

PROJECT PROFILE



Banzer Bridge Structural Health Monitoring System Mist, Oregon

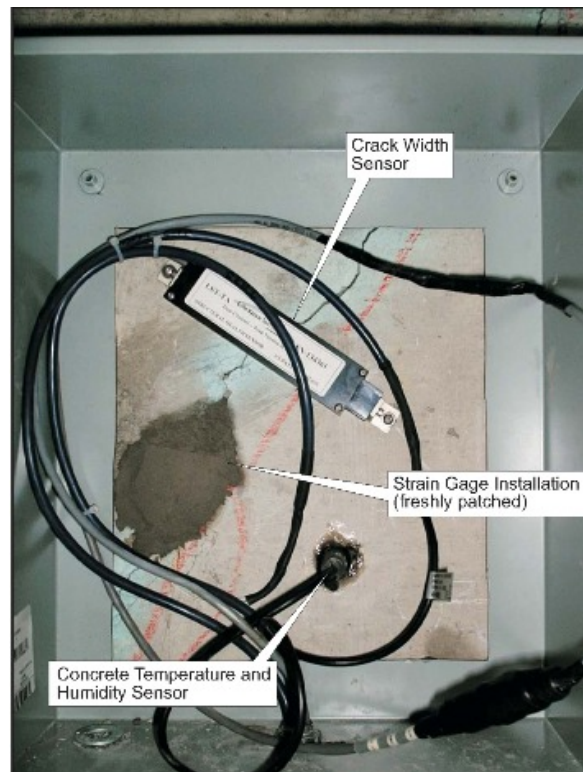
Client:

Oregon Department of Transportation

A statewide structural health monitoring (SHM) system was designed for ODOT by Engineered Monitoring Solutions. The SHM system incorporates a number of bridges with different monitoring objectives. Banzer Bridge provides the Highway 202 crossing over the Nehalem River near Mist, Oregon. The bridge is a reinforced concrete deck girder bridge, approximately 260 feet long with 3 spans.

ODOT undertook this project to improve the ability to monitor the structural performance of the bridge. ODOT is collecting data regarding

rebar strain, crack width, concrete moisture and temperature and air temperature and relative humidity. Unique, patented crack width sensors were deployed that simultaneously indicate active (current) crack width and peak crack width since the last time the sensor was reset. Foil strain gages were installed on existing steel reinforcement bars. The strain gage installations were configured for long term use and were protected against moisture intrusion. In addition, temperature and moisture sensors were installed in the concrete to monitor the conditions in the vicinity of the steel reinforcement.



Due to access constraints, sensors were installed using an under bridge platform

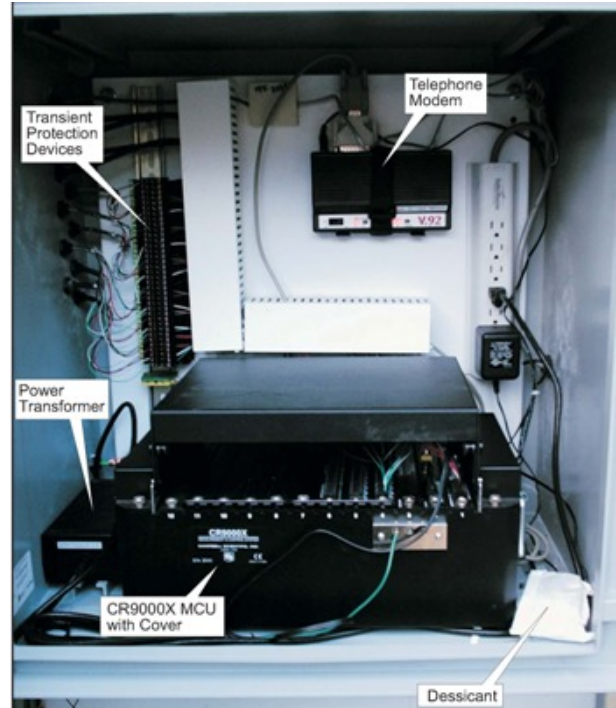


High speed data acquisition is also used to capture the response of the bridge to heavy vehicle loads. To accomplish this, the MCU compares strain levels with a preset threshold level; which if exceeded, triggers accelerated data acquisition at a frequency of 1,000 Hz (1000 readings per second). The data is reviewed by ODOT bridge engineers using the statewide SHM data management system. Bridge engineers access the data using a web browser from workstation PCs connected to the computer network to evaluate the performance of the bridge.

that permitted access beneath the bridge and above the river.

A Measurement and Control Unit (MCU) was 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 data is transmitted from the bridge site to a nearby maintenance station using telephone landline, where a connection to the state's wide area computer network is made. The processed data is loaded into the database once every 6 hours under normal conditions.



Bridge Site Plan

