

MEMORANDUM

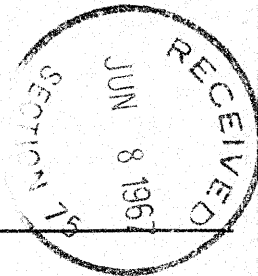
To: Mr. A. Stermac,
Principal Foundation Engineer,
Room 107, Lab. Bldg.

FROM: Bridge Division,
Downsview, Ontario.

DATE: June 7th, 1967.

OUR FILE REF.

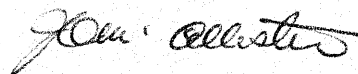
IN REPLY TO



SUBJECT: W.P. 279-64-2, Site Plan 37-797,
Bridge No. 7,
The West Mall over Dundas Street,
District No. 6.

Attached for your information is a print of the
site plan and profiles received from the Consultant
for the above structure.

MB/aw
Attach.


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

66-7-103

Department of Highways Ontario

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

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

Bridge Division,
Downsview, Ontario

September 13, 1967

Bridge No. 7
The West Mall over Dundas St. & Ramps
W.P. 279-64-2, Site No. 37-797
Dundast St. & Hwy. 27 Interchange
District No. 6

Attached herewith are prints of the Preliminary Bridge Plan
Drawing D6202-P1 for the above-mentioned structure.

The estimated cost of the proposed structure is \$558,000.
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. A. Stermac
S. McCombie
W. Wigle
R. Forrest
E. Cross

66-F-103

NO COMMENTS

Sept 14/67

A. K. B.

No Comments: Oct 12th 67

H. L. Sully

Mr. A. Stermac, Principal Foundation Eng., Room 107, Lab. Bldg.

Mr. W. Melnychyn,
Reg. Bridge Location Engineer,
Bridge Division,
Admin. Bldg.

Bridge Division,
Downsview, Ontario.

November 28th, 1967.

Bridge No. 7,
Brown Line, S.E. over
Richview Side Road,
W.P. No. 378-65, Site No. 37-806,
 Hwy. No. 401 & 27, District No. 6.

66 F 102

Attached herewith are prints of the Preliminary
Bridge Plan Drawing D-6226-P for the above-mentioned
structure.

The estimated cost of the proposed structure is
\$131,000.00. This cost includes tender, materials,
engineering and sundry construction.

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

CSO/co

C.S. Grebaki,
Bridge Design Engineer.

Attach.

c.c. J. Anderson
A. Stermac
S. McConbie

NOV 29 1967

NOV 30 1967

7. DUNDAS STREET UNDERPASS AT WEST MALL:

(W.P. 279-64-2)

7.1) Soil Conditions:

Boreholes #21, 22, 23 and 24, were placed at the approximate site of the proposed bridge. A previous hole numbered 5, was also utilized for the soil profile.

A 2 - 4 ft. thick granular fill was observed to be the uppermost layer at the south half of the area; at the north half the fill was missing. The upper 12 - 18 ft. depth of the original subsoil was identified to be clayey silt with sand and traces of gravel. The cohesive material exhibited firm to stiff consistency between ground level and el. 414 ft., corresponding to standard penetration 'N' values of 11 - 28 blows/ft. Below el. 414 ft. the consistency improved considerably, becoming hard. Sand, silty sand and sandy silt with gravel and occasional cobbles underlie the clayey silt, extending to the bottom of the boreholes at approx. el. 366 - 369 ft. Some clayey silt layers or pockets intercept the very dense granular stratum.

The highest level of groundwater was observed in borehole #23, where it was found to be at el. 417.9 ft.

The locations and elevations of the boreholes, together with the stratigraphical profile, may be seen on Drawing #66-F-103C.

7.2) Recommendations:

A six-span structure is proposed at the grade separation of the West Mall and Dundas St. The design grade of the West Mall will be roughly at the existing ground level, while the grade of Dundas St. will be lowered to approx. el. 397 ft.

In the event of constructing closed type abutments, the entire structure may be supported on spread footings, to be placed four ft. below finished grade. It is assumed that the elevation of the footing bases are going to be around 393 ft., at which level a design load of up to 4 t.s.f. is recommended for design purposes.

cont'd. /7 ...

7. DUNDAS STREET UNDERPASS AT WEST MALL: (cont'd.) ...

(W.P. 279-64-2)

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

In contemplating perched abutments, the footings for the abutments may be placed at or below el. 410 ft., using the same design load of 4 t.s.f. Footing excavation below el. 403 - 405 ft. will be within the sand and silty sand stratum, where dewatering problems will likely arise.

8. DUNDAS STREET OVERPASS AT EAST MALL - (VICKERS ROAD):

(W.P. 279-64-5)

8.1) Soil Conditions:

A total of six boreholes was placed at the site of the proposed overpass. The holes were numbered 33, 34, 35, 36, 37 and 38.

A 3 - 7 ft. thick layer of mixed fill, occasionally contaminated with organic matter was found to be the surficial deposit in most of the boreholes. Underlying the fill, a stratum of clayey silt with sand and traces of gravel (glacial till) was encountered, the lower boundary of which ranges between el. 400 and 409 ft. The consistency of the clayey silt is very stiff to hard. A 30 - 35 ft. thick sandy silt to silty sand with some clay and gravel deposit follows the clayey silt, exhibiting very dense relative density. Boreholes #34 and 37 were terminated within the sandy silt at el. 373 - 375 ft. The rest of the borings penetrated into a second stratum of clayey silt with gravel of hard consistency, at around el. 371 - 380 ft.

No bedrock was observed within the investigated approx. 50 ft. depth.

The groundwater level was found to be at el. 399 - 401 ft. at the time of the field work.

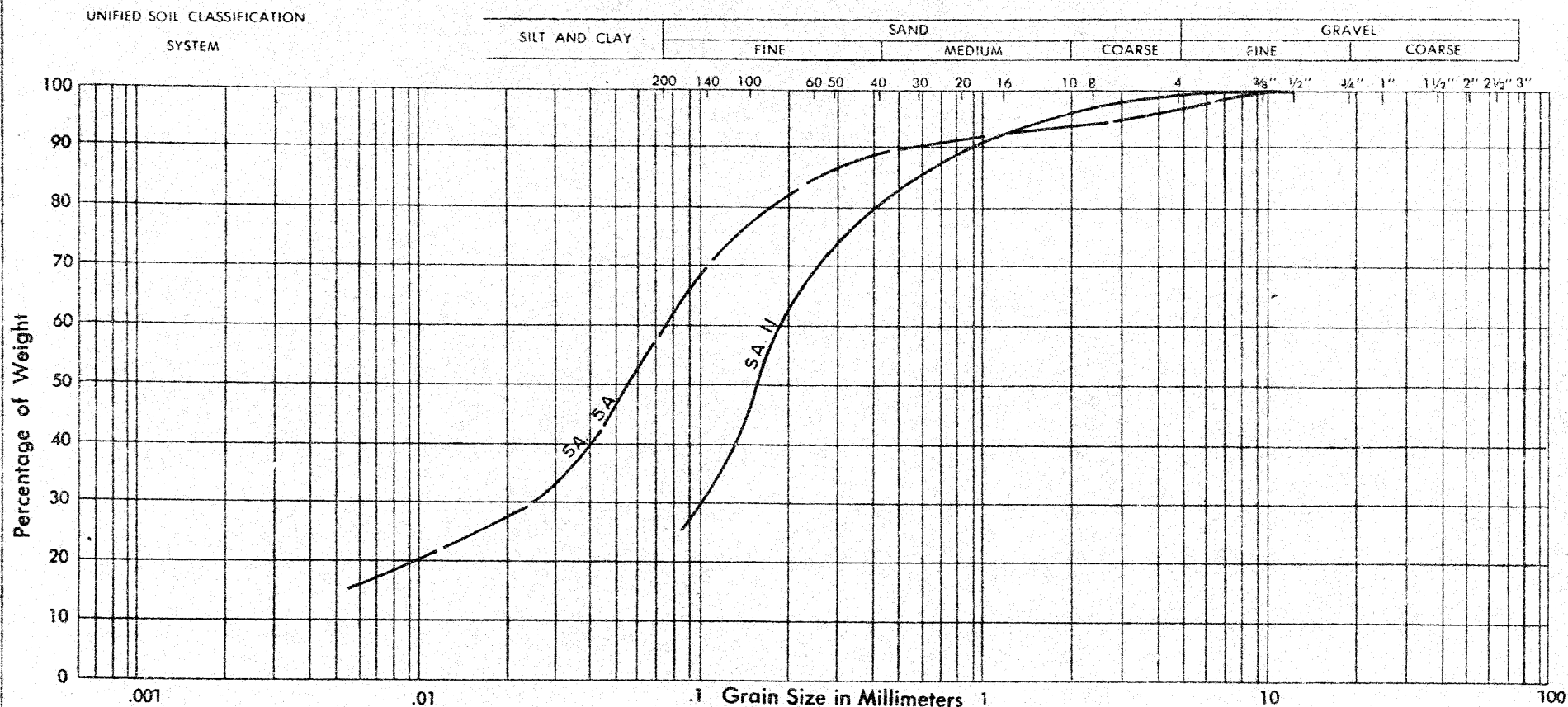
The locations and elevations of the borings, with three subsoil cross sections are plotted on Drawing #66-F-103H.

cont'd. /8 ...

DOMINION SOIL INVESTIGATION LIMITED

GRAIN SIZE DISTRIBUTION

OUR REFERENCE NO. 6-12-13



PROJECT: W. J. 66 - F-103
 LOCATION: ETOBICOKE, ONT.
 BOREHOLE NO.: 21

SAMPLE NO.: 5A 11
 DEPTH OF SAMPLE: 20' 50'
 ELEVATION OF SAMPLE: 397.9' 367.9'

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 SILT
 with some CLAY and trace of
 GRAVEL

SAND
 with some SILT

SA. 5A SM

SA. II SM

Enclosure No.

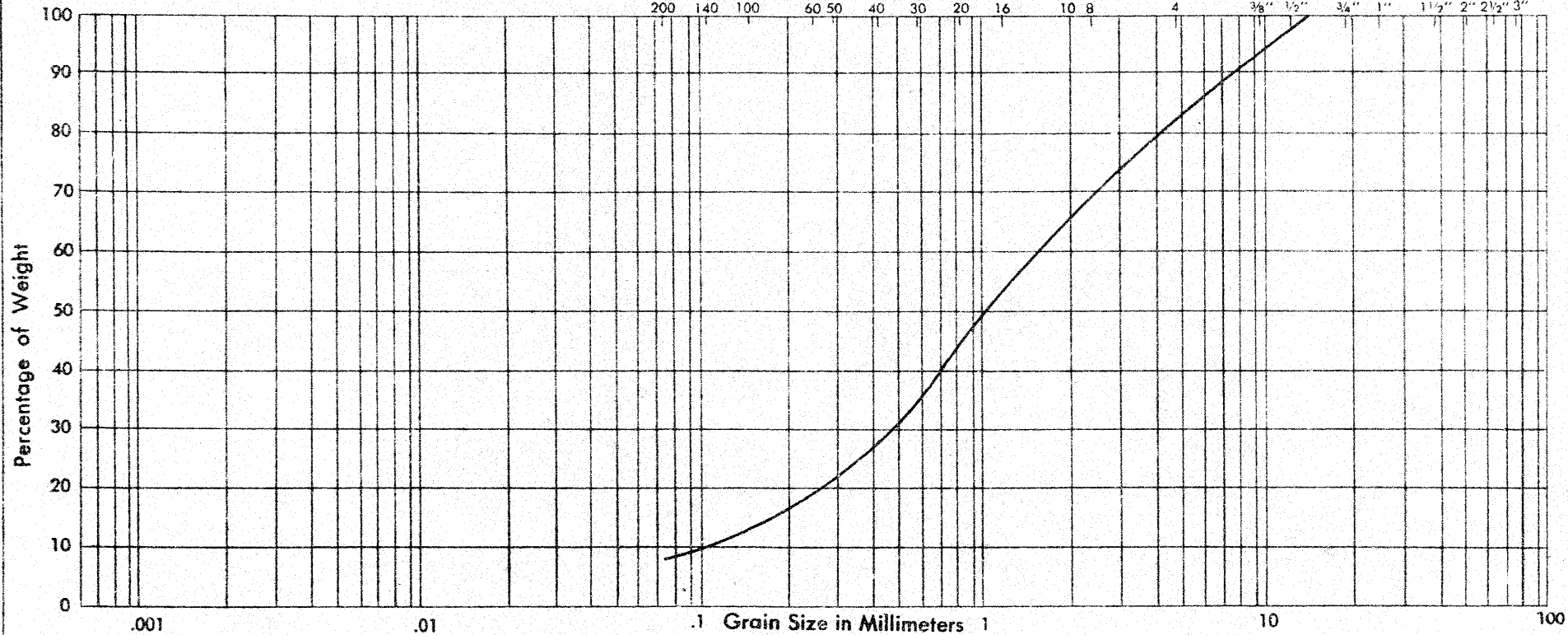
DOMINION SOIL INVESTIGATION LIMITED

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.: 22
 SAMPLE NO.: 6
 DEPTH OF SAMPLE: 25'
 ELEVATION OF SAMPLE: 389.4'

COEFFICIENT OF UNIFORMITY 11.16
 COEFFICIENT OF CURVATURE 1.4

Classification of Sample and Group Symbol:
 GRAVELLY SAND
 with some SILT

SW - GW

PLASTIC PROPERTIES:

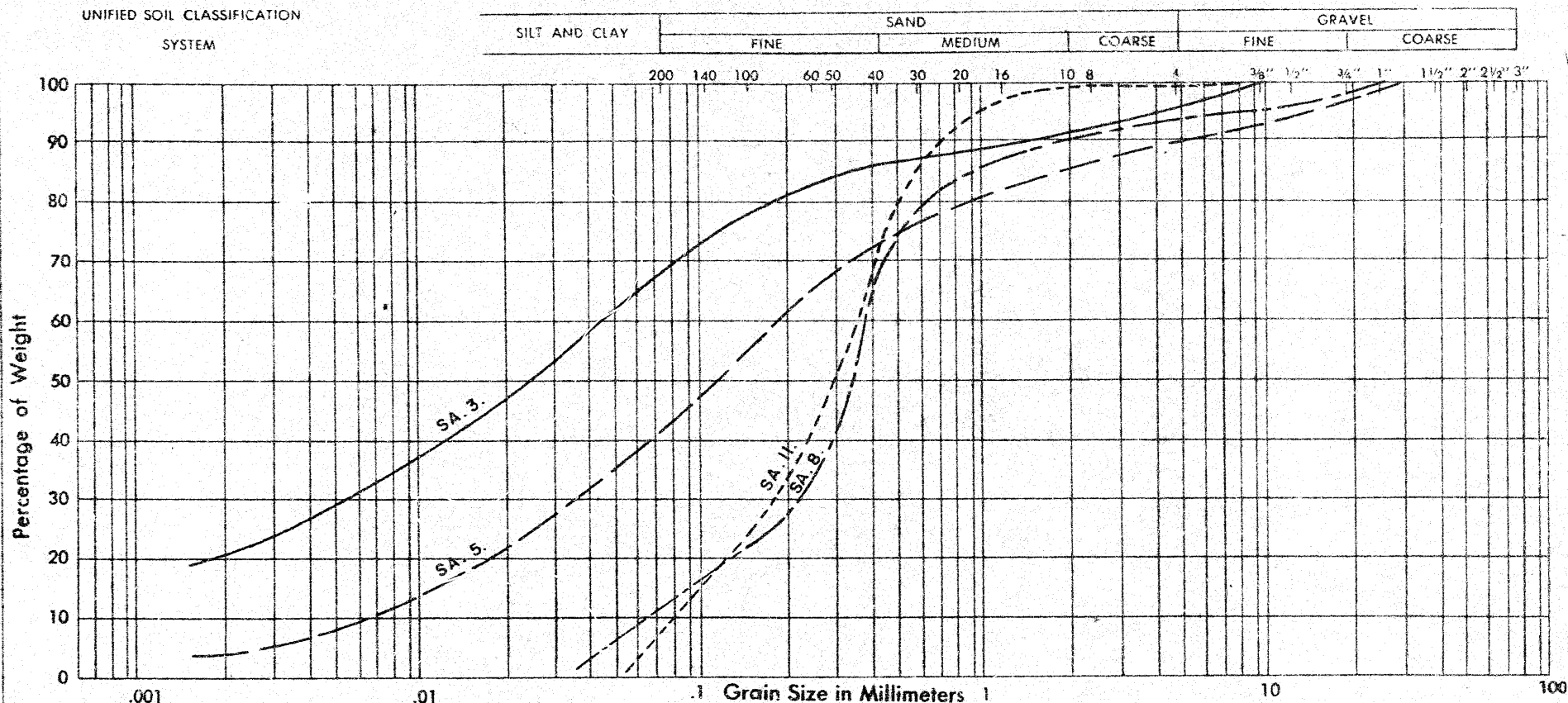
LIQUID LIMIT	% =	
PLASTIC LIMIT	% =	Non
PLASTICITY INDEX	% =	Plastic
MOISTURE CONTENT	% =	
ACTIVITY	=	

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.: 23

SAMPLE NO.: 3 5 8 11

DEPTH OF SAMPLE: 10' 20' 35' 50'

ELEVATION OF SAMPLE: 410.9 400.9 385.9 370.9

COEFFICIENT OF UNIFORMITY

COEFFICIENT OF CURVATURE

SA. 5. SA. 8. SA. 11.

28 6 4.0

1 2.1 1.2

PLASTIC PROPERTIES:

CL
(average)

LIQUID LIMIT % = 24.2

PLASTIC LIMIT % = 16.8

PLASTICITY INDEX % = 7.4

MOISTURE CONTENT % = 10.4

ACTIVITY = 0.35

Classification of Sample and Group Symbol:		
CLAYEY SILT with SAND and a trace of Gravel CL	SILTY SAND with some Gravel and a trace of Clay SM	FINE SAND with some Silt and trace of Gravel SP

SA. 3.

SA. 5.

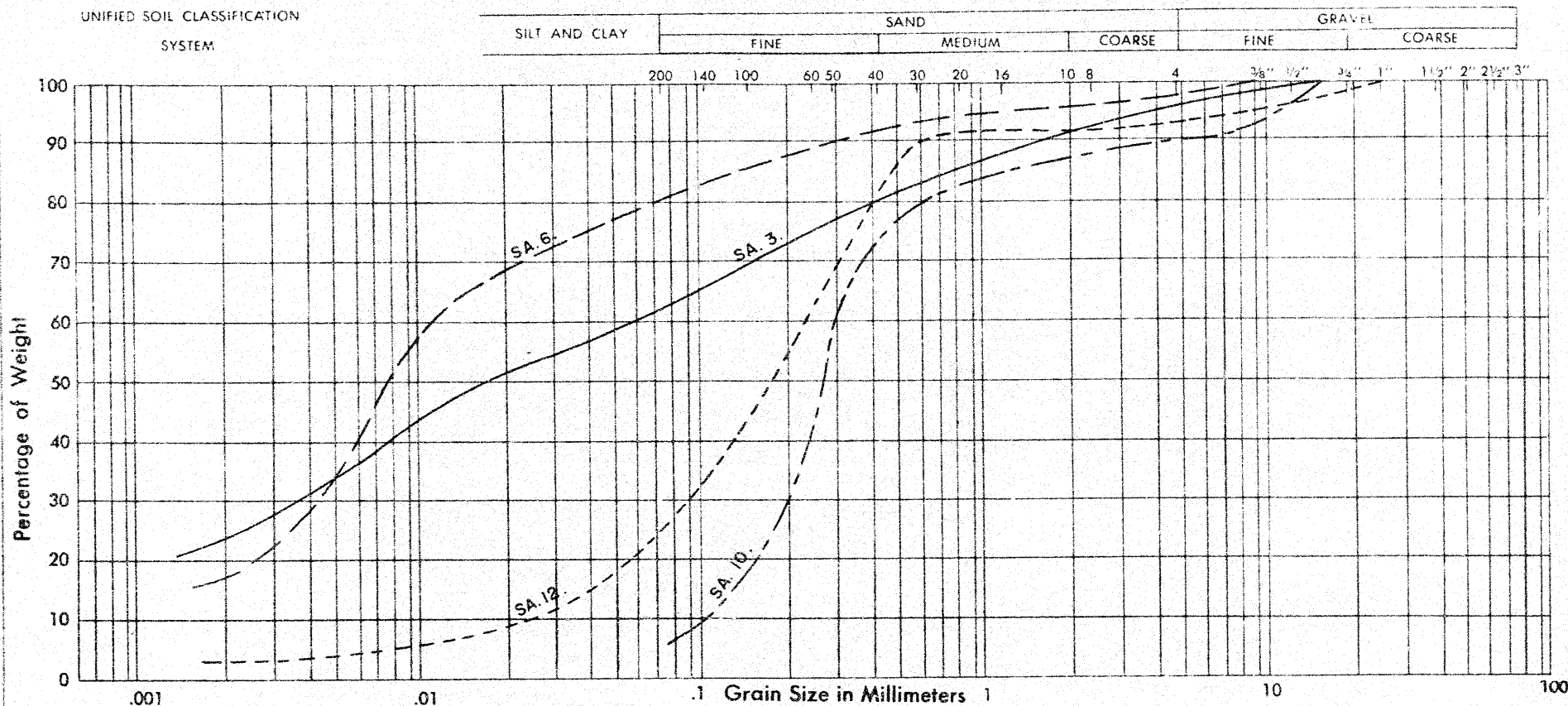
SA. 8 & 11.

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.: 24

SAMPLE NO.: 3 6 10 12

DEPTH OF SAMPLE: 10' 22.5' 40' 50'

ELEVATION OF SAMPLE: 409.0 396.5 379.0 369.0

COEFFICIENT OF UNIFORMITY

COEFFICIENT OF CURVATURE

SA. 10.

SA. 12.

2.8

9

1.33

1.42

PLASTIC PROPERTIES:

CL-ML

LIQUID LIMIT % = 21.20

PLASTIC LIMIT % = 15.60

PLASTICITY INDEX % = 5.60

MOISTURE CONTENT % = 13.20

ACTIVITY =

Classification of Sample and Group Symbol:

CLAYEY SILT with SAND and trace of Gravel	SILT with some Clay and Sand and trace Gravel	SAND with trace Gravel and Silt	SILTY SAND with trace of Gravel & Clay
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SA. 3. SC-CL SA. 6. CL-ML SA. 10. SP SA. 12. SM

Enclosure No.

DEPARTMENT OF HIGHWAYS - ONTARIO

MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 3

FOUNDATION SECTION

JOB 65-F-120 LOCATION Co-ords. N 184,055 E 206,788 ORIGINATED BY P. McW.P. 275-64-02 BORING DATE October 28, 1965 COMPILED BY _____DATUM GSC BOREHOLE TYPE Penn drill and Washboring - Nx and Bx Casing CHECKED BY _____

SOIL PROFILE		SAMPLES			ELEV SCALE	DYNAMIC PENETRATION RESISTANCE		LIQUID LIMIT — WL PLASTIC LIMIT — WP WATER CONTENT — W		BULK DENSITY P.C.F.	REMARKS
ELEV DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS / FOOT		BLOWS / FOOT	SHEAR STRENGTH P.S.F.	WATER CONTENT %	WATER CONTENT %		
414.9	Ground Level										
0.5	Top Soil										
	Silty sand with	1	SS	14	410						
	traces of gravel	2	SS	71							
	and clay to clayey	3	SS	80							
	silt with sand	4	SS	90							
	and traces of gravel	5	SS	60	400						
	(Glacial till)	6	SS	132							
		7	SS	200	390						
		8	SS	24							
	stiff to hard	9	SS	24	380						
	and very dense	10	SS	81							
		11	SS	104	370						
365.9											
49.0	Boulders		Drill								
			Drill	12%							
359.9											
55.0	End of Borehole				360						

Gr. 5%
Sa 45%
Sl 44%
Cl 5%

Gr 25%
Sa 62%
Sl 13%
Cl 1%

GWL 7.2'

DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & TESTING DIVISION

RECORD OF BOREHOLE NO. 5

FOUNDATION SECTION

JOB 65-F-120 LOCATION Co-ords. N. 183.574 E. 206.953ORIGINATED BY P. McW P 275-64-02 BORING DATE October 27, 1965COMPILED BY A. K. B.DATUM _____ BOREHOLE TYPE Washboring - Nx Casing

CHECKED BY _____

SOIL PROFILE		SAMPLES			ELEV SCALE	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	SHEAR STRENGTH P.S.F.	WP	WL		
417.4	Ground Level										
0.0											
			1	SS	19						
			2	SS	38						
			3	SS	93						
			4	SS	126						
			5	SS	96						
			6	SS	92						
			7	SS	131						
			8	SS	127						
			9	SS	60						
			10	SS	75						
			11	SS	60						
			12	SS	75						
			13	SS	120						
				Drill							
355.9	Boulders										
61.5	Shaley Limestone										
348.9											
68.5	End of Borehole										

Soil Description: Silty sand with traces of gravel and clay to clayey silt with sand and traces of gravel (glacial till)

Soil Description: Very stiff to hard and very dense

Soil Description: Boulders

Soil Description: Shaley Limestone

Soil Description: End of Borehole

Dynamic Penetration Resistance (BLOWS / FOOT): 25, 50, 75, 100, 125

Shear Strength (P.S.F.):

Liquid Limit (WL):

Plastic Limit (WP):

Water Content (W):

Water Content %: 10, 20, 30

Bulk Density (P.C.F.):

Remarks: GWL 14.0'

Gr 3 %
Sa 32 %
Sl 60 %
Cl 5 %

Gr 2 %
Sa 34 %
Sl 56 %
Cl 8 %

Sa 50 %
Sl 50 %
Cl 0 %

GEOTECHNICAL DATA SHEET FOR BOREHOLE . . 21 . .

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: 184, 145 N.; 206, 710 E.

DATUM ELEVATION: G.S.S.

METHOD OF BORING: AUGERING

DIAMETER OF BOREHOLE: 3 1/2"

ENCLOSURE NO.

DATE: JAN. 9-10, 1967

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	1 2 3 4 5 6 7 8 9 10 11	2.0 4.0 6.0 8.0 10.0	100	W _p W W _L	2.0 4.0 6.0 8.0	
417.9	0	GROUND SURFACE									
		3" TOPSOIL									
415	5	CLAYEY SILT with sand and trace of gravel. (Glacial Till) Brown		1	S.S.	30					
				2	S.S.	37					
410	10										
				3	S.S.	75					
405	12.5										
		SANDY SILT with some clay and trace of gravel. (Glacial Till) Very Dense Grey		4	S.S.	70/4"					
400	15										
				5A B	S.S.	90/10"					
395	20										
		sand layers		6	S.S.	50/3"					
390	25										
		CLAYEY SILT with sand. (Glacial Till) Hard		7	S.S.	60/3"					
385	30										
				8	S.S.	70/6"					
380	35										
		SAND with some silt Very Dense		9	S.S.	60/6"					
375	40										
				10	S.S.	90					
370	45										
				11	S.S.	95					
365	50										
	51.5	END OF BOREHOLE									

VERTICAL SCALE: 1 IN TO 5 FT

DOMINION SOIL INVESTIGATION LIMITED

MADE: D.A.M. CHO

GEOTECHNICAL DATA SHEET FOR BOREHOLE . 22 .

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

CLIENT: D. H. O.

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

LOCATION 183,970 N; 206,760 E

DATUM ELEVATION G. S. C.

METHOD OF BORING AUGERING

DIAMETER OF BOREHOLE 3 1/2"

DATE JAN. 6-9, 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	Advancement of Sampler	2.0	4.0	6.0	8.0	10.0	W _p	W	W _L		
414.4	0	GROUND SURFACE														
		6" TOPSOIL														
410	5	CLAYEY SILT with some sand and trace of gravel.		1	S.S.	88										
		Brown Grey		2	S.S.	100/6										
405	10	(Glacial Till)		3	S.S.	67										
		Hard		4	S.S.	100/5										
395	20			5	S.S.	100/6										
390	25	GRAVELLY SAND cobbles with some silt		6	S.S.	100/6										
385	30	Very Dense		7	S.S.	100/6										
380	35			8	S.S.	100/4										
375	40	cobbles		9	S.S.	100/6										
370	45			10	S.S.	100/6										
45.5		END OF BOREHOLE														
365	50															

W.C. d. 406-6
15. JAN 167

16 76 8 0

GR SA SI CL
— per cent —

VERTICAL SCALE 1 IN TO 5 FT

DOMINION SOIL INVESTIGATION LIMITED

MADE: D. A. M. CHO

GEOTECHNICAL DATA SHEET FOR BOREHOLE . . 23 .

OUR REFERENCE NO. 6-12-13

Your Ref. No. 66-F-103

CLIENT: D. H. O.

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

LOCATION: 183, 750 N 206, 750 E

DATUM ELEVATION: G. S. C.

METHOD OF BORING: AUGERING

DIAMETER OF BOREHOLE: 3 1/2"

DATE: JAN. 5 - 6, 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- ment of Sampler	2,0	4,0	6,0	8,0	10,0	WP	W	WL	
420.9	0	GROUND SURFACE													
		Firm - Loose Brown FILL		1	S.S.	26									
416.9	4	CLAYEY SILT with SAND and a trace of Gravel		2	S.S.	28									
415	5														
	10														
410				3	S.S.	75									
	14	Brown -													
	15	Grey		4	S.S.	50/4"									
405															
403.9	17														
	20	SILTY SAND with some Gravel and a trace of Clay Very Dense Grey		5	S.S.	60/6"									
400															
	25			6	S.S.	50/4"									
395															
392.9	28														
	30	SANDY SILT with some Gravel and a trace of Clay Very Dense		7	S.S.	60/6"									
390															
	35														
385.6	35.5			8	S.S.	100									
385															
	40	FINE SAND with some Silt and trace of Gravel Very Dense		9	S.S.	70/6"									
380															
	45			10	S.S.	60/6"									
375															
	50														
370	51.5			11	S.S.	82/10"									
369.6		END OF BOREHOLE													

W.L. 417.9 ft.
JAN. 9. 1967.
and JAN. 13. 1967.

4 28 47 21

10 47 39 4

6 82 12 0

1 91 8 0

GR SA SI CL
- per cent -

W.L. 417.9 ft.
JAN. 9, 1967.
and JAN. 13, 1967.

4 28 47 21

10 47 39 4

6 82 12 0

1 91 18 0

GR SA SI CL
- per cent -

VERTICAL SCALE: 1 IN. TO 5 FT.

DOMINION SOIL INVESTIGATION LIMITED

MADE: D. A. M. CHD

GEOTECHNICAL DATA SHEET FOR BOREHOLE . . 2 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. 0' HEAD TO N. OF BLOOR ST.

LOCATION: 183, 650 N 206, 795 E

DATUM ELEVATION: G. S. C.

METHOD OF BORING AUGERING

DIAMETER OF BOREHOLE 3 1/2"

DATE: JAN. 5 - 6, 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	Advancement of Sampler	2.0	4.0	6.0	8.0	10.0	W _p	W	W _L		
419.0	0	GROUND SURFACE														
		Sand, Gravel FILL														
417.0	2															
415	5	CLAYEY SILT with SAND and trace of Gravel (glacial till) Grey - Brown	stiff hard	1	S.S.	11										
				2	S.S.	32										
410	10			3	S.S.	145									4 34 38 24	
405	14			4	S.S.	95/6"										
	15	SILT with some Clay and Sand and trace of Gravel (glacial till) Hard Grey		5	S.S.	82									W.L. EL. 402.9 ft. JAN. 9, 1967.	
400	20			6	S.S.	60									2 17 64 17	
395	25			7	S.S.	72										
391.0	28			8	S.S.	50/4"										
390	30	SILT Very Dense Grey		9	S.S.	100/4"										
386.0	33			10	S.S.	144									10 84 6 0	
385	35	SILT with some Clay and Sand (glacial till) Hard		11	S.S.	100/6"										
380.5	38.5			12	S.S.	85/6"									7 67 23 3	
380	40	SAND with trace of Gravel and Silt Very Dense														
375	45															
371.5	47.5	SILTY SAND with trace of Gravel and Clay Very Dense														
370	50															
368.0	51.0	END OF BOREHOLE													GR SA SI CL — per cent —	

VERTICAL SCALE 1 IN TO 5 FT.

DOMINION SOIL INVESTIGATION LIMITED

MADE: D. A. M. CHD.

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

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 412.0 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.

KGS/MdeP

cc: Foundations Files
Gen. Files

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

M. A. Sternan,
Principal Foundation Engineer,
Room 107, C.N.S. Building.

Bridge Division,
Downsview, Ontario.

Attention: R. A. Selby

September 30, 1965.


Preliminary Foundation Investigation
for Bridge Structures on Highway #27
Between Q.E.W. and Lionview Side Rd.
W.P. 275-64-2 District # 6.

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

Confirming our telephone conversation with Mr. Selby of September 30, this investigation should include 4 structures at Highway 5 (Dundas Street) and one each at Licor St., Elmhamcorpe 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.

KPJ/kp
c.c. E. McCabe
R. Forrest


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

DEFECTS IN 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. Melnyshyn, 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 - 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.

cont'd. /4 ...

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3. FIELD AND LABORATORY INVESTIGATION PROCEDURE.
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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 Conditions and Recommendations -
12. ETOBICOKE CREEK BRIDGE ON DUNDAS STREET (W.P. 277-66).
- Soil Conditions and Recommendations -

-
13. SUMMARY.
 14. MISCELLANEOUS.

MEMORANDUM

23-6883

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

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-P-103 -- W.P. 277-S-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.

ACS/Mde7

Attach.

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

Foundations Files
Gen. Files

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

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 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. Melnyshyn,
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.E. 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. Melinyshyn,
Regional Bridge Location Engineer.

Contract 5 (Dundas)

275-64-2	GDGB 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 at Highway 27
W.P. 279-64-3	Struct.	Dundas St. O'Pass at E. Mall.
W.P. 266-66	Struct.	N. Bd. Basketweave just S. of Bloor St.
W.P. 267-66	Struct.	S. Bd. Basketweave just S. of Bloor St.
W.P. 37-65	Struct.	Hwy. 27 O'Pass at Bloor St.
W.P. 277-66	Struct.	Widening present Etobicoke 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

Planning	Comp. Date
Struct. Geometries	Comp.
Foundation Report	Feb. 15/67
Preliminary Property Request	Mar. 1/67
Soils Report	Jan. 18/67
Final Property Request	Feb. 15/67
Bridge-Comp. D4 & Plans	Apr. 12/67
Consultants - Comp. D4 & Plans	Sept. 13/67
Regional RDO	Oct. 25/67
Head Office RDO	Dec. 6/67
Property Acquired	Jan. 17/68
Advertising	Feb. 28/68
Audits	Apr. 10/68
	May 31/68

DOMINION SOIL INVESTIGATION LIMITED

100 CROCKFORD BOULEVARD - SCARBOROUGH ONTARIO CANADA - TELEPHONE 751-6555

BRANCH

300 QUEEN AVENUE
LONDON, ONTARIO
TELEPHONE 55 5-5551



FOUNDATION ENGINEERS

ASSOCIATED COMPANY
SOIL TESTING AND ENGINEERING LTD.
88 BRENTFORD ROAD,
KINGSTON 3, JAMAICA, WEST INDIES
TELEPHONE 28830

2nd 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 two copies each of the Geotechnical Data sheets
and Grain Size Distribution sheets for boreholes No. 23, 28 and 33.

Yours very truly,

DOMINION SOIL INVESTIGATION LIMITED

J. Hewitt, P.Eng.

JH/ae
Enclosures.

DOMINION SOIL INVESTIGATION LIMITED

100 ROCKFORD BOULEVARD - SCARBOROUGH ONTARIO CANADA - TELEPHONE 751-4157

BRANCH
206 QUEENS AVENUE
LONDON, ONTARIO
TELEPHONE GE. 3-3021



FOUNDATION ENGINEERS

ASSOCIATED COMPANY
SOIL TESTING AND ENGINEERS LTD
24 BRISTOL ROAD,
KINGSTON 5, JAMAICA, WEST INDIES
TELEPHONE: 6896

7th 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-P-103

Dear Sirs,

Enclosed please find two copies of the Geotechnical Data sheets
and Grain Size Distribution sheets for boreholes No. 24 and 34.

Yours very truly,

DOMINION SOIL INVESTIGATION LIMITED


J. Hewitt, P.Eng.

JH/me
Enclosures.

MEMORANDUM

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. 279-64-2), Westbound Basketweave (W.P. 266-66), and Bridge #9 (W.P. 279-64-3). 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/KdeF

Attach.

cc: Messrs. B. R. Davis (2)
H. A. Trojacek
D. W. Pearen
G. K. Hunter (2)
P. Allen
W. S. Melnyshyn
T. J. Kovich
B. A. Singh

A. G. Sternac
PRINCIPAL FOUNDATION ENGINEER

Foundations Files
Gen. Files ✓

- 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 - (C.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.

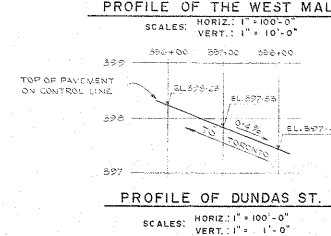
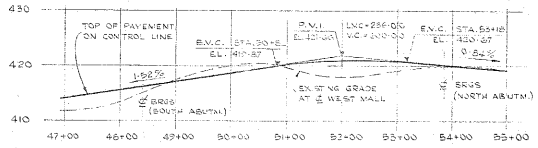
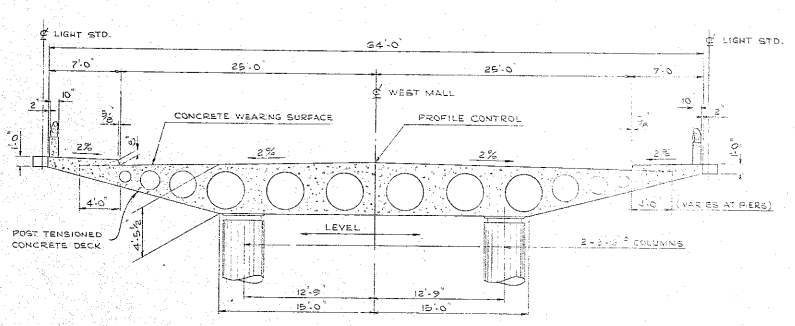
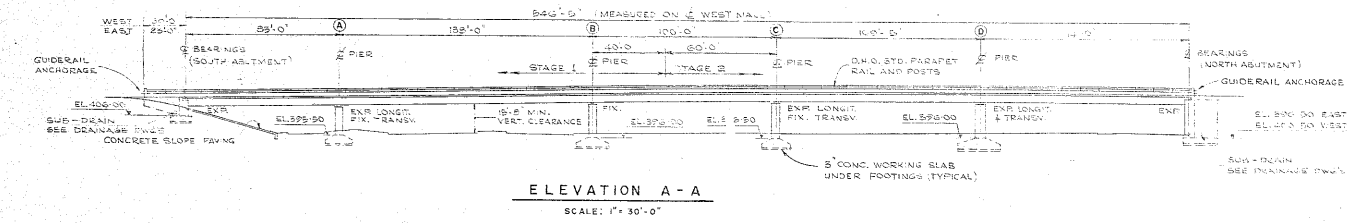
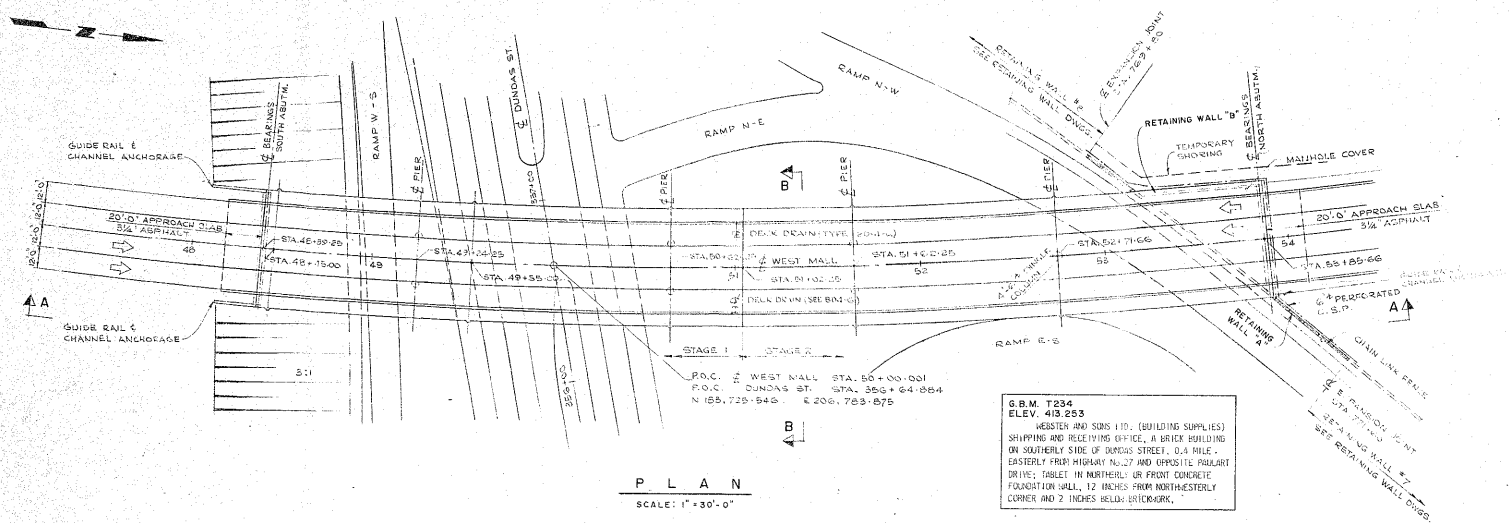
6. HWY. #27 OVERPASS AT DUNDAS STREET:

(W.P. 279-64-1)

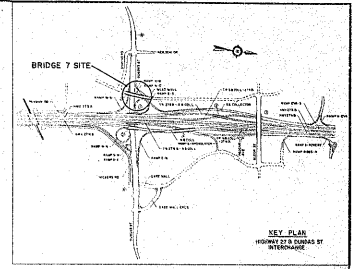
6.1) Soil Conditions:

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 1966, 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 ...



NOTES:
FOR WORKING POINT COORDINATES
SEE DWG. D6202-II.
FOR CONSTRUCTION SEQUENCE
SEE DWG. D6202-III.



GENERAL NOTES:

- CLASS OF CONCRETE:**
DECK, CURBS & COLUMNS 5,000 P.S.I.
PIERS 4,000 P.S.I.
RETAINERS 3,000 P.S.I.
CLEAN COVER ON REINFORCING STEEL:
FOOTINGS & ABUTMENTS 3"
PIERS, CURBS & APPROACH SLABS 2"
DECK TOP 2"
BOTTOM 1 1/2"
ROADWAY WALLS 1 1/2"

CONSTRUCTION NOTES:

THE CONTRACTOR IS RESPONSIBLE FOR FINISHING THE BEARING SEATS TO THE SPECIFIED ELEVATIONS WITH A TOLERANCE OF 1/8" ±. NO CONCRETE SHALL BE PLACED ABOVE THE BEARING SEATS UNTIL ONE MONTH AFTER THE CONCRETE DECK HAS BEEN PLACED, STRESSED AND CURED.

LIST OF DRAWINGS

DWG. NO.	DESCRIPTION
D6202-1	GENERAL APPROXIMATE
D6202-2	FOUNDATION LAYOUT
D6202-3	SOUTH ABUTMENT AND FILING
D6202-4	SOUTH EAST & SOUTH WEST WING WALLS
D6202-5	FTG. PLAN-NORTH ABUTMENT & RET. WALLS
D6202-6	NORTH ABUTMENT
D6202-7	RETAINING WALLS "A" & "B"
D6202-8	RETAINING WALL SECTIONS & DETAILS
D6202-9	PIERS "A" & "B"
D6202-10	PIERS "C" & "D"
D6202-11	PIER LAYOUT AND LIGHT DETAILS
D6202-12	DECK DETAILS
D6202-13	STRESSING PLAN
D6202-14	LONGITUDINAL STRESSING DETAILS
D6202-15	TRANSVERSE STRESSING DETAILS
D6202-16	DECK REINFORCEMENT 1
D6202-17	DECK REINFORCEMENT 2
D6202-18	APPROACH SLABS
D6202-19	CURBS & PARAPETS
D6202-20	DETAILS OF CONCRETE SLOPE PAVING
D6202-21	STANDARD STEEL PROPERTY RAIL
D6202-22	STANDARD DETAILS 1
D6202-23	STANDARD DETAILS 2

DEPARTMENT OF HIGHWAYS ONTARIO 66 F-403
BRIDGE DIVISION

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

BRIDGE No. 7
THE WEST MALL OVER DUNDAS ST. & RAMP

KING'S HIGHWAY No. 8 (DUNDAS ST.) DIST. No. 6
CO. YORK DUNDAS ST. & HWY. 27 INTERCHANGE
TYP. ETOBICOKE LOT CON.

GENERAL ARRANGEMENT

APPROVED DO				SITE No. 37-797		W.F. No. 279-64-2	
BRIDGE ENGINEER							
DESIGN	E. F.	CHECK	D. H.	CONTRACT	No. 68-83		
DRAWING	W. W.	CHECK	S. R.	No.			
DATE	DEC. 67	LOADING	HS 20-44	No.			
				DRAWING No. D6202-1			