

# SEAONC 2006 Fall Seminar

## STATE OF THE ART DESIGN OF TALL BUILDINGS

Dates: Wednesday, November 8th and 15th, 2006

Location: PG & E Auditorium  
245 Market Street, San Francisco

Registration: 5:15 p.m. - 6:00 p.m.

Seminar: 6:00 p.m. - 9:00 p.m.

Topics: **EVENING 1**  
Shankar Nair, Teng & Associates - Evolution of the Skyscraper  
Scott Neuman, KPFF - Code-Based Prescriptive Design Approaches for Wind & Seismic  
Neville Mathias, SOM - Performance-Based Design Approaches for Wind & Seismic

**EVENING 2**  
Chris Plue, Webcor Builders - Construction Techniques for Tall Buildings  
Ron Klemencic, MKA - Performance Based Designs: What We Have Learned  
Loring Wyllie, Degenkolb Engineers - The Peer Review Process for Tall Buildings

\*\*\*Beverages and sandwiches will be served during registration and cookies will be served during the break.\*\*\*



### DIRECTIONS TO THE PG&E AUDITORIUM

From the North  
(Golden Gate Bridge)

- Cross Golden Gate Bridge
- Exit into Lombard Street
- Turn right at Gough Street
- Turn left at California Street
- Turn right at Davis Street
- Go straight into Beale Street

From the South  
(Highway 101)

- Merge into Interstate 80
- Exit at 4th Street
- Go straight into Bryant Street
- Turn left at 2nd Street
- Turn right at Folsom Street
- Turn left at Main Street

From the East  
(Oakland Bay Bridge)

- Exit at Fremont Street
- Go one block north
- Turn right at Howard Street
- Turn left at Main Street

PG&E is on your left between Mission and Market Street

### REGISTRATION FORM

**IMPORTANT:** Registration will be confirmed via e-mail.

No cancellations after 12:00 noon, November 3, 2006.

\* Payment required by first evening of the seminar.

No shows are still responsible for full payment.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Phone \_\_\_\_\_

E-mail \_\_\_\_\_

Remit registration form with payment to:

SEAONC

575 Market Street, Suite 2125

San Francisco, CA 94105

Telephone: 415-974-5147, Fax: 415-764-4915

E-mail: office@seaonc.org

If paying by credit card please provide the following information:

(SEAONC accepts VISA, Mastercard & AMEX)

Credit Card #: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Request for Certificate of Completion

(Certificates will be provided if requested, and attendee must be present at both sessions.)

_____ SEAOC member	\$180	
_____ Non-member	\$300	
_____ Student (bring a copy of your student ID or class schedule to registration)	\$60	Total Enclosed:
_____ Late Registration (all registrations after November 3, 2006)	Add \$30	\$

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### Abstracts:

#### The Evolution of the Skyscraper

**Shankar Nair's** presentation will outline the history of the skyscraper — the invention of the elevator, which made skyscrapers usable; the invention of the metal-framed structure, which made them economical; the rapid increase in height from the 10-story Home Insurance Building in 1885 to the 102-story Empire State Building in 1931; the stagnation in height for many years even as structural materials and techniques improved rapidly; the present surge in super-tall buildings; and trends for the future. All of these developments will be explored with a particular emphasis on the fundamental engineering principles driving the evolution of these structures. Though presented primarily from a structural engineering perspective, the presentation should be accessible to anyone interested in tall buildings.

#### Performance-Based Design Approaches for Wind & Seismic

**Neville Mathias, SE,** will present rational design approaches for wind and seismic design of tall buildings. The approaches are based on actual building behavior when subjected to site-specific loading conditions. The designs incorporate advanced computational methods with the goal of minimizing required structural materials and increasing structural performance. Specific tall building design examples will be discussed including projects in the United States, China, and the Middle East.

#### Code-Based Prescriptive Design Approaches for Wind & Seismic

**Scott Neuman** will speak on the code-based approaches to the lateral design and analysis of high-rise towers and will focus on the code provisions his experience has shown to be the most important.

#### Construction Techniques for Tall Buildings

**Chris Plue** will speak on rapid construction cycles, comparing procedures used in San Francisco, and Manhattan. He will give an overview of construction means and methods (explaining what Webcor does differently from other general contractors), and provide his opinion on effective structural designs specifically related to slabs, shear walls, core walls, coupling beams, and columns. Chris will examine some common design/constructability issues and suggest ways to resolve them. Other topics that will be discussed include economical concrete strength and foundation issues.

#### Performance Based Design: What We Have Learned

**Ron Klemencic, using case studies** will discuss the challenges that structural engineers may encounter in designing innovative tall buildings under the constraints of peer and building official's perspective. Some of the topics he will touch on include drift limitations, shear demands, ground motion selection, diaphragms, foundations and detailing, and concrete core wall structures.

#### The Peer Review Process for Tall Buildings

**Loring Wyllie** will provide an overview of the Peer Review process required by the San Francisco Building Department. He will describe how the members are selected and how the process works. He will use a current San Francisco high rise project as an example and describe how alternative provisions are processed and how the peer review panel attempts to ensure equivalent safety to prescriptive code provisions. The talk will include examples of how the peer review panel influenced changes in the design and several issues were resolved.

#### About the Speakers:

**R. Shankar Nair** is a principal and senior vice president of Teng & Associates, Inc. in Chicago. His projects have won numerous awards, including 4 American Institute of Steel Construction "Prize Bridge" awards and 6 of the Structural Engineers Association of Illinois' annual "Most Innovative Structure" awards. Active as a researcher and leader of professional activities, he is the author of a wide range of technical papers on structural theory, analysis and design and is former Chairman (1997-2001) of the Council on Tall Buildings and Urban Habitat.

**Scott Neuman** graduated from UC Berkeley with both a BS and MS in structural engineering. He works in Seattle for KPFF Consulting Engineers and has been involved in the analysis and design/retrofit of numerous high rise towers.

**Neville Mathias** is an Associate Partner of Skidmore, Owings & Merrill LLP. He has worked extensively on the structural design of major buildings around the world. His current work includes the 1310-foot-tall Al Hamra Fidrour Tower in Kuwait and the 100-story Al Sharq Tower in Dubai. His recently completed St. Regis Hotel and Residences in San Francisco is the tallest reinforced concrete building in California.

**Chris Plue** is director of construction for Webcor Concrete, one of the country's leading concrete contractors. Webcor Concrete specializes in cast-in-place structures throughout California.

**Ron Klemencic** is President of Magnusson Klemencic Associates, Seattle, Washington. Ron's originality and innovation are reflected in such MKA projects as: the 73-story concrete Highcliff Apartments in Hong Kong, the first use of tuned sloshing liquid mass dampers to absorb wind acceleration; 111 South Wacker in Chicago, a 51-story office tower featuring the first elliptical-shaped cable net wall in the world; and the Grand Hyatt Elliott Hotel in Seattle, Washington, the first use of a ductile core wall structural system, increasing seismic safety beyond prescriptive building codes. Ron served Chairman of the Council on Tall Buildings and Urban Habitat from 2001 to 2006.

**Loring A. Wyllie Jr., NAE,** is an expert in structural engineering and senior principal of Degenkolb Engineers. His work has included seismic evaluations, analysis, and design of strengthening measures to improve seismic performance. He has performed seismic assessments and proposed strengthening solutions for several buildings within the DOE weapons complex and for civilian buildings, some of which have historical significance. Mr. Wyllie is a past president of the Earthquake Engineering Research Institute.