



*American Society of Civil Engineers*

## North Jersey Branch

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### The Geotechnical Group Presents

#### Seismic Design Short Course

- Instructor:** James R. Martin, II, Ph.D. (See Biographical Sketch)
- Date:** Thursday, March 26, 2009
- Time:** 8:00 AM to 4:30 PM
- Location:** Pantagis Renaissance (Snuffy's)  
250 Park Avenue (Off Route 22 East)  
Scotch Plains, NJ 07076
- Cost:** \$150 per person
- Register:** RSVP by February 27, 2009. Send Name, phone number, and e-mail address to M. Golam Kabir, [gkabir@converseconsultants.com](mailto:gkabir@converseconsultants.com), (973) 428-0934 x 137 or Register online at <http://branches.asce.org/northjersey> and click on the RSVP button included on the website.
- PDH Credit:** Six (6) PDH's will be presented upon course completion.

#### COURSE SUMMARY

**Although more geotechnical in focus, this course will also cover important structural engineering concepts, and is designed for practicing civil engineers with either structural or geotechnical engineering backgrounds.**

The short course will provide a comprehensive discussion of earthquake engineering procedures and methodologies, with a focus on geotechnical seismic design issues specific to the central and eastern United States (CEUS). The course will begin with a review of fundamental earthquake engineering and seismological concepts, such as fault mechanisms, attenuation of seismic waves, and local site effects. Coverage will include the basic concepts of probabilistic seismic hazard assessment and the development of the seismic hazard maps used for design. The discussion will cover recent studies that have led to increased seismic design requirements for the CEUS region.

Of particular importance, the course will cover IBC2006/ASCE-07 seismic design procedures and discuss unique geological and geotechnical conditions in the CEUS that require site-specific analysis. The tasks involved with site-specific analysis, such as generation of time histories and site response analysis, will be discussed. The course will also include a brief review of

liquefaction evaluation procedures and present new findings that suggest current procedures underestimate the seismic vulnerability of fine-grained soils, including silts and clays. The course will conclude with examples of site-specific seismic analyses in the CEUS performed as per the IBC2006 code. These examples will demonstrate the tasks required for site-specific seismic analysis, and importantly, illustrate the process involved with interpreting the results and using judgment to develop final design specifications. See attached Short Course Agenda.

### **BIOGRAPHICAL SKETCH**

**James R. Martin, II, Ph.D.** is Professor of Civil and Environmental Engineering and Director of the World Institute of Disaster Risk Management at Virginia Tech (DRM@VT) in Blacksburg, Virginia. He also serves as Associate Director of the Center for Extreme Load Effects on Structures (CELES). He has more than 18 years experience in professional earthquake engineering practice and research, and has taught undergraduate and graduate university courses at Virginia Tech since 1990. He serves as Instructor for the American Society of Civil Engineer's Continuing Education Program, and frequently presents short courses to other professional organizations and state and federal agencies, such as USACE and FERC. Dr. Martin also served as Instructor in the Advanced Earthquake Protective Design course at FEMA's Multi-Hazard Building Design Institute in Emmitsburg, MD, and developed university-level courses on earthquake hazards for FEMA's Higher Education Project.

Dr. Martin specializes in the area of geotechnical earthquake and foundation engineering, including site response analysis and soil effects on ground motions, liquefaction, soil and site improvement, probabilistic seismic hazard assessment, risk management, and advanced numerical modeling. He is active in earthquake hazard assessment studies in the eastern and central US, and has been closely involved with the transfer of seismic engineering technology to the region and development of building codes. Martin is an active professional civil engineering consultant, and has worked on more than 100 major civil projects for more than 50 different private and public organizations.

Dr. Martin has received numerous national, state, and university recognitions for teaching, research, and professional work, including the American Society of Civil Engineer's Norman Medal. He received his B.S. degree from The Citadel, and M.S. and Ph.D. degrees from Virginia Tech.

### **TENTATIVE SCHEDULE**

**March 26, 2009**

**Scotch Plains, New Jersey**

8:00 Registration & Breakfast

8:30 Introduction

8:45 Earthquake Basics, Mechanics & Effects

10:15 Break

10:30 Seismic Hazard Analysis and IBC 2006

12:00 Lunch

1:00 Seismic Hazard Analysis and IBC2006

2:15 Ground Motion and Site Response w/ IBC 2006 examples

3:30 Break

3:45 Liquefaction – overview and review of latest developments

4:30 End Session