RT&S
Thursday, May 11, 2017

The presenters, left to right:
Yongchao Yang
(Los Alamos National Laboratory),
Fernando Moreu
(The University of New Mexico),
Duane Otter
(Transportation Technology Center, Inc.),
Mustafa Gul
(University of Alberta) and
Henry Yoon
(Michigan Technological University).

ASCE Structures Congress tackles health, monitoring of rail infrastructure

Written by Dr. Fernando Moreu, Ph.D., PE and assistant professor at the department of civil engineering at The University of New Mexico

Experts in both structural health monitoring and railroad infrastructure management took part in a first-ever technical session, "Structural Health and Performance Monitoring of Railroad Infrastructure," at the 2017 Structures Congress.

The event was organized by the American Society of Civil Engineering (ASCE) and the Structural Engineering Institute (SEI) and took place April 6-8 in Denver, Colo.

Speakers covered the most recent advances in sensing and remote measurements for rail infrastructure and current and future needs for the industry. This unique combination of theory and application attracted a group of more than 50 structural engineers on a Saturday morning. The success in attendance and the interaction between speakers and attendants stresses the interest in the combination of the topics of sensing and railroad infrastructure. Speakers and participants of this session would like to continue offering this technical session for the structures congress in Fort Worth, Texas, in April 2018.

During the 2016 Structures Congress in Phoenix, Ariz., experts in performance of structures discussed and identified the need for a special technical session that focuses on performance of railroad infrastructure. For the 2017 Congress, two technical committees of SEI identified and sponsored the session: "Methods of Monitoring Structural Performance" and "Structural Identification of Constructed Systems." Fernando Moreu, Ph.D., PE and assistant professor at the department of civil engineering at The University of New Mexico organized and chaired the special session.

Dr. Moreu opened the session presenting the paper entitled "Real-time Displacements of Railroad Bridges Under Train Crossing Events Using Non-contact Reference-free Vibrometers." Yongchao Yang, Ph.D., presented his research conducted at Los Alamos National Laboratory entitled "Full-field Structural Dynamics by Video Motion Manipulations." Dr. Yang was honored the previous day at the congress as the 2017 ASCE winner of The Raymond C. Reese Research Prize, which recognizes outstanding contributions to the application of structural engineering research. The third presenter was Mustafa Gul, Ph.D., assistant professor in the department of civil and environmental engineering at the University of Alberta, presenting "Estimation of Track Modulus Using Rolling Deflection Measurements." Henry (Hyungchul) Yoon, Ph.D., assistant professor in the department of civil and environmental engineering at Michigan Technological University presented "Measuring Displacement of Railroad Bridges using UAVs."

The closing talk for the day was "A Railroad Perspective on Bridge Measurement and Monitoring Systems," which it was given by Duane Otter, Ph.D., PE, principal engineer of corporate research at Transportation Technology Center, Inc. (TTCI), a wholly owned subsidiary of the Association of American Railroads. Dr. Otter acknowledged the different advances shared in the session and at the congress and described the interest of new technologies and applications from the perspective of the railroad owner. The speakers and attendants of this session exchanged questions and comments during the session. After acknowledging the experts for their participation and presentations, attendants and speakers exchanged their contact information to continue the technical discussions on railroad infrastructure performance after the congress. The group quickly moved to the main ballroom where the structures congress closing lunch event was being held.

The next Structure Congress will be held April 19-21, 2018, in Fort Worth, Texas.