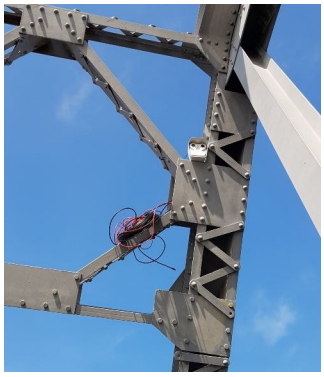
Dynamic monitoring of a bridge, New Brunswick



Camera Installation

Installation of a Strain Gauge

Strain Gauge

Bridge located in New Brunswick, Fredericton area

GKM Consultants in collaboration with University of New Brunswick instrumented a steel truss bridge in the Fredericton area. This research projects intended to monitor the behaviour of the bridge when it is subjected to heavy dynamic loads such as the passages of semi-trailer trucks.

The monitoring system as designed by GKM Consultants can perform dynamic measurements (i.e. >100 measurements per second). It measures local deformation of steel beams with resistive strain gauges. These robust gauges are designed to resist the elements and generate high quality data for years to come while still offering a dynamic response during vehicle passages.

This innovative system relies on radar vehicle detectors that trigger high speed data acquisition during vehicle passages. This systems also provides an exact count of the number of daily vehicles. The detectors trigger a camera that takes a picture providing all the information required to correlate the structural response with the type and weight of vehicles crossing the bridge.

GKM Consultants' team performed the installation of the strain gauges and of the whole detection system in collaboration with the researchers from UNB. The location and the installation methods are critical for the quality of the measurements. A state-of-the-art installation was done to guarantee that both the instruments and the structure would be protected against rust and the stress of weather.

All data is remotely accessible through a cellular modem that uploads images and dynamic data in real-time.

GKM Consultants is proud to have taken part in this research project and to take the opportunity to share knowledge between the industry and academic researchers.