

NCSEA 2010 Winter Institute – The Marriott Coronado Island Resort

March 12 & 13, 2010

Coronado, California

A two-day seminar featuring *Seismic Design: Explaining the “Y” Factor From One Generation to the Next*

Included in the program Friday is a tour of the Charles Pankow Structures Laboratory and the Robert and Natalie Englekirk Structural Engineering Center at the University of California San Diego.

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, Ph.D., 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. Professor Uang is a recipient of two awards from the American Society of Civil Engineers: the Raymond C. Reese Research Prize in 2001 and the Moisseiff Award in 2004.

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, including older unreinforced masonry structures, will be presented.



Benson Shing, Ph.D., is a Professor of Structural Engineering at the University of California, San Diego. He has been engaged in masonry research for a number of years, including large-scale testing and nonlinear analysis of masonry structures. His current research areas include 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 enroute 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 most recently commissioned 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*

One feature of displacement-based methods of analysis is that they do not rely on R-factors to derive the design lateral forces. 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. The building slice that was designed for lateral forces was computed using a displacement-based method and was subjected to gradually increasing intensity input ground motions, including the strong record obtained at Sylmar Hospital during the 1994 Northridge Earthquake.



José I. Restrepo, Ph.D., is a Professor of Structural Engineering at the University of California, San Diego, and Director of Operations of the Charles Lee Powell Structural Research Laboratories, the largest Structures Laboratory complex in the United States and the world. Dr. Restrepo has received a number of awards, including the 2006 Chester Paul Siess Award from ACI for Excellence in Structural Research, the 2006 Charles C. Zollman Award from the Precast/Prestressed Concrete Institute for the best technical paper in the PCI Journal, and the 2008 James Cooper best-paper award at the National Seismic Conference on Bridges and Highways.

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

Early thinking on how to safely design with wood permeates provisions of today's wood design standards for structural design. 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 LRFD for wood.



Phil Line, P.E., works extensively with wood industry technical committees on the development of wood design standards, including the National Design Specification® (NDS®) for Wood Construction. He also 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. At present, continued development and population of data for use in fragility-type approaches provides designers the most fruitful opportunity to design against seismic loading. In this presentation, fragility-based approaches will be discussed and design examples will be provided, specific to the most critical NCSs in typical building systems.



Tara Hutchinson, Ph.D., P.E., is an Associate Professor of Structural Engineering at the University of California, San Diego. Her research interests include both experimental and analytical studies, primarily in earthquake engineering, and emphasizing 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, Ph.D., J.D., is the current President of Earthquake Engineering Research Institute (EERI), Vice President and General Counsel for John A. Martin & Associates, Inc. in Los Angeles and a licensed patent attorney. Dr. Naeim serves as the editor of *The Seismic Design Handbook*, now in its second edition, and is the coauthor of *Design of Seismic Isolated Structures*. He has published more than 120 papers on various aspects of earthquake engineering and has developed more than 45 different software systems for earthquake engineering design and education.

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, not only as the basis for seismic evaluation and upgrade of existing buildings, but also as the seismic design basis for some of the tallest buildings constructed in the Western U.S. in the past 5 years. 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, the Federal Emergency Management Agency (FEMA) has been sponsoring the Applied Technology Council's 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, S.E., SECB, is a Senior Principal with Simpson Gumpertz & Heger Inc. in San Francisco where he manages the firm's western regional structural engineering operations. A Past-President of NCSEA, current chair of its Code Advisory Committee and present chair of the Structural Engineering Certification Board, Mr. Hamburger 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 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. Since 2001 he has served as Project Director for the Applied Technology Council's ATC-58 project to develop Next-Generation Performance-based Seismic Design Criteria under funding from FEMA.

Reservations:

The Marriott Coronado Island Resort
1-800-228-9290 or 1-619-435-3000

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Register online at: www.ncsea.com
Registration fee: \$350 per day, \$595 for both days