

APRIL 24-26, 2008



THE HYATT REGENCY VANCOUVER  
VANCOUVER, BRITISH COLUMBIA

Congress  
Structures 08

- Program to include:**
- **CASE Spring Risk Management Convocation**
  - **18th Analysis & Computation Specialty Conference**

# Crossing Borders

PRELIMINARY  
PROGRAM

**Earn up to 24 PDHs!**



Early Bird Deadline: FEBRUARY 28, 2008

## WEDNESDAY, APRIL 23, 2008

7:30 AM – 6:30 PM  
8:00 AM – 5:00 PM

### REGISTRATION HOURS

Pre-Congress Workshop – *Wood Engineering Challenges in the New Millennium: Critical Research Needs*

## THURSDAY, APRIL 24, 2008

7:30 AM – 6:30 PM  
7:30 AM – 11:30 AM  
8:00 AM – 11:30 AM

### REGISTRATION HOURS

Vendor Demos  
Pre-Congress Workshop – *Wood Engineering Challenges in the New Millennium: Critical Research Needs*

8:00 AM – 11:30 AM  
10:30 AM – 11:30 AM  
10:30 AM – 12:00 PM  
12:00 PM – 2:00 PM

Pre-Congress Technical Seminars  
Pre-Tour Presentations  
Diversity Workshop  
Opening Awards Luncheon, Plenary Session, and Business Meeting

2:15 PM – 3:45 PM  
2:15 PM – 3:45 PM  
2:30 PM – 5:30 PM  
3:45 PM – 4:00 PM  
4:00 PM – 5:30 PM  
6:00 PM – 7:30 PM  
7:30 PM – 10:00 PM

Concurrent Technical Sessions  
18th A&C Specialty Conference Plenary Session  
Technical Tours  
Refreshment Break  
Concurrent Technical Sessions  
Grand Opening Reception  
CASE Spring Risk Management Convocation Dinner with War Stories

## FRIDAY, APRIL 25, 2008

7:30 AM – 6:00 PM  
8:00 AM – 7:00 PM  
8:00 AM – 8:30 AM  
8:30 AM – 10:00 AM  
8:30 AM – 10:00 AM  
  
10:00 AM – 10:30 AM  
10:30 AM – 12:00 PM  
10:30 AM – 12:00 PM

### REGISTRATION HOURS

Exhibit Hall and Poster Session Displays  
Continental Breakfast  
Concurrent Technical Sessions  
CASE Spring Risk Management Convocation Plenary Session I

12:00 PM – 1:30 PM  
1:30 PM – 3:00 PM  
1:30 PM – 3:00 PM

Refreshment Break  
Concurrent Technical Sessions  
CASE Spring Risk Management Convocation Breakout Sessions

3:00 PM – 3:30 PM  
3:30 PM – 5:00 PM  
3:30 PM – 5:00 PM

Exhibit Hall Lunch  
Concurrent Technical Sessions  
CASE Spring Risk Management Convocation Breakout Sessions  
Refreshment Break  
Concurrent Technical Sessions  
CASE Spring Risk Management Convocation Plenary Session II

5:30 PM – 7:00 PM  
7:00 PM – 9:30 PM

Networking Reception  
ASCE / SEI 2008 Structures Congress Banquet

## SATURDAY, APRIL 26, 2008

7:30 AM – 5:30 PM  
8:00 AM – 3:30 PM  
8:00 AM – 8:30 AM  
8:30 AM – 10:00 AM  
10:00 AM – 10:30 AM  
10:30 AM – 12:00 PM  
12:00 PM – 1:30 PM  
1:30 PM – 3:00 PM  
3:00 PM – 3:30 PM  
3:30 PM – 5:00 PM

### REGISTRATION HOURS

Exhibit Hall and Poster Session Displays  
Continental Breakfast  
Concurrent Technical Sessions  
Refreshment Break  
Concurrent Technical Sessions  
Exhibit Hall Lunch  
Concurrent Technical Sessions  
Refreshment Break  
Concurrent Technical Sessions

# 2008 Structures Congress

## Crossing Borders

APRIL 24-26, 2008 VANCOUVER

THE HYATT REGENCY VANCOUVER • VANCOUVER, BRITISH COLUMBIA

The 2008 STRUCTURES CONGRESS takes ASCE and SEI members north across the Canadian border into beautiful British Columbia and the vibrant city of Vancouver. Crossing the border has become business as usual for many of us in today's structural engineering industry. Globalization is making international business and professional collaboration prime roads to success. Don't get left behind. Whether you're a practicing engineer, researcher, or academician, you'll want to join us for this Congress to broaden your horizons and gain important insights from world leaders of the industry.

**This Congress will offer you information from research and practice in more than 100 high-quality technical sessions including:**

- **Practical Design, focused on Structural Engineering, Research for Practitioners, and Codes and Standards**
- **Business and International Engineering**
- **State-of-the-Art Research**
- **18th Analysis & Computation Specialty Conference**
- **CASE Spring Risk Management Convocation**

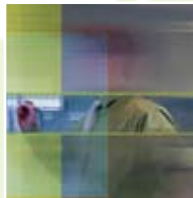
**This Congress will also offer you these opportunities:**

- **Pre-Congress Workshop – Wood Engineering Challenges in the New Millennium: Critical Research Needs**
- **3 Pre-Congress Technical Seminars:**
  - **ASCE 43-05 - Seismic Design Criteria for Structures Systems & Components in Nuclear Facilities & Performance of Lifelines in the M 8.0 Pisco, Peru Earthquake**
  - **Using AF&PA's Wood Design Standards: 2005 NDS (ASD & LRFD), 2001 WFCM, and High Wind Guides**
  - **Maintaining Our Nation's Bridge Inventory: Diagnostic Bridge Testing Short Course**
- **Congress Plenary Presentation: "Science Education in the 21st Century: Using the Tools of Science to Teach Science" by 2001 Nobel Prize Recipient Dr. Carl Wieman**
- **Congress Banquet Keynote Speaker: Dan Doyle, Executive Vice President – Construction, Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC)**
- **An unprecedented opportunity to participate in technical programs presented by affiliate organizations: CASE, CSCE, IABSE, and IStructE. A highlight: Coverage of the Millau Viaduct, the highest vehicular bridge in the world, by its creator, Michel Virlogeux, D.Engr.**
- **Networking events, including the ASCE/SEI 2008 Structures Congress Banquet to honor IStructE's Centenary.**

In addition, you can visit the Exhibit Hall to learn about advanced products and services. And you can earn up to 24 PDHs\* by attending technical sessions.

Take the first step! Cross the border and join us at the 2008 STRUCTURES CONGRESS in Vancouver.

\* Please note that there are differences from state to state in continuing education requirements for professional engineering licensure. Each state registration board has the final authority to approve courses, credits, professional development hours for courses, and other methods of earning credit in that state. ASCE strongly recommends that individuals check with their state registration boards regularly for specific continuing education requirements in their jurisdictions that affect professional engineering licensure and the ability to renew licensure.





## CASE

The **Council of American Structural Engineers (CASE)** is a national association of structural engineering firms that operates as a coalition of the American Council of Engineering Companies (ACEC) in Washington, DC.

CASE's mission is to improve the practice of structural engineering by reducing the frequency and severity of claims. To this end, it provides a forum for action to improve the quality of structural engineering through enhancement of business practices, decreased professional liability exposure, and increased profitability. CASE is organized into a Risk Management Program and a Business Practices Program.

*(See page 11 for the detailed CASE Spring Risk Management Convocation program.)*



## CSCE

The **Canadian Society for Civil Engineering (CSCE)** is a learned Society intended to develop and maintain high standards of civil engineering practice in Canada and to enhance the public image of the civil engineering profession.

CSCE promotes the development, acquisition, and exchange of professional knowledge in the field of civil engineering. Supportive of the work of academics and private institutions and different organizations that deal with civil engineering since 1887 and working with sister organizations, the CSCE also promotes civil engineering among the general public and governmental institutions in Canada and abroad.

*(See page 13 for CSCE sessions.)*



## IABSE

Considered the leading international association in the field of structural engineering, the **International Association for Bridge and Structural Engineering (IABSE)** is a scientific and technical association with 4,000 members in 100 countries, with 50 national groups around the world. IABSE's mission is to promote the exchange of knowledge and to advance the practice of structural engineering worldwide in the service of the profession and society, taking into consideration technical, economic, environmental, aesthetic, and social aspects. Founded in 1929, it has its seat in Zurich, Switzerland.

*(See page 14 for IABSE sessions.)*



## IStructE

The **Institution of Structural Engineers (IStructE)** is the world's leading professional body for structural engineering. It is the source of relevant and considered opinion on all structural engineering and public safety issues in the built environment.

The Institution has some 21,000 members in 109 countries around the world, and is recognized internationally for the technical and professional competence of its members. Its image is one of safety, efficiency, and excellence, both of its operations and in the standards of its members. The Institution qualifies its members by examinations that test professional competence in structural engineering design.

*(See page 18 for IStructE sessions.)*

### SPECIALTY TRACK Schedule:

- **Thursday plenary**
- **16 sessions: Thursday, April 24 through Saturday, April 26**

THURSDAY, APRIL 24, 2008 2:15 PM – 3:45 PM

## 18th A&C Specialty Conference Plenary Distance Learning and Professional Education for Structural Engineers



Addressing the Conference will be **Nelson Baker, Ph.D.**, Associate Professor of Structural Engineering and Associate Vice Provost for Distance Learning and Professional Education, Georgia Institute of Technology, Atlanta. He will focus on challenges and opportunities for structural engineers related to distance learning and professional education.

Dr. Baker is widely recognized for his innovations in engineering education. Some of his numerous awards include Outstanding Innovative Use of Education Technology Award, Georgia Institute of Technology (1997); ENR Educator for Construction's Next Generation (1996); W.M. Keck Foundation Award for Engineering Teaching Excellence (1994); W. Roane Beard Georgia Institute of Technology Outstanding Teacher Award (1994); and National Science Foundation National Young Investigator (1992-1998).



Also addressing the Conference will be **Bruce Finlayson, Ph.D.**, Professor Emeritus of Chemical Engineering at the University of Washington where he has taught chemical engineering and applied mathematics for 40 years. He has authored four books and more than 100 papers and serves on four editorial boards for technical journals. In 1994, he was inducted into the National Academy of Engineering. In 1998,

he was elected Vice-President of the American Institute of Chemical Engineers and in 2000 served as President.

His recent experience involves multiphysics simulations, aided by the existence of high-level computer programs allowing the user to specify the pertinent physics while the mathematical details are performed by the computer program. The emphasis thus shifts from writing those programs to showing that the simulations are correct. His own work involves fluid flow, heat transfer, and mass transfer, and his work with undergraduate and graduate students allows them to be creative and solve problems that are realistic and go far beyond their textbooks.

Dr. Finlayson's plenary lecture will provide the structural engineering profession with a look into a future where nonlinear finite element analysis is coupled with phenomena such as heat transfer, fluid flow, and acoustics. He will provide examples of work with his students that range from biopharmaceutical mixing to mixing polymer and sludge to fluid-solid interactions.

*continued on next page*

## SPECIALTY TRACK

Organized by the Analysis & Computation Technical Administrative Committee of the Structural Engineering Institute, the 18th A&C Specialty Conference, to take place in conjunction with the 2008 Structures Congress, continues a long tradition of holding such conferences every two years. In addition to highlighting recent research issues in the broad areas of applied structural analysis, optimal structural design, structural control, and emergent computing technology, the 18th A&C Specialty Conference will provide a forum to discuss educational concepts and practice of all forms of computations related to the analysis and design of engineering structures.

This specialty conference within the Congress consists of 16 dedicated sessions on the following topics:

- **Educational Concepts** (Applied Structural Analysis, Integration of New Methodologies into Curriculum, Practical Case Studies)
- **Creative Applications of Structural Analysis** (New Methodologies, Case Studies that Indicate the Impact of Analysis on the Performance and Economy of Structures)
- **Emergent Computing Technology** (Parallel and Distributed Computing, Database and Information Systems, Web-Based and Collaboration Technologies, Artificial Intelligence, Field-Based Computing, Automation, Hybrid Simulations, Grid Computing, Visualization)
- **Optimal Structural Design** (Performance-Based Design, Evolutionary Computing, Conceptual Design, Topology and Geometry Optimization, Decomposition Methods, Multi-Objective Design, Life-Cycle Cost Optimization, Soft Computing)
- **Structural Control** (Protective Systems, Intelligent Structures, Control Devices and Sensors, Damage Detection, System Identification and Health Monitoring, Teleoperation and Telecontrol)

---

*For details on the 18th ANALYSIS & COMPUTATION SPECIALTY TRACK SESSIONS, see pages 22-27.*

THURSDAY, APRIL 24, 2008 10:30 AM – 12:00 PM

## Diversity Workshop

### Exploring Challenges: Re-Entry into the Civil Engineering Workforce

This workshop will explore the challenges and barriers highly qualified engineers face when they voluntarily leave their careers for a period of time due to familial or other personal reasons. This workshop will also explore some of the best practices of engineering firms and agencies that support this growing population of employees.

A 2004 national survey of 3,096 highly qualified men and women found that in today's workplace, 37% of the highly qualified women surveyed voluntarily left their careers for an average period of 2.2 years (Center for Life-Work Policy). "Highly qualified" was defined as having a graduate or professional degree. Furthermore, 93% of highly qualified women currently off-ramped want to return to their careers. Most do not understand how difficult ramping back on will be; only 74% manage to return to the workforce. Of those, 40% return full time, 24% part-time and 9% become self-employed. Women returning to work lose an average of 18% of their earning power; this percentage increases as the number of years off-ramped increases.

Such financial penalties are not limited to individuals. There are financial costs to the employer associated with high turnover. One dramatic finding of the survey is that only 5% of off-ramped women want to return to their previous employer. The vast majority of these women feel that they were not supported in those last months on the job (Steiner, 2007). This is happening at the same time the labor market is tightening. According to the National Association of Colleges and Employers, 90% of employers say competition for college hires has increased. As baby boomers retire and foreign nationals increasingly leave the US for job opportunities in their home countries created by the new global economy, it has become more important to hire and retain female talent.

**SPEAKER: Marc Schulte, P.E., D.WRE,**  
**Project Manager, RoseWater Engineering, Inc.**

**Marc Schulte** is a civil engineer specializing in water resources and hydrology. His specific expertise includes hydraulics, hydrology, stormwater quality, floodplain management, drainage analysis, and sediment transport. Currently a project manager with RoseWater Engineering, Inc. in Seattle, Mr. Schulte is a licensed professional engineer in California and Washington. He is also a Certified Floodplain Manager and a Certified Professional in Storm Water Quality.



# NOTABLE EVENTS

THURSDAY, APRIL 24, 2008 12:00 PM – 2:00 PM

## Opening Awards Luncheon, Plenary Session, and Business Meeting

### Science Education in the 21st Century: Using the Tools of Science to Teach Science

**PLENARY SPEAKER:** Carl Wieman, Ph.D., Director, Carl Wieman Science Education Initiative, University of British Columbia



Dr. Carl Wieman, who received the Nobel Prize in Physics in 2001, will discuss methods for combining research with modern information technology to set the stage for a new approach that can provide relevant and effective science education for all students.

Dr. Wieman has been Director of the Carl Wieman Science Education Initiative at the University of British Columbia since early 2007. From 1984 to 2006, he was the Distinguished Professor of Physics and Presidential Teaching Scholar at the University of Colorado, where he retains a 20 percent appointment. These collaborative initiatives are aimed at achieving departmental-wide sustainable change in undergraduate science education. He has worked on a variety of research and innovations in teaching physics to a broad range of students, including in the Physics Education Technology Project.

He received his B.S. from the Massachusetts Institute of Technology in 1973 and his Ph.D. from Stanford University in 1977.

**The Annual SEI Business Meeting and Awards Program will also take place at the Opening Luncheon and Plenary Session. Awards will be presented to individuals in recognition of outstanding achievements and contributions to the practice and body of knowledge of structural/civil engineering.**

THURSDAY, APRIL 24, 2008 6:00 PM – 7:30 PM

## Grand Opening Reception

No need to bring your passport to this stunning event; one will be provided to you, so you can enjoy all of the multicultural cuisines Vancouver has to offer. Our grand event will take place on the top floor of the Hyatt Regency Hotel, with breathtaking views of the city, mountains, and ocean to enjoy as you greet colleagues and international associates.



# 2008 STRUCTURES CONGRESS

THURSDAY, APRIL 24, 2008 7:30 PM – 10:00 PM

## CASE Spring Risk Management Convocation Dinner with War Stories

Come for the dinner, stay for the stories! Seasoned engineers recount past experiences and lessons learned related to structural engineering.

*This is a separately ticketed event.*

FRIDAY, APRIL 25, 2008 5:30 PM – 7:00 PM

## Networking Reception

Relax and wind down after a stimulating day of sessions. Mix, mingle, meet, and converse with exhibitors and presenters before relocating to the banquet, which follows.

FRIDAY, APRIL 25, 2008 7:00 PM – 9:30 PM

## ASCE / SEI 2008 Structures Congress Banquet Honoring the Past, Planning for the Future

This event will honor our co-sponsoring organization IStructE's Centenary. IStructE President Sarah Buck and Chief Executive Keith Eaton will address those attending.

**KEYNOTE SPEAKER:** Dan Doyle, Executive Vice President – Construction, Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC)

Widely recognized for his leadership and problem-solving prowess, **Dan Doyle** is responsible for the \$580 million development and construction of the 2010 Olympic and Paralympic Winter Games venues.

Mr. Doyle has overseen some of the province's landmark construction initiatives during his 35 years of experience with British Columbia's Ministry of Transportation. A civil engineer by training, Mr. Doyle began his career as a trainee with the province's transportation ministry. He worked his way up to deputy minister, a post he held until his retirement from government in 2005. Mr. Doyle also served as chairman for Rapid Transit 2000, the company responsible for building the Millennium Line extension to Vancouver's rapid transit system.

Mr. Doyle's lengthy career has been recognized with many accolades, including the Canadian Transportation Person of the Year Award in 2005 and the Lifetime Achievement Award from the Institute of Transportation Engineers. In addition, he was awarded the Lieutenant Governor's Silver Medal for Excellence in Public Administration in 2002.

*This is a separately ticketed event.*

































