



SOUTHERN PLAINS
TRANSPORTATION CENTER



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Thursday, July 8, 2:00 – 3:15 p.m. (CDT)

Hosted via Zoom; **1 PDH Provided**

Register at <https://www.eventbrite.com/e/structural-monitoring-of-pc-beams-in-the-sh-4-bridge-over-n-canadian-r-tickets-160104283221>

Structural Monitoring of PC Beams in the SH 4 Bridge over N. Canadian River and Recommendations for Improving Designs

The new SH 4 bridge over the North Canadian River features fifteen 100 ft. spans, each supported by four Type IV PC girders. Two of the 60 PC Bridge Beams were instrumented to measure concrete and steel strains, stresses and temperatures. Each PC bridge beam carries its own battery-powered data acquisition (DAQ) system which, in turn, is powered by solar panels. Data is transmitted remotely in real-time via cell phone technology and is available for download, review and analysis 24/7/365. Instrumentation and monitoring of data have been continuous since the initial fabrication of the PC beams in April 2020. Acquisition of data has continued without interruption from beam fabrication, through transportation, erection, bridge construction and Life In-Service. Monitoring has continued into the current fiscal year, and can be continued indefinitely as needed through the life of the bridge. Some of the collected data will be presented in this webinar. The instrumentation and data systems are robust and demonstrate that the capability to instrument PC Bridge Beams, and to remotely and continuously monitor performance in real-time. Analyses of these data in real-time provide valuable information related to performance. Recommendations for improving designs of PC bridges will also be discussed in this webinar.

Bruce W. Russell is an award-winning engineer, educator, researcher, and author. He has served the State of Oklahoma as a faculty member at both OU (1992 – 2001) and OSU (2002 – Present). His designs for PC Bridge Beams, 1st implemented on the Rollercoaster and Pine Bridges on I-35 and the SH 99 Bridge over the Deep Fork became the model for PC Bridge designs in Oklahoma from 1997 to present. Currently, he is serving his third term as a voting member of ACI 318P, Building Code Sub-committee for Prestressed Concrete (2019-2025). At PCI, Dr. Russell currently serves as a voting member of the PCI Committee on Prestressed Concrete Bridges, which meets bi-annually with AASHTO T-10. In April 2015, he was named the Founding Director of the Bert Cooper Engineering Laboratory. His research publications have won the 1993 Martin P. Korn Award from the *PCI Journal*, the 1994 T.Y. Lin Award from ASCE, and the George Nasser Award from PCI in 2006.