Friday, March 12, 2010

8.0 Professional Development Hours

7:00 a.m.–8:00 a.m. **REGISTRATION AND CONTINENTAL BREAKFAST**

8:00 a.m.–8:30 a.m. **ASCE 7**—*Chia-Ming Uang*

8:30 a.m.–10:00 a.m. **Underlying Concepts in Seismic Design Codes: Application to Steel Building Structures**

Seismic loadings and materials design codes have evolved significantly over the past few decades; but the underlying concept remains more or less the same. This presentation will demystify these ever-sophisticated codes from a historical perspective. The 2010 AISC Seismic Provisions will be used to demonstrate how these principles are implemented in the code.

Chia-Ming Uang is a Professor of Structural Engineering at the University of California, San Diego. His research area is in seismic design methodology, large-scale testing, seismic analysis and design of steel structures.

10:00 a.m.–10:15 a.m. **BREAK**

10:15 a.m.–11:45 a.m. **Design Issues and Evaluation Methods for Masonry Structures**

This talk will cover basic concepts on the seismic design of reinforced masonry structures using the strength design method, including issues and pitfalls in current code provisions. The expected performance of reinforced masonry wall systems designed according to current codes will be discussed. Analytical methods for performance assessment of different masonry systems will be presented.

Benson Shing is a Professor of Structural Engineering at the University of California, San Diego. His current masonry research includes the seismic performance of reinforced and unreinforced masonry structures and the development of analytical tools for performance assessment.

11:45 a.m.–12:30 p.m. **Q & A with Benson Shing and Chia Ming Uang**

12:30 p.m.–1:30 p.m. **LUNCH**

1:30 p.m.–2:00 p.m. **Discussions en route to UCSD Laboratory**

2:00 p.m.–5:00 p.m. **Tours of UCSD Laboratory and UCSD Shake Table Facility**

Attendees will have the opportunity to visit the Charles Pankow Structures Laboratory and the Robert and Natalie Englekirk Structural Engineering Center at the University of California San Diego. Large-scale dynamic and static tests are often performed in these two laboratories. The Englekirk laboratory hosts the NEES Large Outdoor High-Performance Shake Table, a blast simulator and two soil pits for performing soil-foundation studies.

6:30 p.m.–7:30 p.m. **RECEPTION**

Saturday, March 13, 2009

7.5 Professional Development Hours

7:00 a.m.–8:00 a.m. **REGISTRATION AND CONTINENTAL BREAKFAST**

8:00 a.m.–9:30 a.m. **System Performance Factors for Concrete Structures from a Displacement-Based Perspective**

This presentation will compare the design lateral forces obtained using the conventional force-based methods as prescribed in ASCE 7-05 with those obtained from a displacement-based method. The seminar will also examine the seismic response of a full-scale 7-story, load-bearing building slice tested on the NEES-UCSD shake table.

José I. Restrepo is a Professor in Structural Engineering at the University of California, San Diego, and Director of Operations of the Charles Lee Powell Structural Research Laboratories. He also holds an adjunct faculty position at the International School of the Reduction of Seismic Risk at the University of Pavia, Italy.

9:30 a.m.–9:45 a.m. **BREAK**

9:45 a.m.–11:00 a.m. **Design Provisions for Wood Construction—A Comparison of Past and Present**

A comparison of wood design provisions, past and present, will highlight differences and similarities, as well as expose underlying considerations embedded in today's wood design provisions. Wood design issues covered include design of wood structural panel shear walls, connection design, member design and implementation of RFD for wood.

Phil Line works extensively with wood industry technical committees on the development of wood design standards, including the National Design Specification® for Wood Construction, and serves on the BSSC Provisions Update Committee, ASCE 7 Seismic Subcommittee and ASTM D07 Committee on Wood.

11:00 a.m.–12:30 p.m. **Fragility of Nonstructural Components and Systems**

Minimizing seismic-induced damage to nonstructural components and systems (NCSs) continues to be a difficult task for earthquake professionals. Limited experimental data and the extensive number of NCSs used in building systems result in an inability to generalize their behavior, prohibiting use of blanket design specifications. This presentation will include discussion of fragility-based approaches and provide design examples specific to the most critical NCSs in typical building systems.

Tara Hutchinson is an Associate Professor in the Department of Structural Engineering at the University of California, San Diego. Her research is in the seismic performance assessment of structures, particularly, soil-structure interaction, seismic response of concrete and timber structures, and response of nonstructural components.

12:30 p.m.–1:30 p.m. **LUNCH**

1:30 p.m.–2:45 p.m. **Modeling Soil-Foundation-Structure Interaction in a Design Environment—Easy, Difficult or Impossible?**

This lecture will discuss the various aspects of soil-foundation-structure-interaction (SFSI), including when SFSI effects may be significant and when these effects may be ignored. Various modeling techniques for incorporating SFSI in seismic analyses are presented and compared. The difficulties in modeling SFSI in a design office environment are discussed. Various simplifications that may render SFSI application in a design environment feasible are presented.

Farzad Naeim, current President of Earthquake Engineering Research Institute (EERI), and Vice President of John A. Martin & Associates, Inc, Los Angeles, CA, serves as the editor of *The Seismic Design Handbook,* and is the coauthor of *Design of Seismic Isolated Structures*. He has developed more than 45 different software systems for earthquake engineering design and education.

2:45 p.m.–3:00 p.m. **BREAK**

3:00 p.m.–4:30 p.m. **Development of Next-Generation Performance-Based Seismic Design Criteria**

Since the publication of the ASCE 31 and 41 standards, the performance-based design process that underlies these standards has been widely used. As popular as these first-generation procedures have become, they are of unknown reliability, present difficulties with regard to definition of performance intent, and may create significant liability for the design professional using them. Since 2001, FEMA has been sponsoring the ATC-58 project to develop Next-generation Performance-based Design Criteria. Intended to eventually replace the technology contained in the present ASCE standards, this new methodology permits engineers to characterize performance directly in terms of probable repair costs, occupancy interruption time and casualties associated with building response to earthquakes. Slated for completion in 2011, the new procedures are anticipated to revolutionize the practice of performance-based earthquake engineering.

Ronald O. Hamburger, Senior Principal with Simpson Gumpertz & Heger Inc. in San Francisco, CA, is an international expert on performance-based engineering for extreme events. He was instrumental in the development of the ASCE 41 Standard for Seismic Rehabilitation, chairs the AISC Connection Prequalification Committee and serves on the ASCE-7 Main Committee, as well as the Seismic and Load Combinations Task Committees. As chair of the ASCE-7 General Task Committee, he led the development of performance-based design criteria for adoption by the 2010 edition of the ASCE 7 standard, and, since 2001, he has served as Project Director for the ATC-59 project to develop Next-Generation Performance-based Seismic Design Criteria under funding from FEMA.

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