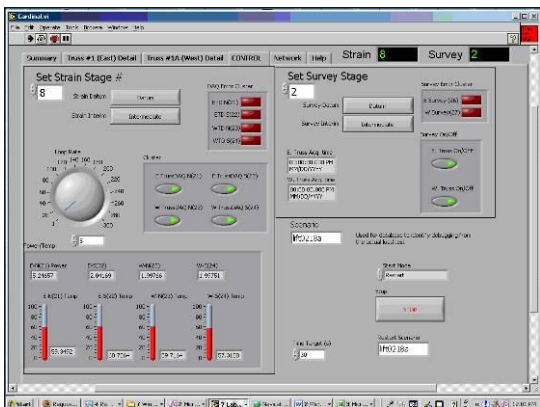
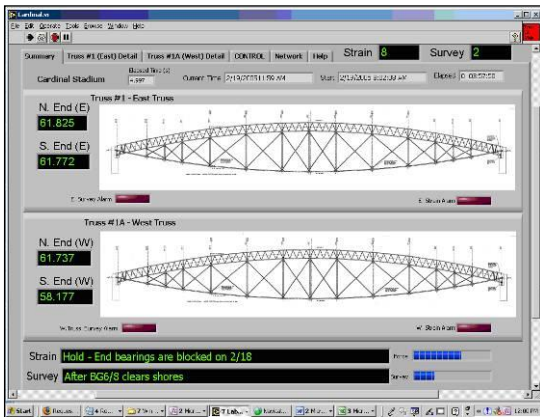


Cardinals Stadium Roof Lift

Instrumentation and Monitoring of Super Trusses
Glendale, Arizona



CLIENT

Hunt Construction Group, Inc.

CHALLENGE

Construction of a large stadium roof required two massive steel trusses to be lifted approximately 120 feet into position. The final erection of these trusses represented the heaviest recorded lift in North America. To facilitate this critical operation, the project construction manager, Hunt Construction Group, needed an instrumentation system that would allow the lift participants to monitor changing conditions of truss position, geometry, and stresses in real time during the lift.

STRUCTURE

Cardinals Stadium, completed in 2006, is the home of the National Football League's Arizona Cardinals and the annual Fiesta Bowl. The stadium features a retractable roof that is supported by two parallel 700-foot-long "super trusses" weighing approximately 11 million pounds. The trusses are supported by 160-foot-tall "super columns."

SOLUTION

WJE designed and installed a state-of-the-art instrumentation and monitoring system to achieve the project objectives. Key elements included the following:

- Installation of more than eighty strain gages, displacement gages, and thermocouples on the trusses during construction and monitoring of data collected from four networked data acquisition units
- Wireless collection of survey data for sixty-eight monitoring points as measured by two remote survey stations during the roof lift
- Utilization of a local area wireless network to connect six data acquisition systems for broadcast of acquired data to lift participants
- Implementation of a centralized database collection system to allow access and management of data for multiple users simultaneously
- Development of software capable of processing and graphing real-time and historical data in a user-friendly interface