



# CONNECTIONS

October 2012 Volume 13 Issue 2

Newsletter of the  
Structural Engineers  
Association of Oregon

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## FALL Issue

### Upcoming SEAO Meetings and Events:

#### **Tuesday, October 30, 2012:** SEAO Lunch Meeting

Speaker: Steve Pryor, PE, SE, International Director of Building Systems at Simpson Strong-Tie

Topic: Seismic and Moment Frame Testing at the Simpson Strong-Tie Tye Gilb Lab

Location/Time: Governor Hotel, Portland / 11:30 am check-in, 12:00 pm lunch;  
12:15 pm program.

Sponsor: Simpson Strong-Tie.

See page 3 for more information.



#### **Thursday, November 1, 2012:** AISC & The Pacific Northwest Steel Fabricators Association Breakfast Program

Topic: Steel Plate Shear Walls, TEBF, CFST, SF and Other Short Stories

Location: Doubletree by Hilton Hotel Portland, 1000 NE Multnomah, Portland, OR

Time: Sign-in & coffee at 7:30am, breakfast & program 8-9:30am

See page 13 for additional information.

#### **Thursday, November 1, 2012:** OSU Student Chapter Speaker Meeting-Open to All

Speaker: Sam Rahani, President of the Structural Engineering Institute (SEI)

Location/Time: Kearney Hall, Room 312, Oregon State University, Corvallis, OR/6 pm to 7 pm

Topic: A discussion of the state of affairs in the SEI (background, current activities, and future initiatives) and Structural Engineering Licensure.

Meeting is open to all and refreshments will be provided.

See attached brochure on page 10 for additional information.

#### **Friday, November 9, 2012:** SEAO Fall Seminar

Topic: ACI 318-11 Anchor Design

Speakers: SK Ghosh and Susan Dowty of S.K. Ghosh Associates, Inc.

Location: Sheraton Portland Airport Hotel & Conference Center, 8235 NE Airport Way, Portland, OR

Time: Registration opens at 7 am, Seminar from 8 am to 5 pm

See pages 11 and 12 for additional information.

#### IN THIS ISSUE: PAGE #

- President's Message 2
- October Meeting Announcement 3
- September Meeting Recap 4
- Welcome New Members 5
- Committee Update 6
- Videocast News 6
- Member of the Month 7
- 2012 SEA NW Conference Recap 8
- Oregon State Winter Course Offerings 9
- ASCE Speaker Meeting 10
- SEAO Fall Seminar Announcement & Registration Form 11-12
- AISC Breakfast Program 13



CONNECTIONS is a monthly publication of the Structural Engineers Association of Oregon, published to disseminate current news to our membership and others involved in the profession of structural engineering. The opinions expressed reflect those of the author and, except where noted, do not represent a position of SEAO.

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## PRESIDENT'S MESSAGE: PASSING THE TORCH

*By: Aaron Burkhardt, P.E.*

Happy New Year! OK, not really. However, it is a brand new year for SEAO, which means a new Board, a fresh batch of seminars and meetings, and,

as always, many volunteer opportunities for our members. We are bidding farewell to last year's Board, moving in a new one, and looking forward to the year to come. I have a set of goals that I would like to see this year's Board accomplish, and that work has already begun.

We cannot move on to the new year without first recognizing the individuals that have made this organization successful over the past year. A heartfelt thank you goes to outgoing Board members Norm Faris, Kevin Kaplan, Michelle Chavez, and Trent Naegle. Ed Quesenberry and Don Ellsworth will remain and carry over to the new Board. This group, along with our committees, worked hard over the past year to accomplish many goals, notably, we continued to provide quality meeting and seminar presentations, participated in code development and review in Oregon, strove to promote our profession in the K-12 school system, and took a leading role in the statewide seismic resiliency effort. It cannot be emphasized enough that this is a volunteer organization and that these individuals, along with many others, provide their very valuable time to help our organization and our profession. Once again, thank you to all who have volunteered their time and expertise this past year.

With that said, the new Board is very eager to get started on a productive new year. Please join me in welcoming our new Board members: Amit Kumar (Vice President), Jennifer Eggers (Secretary), Shelly Duquette (Treasurer, 2-term), and Jason Thompson

(Director, 2-term). We will continue the fine work of the previous Board as well as develop our own agenda and goals for the next year. Some of these goals will be looking at code development/adoption, seismic resiliency, our website and ways in which we can offer our members more educational opportunities, and opportunities to engage our younger members and get them more involved. This is a short list and surely it will evolve. The Board is always available for our members and their needs or concerns. Historically, our members have been very open and up front with previous Boards and I would expect this to continue.

This is a very interesting time in our profession. With codes changing, reorganizing, shifting, and updating at a dizzying pace, we are challenged to not only keep up, but to excel. The looming risk of seismic damage to our State is not only a constant concern in our profession, it is also at the forefront of the public's mind. Preparedness and advocacy on our part is not only needed, it is required. I look forward to addressing this very subject in the months to come, and I hope to see members at large participating in any educational opportunities or community forums that occur this year.

SEAO was founded 63 years ago to provide education for design professionals and the Oregon community, encourage practice with ethical standards, promote the highest standards for structural engineering, develop criteria to help enhance building codes, and provide a forum for discourse and social interaction between its members. This Board will work diligently to continue to promote these ideals while responding to the new challenges of our time.

I became a member of SEAO as a junior at Oregon State University. At the time, I wasn't sure what it meant to be a structural engineer or if this was going to be my profession. SEAO served as my first introduction to the profession and I'm very grateful

*(Continued on page 5)*

## SEAO Committees

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### Conferences

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### Young Member Forum

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### MASER, OBOA

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## OCTOBER LUNCH MEETING ANNOUNCEMENT TUESDAY, OCTOBER 30, 2012

*Sponsored by: Simpson Strong-Tie*

**Topic:** Over the past several years, Simpson has been working to bring a fundamentally new kind of steel special moment-frame system to the market. Developed at Simpson's award-winning Tyrell Gilb research laboratory, this new technology eliminates many of the challenges associated with merging steel frames into wood structures for seismic applications involving both new structures and soft/weak story retrofits. The presentation will discuss the impetus behind the idea, developmental testing both at Simpson's facilities and in Japan at the world's largest shake table (E-Defense), and provide an update on the current status of code approvals.

### Speaker: Steven Pryor, PE, SE

Steven Pryor received his B.S.C.E. from Rose-Hulman Institute of Technology in 1990. Upon graduating he joined the design team at Butler Manufacturing, the leading supplier of industrial steel buildings, and became a registered Professional Civil Engineer in California in 1993. In 1994 he developed GNT Structural Engineering to provide design services for a wide-range of residential, commercial, and industrial projects.

After receiving his California Structural Engineering license in 1997, he joined Simpson Strong-Tie, the world's leading supplier of steel connections for light-frame construction, where for the last 15 years he has headed up research and development for large-scale systems products for lateral force resistance. In addition to developing the largest private large-scale structural engineering research laboratory in the United States, which includes both shaking table and quasi-static cyclic test rigs, Mr. Pryor is the holder of several patents. He is a member of the Structural Engineers Association of California, the American Society of Civil Engineers, and the Building Seismic Safety Council.

Mr. Pryor currently serves on several state, national, and international building code committees, has authored many papers that have been presented in the U.S. and around the world, and is an expert in the field of structural response of light-frame buildings. Most recently he was the primary industry technical collaborator with Prof. John van de Lindt on the recent successful testing of a 7-story mixed steel and wood light-frame structure--the largest building ever tested on a shake table. Steve currently serves Simpson Strong-Tie as their International Director of Building Systems.



Simpson Strong-Tie Company helps people/design professionals build/construct safer, stronger structures with metal connectors very economically.

### Location and Times:

Governor Hotel, 2<sup>nd</sup> Floor, Library  
614 SW 11th Ave, Portland OR

*The MAX Light Rail System stops just a block away from the hotel (The Galleria stop) and Portland's Streetcar stops right outside the hotel. Smart Park is located at SW 10<sup>th</sup> and Yamhill about two blocks from the hotel.*

**Check-in:** 11:30 am

**Lunch:** 12:00 pm

**Program:** 12:15 pm

### Cost: Lunch & Program

\$32 – Pre-paid Members  
\$40 – Pre-paid Non-members  
\$18 – Students

### Cost: Videocast Locations

\$20 – Members  
\$33 – Non-members  
\$13 – Students

### Videocast Venues:

**Corvallis:** CH2M Hill, 1100 NE Circle Blvd., Suite 300, (541) 752-4271

**Eugene:** Artisan Engineering, 325 West 13th Avenue, (541) 338-9488

**Medford:** Marquess & Associates, 1120 E. Jackson, (541) 772-7115

**Bend:** Eclipse Engineering, Inc. 155 NE Revere Ave., Suite A, (541) 389-9659

### Reservations:

Pre-registration required. **You can register and pay online at [www.seao.org](http://www.seao.org) before noon, Thursday, October 25.** You can also register with Jane Ellsworth via phone at (503) 753-3075 or via Email: [jane@seao.org](mailto:jane@seao.org). Note: No-shows will be billed.

**PDH Credit:** One PDH has been recommended for this program.

# SEPTEMBER MEETING RECAP

By: David Tarries, P.E.

Topic: Masonry Design Using TMS 402-11 Design Manual

Speaker: Lane P. Jobe, P.E., S.E.

Lane is a Principal with Miller Consulting Engineers, Inc. He is a registered Structural Engineer in Oregon, Washington, and California. He also holds Civil Engineering Licenses in Montana and Hawaii. He holds professional memberships in AISC, ASCE, SFA, SEAO, and TMS. He has conducted structural design for the Direct Design Handbook for Masonry Design published by The Masonry Society. He holds a Bachelor of Science in Civil Engineering from Portland State University.

The new 2012 International Building Code will bring a number of changes to masonry design when it is adopted by local jurisdictions. The current reference to the 2008 TMS 402/ACI 530 (and TMS 602/ACI 530.1) will change to the 2011 TMS 402/ACI 530 in the 2012 version. This will have an impact on how engineers design masonry as there are adjustments between the 2008 TMS and the 2011 TMS. The following is a synopsis of Lane's presentation intended to provide an in depth review of the changes.

The format of the 2011 code is very similar by chapter, however, the commentary for the code and specification sections have now been relocated on the same page as the code sections they reference for easy reference. This is similar to the layout of the concrete code, ACI 318.

An overview of the more significant changes includes:

- The removal of the 1/3 stress increase for ASD wind or seismic loads.
- Adjustments of the ASD stress increases.
- Changes to the deep beam provisions.
- Reference to the Direct Design Handbook for design.
- Clarification of masonry infill in Appendix B.

Some new terms have also been added that clarify infill, bounding frames, beams, and deep beams. Beams have now been formally defined and include masonry lintels. Deep beams are outlined in section 1.13.2 and are determined by their span to depth ratio. If the effective length ( $l_{eff}$ ) divided by the flexural design bar depth ( $d_v$ ) is less than 3 for a continuous span or less than 2 for a simple span, then the member is a deep beam. The term internal lever arm ( $z$ ) is the distance between the compressive and tensile forces and is used in deep beam calculations. Flexural reinforcement is limited to a zone that is half of  $d_v$  and may be spaced at a maximum of 16 inches. Horizontal flexural reinforcement shall be anchored at the end of the span. Minimum shear reinforcement is similar to wall reinforcement at  $0.0007bd_v$ . The horizontal shear reinforcement shall have an area of at least half the vertical shear reinforcement. Maximum spacing of shear reinforcement shall not exceed  $d_v/5$  or 16 inches. The total cross sectional area of horizontal and vertical reinforcement shall be at least  $0.001bd_v$ .

The organization of chapters in the 2011 TMS is the same as the previous version.

Chapter 1 deals with general design requirements for masonry. Columns are covered in section 1.14.1.1. They shall be limited in height between lateral supports to a maximum of 99 divided by the least radius of gyration. The minimum side dimension is 8 inches. Section 1.15 involves pilasters. The section stipulates that pilasters shall be running bond. Walls shall be anchored by steel connections grouted in the wall at a maximum of 48 inches on center. Design for shear at interfaces is covered in sections 1.9.4.2.2 through 1.9.4.2.4. There are some minor changes to anchor bolts in section 1.17.1 that cover placement of anchor bolts at top of grouted cells, bond beams, and in drilled holes in face shells. The grout surround is no longer required for bolts through a face shell. Special Reinforced Masonry Shear Walls are described in section 1.18.3.2.6. Shear reinforcement shall be hooked around vertical reinforcement with a standard hook. The standard hook is described as either a 135 degree or 180 degree hook. Hooked bar anchorage is only required when shear reinforcement is required by equation 2-25 for working stress design and 3-20 for strength design. If reinforcement is not required, straight bars may be used. Section 1.18.3.2.12 on Special Reinforced Prestressed Masonry Shear Walls also has some minor modifications to dead load axial forces and design shear strength. Quality assurance in the 2012 IBC will defer to TMS 402/ACI 530 for specifics on inspection requirements. The text to be used on drawings to clarify inspection is covered in Table 1.19.2 for Level B and Table 1.19.3 for Level C, with Level C being the more stringent of the two for buildings of greater importance. Section 1.20.2.1 has been added to call to attention issues with coordinating other building system disciplines. *Conduits, pipes, and sleeves shall not be considered to be structural replacements for the displaced masonry. The masonry design shall consider the structural effects of this displaced masonry.*

Chapter 2 still covers working stress design for masonry, but there are some changes to the design approach. The most plentiful changes to the masonry code occur in chapter 2. Bearing stress on masonry shall not exceed  $0.33f'_m$ . Lap splices may be reduced per equation 2-13 if transverse confining reinforcement of #3 or larger exists with 8 inches of each end of the lap. The clear space between the transverse bars in grouted cells and the lapped bars may not be greater than 1.5 inches. Table 2.2.3.2 provides revised values for allowable flexural stresses in clay and masonry. The allowable stresses have been increased by 1/3 based on recent research results. This change in allowable stress is equivalent to the reduction in stress for seismic and wind forces effectively providing a standard design stress for all load cases. In addition to this adjustment in masonry strength, the requirement that the steel shear reinforcement be designed to resist the entire shear force when it is required by equation 2-24, section 2.3.6, has been refined to allow a combination of the steel and CMU. Special notice of the new minimum shear reinforcement equation from section 1.13.2.4 is required as it will likely control design and results in steel quantities similar to the old code versions where steel resisted all shear forces when required. The minimum steel requirement is not very apparent as it is indicated in the text and not with a designated equation. Steel reinforcement allowable stresses have also seen a 1/3 increase in the 2011 code. Grade 60 reinforcement shall have an allowable stress of 32,000psi per section 2.3.3.1. Additionally, joint reinforcement shall not exceed 30,000psi per 2.3.3.2. Steel reinforcement shall not be considered in compression unless confined. The allowable stress in masonry due to flexure or a combination of flexural and axial shall not exceed  $0.45f'_m$ . As indicated in section 2.3.4.3 for columns, design axial loads shall consider a minimum eccentricity of 0.1 times the side dimension.

Chapter 3 covers Ultimate Strength Design of masonry, similar to the previous code. There are relatively few changes to chapter 3. Section 3.1.7 has been updated to indicate a nominal bearing strength of  $0.8f'_m$  times the bearing area, instead of the previous  $0.6f'_m$ .  $I_{cr}$  has now been codified for computation of deflections. Equation 3-31 provides the cracked moment of inertia for a fully grouted or partially grouted wall.

Prestressed masonry is covered in chapter 4. Changes in this chapter include adjustments to  $d$  for prestressed tendons, the maximum ratio of  $a/d$  equaling 0.38, and new equation for  $f_{ps}$ .

Chapter 6 on Veneer also has seen changes in the 2011 version. Anchored masonry is limited to areas where strength level velocity pressure does not exceed 40psf. Minimum attachment of anchors to steel framing shall be at least a #10 corrosion resistant screw. Minimum attachment to wood backing shall be at least 8d ring-shank corrosion resistant nails or a #10 corrosion resistant -

**September's Meeting Was  
Sponsored by:**



**Boise Cascade**  
Building Materials Distribution

(Continued on page 5)

## SEPTEMBER MEETING RECAP (CONTINUED FROM PAGE 4)

By: David Tarries, P.E.

screw in SDC D.

Glass unit masonry in chapter 7 has changes to wind pressures.

Changes to chapter 8 on autoclaved aerated CMU include reinforcement strength, bearing strength, corbels, maximum usable strain, and nominal sliding shear strength.

Appendix B is new to the 2011 version of TMC 402/ACI 530 and gets into the specifics of the design of masonry infill inside a structural frame system.

The 2012 IBC allows masonry to be designed by the Direct Design Method and comply with the provisions of TMS 403-10. The 2012 IBC also has provisions for architectural cast stone. Other revisions/code additions in the 2012 IBC include:

- Quality assurance per the unit strength method.
- Quality assurance per the prism test method.
- Adjustments to lap splices in section 2.1.8.7.1.1.
- Allowance for adobe construction
- Provisions for reinforcement for masonry heaters.
- Provisions for seismic reinforcement for masonry chimneys.

This summary is only an overview of the changes to TMC 402/ACI 530 and is not all inclusive. Additional review of the code is necessary for any new designs. Revisions to the specifications (TMA 602/ACI 530.1) as well as the commentary for both the code and specifications have been completed to comply with the code changes. The 2011 version is not required for designs in Oregon at this time and will not be until adoption of the 2012 IBC. It is estimated that the 2012 IBC will not be adopted in Oregon until at least 2014. A copy of Lane's presentation complete with design examples has been posted to the SEAO website. Review of the presentation is recommended for additional information. Special thanks go to Lane for allowing use of his presentation on the website.

## PASSING THE TORCH (CONTINUED FROM PAGE 2)

By: Aaron Burkhardt, P.E.

for it. As a young engineer I became involved with SEAO in a volunteer capacity serving on various committees and in Board positions. It is eighteen years later and I am so thankful for the opportunities of education and professional development that this organization has provided me. Our young membership will become our leaders of tomorrow, so I ask you all to join me in encouraging not only membership but also participation in our organization. It is worth the time.

I thank you all for trusting me to carry the torch of the many fine Board members who have served before me. I look forward to working with you over the next year to strengthen our organization, its presence in our communities, and to continue to serve our profession with stellar educational and professional growth opportunities.



## WELCOME NEW MEMBERS!

### October:

Katherine Hammer, BMGP Engineers

David Morris, Endex Engineering

Brentley Matthias, Western Wood Structures

## COMMITTEE UPDATE

### Wind Committee Update:

By: Jim Riemenschneider, P.E.

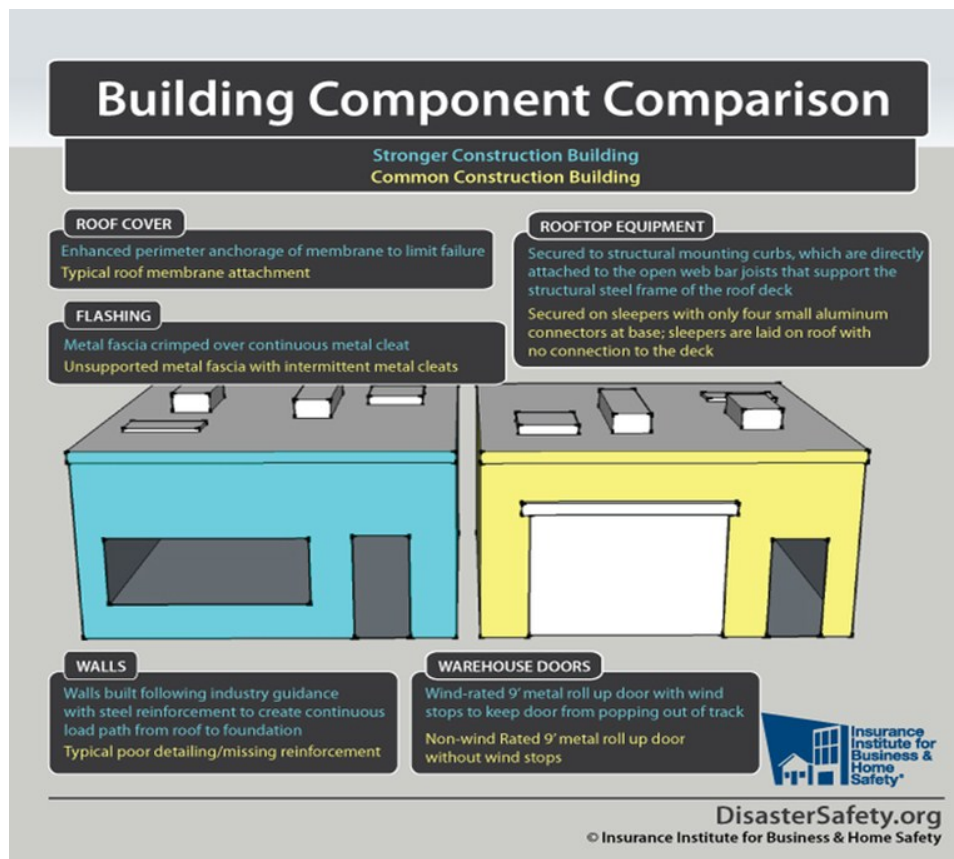
We recommend that the membership watch an eye-opening video of full scale building testing performed by the Insurance Institute for Business and Home Safety (IBHS), which brings new light to a few age-old and related questions, such as “Does seismic or does wind control one’s lateral design and analysis?” and “Does my building need seismic detailing even if wind loads control over seismic loads?”. Remember, OSSC Section 1604.10 truly answers that question. And with that, we often overlook “enclosed” versus “partially enclosed” wind design, because there can’t be that much difference, can there?



In this video, inside IBHS’s 145’ x 145’ x 70’ tall testing chamber, two 30’ x 20’ one-story masonry buildings, each with fully detailed roof assemblies but different wall assemblies, are put to the test. One received a higher standard of wall construction that is minimally more expensive than did its unreinforced ‘neighbor’.

Have you ever known a roof to actually tear a masonry wall upward in tension? Watch this video as windows break and one building gets ripped apart from internal and external wind pressures (from 136 mph peak gusts) and its neighbor ‘stands tall’. Go to the following link for the video: <http://vimeo.com/45921239>

Some of the differences in the construction are shown in the diagram below:



## VIDEOCAST NEWS

Last month’s meeting set new records for number of remote viewers via our online webcast! In addition to the five professionals viewing at CH2M Hill in Corvallis, Oregon Institute of Technology in Klamath Falls joined in for the first time and had 20 students and two professors tuning in! A big thanks to Professor Charles Riley and ASCE Student Chapter President Matt Nicholson at OIT for organizing the event and helping set a new milestone for SEAO! With efforts from other ASCE chapters in the Oregon University System, we are hoping to continue to expand the webcast to additional Universities around Oregon!

## MEMBER OF THE MONTH



On behalf of the Board of Directors of Structural Engineers Association of Oregon, it is our great pleasure to honor and recognize **Trent Nagele** for all his work in service of SEAO and the engineering community with the Member of the Month award for the month of November.

Trent has worked tirelessly serving on the SEAO Board the past three years as the Vice-President in 2009-2010, then as President in 2010-2011 and then as Past President in 2011-2012. Under his leadership and guidance, SEAO completed the herculean task of revamping and launching a completely redesigned website to better serve the members of SEAO. With his stewardship the newsletter committee was reenergized with new leadership and staff, and SEAO began to extend its roots beyond the Portland metropolitan area in an effort to engage engineers from rest of the State. We now regularly webcast the monthly dinner meetings to interested engineers in Corvallis, Bend, and Klamath Falls areas. During Trent's tenure on the Board, SEAO embarked on the process of developing a new snow load manual which very soon should culminate in the publication of a web-based interactive snow load map for Oregon. These are just a few accomplishments that Trent achieved as he volunteered countless hours on the Board of SEAO.

Trent has also previously served on the SEAO Board of directors as Secretary, has been a member of the Nominating Committee and the Ad Hoc Committee for Building Code Evaluation when the IBC was being adopted. He has also provided assistance with editing the SEAO Newsletter in past years and has served on the SEAO scholarship awards committee.

Even though he is not on the Board anymore, Trent continues to serve SEAO as the Co-Chair of the Critical Buildings Task Group participating in the Oregon Seismic Resiliency planning, a major effort led by OSSPAC to develop a 50 year resiliency plan to make Oregon a resilient state in the event of a Cascadia subduction zone earthquake.

Trent is a Principal with VLMK Consulting Engineers. A native of Portland, Trent received a Bachelor's degree from Walla Walla College in 1994 and a Master's degree from Washington State University in 1995. He is a licensed Professional and Structural Engineer in Oregon, Washington, California, and Illinois.

Outside the office, he is active with his local church and childrens' school, and enjoys outdoor sports and traveling with his family.

The SEAO Board would like to thank Trent for his years of dedicated service to our organization and the engineering community. CONGRATULATIONS Trent for a well-deserved honor!

## 2012 SEA NORTHWEST CONFERENCE RECAP

*By: Ed Quesenberry, P.E., S.E.*

SEAO hosted the 2012 SEA Northwest Conference, which was held from July 26-28 at Kah-Nee-Ta Resort and Spa in Warm Springs. The conference was organized by SEAO's Conference Committee, which was headed up by Kevin McCormick and also included Tonya Halog, Jenny Carlson, Don Ellsworth, and Jane Ellsworth. In attendance were members from SEA Washington, Idaho, Oregon, and British Columbia Chapters, and 16 vendors had booths in the tradeshow.

The conference kicked off with the NWCC delegate meeting, which is an opportunity for the member organizations to report on their activities over the last year and to discuss ways in which our organizations can collaborate or share resources in the coming year. Sue Frey and Ed Quesenberry represented SEAO at this meeting. One result from this collaborative session was a commitment between SEAW and SEAO to explore co-hosting an ATC-20 training seminar in the Spring of 2013.

After the delegate meeting concluded, the afternoon technical sessions were held, along with breaks spent visiting the vendor tradeshow. The first day of the conference was capped off with a wonderful Native American salmon bake outside overlooking the gorgeous landscape and an impressive show given by a group of Native American dancers. The dinner and festivities were attended by engineers, spouses and children, so it was a festive evening. Seeing Pat Hynes doing the Native American fire dance was something to behold!



The second day included 6 technical sessions, an ice cream social, and more tradeshow time. The conference officially concluded with a tasty banquet dinner that was attended by engineers and their families.

Early Saturday morning, while most conference attendees were still asleep, the NWC Water Competition was held. This is an event steeped in tradition (the tradition is that the host organization rigs it so that they win). Keeping with this tradition, SEAO easily walked away with the trophy and has bragging rights for the entire year.

The SEAO Conference Committee should be congratulated for putting together this very fun, successful event. It was well worth the cost of admission!

# OREGON STATE UNIVERSITY DESIGN COURSES

## CLASSES

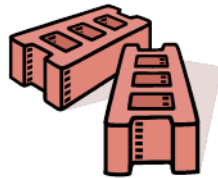
PRESTRESSED CONCRETE DESIGN CLASS  
SPONSORED BY KNIFERIVER AND OREGON PRECAST CONCRETE INSTITUTE

CE 408/508 or CE 808 - Prestressed Concrete (3 credits)  
Prerequisite: course in reinforced concrete design  
Instructor: Dr. Keith Kaufman of Kniferiver  
Winter Term: 6 to 9 PM on Mondays starting January 8th in Kearney Hall 312 at OSU.  
Course is also available as a regular university course (CE 486/586) if you are pursuing a degree.



MASONRY DESIGN CLASS  
SPONSORED BY MASONRY INSTITUTE OF OREGON

CE 408/508 or CE 808 - Masonry Design (3 credits)  
Prerequisite: course in reinforced concrete design  
Instructor: Sue Frey of CH2M-Hill  
Winter Term: 6 to 9 PM on Thursdays starting January 10th in Kearney Hall 205 at OSU.  
Course is also available as a regular university course (CE 482/582) if you are pursuing a degree.  
Also, note that the masonry design course is available on-line in the e-campus version (CE 408/508 or CE 808) including videos, and does not need to be an on-site attendance class.



NOTE: CE 408/508 are undergraduate and graduate workshops. CE 808 is the least expensive option and is a professional workshop, not applicable to a degree. Cost for CE 808 is \$175 for each 10 week course for continuing education students. PDH credits can be earned.

Admission information: <http://ecampus.oregonstate.edu/services/admissions/>

Registration information:

<http://ecampus.oregonstate.edu/services/registration/register.htm>

Students need to apply for admission and register before the start of the term to avoid late fees.

CRN for CE 808 (Masonry) = 36362

CRN for CE 808 (Pres. Conc.) = 36460

Questions? Please contact Prof. Tom Miller at OSU at (541) 737-3322 or [thomas.miller@oregonstate.edu](mailto:thomas.miller@oregonstate.edu).



**American Society of Civil Engineers, OSU Student Chapter**

## **Speaker Meeting**

**Sam Rahani, President of ASCE  
Structural Engineering Institute (SEI)**

**“ASCE’s Structural Engineering Institute  
and SE Licensure”**

**Kearney Hall, 6-7 PM  
Thursday, Nov 1<sup>st</sup>  
Refreshments Provided**

Sam Rahani, P.E., F.SEI, F.ASCE of Reston, Virginia, is current President of the Structural Engineering Institute and Principal of REI Structural Consultants. During his 35-year professional career, he has specialized in the structural analysis and design of steel framing systems and buildings, and acted as the lead structural engineer on more than 700 projects including numerous industrial, commercial, educational, and institutional buildings. He has held the positions of Senior Structural Engineer, Design Manager, Engineering Manager, Division Manager, Vice President of Engineering and Project Management, Principal, and CEO. He is a licensed professional engineer in 11 states, and is a Fellow member of SEI and ASCE. Sam has been an active member of ASCE since 1975 when he was an undergraduate student at Oregon State University. He is a 1977 graduate of Oregon State University with a BS in civil engineering. He earned his MSCE with an emphasis in structural engineering from the University of Maryland.



# SEAO ACI 318-11 Anchor Design – Seminar Other ACI 318 Significant Changes & (3) ASCE 7 Misunderstood Provisions

Hosted by the Structural Engineers Association of Oregon (SEAO)

**Date:** Friday, November 9, 2012 – 8:00 AM to 5:00 PM

Registration Opens at 7:00 AM (Lunch Included)

**Cost:** \$200 SEAO Member (Includes Class Notes) \$250 Non-member  
\$25 Late Fee (if registration received after Nov. 1, 2012)  
Students \$65 (Includes Notes) – Must show current student ID  
No refunds after 12:00 noon Thursday, Nov. 1, 2012  
Register early; Maximum 100 people **Program to be Taped by Limelight Video**

**Location:** Sheraton Portland Airport 8235 NE Airport Way  
Hotel and Conference Center Portland, Oregon  
(503) 249-7606

Continuing Education: SEAO has recommended this seminar for 7 PDHs  
(5 PDHs for Viewing Video)

**Speakers:** **S. K. Ghosh**, Ph.D., President, S. K. Ghosh Associates Inc., is a highly acclaimed speaker and author on seismic-related issues and concrete design, and has been involved with the development of national codes and standards.

**Susan Dowty**, SE, Project Manager, S. K. Ghosh Associates Inc., is the past Structural Secretariat for the IBC and consultant responsible for reorganizing the ASCE 7-05 seismic provisions. Ms. Dowty was extensively involved in code development during her 14-year employment with ICBO.

## IMPROVED ANCHOR DESIGN PROVISIONS IN ACI 318-11

Ever since Appendix D, Anchoring to Concrete, was introduced in the 2002 edition of ACI 318, the design of anchors subject to seismic forces in structures assigned to Seismic Design Category (SDC) C and above has been problematic. Real relief has finally been provided in ACI 318-11. This portion of the seminar will discuss the significant revisions to the seismic design provisions for anchorage to concrete, including

- 20% rule for invoking seismic design requirements
- ductile anchor check – single anchors and groups
- 8d<sub>s</sub> stretch length requirement
- options for shear

The other big change in Appendix D of ACI 318-11 is the introduction of design provisions for adhesive anchors. These provisions will be briefly discussed.

## SIGNIFICANT CHANGES IN ACI 318-11 OUTSIDE OF APPENDIX D

Significant changes in ACI 318-11 outside of Appendix D, including important changes in Chapter 21, Earthquake-Resistant Structures, will be outlined and discussed. The most significant of these changes is the introduction of a definition and design provisions for wall piers. Wall pier provisions so far were available only in the form of an IBC modification to ACI 318 requirements.

## THREE FREQUENTLY MISUNDERSTOOD ASCE 7 PROVISIONS

ASCE 7 provisions related to the following topics have generated many questions from users of the document. Important clarifications will be provided, which should lead to a better understanding of the provisions.

Drift Determination and Building Separation  
Special Seismic Load Combinations  
R, C<sub>d</sub> and Overstrength Factor Values for Horizontal and Vertical Combinations

**Questions:** Andy Stember at (503) 657-9800

# ACI 318-11 Anchor Design Seminar & Signif. Changes

## Registration Form

Register Online at [www.seao.org](http://www.seao.org) or

Send to: SEAO  
PO Box 2958  
Vancouver, WA 98668  
(503) 753-3075

Make Checks Payable to:  
SEAO

(503) 214-8142 (fax)

Firm Name: \_\_\_\_\_

Firm Address: \_\_\_\_\_

Phone \_\_\_\_\_

Name of Attendee(s) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# of Attendee(s) \_\_\_\_\_ @ \$200.00 / each = \$ \_\_\_\_\_  
(Nonmember \$250.00)

# of Late Fees \_\_\_\_\_ @ \$25.00 / each = \$ \_\_\_\_\_

# of Students \_\_\_\_\_ @ \$65.00 / each = \$ \_\_\_\_\_

# of Videos \_\_\_\_\_ @ \$175.00 / each = \$ \_\_\_\_\_

**Total Enclosed =** \$ \_\_\_\_\_

To Register with Visa Or Mastercard go to [www.seao.org](http://www.seao.org) to register online.



# The American & The Pacific Northwest Institute of Steel & Steel Fabricators' Construction Association



Invite you to attend this breakfast program on:

## Steel Plate Shear Walls (SPSW), TEBF, CFST, SF, and Other Short Stories

*Presented by*

**Michel Bruneau, PhD, P.Eng, F.ASCE, Department of Civil, Structural, and Environmental Engineering, University at Buffalo**

**Portland Meeting Thursday November 1, 2012**

Doubletree by Hilton Portland

1000 NE Multnomah, Portland OR 97232

– OR –

**Seattle Meeting Friday November 2, 2012**

Embassy Suites Seattle-Tacoma Int'l Airport

15920 West Valley Hwy, Seattle, WA 98188

**Schedule:** 7:30 am Sign-in & Coffee • 8:00 am – Breakfast & Program Begins • 8:00 am – 9:30 am Program

Cost: \$30 if registered by October 26, \$40 if registered after October 26

**TR Higgins Paper Presentation** – New structural systems and concepts can add to the Structural Engineer's "toolbox," providing him/her with an ever increasing range of solutions to meet increasingly complex design challenges. This presentation will provide an overview of some recently developed "tools" that can enrich this toolbox. This presentation will provide summaries on Steel Plate Shear Walls (SPSWs), Perforated SPSWs (P-SPSWs), Tubular Eccentrically Braced Frames (TEBFs), Concrete Filled Steel Tubes (CFSTs), Structural Fuses (SFs), Rocking Frames (RFs), and Self-Centering SPSWs (SCSPSWs). This lecture will include other elements of Bruneau's work as well—which encompasses new design concepts for seismic design, blast-resistance, and multi-hazard resistance concepts. His research at the University of Buffalo, where he is a professor and former director of MCEER, includes concepts for ductile steel plate shear walls, ductile bridge diaphragms, tubular eccentrically braced frames, structural fuses and controlled-rocking piers. Additional technical information can also be found at [www.michelbruneau.com](http://www.michelbruneau.com).

**About the Speaker** - Michel Bruneau, PhD, P.Eng, F.ASCE is a Professor for the Department of Civil, Structural, and Environmental Engineering at the University at Buffalo. He is a former Director (2003-2008) and Deputy Director (1998-2003) of the Multidisciplinary Center for Earthquake Engineering Research. He received his BSc Civil Engineering from the Université Laval, Québec, and his MS in Structural Engineering at the University of California, Berkeley; and his PhD in Structural Engineering at the University of California, Berkeley (with specialization in Earthquake Resistant Design). He gained practical experience working for the design offices of Morrison Hershfield Limited, in North York and Ontario; and Buckland and Taylor Ltd, in North Vancouver, B.C. In addition, he regularly provides consulting services to the industry.

Dr. Bruneau has conducted research on the evaluation and retrofit of existing steel bridges and buildings subjected to destructive forces, as well as on the development of new design concepts capable of providing satisfactory seismic-resistance, blast-resistance, or both (as multi-hazard resistant concepts). He has conducted reconnaissance visits to numerous disaster stricken areas, and is a member of various AISC and CSA specifications-writing committees. He has authored over 400 technical publications, including the textbook *Ductile Design of Steel Structures*, and two fiction books.

We invite you to attend this presentation and to extend the invitation to your colleagues—engineers, architects, general contractors, and owners. Take advantage of this opportunity to dialog about how you can work together to provide quality work, and to network with local fabricators. All engineers will receive a (CEU) continuing education certificate for Oregon and Washington for attending.

## PNSFA/AISC 2012 BREAKFAST MEETING REGISTRATION FORM

Please select one: ☐ Portland Meeting November 1 **OR** ☐ Seattle Meeting November 2 **OR** ☐ Both Portland & Seattle Meetings

Cost: \$30 if registered by October 26, \$40 if registered after October 26

Attendee Name(s):

1. \_\_\_\_\_ 3. \_\_\_\_\_  
2. \_\_\_\_\_ 4. \_\_\_\_\_

Please check: ☐ Engineer, Architect or Other Specifier ☐ PNSFA Member

Company: \_\_\_\_\_ Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Do you have any dietary restrictions? \_\_\_\_\_

# \_\_\_\_\_ attendees @ \$ \_\_\_\_\_ each = \_\_\_\_\_ TOTAL DUE

Make checks payable to PNSFA or pay by credit card: VISA ☐ MasterCard ☐ AMEX ☐

Card #: \_\_\_\_\_ Exp. Date: \_\_\_\_\_ Amount Authorized: \$ \_\_\_\_\_

Name on Card: \_\_\_\_\_ Signature: \_\_\_\_\_

Credit Card Billing Address & Zip Code: \_\_\_\_\_

**PNSFA Meeting Policies:** Pre-payment for registration is required. Space is limited, early registration is encouraged. Cancellations received on or after October 26 as well as no-shows to the meeting will not receive a refund.

Send to PNSFA at 147 SE 102nd Ave., Portland, OR 97216 or FAX to 503.253.9172

\* Due to credit card security policies, we cannot accept PDF registrations with credit card information or phone call registrations to the PNSFA office—please fax or mail in your registrations to PNSFA

Questions? Call PNSFA at 503.253.9030 or email us at [info@pnsfa.org](mailto:info@pnsfa.org)