



MISSOURI  
**S&T**

# CENTER FOR TRANSPORTATION INFRASTRUCTURE AND SAFETY

## **Sixth National Seismic Conference on Bridges and Highways**

**Charleston, South Carolina  
July 28-30, 2008**

by

Genda Chen



**NUTC  
ETT212**

**A National University Transportation Center  
at Missouri University of Science & Technology**

## ***Disclaimer***

The contents of this report reflect the views of the author(s), who are responsible for the facts and the accuracy of information presented herein. This document is disseminated under the sponsorship of the Department of Transportation, University Transportation Centers Program and the Center for Transportation Infrastructure and Safety NUTC program at the Missouri University of Science & Technology, in the interest of information exchange. The U.S. Government and Center for Transportation Infrastructure and Safety assumes no liability for the contents or use thereof.

### Technical Report Documentation Page

1. Report No.  NUTC ETT212	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Sixth National Seismic Conference on Bridges and Highways Charleston, SC, July 28-30,2008	5. Report Date  August 2008		6. Performing Organization Code
	8. Performing Organization Report No.  00019584		
7. Author/s  Genda Chen, Ph.D., P.E.	9. Performing Organization Name and Address  Center for Transportation Infrastructure and Safety/NUTC program Missouri University of Science & Technology 220 Engineering Research Lab Rolla, MO 65409		
12. Sponsoring Organization Name and Address  U.S. Department of Transportation Research and Innovative Technology Administration 1200 New Jersey Avenue, SE Washington, DC 20590		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No.  DTRT06-G-0014	
12. Sponsoring Organization Name and Address  U.S. Department of Transportation Research and Innovative Technology Administration 1200 New Jersey Avenue, SE Washington, DC 20590		13. Type of Report and Period Covered  Final	
		14. Sponsoring Agency Code	
15. Supplementary Notes			
16. Abstract The sixth National Seismic Conference on Bridges and Highways was held on July 28-30, 2008, in Charleston, South Carolina (www.scdot.org/events/6NSC). The conference was jointly organized by Federal Highway Administration (FHWA), Transportation Research Board (TRB), and MCEER. It was hosted by South Carolina Department of Transportation (SCDOT). The conference attracted over 300 bridge and highway engineers as well as bridge engineering researchers from 17 countries. Most state Departments of Transportation in the U.S., particularly AASHTO T3 states, participated in this biennial national conference.			
17. Key Words  Bridge, structures, seismic design	18. Distribution Statement  No restrictions. This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161.		
19. Security Classification (of this report)  unclassified	20. Security Classification (of this page)  unclassified	21. No. Of Pages  5	22. Price



**Sixth National Seismic Conference on Bridges and Highways  
Charleston, South Carolina  
July 28-30, 2008**

**With partial support from the  
Center for Transportation Infrastructure and Safety,  
Missouri University of Science and Technology (Missouri S&T)**

A Report Prepared and Submitted by Genda Chen

August 18, 2008

## **OVERVIEW**

The sixth National Seismic Conference on Bridges and Highways was held on July 28-30, 2008, in Charleston, South Carolina ([www.scdot.org/events/6NSC](http://www.scdot.org/events/6NSC)). The conference was jointly organized by Federal Highway Administration (FHWA), Transportation Research Board (TRB), and MCEER. It was hosted by South Carolina Department of Transportation (SCDOT). The conference attracted over 300 bridge and highway engineers as well as bridge engineering researchers from 17 countries. Most state Departments of Transportation in the U.S., particularly AASHTO T3 states, participated in this biennial national conference.

The conference was promoted and assisted by a number of professional organizations. They include:

- American Association of State Highway and Transportation Officials (AASHTO)
- American Society of Civil Engineers (ASCE)
- Critical Infrastructure ASCE
- Geo-Institute ASCE
- Earthquake Engineering Research Institute (EERI)
- Pacific Earthquake Engineering Research Center (PEER)
- Portland Cement Association (PCA)
- South Carolina Emergency Management Division
- Structural Engineers Association of South Carolina

The conference was chaired by Dr. Phillip W. Yen, Seismic Program Manager at FHWA, and coordinated by Jerome O'Connor from MCEER, University at Buffalo. The overall program and organization of the conference have been directed by the Steering Committee. The Technical Committee was chaired by Michael Keever from CALTRANS and Lucero Mesa from SCDOT. Dr. Genda Chen at Missouri S&T was one of the 16 steering committee members. Dr. Bryan Hartnagel from Missouri Department of Transportation was among the 23 technical committee members.

## **SPONSORSHIP**

The national conference was sponsored by 13 organizations in four categories. The highest platinum sponsors include the Center for Transportation Infrastructure and Safety (CTIS) at Missouri S&T, and Parsons Brinckerhoff. The gold sponsors include S&ME, Inc., T.Y.LIN International. The silver sponsors include CH2MHill, Florence & Hutcheson, Inc., HDR Engineering, the LPA Group, STV, Weidlinger Associates, Inc., and Wilbur Smith Associates. In addition, Bridge Design & Engineering Magazine, and Taylor & Francis made it possible for two special events at the conference.

## **TECHNICAL PROGRAM**

The conference has a total of 18 sessions with two concurrent tracks for regular technical programs and one plenary session each morning. Approximately 70 papers were select from over 100 received abstracts. Both structures and geotechnical aspects of seismic design and analysis in bridges and highways were addressed.

An integral part of the conference program was the bridge design competition for college students. Undergraduate students from six universities in the U.S. submitted their entry papers and projects for the design competition. Four of them participated in the actual competition during the conference. It is noteworthy to mention that the University of Missouri-Columbia team won the competition at the national conference.

Each student team designed a bridge with plastic ANEX components according to the design requirements and competition rules established by the conference subtask committee. Their design was evaluated based on the bridge static displacement, peak acceleration under earthquake excitations, the materials used, and the time required to build the bridge. The first place of the competition was awarded with \$500 in addition to registration fee waive.

A technical boat tour was organized by the conference. It was a guided tour of Charleston harbor and the Ravenel Bridge over the Cooper River. The bridge is a cable-stayed structure designed by a design-build team led by Parsons Brinckerhoff. The cable-stayed crossing of the Cooper River was designed to accommodate a 2,500-year seismic event and to withstand ship collisions and hurricane-force winds.

## PHOTO GALLERY FROM THE CONFERENCE



Conference Poster



Technical Presentation



Attendees Attention



Idea Exchange in Exhibition Hall



CTIS Sponsorship Acknowledged throughout the Conference



Missouri S&T Participation at Poster Session



Present and Future Engineers



Student Competition



Conference Attendees on Boat Cruise



Familiar Faces from Missouri



Charleston's Arthur Ravenel Bridge



Look up the Cable-stayed Bridge