

DOCUMENT MICROFILMING IDENTIFICATION

G.I.-30 SEPT. 1976

GEOCRES No. 30M11-187

DIST. 6 REGION

W.P. No.

CONT. No.

W. O. No. 86-11005

STR. SITE No.

HWY. No.

LOCATION PROP. DOWNSVIEW BASE LINE

MONUMENT DESIGN

(M.T.C. DOWNSVIEW COMPLEX)

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OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.

REMARKS:

memorandum



248-3282

To: D. E. Morris
Supervisor Control Surveys
Surveys and Plans Office
Surveys Section
Lower Floor, East Building

Date: 1986 09 08

From: Foundation Design Section
Room 315, Central Building

Re: W.O. 86-11005
PROPOSED DOWNSVIEW BASE LINE
MONUMENT DESIGN

As requested in your memo dated 86 07 03, this office has completed a foundation investigation to determine foundation design criteria for the installation of 4 survey monuments for the proposed Downsview Base Line

The field work was conducted on 86 07 16 utilizing a continuous flight auger machine equipped with hollow-stem augers. This work consisted of advancing two sampled boreholes, to depths of 9.6 and 11.9 m, along the proposed Downsview base line located along the north (Wilson Avenue) boundary of the MTC Downsview complex.

The overburden is essentially a cohesive till consisting of silty clay of low plasticity, with sand, trace gravel. Based on the results of the Standard Penetration Tests, field vane and laboratory unconfined compression test, the consistency of the deposit ranges from stiff to very stiff.

The groundwater elevation at the time of the field investigation was estimated at elevation 162± m.

The appended Record of Borehole Sheets # 1 and # 2 illustrate the specific conditions at the borehole locations.

The recommended design consists of 2 components:

- 1) The structural component consists of the sizing and detailing of the caisson. This component was provided by Mr. W. Hashizume of the Central Region Structural Section.
- 2) The foundation component consists of the foundation insulation recommendations.

The recommended installation is illustrated in Figure 1. It consists of a 3 m (10 feet) long, 0.46 m (18 inches) diameter reinforced concrete caisson insulated with a rigid product such as styrofoam (Dow Chemical Co.) or expanded polystyrene (Morval-Durofoam Ltd.).

.../2

In the vertical plane, the upper 1.2 m (4 feet) should be insulated with 38.1 mm (1.5 inches) minimum thickness of flush mounted insulation. The manufacturers should be consulted regarding product type and forming, but it is believed that it is possible to order a preformed section, or alternatively to bend the product to the required shape.

In the horizontal plane, a 1.2 m (4 feet) radius of 76.2 mm (3 inches) minimum thickness of rigid insulation should be installed on 152.4 mm (6 inches) of compacted Granular 'A' bedding, sloped at 10H:1V away from the caisson, and located a minimum of 0.3 m (1 foot) below the ground surface. A material equivalent to Dow Chemical Co. Styrofoam HI-35 is recommended for this application.

In addition, it is recommended that provisions should be made to ensure that no excavations or heavy equipment are permitted within 3 m (10 feet) of a monument.

We believe that this memo provides sufficient information for design and construction of the monuments to proceed. However, if any clarification is required, please do not hesitate to contact this office.

D. H. Dundas

D. H. Dundas
Sr. Foundations Engineer

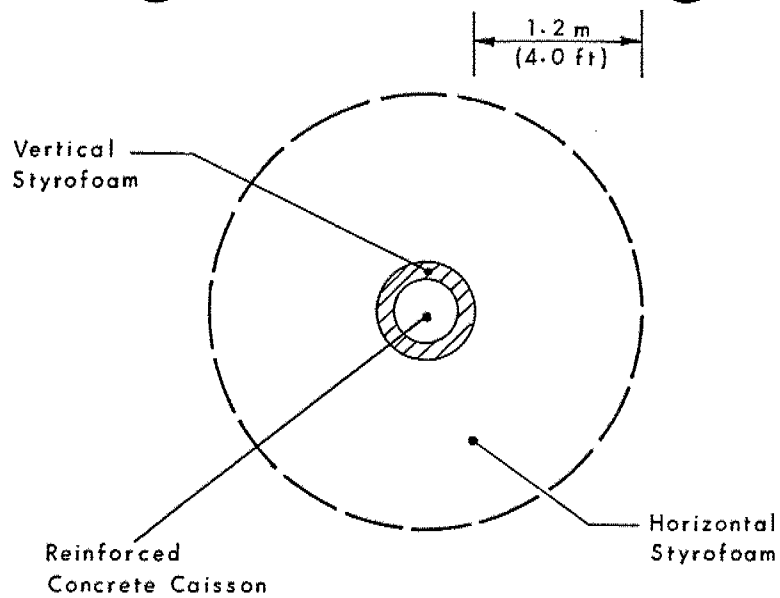
for

M. Devata, P.Eng.
Chief Foundations Engineer
(East)

DD/mls

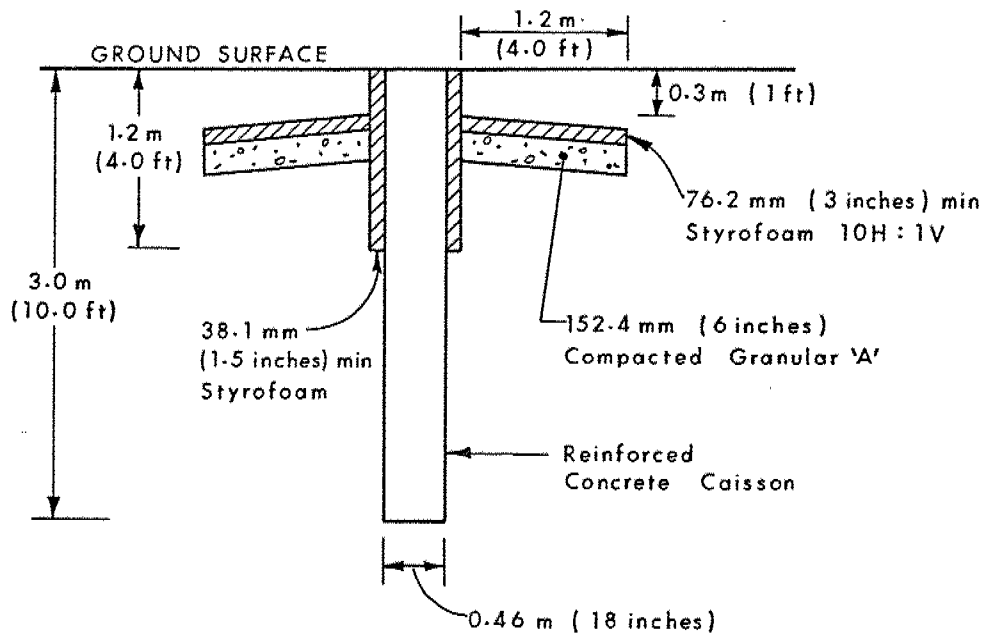
c.c. G. C. E. Burkhardt
(att'n) W. Hashizume

A P P E N D I X



PLAN

NTS



SECTION

NTS

Downsview Base Line Monument Design

Geocres No 30M11-187

Fig 1

W O 86-11005

RECORD OF BOREHOLE No 1

METRIC

WO 86 - 11005 LOCATION CO-ORDS: N 4 842 634.6; E 305 967.7 ORIGINATED BY DBM
 DIST 6 HWY N/A BOREHOLE TYPE CONE TEST, HOLLOW-STEM AUGER COMPILED BY DBM
 DATUM GEODETIC DATE 86 07 16 CHECKED BY DD

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL				
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)			
175.0	GROUND SURFACE							20 40 60 80 100										
0.0	Silty Clay (CL) with sand trace gravel (TILL)					*												
		1	SS	19	174								1 29 50 20					
		2	SS	22	173													
		3	SS	27	172								5 24 52 19					
		4	SS	16	171								1 27 48 24					
		5	SS	17	170													
		6	SS	10	169													
		7	SS	16	168													
		8	TW	PH	167								22.5 1 30 50 19					
		9	TW	PH	166													
		10	SS	17	165													
		11	SS	12	164													
		12	SS	15														
		13	SS	17														
		14	SS	13														
163.1			15	SS	24													
11.9	END OF BOREHOLE																	
	* groundwater elevation not determined																	

+³, x⁵: Numbers refer to
Sensitivity

20
15 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 2

METRIC

W O 86 - 11005 LOCATION CO-ORDS: N 4 842 520.9; E 305 596.1 ORIGINATED BY DBM
 DIST 6 HWY N/A BOREHOLE TYPE CONE TEST, HOLLOW-STEM AUGER COMPILED BY DBM
 DATUM GEODETIC DATE 86 07 16 CHECKED BY DD

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)
								○ UNCONFINED 20 40 60 80 100	+ FIELD VANE 20 40 60 80 100						
168.3	GROUND SURFACE													GR SA SI CL	
0.0	Silty Clay (CL) with sand trace gravel (TILL)		1	SS	23		168							2 23 50 25	
			2	SS	24		167							1 31 48 20	
			3	SS	16		166								
			4	SS	15		165								
			5	SS	21		164								
			6	SS	14		163							8 25 52 15	
			7	SS	10		162								
			8	SS	8		161								
			9	SS	54		160								
159.6															
8.7	Sandy Silt														
158.7	trace clay very dense		10	SS	180		159								
9.6	END OF BOREHOLE														
	* probable groundwater elevation														

OFFICE REPORT ON SOIL EXPLORATION