

SUPPLEMENTARY
FOUNDATION INVESTIGATION REPORT

For

I.E.W. and Hwy. #27 Interchanges,
Twp. of Kitchcock, County of York,
District #6 (Toronto).
W.P. 275-64-1 and W.P. 275-64-4
W.J. 65-P-104

INTRODUCTION

Since the original foundation investigation report for the above mentioned interchange was prepared, we have received the preliminary plans for the individual structures involved which show the exact locations of each. We have reviewed these plans with respect to the available soil information, and as a result of this review, we arranged for more borings to be carried out in the field to obtain additional information.

Field work, laboratory work, and the preparation of the Record of Borehole sheets, for the additional borings, were undertaken by Dominion Soil Investigation Ltd. at our request and according to a program decided upon by us.

The following pages contain a description of the subsoil conditions prevailing at each structure location, together with our final recommendations for the structure foundations.

This report was prepared by Mr. A. Barsvary, Senior Foundation Engineer, under the general supervision of Mr. K. G. Selby, Supervising Foundation Engineer.

cont'd. /2 ...

STRUCTURE #20 - W.P. 238-61-8 -

1. Soil Conditions:

Boreholes #5 and 121 were located in the vicinity of the proposed structure.

Below ground elevation in both borings, clayey silt fill material was found, extending to el. 357 - 360 ft. The stratum exhibited a hard consistency. Underlying the fill, the glacial till follows, which was identified to be cohesive clayey silt with a hard consistency. Shale bedrock was observed at el. 351.5 ft. in hole #5, and at 356.5 ft. in hole #121. The upper approx. 2 ft. zone of the shale is extremely weathered and disintegrated; the next roughly 10-ft. portion is still weathered, and the sound rock was found only below el. 344 ft.

Groundwater table was established at el. 362 ft. within the clayey silt fill layer.

The locations and elevations of the borings, together with the stratigraphical profile, are shown on Drawing #65-P-104E.

2. Recommendations:

Bridge #20 is proposed to be a three-span structure, the grade of Ramps Ev - N being around el. 342 - 343 ft., some 22 ft. below existing ground level. Due to the relatively deep cut, the abutments should be supported on spread footings, placed on rock. The footings of the two piers will necessarily be on sound rock.

The footings of the south abutment may be placed between el. 350 ft. and 352.5 ft., utilizing a design load of 5 t.s.f. By placing the footings below el. 350 ft., the safe load may be increased to 10 t.s.f. Simultaneously, the footings of the north abutment may be placed between el. 353 - 356 ft. with a design load of 5 t.s.f; also, it may be lowered below el. 353 ft., using a design load of 10 t.s.f. A minimum of four-ft. cover above the bottom of the footings should be provided for frost protection.

cont'd. /8 ...

STRUCTURE #20 - W.P. 238-61-8 - (cont'd.) ...

2. Recommendations: (cont'd.) ...

The piers should also be supported on spread footings four ft. below finished grade. At these depths the footings will likely be placed on sound rock, and a safe bearing pressure of 10 t.s.f. may also be assumed for design purposes.

No dewatering problems of the excavations are anticipated.

cont'd. /9 ...

RECORD OF BOREHOLE NO. 5

FOUNDATION SECTION

JOB 65-F-104

LOCATION 177,995 N 209,509 E

ORIGINATED BY P. MC

W.P. 275-64-1

BORING DATE Oct. 25, 1965.

COMPILED BY H.S.

DATUM G.S.C.

BOREHOLE TYPE Washboring - NX Casing.

CHECKED BY

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE					LIQUID LIMIT ——— WL PLASTIC LIMIT ——— WP WATER CONTENT ——— W			BULK DENSITY P.C.F.	REMARKS
ELEV DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS / FOOT	ELEV SCALE	25	50	75	100	125	WATER CONTENT % WP ——— W ——— WL			
364.5	Groundlevel														
0.0	Clayey silt with some sand & gravel. Compact to v. dense (Fill)		1	SS	15	360									Blocked dry 3.0' Gr 39% Sa 15% Si&Cl 66%
357.5			2	SS	118										
7.0	Clayey silt with some sand & gravel. (Glacial Till) V. dense.		3	SS	60 for 6"										
352.5				Drill											
12.0	Shaley limestone with intermittent limestone.			Drill	79%	350									
347.2				Drill											
17.3	End of borehole.														

MEMORANDUM

To: Mr. B. R. Davis,
Bridge Engineer,
Bridge Division.

Attention: Mr. S. McCombie

From: Foundation Section,
Materials & Testing Div.,
Room 107, Lab. Bldg.

Date: November 21, 1966

Our File Ref.

In Reply To:

Subject:

FOUNDATION INVESTIGATION REPORT
For
Q.E.W. and Hwy. #27 Interchange,
Twp. of Etobicoke, County of York,
District #6 (Toronto)
W.J. 65-F-104 -- W.P. 275-64-1

Enclosed please find the results of our final
foundation investigations for Structures No's 2, 3, 8,
12, and 20.

Please attach these to your copy(s) of
Foundation Report #65-F-104.

AGS/MdeF
Attach.

cc: Messrs. B. R. Davis (2)
H. A. Tregaskes
D. W. Farren
G. K. Hunter (2)
F. Allen
T. J. Kovich
W.S. Melinyshyn
A. Watt

Foundations Office
Gen. Files

A.G. Stermac
A.G. Stermac,
PRINCIPAL FOUNDATION ENGINEER

DOMINION SOIL INVESTIGATION LIMITED
77 CROCKFORD BOULEVARD - SCARBOROUGH ONTARIO CANADA - TELEPHONE 751-6565

RANCH
89 QUEENS AVENUE
LONDON, ONTARIO
TELEPHONE GE 9-3651



FOUNDATION ENGINEERS

ASSOCIATED COMPANY
SOIL TESTING AND ENGINEERING LTD.
34 BRENTFORD ROAD,
KINGSTON 5, JAMAICA, WEST INDIES
TELEPHONE: 66836

Our Ref. No: 6-6-26
Your Ref: W.P. 238-61-8

5th October 1966.

Mr. A.G. Stermac,
Principal Foundation Engineer,
Materials and Testing Division,
Department of Highways,
Downsview Avenue,
Downsview, Ontario.

Attention: Mr. K. Selby P.Eng.

Re: Soil Investigation for Q.E.W. and Hwy. No. 27
Interchange. Bridge No. 20.

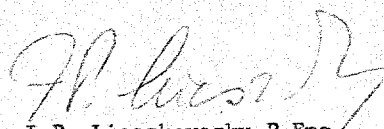
Dear Sirs,

This letter accompanies eleven copies of the records of
Borehole No. 121 put down in connection with the above structure.

We trust that you will find the records to your satisfaction.

Yours very truly,

DOMINION SOIL INVESTIGATION LIMITED


I.P. Lieszkowszky P.Eng.
Chief Engineer.

IPL/me
Enclosures

GEOTECHNICAL DATA SHEET FOR BOREHOLE 151

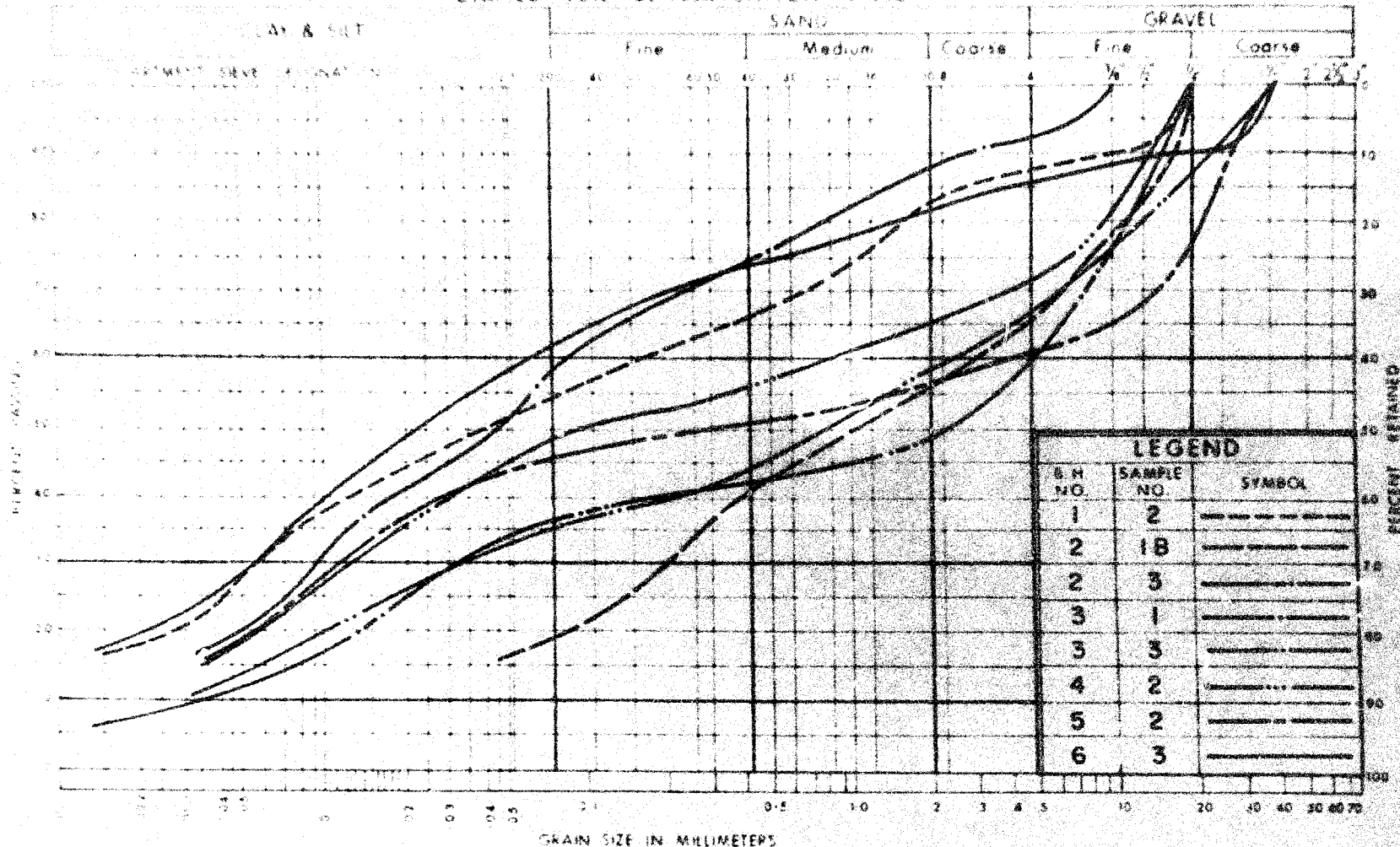
OUR REFERENCE NO. 2-6-26

CLIENT: D.H.O.
 PROJECT: D.E.W. & HWY. No. 27 INTERCHANGE, BRIDGE No. 20.
 LOCATION: 178° 17' N; 209° 6' E
 DATUM ELEVATION: 62.2 C
 W.P. 538-61-8, 1956
 DATE: JULY 19, 1956
 DIAMETER OF BOREHOLE: 3.8"
 METHOD OF BORING: WASHBORING
 ENCLOSURE NO.

ELEVATION ft	DEPTH ft	STRATIFICATION DESCRIPTION	NOTATION JOINTS		SHEAR STRENGTH lb/sq ft	PENETRATION RESISTANCE blows per foot	CONSISTENCY Water content % PL W LI	REMARKS
			NUMBER	TYPE				
325.2	0	GROUND SURFACE						
325.2	0	6" TOPSOIL						
320.0	5	Compact to Dense Brown SANDY SILT	1	SS	80%			
320.0	5	Hold Brown to Grey CLAYEY SILT (GLACIAL TILL)	2	SS	100%			
325.0	10	Extremely Weathered	3	RC	50%			
325.0	10	Weathered	4	SS	100%			
325.0	10	Grey SHALE	5	RC	50%			
325.0	12	with layers of limestone	6	SS	100%			
345.0	20	BED ROCK	7	RC	75%			
345.0	20	Sound	8	RC	75%			
340.0	25		9	RC	80%			
325.0	30	END OF BOREHOLE						

W.L. 361.7 ft
 July 20, 1956

UNIFIED SOIL CLASSIFICATION SYSTEM



LEGEND		
B.H. NO.	SAMPLE NO.	SYMBOL
1	2	—————
2	1B	—————
2	3	—————
3	1	—————
3	3	—————
4	2	—————
5	2	—————
6	3	—————

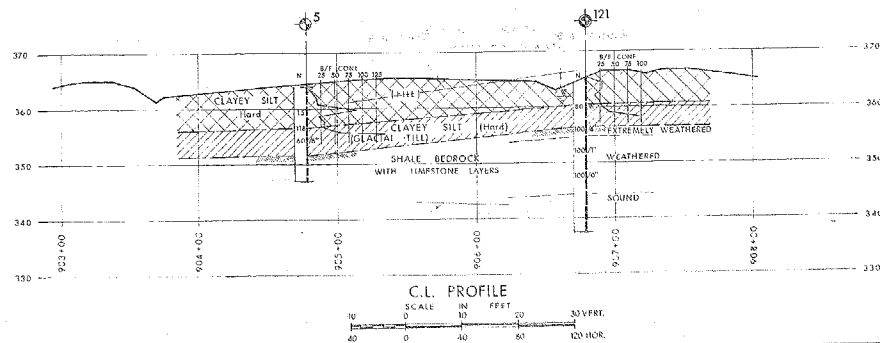
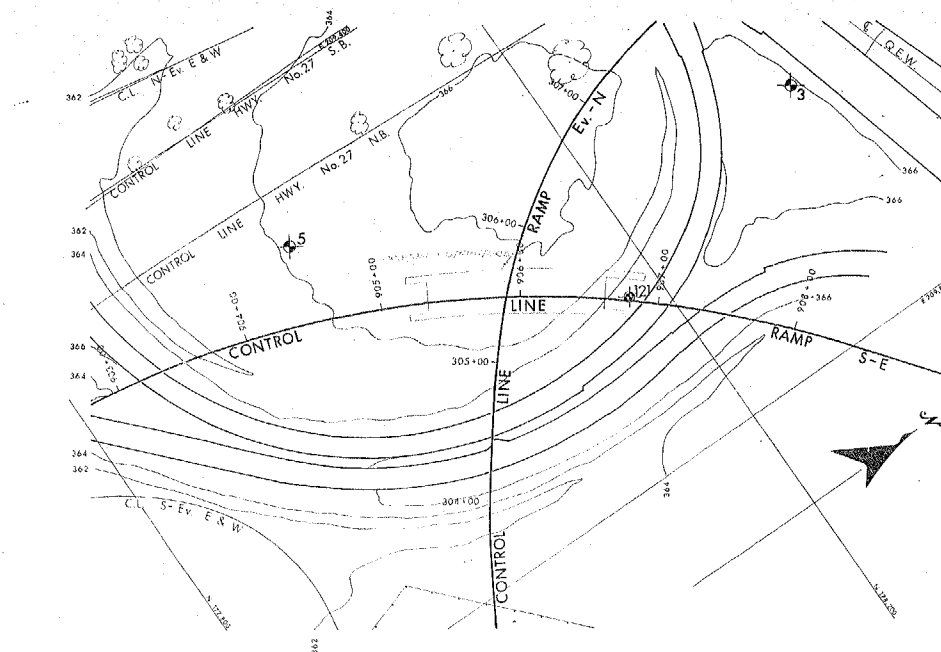


DEPARTMENT OF HIGHWAYS
MATERIALS and
TESTING
DIVISION

GRAIN SIZE DISTRIBUTION
CLAYEY SILT, SAND & GRAVEL
(GLACIAL TILL)






WP No.

JOB No. 65-F-104



SEE DRAWING No. 65-F-104A

KEY PLAN

LEGEND		
	Bore Hole	
	Cone Penetration Hole	
	Bore & Cone Penetration Hole	
	Water Levels established at time of field investigations	
	[Doms. Soil] Bore & Cone	

- NOTE

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence and may be subject to considerable error.

DATE	NO	DESCRIPTION
10-1-55	1	...
10-1-55	2	...
10-1-55	3	...
10-1-55	4	...
10-1-55	5	...
10-1-55	6	...
10-1-55	7	...
10-1-55	8	...
10-1-55	9	...
10-1-55	10	...
10-1-55	11	...
10-1-55	12	...
10-1-55	13	...
10-1-55	14	...
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10-1-55	18	...
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10-1-55	97	...
10-1-55	98	...
10-1-55	99	...
10-1-55	100	...

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION - FOUNDATION SECTION

BRIDGE No. 20

RAMP S-E OVER RAMP E_v-N

KING'S HIGHWAY NO. Q.E.W. & HWY No.27 DIST. NO. 6

CO, YORK METRO TORONTO

LOT CON.

BORE HOLE LOCATIONS & SOIL STRATA

SUBM'D K.S.	CHECKED	W.P. NO 238-61-8
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DRAWN BY	CHECKED <i>[Signature]</i>	JOB NO 65-F-104
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DATE 14 OCT. 1966

	SITE N
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BRIDGE DRAWING NO.

APPROVED *[Signature]* CHIEF

10

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

