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GEOCRES No. 30M5-197

DIST. 4 REGION

W.P. No. ~~00~~

CONT. No.

W. O. No. 74-11012

STR. SITE No.

HWY. No.

LOCATION BURLINGTON PATROL YARD @ HAMILTON DISTRICT OFFICE

No. of PAGES - —

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.

REMARKS:

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS, ONTARIO

MEMORANDUM

30M5-197
GEOCRES No.

TO: Mr. A. Gibbon,
Special Services Section,
Central Region, Toronto.

FROM: Soil Mechanics Section,
Geotechnical Office,
West Building, Downsview.

ATTENTION:

DATE: May 9th, 1974.

OUR FILE REF.

IN REPLY TO MAY 21 1974

SUBJECT: RE: Foundation Investigation for the Proposed Sand Pile Domes Construction at Burlington M.T.C. Yard, Requisition No. 22198, District #4, Hamilton, W.O. 74-11012 (R).

It is proposed to construct three sand pile domes at the Burlington M.T.C. Patrol Yard. At the request of Mr. Arthur Gibbon, (Central Region, Special Services Section, requisition No. 22198, dated April 23rd, 1974) a foundation investigation was carried out by the Soil Mechanics Section to determine the subsoil conditions at this site.

The factual information obtained at the site indicates that the subsoil is a granular deposit extending down to at least 26 ft. (7.93 m) below existing groundlevel. Under a 3 to 6 inch (7.6 cm to 15.2 cm) topsoil, the upper 15 ft. (4.57 m) is recently filled material consisting of silty sand with a variable amount of organics. This deposit is in a loose to compact state, with "N" values ranging from 3 to 19 blows/foot. Underlying this fill material is a thin layer (6 to 8 inches) (15.24 to 20.32 cm) of black, organic material with some sand, believed to be the original lake bed. Underlying this organic layer the deposit is granular in composition being silty sand with gravel and generally in a dense to very dense state, having "N" values ranging from 35 - 100 blows/ft.

The groundwater level, during the time of field investigations, was observed to be 2.5 (0.76 m) below the groundlevel, i.e. about elevation 249.5 ft. (76.07 m).

The proposed sand pile conical domes will be 25 ft. (7.62 m) high and 100 ft. (30.5 m) wide (Base diameter). It is understood that the sand piles will be placed on a flexible asphalt mat base and with a 2:1 side slope. They will be covered with a light weight dome structure supported on circular concrete footings.

..... /2

Mr. A. Gibbon - RE: W.O. 74-11012 (R).

No stability problems are anticipated if the following recommendations are adopted:

1. To diminish the possibility of flooding of the dome area it will be necessary to raise the existing ground level at least 2 ft. (0.61 m) by placing a layer of granular or other suitable earth material.

2. An allowable safe bearing pressure of 1000 p.s.f. (47.88 kPa), may be used for the design of the concrete circular footings located at or below elevation 247 ft. (75.3 m). The footing base should have a minimum cover of 4 ft. (1.22 m) to provide adequate frost protection.

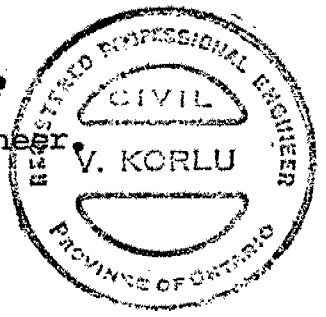
3. If footing excavations are carried out below the prevailing water table a proper dewatering scheme may be necessary during the construction of the circular footings of the domes.

4. It is estimated that the differential settlement at the centre and extreme ends of the base will be in the order of 1.5 in. (3.8 cm.). In order to accommodate these differential settlements and also to ensure proper drainage in this mat area, it is recommended that the centre portion of the mat should be at least 2.5 in. (6.35 cm.) higher than the perimeter of the base.

A detailed drawing No. 74-11012 A showing the location of the proposed sand pile domes and the subsoil stratigraphy is attached to this memo.

We believe that the aforementioned comments will be adequate for your design requirements of this project. Should you require any further information, please feel free to contact this Section.

V. Korlu,
Project Engineer.
For: M. Devata,
Supervising Engineer.



VK/mj
c.c. C.R. Robertson,
D. Gunther,
Files,
Documents.

Attach.*

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS – ONTARIO

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE No 1

JOB 74-1012(R) LOCATION Burlington N.T.P. Curve ORIGINATED BY V.K.

W.P. — BORING DATE April 23, 1974 COMPILED BY V.K.

DATUM Geodetic BOREHOLE TYPE Auger and sample with CME-55 Machine CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	LIQUID LIMIT W_L / PLASTIC LIMIT W_P / WATER CONTENT W	BULK DENSITY	REMARKS
ELEV. / DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F. ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE	W_P — W — W_L WATER CONTENT %	γ P.C.F.	GR. SA. SI. CL
252.0	Ground Level									
0.0	silt sand and trace of organics loose to compact		1	SS	12	250				∝ wl. 249.0
			2	SS	4					
			3	SS	12					
			4	SS	10	240				
	black organic silt and sand.		5	SS	5					
	silt sand with occasional gravel v. dense		6	SS	63	230				
			7	SS	134					
26.5	End of Borehole									

E REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS – ONTARIO

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE No 2

JOB 74-11012(R) LOCATION Burlington HTC. Yard ORIGINATED BY VK

W.P. — BORING DATE April 23, 1974 COMPILED BY VK

DATUM Geodetic BOREHOLE TYPE Auger and sample with C.M.E. machine CHECKED BY

SOIL PROFILE			SAMPLES			ELEV. SCALE	DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	LIQUID LIMIT W_L / PLASTIC LIMIT W_P / WATER CONTENT W	BULK DENSITY	REMARKS
ELEV. / DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT		SHEAR STRENGTH P.S.F. ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE × LAB VANE	WATER CONTENT %	γ P.C.F.	GR. SA. SI. CL.
252.0	Ground level									
0.0			1	SS	19	250				▽ Water at 249.5
			2	SS	12					
			3	SS	6					
	Loose to compact		4	SS	4	240				
	Black organics with some sand.		5	SS	6					
			6	SS	65	230				
	V. Dense		7	SS	73					
26.5	End of Borehole									

E REPORT ON SOIL EXPLORATION

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS – ONTARIO

DESIGN SERVICES BRANCH

FOUNDATIONS OFFICE

RECORD OF BOREHOLE No 3

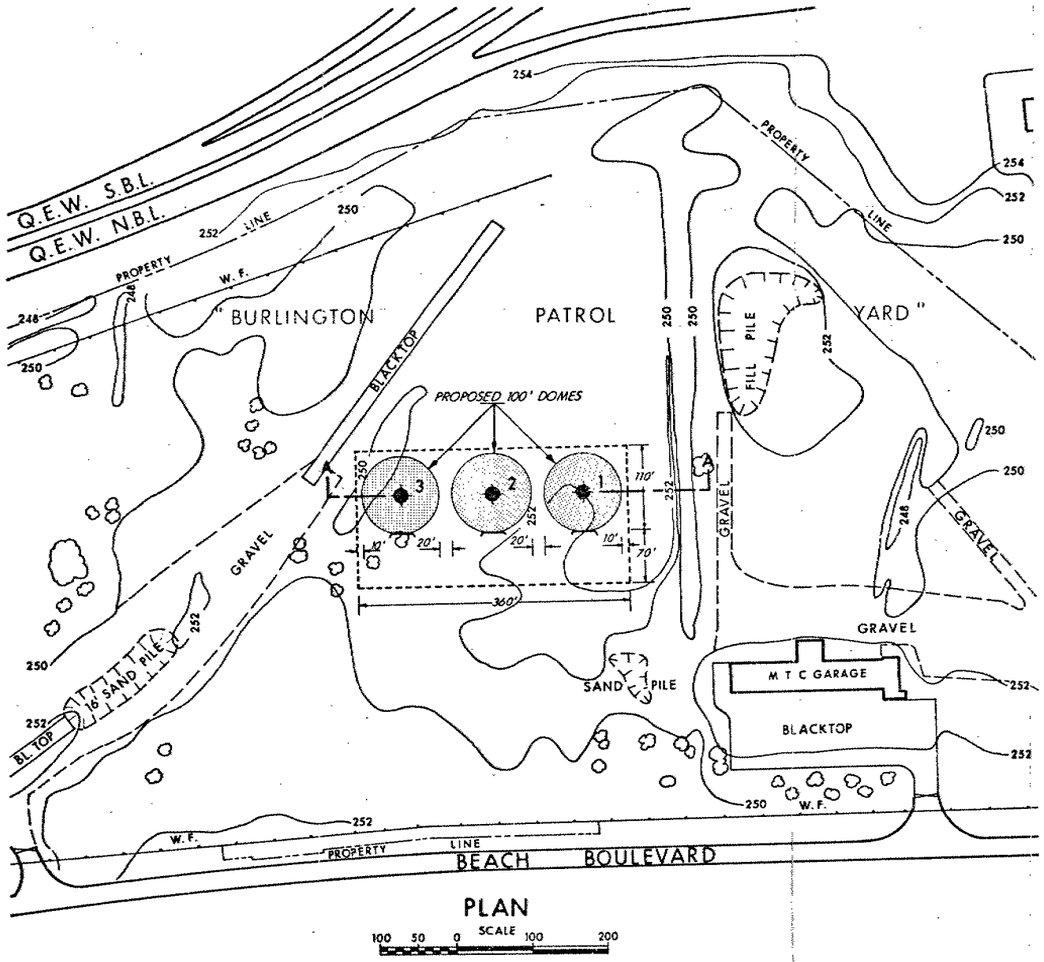
JOB 74-F 0012 (R) LOCATION Burlington M.T.C. Yard ORIGINATED BY W.E.

W.P. — BORING DATE April 23 1974 COMPILED BY W.E.

DATUM Geodetic BOREHOLE TYPE Auger and sample with 4½" E. machine CHECKED BY —

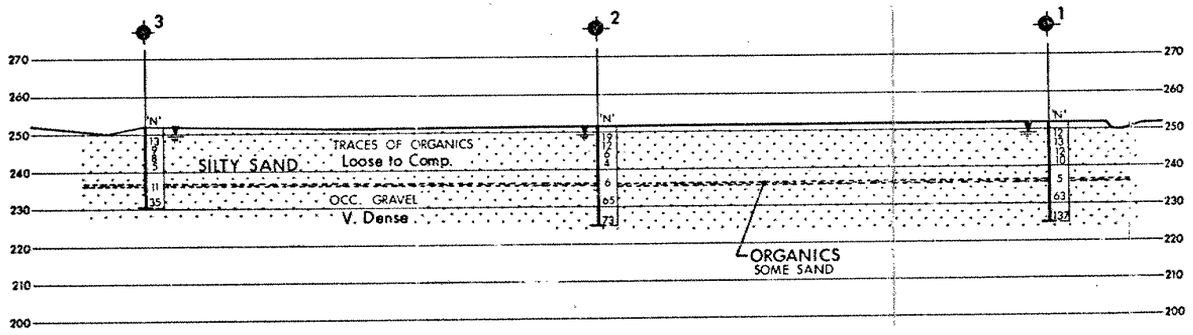
SOIL PROFILE			SAMPLES				DYNAMIC PENETRATION RESISTANCE BLOWS / FOOT	LIQUID LIMIT W_L / PLASTIC LIMIT W_P / WATER CONTENT W	BULK DENSITY γ	REMARKS
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	BLOWS/FOOT	ELEV. SCALE	SHEAR STRENGTH P.S.F. ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE	WATER CONTENT %	P.C.F.	GR. SA. SI. CL.
959.0	Ground level									
0.0						760				Bk. 250.0
			1	SS	13					
			2	SS	9					
			3	SS	8					
	Loose to compact		4	SS	5	240				
			5	SS	11					
230.5	Dense		6	SS	35	730				
21.5										

FORM REPORT ON SOIL EXPLORATION



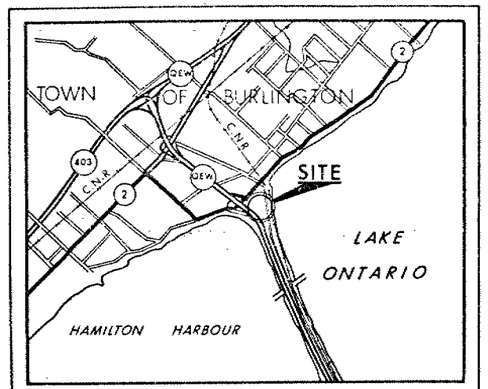
PLAN

SCALE 100 50 0 100 200



SECTION A-A

SCALE 20 10 0 20 40



KEY PLAN

SCALE IN MILES 1 0·5 0 1 2 3 4

LEGEND

- Bore Hole
- Cone Penetration Test
- Bore Hole & Cone Test
- Water Levels established at time of field investigation. APR. 1974

NO.	ELEVATION	
1	252·0	LOCATION AS SHOWN ON PLAN
2	252·0	
3	252·0	

— NOTE —

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence.

REVISIONS		
DATE	BY	DESCRIPTION

REF. NO. H-1337-2

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS—ONTARIO
ENGINEERING SERVICES BRANCH - GEOTECHNICAL OFFICE

BURLINGTON PATROL YARD

PROPOSED 3 - 100 FT. DOMES

HIGHWAY NO. — DIST NO. 4

CO. HALTON TOWN OF BURLINGTON

TWP. LOT CON.

BORE HOLE LOCATIONS & SOIL STRATA

SUBM'D V.K.	CHECKED	W.P. NO —	DRAWING NO 74-11012 A
DRAWN N.T.	CHECKED	W.O. NO 74-11012 R	
DATE 15 MAY 1974		SITE NO	BRIDGE DRAWING NO
APPROVED		CONT. NO	