

SUPPLEMENTARY
FOUNDATION INVESTIGATION REPORT
For
R.E.W. and Hwy. #22 Interchange,
Twp. of Etobicoke, County of York,
District #6 (Toronto).
W.P. 275-64-1 and W.P. 275-64-4
W.J. 65-8-104

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 #13 - W.P. 238-61-6 -

1. Soil Conditions:

Two boreholes, numbered 96 and 111, were drilled by Dominion Soil Investigation Ltd. at the site of the proposed bridge.

The upper portion of the subsoil was found to be a silty sand fill with some gravel. The depth of the compact to dense fill varies between 10 to 14 ft. Underlying the fill, a thin layer of organic topsoil and silty fine sand was revealed in both borings. The total depth of these strata is roughly 2 - 4 ft., with a "compact" relative density.

At el. 367 - 370 ft. a stratum of glacial till was observed and identified to be clayey silt and sandy silt with some gravel. The very dense and hard layer terminates at approximate el. 363 - 365 ft. where it is followed by shale bedrock. A six-ft. depth of bedrock was proved by diamond drilling, yielding 80 - 85% recovery. (Refer Drawing No. 65-F-104L.)

2. Recommendations:

It is proposed to erect a three-span structure at this crossing. The finished grade of Hwy. #27 South-bound lane is designed to be approx. el. 373 ft. Spread footings are recommended for the bridge, to be placed at or below el. 367 ft., some six ft. below proposed grade. At the above elevations the glacial till stratum will have a safe bearing capacity of 4.0 t.s.f. In the event that footings are placed on sound bedrock, a design load of 10.0 t.s.f. may be assumed.

Alternatively, perched abutments may be supported on piles driven to sound bedrock (El. 363-365 ft.). 12 BP 53 steel H-piles, driven to sound rock, will safely support 70 T/pile.

The sandy silt portion of the glacial till is susceptible to conditions of unbalanced hydrostatic head; consequently, some dewatering problems will likely to be encountered.

MEMORANDUM

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

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

Attention: Mr. S. McCombie

Date: September 28, 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. 238-61-6

Enclosed, please find the results of our final
foundation investigation for Structure No. 13 -
(W.P. 238-61-6).

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

AGS/MdeF
Attach.


A. G. Stermac,
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 421-2567

BRANCH
369 QUEENS AVENUE
LONDON, ONTARIO
TELEPHONE GE. 3-3851



FOUNDATION ENGINEERS

ASSOCIATED COMPANY
SOIL TESTING AND ENGINEERING LTD.
34 BRENTFORD ROAD,
KINGSTON 5, JAMAICA, WEST INDIES
TELEPHONE: 66896

August 2, 1966.

Our Ref. 6-6-22
Your Ref. W.P. 238-61-6

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
Bridge No. 13

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

IPL/ds

GEOTECHNICAL DATA SHEET FOR BOREHOLE . . 96 . .

OUR REFERENCE NO. 6-6-22

CLIENT: D.H.O.
 PROJECT: Q.E.W. & HWY. no. 27 INTERCHANGE.
 LOCATION: 179,729 N ; 208,706 E
 DATUM ELEVATION: G.S.C.

METHOD OF BORING: WASHBORING.
 DIAMETER OF BOREHOLE: 2 ³/₈"
 DATE: JULY 15, 1966
 W.P. 238-61-6

ENCLOSURE NO.

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE				CONSISTENCY			REMARKS
				NUMBER	TYPE	N or Advancement of Sampler	blows per foot				water content %			
							2.0	4.0	6.0	8.0	10.0	PL	W	LI
							SHEAR STRENGTH				lbs/sq ft			
383.2	0	GROUND SURFACE												
		Compact to Dense												
380.0		CLAYEY		1 A	CS	-								
	5	Brown		1	SS	64								
		GRAVELLY SAND												
		with some SILT												
		(FILL)												
375.0														
	10													
372.7	10.5	ORGANIC TOPSOIL		2 A	SS	21								
				B										
381.2	12.0	SILTY FINE SAND												
370.0		Very Dense Brown to		3 A	SS	56								
		Grey		B										
	15	SANDY SILT		4	SS	70/6"								
		with some GRAVEL												
		and CLAY												
		(GLACIAL TILL)												
365.0	18.0			5	SS	80/6"								
	20	Grey SHALE		6	R.C.	75 %								
		BEDROCK												
360.0				7	R.C.	85 %								
358.0	25	END OF BOREHOLE												

Gr. 28 % ; Sa. 55 %
 SI. 17 %

W.L. 371.0 Ft.
 JULY 18, 1966.

SS-3A.
 Gr. 4 % ; Sa. 71 %
 SI. 25 %

SS-3B.
 Gr. 9 % ; Sa. 27 %
 SI. Cl. 64 %

GEOTECHNICAL DATA SHEET FOR BOREHOLE . . III. .

OUR REFERENCE NO. 6-6-22

CLIENT: D.H.O.
 PROJECT: Q.E.W. & HWY. no. 27 INTERCHANGE
 LOCATION: 179,502 N ; 208,778 E
 DATUM ELEVATION: G.S.C.

METHOD OF BORING: WASHBORING.
 DIAMETER OF BOREHOLE: 2 3/8"
 DATE: JULY 14, 1966
 W.P. 238-61-6

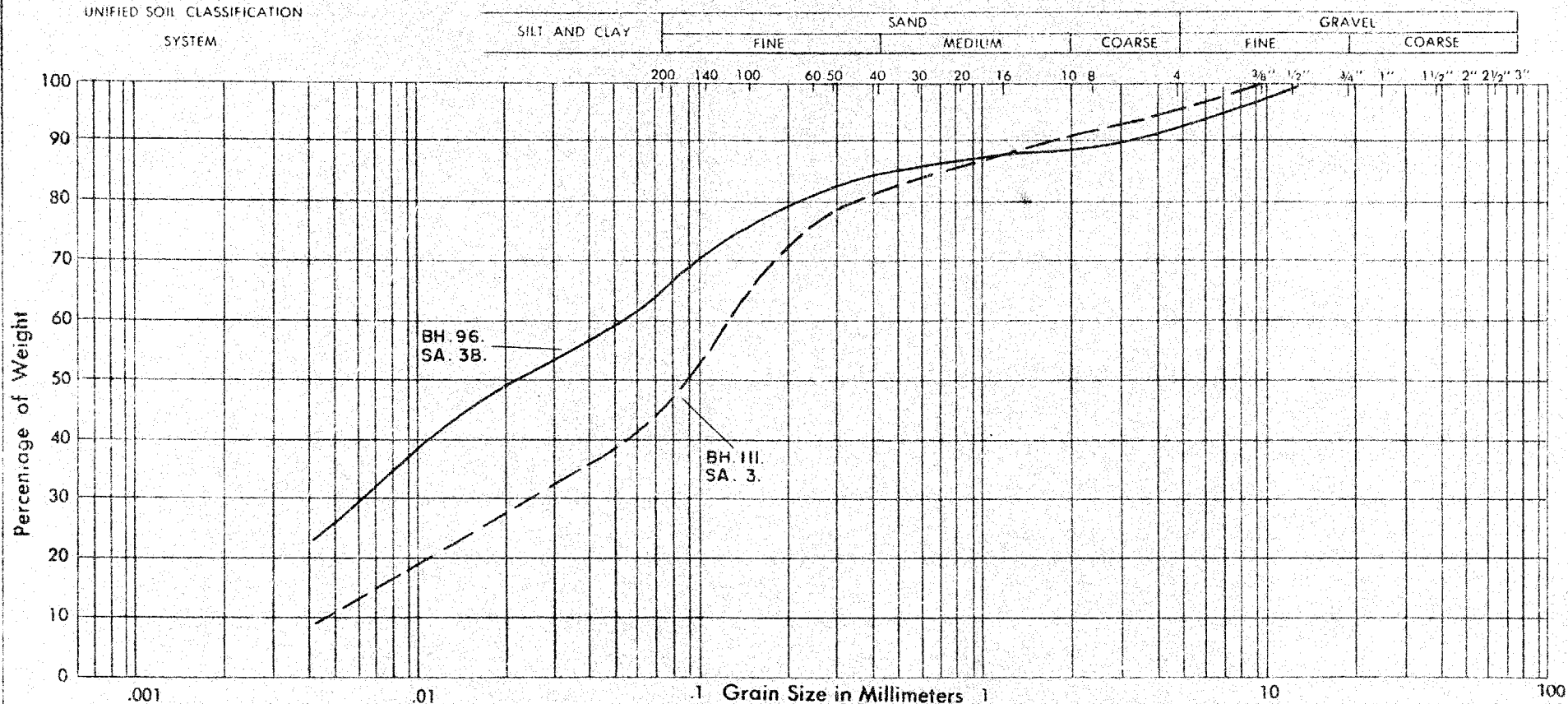
ENCLOSURE NO.

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE *					CONSISTENCY					REMARKS
				NUMBER	TYPE	N- or Advancement of Sampler	blows per foot					water content %					
							2.0	4.0	6.0	8.0	10.0	<div style="display: flex; justify-content: space-between; align-items: center;"> PL W LI </div> <div style="text-align: center;"> </div>					
							SHEAR STRENGTH					lbs/sq ft					
383.9	0	GROUND SURFACE															
380.0	5	Generally Dense Brown SILTY SAND (FILL)		1	SS	60/6"										Gr. 12 % ; Sa. 68 % Si. 20 % W.L. 377.2 Ft. JULY 18, 1966. Sa. 80 % ; Si. 20 %	
				2 A	WS	-											
375.0	10			2	SS	37											
				3	SS	26											
370.0	14.5															Gr. 4 % ; Sa. 50 % Si. 46 %	
369.4	15	ORGANIC TOPSOIL															
368.4	15.5	Compact Brown FINE SAND		4	SS	17											
366.9	17.0																
365.0	20	Very Hard Grey CLAYEY SILT (GLACIAL TILL)		5	SS	60/3"											
363.6	20.3			6	SS	100/2"											
360.0		Grey SHALE BEDROCK		7	R.C.	80 %											
359.0	25	END OF BOREHOLE															

DOMINION SOIL INVESTIGATION LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO 6-6-22
YOUR REF. W.P. 238-61-6



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

LOCATION: BRIDGE No. 13.

BOREHOLE NO.: 96 ; III

SAMPLE NO.: 3B. 3

DEPTH OF SAMPLE:

ELEVATION OF SAMPLE:

COEFFICIENT OF UNIFORMITY

COEFFICIENT OF CURVATURE

PLASTIC PROPERTIES.

LIQUID LIMIT % =

PLASTIC LIMIT % =

PLASTICITY INDEX % =

MOISTURE CONTENT % =

ACTIVITY =

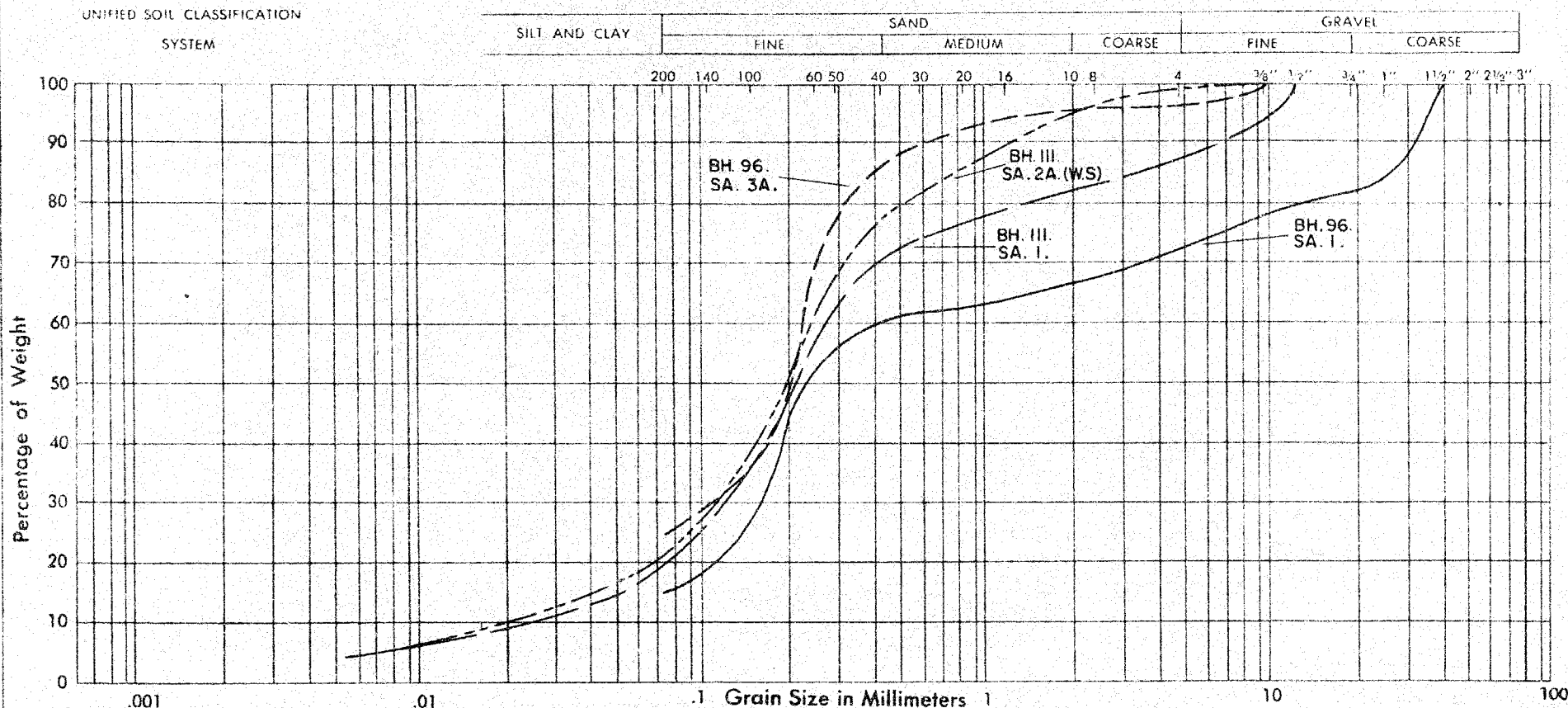
Classification of Sample and Group Symbol:
SANDY SILT with some CLAY
and a trace of GRAVEL

Enclosure No.

DOMINION SOIL INVESTIGATION LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6-6-22
YOUR REF. W.P. 238-61-6



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

LOCATION: BRIDGE No. 13.

BOREHOLE NO.: 96 ; 96 ; III ; III

SAMPLE NO.: I 3A I 2A

DEPTH OF SAMPLE:

ELEVATION OF SAMPLE:

COEFFICIENT OF UNIFORMITY

COEFFICIENT OF CURVATURE

Classification of Sample and Group Symbol:
SILTY SAND with some GRAVEL

PLASTIC PROPERTIES:

LIQUID LIMIT %

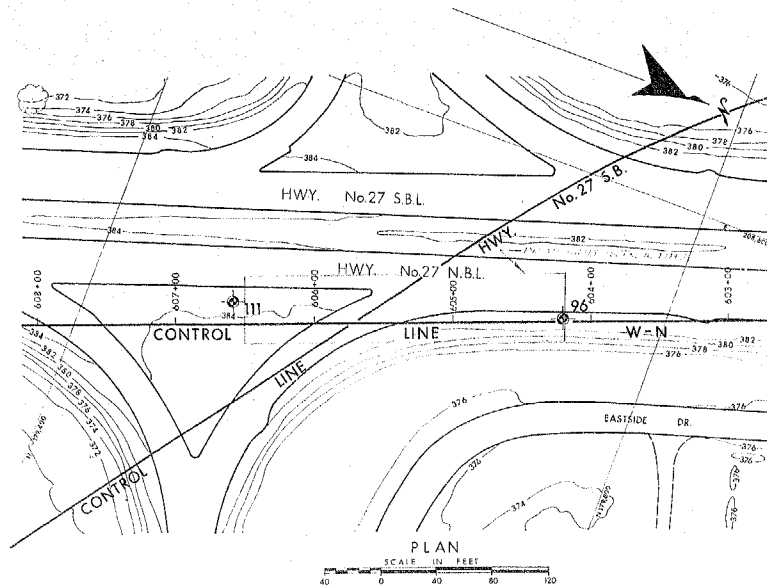
PLASTIC LIMIT %

PLASTICITY INDEX %

MOISTURE CONTENT %

ACTIVITY

Enclosure No.



SEE DRAWING No. 65-F-104 A

KEY PLAN
SCALE IN MILES

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
96	383.2	179,729	206,706
111	383.9	179,502	206,778

NOTE

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

NO.	DATE	DESCRIPTION

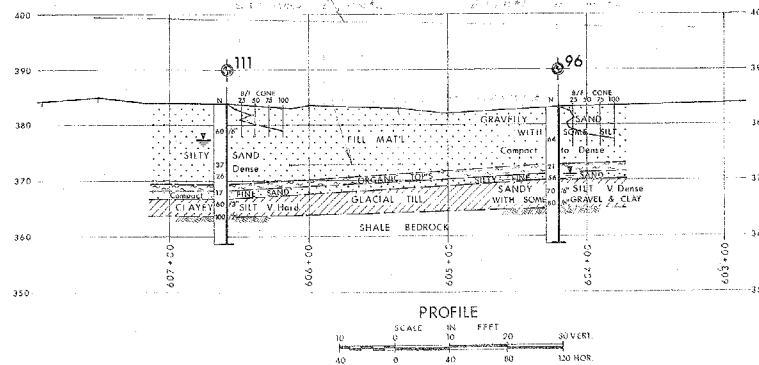
DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION - FOUNDATION SECTION

BRIDGE No. 13
TURNING ROADWAY W-N OVER HWY. 27 S.

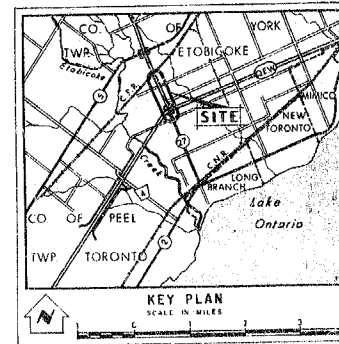
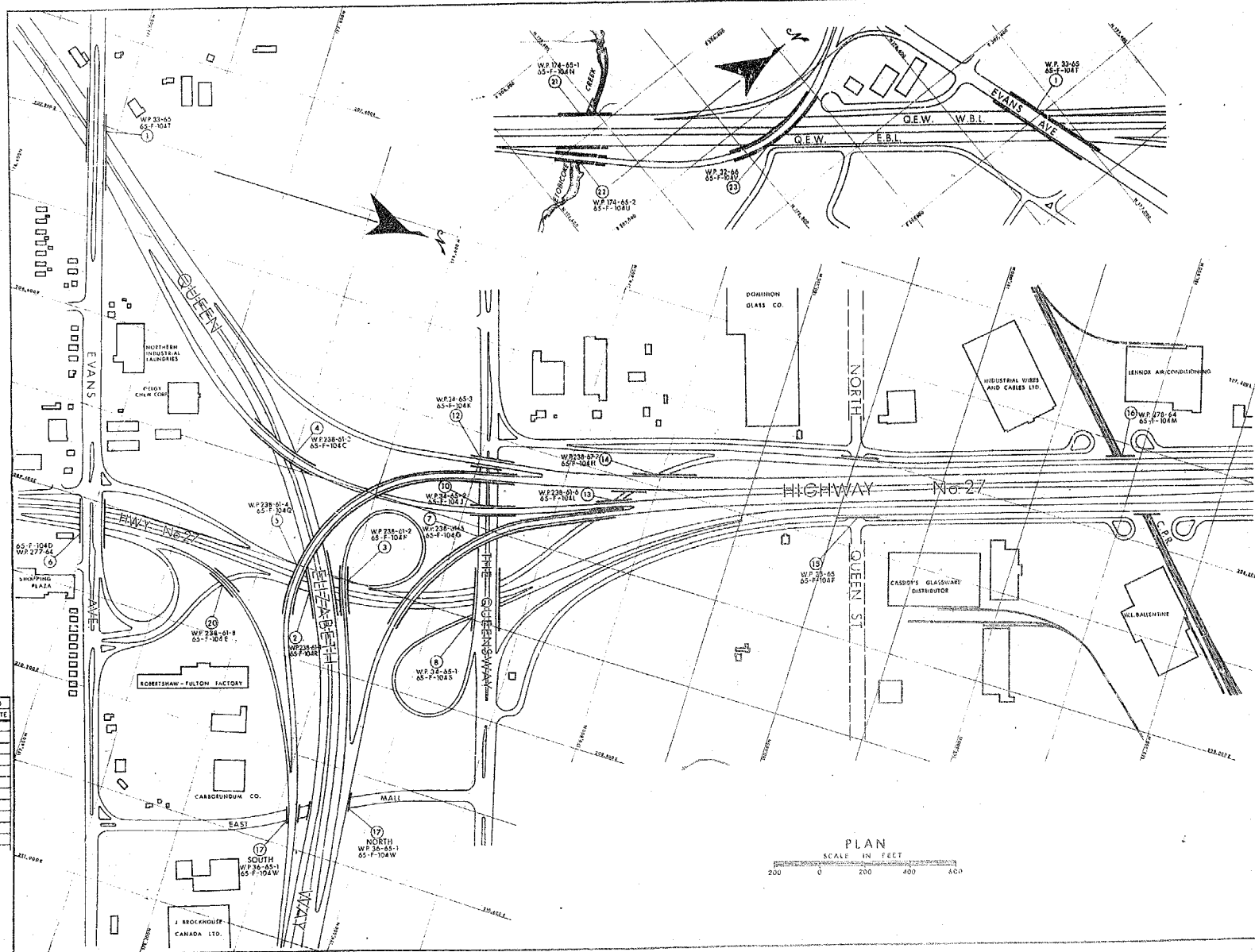
KING'S HIGHWAY NO. 27 E.W. & HWY. No. 27 INTER. DIST. NO. 6
CO. YORK METRO TORONTO
TWP. ETOBICOKE LOT CON.





BORE HOLE LOCATIONS & SOIL STRATA

DESIGNED BY K.S.	CHECKED BY	W.P. NO. 238-61-6	PLAT. DRAWING NO. 65-F-104 L
DRAWN BY	CHECKED BY	JOB NO. 62-F-104	BRIDGE DRAWING NO.
DATE 12 AUG 70	SITE NO.	APPROVED BY	PORT NO.



NO.	FOR	DATE



LEGEND	
	Bore Hole
	Cone Penetration Hole
	Bore A Cone Penetration Hole
	Water Levels established at time of field investigation.
(21)	Structure Number

- 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	BY	REMARKS	1. The following information was obtained from the records of the Department of the Interior, Bureau of Land Management, Washington, D.C., on the subject of the above-captioned matter:
			2. The following information was obtained from the records of the Department of the Interior, Bureau of Land Management, Washington, D.C., on the subject of the above-captioned matter:

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

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

KING'S HIGHWAY NO. DIST. NO. 6
CO. YORK METROPOLITAN TORONTO
TWP. ETOBICOKE LOT CON.

GENERAL LAYOUT

SUBNO'D. P. M.S.	CHECKED <i>19</i>	W.P. NC	M.S.T. DRAWING NO.
DRAWN D.G.H.	CHECKED <i>✓</i>	JCB NO 65-F-104	65-F-104 A
DATE 25 NOV. 1966		SITE NO	BRIDGE DRAWING NO.
APPROVED <i>A. K. B. [Signature]</i>		CONT NO	
PRINCIPAL, TRANSPORTATION AND HIGHWAYS			