



Project Title: East Saint John (ESJ) Pipeway

Client: Irving Oil

Project Description:

GEMTEC's involvement with the ESJ Pipeway included; completing a geotechnical assessment, geotechnical consultation during the design phase, and inspection services during the upgrading of the berm road and pile driving.

The field work for the geotechnical investigation included drilling a number of conventional boreholes as well as a number of peizocone (CPT) holes. The data gathered as part of the fieldwork was used to assess the suitability of the existing dyke road as an access road for the proposed construction as well determining a suitable type of foundation for the pipeway. The peizocone was particularly useful in assessing the underlying organic silts at the site. It is noteworthy that construction traffic on the dyke road was limited to ½ tonne trucks prior to the geotechnical assessment undertaken by GEMTEC. As a result of the geotechnical assessment, owing to the information attained using the peizocone, the traffic loads on the dyke road was increased substantially to allowing 100-tonne cranes.

The requirements of the geotechnical report for the ESJ Pipeway project were similar to that for this project. Specifically we were required to provide geotechnical parameters such as; pile axial and lateral capacity; seismic parameters; bearing capacity and stability analyses; vibration evaluation, etc.

GEMTEC provided geotechnical consultation to the Fluor design team during the design phase of the ESJ Pipeway project. This

included reviewing and recommending geotechnical parameters through the several iterations for the pile foundations. Pile foundation design was particularly complicated as a result of the high lateral loads and the very poor soil conditions (i.e. very soft organic silts). The proximity of the Refinery's main treatment pond and environmental sensitivity of the wetlands added to the complexity in that the foundation size was limited.

GEMTEC also provided construction inspection and monitoring services during the construction phase. The services included, but were not limited to; pile driving monitoring using our Pile Driving Analyzer (PDA), settlement monitoring of the dyke, vibration monitoring of the existing pipelines during pile driving as well as routine inspection concrete and backfill inspection. Vibration monitoring was particularly important given the proximity of the existing deteriorated pipeway. On several occasions pie driving was stopped as a result of excessive vibration levels (threshold levels were arrived at by GEMTEC and Fluor prior to the commencement of construction). GEMTEC's PDA, along with a geotechnical engineer operator was also very useful in limiting the length of the pile as well as determining lateral pile resistance requirements. The field geotechnical staff was in constant communication with office staff throughout the construction phase.