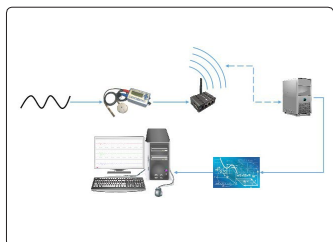


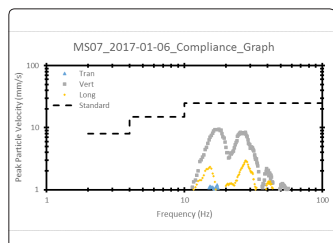
MTO - Victoria Street Bridge, Kitchener, Ontario



♦ Autonomous Sound and Vibration Monitor



♦ Concept of operation



♦ Compliance graph



♦ Sound Level Meter



Junction of Highways 85 and 7

The services of GKM Consultants have been retained by Dufferin Construction Company (DCC) to perform the noise and vibration monitoring program for a contract of the Ministry of Transportation of Ontario (MTO) in the city of Kitchener.

The Victoria Street Bridge, located at the interchange of Hwy 85 and Victoria Street North, will be reconstructed. The project involves widening of the approach, improvement of the east and west embankments, and new ramps. As a result, the existing utilities in the vicinity of Victoria Street and Hwy 85, including storm water sewers, water mains, sanitary gravity sewers, sanitary force mains, gas mains etc., must be relocated using construction techniques such as open cut and microtunnelling up to 15 m below ground.

GKM has provided eight continuous noise and vibration data acquisition systems located at sensitive areas and structures nearby. Prior to the start of the construction activities, baseline measurements were performed. Sound level measurements of the construction equipment have also been conducted to check compliance with provincial publication NPC-115.

The autonomous and automated systems enable data to be transferred via a cellular modem to GKM Consultants' secure servers and provide real-time alarms in case of vibration level exceedance. An in-house fast Fourier transform algorithm is used to perform an accurate analysis to determine all the frequency components of the complex vibration waveforms. The results are analysed on a daily basis by an engineer and summarized in a daily report.

Furthermore, GKM Consultants provided required materials for installation of deep and shallow settlement measurement points along the alignment of the tunnel and over nearby utilities within the zone of construction influence.

GKM Consultants is proud to work in partnership with DCC and be part of a project that will benefit the citizens of Kitchener.