

Dallas selects Loadsensing for wireless crack and tilt monitoring

COUNTRY

UNITED STATES
OF AMERICA

PROJECT TYPE

CONSTRUCTION SITE
MONITORING

SECTOR

CONSTRUCTION

MAIN PRODUCT

LOADSENSING

Challenge

The Katy Trail is a jogging, walking, inline skating and cycling path that runs through the Uptown and Oak Lawn areas of Dallas, Texas, following the path of the old Missouri-Kansas-Texas Railroad, which was formerly known as MKT or the Katy.

The construction work to convert the unused railway track into a hiking trail took place between 2000 and 2007. Since its completion, the hiking trail has seen several expansions.

One of these, spanning 0.65 miles and including two pedestrian bridges, required unique engineering and structural monitoring because one of the bridges was atop a Dallas Area Rapid Transit (DART) tunnel. A cantilever suspension bridge design had to be used to push the bridge foundation away from the tunnel. It was crucial to monitor movements across existing cracks in the tunnel lining, along with the rotation of the retaining structure.

Solution

The instrumentation and monitoring scheme was designed and carried out by HNTB and Rebcon.

Our New Jersey partner, Specto Technology, supplied crack meters, tiltmeters, our Loadsensing wireless data units and a gateway. Specto Technology used Argus software for web-based management and reporting, and gave Rebcon technical support relating to the installation and commissioning of all automated instruments.

The Loadsensing system deployed at the site consists of one gateway, 11 data loggers for Micro Electro-Mechanical System tiltmeters and 5 data loggers for vibrating wire crack meters. It also includes 92 prisms installed in and outside the DART tunnel, which are monitored by manual optical surveys.

Benefits

The Loadsensing wireless monitoring system was selected due to its long-range radio, low-power consumption, easy implementation and its ability to work inside the tunnel.

The system automatically and wirelessly collects readings from the crack meters and tiltmeters. It sends the data to the Argus software, which also integrates manual data surveys, helping ensure the safety of the infrastructure.

Advantages

- Almost maintenance-free monitoring thanks to radio communications and long-battery-life devices
- Improved construction safety thanks to high-quality real-time monitoring data
- Simple integration with industry-standard sensors and reporting tools