

SUPPLEMENTARY  
FOUNDATION INVESTIGATION REPORT

For

Q.E.W. and Hwy. #27 Interchange,  
Twp. of Stobrooke, County of York,  
District #6 (Toronto).

W.P. 275-64-1 and S.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. Barsvary, Senior Foundation Engineer, under the general supervision of Mr. K. G. Selby, Supervising Foundation Engineer.



STRUCTURE #10 - W.P. 34-65-2 -

1. Soil Conditions:

Two boreholes - numbered 93 and 112, were drilled at the site of the proposed structure, in addition to borehole #13, which was part of the preliminary foundation survey.

The soil stratigraphy, revealed by the boreholes, is quite consistent. Below the 7 - 12 ft. high existing Hwy. #27 fill, the original topsoil was identified. The fill contains sand with some silt and gravel having loose to compact relative densities. Underlying the topsoil, a 5 - 8 ft. thick layer of very dense fine sand with some silt was encountered, ranging from el. 369 - 372 ft. downward to el. 364 ft. A thin layer (1 - 2 ft.) of clayey silt (glacial till) follows the fine sand, which in turn, is underlain by grey shale bedrock. The upper surface of the bedrock was observed at approx. el. 362 ft., and was diamond drilled through a maximum thickness of 10 ft.

No free groundwater level was noticed in the boreholes during the field investigations; however, both boreholes caved in at el. 366 - 364 ft., indicating the presence of groundwater.

On attached Drawing #65-F-104J, the locations and elevations of the boreholes, together with the estimated soil profiles, are shown.

2. Recommendations:

The proposal for Bridge #10 calls for a three-span structure with perched abutments. The grade of the future Queensway will be raised some 9 ft. to approx. el. 380 ft.

The proposed piers may be supported on spread footings, placed on the sound shale bedrock, at around el. 362 ft. The badly weathered and broken portion of the rock should be removed and the footings be placed on sound rock. A safe pressure of 10 t.s.f. may be assumed on the footings for design purposes.

STRUCTURE #10 - W.P. 34-65-2 - (cont'd.) ...

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

The spill-through abutments may be founded on steel H-piles driven to bedrock, or to practical refusal. It is anticipated that refusal will be experienced at around el. 362 ft. It is believed that 12 BP 53 H-piles will safely support the design load of 70 T/pile.

No major dewatering problems are foreseen; some seepage, however, along the walls of the excavations, will likely occur.

cont'd. /17...

DEPARTMENT OF HIGHWAYS ONTARIO

MEMORANDUM

BA 2377

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

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

Attention: Mr. B. McCombie

DATE: August 18, 1966

Due Fax War

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  
Spec #7 W.P. 235-61-5, Spec #10 W.P. 34-63-2

Enclosed, please find the results of our final  
foundation investigations for Structures No's 7 and 10.

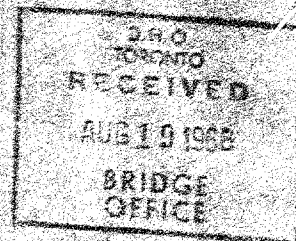
Please attach these to your copy(s) of  
Foundation Report #65-F-104.

AGS/WdeF  
Attach.

*A. G. Sternac*  
A. G. Sternac,  
PRINCIPAL FOUNDATION ENGINEER

- cc: Messrs. B. H. 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



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STRUCTURE #10 - W.P. 34-65-2 - (cont'd.) ...

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

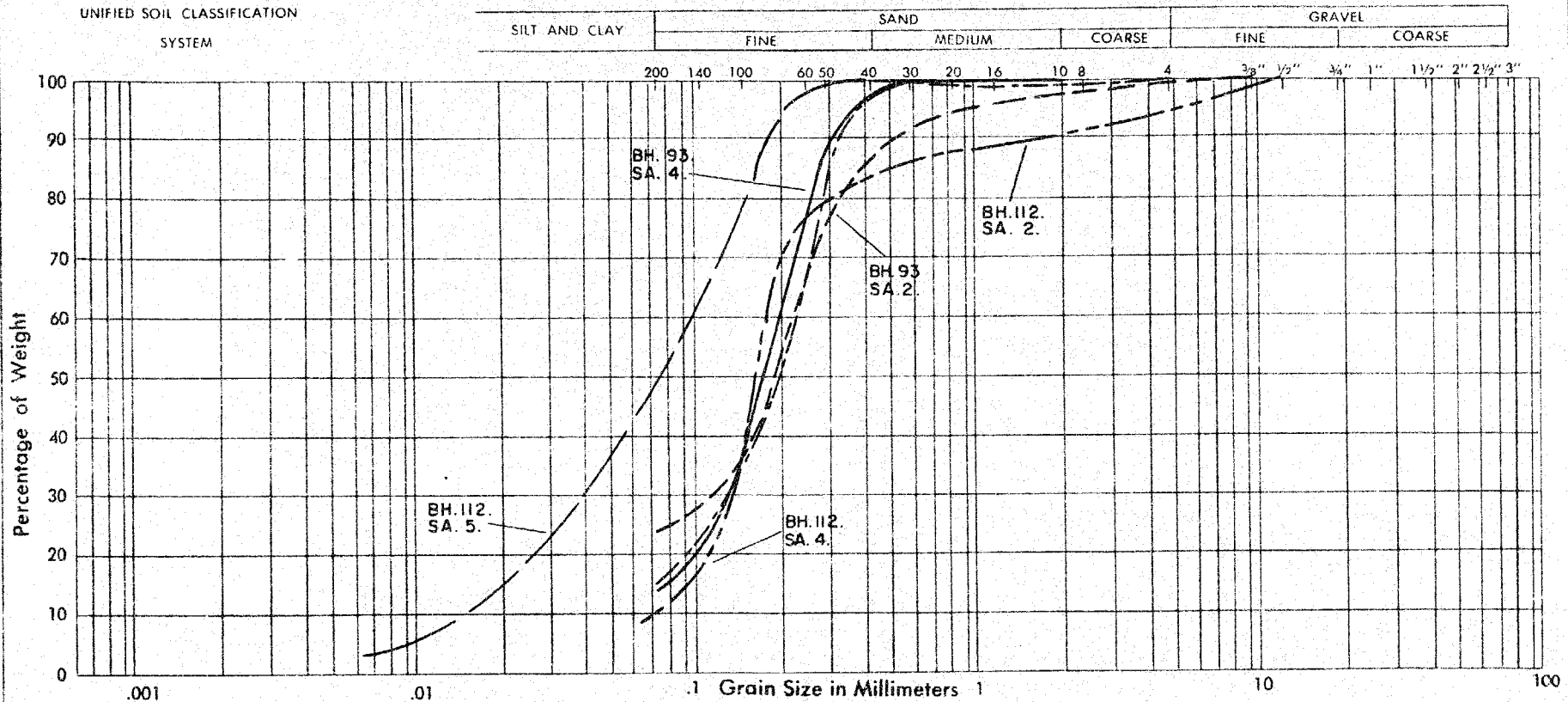
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# DOMINION SOIL INVESTIGATION LIMITED

## GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6-6-20  
YOUR REF. No.W.P 34-65-2



PROJECT: Q.E.W. & HWY. No. 27. INTERCHANGE

LOCATION: BRIDGE No. 10.

BOREHOLE NO.: 93 ; 93 ; 112 ; 112 ; 112

SAMPLE NO.: 2 4 2 4 5

DEPTH OF SAMPLE:

ELEVATION OF SAMPLE:

COEFFICIENT OF UNIFORMITY

COEFFICIENT OF CURVATURE

**Classification of Sample and Group Symbol:**  
**SILTY FINE SAND**

PLASTIC PROPERTIES:

LIQUID LIMITED	%	=
PLASTIC LIMIT	%	=
PLASTICITY INDEX	%	=
MOISTURE CONTENT	%	=
ACTIVITY	=	

Enclosure No.



CLIENT: D. H. O.  
 PROJECT: BRIDGE No. 10, Q. E. W. & HWY. No. 27.  
 LOCATION: 179,045 N ; 208,930 E  
 DATUM ELEVATION: G. S. C.

METHOD OF BORING: WASHBORING  
 DIAMETER OF BOREHOLE: 2 3/8"  
 DATE: JULY 12, 1966  
 W. P. 34-65-2

ENCLOSURE NO

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE				CONSISTENCY				REMARKS
				NUMBER	TYPE	Advancement of Sampler	blows per foot	20	40	60	80	100	PL	W	
387.6	0	GROUND SURFACE													
385.0	5	Compact to Loose Brown SAND and GRAVEL (FILL)		1	SS	9									
381.6	6	Compact Grey CLAYEY SAND and SILT (FILL)		2	SS	52									
380.0	10	Dense Brown SILTY SAND (FILL)		3	SS	24									
377.1	10.5	Dark Brown ORGANIC TOPSOIL		4	SS	82									
375.0	15	Very Dense Brown FINE SAND with some SILT		5	SS	80/10"									
370.0	15.8	Very Hard Grey CLAYEY SILT (TILL)		6	SS	100/1"									
365.0	20	Grey SHALE BEDROCK		7	RC	90%									
363.4	24.2														
362.3	25.3														
360.0	30														
355.0	30.3	END OF BOREHOLE													
	35														

So. 75% ; Si. 25 %

So. 85% ; Si. 15 %

HOLE DRY  
 CAVE - IN  
 EL. 364.3 Ft.  
 JULY 18, 1966.

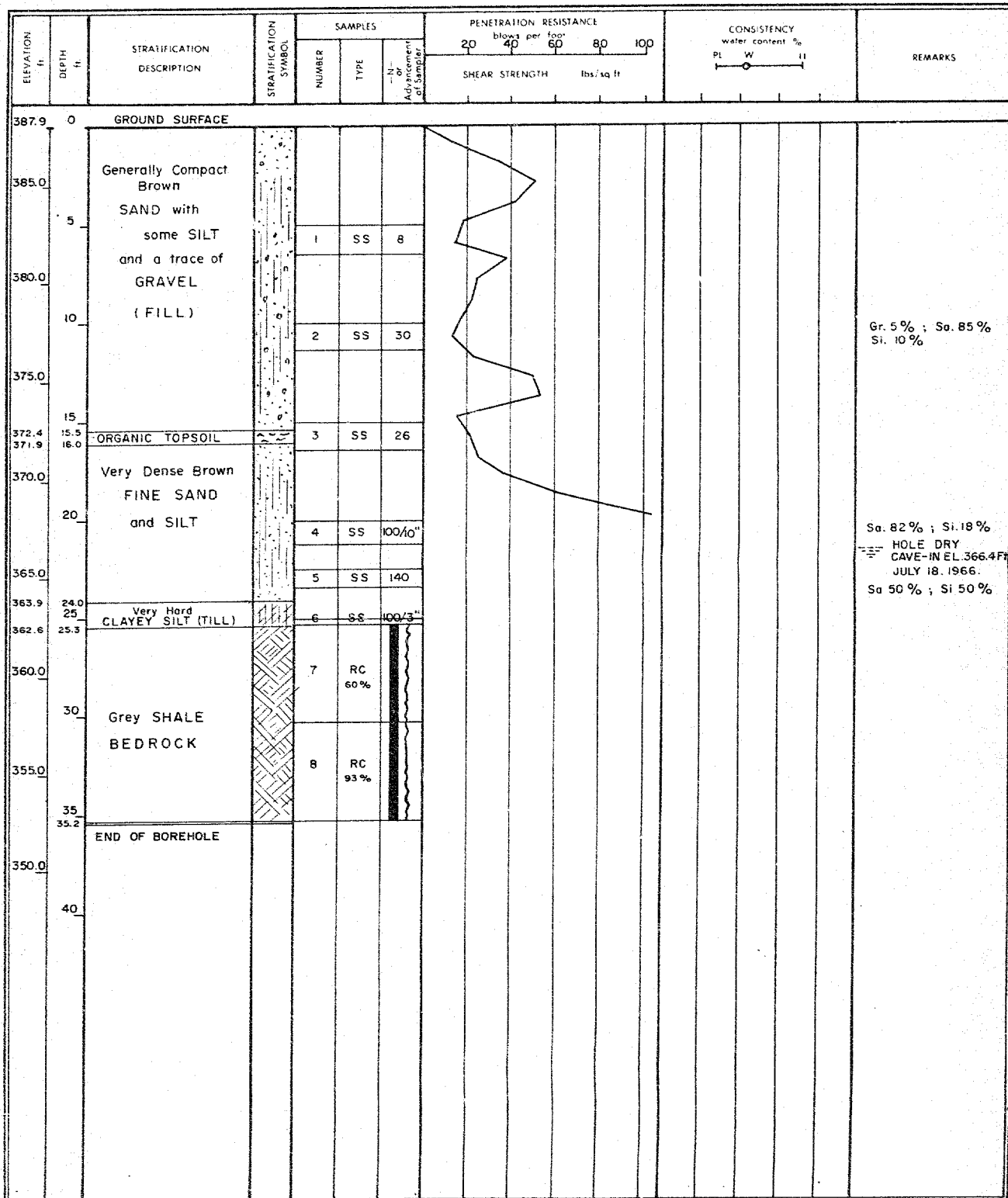
# GEOTECHNICAL DATA SHEET FOR BOREHOLE 112...

OUR REFERENCE NO 6-6-20

CLIENT D. H. O.  
 PROJECT: BRIDGE No. 10. Q.E.W. & HWY. No. 27.  
 LOCATION: 179,180 N ; 208,990 E  
 DATUM ELEVATION: G. S. C.

METHOD OF BORING WASHBORING  
 DIAMETER OF BOREHOLE 2 3/8"  
 DATE JULY 13, 1966.  
 W. P. 34-65-2

ENCLOSURE NO



VERTICAL SCALE: 1 IN TO 5 FT

DOMINION SOIL INVESTIGATION LIMITED

MADE: V. G. H. CHD.

# DOMINION SOIL INVESTIGATION LIMITED

77 CROCKFORD BOULEVARD - SCARBOROUGH ONTARIO CANADA - TELEPHONE 421-2567

BRANCH  
369 QUEENS AVENUE  
LONDON, ONTARIO  
TELEPHONE GE. 3-3551



FOUNDATION ENGINEERS

ASSOCIATED COMPANY  
SOIL TESTING AND ENGINEERING LTD.  
34 BRENTFORD ROAD,  
KINGSTON 5, JAMAICA, WEST INDIES  
TELEPHONE: 65896

August 2, 1966.

Our Ref. 6-6-20  
Your Ref. W.P. 34-65-2

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

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

Re: Soil Investigation for Q.E.W. and Hwy. # 27  
Interchange, Bridge No. 10

Dear Sirs:

We are forwarding you herewith the results of the borings and laboratory tests performed in connection with the above project.

We trust that the information given here is sufficient for your purposes. However, if we can be of further assistance to you please do not hesitate to call.

Yours very truly,

DOMINION SOIL INVESTIGATION LIMITED,

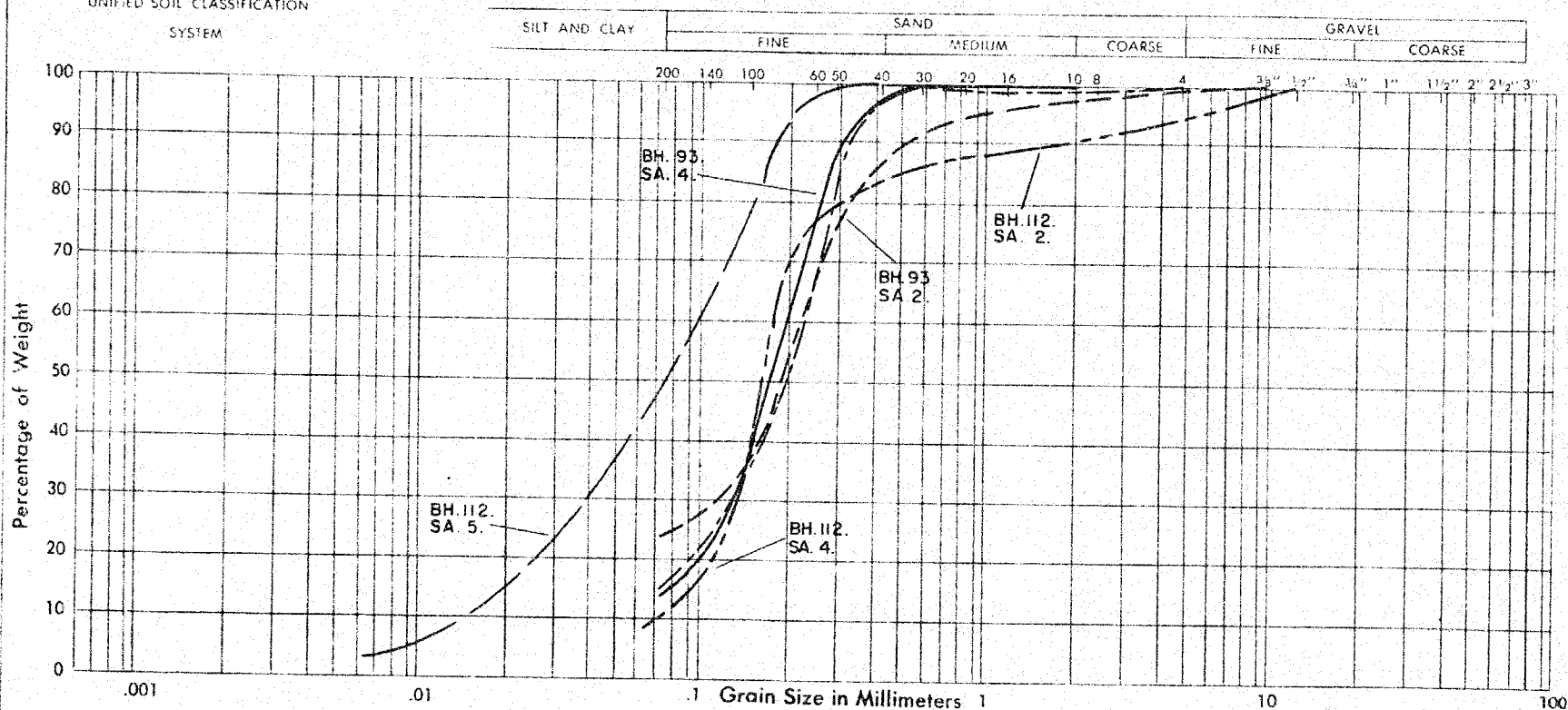
I. P. Lieszkowsky, P. Eng.,  
Project Engineer.

IPL/ds

**DOMINION SOIL INVESTIGATION LIMITED**  
GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6-6-20  
YOUR REF. No. W.P. 34-65-2

UNIFIED SOIL CLASSIFICATION  
SYSTEM



PROJECT, Q.E.W. & HWY. No. 27 INTERCHANGE

LOCATION. BRIDGE No. 10.

BOREHOLE NO.: 93 ; 93 ; 112 ; 112 ; 112

SAMPLE NO. 2 4 2 4 5

DEPTH OF SAMPLE

ELEVATION OF SAMPLE:

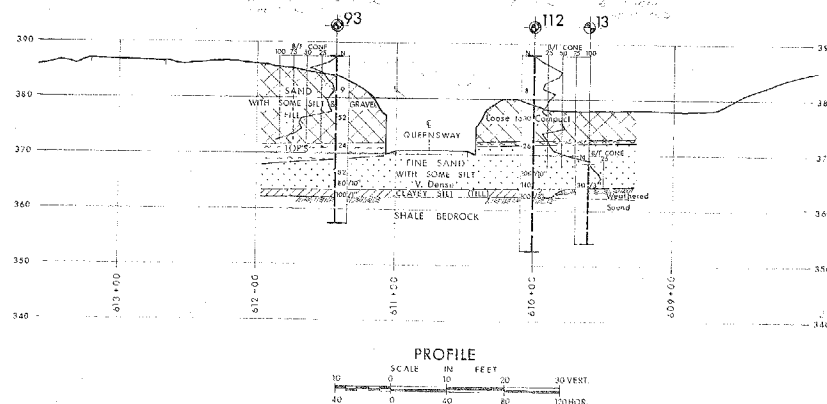
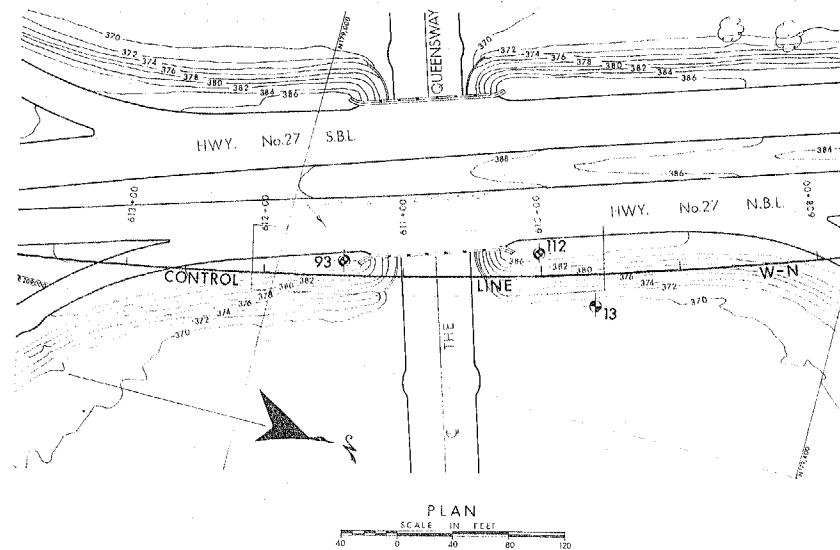
COEFFICIENT OF UNIFORMITY  
COEFFICIENT OF CURVATURE

### PLASTIC PROPERTIES.

LIQUID LIMITED	%	.....
PLASTIC LIMIT	%	.....
PLASTICITY INDEX	%	.....
MOISTURE CONTENT	%	.....
ACTIVITY	%	.....

Classification of Sample and Group Symbol:  
SILTY FINE SAND






Enclosure No



SEE DRAWING No.65-F-104 A

KEY PLAN

### LEGEND

-  Bore Hole  
 Cone Penetration Hole  
 Bore & Cone Penetration Hole  
 Water Levels established at time of field investigation.  
 Bore & Cone (Dom. Soil Ltd.)

NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
13	368.6	179,275	208,96
93	387.6	179,045	208,93
112	387.9	179,180	208,88

- NOTE -

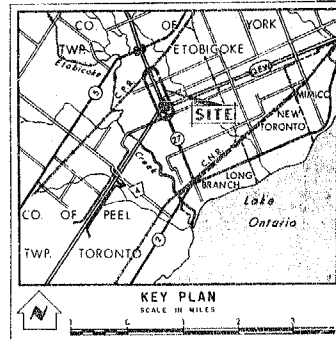
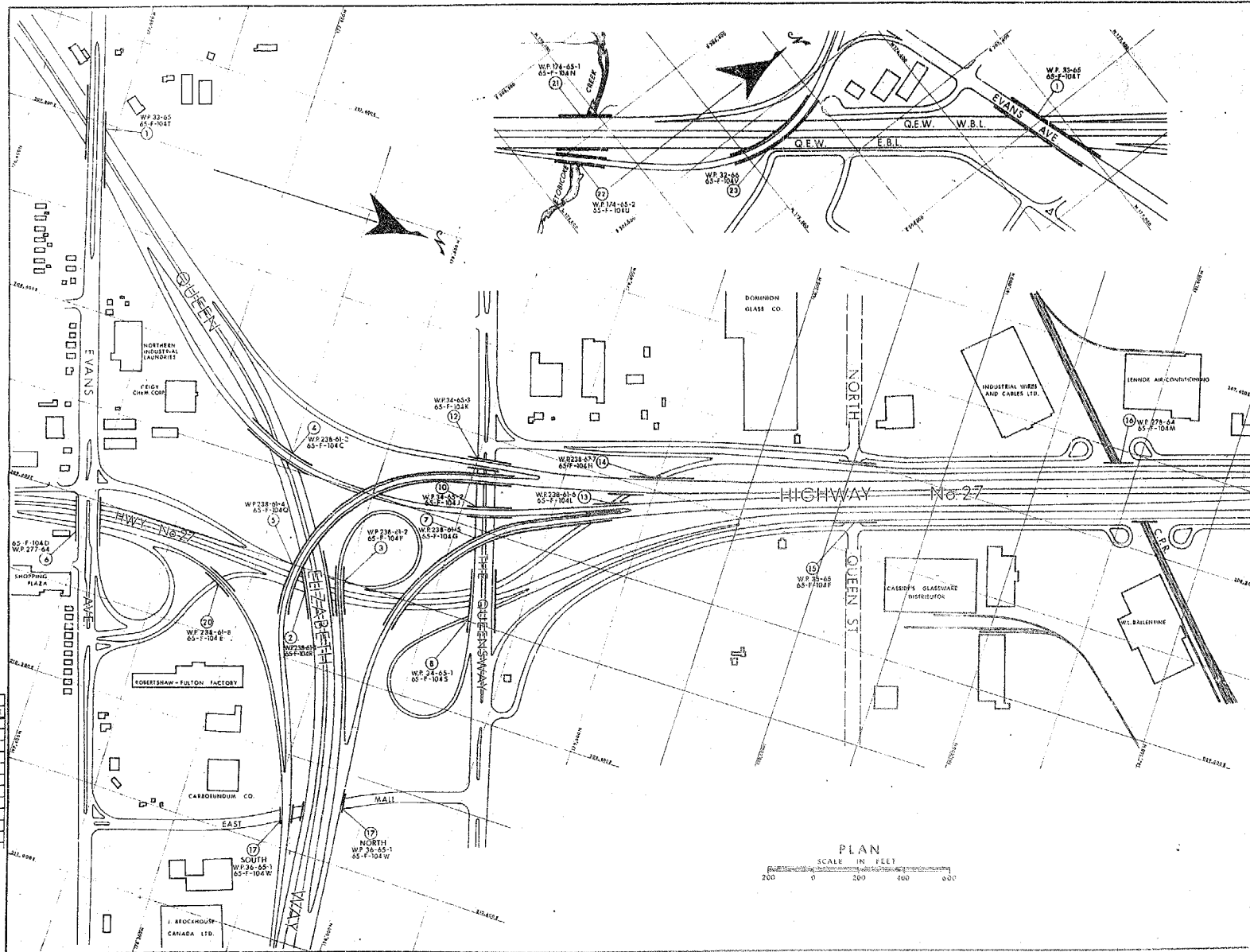
The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence and may be subject to considerable error.






DATE	01	DESCRIPTION
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DEPARTMENT OF HIGHWAYS - ONTARIO  
MATERIALS & TESTING DIVISION - FOUNDATION SECTION

BRIDGE No.10  
TURNING ROADWAY W-N OVER QUEENSWAY  
KING'S HIGHWAY NO. Q.E.W. & HWY. No.27 INTER. DIST. NO. 6  
CO. YORK METRO TORONTO  
TWP. ETOBICOKE LOT CON.

BORE HOLE LOCATIONS & SOIL STRATA			
SUBMIT X.S.	CHECKED <i>ll</i>	HP NO. 34-65-2	M.T. DRAWING NO. <b>65-F-104 J</b>
DRAWN ON	CHECKED <i>ll</i>	JOB NO. 65-1-104	
DATE 5 AUG 66		SITE NO.	BRIDGE DRAWING NO.
APPROVED <i>ll</i>		CONT NO.	



LEGEND			
		Bore Hole	
		Cone Penetration Hole	
		Bore B Cone Penetration Hole	
		Water Levels established at time of field investigation.	
		Structure Number	

NO.	ELEVATION	CO-ORDINATES NORTH      EAST	

**- NOTE -**

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[illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO  
WATERIALS IN TESTING DIVISION - FOUNDATION SECTION

HIGHWAY No.27 & Q.E.W. INTERCHANGE

KING'S HIGHWAY NO. \_\_\_\_\_ DIST. NO. 6

CO. YORK METROPOLITAN TORONTO

TWP. ETOBICOKE LOT \_\_\_\_\_ CON. \_\_\_\_\_

GENERAL LAYOUT			
SUBMIT P.M.T.	CHECKED <i>W</i>	W.P. NO.	M.B.T. DRAWING NO.
DRAWN D.G.H.	CHECKED <i>W</i>	JOB NO. 65-F-104	<b>65-F-104 A</b>
DATE 25 NOV. 1966		SITE NO.	BRIDGE DRAWING NO.
APPROVED <i>W</i>		CONT. NO.	