

PART A - PRELIMINARY FOUNDATION INVESTIGATION REPORT
HWY 407 EAST EXTENSION – EASTERN SECTION

LOCATION No:	EM-40
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Structure Description: Overpass Highway 407 East Mainline / Leskard Road

W.O. 07 – 20017

Highway 407 Proposed Grade: ~ El. 207 to 209 m

Existing Ground Elevation: ~ El. 202 to 205 m

Site Ranking: Medium

Station: 24+740

FOUNDATION INVESTIGATION

Site Description:

At this site, the existing Leskard Road is a two lane paved roadway running in a north-south direction through a moderately vegetated area. The terrain is mapped as being underlain by silty glaciolacustrine soils with the Wilmot Creek wetland complex intruding into the north end. The relief is moderate, ridged and terraced, and rapidly drained.

Borehole Information:

Borehole No.	Borehole Location	MTM NAD 83 – Northing	MTM NAD 83 - Easting	Borehole Elevation (m)	Borehole Depth (m)
EM40-1*	South Side	4 874 856.0	373 519.0	204.7	7.7
P38	North Side	4 874 927.5	373 470.5	202.3	9.5

* Structure changed from underpass to overpass after borehole was drilled.

Subsurface Conditions:

- Asphalt and Fill:**
A 0.6 m thick layer of sand and gravel fill was encountered in Borehole EM40-1 underneath a 50 mm thick asphalt layer. The underside of the fill was at Elevation 204.1 m. The measured water content for a sample of this fill was approximately 8%.
- Silty Sand Till:**
A silty sand till containing trace clay, trace gravel and inferred cobbles was encountered in both boreholes. Borehole P38 penetrated 9.5 m of this till before termination at Elevation 192.8 m. In Borehole EM40-1 where the silty sand till interlayered with a sand and silt till, the combined thickness of the upper and lower silty sand till was 3.1 m with the underside of the lower layer at Elevation 197.9 m. This till was in a dense to very dense state ('N' values of 28 blows/0.3m penetration to >100 blows for <0.3m penetration). Figure EM40-B1 presents grain size distribution curves for samples of this till. Measured water contents varied between 4% and 12%.
- Sand and Silt Till:**
Sand and silt till was encountered interlayering with silty sand till in Borehole EM40-1. This till contains trace to some clay, trace gravel and inferred cobbles. The thickness of this brown till in Borehole EM40-1 was 3.1 m with an underside at Elevation 198.6 m. This till was in a dense to very dense state ('N' values of 32 blows/0.3m penetration to >100 for <0.3m penetration). Figure EM40-B2 presents a grain size distribution curve for a sample of this till. Moisture contents of the sand and silt till varied between 7% and 12%.
- Sand and Gravel:**
A deposit of sand and gravel, trace silt, underlies the silty sand till in Borehole EM40-1. This borehole terminated within the sand and gravel layer. The soil is grey in colour and is in a very dense state (an 'N' value of >100 blows for <0.3m penetration).

Groundwater Conditions:

- BH EM40-1:** 6.2 m depth (Elev. 198.5 m) in piezometer on July 28, 2008.
- BH P38:** 7.2 m depth (Elev. 195.0 m) in piezometer on May 26, 1994.

