Monitoring Bridges on the Move

By

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Abstract
The State of Utah Department of Transportation (UDOT) is involved in a very innovative Accelerated Bridge Construction (ABC) program employing advanced technology. The ABC program will reduce motorist’s delays from months to days. The project includes replacing bridges, adding new lanes and providing safety improvements. Bridges are constructed, to near completion, on “Bridge Farms” adjacent to the roadway and are moved to their final location with traffic interventions limited to only a few days or in some cases only hours. The design criteria for these bridges generally are based on normal in-service conditions, with some conservatism to account for conditions that might occur during their movement into place. Since ABC is still in the embryo stages of development, particularly to the advance stage that UDOT’s innovative program is in, it was desirable for Utah DOT to “Monitor the Bridges on the Move.” Monitoring for the move begins just prior to it being lifted onto the Self Propelled Modular Transporters (SPMT) and continues until the bridge is moved and placed onto the abutments in the final position. This presentation will explain the objectives of the monitoring systems and the sensors used to monitor the strains/stresses and deformation during the move.

Bio
Dr. Imbsen has been a pioneer in developing, implementing, teaching, and applying seismic design principles to bridges since the San Fernando earthquake in 1971. He was the co-recipient of the AASTHO Dr. L.I. Hewes Award for “Outstanding Contribution to Transportation Development” for the development of the first comprehensive seismic design specification for bridges. This Interim Specification developed by Dr. Imbsen was adopted by AASHTO in 1976 and remained in effect for fifteen years, until the ATC-6 Seismic Design Guideline for Bridges (1986) was officially adopted as an Interim Specification in 1991. Dr. Imbsen was a key participant in both the development of the first Caltrans seismic design criteria in 1973 and the ATC-6 Guideline as a panel member and sub consultant. He also participated in the recent ATC-32 project to review and update the Caltrans Seismic Design Criteria to incorporate the latest technology and the lessons learned from the Loma Prieta (1989), Northridge (1994) and Kobe (1995) earthquakes. He also developed the recently adopted AASHTO LRFD Guide Specifications for Seismic Design of Bridges.