UNIVERSITY of HOUSTON

CULLEN COLLEGE of ENGINEERING

Department of Civil & Environmental Engineering

CIVE 6111 Graduate Seminar Series

Yihui Zhou, Ph.D.
Postdoctoral Research Fellow
Civil and Environmental Engineering
University of Houston

Multi-Hazard Assessment of Dry Casks for Interim Storage of Spent Nuclear Fuel

Monday, October 27, 2014
11:00 am – 11:30 am
Room: D3 W205

Abstract

In the absence of a long-term nationwide storage facility, the number of dry cask storage systems will increase dramatically in the nuclear industry in the near future. A comprehensive study is warranted to better understand the performance of dry cask storage systems under multiple hazards, in particular, when the systems are aged for 40, 60, or even hundreds of years and subjected to extreme events such as earthquakes. This presentation summarizes an ongoing research project that aims at developing a probabilistic multi-hazard assessment framework for dry cask storage systems through experimental and analytical research on aging and seismic effects.

About the speaker:

Yihui Zhou is a Postdoctoral Research Fellow in the University of Houston. She received a B.S. in Civil Engineering from China and the M.S. and Ph.D. in Structural Engineering from the State University of New York at Buffalo. Dr. Zhou was a Post-Doctoral Research Scientist in the University at Buffalo from 2011 to 2013. She also served as a Structural Engineer in the Structural Engineering and Earthquake Simulation Laboratory (SEESL) in Buffalo. She has been active in the area of dynamic finite element simulation in earthquake engineering, high performance steel and concrete materials, segmental bridge system and multi-hazard assessment. Dr. Zhou joined University of Houston in 2013 and her current research involves the multi-hazard assessment of dry casks for interim storage of spent nuclear fuel.

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Sinjaya Tan
PhD Candidate
Civil and Environmental Engineering
University of Houston

Structural Behavior of Thin Prestressed Slab Beams in Bridges

Monday, October 27, 2014
10:30 am - 11:00 am
Room: D3 W205

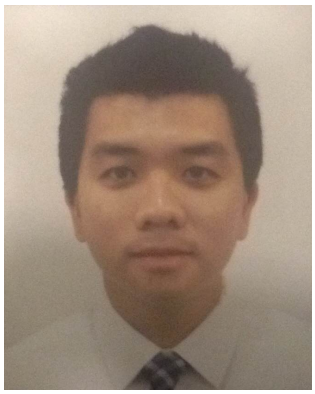
Abstract

In recent years, the needs to rehabilitate or replace many short span old bridges in the most economical way gave rise to the idea of designing a wide-and-shallow beam, so called Thin Prestressed Slab Beams (TPSBs). TPSBs are very cost-effective because of: (1) simple formwork, (2) simple reinforcement detailing, (3) easy for quality control, and (4) overall good performance since their behavior are more like slabs (governed by flexure) rather than beams (governed by flexure/shear). In 2003, the Texas Department of Transportation (TxDOT) officially introduced TPSBs with 305 mm (12 in.) and 381 mm (15 in.) in height, 1.22 m (4 ft.) and 1.52 m (5 ft.) in width, and up to 12.2 m (40 ft.) in length. The shear reinforcement design in TPSB is guided by the AASHTO LRFD Specification. However, no tests on such TPSBs have been performed in the past.

The research has four main objectives: (1) to characterize the behavior of TPSBs and the failure modes; (2) to evaluate the effectiveness of stirrups; (3) to check applicability of the shear design provisions in AASHTO LRFD; and (4) to provide design recommendation for TPSBs.

The test results of full-scale TPSBs showed that the failure mode of TPSBs was governed by either non-ductile anchorage bond or flexure failure.

About the speaker:



Sinjaya Tan is a Ph.D. Candidate working under the supervision of Prof. Hsu and co-supervision of Prof. Mo and Prof. Belarbi. Sinjaya obtained his M.S. from National Taiwan University, Taiwan, and his B.Eng. from Institut Teknologi Bandung, Indonesia. Sinjaya has 5+ years of experience in performing the full-scale experimental work. He was awarded the 2013 ASCE Centennial Best Student Paper with the title “Anchorage Bond Behavior of Thin Prestressed Slab Beams”. His primary research interests include: the behavior and design of Reinforced/Prestressed Concrete, Composite Members, Structural Mechanics, and Structural Dynamics.