

MEMORANDUM

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

From: Bridge Division,
Downsview, Ontario.

Date: April 25th, 1967.

Our File Ref.

IN REPLY TO

SUBJECT: W.P. 275-64-2, Dundas Interchange,
Highway No. 27, District No. 6.

Since receiving your report WJ. 66-P-103 dated 21st February 1967 the design of the above interchange has been changed by Functional Planning. The attached two prints of the 100' scale plan are different in the following areas:-

- a) The original overpass at Dundas Street has now been split into two bridges with the North Bound Collector being called Bridge No. 2 with W.P. 279-64-4.
- b) The location of the W.B. Basketweave (W.P. 266-66) has been moved southwards. The grades have also been reversed with the N.B. Collector going over the two-lane transfer road.
- c) A temporary grade separation Bridge No. 9, W.P. 279-64-6 will be located approximately as shown on the plan.
- d) The proposed location of retaining walls No. 1 to No. 12, 13B and 14B are also shown on the plan with the approximate height of ret. wall above ground also shown.

Also attached are two prints of preliminary profiles of Highway No. 27 S.B. and N.B. Basketweaves, and Dundas St.

It is expected that all the bridges in this interchange will be under design within a month. We therefore should have foundation reports by 31st May 1967.

JCMcA/aw
Attach.

c.c. A. Crowley
R. Forrest

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

MEMORANDUM

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

From: Bridge Division,
Downsview, Ontario.

Attention: Mr. A. Barsvary.

Date: May 29th, 1967.

Our File Ref.

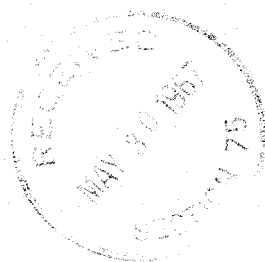
In Reply To

Subject: Bridge No. 2, W.P. 279-64-2,
Site No. 37-797,
The West Mall over Dundas Street,
District #6.

Attached for your information is one copy of bridge
site plan #6725 for Bridge #2.

RD1 /cew
Attach.

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



MEMORANDUM

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

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

Attention: Mr. S. McCombie

DATE: May 26, 1967

OUR FILE REF.

IN REPLY TO

MAY 31 1967

SUBJECT:

FOUNDATION INVESTIGATION REPORT

For

The Proposed Bridge #2, Bridge #9,
And W.B. Basketweave,
Hwy. #27 and Dundas St. Interchange,
District #6 (Toronto).

W.J. 66-P-103 -- W.P. 275-64-2

In a memo dated April 25, 1967, Mr. W. S. Melinyshyn, Regional Bridge Location Engineer, requested foundation investigations at the sites of three bridges. These structures belong to the proposed Hwy. #27 and Dundas St. interchange, but were recently changed or added; consequently, they were not included in our original Foundation Report W.J. 66-P-103.

Supplementary field and laboratory investigations were therefore undertaken by this Section to enable us to give recommendations for the requested structure foundations.

Attached, we are forwarding to you, our foundation reports for the above bridges, namely: Bridge #2 (W.P. 279-64-4), Westbound Basketweave (W.P. 266-66), and Bridge #9 (W.P. 279-64-6). Please insert these pages and drawings into your copy(s) of the original report W.J. 66-P-103.

Your attention is called to the section entitled: "General Remarks about Foundations" - Part Two (2), page four (4) of the original report. Suggestions given under this heading are valid for the foundations of the bridges sent to you hereby.

AGS/MdeF

Attach.

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

A. C. Sternac
A. C. Sternac

PRINCIPAL FOUNDATION ENGINEER

Foundations Files
Gen. Files ✓

DEPARTMENT OF HIGHWAYS - ONTARIO

RECORD OF BOREHOLE NO. 2

FOUNDATION SECTION

MATERIALS & TESTING DIVISION

JOB 66-F-103

LOCATION Co-ords. N 184,078 E 207,421

ORIGINATED BY P Mc

W.P. 275-64-02

BORING DATE October 25, 1965

COMPILED BY

DATUM GSC

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	wp	w		
105.9	Ground Level														
0.7	Top Soil														
	Silty sand with traces of gravel and clay to clayey silt with sand and traces of gravel (glacial till) very dense and hard		1	SS	11										
			2	SS	92	400									
			3	SS	95										
			4	SS	97										
			5	SS	132	390									
			6	SS	100 for 2"										
			7	SS	75 for 2"	380									
			8	SS	100 for 2"										
371.6			9	SS	140 for 4"	370									
35.3	End of Borehole														

Gr 17%
SA 30%
SI 43%
CL 10%
Gr 2%
SA 36%
SI 62%

Gr 6%
SA 40%
SI 45%
CL 8%

Gr 23%
SA 61%
SI 16%
CL 16%

MEMORANDUM

o. Mr. C. S. Grebski,
Bridge Design Engineer,
Bridge Division,
Admin. Bldg.

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

DATE: July 10, 1968

OUR FILE REF.

IN REPLY TO

SUBJECT:

Hwy. #27 and Dundas St. Interchange
and C.P.R. Overhead North of Q.E.W.
and Hwy. #27 Interchange.
W.J. 65-P-104 and W.J. 66-P-103,
District No. 6 (Toronto).

We have reviewed your designs for the proposed bridges of the above interchange and our comments pertaining to footings are as follows:

Bridge #1 and #2 (W.P. 279-64-1 and 279-64-4)

No comments.

Bridge #3 (W.P. 37-65)

No comments concerning spread footings beneath the piers. It is suggested, however, that - in view of recent experiences at the site of Hwy. #401 & #27 - pile lengths be provided for the abutments according to the Table below:

Location	No.	Piles Supplied	Type	Design Load
East Abutment	20	33 Ft.	12 BP @ 53	70 T/Pile
West Abutment	20	22 Ft.		

The above pile lengths include a one-ft. allowance for cutting off buckled ends.

Bridge #4 (W.P. 266-66)

No comments.

Bridge #5 (W.P. 267-66)

No comments.

cont'd. /2 ...

66-175-113
Mr. A. Storman,
Principal Foundation Engineer,
Road 107, and Building.

Attention: R. A. Selby

Bridge Division,
Downsview, Ontario.

September 30, 1965.

Preliminary Foundation Investigation
for Bridge Structures on Highway #27
between Q. & B. and Highview Side Rd.
C.P. 275-4-2 District # 6.

This is an extension of the preliminary foundation
investigation of the intersection of Q. & B. and Highway 27
etc.

Confirming our telephone conversation with Mr. Selby of
September 30, this investigation should include 4 structures at
Highway 5 (Lundas Street) and one each at Alcor St.,
Crimsoncorpe Road, and Fairburn Road.

It was agreed upon that the only available information at
this time, namely the Functional Planning Report, will be
sufficient for this preliminary investigation.

KRJ/kp

C.C. E. McCabe
R. Forrest

J. J. Jones,
for J. J. Curtis,
Regional Bridge Location Engineer.

COPIES OF NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

FOUNDATION INVESTIGATION REPORT
For
The Proposed Dundas St. and Hwy. #27
Interchange and Bloor St. Underpass,
Hwy. #27 -- District #6 (Toronto)
W.J. 66-P-103 -- W.P. 275-64-2

1. INTRODUCTION:

A memo by the Regional Bridge Location Engineer, Mr. W. S. Melinyshyn, dated December 8, 1966, was received by this Section, requesting a foundation investigation at the site of the proposed Hwy. #27 and Dundas Street interchange and Bloor Street underpass.

The request calls for investigations at the site of seven structures, all of which are delineated in Contract #5, which in turn, is part of the several contracts covering the proposed improvement of Hwy. #27.

A limited scale field investigation, containing some 7 boreholes, was already carried out at the site by the Foundation Section in 1965, and some of these boreholes are also incorporated in this report. The recent field work as well as the laboratory testing and the compilation of the geotechnical data sheets, were performed by Dominion Soil Investigation Ltd.

Presented in this report are the results of this investigation, together with recommendations pertaining to the foundations of the structures.

In the first part of the report, a general description of the site and subsoil conditions are given; the second part deals with each individual structure separately, presenting a short description of the soils and detailed recommendations for the footings.

cont'd. /2 ...

PART ONE

2. DESCRIPTION OF THE SITE:

Contract #5 covers the section of Hwy. #27 from north of the C.P.R. overhead to north of Bloor Street. The vicinity of the existing highway is generally flat, urban development with residential and light industrial buildings.

The area belongs to the "Iroquois Plain" physiographic region, formed by undulating till plains above the lowland, bordering Lake Ontario. This low-lying terrain was inundated by a body of water known as Lake Iroquois in late Pleistocene times. At this portion of the region, some alluvial terrace lands may be found behind huge baymouth bars.

3. FIELD AND LABORATORY INVESTIGATION PROCEDURE:

Thirty-seven boreholes, and adjacent to the holes, 37 cone penetration tests were carried out at the site of the seven proposed structures, during the recent field investigation.

The general layout of the site, showing the proposed structures, may be seen on attached Drawing #66-P-103A.

The borings were carried out by means of two conventional diamond core rigs adapted for soil sampling purposes, and two continuous flight augers. 2-in. O.D. split-spoon samplers were used to recover soil samples. The number of hammer blows necessary to advance the sampler one foot under an impact of 350 ft.-lbs. was recorded as the standard penetration 'N' value.

cont'd. /3 ...

3. FIELD AND LABORATORY INVESTIGATION PROCEDURE: (cont'd.) ...

Soil samples were visually examined and identified upon recovery and again in the laboratory. Laboratory tests of natural moisture content, Atterberg limits and grain-size distribution, were performed on representative soil specimens. The results of the laboratory and field tests are compiled on the geotechnical data sheets accompanying this report, together with the grain-size distribution curves.

4. GENERAL SOIL CONDITIONS:

The overburden within the entire area investigated was found to be a heterogeneous mixture of glacial till. Due to the nature of such glacial drifts, the classification of the various strata based on the individual samples, could sometimes be misleading. From the practical point of view, two main bodies of the glacial overburden may be differentiated. The coarse-grained portion was variously identified as silty sand to sandy silt, fine sand, silt, gravelly sand, etc. The fine-grained or cohesive portion is a clayey silt with some gravel and sand. At a few locations the uppermost ten-ft. zone exhibited firm to stiff consistency or loose to compact relative density. Otherwise, the deposit was found to be very dense or hard, corresponding to Standard Penetration 'N' values of much in excess of 100 blows/ft.

In order to ascertain the depth of the overburden, several boreholes were advanced into the bedrock. The bedrock was identified to be shale with intermittent limestone, the upper, approx. 8 - 10 ft. thickness of which was usually badly weathered. The surface of the weathered bedrock lies around el. 367 - 370 ft. The sound rock commences at el. 357 - 356 ft. Some 5 - 7 ft. depth of the sound rock was proved in a few locations by diamond drilling. The bedrock at the proposed crossing at Etobicoke Creek was observed to be somewhat lower.

- 4 -

PART TWO

5. GENERAL REMARKS ABOUT FOUNDATIONS:

5.1) Subsoil within the entire site investigated appears to exhibit sufficient strength for spread type foundations at relatively shallow depths. A four-ft. cover should be maintained above the base of the footings for frost protection.

5.2) Where perched abutments are supported on steel tube piles, it should be specified that no bouldery fill be placed at the locations of the footings. The working load on the piles must be checked during pile driving by means of the Hiley formula - (A.S.C. Standards DD 1218 and 1219).

5.3) Due to the high groundwater levels and the presence of the sandy silt to silty sand stratum, dewatering schemes for the footing excavations within this granular layer are likely to be necessary. Interlocking sheet piles, caissons, or well-point dewatering system, may be used. Sheet-piles or caissons should be lowered to a depth below the base of the excavation equal to the height of water above it, to prevent quick conditions of the soil.

5.4) No stability problems are foreseen for the approach fill and cuts with 2 horizontal to 1 vertical slopes.

6. HWY. #27 OVERPASS AT DUNDAS STREET:

(W.P. 279-64-1)

6.1) Soil Conditions:

Some 8 boreholes were drilled at the site of the proposed structure during the recent field investigation, and they were numbered from 25 to 32, inclusive. Two borings numbered 1 and 2, drilled in October 1965, are also incorporated in the stratigraphy. Predominantly silty sand to sandy silt with some gravel and clay material was recovered by the samples. The granular type glacial deposit exhibited very dense relative density in almost every

cont'd. /5 ...

466-103

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- Soil Conditions and Recommendations -
7. DUNDAS STREET UNDERPASS AT WEST MALL (W.P. 279-64-2).
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8. DUNDAS STREET OVERPASS AT EAST MALL (Vickers Rd.) (W.P. 279-64-3).
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9. NORTHEBOUND BASKET-WEAVE JUST SOUTH OF BLOOR ST. (W.P. 266-66).
- Soil Conditions and Recommendations -
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- Soil Conditions and Recommendations -
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- Soil Conditions and Recommendations -

-
13. SUMMARY.
 14. MISCELLANEOUS.

MEMORANDUM

23-67-83

To: Mr. B. R. Davis,
Bridge Engineer,
Bridge Division,
Admin. Bldg.
Attention: Mr. S. McCombie

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

DATE: February 21, 1967

OUR FILE REF.

IN REPLY TO:

FEB 28 1967

SUBJECT:

FOUNDATION INVESTIGATION REPORT
For
The Proposed Dundas St. and Hwy. #27
Interchange and Bloor St. Underpass,
Hwy. #27 -- District #6 (Toronto)
W.J. 66-F-103 -- W.P. 225-C-2

Attached, we are forwarding to you, our detailed foundation investigation report on the subsoil conditions existing at the above structure sites.

We believe that you will find the factual data and recommendations contained therein, adequate for your design requirements. Should additional information be required, please do not hesitate to contact our Office.

AGS/KdeF

Attach.

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

Foundations Files
Gen. Files ✓

A. G. Sternac
A. G. Sternac
PRINCIPAL FOUNDATION ENGINEER

MEMORANDUM

To: Mr. A. Sternac,
Principal Foundation Engineer,
Room 107, Lab. Bldg.

From: Bridge Division,
Downsview, Ontario.

Date: November 24, 1966.

Our File Ref

IN REPLY TO

SUBJECT: W.P. 275-64-2, Contract #5,
Dundas and Hwy. #27 Interchange and Bloor St. Underpass,
District No. 6.

This will confirm my verbal request for foundation investigation to be carried out for the structures within the Dundas interchange and the Bloor St. Underpass as delineated in Contract #5.

I have approached the consultants for drawings (100' scale) of this interchange and have been promised them by 30th Nov. 1966. Three copies will be forwarded to you as soon as mark up is completed.

The contract schedule of November 16, 1966 calls for a foundation report by 1st March 1966. In view of the work already done here and the reasonable time available consideration should be given to completing an individual report for each structure prior to preliminary structure plans. Within a few days after 1st December, 1966 we can supply you with borehole locations for the proposed structures. I trust you will give this your consideration.

J. C. McAllister

JCMCA/im
cc. A. Crowley

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

MEMORANDUM

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

From: Bridge Division,
Downsview, Ontario.

Date: December 8th, 1966.

Our File Ref.

IN REPLY TO

SUBJECT: W.P. 275-64-2, Contract #5,
Dundas and Hwy. #27 Interchange
and Bloor Street Underpass,
Hwy. #27, District #6.

Attached are three prints of 100' schematic drawing of the proposed interchange at Dundas Street marked up to show the approximate location of bridge footings as promised in my memo of 24th November, 1966.

You will notice that the layout of the proposed structures differs somewhat from the structures indicated on Mr. Strain's program dated 16th, November 1966. Dundas Street at the west mall has been combined with S.B. ramp of Hwy. #27 under West Mall. (i.e. W.P. 279-64-2 and -3 are combined). Also a grade separation is now called for East of Hwy. #27 on Dundas Street as shown on the plan.

Mr. Strain will be revising his program in the near future. When it is available a copy will be forwarded to you.

The alignment for the widening or replacement is not yet decided. When it is, a layout will be forwarded to you for investigation.

JCMcA/cew
Attach.

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

Contract A (Dundas)

W.P. 275-64-2	CIDGB Pav.	From N. of C. P. R. O'Head to N. of Bloor St.
W.P. 279-64-1	Struct.	Hwy. 27 O'Pass at Dundas St.
W.P. 279-64-2	Struct.	Dundas St. O'Pass at West Mall and S. Bd. ramp of Highway 27, Dundas St. to Hwy. 27 at Bloor St.
W.P. 279-64-5	Struct.	Dundas St. O'Pass at E. Mall.
W.P. 256-66	Struct.	N. Bd. Basketweave just S. of Bloor St.
W.P. 267-67	Struct.	S. Bd. Basketweave just S. of Bloor St.
W.P. 37-63	Struct.	Hwy. 27 O'Pass at Bloor St.
W.P. 277-66	Struct.	At present present Llanocose Creek Bridge on Dundas Street just W. of Hwy. 27.

Program

Start Construction		Expend. 1968	2,500,000
Comp. Construction	Nov. 15/70	Expend. 1969	2,500,000
		Expend. 1970	1,500,000
		Total Value	\$ 6,500,000

Pre-Engineering Schedule

	Comp. Date
Planning	Comp.
Struct. Geometrics	Feb. 15/67
Foundation Report	<u>Mar. 1/67</u>
Preliminary Property Request	Jun. 13/67
Soils Report	Feb. 15/67
Final Property Request	Apr. 12/67
Bridge-Comp. D4 & Plans	Sept. 13/67
Consultants - Comp. D4 & Plans	Oct. 25/67
Regional (R12)	Dec. 6/67
Local Office (R10)	Jan. 17/68
Property Acquired	Feb. 20/68
Assestment	Apr. 10/68
Design	May 23/68

For Information

Mr. A. Sternas, Principal Foundation Engineer,
Room 107, Lab. Building

Mr. W. Malinayhyn,
Reg. Bridge Location Engineer,
Central Region,
Administration Building

Bridge Division,
Downsview, Ontario

July 5, 1967

Bridge No. 1 & 2
Hwy. 27 Overpass @ Dundas St. (Hwy. 5)
N.B. Collector Overpass @ Dundas Street
W.P. 279-64-1, W.P. 279-64-4
Highways 27 & 5, District No. 6

Attached herewith are prints of the Preliminary Bridge Plan Drawing D-6196-P1 for the above-mentioned structures.

The estimated cost of the proposed structures is \$621,500 for Bridge No. 1 and \$192,500 for Bridge No. 2. This cost includes tender, materials, engineering and sundry construction.

Any comments or revisions you may have should be submitted within three weeks.

CSG:rd

C.S. Grebski,
Bridge Design Engineer

Attach.

c.c. S. McCombie
A. Sternas
R. Forrest
E. Cross

dep

Mr. C. S. Grebaki,
Bridge Design Engineer,
Bridge Division,
Admin. Bldg.

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

July 17, 1967

-- Bridge No. 1 and No. 2 --
Hwy. 27 Overpass and Dundas St. (Hwy. 5),
M.E. Collector Overpass at Dundas St.,
Hwy's. 27 and 5, District No. 6 (Toronto).
W.P. 279-64-1 -- W.P. 279-64-4

66-9-103

We have reviewed Preliminary Plan D-6196-P1 for
the above mentioned structures.

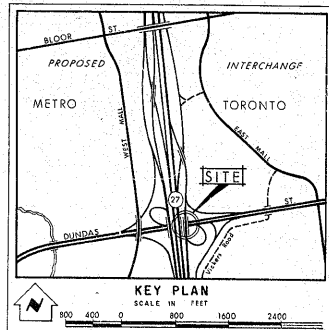
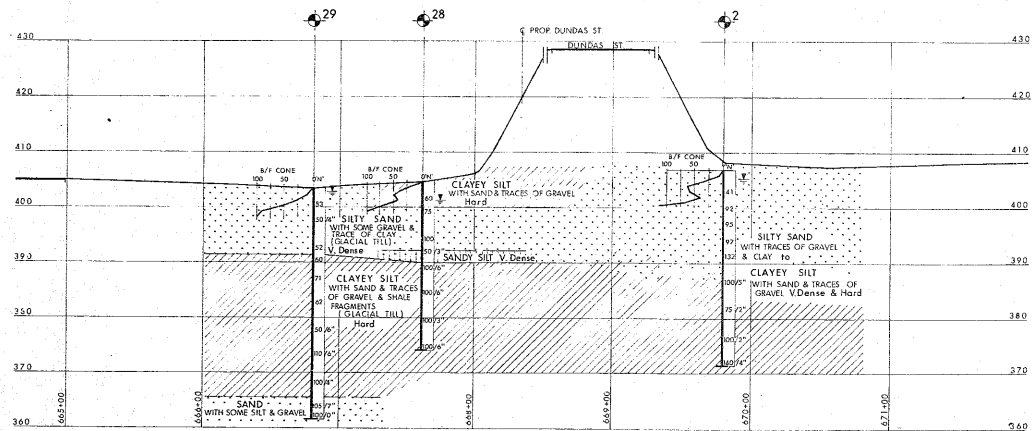
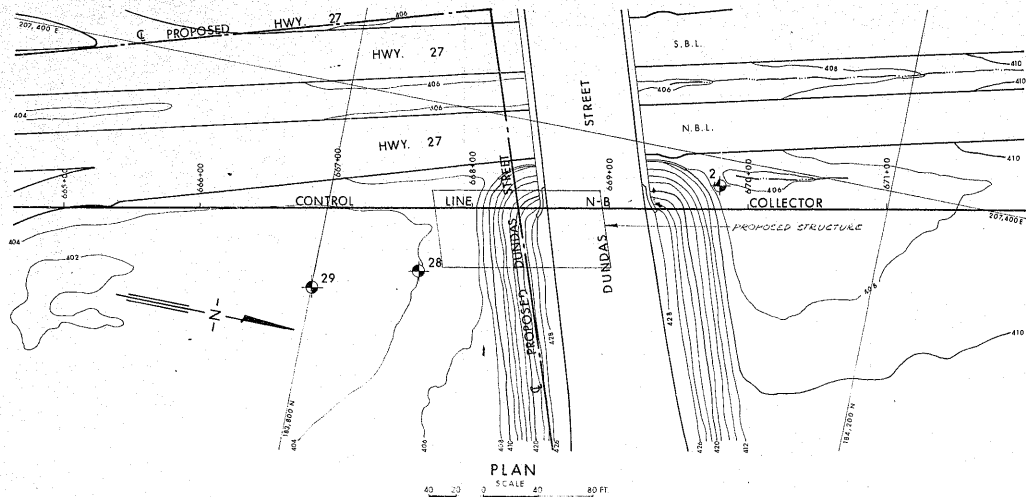
we have no comments.

KGS/EdaP

Eda P. Selby
K. G. Selby,
SUPERVISING FOUNDATION ENGR.
For:
A. G. Sternie,
PRINCIPAL FOUNDATION ENGR.

cc: Messrs. S. McCombie
W. S. Melnyshyn

Foundations Files
Gen. Files



LEGEND

- Bore Hole
- ⊕ Cone Penetration Hole
- ⊕ Bore & Cone Penetration Hole
- ⊕ Water Levels established at time of field investigation, JAN. 1964

NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
2	406.9	184,078	207,421
28	404.6	183,875	207,523
29	402.3	183,800	207,550

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.

REVISIONS	DATE	BY	DESCRIPTION

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

DUNDAS INTERCHANGE BRIDGE NO 2

NORTH BOUND COLLECTOR OVER DUNDAS ST.

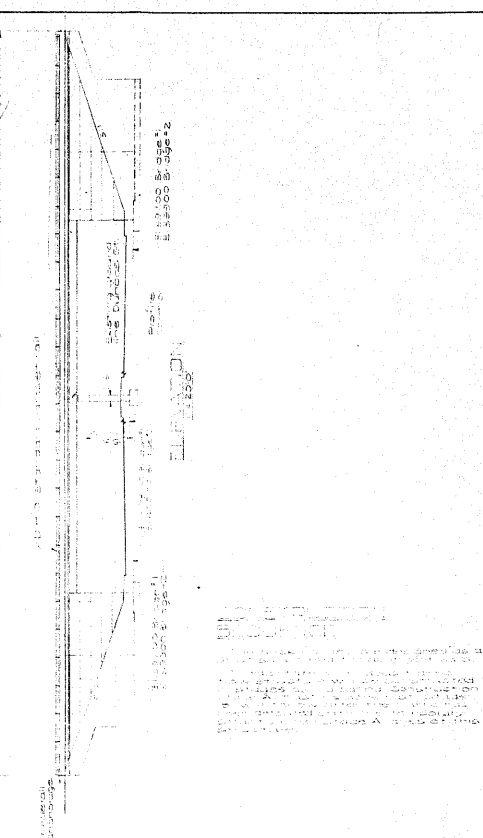
KING'S HIGHWAY NO. 27 (IMPROVEMENT) DIST. NO. 6

CO. YORK METROPOLITAN TORONTO

TWP. ETOBICOKE LOT CON.

BORE HOLE LOCATIONS & SOIL STRATA

SUBMIT A.B. CHECKED	W.P. NO. 279-64-4	1/8 T. DRAWING NO.
DRAWN S.O. CHECKED	JOS NO. 66-F-103	66-F-103 J
DATE 18 MAY 1967	SITE NO.	BRIDGE DRAWING NO.
APPROVED	POINT NO.	

PLAN
1" = 20' 0"

PRINT RECORD		
No.	FOR	DATE

[illegible]

REVISIONS	DATE		BY	DESCRIPTION

DEPARTMENT OF HIGHWAYS ONTARIO BRIDGE DIVISION	
668-103 BRIDGE NO. 112 KING'S HIGHWAY No. 1016 CO. 1016 DIST. No. 1016	
LOT CON.	PRELIMINARY
APPROVED DESIGN <input checked="" type="checkbox"/> CHECK <input checked="" type="checkbox"/> QUANTITIES <input checked="" type="checkbox"/> DRAWING <input checked="" type="checkbox"/> DATE <input checked="" type="checkbox"/>	DATE <input checked="" type="checkbox"/> BY <input checked="" type="checkbox"/> CONTRACT NO. <input checked="" type="checkbox"/> DRAWING NO. <input checked="" type="checkbox"/>