CONNECTIONS

February 2013 Volume 13 Issue 5

Newsletter of the Structural Engineers Association of Oregon

SEAO

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Upcoming SEAO Meetings and Events:

Wednesday, February 20, 2013: 49th Annual Engineers Week High School Banquet
Keynote Speaker: Dr. Owen McCarty, Associate Professor in Biomedical Engineering at Oregon Health & Science University
Topic: A Sticky Situation in the Blood
Location/Time: Lloyd Center DoubleTree Hotel, Portland
Time: 6:30 pm to 8:30 pm
For information, see pages 9 & 10 or visit the website www.asceor.org\eweek\.
Contact Michelle Chavez ASAP at (503)246-1250 if you would like to attend.

Thursday, February 21, 2013: SEAO YMF Tour of Galvanizing Facility
Location: Galvanizers Company, 2406 NW 30th Avenue, Portland, OR
Time: 4:00 to 5:30 pm
See Page 7 for additional information.

Thursday, February 28, 2013: SEAOSF Tradeshow
Location: Monarch Hotel & Conference Center, 12566 SE 93rd Avenue, Clackamas, OR
Seminars: 11:00 am to 5:00 pm—See schedule on page 5
Tradeshow: 5:00 pm to 8:00 pm
Dinner: Served at 6:00 pm
Cost: Complimentary dinner & beverage for SEAO members; $25 per person for non-members.
RSVP for tradeshow only to Jane at jane@seao.org or (503)753-3075. RSVP not required for seminars.
PDH Credits: 6 hours available (1 for tradeshow attendance + 1 hour for each seminar attended).
See Pages 3, 4 and 5 for more information.

Thursday, March 7, 2013: YMF Lunch Meeting
Topic: YMF Event Planning for Upcoming Months
Location: TBD
Time: 12:00 to 1:00 pm
See Page 7 for more information.

Wednesday, April 24, 2013: SEAO Dinner Meeting
Speaker: Kimberley Robinson, S.E., Star Seismic
Topic: Advances in Buckling Restrained Braced Frame Design
Location: Governor Hotel, Second Floor, Portland
Time: 5:30 pm check-in & social, 6:15 pm dinner, 6:30 pm program

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.

Send membership inquires to:
9220 SW Barbur Blvd.
No. 119
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Portland, OR 97219

PRESIDENT'S MESSAGE:
ENGINEERS MONTH

By: Aaron Burkhardt, P.E.

February is Engineers Month here in Oregon and, more formally, the week of February 18 is National Engineers Week (http://www.asceor.org/eweek/).

This is a community supported outreach event to promote the fields of engineering to high school students. It was developed to educate these students about engineering and the different engineering disciplines. The main event is on Wednesday, February 20. That day, students, parents, educators, and engineers participate in field trips. After the field trips, all return to the Doubletree Hotel for a visit to an exhibit hall and a dinner. At the dinner, students are usually paired with an engineer at their table. This provides a great opportunity for these students to interact with engineers and ask all of their burning questions about our profession. ASCE Oregon needs additional volunteers to attend the dinner from the structural engineering profession. We generally have a low turnout from our professionals, and I would like to change that. As you are reading this, the dinner is probably only a couple of days away. Please contact Michelle Chavez (503-246-1250), and she can help you to participate in the event. I'm sure they will be filling seats up to the last day. It is very important that we have a good turnout of structural engineers. I've attended this event (and the field trips) many times in that past and had a great time with the students.

SEAO has an Engineers Week committee and individuals that participate in the events each year. In addition over the past few years, we have made a concentrated effort to reach out to high school students to talk to them about structural engineering and what structural engineers do. The effort is spearheaded by our current Past President Ed Quesenberry and the Young Members Forum (led by Seth Thomas). We have plans to get into several schools this year. We provide a presentation and do an activity (gumdrop and toothpick structures!). For many of these students, this will be their first formal introduction to what structural engineers do. If you are interested in participating with the forum or the school outreach program, please contact Seth (503-223-9932).

We structural engineers tend to perform our jobs in relative anonymity. My own mother still tells everyone how proud she is of her architect son, no matter how many times I explain to her what I do. We do our job not to be recognized by everyone, but to provide a valuable service to the safety of our built environment. This public service relies on some of the brightest minds in the world. Let's get out there and show the way for the next generation of great minds to be structural engineers.

SEAO Committees

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SEAO SCHOLARSHIP FOUNDATION ANNUAL TRADESHOW AND SEMINARS FEBRUARY 28, 2013

This year's show will include nine seminars and 28 vendors, and promises to be very informative and entertaining.

This event provides a good deal of income to the scholarship fund in large part due to the continued support and participation of the vendors. Our past shows have been a great benefit to both the vendors and the foundation. To continue this success, we need our members to support the show and its participants with their attendance. You will have the opportunity to view a variety of products and discuss problems and ideas. It is an excellent chance for new SEAO members to see what materials and products are available and currently in use in the field.

The afternoon seminars will run from 11:00 am until 5:00 pm, allowing the vendors to go more in depth and offer more information to the members than might be available at the Tradeshow alone.

We will be raffling off great prizes thanks to donations from some very generous companies. Tickets may be purchased at the show.

As always, donations (no matter how big or small) are very much appreciated. Remember that all proceeds will help the organization reach our scholarship goal. The Tradeshow is free to all SEAO members and includes a meal and two beverages. We look forward to seeing you at this year's trade show!

Date:
Thursday, February 28, 2013

Times:
Mini Seminars: 11:00 am to 5:00 pm
(see schedule on page 5)
Trade Show: 5:00 pm to 8:00 pm
Dinner: Served at 6:00 pm

Location:
Monarch Hotel
12566 S.E. 93rd Avenue
Clackamas, OR

Cost: Complimentary dinner and beverages for SEAO members; $25.00 per person for non-members

Reservations:
Please email or call Jane Ellsworth before noon on Monday, February 25, 2013
You only need to RSVP for the Tradeshow – it is not necessary for mini seminars.
Phone: (503) 753-3075
Fax: (503) 214-8142
Email to: jane@seao.org

PDH Credit:
SEAO recommends a maximum of 6 total hours of PDH's (Professional Development Hours) for the event. This includes one-hour for each seminar attended and one-hour to those who register their attendance for documentation at the trade show. See Jane Ellsworth to sign up specifically for that documentation.

PARTICIPATING VENDORS

This year's show will include nine afternoon seminars and 28 vendors, several of which have supported our scholarship tradeshow for over sixteen years. We hope you will also show your support of SEAOSF and an appreciation for these affiliate members by attending and discussing your projects with them and how they can assist you in being a more knowledgeable and efficient engineer.

ASC Steel Deck
Boise Cascade
Commins Manufacturing
Contech Services
CoreBrace
D&R Masonry
Fabreeka International
Five Star Products
Galvanizers Company
Hardy Frames
Hilti
Knife River
LP Corp
Mason Supply Company
Powers Fasteners
Ram Jack
RedBuilt
RISA Technologies
Scafco Steel Stud
Simpson Strong Tie
SR Contractors
Star Seismic
TerraFirma Foundation
Ultrablock
Verco
Web Joist
Western Wood Structures
Weyerhaeuser Trus Joist

SEAO SCHOLARSHIP FOUNDATION

Please consider making a donation to the SEAO Scholarship Foundation. Each contribution, no matter how big or how small, helps to fund our annual awards. For the 2013-2014 year, the Board has approved awards up to a total of $8,000 plus the annual award of $500 added to the top scoring applicant to create the Don Kramer Memorial Scholarship. This additional amount was made possible entirely through contributions in memory of Don. SEAOSF is a 501(c)(3) charitable organization so your entire donation is tax deductable. A good guide to giving is one dollar for each year of practice. In some years, the foundation has received contributions from over 100 members. Contributions may be sent to:

SEAO Scholarship Foundation
9220 SW Barbur Blvd. #119, PMB#336
Portland, OR 97219

SEAO SCHOLARSHIP FOUNDATION
ANNUAL TRADESHOW SEMINARS
FEBRUARY 28, 2013

CLACKAMAS ROOM

12:15 - 1:15 pm
Powers Fasteners

The following will be covered during the presentation:
1. A PowerPoint overview – focusing on anchors (Mechanical & Adhesive) which are designed per Strength Design criteria, have Cracked Concrete approval, and have been qualified for Seismic conditions.
2. Powers Design Assist (PDA – version2) software introductory demonstration.

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1:30 – 2:30 pm
Masons
Explosive Spalling

As the world's most widely used construction material, concrete offers many advantages to building and civil engineering projects, including versatility, strength, and durability. However, it can present problems when exposed to fire—such as explosive spalling. Explosive spalling occurs when thermal and pore pressure buildup happens quickly within the concrete and the increased pore pressure cannot be relieved. Consequences of explosive spalling include 1) a health and safety risk for emergency services, 2) loss of structural integrity of the structure, and 3) huge economic damage due to enormous repair costs. By incorporating polypropylene fibers within the concrete, not only will they provide resistance to early age shrinkage cracking and improve impact and abrasion resistance, explosive spalling can be mitigated because the fibers help relieve steam pressure within the structure.

2:45 - 3:45 pm
Contech Services
Adhesive Anchors Require Installer Certification?
Hear about ACI updates.

Don Ellsworth and Pete Barlow will give a brief overview of some current developments from the American Concrete Institute. The first overview will be ACI 562, the proposed repair code for existing buildings. The second overview will be the impending requirement per ACI 318-11 requiring all installers of adhesive anchors be ACI certified per 318-11, Appendix D, Section D.9.2.2 Adhesive Anchor Certification.

4:00 – 5:00 PM
RAM JACK

The description of the mini seminar is: Installation of sheet piling, steel piling,, and wood piling using vibratory technology.

WILLAMETTE ROOM

11:00 am - 12:00 pm
Five Star Products
Proper Grouting of Equipment

12:15 - 1:15 pm
Weyerhaueser – Trus Joist
Designing Around Moisture with Engineered Wood Products"...
or, "*Designing Around Moisture with EWP*"

1:30 – 2:30 pm
Simpson Strong Tie
Simpson Strong-Tie® Strong Frame® Special Moment Frame and the Yield-Link™ Structural Fuse.

Introducing the Strong Frame(R) special moment frame and the patented Yield-Link(TM) structural fuse. This new approach to special moment frame connections forces the deformation into the fuses allowing the beams, and the frames, to remain intact after a major seismic event. The Yield-Link structural fuse can be removed and new fuses bolted on with no welding required. This technology also eliminates the need for lateral beam bracing, typically required with a special moment frame, that is difficult, if not impossible to design and install in wood construction.

2:45 - 3:45 pm
Star Seismic

Buckling restrained brace usage has grown in the Pacific Northwest and has been used in both new construction and retrofit projects. They have been incorporated in healthcare structures, manufacturing facilities, schools and libraries, metal buildings, parking structures, civil structures, arenas and stadiums, high rise structures, retail and multi-story residential, and other types of projects. This presentation will give an overview of the changes that are coming in the upcoming AISC341-10 code, due to be adopted by many municipalities this summer, and discuss some of the most unique uses of the technology besides the typical BRBF frame.

4:00 – 5:00 PM
RISA
Commercial Building design using RISA software

Learn how to use RISA to design a multi-story building with a variety of materials, including masonry, wood, and steel. See how RISA can be used to define diaphragms and automatically generate wind and seismic loads per the ASCE 7.

2009 IBC Structural Q & A–Section 1908 modifications to ACI 318

By: ICC Staff.

1908.1.8 ACI 318, Section 22.10. Delete ACI 318, Section 22.10, and replace with the following:

22.10 – Plain concrete in structures assigned to Seismic Design Category C, D, E or F.

22.10.1 – Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:

(a) …

(b) …

(c) Plain concrete footings supporting walls are permitted, provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. For footings that exceed 8 inches (203 mm) in thickness, a minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exceptions:

1. *In detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls, plain concrete footings without longitudinal reinforcement supporting walls are permitted.*
2. *For foundation systems consisting of a plain concrete footing and a plain concrete stemwall, a minimum of one bar shall be provided at the top of the stemwall and at the bottom of the footing.*
3. *Where a slab on ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.*

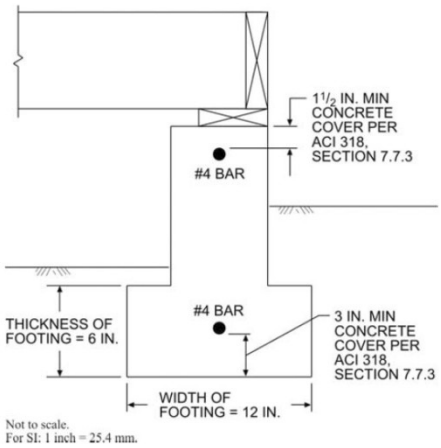
Q: Section 1908.1.8 [22.10.1 (c)] requires that reinforcement be placed in the top of the stem wall in Seismic Design Category C and higher structures. Is the reinforcement required to be continuous, or can foundation vents interrupt the continuity of the bar?

A: The reinforcement should be continuous. Interruption of the reinforcing by foundation vents could be considered, if reinforcing were placed below the vent opening, which extended far enough beyond the opening to ensure continuity of the strength of the wall or if reinforcing was bent up at an angle and then lapped with the top bar. If lap splices were used, they should conform to the requirements of ACI 318-08.

Also, the rim joist or other member over the vent opening should be adequate to span the opening. The intent of this provision is to add a measure of ductility to the wall so that, under seismic loading, shear cracking in the foundation stem wall will be minimized, preventing a substantial reduction in the lateral load capacity of the wall. It is also intended to minimize differential settlement. [19-45]

Q: Section 1908.1.8 [22.10.1(c)] prescribes a minimum of one bar at the bottom of a footing and at the top of a concrete stem wall for structures assigned to Seismic Design Category C and higher. What is the maximum distance allowed from the top of the footing or wall for the placement of this bar?

A: The code does not state a specific maximum distance. It is suggested that top reinforcement be placed with proper concrete cover in accordance with Section 7.7.1 of ACI 318-08, but not much more than that, as illustrated in Figure 19-46. [19-46]



MINIMUM REINFORCEMENT FOR PLAIN CONCRETE FOOTINGS AND STEM WALLS
FIGURE 19-46

This question and answer are from the *2009 IBC Q&A Structural Provisions*. The question is a commonly asked question which arises in the application of code provisions during design and plan review. The IBC section is reprinted for easy reference, followed by the question and answer pertaining to that section. The *2009 IBC Q&A Structural Provisions* is available at iccsafe.org/store. Use ID # 4003S09.

The applications and illustrations published herein are those of the ICC staff and are not binding on the authority having jurisdiction. The authority having jurisdiction has the ultimate responsibility for rendering interpretations of the code.

UPCOMING SEISMIC EVENTS

ASCE Seminars (www.asce.org)

Thursday-Friday March 21-22, 2013, Seattle, WA.
Earthquake-Induced Ground Motions

FEMA 154/ATC 20 Training
http://www.fema.gov/earthquake-training/national-earthquake-technical-assistance-program-training-calendar

Monday-Tuesday March 18-19, 2013, Medford, OR
Wednesday-Thursday March 20-21, 2013, Eugene, OR

NEES Webinars (http://nees.org/events/details/181)

Thursday February 21, 2013.
Research to Practice Webinar: Performance and Design of Low Shear Walls

WELCOME NEW MEMBERS!

January:
Ali Rejaie, HNTB Corp
Michael Daubenberger, MD Structural

YOUNG MEMBER FORUM ACTIVITIES

By: Phil Davis & Seth Thomas

Thursday February 21st, 4pm – SEAO YMF Tour of Galvanizing Facility—THERE ARE STILL SPOTS AVAILABLE

The YMF is organizing a tour and information session at Galvanizers Company located at 2406 NW 30th Avenue in Portland, Oregon. This 1.5 hour tour and information session will cover how the galvanizing process works, why it is needed, what we as engineers need to consider for constructability, the size limits of what can and cannot be galvanized at their facility, and coordination tips for working with a galvanizer. We will then be taken around the facility and shown the kettles and the galvanizing process.

This is a great opportunity to get to see the galvanizing process up close and get some insight into the process, and this tour qualifies for continuing education credits. The facility is located close in Northwest Portland and very easy to get to. There is a limit of 40 people and space will be reserved on a first-come first-served basis and **this tour is not limited to YMF members--anyone from the SEAO is welcome to join**.

Please RSVP to Phil Davis (pdavis@degenkolb.com) or Seth Thomas (sthomas@degenkolb.com) to reserve your space.

YMF Website Info: YMF now has an updated website and the address is http://www.seao.org/committees/youngmembers/. Please visit our website for more information on YMF events and information.

Thursday March 7th – SEAO YMF Lunch Meeting

Come join the YMF for a working lunch meeting to discuss and plan future events in the upcoming months. Anyone interested is welcome to attend and find out more about the YMF and help plan our next activities. Location is to be determined, but please contact Phil Davis (pdavis@degenkolb.com) or Seth Thomas (sthomas@degenkolb.com) if you are interested in attending or have any questions.

EMPLOYMENT OPPORTUNITIES

catena consulting engineers provides the personal environment of a small firm while providing the opportunity to work on a variety of projects. Our projects vary in size from a single day's effort to large projects with construction values in excess of $300 million. You will gain design experience in concrete, steel, timber, and masonry buildings and will work on a wide variety of project types, including buildings created for healing, learning, living, and interacting. Due to the technical complexity and challenge of many of our projects, we seek engineers that have earned a Master's degree, and that have a desire to learn, grow, and be challenged. U.S. citizenship is preferred. For a detailed advertisement and to submit your resume, visit our website http://www.catenaengineers.com/opportunities.php

Corbin Consulting Engineers, Inc. is a full-service, multi-discipline engineering firm that specializes in providing professional services to advanced technology, industrial, and institutional clients throughout the Pacific Northwest. Our firm is currently seeking a structural engineer who has 3 to 6 years experience in performing structural analysis and design on industrial buildings and non-building structures. Structural designs will include reinforced concrete structure design, steel structure design, seismic design and detailing for new and existing buildings and non-building structures. Other duties include preparing a variety of reports and correspondence related to project activities and construction administration.

The ideal candidate must have a Bachelors degree in Civil/ Structural Engineering, a PE license or ability to obtain one within 3 months, be a team player, have a general sense of responsibility and follow through, have excellent verbal/ written communication, a demonstrated ability and knowledge using RISA 3D as well as Excel, Outlook and other Microsoft Office programs.

If interested in this position, please email your resume and cover letter to corbin@corbinengineering.com

KPFF Portland is looking for motivated Structural Project Engineers interested in opportunity for growth. As a Structural Project Engineer, you will work individually and collaboratively in the design - construction process for some of the most challenging projects in the Pacific Northwest, as well as nationally and overseas. You will work closely with talented engineers, BIM / CAD technicians, architects, project managers, contractors and client teams.

The preferred candidate will have:

- 3+ years of structural engineering experience
- PE and MS / MEng engineering degrees
- Revit Structure experience
- Strong verbal and written communication skills
- Creative, proactive, and detail-oriented individual
- Outgoing individuals who thrive when working directly with architects, contractors, and other engineers

Apply
KPFF would like to hear from you. Please submit a cover letter and resume to sharon.ellis@kpff.com

KPFF is an equal opportunity employer.
For more information, please visit:
http://www.kpff.com/contacts-7/40

Engineers Week 2013

ENGINEERS MAKE IT WORK.

We request your support for the 2013 Engineers Week High School Program. E-week is a community-supported outreach program to promote the field of engineering as a career option for local high school students. Portland, Oregon's Annual Engineers Week High School Program reaches out to high school students in the greater Portland metropolitan area and southwest Washington. Over 350 high school students and 50 high school teachers participate in the annual event.

The E-week High School Program was developed to educate high school students about engineering and the variety of engineering disciplines. The goal of the program is to engage and inspire students through: field trips to local engineering projects, research and design facilities, and fabrication facilities, exposure to the diversity of local companies which employ engineers, and 1-on-1 interactions with practicing engineers.

E-week is an invaluable resource for the local engineering community for many reasons:

- E-week is free to students and teachers throughout NW Oregon and SW Washington
- E-week gives students exposure to engineering disciplines in various ways: field trips, exhibit hall, 1-on-1 dialogue with practicing engineerings, and a keynote presentation.
- E-week introduces sophomores and juniors to engineering while they are still on the high school track to choose courses and other activities to more adequately prepare them for college engineering.
- E-week deconstructs engineering stereotypes and focuses on problem solving, team work, and promotes a strong foundation in science, technology, engineering, and math education.
- E-week promotes gender, cultural and economic diversity through focused outreach to schools and communities.
- E-week promotes science, technology, engineering, and math (STEM) curriculum in local schools and makes connections between local engineers and STEM teachers.
- E-week is coordinated by a diverse volunteer committee representing both the private and public sectors, a variety of engineering disciplines, and a variety of business sectors.

Please consider supporting this event as an E-week Sponsor. See next page for more details.

ENGINEERS MAKE IT WORK.

Support the 49th Annual Engineers Week High School Program

Wednesday, February 20, 2013
Lloyd Center DoubleTree Hotel

E-week Platinum Sponsor ($2000)

- Principal title sponsor on all event advertisements.
- Your organization's name included in all press releases for the E-Week event.
- Your organzation's name included on the event website and Facebook page.
- Opportunity for your company executive to address event participants at E-week banquet.
- Sponsor two schools. This includes hosting 20 students at the Event.
- Participation of 20 engineers from your organization at the event banquet.
- Special acknowledgement within the event invitation and the event program.
- Audio and visual recognition at the event.
- Optional: Host a technical field trip to your organization or a project site for students and teachers.
- Optional: Coordinate site visit to your office for your sponsored high school students before or after February 20th.

E-week Gold Sponsor ($1000)

- Secondary title sponsor on all event advertisements.
- Your organization's name included in all press releases for the E-Week event.
- Your organzation's name included on the event website and Facebook page.
- Sponsor one school. This includes hosting 10 students at the Event.
- Participation of 10 engineers from your organization at the event banquet.
- Special acknowledgement within the event invitation and the event program.
- Audio and visual recognition at the event.
- Optional: Host a technical field trip to your organization or a project site for students and teachers.
- Optional: Coordinate site visit to your office for your sponsored high school students before or after February 20th.

E-week Silver Sponsor ($500)

- Tertiary title sponsor on all event advertisements.
- Your organization's name included in all press releases for the E-Week event.
- Your organzation's name included on the event website and Facebook page.
- Sponsor 10 students at the Event.
- Host a technical field trip to your organization or a project site for students and teachers.
- Participation of 4 engineers from your organization at the event banquet.
- Special acknowledgement within the event invitation and the event program.
- Audio and visual recognition at the event.
- Optional: Coordinate site visit to your office for your sponsored high school students before or after February 20th.

E-week Steel Sponsor ($175)

- Host five high school students.
- Acknowledgement within the event program.

Host ($75) Attend the banquet and host a high school student. $35/student to host additional students.