

D O M I N I O N S O I L I N V E S T I G A T I O N L I M I T E D

7 ROCKFORD BOULEVARD - SCARBOROUGH ONTARIO CANADA - TELEPHONE 751-6565

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

14th February 1967.

Department of Highways, Ontario,
Materials and Testing Division,
Downsview Avenue,
Downsview, Ontario.

Attention: Mr. A. Barsvary, P.Eng.

Re: Our Ref. No: 6-12-13
Your Ref: W.J. -66-F-103

Dear Sirs,

Enclosed please find Geotechnical Data Sheets for boreholes No. 39 to 44 inclusive. Also Cone tests A, C, E, G and I.

Yours very truly,

DOMINION SOIL INVESTIGATION LIMITED


J. Hewitt, P.Eng.

JH/me
Enclosures.

Department of Highways Ontario

Copy for the information of
Mr. A. Stermac,
Principal Foundation Engineer

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

Bridge Division,
Downsview, Ontario

September 13, 1967

Bridge No. 8
Dundas St. Over Etobicoke Creek
W.P. 277-66, Site No. 24-187
Dundas St. & Hwy. 27 Interchange
District No. 6

Attached herewith are prints of the Preliminary Bridge Plan
Drawing D6203-P1 for the above-mentioned structure.

The estimated cost of the proposed structure is \$306,000.
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. Stermac
W. Wigle
R. Forrest
E. Cross

66-F-103

NO COMMENTS

Sept. 19, 1967

A. V. B.

NO COMMENTS: Oct 12th 1967

H. L. Bille

12. ETOBICOKE CREEK BRIDGE ON DUNDAS STREET: (cont'd.) ...

(W.P. 277-66)

12.1) Soil Conditions: (cont'd.) ...

the existing bridge (B.H.'s #39, 41, 44), the presence of the bedrock could not be confirmed. Although a considerable amount of shale fragments were observed within the strata, the material is believed to be part of the glacial overburden and not bedrock. Due to the uncertainties as to the upper surface of the bedrock and its probable inclination, it is recommended that additional boreholes be drilled at the proposed piers, after their exact locations become available.

The groundwater was observed to range from el. 362 ft. to el. 366 ft. in the boreholes, roughly corresponding to the water level of the creek.

The locations and elevations of the borings and three stratigraphical cross sections are presented on Drawing #66-F-103G.

12.2) Recommendations:

The proposed grade of Dundas Street will be raised to el. 386 - 389 ft.

The abutments of the new bridge should be placed on footings within the approach fills and supported on piles. By using 12-inch BP at 53 steel H-piles, driven to el. 347 - 357 ft., a design load of 70 T/pile may be achieved.

The piers may be supported on spread footings at elevations not above 358 ft., using a design load of up to 4 t.s.f. The final elevation of the footings and the pile tips, however, should be governed by the depth of scour. It is suggested that the Hydrology Section be consulted as to the exact depth of scour. Protection of the end slopes of the approach fills by rip-rap should also be considered.

cont'd. /14 ...

12. ETOBICOKE CREEK BRIDGE ON DUNDAS STREET: (cont'd.) ...

(W.P. 277-66)

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

It is believed that dewatering of the footing excavations will present problems. Since the exact locations of the piers are not yet known, recommendations at this stage cannot be given. The dewatering scheme to be adopted, will depend upon the depth of scour and the elevation of the bedrock at the locations of the proposed piers.

13. SUMMARY:

The foundation investigation for the structures at the proposed Dundas Street and Hwy. #27 interchange and Bloor Street underpass is presented.

The first part of this report contains the general description of the site and field work as well as the subsoil characteristics.

In the second part, detailed descriptions of the soils and recommendations for the footings are given at the sites of the individual structures.

Attention is called to Part Two, Section #5, where general suggestions pertaining to all the structure foundations, are discussed.

14. MISCELLANEOUS:

The field work performed during the period December 28, 1966 - February 8, 1967, together with the laboratory testing, were undertaken by Dominion Soil Investigation Ltd., who also owned the equipment. This report was prepared by Mr. A. K. Barsvary, Senior Foundation Engineer, D.H.O., and reviewed by Mr. K. G. Selby, Supervising Foundation Engineer, D.H.O.

February 1967

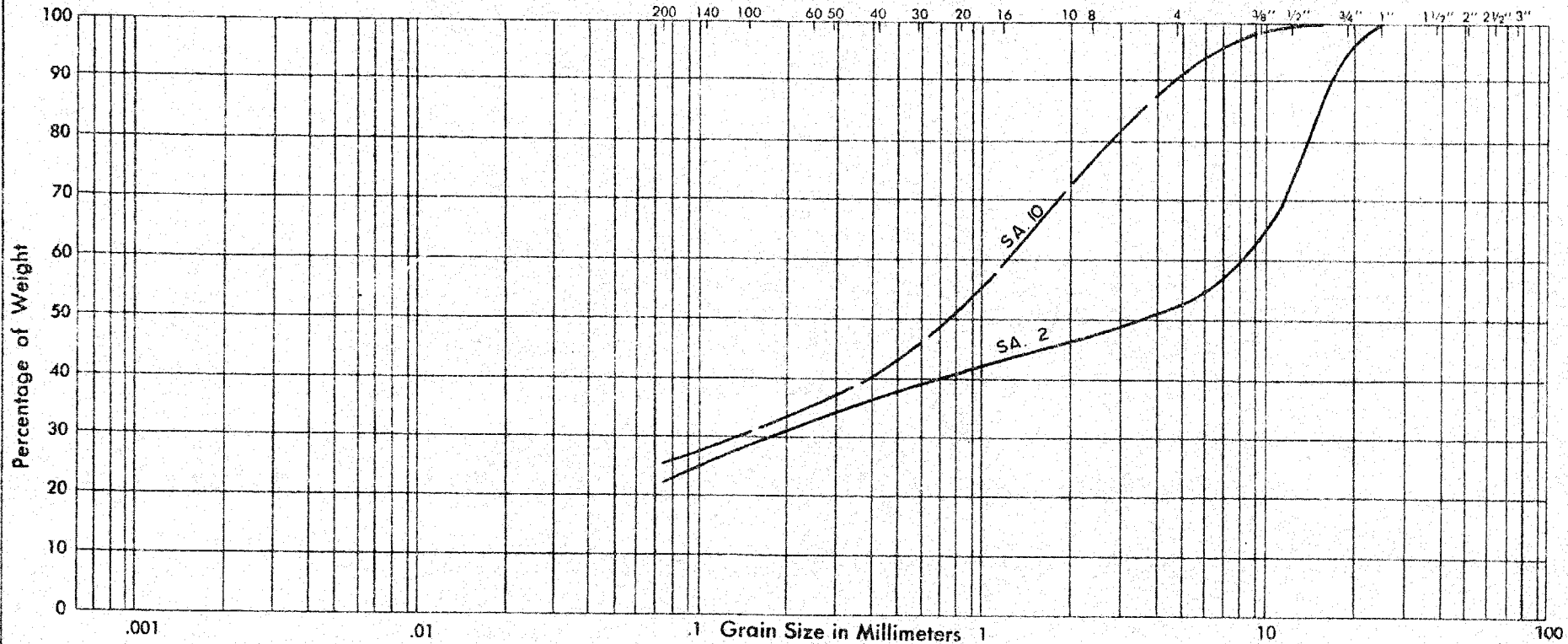
DOMINION SOIL INVESTIGATION LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6 -12 -13

UNIFIED SOIL CLASSIFICATION
SYSTEM

SILT AND CLAY	SAND			GRAVEL	
	FINE	MEDIUM	COARSE	FINE	COARSE



PROJECT: W. J. 66-F - 103

LOCATION: ETOBICOKE, ONT

BOREHOLE NO.: 39

SAMPLE NO.: 2 10

DEPTH OF SAMPLE: 10' 27'

ELEVATION OF SAMPLE: 362.4' 345.4'

COEFFICIENT OF UNIFORMITY
COEFFICIENT OF CURVATURE

Non Applicable

PLASTIC PROPERTIES:

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

Classification of Sample and Group Symbol:

SANDY GRAVEL
with some SILT

SILTY SAND
with some GRAVEL

SA. 2 GM

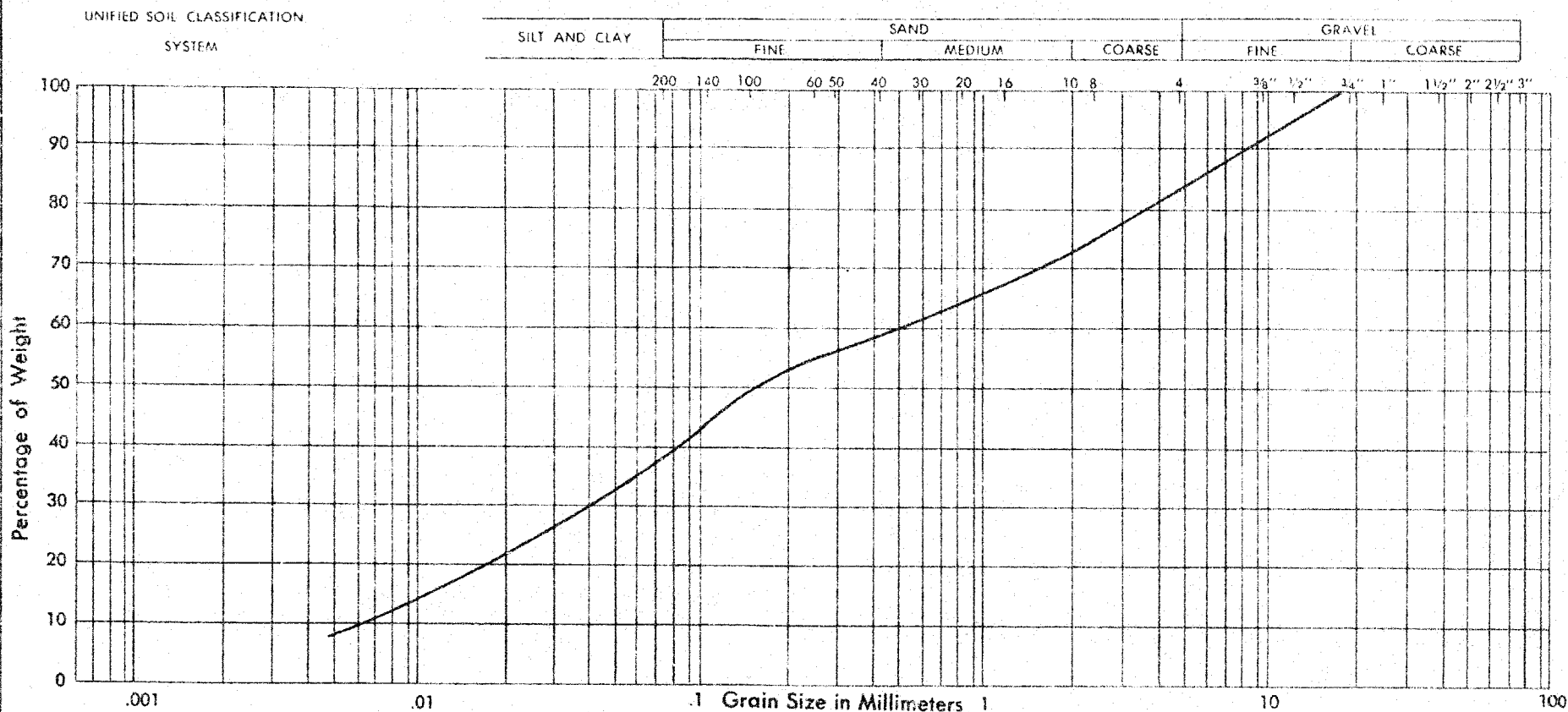
SA. 10 SM

Enclosure No.

DOMINION SOIL INVESTIGATION LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6 - 12 - 13



PROJECT: W.J. 66 - F - 103
 LOCATION: ETOBICOKE, ONT.
 BOREHOLE NO.: 41
 SAMPLE NO.: 2
 DEPTH OF SAMPLE: 10'
 ELEVATION OF SAMPLE: 355.2'

COEFFICIENT OF UNIFORMITY
 COEFFICIENT OF CURVATURE

Non Applicable

Classification of Sample and Group Symbol:

SILTY SAND with some GRAVEL and trace
of CLAY

PLASTIC PROPERTIES.

LIQUID LIMIT	% =	
PLASTIC LIMIT	% =	Non
PLASTICITY INDEX	% =	Plastic
MOISTURE CONTENT	% =	
ACTIVITY	=	

Enclosure No.

GEOTECHNICAL DATA SHEET FOR BOREHOLE 39.

OUR REFERENCE NO. 6-12-13
Your Ref No W.J. 66-F-103

CLIENT: D. H. O.

PROJECT: FROM N. OF C.P.R. O'HEAD TO NORTH OF BLOOR

METHOD OF BORING: WASH BORING

DIAMETER OF BOREHOLE: 2 7/8"

ENCLOSURE NO.

LOCATION: 183,252 N.; 205,472 E.

DATE: JAN. 27-FEB. 1, 1967

DATUM ELEVATION: G. S. C.

W. P. 275-64-2

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %				REMARKS
				NUMBER	TYPE	N- Advance of Sampler	2.0	4.0	6.0	8.0	10.0	WP	W	WL		
372.4	0	GROUND SURFACE														
		1' TOPSOIL														
		FILL														
370	2.0															
	5	SANDY														
		GRAVEL														
365		with Dense														
		some V Dense														
	10	silt														
360		(Glacial Till)														
	15															
		Shale fragments														
355		cobbles														
	20	and														
		boulders														
350																
	25	sand seams														
345																
	30															
340																
	33.0	END OF BOREHOLE														
	35															
335																

VERTICAL SCALE: 1 IN. TO 5 FT.

DOMINION SOIL INVESTIGATION LIMITED

MADE D. A. M. CHD.

GEOTECHNICAL DATA SHEET FOR BOREHOLE . 40 .

OUR REFERENCE NO. 6-12-13
Your Ref. No. W.J. 66-F-103

CLIENT D. H. O.

PROJECT FROM N. OF C.P.R. O'HEAD TO N. OF BLOOR ST.

LOCATION 183, 373 N; 205, 430 E.

DATUM ELEVATION: G. S. C.

METHOD OF BORING WASHBORING

DIAMETER OF BOREHOLE 2 7/8"

DATE JAN 30 - FEB. 2, 1967

W. P. 275 - 64 - 2

ENCLOSURE NO.

ELEVATION ft	DEPTH ft	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE		CONSISTENCY		REMARKS
				NUMBER	TYPE	Advance of Sampler	blows per foot	SHEAR STRENGTH lbs. sq. ft.	water content %	W P W L	
376.1	0	GROUND SURFACE									
375		Clayey Silt with trace of gravel (FILL)									
370	5	Hard, Brown		1	S.S.	34					
365	10	CLAYEY SILT with sand and some gravel (FILL)		2	S.S.	11					
360	15	Stiff, Brown									
355	20	SAND and SILT with cobbles some gravel (Glacial Till) Grey boulders Very Dense		3	S.S.	180/6					
350	25	CLAYEY SILT with sand and gravel (Glacial Till) Hard sand seams shale fragments		4	W.S.	—					
345	30	WEATHERED SHALE		5	S.S.	75/6"					
340	35	BEDROCK Banded Shale and Limestone		6	S.S.	100/4"					
	40	END OF BOREHOLE		7	S.S.	100/1"					
				8	R.C.	93%					

W.L. EL. 365.2'
FEB. 2, 1967

CASED TO 25'

VERTICAL SCALE 1 IN TO 5 FT

DOMINION SOIL INVESTIGATION LIMITED

MADE D. A. M. CHD.

GEOTECHNICAL DATA SHEET FOR BOREHOLE . . 4 . .

OUR REFERENCE NO. 6-12-13

Your Ref. No. W.J. 66-F-103

CLIENT: D. H. O.

PROJECT: FROM N. OF C.P.R. O'HEAD TO N. OF BLOOR ST.

LOCATION: 183, 272 N.; 205, 57 E.

DATUM ELEVATION: G. S. C.

METHOD OF BORING WASHBORING

DIAMETER OF BOREHOLE 2 7/8"

DATE JAN. 23-27, 1967

W. P. 275-64-2

ENCLOSURE NO.

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %				REMARKS
				NUMBER	TYPE	N or Advance of Sample	2.0	4.0	6.0	8.0	10.0	WP	W	WL		
365.2	0	GROUND SURFACE														
		Gravelly Sand with some silt (FILL)														
360	5.5	CLAYEY SILT with some sand (Glacial Till) Hard, Grey		1A B	S.S.	79/6"										
355	10			2	S.S.	100/2"									16 46 33 5	
		SILTY SAND with gravel and boulders trace of clay. (Glacial Till)		3	R.C.	25%										
350	15			4	R.C.	50%										
				5	W.S.											
345	20			6	S.S.	100/0"										
		boulders Very Dense		7A B	R.C.	37%										
340	25			8	S.S.	80/1"										
		BEDROCK Banded Shale and Limestone		9	R.C.											
	25.5			10	S.S.	100/1/2"										
				11	R.C.											
340	25.5			12	R.C.	57%										
	28.0	END OF BOREHOLE														
335	30															

VERTICAL SCALE 1 IN TO 5 FT.

DOMINION SOIL INVESTIGATION LIMITED

MADE D. A. M. CHD 7/2

GEOTECHNICAL DATA SHEET FOR BOREHOLE . 4 2 .

OUR REFERENCE NO. 6-12-13
Your Ref. No. W.J. 66-F-103

CLIENT: D. H. O.

PROJECT: FROM N. OF C.P.R. O'HEAD TO N. OF BLOOR ST.

LOCATION: 183,420 N ; 205,546 E

DATUM ELEVATION G. S. C.

METHOD OF BORING WASHBORING

DIAMETER OF BOREHOLE 2 7/8"

DATE JAN. 24-27, 1967

W. P. 275 - 64 - 2

ENCLOSURE NO.

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES		PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %				REMARKS
				NUMBER	TYPE	20	40	60	80	100	W _p	W	W _L		
365.9	0	GROUND SURFACE													
		Sandy Gravel with silt. (FILL)													
	3.5	Loose, Brown													
360	5	SANDY SILT with some gravel (Glacial Till)													
	10	Very Dense Grey cobbles and boulders Shale fragments													
355	12.0														
	15	WEATHERED SHALES													
350															
	20														
345		BEDROCK Banded Shale and Limestone													
340	25														
335	29.0	END OF BOREHOLE													

VERTICAL SCALE: 1 IN TO 5 FT.

DOMINION SOIL INVESTIGATION LIMITED

MADE D.A.M.

CHD.

GEOTECHNICAL DATA SHEET FOR BOREHOLE . 43 .

OUR REFERENCE NO. 6 - 12 - 13

Your Ref. No. W.J. 66 - F - 103

CLIENT: D.H.O.

PROJECT: FROM N. OF C.P.R. O'HEAD TO N. OF BLOOR ST

LOCATION: 183,439 N; 205,593 E

DATUM ELEVATION: G. S. C.

METHOD OF BORING

WASHBORING

DIAMETER OF BOREHOLE

2 7/8"

ENCLOSURE NO.

DATE: JAN. 18 - 24, 1967

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE		CONSISTENCY		REMARKS
				NUMBER	TYPE	N or Adjustment of Sample	blows per foot	SHEAR STRENGTH lbs./sq. ft.	W _p	W _L	
372.0	0	GROUND SURFACE									
372.0		Sandy Silt with trace of gravel (FILL)									
365	5	Brown <u>Loose</u> clayey layers		1	S.S.	9					
365	10	SANDY SILT with some gravel (Glacial Till)		2	S.S.	127					
360	15	Very Dense Grey sand seams		3	S.S.	100/5					
355	20	cobbles and boulders		4	S.S.	100/9					
355	22.0	WEATHERED SHALE		5A	R.C.						
355	25	BEDROCK Banded Shale and Limestone		6	WS.						
355				7	S.S.	100/4"					
355				8	R.C.						
355				9	R.C.	92%					
355	31.0	END OF BOREHOLE									
355	35										

W.L. E.I. 364.8'
JAN. 24, 1967

GEOTECHNICAL DATA SHEET FOR BOREHOLE . 44 .

OUR REFERENCE NO. 6-12-13
Your Ref. No. W.J. 66-F-103

CLIENT: D. H. O.
PROJECT: FROM N. OF C.P.R. O'HEAD TO N. OF BLOOR ST.
LOCATION: 183, 312 N. 205, 645 E.
DATUM ELEVATION: G. S. C.

METHOD OF BORING: WASHBORING
DIAMETER OF BOREHOLE: 2 7/8"
DATE: FEB. 2-8, 1967
W.P. 275-64-2

ENCLOSURE NO.

ELEVATION ft	DEPTH ft	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot					CONSISTENCY water content %			REMARKS
				NUMBER	TYPE	N ₆₀ or Adapted of sampler	20	40	60	80	100	wp	w	wl	
376.0 376.0	0	GROUND SURFACE													
375 376	5	SANDY SILT with some clay (FILL) Loose Brown		1	SS	10									
370 368	8.5														
365 369	10	SILTY SAND with trace of clay (Weathered Till) Loose, Brown		2	SS	8									
360 361	14.0														
355 357	15	GRAVELLY SAND with silt (Glacial Till) Very Dense Grey		3	SS	100/4									
350 351	20			4	SS	100/4									
345 347	24.5			5	WS	—									
340 342	25	CLAYEY SILT (GLACIAL TILL) shale fragments, Hard, Grey		6	SS	100/4									
335 337	26.5														
330 331	30	SANDY GRAVEL with some silt (Glacial Till) Very Dense Grey		7	SS	100/5									
325 327	35			8	WS	—									
320 321	39			9	SS	100/3									
315 317	40	some shale fragments END OF BOREHOLE		10A B	RC 5%										
310 311	45														

W.L. E1. 362.2'
Feb. 9, 1967

W.L. E1.362.2'
Feb. 9, 1967

VERTICAL SCALE 1 IN TO 5 FT

DOMINION SOIL INVESTIGATION LIMITED

MADE: D A M. CHD.

GEOTECHNICAL DATA SHEET FOR ~~BOREHOLE~~ CONE TEST 'A' & 'C'

OUR REFERENCE NO. 6 - 12 - 13
Your Ref. No. W.J. 66-F-103

CLIENT: D. H. O.

PROJECT: FROM N. OF C.P.R. O'HEAD TO N. OF BLOOR ST.

LOCATION:

DATUM ELEVATION: G.S.C.

METHOD OF BORING CONE PENETRATION TEST

DIAMETER OF BOREHOLE

ENCLOSURE NO.

DATE: C.T. - 'A' - FEB. 2, 1967

C.T. - 'C' - FEB. 2, 1967

W. P. 275 - 64 - 2

ELEVATION ft.	DEPTH ft.	STRATIFICATION DESCRIPTION	STRATIFICATION SYMBOL	SAMPLES			PENETRATION RESISTANCE blows per foot		SHEAR STRENGTH lbs. sq. ft.	CONSISTENCY water content %			REMARKS
				NUMBER	TYPE	N Advancement of Sampler	20	40		60	80	100	
375.3	0	GROUND SURFACE					CONE TEST 'A' (183,300 N; 205,455 E.)						
370	5												
365	10												
364	11.4	END OF CONE TEST											
360	15												
364.4	0	GROUND SURFACE					CONE TEST 'C' (183,318 N; 205,502 E.)						
360	5												
355	6.6	END OF CONE TEST											
	10												

VERTICAL SCALE: 1 IN. TO 5 FT.

DOMINION SOIL INVESTIGATION LIMITED

MADE: D. A. M. CHD. *9/2*

GEOTECHNICAL DATA SHEET FOR CONE TEST 'E', 'G', 'I'

OUR REFERENCE NO. 6-12-13

Your Ref. No. W.J. 66-F-103

CLIENT: D. H. O.

PROJECT: FROM N. OF C.R.R. O'HEAD TO N. OF BLOOR ST.

LOCATION

DATUM ELEVATION G.S.C.

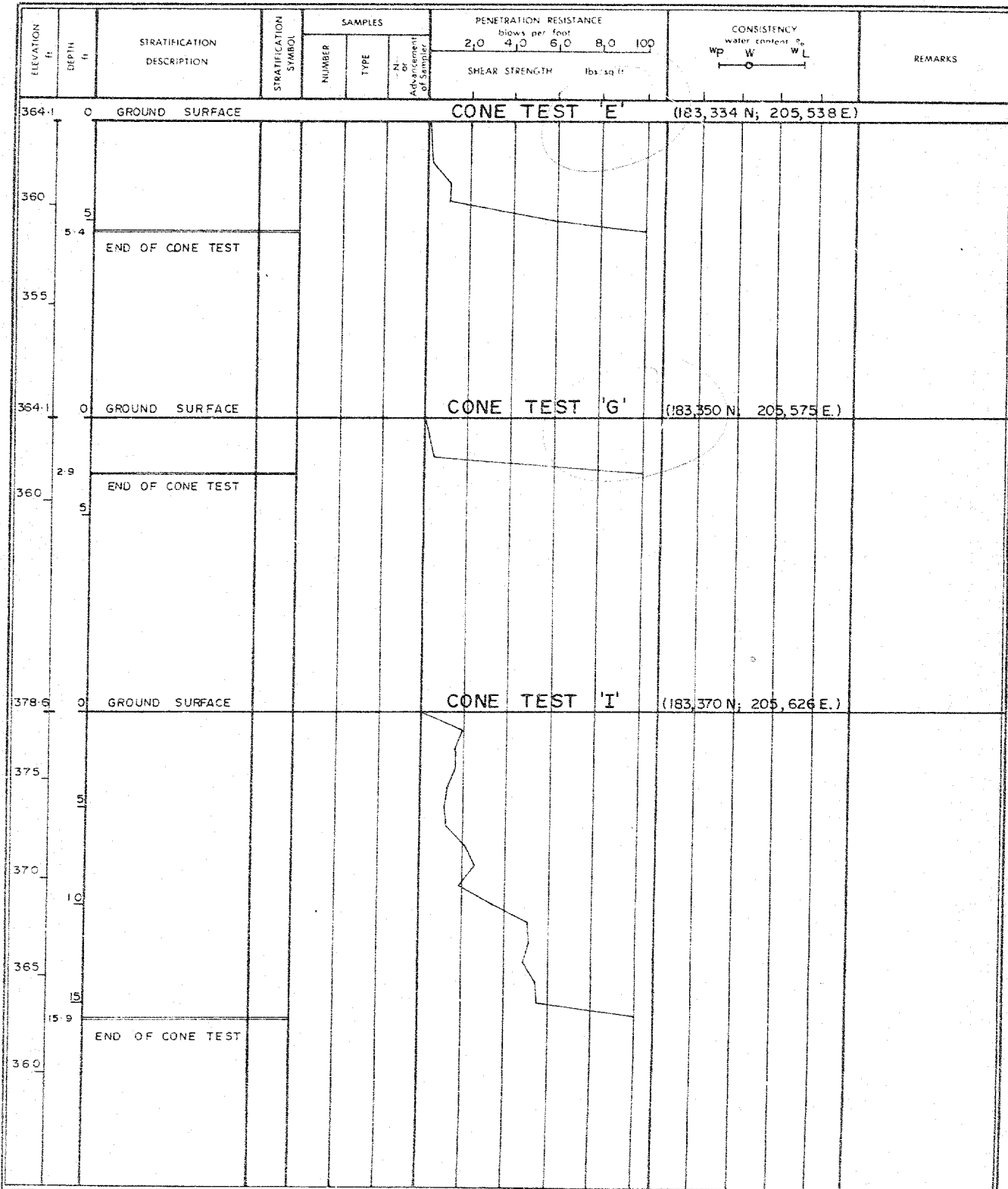
METHOD OF BORING CONE PENETRATION TEST

DIAMETER OF BOREHOLE

DATE FEB. 8, 1967

W F 275-64-2

ENCLOSURE NO.



VERTICAL SCALE: 1 IN. TO 5 FT

DOMINION SOIL INVESTIGATION LIMITED

MADE D.A.M. CHD 32

MEMORANDUM

TO: 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 ...

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

2.

July 11, 1968

Bridge #6 (W.P. 279-64-5)

No comments.

Bridge #7 (W.P. 279-64-2)

No comments.

Bridge #8 (W.P. 277-66)

Pile lengths are not marked on the design drawings.
We recommend pile lengths to be provided as follows:

Location	No.	Type	Pile Lengths
East Abutment	32	12 BP @ 53	22 Ft.
West Abutment	30		20 Ft.

Above lengths are valid provided that scour does not affect the soil beneath El. 355 ft.

The given lengths include a one-ft. allowance for buckling during driving.

Bridge #9 (W.P. 279-64-6)

Our foundation report called for spread footings to be placed at or below El. 406.0 ft. The designer, however, has placed the footings at higher elevations, ranging from 407.5 ft. to 411.0 ft. It should be ensured that no organics or loose material remains below the footings in this case.

Bridge #10 (W.P. 32-68)

No foundation investigation was requested along this temporary pedestrian overpass, thus no comments can be given.

Bridge #16 (W.P. 278-64-3; W.J. 65-P-104)

No comments.

KCS/WdeF

cc: Foundations Files
Gen. Files

K. G. Selby,
SUPERVISING FOUNDATION ENGR.
For:
A. G. Stermac,
PRINCIPAL FOUNDATION ENGR.

66-F-123

W. A. Steward,
Principal Foundation Engineer,
2501 17th Ave. S.W. Building.

Bridge Division,
Edmonton, Alberta.

Attention: Mr. A. Selby

September 30, 1966.


Preliminary Foundation Investigation
for Bridge Structures on Highway #27
between Q. & W. and Riverview Side Rd.
Q.R. 275-4-2 District # 6.

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

Continuing our telephone conversation with Mr. Selby of
September 30, this investigation should include 4 structures along
Highway 5 (Dundas Street) and one each at Bloor St.,
Farmington Road, and Hawthorn 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.

And/xy
C.C. H. McCabe
R. Forrest


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

REPLIES TO NEGATIVE LIT. CO.
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)
M.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.

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-F-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 - 360 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 Stobicoxe Creek was observed to be somewhat lower.

cont'd. /b ...

11. HWY. #27 UNDERPASS AT BLOOR STREET: (cont'd.) ...
(W.P. 37-65)

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

If the design calls for perched type abutments, the footings may be placed within the approach fills and supported on piles.

In using 12-inch BP at 53 steel H-piles or 12-3/4 inch x 1/4 inch steel tubes driven to approx. el. 405 - 408 ft., a design load of 70 T/pile may be assumed for design purposes.

No dewatering problems are foreseen for the footing excavations. It is believed that any water accumulated in the excavation may be eliminated by conventional pumping from open sumps.

12. ETOBICOKE CREEK BRIDGE ON DUNDAS STREET:

(W.P. 277-66)

12.1) Soil Conditions:

Six sampled boreholes and some eleven cone penetration tests were carried out at the site of the proposed new bridge. Boreholes were numbered from 39 to 44, inclusive.

The uppermost layer was found to be a mixed fill of sand, gravel, clayey silt and sandy silt. The relative density of the fill ranges from loose to compact, the consistency from stiff to hard.

Predominantly granular sandy silts and silty sands underlie the fill with a fair percent of cobbles and boulders. The stratum is very dense with 'N' values of well over 100 blows/ft.

In the boreholes placed at the north side of the existing bridge (B.H.'s #40, 42, 43), shale bedrock with intermittent limestone, was encountered around el. 350 - 354 ft. The upper 3 - 6 ft. of the bedrock is badly weathered. At the south side of

cont'd. /13 ...

TABLE OF CONTENTS

PART ONE

1. INTRODUCTION.
2. DESCRIPTION OF THE SITE.
3. FIELD AND LABORATORY INVESTIGATION PROCEDURE.
4. GENERAL SOIL CONDITIONS.

PART TWO

5. GENERAL REMARKS ABOUT FOUNDATIONS.
6. HWY. #27 OVERPASS AT DUNDAS STREET (W.P. 279-64-1).
- Soil Conditions and Recommendations -
7. DUNDAS STREET UNDERPASS AT WEST MALL (W.P. 279-64-2).
- Soil Conditions and Recommendations -
8. DUNDAS STREET OVERPASS AT EAST MALL (Vickers Rd.) (W.P. 279-64-5).
- Soil Conditions and Recommendations -
9. NORTHBOUND BASKET-WEAVE JUST SOUTH OF BLOOR ST. (W.P. 266-66).
- Soil Conditions and Recommendations -
10. SOUTHBOUND BASKET-WEAVE JUST SOUTH OF BLOOR ST. (W.P. 267-66).
- Soil Conditions and Recommendations -
11. HWY. #27 UNDERPASS AT BLOOR STREET (W.P. 37-65).
- Soil Condition and Recommendations -
12. ETOBICOKE CREEK BRIDGE ON DUNDAS STREET (W.P. 277-66).
- Soil Conditions and Recommendations -

-
13. SUMMARY.
 14. MISCELLANEOUS.

MEMORANDUM

GEN. FILE

23-67-83

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: February 21, 1967

D. 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. 271-1442

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/VdeF

Attach.

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

Foundations Files
Gen. Files

A. G. Sterzac
A. G. Sterzac
PRINCIPAL FOUNDATION ENGINEER

DEPARTMENT OF HIGHWAYS ONTARIO

MEMORANDUM

To: Mr. A. Stermac,
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 bore-hole 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 3 (Hauls)

W.P. 273-64-2	CDGB Pav.	From N. of C. P. R. Overhead to N. of Bloor St.
W.P. 379-64-1	Struct.	Hwy. 27 O'Pass at Dundas St.
W.P. 279-64-2	Struct.	Dundas St. U'Pass at West Mall and S. Bd. ramp on Highway 27
W.P. 279-64-3	Struct.	Dundas St. O'Pass at E. Mall
W.P. 256-66	Struct.	N. Bd. Basketweave just S. of Bloor St.
W.P. 257-66	Struct.	S. Bd. Basketweave just S. of Bloor St.
W.P. 37-65	Struct.	Hwy. 27 U'Pass at Bloor St.
W.P. 277-66	Struct.	Present present Michicoke Creek Bridge on Dundas Street just W. of Hwy. 27.

Program

Start Construction		Expend. 1968	2,500,000
Comp. Construction	Nov. 13/70	Expend. 1969	2,500,000
		Expend. 1970	1,500,000
			\$
		Total Value	\$7,500,000

Pre-Engineering Schedule

Planning	Comp. Date
Struct. Geometries	Comp.
	Feb. 13/67
Foundation Report	Mar. 1/67
Preliminary Property Request	Jan. 19/67
Soils Report	Feb. 15/67
Final Property Request	Apr. 12/67
Bridge-Comp. D4 & Plans	Sept. 13/67
Conventions - Comp. D4 & Plans	Oct. 25/67
Reports R/O	Dec. 6/67
Final O'Pass (O'P)	Jan. 14/68
Property Acquired	Mar. 28/68
Assestment	Apr. 10/68
Assestment	May 22/68

MEMORANDUM

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

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

Attention: Mr. S. McCorble

DATE: May 26, 1967

Our File No.

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-F-103 -- W.P. 275-64-2

In a memo dated April 25, 1967, Mr. W. S. Melnyshyn, 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-F-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. 275-64-2), Westbound Basketweave (W.P. 266-66), and Bridge #9 (W.P. 275-64-3). Please insert these pages and drawings into your copy(s) of the original report W.J. 66-F-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/KdeP

Attach.

cc: Messrs. B. R. Davis (2)

H. A. Trogaskes

D. W. Patren

G. K. Hunter (2)

F. Allen

W. S. Melnyshyn

T. J. Kovich

B. A. Singh

A. G. Sterner
PRINCIPAL FOUNDATION ENGINEER

Foundations Files
Gen. Files ✓

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 - (D.E.O. 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 fills and cuts with 2 horizontal to 1 vertical slopes.

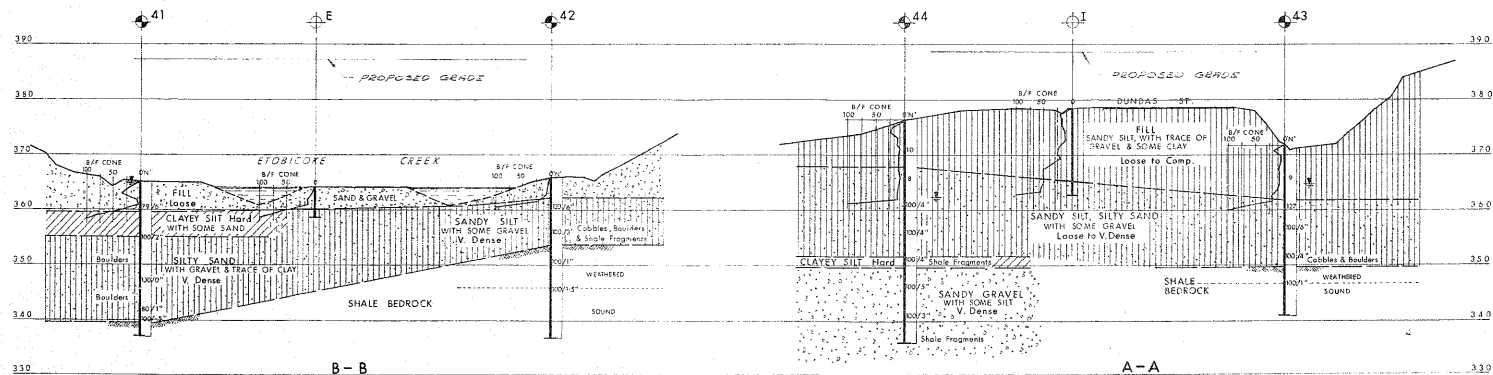
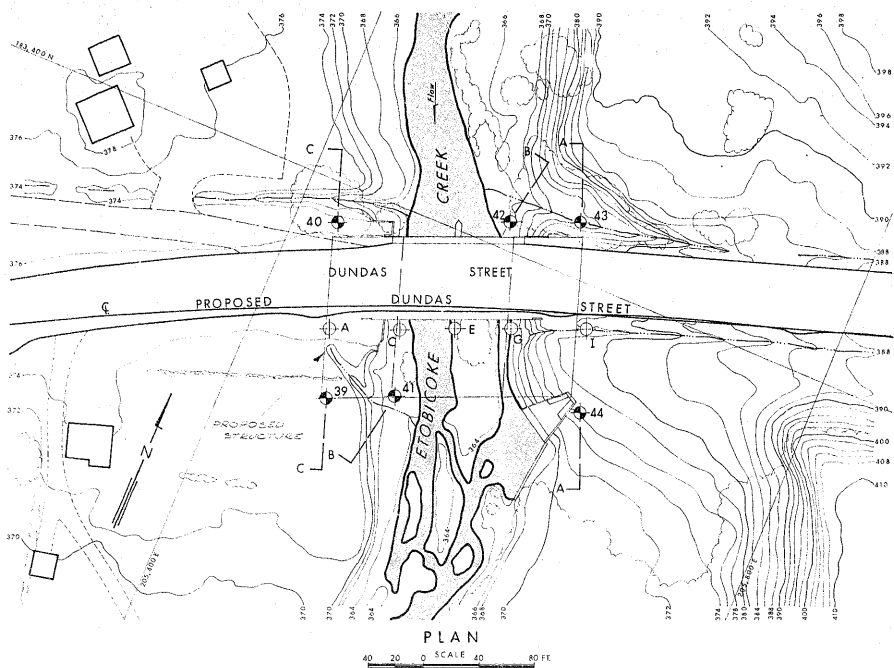
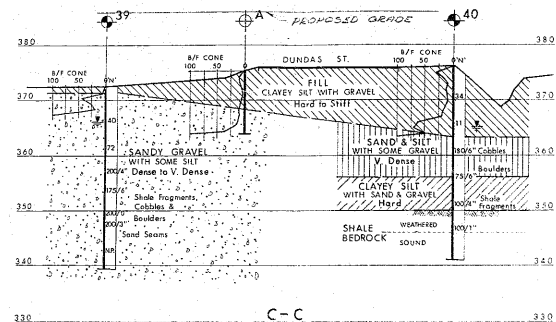
6. HWY. #27 OVERPASS AT DUNDAS STREET:

(W.P. 279-64-1)

6.1) Soil Conditions:

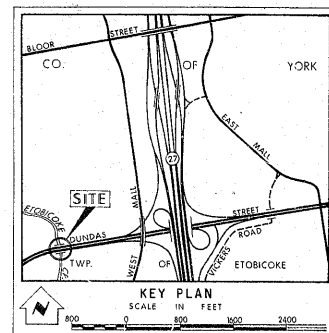
Some 8 boreholes were drilled at the site of the proposed structure during the recent field investigation, and they were numbered from 25 to 32, inclusive. Two borings numbered 1 and 2, drilled in October 1965, are also incorporated in the stratigraphy. Predominantly silty sand to sandy silt with some 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 ...



SECTIONS

VERT. 10 5 0 SCALE 10 20 40 FT.
HORIZ. 20 10 0 20 40



LEGEND

- Bore Hole
- ⊕ Cone Penetration Hole
- ⊕ Bore & Cone Penetration Hole
- Water Levels established at time of field investigation, JAN. & FEB. 1967

NO.	ELEVATION	CO-ORDINATES	
		NORTH	EAST
39	372.4	183,257	205,472
40	376.1	183,373	205,430
41	365.2	183,272	205,517
42	365.9	183,420	205,546
43	372.0	183,439	205,593
44	376.4	183,312	205,645
A	375.3	183,300	205,451
C	364.4	183,318	205,502
E	364.1	183,334	205,538
G	364.1	183,350	205,575
I	378.6	183,370	205,626

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	DESCRIPTION

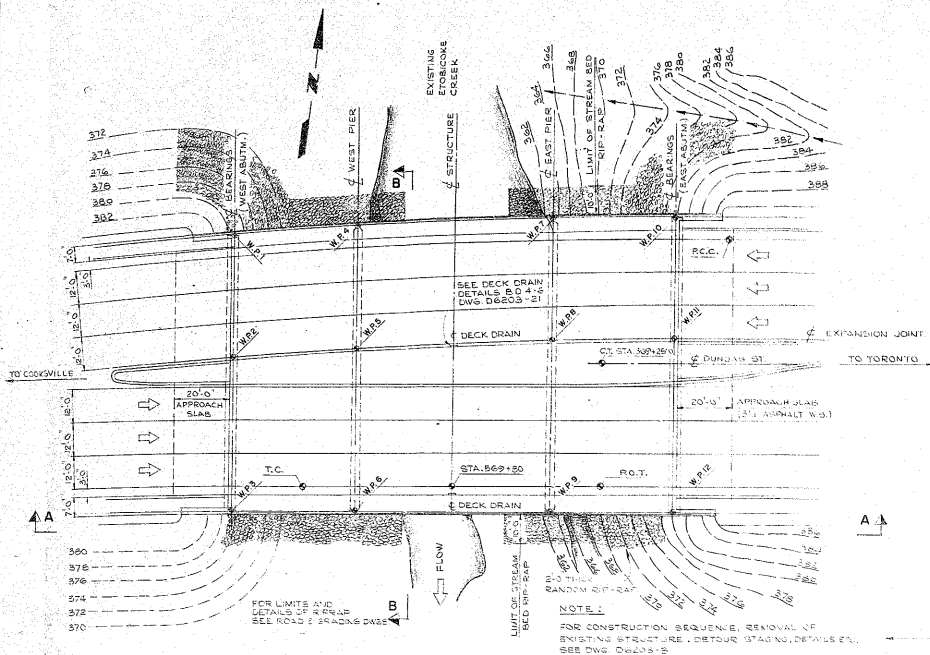
DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION - FOUNDATION SECTION

DUNDAS STREET BRIDGE REPLACEMENT AT
ETOBICOKE CREEK

KING'S HIGHWAY NO. 27 IMPROVEMENT DIST. NO. 6
CO. YORK METRO TORONTO
TWP. ETOBICOKE LOT CON.

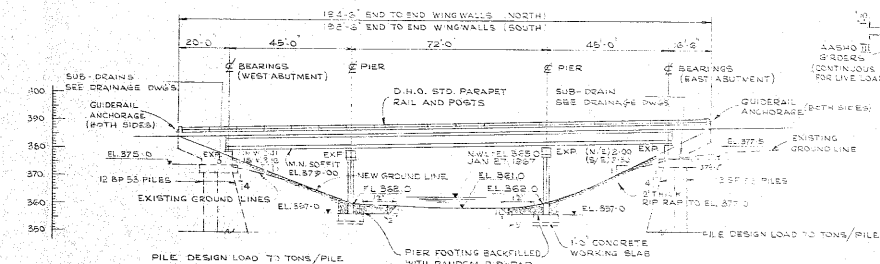
BORE HOLE LOCATIONS & SOIL STRATA

SUBMIT. A.B.	CHECKED <input checked="" type="checkbox"/>	R.P. NO. 277-65	R.B.T. DRAWING NO.
DRAWN S.O.	CHECKED <input checked="" type="checkbox"/>	JOB NO. 66-F-103	66-F-103 G
DATE 22 FEB. 1967	SITE NO.	BRIDGE DRAWING NO.	
APPROVED <i>[Signature]</i>	CONT. NO.		



PLAN

SCALE: 1" = 20'-0"



ELEVATION A-A

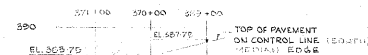
SCALE: 1" = 20'-0"

G.B.M. T252
ELEV. 378.885

HIGHWAY No. 5 (DUNDAS STREET) BRIDGE OVER
ETOBICOKE CREEK, 0.4 MILE SOUTH-EAST OF HIGHWAY
No. 27 INTERSECTION, TAILSET ON WESTERLY FACE
(END) OF CONCRETE ROAD RAIL POST ON SOUTHERLY
SIDE AND AT WESTERLY END OF BRIDGE, IN CENTRE
AND 12 INCHES BELOW TOP.

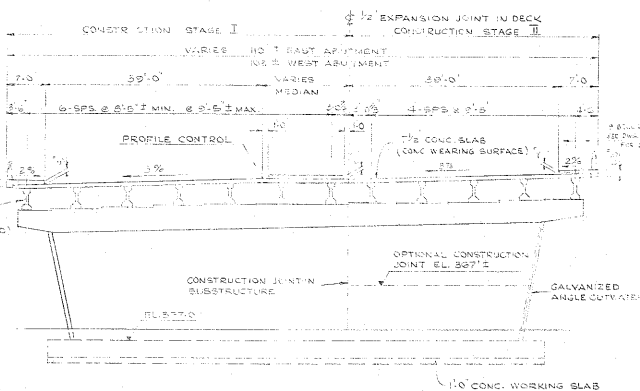
G.B.M. T234
ELEV. 413.253

SHIPPING AND RECEIVING OFFICE, A BRICK BUILDING
ON SOUTHERLY SIDE OF DUNDAS STREET, 0.4 MILES
EASTERLY FROM HIGHWAY No. 27 AND OPPOSITE AIRPORT
DRIVE, TAILSET IN NORTHERLY ON FRONT CONCRETE
FOUNDATION WALL, 12 INCHES FROM NORTHERLY
CORNER AND 7 INCHES BELOW BRICKWORK.



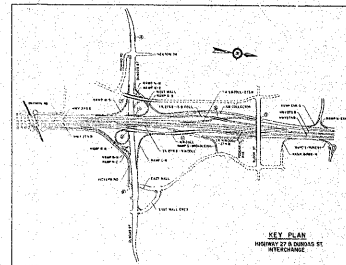
PROFILE OF DUNDAS ST.

SCALES: HORIZ: 1" = 100'-0"
VERT: 1" = 10'-0"



SECTION B-B

SCALE: 1" = 10'-0"



GENERAL NOTES:

PRESTRESSED BEAMS 5,000 P.S.I.
DECK, CURBS AND PARAPETS 4,000 P.S.I.
REINFORCER 3,000 P.S.I.

CLIQUE COVER UP REINFORCING STEEL:

DECK: TOP 1 1/2" PIER CAP & CURBS 2"
BOTTOM 1" PARAPET WALLS 1 1/2"
FASTENINGS, ANCHORS, 3"
WINDWALLS & PIERS 3"

CONSTRUCTION NOTE:

THE CONTRACTOR IS RESPONSIBLE FOR FINISHING THE BEARING SEATS LEVEL
TO THE SPECIFIED ELEVATIONS WITH A TOLERANCE OF ± 1/8".
NO CONCRETE SHALL BE PLACED UNTIL THE ADJUTANT BEARING SEATS UNTIL THE
CONCRETE IN THE DECK AND FOUNDATIONS HAS BEEN PLACED.
FOR WORKING POINT TO ORDINANCES SEE DUG. 06200-14
FOR PRESTRESSED GIRDER NOTES SEE DUG. 06200-13

LIST OF DRAWINGS	
D 6203-1	GENERAL ARRANGEMENT
D 6203-2	PARAPET WALLS
D 6203-3	FASTENINGS, ANCHORS, WINDWALLS & PIERS
D 6203-4	DETAILS OF TEMP. WORKING II
D 6203-5	DETAILS OF TEMP. WORKING II
D 6203-6	WEST ABUTMENT
D 6203-7	EAST ABUTMENT
D 6203-8	EAST WING WALLS
D 6203-9	DECK CURBS
D 6203-10	DECK CURBS
D 6203-11	DECK CURBS
D 6203-12	DECK CURBS
D 6203-13	PRESTRESSED GIRDERS & BEARINGS
D 6203-14	DECK ALIGNED DETAILS
D 6203-15	DECK REINFORCEMENT
D 6203-16	DECK SECTION
D 6203-17	DECK DETAILS
D 6203-18	WINDS, ANCHORS & PROFILES
D 6203-19	APPROACH SLABS
D 6203-20	STANDARD STEEL JOIST BRILL
D 6203-21	STANDARD DETAILS II
D 6203-22	STANDARD DETAILS II

DATE	BY	DESCRIPTION

DEPARTMENT OF HIGHWAYS, ONTARIO
BRIDGE DIVISION

DE LEUW, CATHIER & COMPANY OF CANADA LIMITED
CONSULTING ENGINEERS TORONTO

BRIDGE No. 8

DUNDAS ST. OVER ETOBICOKE CREEK

KING'S HIGHWAY No. 5 (DUNDAS ST.) DIST. No. 8
CO. YORK & P.E. DUNDAS ST. B. HWY 27 INTERCHANGE
TWP. ETOBICOKE & TORONTO LOT CON.

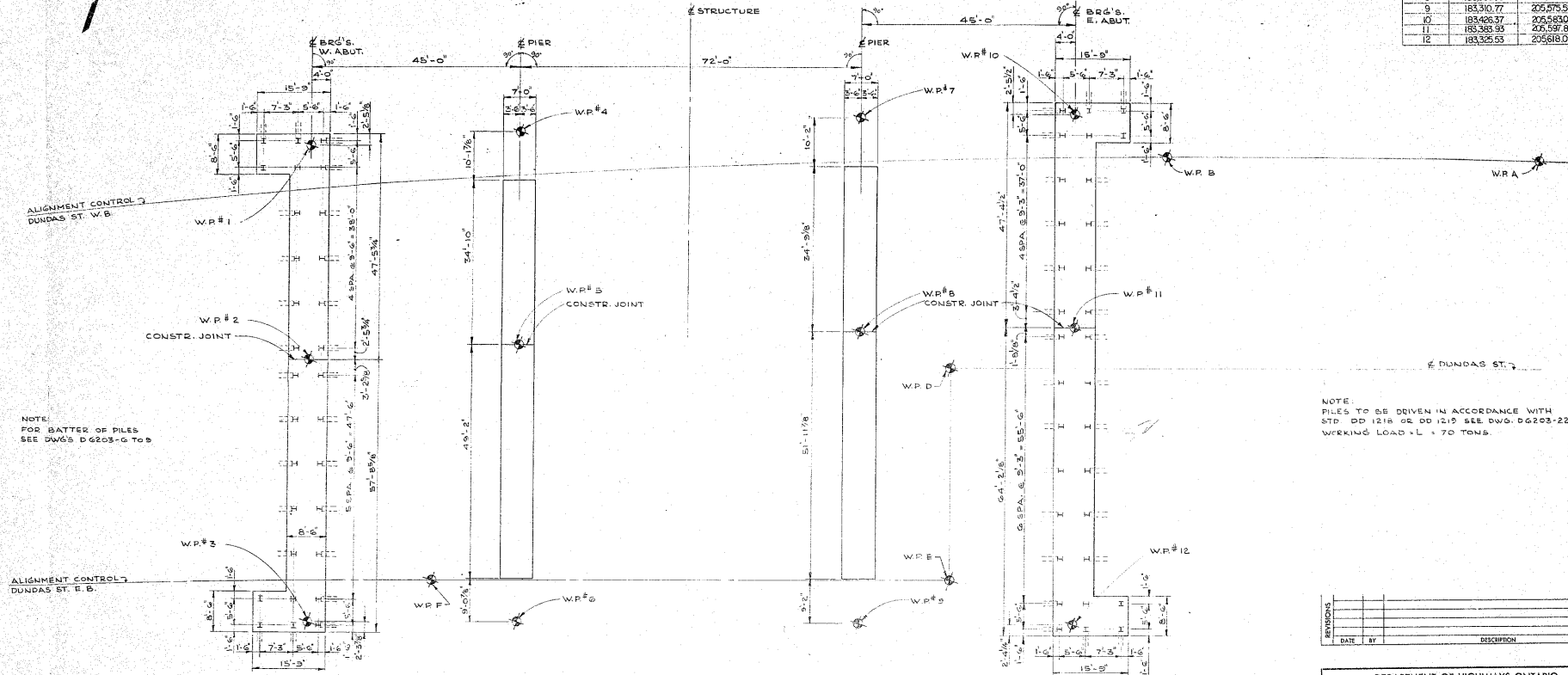
GENERAL ARRANGEMENT

DESIGN	T.T.	CHECK	E.F.
DRAWING	W.W.	CHECK	
DATE	DEC. 67	LOADING	06200-44
APPROVED		CONTRACT	





WORKING POINT CO-ORDINATES		
POINT MK.	NORTH	EAST
1	183359.15	205432.16
2	183324.59	205446.93
3	183272.25	205460.10
4	183394.68	205473.71
5	183342.91	205488.45
6	183257.16	205507.56
7	183411.00	205520.79
8	183368.55	205535.32
9	183310.77	205550.58
10	183426.37	205563.09
11	183383.93	205577.82
12	183325.53	205618.09



NOTE:
FILES TO BE DRIVEN IN ACCORDANCE WITH
STD. DD 1218 OR DD 1219 SEE DWG. D6203-22
WORKING LOAD = L = 70 TONS.

PRINT RECORD -
NO. FOR DATE
1 05 11/66

FOUNDATION LAYOUT
SCALE 1" = 10'-0"

REVISIONS	DATE	BY	DESCRIPTION

DEPARTMENT OF HIGHWAYS ONTARIO 66-7-748			
DE LEUW, CATHAR & COMPANY OF CANADA LIMITED CONSULTING ENGINEERS TORONTO			
BRIDGE No. 8 DUNDAS ST. OVER ETOBICOKE CREEK			
KING'S HIGHWAY No. 5 (DUNDAS ST.)		DIST. No. 6	
CO. YORK & P.E.E.L.		DUNDAS ST. & HWY 27 INTERCHANGE	
TWP. ETOBICOKE & TORONTO		LOT CON.	
FOUNDATION LAYOUT			
APPROVED		SITE No. 24-187 W.P. No. 277-66	
DESIGN A.G.	CHECK T.T.	CONTRACT No.	68-83
DRAWING R.S.	CHECK E.P.	DRAWING No.	D6203-2
DATE DEC. 67	LOADING HS20-44		

