

G.I.-30 SEPT. 1976

GEOCRES No. 40J2-41DIST. 32 REGION _____

W.P. No. _____

CONT. No. _____

W. O. No. 96-33-002

STR. SITE No. _____

HWY. No. 401LOCATION Hwy 401 & Walker Rd.No of PAGES -=====

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. _____

REMARKS: _____

MEMORANDUM



To: Eric Magni
Head, Geotechnical Section
Southwestern Region

Date: June 27, 1996

Atten: Neil Zohorsky

From: Pavements & Foundations Section
Room 315, Central Building

Tel: 235-3731

Fax: 235-5240

Re: High Mast Light Pole Foundation
W.O. 96-33-002; Hwy. 401 & Walker Road
Highway 401, District 32, Chatham

The proposed locations for the high mast light poles were inspected on June 21, 1996. During the site visit, two boreholes in the vicinity of pole locations P2 & P5 were advanced to a maximum depth of 5.6 m (El. 184.8) below the existing ground level using a power auger.

The site is located between North Talbot Road and Walker Road along Highway 401 in the City of Windsor. The topography of the site, with the exception of the existing crossings and ramps (embankment fill) is generally flat to gently rolling. Physiographically the area is located in the region known as the "St. Clair Clay Plains".

Generally uniform subsoil conditions were found to prevail over the project area. The underlying subsoil at this site consists of 200 mm to 380 mm topsoil underlain by very stiff clayey silt with varying proportions of sand and gravel sized particles.

It is proposed to construct high mast light poles at five locations between North Talbot Road and Walker Road. The location of the poles and the ground elevations are as follows:

<u>High Mast Pole No.</u>	<u>Location</u>		Ground Elevation
	Northing	Easting	
1	4 678 354.3	266 503.2	190.5
2	4 678 299.8	266 366.6	190.8
3	4 678 267.4	266 208.8	190.1
4	4 678 218.5	266 047.5	190.3
5	4 678 172.7	265 884.2	190.4

The design of the foundation for the high mast light poles (single concrete caisson) should be in accordance with the method as outlined in the following papers.

Brohms, B.B. "Lateral Resistance of Piles in Cohesive Soil" Journal of the Soil Mechanics and Foundation Division ASCE Vol. 90 No. SM2, Paper 3285, March 1964.

Brohms, B.B. "Design of Laterally Loaded Piles", Journal of the Soil Mechanics and Foundation Division. ASCE Vol. 91 No. SM3, May 1965.

The design parameters are given in the Table attached to this memorandum. The soil located within the zone of frost penetration (1.2 m) should be neglected in the calculation of lateral resistance.

The boreholes were advanced only to a maximum depth of 5.6 m. In view of this, the following Special Provisions may be included in the contract documents.

"Groundwater is likely to be encountered above the base level of the caissons. The Contractor shall be responsible for constructing the high mast light pole foundations without disturbing the material at the sides or base of the foundations".

M. Vasavithasan

M. Vasavithasan, P. Eng.
Foundation Engineer
for
T.C. Kim, P. Eng.
Sr. Foundation Engineer

MV/TCK/mmj

cc - A. Ho
M. Vyse
N. D'Alessandro

High Mast Pole No. & Location	Ground Elevation	Soil Boundary	Soil Type	Soil Parameter	
				q_u (kPa)	γ (kN/m ³)
1 N 4 678 354.3 E 266 503.2	190.5	190.5 - 187.5 187.5 - 184.5 184.5 - 181.5	Cohesive " "	260 220 150	21 19 18.5
2 N 4 678 299.8 E 266 366.6	190.8	190.8 - 187.8 187.8 - 184.8 184.8 - 181.8	Cohesive " "	260 220 150	21 19 18.5
3 N 4 678 267.4 E 266 208.8	190.1	190.1 - 187.1 187.1 - 184.1 184.1 - 181.1	Cohesive " "	260 220 150	21 19 18.5
4 N 4 678 218.5 E 266 047.5	190.3	190.3 - 187.3 187.3 - 184.3 184.3 - 181.3	Cohesive " "	260 220 150	21 19 18.5
5 N 4 678 172.7 E 265 884.2	190.4	190.4 - 187.4 184.4 - 181.4 184.4 - 181.4	Cohesive " "	260 220 150	21 19 18.5

Note: q_u = Unconfined Compressive Strength (kPa)
 γ = Bulk Unit Weight (kN/m³)

RECORD OF BOREHOLE No P2

1 OF 1

METRIC

W.O. 96 - 33 - 002 LOCATION CO - ORDS: N 4 678 306.5; E 266 363.0 ORIGINATED BY N Z&M V
 DIST 32 HWY 401 BOREHOLE TYPE POWER AUGER WITH SOLID STEM COMPILED BY M V
 DATUM GEODETIC DATE 1996 06 21 CHECKED BY T C K

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 (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20	40					
190.8	Ground Surface													
0.0	Topsoil					DRY *								
	CLAYEY SILT, Some Sand, Some Gravel, Very Stiff													
	Brown to Greyish Brown													
	Grey													
185.2														
5.6	End of Borehole													
	Note: Borehole Dry on Completion													

RECORD OF BOREHOLE No P5

1 OF 1

METRIC

W.O. 96 - 33 - 002 LOCATION CO - ORDS: N 4 678 184.9; E 265 880.2 ORIGINATED BY N Z&M V
DIST 32. HWY 401 BOREHOLE TYPE POWER AUGER WITH SOLID STEM COMPILED BY M V
DATUM GEODETIC DATE 1996 06 21 CHECKED BY T C K

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 (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			'N' VALUES	20					
190.4	Ground Surface												
0.0	Topsoil												
	CLAYEY SILT, Some Sand, Some Gravel, Very Stiff												
	Brown to Greyish Brown												
	Grey												
184.8	End of Borehole												
5.6	Note: Borehole Dry on Completion												