

**Annual Convention of
the Structural Engineers
Association of California 2009**

(SEAOC 2009)

**San Diego, California, USA
23-26 September 2009**

ISBN: 978-1-62276-018-3

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2009) by the Structural Engineers Association of California
All rights reserved.

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact the Structural Engineers Association of California
at the address below.

Structural Engineers Association of California
555 Capitol Mall, Suite 755
Sacramento, California 95814

Phone: (916) 447-1198

Fax: (916) 442-0812

info@seaoc.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com



2009 SEAOC CONVENTION TECHNICAL PRESENTATIONS

PREFACE

The following are unedited papers presented by the authors at the 2009 SEAOC Convention. These papers reflect the opinions, positions, and commentary of the authors and do not represent a consensus viewpoint of the Structural Engineers Association of California. The material presented in this publication should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability, and applicability by qualified professionals. This document is not intended, nor should it establish or define a “standard of care” or a “standard of practice”. Users of information from this publication assume all liability from such use.

- 1 Retrofit of the Los Angeles World Airport Building by Mass Dampers**
H. Kit Miyamoto, Amir S.J. Gilani, Jaime Garza, Scott Markle, and Stephen A. Mahin

- 19 Advance Performance Based Analysis for Seismic Retrofit of a Historic High Rise Building**
Anindya Dutta, Ronald O. Hamburger, Ahmet Citipitioglu, and Stephen T. Bono

- 35 Resilience Criteria for Seismic Evaluation of Existing Buildings:**
A Proposal to Supplement ASCE 31 for Intermediate Performance Objectives
David Bonowitz

- 45 SEAOC's Earthquake Performance Evaluation Program: An Update**
Fred Turner, Anthony Court, David McCormick, and Joseph Valancius

- 63 Stanford University Peterson Hall Renovation: A Case Study of**
Engineers' Pro-Active Participation in a Seismic Retrofit Project
Raymond Pugliesi and Nick Alexander

- 69 Investigation of the Seismic Response of Slender Planar Concrete Walls**
Anna Birely, Joshua Pugh, Laura N. Lowes, Dawn E. Lehman, Daniel Kuchma, Chris Hart, and Ken Marley

- 81 Shake Table Testing of a Seven-Story Mixed-Use Condominium at Japan's E-Defense**
John W. van de Lindt, Steven E. Pryor, and Shiling Pei

- 91 Higher-Mode Effects in Performance-Based Seismic Design of High-Rise Buildings**
Gabriele Guerrini and Jose' Restrepo

- 111 Performance Based Plastic Design (PBSD) Method for Earthquake-Resistant Structures:**
An Overview
Subhash C. Goel, Shih-Ho Chao, Wen-Cheng Liao, and Mohammad Reza Bayat

- 125 Comparison of Seismic Demands for a Three-Story SCBF System**
Considering Fiber and Finite Element Models
Stephen Mahin, Chui-Hsin Chen, and Yuli Huang



- 143 United States Courthouse:** Integration of Architecture, Seismic Design, Blast and Progressive Collapse
Diana E. Nishi, Paul K. Kagoo, and Thomas A. Sabol
- 161 Optimization Tools for the Design of Structures**
Mark Sarkisian, Eric Long, Chung-Soo Doo, and David Shook
- 177 21st Century High Rise Structures in Dubai**
Peyman Mohajer, Farhad H Shad, and S.K.Ghosh
- 195 Long-Span Bridges and the Art of American Bridge Engineering**
Roumen V. Mladjov
- This paper is not published* **MGM City Center – A City Within a City:** Peer Review Lessons Learned
Saiful Islam, Sampson Huang, Matthew Skokan, and Metin Oguzmert
- 213 SEAOC Blue Book:** Seismic Design Recommendations 1959 to 2008
John Diebold, Kevin Moore, and Gary Mochizuki
- 219 Report on Laboratory Testing of Anchor Bolts Connecting Wood Sill Plates to Concrete with Minimum Edge Distance**
W. Andrew Fennell, Gary S. Mochizuki, Kevin S. Moore, Thomas D. Van Dorpe, Philip Line and Thomas A. Voss
- 225 Do Complex Codes Produce Safe Designs?**
Brent Nuttall
- 235 The Quality Assurance Plan of AISC 341**
SEAONC Construction Quality Assurance Committee
- 245 NEHRP Seismic Design Technical Brief No. 2 – Seismic Design of Steel Special Moment Frames:** A Guide for Practicing Engineers
Scott M. Adan, Ronald O. Hamburger, Helmut Krawinkler, and James O. Malley
- 253 Viscous Dampers Used to Renovate Twin 17-Story State Buildings**
Arthur E. Ross & Kenneth A. Luttrell
- 275 Reducing the Risks of Nonstructural Earthquake Damage:**
The Structural Engineer’s Role and Responsibility
Maryann Phipps, Cynthia Perry, and Ayse Hortacsu
- 285 The Structural Engineer’s Responsibility to Provide Constructible and Inspectable Details**
Ronald LaPlante



- 295 The Sustainable Practice of Reusing Buildings**
David Cocke and Ben Hays
- 303 Wood – A Natural Choice for a Structural Sustainable Building Material**
Michelle Kam-Biron and Lisa Podesto
- 329 Engineering for Most of the World: Tips on Working in Lesser Developed Countries**
Eric Lehmkuhl
- 339 A New Method for Collector Design in Stiff Diaphragms**
Benjamin Mohr and Stephen K. Harris
- 345 Higher Mode Effects on the Seismic Response of Tall Cantilever Wall Buildings Subjected to Near Fault Ground Motions**
Marios Panagiotou, Vladimir Calugaru, and Tea Visnjic
- 359 “First in California” 55 Story Tower, Using Un-Stiffened Thin Steel Plates**
Nabih Youssef, Ryan Wilkerson, Kurt Fischer and Daniel Tunick
- 379 Performance-Based Design of Tall Buildings: A Comparison of Recent Projects**
SEAONC Performance-Based Design of Tall Buildings Committee
- 393 Sensitivity Analysis of a Modeling Scheme for Masonry-Infilled RC Frames**
Andreas Stavridis and Benson Shing
- 409 Performance-Based Seismic Design of a Large Seismically Isolated Structure: Istanbul Sabiha Gökçen International Airport Terminal Building**
Atila Zekioglu, Huseyin Darama, and Baris Erkus
- 429 Modal-Pushover-Based Ground Motion Scaling Procedure for Nonlinear Response History Analysis of Structures**
Erol Kalkan and Anil K. Chopra
- 443 A Direct Analysis Method for Drift-Sensitive Steel Moment Frames**
John L. Harris III



2009 SEAOC CONVENTION TECHNICAL PRESENTATIONS

PREFACE

The following are unedited papers that the 2009 SEAOC Convention Technical Committee deemed deserving of inclusion in the Proceedings. These papers were not presented at the Convention due to logistical constraints. These papers reflect the opinions, positions, and commentary of the authors and do not represent a consensus viewpoint of the Structural Engineers Association of California. The material presented in this publication should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability, and applicability by qualified professionals. This document is not intended, nor should it establish or define a “standard of care” or a “standard of practice”. Users of information from this publication assume all liability from such use.

- 461 Parking Structure Overload Damage: Investigation and Repair**
Scott M. Adan and René W. Luft

- 467 Response of a Low Rise Steel Building to Air Blast**
Young Seo Hwang and James C. Anderson

- 475 B.I.M. Solving the Problems in Design-to-Construction Implementation That We Have Created?**
Richard L. Hess