

Monitoring bridge construction around Optus Stadium

COUNTRY

AUSTRALIA

PROJECT TYPE

UNDERGROUND WATER
MONITORING DURING DEWATERING

SECTOR

CONSTRUCTION

MAIN PRODUCT

LOADSENSING

Challenge

In 2018, the multi-purpose 60,000-seat Optus Stadium in Australia opened for the kickoff of the Australian Football League season. The six-platform Optus Stadium Station was one of the key infrastructures in the area's transportation strategy, serving 28,000 people. During the construction work, the Victoria Park Bridge, an adjacent infrastructure that crosses over a congested highway, was at risk of being affected. Proper monitoring was crucial to the safety of passing vehicles.

Solution

Worldsensing partnered with Itmsoil Australia to deploy a Loadsensing system for remote monitoring of the Victoria Park Bridge on behalf of the Prism Alliance, which comprised Laing O'Rourke, Aecom and the Perth Transport Authority. Itmsoil installed eight vibrating wire piezometers, six 4-20mA pressure transducers, seven Micro Electro-Mechanical System tiltmeters, three settlement plates and two inclinometers. The equipment was used to monitor the pore water pressure, the piezometric head of groundwater during dewatering, the tilt of the Victoria Park Bridge and the settlement of surcharge. Considering the scale of the project and the distances between the sensors installed, it made sense to use a Loadsensing wireless telemetry system due to its cost-effectiveness and long-range performance. The Loadsensing gateway received the data from all sensors installed on site, with a distance of 3.5 kilometers from the farthest monitoring point, then relayed it to the Itmsoil's web-based data presentation package, Argus.

Benefits

The Loadsensing wireless monitoring solution enabled greater control of the bridge during this major infrastructure construction project. A key advantage of the solution was the remote and automatic access to data without any need for manual collection. In addition, by removing wiring, it allowed for easy installation and provided important cost reductions. The client was able to receive data in real time and be warned via SMS or email if any instrument exceeded set alarm thresholds.

Advantages

- Improved safety during the course of a major infrastructure construction project
- Low cost thanks to the wireless nature of the monitoring system
- Real-time alerts delivered via SMS and email

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