

SUPPLEMENTARY  
FOUNDATION INVESTIGATION REPORT

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

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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. Baravary, Senior Foundation Engineer, under the general supervision of Mr. K. G. Selby, Supervising Foundation Engineer.

cont'd. /2 ...

STRUCTURE #22 - W.P. 174-65-2 -- W.J. 65-F-104 -

1. Soil Conditions:

Two boreholes were placed at the locations of each pier and abutment of the proposed bridge. The borings were numbered from 133 to 140.

The boreholes disclosed a somewhat heterogeneous overburden, consisting of clayey silt fill at the east abutment and gravelly sand and organic clayey silt at the west. At certain borehole locations, sand and gravel layers were also encountered with further seams of contaminated sandy silt.

Underlying the heterogeneous overburden, shale bedrock with layers of limestone was found. The upper 3-to 13-ft. portion of the bedrock is weathered and broken. The elevations of the weathered and sound bedrock, as established in the boreholes, are tabulated below:

Bridge #22	BEDROCK ELEVATION (FT.)	
	Weathered	Sound
West Abutment	300.4 - 302.7	290.0 - 297.4
West Pier	299.0 - 299.8	293.0 - 294.6
East Pier	303.6 - 304.6	294.6 - 296.0
East Abutment	301.4 - 303.5	294.0 - 300.8

Ground water level was encountered in the boreholes between el. 307 and 302 ft. Water level of the creek was established at el. 301 ft. at time of the field work (Aug. 1966).

The locations and elevations of the boreholes, together with the estimated soil cross sections, are presented on Drawing #65-F-104U.

cont'd. /23...

STRUCTURE #22 - W.P. 174-65-2 -- W.J. 65-F-104 - (cont'd.) ...

Recommendations:

Spread footings are recommended for the abutments as well as for the piers, to be placed within the weathered or sound bedrock.

Suggested elevations of the bottom of footings are quoted as follows:

Bridge #22	Bottom of Footing At or Below Elev. (Ft.)
West Abutment	300.0
West Pier	294.0
East Pier	296.0
East Abutment	300.0

At or below the above recommended elevations, a safe design load of 10 t.s.f. may be utilized.

Some seepage in the excavation will probably take place, but it is believed that in the weathered rock stratum, it will present no major problems.

cont'd. /34 ...

## MEMORANDUM

To: Mr. H. R. Davis,  
Bridge Engineer,  
Bridge Division.  
Attention: Mr. S. McCombie

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

Date: October 11, 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. 174-65-1  
W.P. 174-65-2

Enclosed, please find the results of our final  
foundation investigations for Structures No's 21 (W.P. 174-65-1)  
and 22 (W.P. 174-65-2).

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

AGS/MdeF  
Attach.

  
A. G. Sternac,  
PRINCIPAL FOUNDATION ENGINEER

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

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

BRANCH  
389 QUEENS AVENUE  
LONDON, ONTARIO  
TELEPHONE GE. 8-8851



FOUNDATION ENGINEERS

ASSOCIATED COMPANY  
SOIL TESTING AND ENGINEERING LTD.  
34 BRENTFORD ROAD,  
KINGSTON 5, JAMAICA, WEST INDIES  
TELEPHONE: 66886

September 21, 1966.

Our Ref: 6-8-15  
Your Ref: W.P. 174-65-2

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

Attention: Mr. K. Selby, P. Eng.

Re: Soil Investigation for Q.E.W. and Highway #27  
Interchange, Bridge #22

Dear Sirs:

Enclosed are eleven copies of the records of  
Boreholes No. 133 to 140 inclusive.

We trust that the information contained in the  
Borehole Logs is sufficient for your requirements.

Yours very truly,

DOMINION SOIL INVESTIGATION LIMITED,

I. P. Lieszkowszky, P. Eng.

IPL/jvm  
Encls.

## MEMORANDUM

To: Mr. A. G. Stermac,  
Principal Foundation Engineer,  
Room 107, Lab. Building.

FROM: Bridge Division,  
Downsview, Ontario

Attention: Mr. K. Selby

DATE: August 10, 1966

OUR FILE REF.

IN REPLY TO:

SUBJECT: W.P. 174-65-2, Bridge No. 22  
W.P. 32-66, Bridge No. 23,  
Q.E.W. and No. 27 Interchange,  
District 6

Attached is one print of a 1" = 40' plan as you requested for the above crossings; showing the approximate location of footings and a suggested bore hole layout.

Elevation of the ramp W-Ev. over Q.E.W. will be at approximate elev. 358 ± at sta. 450 + 00.

This information is preliminary, however the geometrics are now available and the layout as shown should not differ much from the final design.

JCMCA/pr  
Attach.

cc. A. Crowley  
R. Strain

*J. C. McAllister*  
J. C. McAllister,  
for W. S. Melinyshyn,  
Regional Bridge Location  
Engineer.

# GEOTECHNICAL DATA SHEET FOR BOREHOLE 133.

OUR REFERENCE NO. 6-8-15

CLIENT: D.H.O.

PROJECT: Q.E.W. & HWY. NO 27 INTERCHANGE - BRIDGE #22

METHOD OF BORING: WASH BORING

ENCLOSURE NO.

LOCATION: 175, 167 N; 206, 590 E.

DIAMETER OF BOREHOLE 2 3/8"

DATE: AUG. 19-23, 1966

DATUM ELEVATION: G.S.C.

W. P. 174-65-2

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %			REMARKS
				NUMBER	TYPE	N- or Advance- ment of Sampler	20	40	60	80	100	PL	W	LI	
307.4	0	GROUND SURFACE													
		Compact, Brown GRAVELLY SAND													
305.0	2.0	Compact to Dense Brown GRAVEL, some sand		1	S.S.	37									
	5	CLAYEY SILT LAYER		2	S.S.	115/10"									
300.4	7.0	Grey extremely weathered		3	S.S.	100/2"									
300.0		SHALE BEDROCK		4	S.S.	100/2"									
	10			5	R.C.	86%									
295.0				6	S.S.	100/2"									
	15	intermittent layers of LIMESTONE		7	R.C.	68%									
290.0				8	S.S.	100/2"									
	20			9	R.C.	47%									
285.0															
	25			10	R.C.	84%									
280.0	27.5	END OF BOREHOLE													
279.3															
	30														

W. L. E.I. 303.1'  
AUG. 25, 1966

VERTICAL SCALE: 1 IN TO 5 FT.

DOMINION SOIL INVESTIGATION LIMITED

MADE: D. A. M. CH'D.

# GEOTECHNICAL DATA SHEET FOR BOREHOLE . . 134.

OUR REFERENCE NO. 6 - 8 - 15

CLIENT: D. H. O.

PROJECT: Q. E. W. 8 HWY. NO 27 INTERCHANGE - BRIDGE NO 22

LOCATION: 175,146 N; 206,611 E

DATUM ELEVATION: G. S. C.

METHOD OF BORING: WASH BORING

DIAMETER OF BOREHOLE: 2 3/8"

DATE: AUG. 23 & 24, 1966

W. P. 174 - 65 - 2

ENCLOSURE NO.

ELEVATION ft	DEPTH ft	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot		CONSISTENCY water content %		REMARKS
				NUMBER	TYPE	N- or Advancement of Sampler	2.0 4.0 6.0 8.0 10.0	SHEAR STRENGTH lbs/sq ft	PL W LI		
304.7	0	GROUND SURFACE									
303.7	1.0	Soft ORGANIC SILT									
302.7	2.0	CLAYEY SILT									
300.0	5	Grey SHALE BED ROCK		1	S.S.	100/1"					
				2	S.S.	100/3"					
				3	S.S.	100/4"					
295.0	10	extremely weathered broken		4	S.S.	100/1"					
		weathered		5	R.C.	48%					
290.0	15			6	R.C.	78%					
		sound		7	R.C.	80%					
285.0	20										
280.0	25										
		END OF BOREHOLE									

W.L. El. 302.7'  
AUG. 25, 1966



OUR REFERENCE NO. 6 - 8 - 5

DATUM ELEVATION: G.S.C.

W.P. 174 - 65-2

ENCLOSURE NO

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %			REMARKS	
				NUMBER	TYPE	N- or Advancement of Sampler	2.0	4.0	6.0	8.0	10.0	PL	W	LI		
							SHEAR STRENGTH      lbs/sq ft.									
299.0	0	GROUND SURFACE (CREEK BOTTOM)														W.L. El. 301.5 ft.
		Grey SHALE BEDROCK  occasional LIMESTONE layers  weathered sound		1	R.C. 50%											
295.0	5			2	R.C. 40%											
292.0				3	R.C. 42%											
290.0	10			4	R.C. 93%											
287.0	12.0	END OF BOREHOLE														
285.0	15															

OUR REFERENCE NO. 6 - 8 - 15

## GEOTECHNICAL DATA SHEET FOR BOREHOLE . . 137.

CLIENT: D.H.O.

PROJECT: Q.E.W. &amp; HWY. No 27 INTERCHANGE - BRIDGE No 22

METHOD OF BORING: WASHINGTON

DIAMETER OF BOREHOLE: 2 3/8"

ENCLOSURE NO.

LOCATION: 175,273 N; 206,698 E.

DATE: AUG 22 &amp; 23, 19

DATUM ELEVATION: G.S.C.

WP 174 - 65 2

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %	REMARKS
				NUMBER	TYPE	1 2 or Advancement of Sampler	2,0	4,0	6,0	8,0	10,0		
							SHEAR STRENGTH lbs/sq ft						
307.6	0	GROUND SURFACE											
305.0		Very Dense Brown GRAVEL some sand and silt											
304.8	3.0			1	S.S.	100%							
	5	Grey SHALE		2	R.C.	23%							
				3	S.S.	100%							
		BEDROCK		4	R.C.	46%							
300.0		layers of		5	S.S.	100%							
	10	LIMESTONE		6	R.C.	73%							
				7	S.S.	100%							
295.0		weathered sound		8	R.C.	53%							
290.0	15			9	R.C.	90%							
288.6	19.0	END OF BOREHOLE											

W.L. El 302.0'  
AUG 25, 1960

# GEOTECHNICAL DATA SHEET FOR BOREHOLE .13.8.

OUR REFERENCE NO 6-8-15

CLIENT: D. H. O.

PROJECT Q.E.W. & HWY. NO 27 INTERCHANGE - BRIDGE NO 22

METHOD OF BORING WASH BORING

DIAMETER OF BOREHOLE 2 3/8"

ENCLOSURE NO

LOCATION 175, 252 N; 206, 719 E.

DATE AUG 23 & 24, 1966

DATUM ELEVATION G.S.C.

WP. 174 - 65 - 2

ELEVATION ft	DEPTH ft	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %			REMARKS
				NUMBER	TYPE	N & Advance of Sample	2.0	4.0	6.0	8.0	10.0	PL	W	LI	
308.1	0	GROUND SURFACE													
305.0		Compact, Brown CLAYEY SILT with some gravel (FILL)		1	S.S.	38									
303.6	4.5			2	S.S.	50/3									
	5	Grey SHALE BEDROCK		3	R.C.	67%									
300.0				4	S.S.	100/NP									
	10			5	R.C.	37%									
				6	S.S.	100/1									
295.0		weathered sand		7	R.C.	17%									
	15			8	S.S.	100/1									
				9	R.C.	90%									
290.0				10	S.S.	100/NP									
	20			11	R.C.	70%									
285.0				12	R.C.	90%									
283.1	25	END OF BOREHOLE													

W.L. El. 302.1'  
AUG. 25, 1966

OUR REFERENCE NO 6 - 8 - 15

ENCLOSURE NO.

ELEVATION ft	DEPTH ft	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE		CONSISTENCY water content %  PL      W      LI	REMARKS
				NUMBER	TYPE	N- or Advancement of Sampler	blows per foot	SHEAR STRENGTH lbs / sq ft		
306.9	0	GROUND SURFACE								
305.9	1.0	SANDY SILT (FILL)	[Symbol]							
305.0		TOP SOIL	[Symbol]							
304.4	2.5	ORGANIC SANDY SILT	[Symbol]							
303.2	3.7	Dense, Brown	[Symbol]	1	S.S.	13				
	5	SANDY SILT (TILL)	[Symbol]							
301.4	5.5	Grey	[Symbol]	2	S.S.	85/5"				
300.0		SHALE	[Symbol]	3	R.C. 32%					
		BEDROCK	[Symbol]	4	S.S.	100/NP				
	10		[Symbol]	5	R.C. 37%					
295.0		weathered	[Symbol]							
		sound	[Symbol]							
	15		[Symbol]	6	R.C. 80%					
290.0			[Symbol]							
	18.0	END OF BOREHOLE	[Symbol]							
	20		[Symbol]							
285.0			[Symbol]							

OUR REFERENCE NO 6 - 8 - 15

## GEOTECHNICAL DATA SHEET FOR BOREHOLE 140.

CLIENT: D.H.O.

PROJECT: Q.E.W. &amp; HWY. No 27 INTERCHANGE-BRIDGE No 22

LOCATION 175, 285 N; 206, 754 E.

DATUM ELEVATION: G.S.C.

METHOD OF BORING WACO BORING

DIAMETER OF BOREHOLE 2 3/8"


DATE AUG. 18 &amp; 19, 1966

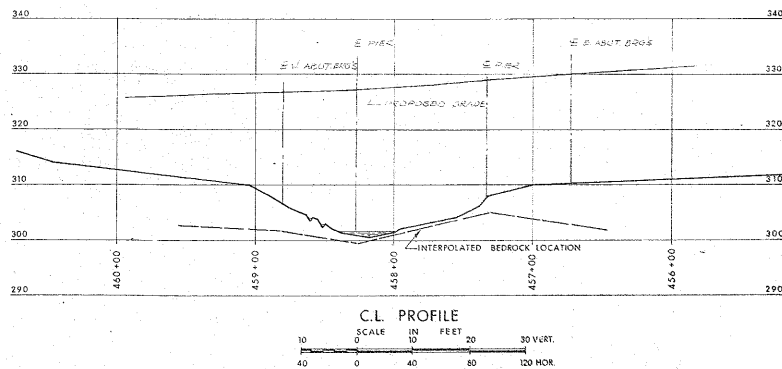
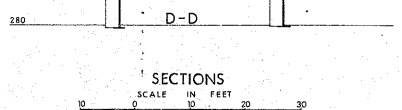
W.P. 174 - 65 - 2

ENCLOSURE NO

ELEVATION ft	DEPTH ft	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %			REMARKS
				NUMBER	TYPE	N- or Advancement of Sampler	20	40	60	80	100	PL	W	LI	
310.8	0	GROUND SURFACE													
310.0		Dense, Brown GRAVELLY to CLAYEY SILT (FILL)		1	S.S.	35									
306.3	4.5	Very Dense SAND and GRAVEL		2	S.S.	90/6									
305.0															
303.5	7.3	Grey SHALE		3	S.S.	75/5									
				4	R.C.	68%									
300.8	10	weathered sound		5	S.S.	100/5									
300.0				6	R.C.	96%									
				7	S.S.	100/1									
		BEDROCK													
		intermittent LIMESTONE layers		8	R.C.	83%									
295.0	15														
293.2	17.5	END OF BOREHOLE													
	20														
290.0															

W.L. El. 306.4'  
AUG. 25, 1966

 W.L. El. 306.4'  
AUG. 25, 1966



DEPARTMENT OF HIGHWAYS - ONTARIO			
MATERIALS & TESTING DIVISION - FOUNDATION SECTION			
BRIDGE No.22			
RAMP W-Ev. OVER ETOBICOKE CREEK			
KING'S HIGHWAY NO. <u>Q.E.W. &amp; HWY. No.27</u> INTER. DIST. NO. <u>1</u>			
C.O. YORK		METRO TORONTO	
TWP. ETOBICOKE		LOT <u>      </u> CON <u>      </u>	
BORE HOLE LOCATIONS & SOIL STRATA			
SUBM'D K.S.	CHECKED	WR NO. 174 - 45 - 2	M.S.T. DRAWING NO.
DRAWN OM	CHECKED	JOB NO. 65-P-104U	65-P-104U
DATE 6 OCT 64	SITE NO.	BRIDGE DRAWING NO.	
APPROVED <i>(Signature)</i> DIVISIONAL ENGINEER			

[illegible]

