350 ..... lbs. with ..... 24 ..... inches—drop.....

(B) Sampling ..... 140 ..... lbs. with ..... 30 ..... inches—drop.....

WATER LEVELS:—Depth of Hole..... Time..... Depth to Water.....

Depth of Hole..... Time..... Depth to Water.....

BORING STOPPED BY

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION  
PAGE: 3.

ORDER NO.: SI-55/9

HOLE NO.: 4.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
17'	18'	Drove 2½" casing	14		
16'	17'-6"	As sample #3			
17'-6"	18'	Grey silty clay containing decayed vegetation.			
18'	19'	Drove 2" split-tube sampler Stiff grey silty clay con- taining decayed vegetation (moist)	14	4	
18'	19'	Drove 2½" casing	34		
19'	20'	" " "	40		
20'	21'	" " "	65		
21'	22'	" " "	100		
19'	22'	Greyish brown silty clay, containing coarse sand & fine gravel (slightly moist)			
22'	23'	Drove 2" split-tube sampler	32	5	

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....  
(B) Sampling 110 lbs. with 30 inches—drop.....

WATER  
LEVELS:—Depth of Hole 19' Time 8 AM Depth to Water 6'  
Depth of Hole..... Time..... Depth to Water.....

BORING STOPPED BY

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J. McDonald.

# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 4.

ORDER NO.: SI-55/9

HOLE NO.: 4.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
22'	23'	Hard greyish brown clay, containing coarse sand & fine gravel (slightly moist)		5	
23'	24'	Drove 2" split-tube sampler	33		
24'	25'	" " " " "	31		
25'	26'	" " " " "	30		
23'	26'	As sample #5			
26'	27'	Drove 2" split-tube sampler	27		
27'	28'	" " " " "	27		
28'	29'	" " " " "	24		
26'	29'	Very stiff greyish brown clay containing coarse sand & fine gravel with slight silt content (moist)		6	
29'	32'	As sample #6 becoming softer with depth			
32'	33'	Drove 2" split-tube sampler	13		

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Tim.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

J. McDonald

# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 5.

ORDER NO.: SI-55/9

HOLE NO.: 4.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
32'	33'	Stiff greyish brown clay		7	<del>HOLE COMPLETED</del>  PULLED CASING & MOVED TO HOLE #2.
		containing fine to medium gravel (moist)			
33'	36'	As sample #7			
36'	37'	Drove 2" split tube sampler	11		
37'	38'	" " " " "	12		
38'	39'	" " " " "	10		
39'	40'	" " " " "	11		
36'	40'	Stiff grey clay with slight sand content (moist)		8	

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.

B) Sampling 140 lbs. with 30 inches—drop.

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

J. McDonald.



# SOIL INVESTIGATIONS AND TESTING LTD.

## TEST BORINGS DATA SHEET

FILE NO.:

ORDER NO.: S1-55/9

CLIENT: PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E.O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

HOLE NO.: 4  
CONTINUED

NAME OF JOB: COLBORNE ROAD OVERPASS CAH #402, SARNIA, ONTARIO.

HOLE LOCATION: Refer to plot plan.

ELEVATION OF SURFACE: 601.0'

FEET USED...79'...OF...2 1/2" CASING.

FEET USED.....OF.....DRIVE PIPE.

DATE STARTED: MARCH 28th/55

DATE COMPLETED: MARCH 30th/55.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
0'-0"	40'	Drove 2 1/2" casing			
40'	41'	" " "	68		
41'	42'	" " "	60		
42'	43'	" " "	78		
43'	44'	" " "	78		
44'	45'	" " "	78		
0'-0"	45'-0"	Cleaned out as instructed.			
		No soil definitions or soil			
		sampling required.			
45'	46'	Drove 2" split-tube sampler	6		
		Soft grey clay containing		1	
		coarse sand & fine gravel (moist)			NO FREE WATER @ 46'

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER

LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

P. McBreen

# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 2.

ORDER NO.: SI-55/9

HOLE NO.: 4.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
45'	46'	Drove 2½" casing	65		
46'	47'	" " "	50		
47'	48'	" " "	49		
48'	49'	" " "	46		
49'	50'	" " "	40		
46'	50'	Soft grey clay containing coarse sand & fine gravel (moist) with small stones included			
50'	51'	Drove 2" shelby tube	6		
51'	52'	" " " "	7		
50'	52'	Soft grey clay containing pieces of coarse sand & fine gravel (moist)		2	
					NO WATER @ 52'
50'	51'	Drove 2½" casing	60		
51'	52'	" " "	66		
52'	53'	" " "	80		
53'	54'	" " "	78		
54'	55'	" " "	80		

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.  
 (B) Sampling 110 lbs. with 30 inches—drop.

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....  
 Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 3.

ORDER NO.: 81-55/9

HOLE NO.: 4.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
55'	56'	Drove 2½" casing	180		
56'	57'	" " "	156		
52'	57'	Soft grey clay containing pieces of coarse sand & fine to medium gravel (moist)			
57'	58'	Drove 2" split-tube sampler	4		
		Soft grey clay containing pieces of coarse sand (moist)		3	
57'	58'	Drove 2½" casing	118		
58'	59'	" " "	120		
59'	60'	" " "	126		
60'	61'	" " "	113		
61'	62'	" " "	113		
58'	62'	As sample #3			
62'	63'	Drove 2" shelby tube	5		
63'	64'	" " " "	8		
62'	64'	Soft grey clay (moist)		4	
					NO FREE WATER @ 64'

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop

(B) Sampling 142 lbs. with 30 inches—drop

WATER LEVELS:—Depth of Hole Time Depth to Water

Depth of Hole Time Depth to Water

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 4.

ORDER NO.: 51-55/9

HOLE NO.: 4.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
62'	63'	Drove 2½" casing	70		
63'	64'	" " "	90		
64'	65'	" " "	113		
65'	66'	" " "	100		
66'	67'	" " "	130		
67'	68'	" " "	122		
68'	69'	" " "	112		
64'	69'	Soft grey clay containing pieces of coarse sand & fine to medium gravel (moist)			
69'	70'	Drove 2" split-tube sampler	8		
		Soft grey clay containing pieces of coarse sand & fine to medium gravel (moist)		5	
69'	70'	Drove 2½" casing	110		
70'	71'	" " "	115		
71'	72'	" " "	160		
72'	73'	" " "	165		
73'	74'	" " "	170		

HAMMERS:—(A) For Casing ..... 350 lbs. with 24 inches—drop.....

(B) Sampling..... 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole..... Time..... Depth to Water.....

Depth of Hole..... Time..... Depth to Water.....

BORING STOPPED BY

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION  
PAGE: 5.

ORDER NO.: S1-55/9

HOLE NO.: 4.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
74'	75'	Drove 2½" casing	250		
70'	75'	As sample #5 (moist)			
75'	76'	Drove 2" split-tube sampler	12		
		Medium stiff grey clay con-		6	
		taining pieces of coarse			
		sand & fine gravel (moist)			HOLE DRY @ 76'
75'	76'	Drove 2½" casing	210		
76'	77'	" " "	174		
77'	78'	" " "	225		
78'	79'	" " "	226		
76'	79'	Medium stiff grey clay con-			
		taining pieces of fine to			
		medium & coarse gravel (moist)			
79'	80'	Drove 2" shelby tube	12		
80'	81'	" " " "	14		
79'	81'	Medium stiff grey clay con-		7	
		taining pieces of fine to			
		medium gravel (moist)			HOLE DRY @ 81'

HAMMERS:—(A) For Casing 350 lbs. with 24 inches—drop.....

(B) Sampling 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole.....Time.....Depth to Water.....

Depth of Hole.....Time.....Depth to Water.....

BORING STOPPED BY

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# SOIL INVESTIGATIONS AND TESTING LTD.

FILE NO.

## TEST BORINGS DATA SHEET

CONTINUATION

PAGE: 6.

ORDER NO.: SI-55/9

HOLE NO.: 4.

DEPTH		CLASSIFICATION OF SOILS	No. of Blows Per Ft.	Sample Numbers Taken	REMARKS
From	To				
81'	82'	Drove 2" cross chopping bit	10		HOLE DRY
82'	83'	" " " " "	15		
83'	84'	" " " " "	20		
84'	85'	" " " " "	36		
85'	86'	" " " " "	48		
86'	87'	" " " " "	48		
87'	88'	" " " " "	57		
88'	89'	" " " " "	59		
89'	90'	" " " " "	63		
90'	91'	" " " " "	61		
91'	92'	" " " " "	77		
92'	93'	" " " " "	72		
93'	94'	" " " " "	92		
94'	95'	" " " " "	93		
					HOLE COMPLETED

HAMMERS:—(A) For Casing ..... 350 lbs. with 24 inches—drop.....

(B) Sampling..... 140 lbs. with 30 inches—drop.....

WATER LEVELS:—Depth of Hole..... Time..... Depth to Water.....

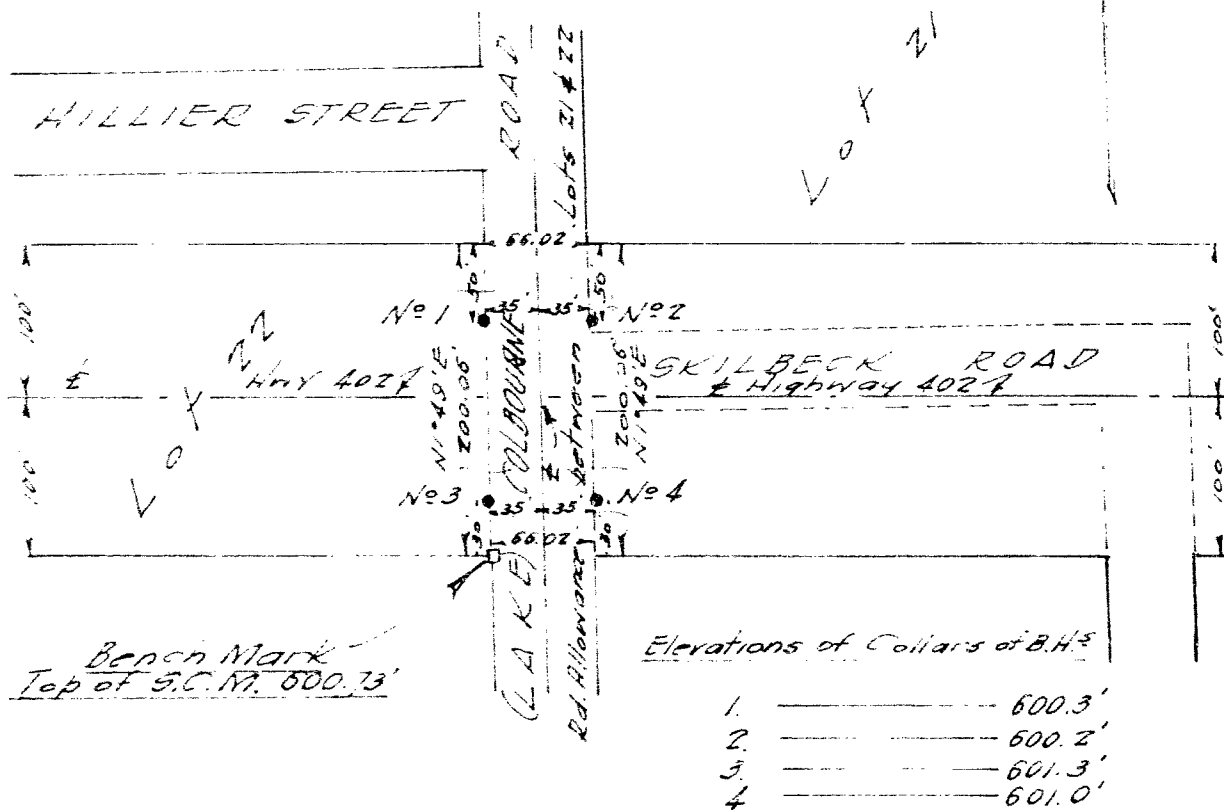
Depth of Hole..... Time..... Depth to Water.....

BORING STOPPED BY

DRILLER FOREMAN

P. McBreen

PLAN  
SHOWING LOCATION & ELEVATION OF SOIL INVESTIGATIONS B.H.'S  
COLBORNE ROAD OVERPASS, CAH 402  
ROAD ALLOWANCE BETWEEN LOTS 21 & 22  
TOWNSHIP OF SARNIA  
COUNTY OF LAMETON  
Scale 1" = 100'



For  
Soil Investigations & Testing Ltd.  
Richmond Hill

By Proctor Redfern & Laughlin

PROJECT E.O. 556

Paul Minarski  
Ontario Land Surveyor  
46 Parkhurst Blvd.  
Leaside Ontario  
March 5 1955

# SOIL INVESTIGATIONS & ENGINEERING LTD.

5 YONGE STREET SOUTH  
BOX 711  
RICHMOND HILL, ONTARIO

Job Name COLBORNE ROAD OVERPASS CAH # 402, SARNIA, ONTARIO.

Order No. SI-55/9

Client PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E.O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

Borehole No. 1 Diameter 2 1/2" Date MARCH 15th - 17th/55

Borehole Location Refer to plot plan Elevation 600.3'

Description	Elevation	Legend	SAMPLE	Depth	Thickness	Blows Split- tube	Depth To Water Below Ground Level
Fine to coarse sand & fine to coarse gravel (moist)				0'-0"			140 lb. hammer 30" drop
Medium dense grey fine to coarse sand & fine to coarse gravel (wet) As sample #1			1	3'-0" 4'-0"	1'-0"	24	
Medium grey silty sand (wet) As sample #2			2	7'-0" 8'-0"	1'-0"	18	
Dense grey fine silty sand (wet) As sample #3			3	11'-0" 12'-0"	1'-0"	42	
Medium dense grey fine silty sand containing decayed vegetation (wet) As sample #4			4	16'-0" 17'-0"	1'-0"	19	
Medium grey fine silty sand (wet) Grey clayey silt (moist)			5	20'-0" 21'-0" 22'-0"	1'-0"	18	
Very soft grey clayey silt and decayed vegetation (moist) As sample #6			6	24'-0" 25'-0"	1'-0"	4	
As sample #6				28'-0"	3'-0"	PUSHED SAMPLER	
Medium stiff grey peat with slight clay content & decayed vegetation (moist) Soft grey silty clay (moist) Hard greyish brown silty clay containing fine to medium gravel (slightly moist) As sample #8 As sample #8			7	31'-0" 32'-0"	1'-0"	9	
Stiff grey clay containing coarse sand (moist) As sample #9			8	34'-0" 35'-0" 36'-0"	1'-0" 1'-0"	40 45	
Medium stiff grey clay containing coarse sand (moist) No change			9	38'-0" 39'-0"	1'-0"	15	
Stiff grey plastic clay containing fine gravel (moist)			10	42'-0" 43'-0" 46'-0" 47'-0"	1'-0"	10 14	

CONTINUED

Scale 1" = 5'-0"

● Disturbed Sample

■ Undisturbed Sample

⬇ Water Sample



**SOIL INVESTIGATIONS AND TESTING LTD.**

5 YONGE STREET SOUTH  
RICHMOND HILL, ONTARIO

Job Name COLBORNE ROAD OVERPASS CAH #402, SARNIA, ONTARIO.

Order No. 51-55/9

Client PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E.O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

Borehole No. 1 Diameter 2 1/2" Date MARCH 17th-18th/55

Borehole Location Refer to plot plan. Elevation 600.3'

Description	Elevation	Legend	SAMPLE	Depth	Thickness	Blows Split- tube	Depth To Water Below Ground Level
		CONTINUED					140 lb. hammer 30" drop
Stiff grey plastic clay containing fine gravel (moist) No change				47'-0"			
Stiff grey plastic clay containing 2" seam of grey fine silty sand (moist)			11	51'-0" 52'-0"	1'-0"	15	
Grey plastic clay (moist)							
Very soft grey clay with slight silt content (moist)			12	56'-0" 57'-0"	1'-0"	2	
As sample #12							
As sample #12				61'-0" 62'-0"	1'-0"	3	
As sample #12							
Medium stiff grey clay with a slight silt content (moist)			13	66'-0" 67'-0"	1'-0"	12	
As sample #13							
Stiff greyish blue clay (moist)			14	71'-0" 72'-0"	1'-0"	14	
As sample #14							
Stiff greyish blue clay with slight silt content containing fine gravel (moist)			15	81'-0" 82'-0"	1'-0"	13	
As sample #15							
As sample #15				86'-0" 87'-0"	1'-0"	14	
		HOLE COMPLETED					

Scale 1" = 5'-0"

● Disturbed Sample

■ Undisturbed Sample

1 Water Sample

5 YONGE STREET SOUTH  
 BOX 747  
 RICHMOND HILL, ONTARIO

Order No. S1-55/9

Borehole Location	Refer to plot plan.	Elevation	600.2'
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Scale 1" = 5'-0"

### ● Disturbed Sample

### ■ Undisturbed Sample

### 1 Water Sample

SOIL INVESTIGATIONS AND TESTING  
~~XXXXXXXXXXXXXXXXXXXX~~ LTD.

5 YONGE STREET SOUTH  
~~XXXXXXXXXXXXXXXXXXXX~~  
BOX 747  
RICHMOND HILL, ONTARIO

Job Name COLBORNE ROAD OVERPASS CAH #402, SARNIA, ONTARIO.

Order No. 51-55/9

Client PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E. O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

Borehole No. 3 Diameter 2 1/2" Date MARCH 10th/55

Borehole Location Refer to plot plan. Elevation 601.3'

Description	Elevation	Legend	SAMPLE	Depth	Thickness	Blows Split- tube	Depth To Water Below Ground Level
							140 lb. Hammer 30" drop
				0'-0"			
Grey fine to coarse sand & coarse gravel (moist)		▲			3'-0"		
Dense grey fine to medium sand & coarse gravel (moist)		▲	[1	3'-0" 4'-0"	1'-0"	35	
As sample #1							
Loose grey fine sand containing fine to coarse gravel (wet)		▲	[2	7'-0" 8'-0"	1'-0"	5	
Grey fine silty sand (highly saturated)							9'-0" 12:30 ↑ 10' PM
Medium dense grey fine silty sand (highly saturated)			[3	11'-0" 12'-0"	1'-0"	20	BAILED DRY 12 NOON
Grey fine silty sand (wet)							
Medium grey fine silty sand (wet)			[4	15'-0" 16'-0"	1'-0"	12	
As sample #4							
Very stiff grey silty clay con- taining decayed vegetation (moist)		▲	[5	19'-0" 20'-0"	1'-0"	19	
Grey silty clay (moist)							19'
Grey silty clay containing decayed vegetation (jar sample)		▲	[6	22'-6" 23'-6" 24'-4" 25'-0"	1'-0" 0'-10"	27 33	WATER RISE 8 AM MARCH 11th
Hard greyish brown silty clay con- taining fine gravel (slightly moist)		▲	[7	26'-0" 27'-0" 28'-0" 29'-0" 30'-0" 31'-0"	1'-0" 1'-0" 1'-0" 1'-0" 1'-0" 1'-0"	31 24 24 20 21 18	2" SHELBY-TUBE 26'
Very stiff greyish brown clay con- taining coarse sand and fine gravel (moist)			[8	32'-0" 33'-0" 34'-0" 35'-0" 36'-0"	1'-0" 1'-0" 1'-0" 1'-0" 1'-0"	19 18 16 14 12	
Stiff grey silty clay with coarse sand content (moist)			[9	39'-0" 40'-0"	1'-0"	10	
As sample #9							
As sample #9							
Medium stiff grey silty clay (moist)			[10				
HOLE COMPLETED							

Scale 1" = 5'-0"

● Disturbed Sample

■ Undisturbed Sample

┘ Water Sample

# SOIL INVESTIGATIONS ~~XXXXXXXXXXXX~~ LTD.

5 YONGE STREET SOUTH  
~~XXXXXXXXXXXX~~  
BOX 747  
RICHMOND HILL, ONTARIO

Job Name COLBORNE ROAD OVERPASS CAH #402, SARNIA, ONTARIO.

Order No. S1-55/9

Client PROCTOR, REDFERN & LAUGHLIN, (PROJECT - NO. E.O. 556)  
DEPARTMENT OF HIGHWAYS, (WORK ORDER NO. 4-1081)

Borehole No. 4 Diameter 2½" Date MARCH 11th/55

Borehole Location Refer to plot plan Elevation 601.0'

Description	Elevation	Legend	SAMPLE	Depth	Thickness	Blows Split- tube	Depth To Water Below Ground Level
				0'-0"			140 lb. hammer 30" drop
Grey fine sand (moist)					3'-0"		
Medium grey fine to coarse sand & fine to medium gravel (wet)			1	3'-0" 4'-0"	1'-0"	17	
As sample #1				6'-0"			6'-0"
Grey fine silty sand (wet)				7'-0"			
Dense grey fine silty sand (wet)			2	8'-0"	1'-0"	31	
As sample #2							
Dense grey fine silty sand (highly saturated)			3	12'-0" 13'-0"	1'-0"	31	
As sample #3							
Lost sample				16'-0"			
As sample #3				17'-0" 17'-6"	1'-0"	28	
Stiff grey silty clay containing decayed vegetation (moist)			4	18'-0" 19'-0"	1'-0"	14	
Greyish brown silty clay containing coarse sand & fine gravel (slightly moist)							
Hard greyish brown clay containing coarse sand & fine gravel (slightly moist)			5	22'-0" 23'-0" 24'-0"	1'-0" 1'-0" 1'-0"	32 33 31	
As sample #5				25'-0" 26'-0"	1'-0" 1'-0"	30	
Very stiff greyish brown clay con- taining silt content, coarse sand & fine gravel (moist)			6	27'-0" 28'-0" 29'-0"	1'-0" 1'-0" 1'-0"	27 27 24	
As sample #6 becoming softer with depth							
Stiff greyish brown clay contain- ing fine to medium gravel (moist)			7	32'-0" 33'-0"	1'-0"	13	
As sample #7							
Stiff grey clay with slight sand content (moist)			8	36'-0" 37'-0" 38'-0" 39'-0" 40'-0"	1'-0" 1'-0" 1'-0" 1'-0" 1'-0"	11 12 10 11	
HOLE COMPLETED							

WATER  
RISE  
8 AM  
MARCH 12th

Scale 1" = 5'-0"

● Disturbed Sample

■ Undisturbed Sample

┘ Water Sample