

PROJECT PROFILE



Kamal's Bridge Structural Health Monitoring System Tualatin, Oregon

Client:

Oregon Department of Transportation

Kamal's Bridge provides the Southbound I-205 crossing of I-5 in Tualatin, Oregon. This bridge is a 4-span steel box girder bridge and includes longitudinal box girders on either side of the bridge deck. Visual evidence of fatigue cracking between the longitudinal box girders and the transverse cross beams at each pier has been observed.

Engineered Monitoring Solutions completed the design of a Structural Health Monitoring (SHM) system for the bridge and is currently installing the system. The Kamal's Bridge monitoring system is part of a statewide structural health monitoring program. ODOT undertook this project to improve the ability to monitor the structural response of the bridge to traffic loads and changes in temperature. The monitoring system will

collect data regarding strain in the box girder and cross beam diaphragms, rotation of the joints between the box girder and cross beam diaphragms, surface temperature of the box girders and air temperature.

A Measurement and Control Unit (MCU) will be programmed to collect the data, perform calculations to process the data and store the data until it is automatically loaded into the SHM database. The MCU will collect event data at 100HZ (100 times per second) to evaluate the response of the bridge to larger traffic loads. A traffic loading event of interest is identified automatically when a predetermined strain threshold has been exceeded at any of the strain gages. Data will also be collected at lower frequencies to evaluate the effect of temperature changes on the performance of the bridge.

The data will be transmitted from the bridge site to a nearby maintenance station using telephone communications, where a connection to ODOT's wide area computer network will be made. The processed data will be loaded into the database hourly for review by bridge engineers using a web browser from a remote location.

