



CONNECTIONS

May 2014 Volume 14 Issue 8

Newsletter of the
Structural Engineers
Association of Oregon

SEAO
9220 SW Barbur Blvd.
No. 119
PMB #336
Portland, OR 97219

Phone: (503) 753-3075
Fax: (503) 214-8142
E-Mail: jane@seao.org
Web site: www.seao.org

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Upcoming SEA/O Meetings and Events:

Thursday, May 15, 2014: YMF Happy Hour

Location: Burnside Brewery, 701 E Burnside, Portland, Oregon
Time: 5:30 pm to 7:30 pm
See Page 4 for additional YMF information.



Thursday, May 29, 2014: SEA/O Dinner Meeting

Speaker: Joseph Tortorella with Structural Engineers Association of New York
Topic: 9/11 Responders and the Structural Risk Involved — Post 9/11 Lawsuits of SEA/O Members and the Path Forward Through a National Good Samaritan Act
Location: Sentinel Hotel, 614 SW 11th Ave, Portland, Oregon (formerly named the Governor Hotel)
Time: 5:30 pm check-in and social; 6:00 pm dinner; 6:15 pm program
Sponsor: The International Code Council (ICC). See Page 10 for sponsor information.
See Page 3 for additional meeting information.

Thursday, June 19, 2014: YMF Happy Hour

Location: To Be Determined—Save the Date!
Time: 5:30 pm to 7:30 pm

Wednesday, June 25, 2014: SEA/O Lunch Meeting

Panelists: Matthew Braun—Howard S. Wright; Nathan Ingraffea—KPFF Consulting Engineers;
Guari Rajbaidya—SERA Architects; Bret Cournoyert—PAE; Jonathan Gray—Interface Engineering
Topic: Edith Green/Wendell Wyatt Federal Building - Integrated Project Delivery, Co-Location,
Collaboration of Team & Lessons Learned
Location: Portland City Grill, 111 SW Fifth Avenue, 30th Floor, Portland, Oregon
Time: 11:30 am check-in and buffet lunch, 12:00 pm program
Sponsor: Daily Journal of Commerce (DJC Oregon)



Wednesday, July 23, 2014: SEA/OACI Annual Golf Tournament

Location: Pumpkin Ridge Golf Club, 12930 NW Old Pumpkin Ridge Road, North Plains, Oregon
Time: 1:00 pm shotgun start, 6:00 pm social, 6:30 to 7:30 pm dinner & awards
See Pages 11 and 12 for additional registration and sponsorship information.



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 inquiries to:
9220 SW Barbur Blvd.
No. 119
PMB #336
Portland, OR 97219

BOARD OF DIRECTORS

President

Amit Kumar
Bureau of Development Services
City of Portland
503.823.7561
amit.kumar@portlandoregon.gov

Vice President

Jennifer Eggers
KPFF Consulting Engineers
Ph: 503.227.3251
jennifer.eggers@kpff.com

Secretary

Dominic Matteri
Kramer Gehlen & Associates
Ph: 503.289.2661
dominicm@kramer-gehlen.com

Treasurer

Shelly Duquette
City of Portland
Ph: 503.823.4961
shelly.duquette@portlandoregon.gov

Director

Mike Bair
Weyerhaeuser
Ph: 503.853.4638
mike.bair@weyerhaeuser.com

Director

Jason Thompson
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jason@catenaengineers.com

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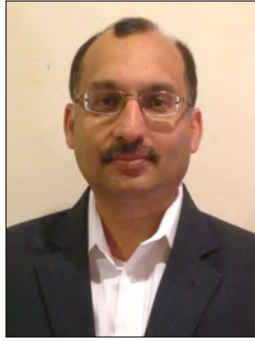
Aaron Burkhardt
KPFF Consulting Engineers
Ph: 503.227.3251
aaron.burkhardt@kpff.com

Executive Secretary

Jane Ellsworth
SEAO Staff
Ph: 503.753.3075
Fax: 503.214.8142
jane@seao.org

PRESIDENT'S MESSAGE: REFLECTIONS ON CODE CHANGES

By: Amit Kumar, S.E., P.E.



For those of you who were not able to attend our lunch meeting on April 30th, you missed a very compelling talk on the Canterbury (New Zealand) series of earthquakes, engineer's role in the post-earthquake environment, and what we as structural engineers can do to be better prepared. The talk was presented by Lara Simmons, an engineer from the Northwest who spent a couple of years in Christchurch in New Zealand during and after the series of earthquakes that racked the city. If you are interested in that presentation, a video recording is available for viewing at a nominal charge. Please contact Jane Ellsworth at jane@seao.org for more information. Dave Tarries has also provided an excellent recap of the presentation in this newsletter.

There was obviously a lot of engineering information related to building performance during the earthquakes and lessons learned from these earthquakes; however one statement related to the practice of engineering in the presentation caught my eye. One of the engineers leading the investigation of building performance during the Christchurch earthquakes commented and I quote, "toughen up the entry and maintenance requirements of CPEng and lay formal complaints against engineers who have been cutting corners for years and everyone knew it." (CPEng certification in New Zealand is the equivalent of Professional Engineer (PE) license here in the US.) These statements relate to ethics in engineering. Ethics is doing what is right. To be ethical as engineers we need to practice within our discipline, within our area of competence and area of examination. Most states like Oregon award a PE license but do not distinguish between the various disciplines. An engineer has an obligation to practice only in the area in which they are truly competent. However, this arrangement does not seem to be working, similar to what appears to be a concern in New Zealand. I personally see this every now and then in my role at the City of Portland reviewing structural designs prepared by Professional Engineers. It is my opinion that hav-

ing a PE license by itself is not adequate. I would advocate for specifically licensing structural engineers as distinct from other disciplines or as additional credentials beyond the PE license to practice in our field. The State of Oregon has instituted laws limiting who can practice structural engineering on "Major" structures to those who are licensed as Structural Engineers (SE). Based on some of the designs that I have seen prepared by some Professional Engineers, I think we need to expand the definition of "Major" structures!! Most other states do not have any structural specific license requirements on the books and our industry has recognized this shortcoming and professional societies like NCSEA have taken up the cause.

The second statement, "lay formal complaints against engineers who have been cutting corners for years and everyone knew it", unfortunately rings true based on my experience. There are times when we as engineers push our limits and that is okay as long as we practice within our area of competence and with ethics. Unfortunately sometimes, some of us get caught up in trying to please our clients by taking shortcuts, putting our duties and responsibility aside. The clients ask for the impossible, and we believe that in order to keep them happy, we have to provide any design that they request. However, we are trained professionals and need to make well-reasoned recommendations on what is required and appropriate. When it comes to engineering, we need to defend what is right. We as engineers have a duty not only to the paying clients but to the general public. Taking shortcuts to please our clients without regard for proper engineering practice or ethics could endanger the safety, health, and welfare of the public. When we see something that is not right, it is our responsibility to question and challenge it. It is our responsibility to bring it to the attention of the design professional and where appropriate report it to the licensing board. It is up to us engineers to uphold the ethical responsibility that we have to the public. I hope we all will take this responsibility seriously.

That's it for my soap box this month. I would

(Continued on Page 5)

SEAO COMMITTEES

CODE ADVISORY COMMITTEE

Seismic

Chad Kilian—kilianc@bv.com

Wind

Jim Riemenschneider—jimr@vlmk.com

Snow Load

Andy Stember—andy@jasenginc.com

Code

Eric Watson—eric@millers-se.com

Vintage Building

Wade Younie—wyounie@dc-engineers.com

Special Inspections

Ray Miller—ray@millers-se.com

STRUCTURAL ENGINEERS EMERGENCY RESPONSE (SEER)

Shawn Stevenson—

sstevenson@morrisonhershelfield.com

PROGRAM COMMITTEE

Monthly Meetings

David Gilroy—dgilroy@strongtie.com

Devon Lumbard—devonl@wrkengrs.com

Golf Tournament

Devon Lumbard—devonl@wrkengrs.com

Conferences

Kevin McCormick—kevin@millers-se.com

ADVOCACY COMMITTEE

Website

Aaron Burkhardt—

aaron.burkhardt@kpff.com

Legislative

Paul Kluvers—pkluvers@gmail.com

Engineers Week

Michelle Chavez—

michelle@millers-se.com

Young Member Forum

Seth Thomas—setht@wrkengrs.com

Phillip Davis—phillip.davis@kpff.com

CONTINUING EDUCATION COMMITTEE

Seminars

Andy Stember—andy@jasenginc.com

Professional Development

Open

MEMBERSHIP COMMITTEE

Newsletter

JoMarie Farrell—

jomarie@equilibriumllc.com

Roster

Jane Ellsworth—jane@seao.org

DELEGATES

NCSEA & WCSEA/NWC

Ed Quesenberry—

edq@equilibriumllc.com

Seth Thomas (Alternate)—

setht@wrkengrs.com

MAY DINNER MEETING ANNOUNCEMENT

THURSDAY, MAY 29, 2014

Topic: 9/11 Responders and the Structural Engineering Risk Involved — Post 9/11 Lawsuits of SEAoNY Members and the Path Forward Through a National Good Samaritan Act

Speaker: Joseph F. Tortorella, P.E., President of Robert Silman Associates

Since joining Robert Silman Associates in 1979, Mr. Tortorella has supervised new construction, modernization, additions, renovation, adaptive reuse, sustainable design, and historic preservation projects. His role in the firm as President and Managing Principal has led to strategic growth and continued financial success over the past twenty years. He is particularly involved in promoting and sustaining the firm's unique culture of "Joy" in the workplace.



Mr. Tortorella is currently a Vice President of the International Association for Bridge and Structural Engineering (IABSE) and Chair of the US National Group of IABSE. He is the president of the board of the Center for Architecture Foundation, through which he previously taught architecture to primary school children through their Learning by Design program. He is a member and past president of the Structural Engineers Association of New York (SEAoNY) and a past board member of the American Council of Engineering Companies, New York Chapter. He served on the Executive Board of New York New Visions in the evaluation of the designs for the redevelopment of the World Trade Center site and has chaired or served on many industry committees over the years, most recently, the AIA Post Sandy task force. Mr. Tortorella is a graduate of Manhattan College (BSCE).

Topic Abstract: "No good deed goes unpunished" (Clare Booth Luce). September 11th brought many engineers together to volunteer in the rescue/recovery effort at Ground Zero. From September 13, 2001 through January, 2002, over 100 SEAoNY engineers went to Ground Zero on a round-the-clock basis to help rescue workers evaluate debris piles for stability as well as the safety of surrounding structures. Unfortunately, the engineering firms that employed the engineers who volunteered are being sued by 20,000+ plaintiffs over respiratory damages. What do structural engineers have to do with this? Our concern is this: When I was President of SEAoNY, I found resistance by our members when I asked for volunteers (example, only 13 members volunteered to assist after Katrina!!). Several members said to me "their boss would not allow them to volunteer again because of the lawsuit." Is this the attitude we want to foster? We fear that, should another extreme event occur in New York or in other states, we would be left with nothing but lawyers scrambling to solve the problem. Are people outside of NY even aware of the possible ramifications of their efforts in volunteering at a disaster site? What we need desperately is Emergency Responder Legislation. This presentation will tell the tale about the post 9/11 work at Ground Zero and the ensuing lawsuits and our proposal for Emergency Responder Legislation

Location: Sentinel Hotel (formerly the Governor Hotel), 614 SW 11th Avenue, Portland, OR

Check-in & Social: 5:30 pm; **Dinner:** 6:00 pm; **Program:** 6:15 pm

Cost: Dinner and Program: \$32 — Prepaid Members,
\$40 — Prepaid Non-Members
\$18 — Students

Reservations: Pre-registration is required. **You can register and pay online at www.seao.org before noon, Friday, May 23.** You can also register with Jane Ellsworth via phone at (503)753-3075 or via Email: jane@seao.org. Note: No-shows will be billed.

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

Videotaping: This month's presentation will be videotaped and will be available for purchase to view for those who are not able to attend. The cost for obtaining access to the video is \$16 for members and \$22 for non-members. Please contact Jane Ellsworth at (503)753-3075 or via Email: jane@seao.org to obtain a web link to view the video.

This month's meeting is proudly sponsored by the International Code Council (ICC). Reference Page 8 for additional information.



EMPLOYMENT OPPORTUNITIES

KPFF Portland is looking for motivated Structural Engineers

Position: Structural Project Engineer

Position Summary: As a Structural Project Engineer, you will work individually and collaboratively in the design/construction process for some of the most challenging projects. You will work closely with talented engineers, BIM/CAD technicians, architects, project managers, contractors, and client teams.

Qualifications

The preferred candidate will have:

- 3+ years of experience in structural engineering
- PE and MS/MEng engineering degrees
- Experience with Revit Structure
- Strong verbal and written communication skills
- Creative, proactive, and detail-oriented individual

Apply

Follow this link to apply: <http://tinyurl.com/kpffpdx-structuralengineer>

KPFF is an equal opportunity employer.

ITS Technologies is seeking

Entry Level Structural Engineer to work in the Portland area. This position offers a variety of great benefits, including health insurance, 401(k), and paid time off, with a salary range of \$45-\$60k.

Responsibilities & Duties for Structural Engineer Include:

- Perform a variety of routine engineering assignments with increasing responsibility based on performance
- Screen assignments for problems and select appropriate methods and techniques to apply
- Draft interpretation of own design into completed working drawings and applies engineering fundamentals to design
- Perform routine calculations and work on PC system

Requirements & Desired Skills for Structural Engineer Include:

Bachelor Degree in Engineering

0-2 years of experience

Structural Engineer to work in the Portland area. This position offers a variety of great benefits, including health insurance, 401(k), and paid time off, with a salary range of \$55-\$85k.

Responsibilities & Duties for Structural Engineer Include:

- Design structural projects and effectively utilize other engineering resources to provide complete led design packages
- Provide all pertinent information and required deliverables for each project
- Review and comprehend project documents submitted by clients
- Prepare design documents for drafting
- Prepare engineering calculations for permitting and client review

Requirements & Desired Skills for Structural Engineer Include:

Bachelor's Degree in Civil/Structural Engineering

Licensed professional engineer (PE) preferred

6-8 years of experience

Contact: Danielle Kluge, Lead Technical Researcher

DKluge@ITSTechnologies.com

| Desk: 419-842-2129 | Toll-Free: 800-432-6607 x220

YOUNG MEMBER FORUM ACTIVITIES

By: Phil Davis & Seth Thomas

Upcoming YMF Events:

Thursday, May 15th – Happy Hour – Burnside Brewery, 701 E Burnside, Portland, OR—5:30 to 7:30 pm. Bring a friend, coworker, or both and enjoy a beer and some food while getting to know some other young professionals in our area.

Thursday, June 19th – Happy Hour — Location: TBD—5:30 pm to 7:30 pm. Bring a friend, coworker, or both and enjoy a beer and some food while getting to know some other young professionals in our area.

Thursday, July 10th – YMF Lunch Meeting — KPFF Consulting Engineers, 111 SW Fifth Avenue, 26th Floor Conference Room—noon to 1:00 pm. Join us for our bi-monthly lunch meeting to discuss future events and activities. This is a great way to get involved in SEO.

YMF Summer BBQ—The YMF is working on a summer BBQ. Stay tuned for more information on date and time.

YMF Website Info: <http://www.seao.org/committees/youngmembers/>. Please visit our website for more information on YMF events and information.

SNOW COMMITTEE NEWS

The new Oregon Snow Load Design Manual has been printed and is available for purchase. Visit the SEO website at www.seao.org/publications/snowload/ for information on how to order or contact Jane Ellsworth at jane@seao.org. The design ground snow load map is also available online on the SEO website at <http://snowload.seao.org/lookup.html>.



FISH TRIP RAFFLE

For every SEAO event that you have attended this fiscal year, you have been entered a chance to win a trip to FishCamp for two days of fishing on the Rogue River in Southern Oregon. FishCamp is located along the banks of one of the most scenic rivers in the State, just outside the town of Shady Cove. Accommodations, meals, gear and guide are all provided. No previous fishing experience is required. Your guide will teach you the proper methods for catching a fish on the Rogue. The drawing for the trip will occur during the June meeting. Attendance is not required, but we do encourage you to join us. This trip has been donated by Mike Bair of Weyerhaeuser (a fellow SEAO member and current SEAO Board Director). Attend the two remaining year's meetings (May & June) and have two more chances to win.



SEISMIC EVENTS

[ASCE Webinars \(www.asce.org\)](http://www.asce.org)

Tuesday May 20, 2014, 8:30 – 10:00 AM PST. [Seismic Evaluation and Retrofit of Unreinforced Brick Masonry Buildings Using ASCE 41-13.](#)

Monday June 2, 2014, 8:30 – 10:00 AM PST. [Damping and Motion Control in Buildings and Bridges.](#)

Tuesday June 17, 2014, 8:30 – 10:00 AM PST. [Design of Masonry Shear Walls.](#)

[ATC Webinars \(www.atccouncil.org\)](http://www.atccouncil.org)

Wednesday May 21, 2014, 12:00 – 1:30 PM PST. [Seismic Design of Steel Special Concentrically Braced Frame Systems.](#)

Wednesday May 28, 2014, 12:00 – 1:30 PM PST. [Use of High-Strength Reinforcement for Earthquake Resistant Concrete Structures.](#)

EDUCATIONAL OPPORTUNITIES

Structural Masonry Design Seminar

The Northwest Concrete Masonry Association will be conducting a full-day seminar focusing on the design of reinforced concrete masonry construction. Both working stress and strength design methods of the new 2012 IBC and 2011 MSJC codes will be covered.

The seminar will include the explanation of new code provisions and step-by-step design examples of masonry building elements by manual and automated methods. It is aimed at practicing engineers who want to learn how to design masonry in a practical and efficient manner. It will be presented by two professional engineers at each location. The seminar will consist of 7.5 hours of continuing education. Certificates of attendance will be issued.

Seminar date and location: **June 17, 2014 - Portland, OR**

Additional information can be obtained from the Northwest Concrete Masonry Association at 425.697.5298 or www.nwcma.org. See pages 13 and 14 for more information.

PRESIDENT'S MESSAGE (CONT. FROM PAGE 2)

like to end by reminding you that our monthly meeting is on **Thursday, May 29th**. This is a change from our usual meeting time of the last Wednesday of the month. In addition, our monthly meeting will be over dinner, instead of the lunch meetings we have been having the past few times. This is to accommodate our speaker who is travelling from New York and will be presenting to the Structural Engineers Associations of Washington and Idaho on his swing through the Northwest. Joe Tortorella will be talking about how structural engineering firms got entangled in law suits in the aftermath of the 9/11 disaster. This presentation will tell the tale about the post 9/11 work at Ground Zero and the ensuing lawsuits and the proposal for "Emergency Responder" legislation.

We have had some great turnout at our last few monthly meetings, and I hope we can continue this trend at our May meeting. As in the past, to provide further incentive, your attendance at the meeting will qualify you to enter into our drawing for a fully-guided fishing trip on the Rogue River, courtesy of SEAO board member, Mike Bair and The Weyerhaeuser Corp.

APRIL MEETING RECAP

By: David Tarries, P.E.

Structural Engineering After a 2,500 Year Earthquake – Lessons Learned While Working in Christchurch

By Lara Simmons, S.E. of LRS Engineering in Seattle, Washington

Lara is a structural engineer with her own firm in Seattle, Washington. She graduated from the University of Minnesota in 1999 and has worked in Minneapolis and Seattle. She spent time with firms such as Swenson Say Faget and KPFF in Seattle until 2011 when she accepted a position with Holmes Consulting Group and travelled to Christchurch, New Zealand to assist with retrofit projects after the 2011 quake and subsequent aftershocks.

Overview

Lara moved to Christchurch to manage the structural engineering effort to restore the Art Centre Building at the University of Canterbury and other significant historic retrofit projects in Christchurch, New Zealand. During her time in Christchurch she learned many earthquake-related lessons involving building damage, engineering and personal challenges, public education and sentiment, the Royal Commission, and future preparation. Her presentation to the SEAO chapter is a recap of these lessons learned.

The Events

The main seismic events in Christchurch occurred after a 7.1 magnitude earthquake on September 4, 2010, in which there were no direct fatalities. There have been more than 3,500 aftershocks of varying magnitude and epicenter since this initial quake. GeoNet services, the USGS equivalent in New Zealand, lists 4 major events in the Christchurch Earthquake starting with the 7.1 event on September of 2010 and ending with a 6.0 event in December of 2011. The most significant of these events was a 6.3 aftershock that occurred on a previously unknown east-west fault near Lyttleton, near Christchurch, on February 22, 2011. This event caused major damage to already weakened structures and resulted in the death of 185 people. Three main structures were responsible for the majority of deaths: the Canterbury Press Building, the Pine Gold Building, and the Press Building. At least 42 people lost their lives in unreinforced masonry structures (URM). The financial cost of the destruction was approximately \$50 billion dollars, about 8% to 10% of New Zealand's GDP. 80% of the buildings had earthquake insurance. About 23% of the businesses had to relocate, and 9% had to do that more than once.

Buildings typically performed as expected for their respective lateral systems. Unreinforced masonry structures crumbled and fell, precast stairs failed often, and roads and bridges were cracked and broken. Settlement caused significant damage to many buildings. Liquefaction and lateral spreading were common. The government implemented a buy back policy for some of the most heavily damaged areas to restrict future construction in unstable soil zones.

Non-structural damage was significant. Non-structural does not mean non-hazard and there were many falling hazards from falling materials that continued long after the main events. As the contents of a building account for about 75% of the cost of the structure, the financial losses for buildings with even minor structural damage could be quite large.

Engineering Efforts

Engineers were on the scene within hours of the event and helped determine safe paths for rescue operations and directed shoring of falling

structures. The Canterbury Earthquake Recovery Authority (CERA) enacted the CBD Red Zone and limited public access to the central, most heavily damaged, area in the city. The New Zealand Defense Force and the New Zealand Police installed cordons and manned checkpoints around the area. Charter Professional Engineer (CPEng) status was required to enter the zone without an escort. Working inside the Red Zone came with the restriction that in the event of an aftershock of 5.0 or above access to the zone would be shut down for 24 hours. This complicated travel for workers inside the zone. Controlled access of some form into the Red Zone continued until June of 2013.

Lara arrived in Christchurch to design repairs and retrofits on the Canterbury University Campus. Buildings on the campus had typically been constructed between 1890 and 1926 and the campus boasted the largest collection of URM in New Zealand. Damage to the campus was extensive. A large part of the engineering work she participated in included monitoring buildings for additional damage following aftershocks. Survey points, crack monitoring, and even string drift markers were used to try to document shifts in structures. One of the most effective methods was looking for rubble. The areas around structures were kept clean so that any new debris could be more easily spotted.

Another task for engineers was directing shoring of existing structures prior to demolition, as well as the development of demolition plans and sequences. An additional complication to the creation of demolition plans was determining the safety of adjacent buildings during the process. These tasks exposed some points of contention between engineers. These points included if temporary shoring should be designed to support more load than the original structure, how much crack movement represents an unsafe condition, and what should be safety procedures for construction workers. Shelter tunnels were a common safety measure used, and recommended egress plans were given to workers on each site to provide a sense of order and direction. Some of the other challenges facing engineers working after the earthquake were locating office space to work from and finding contractors with time available to take on additional projects.

Public Reaction

The personal challenges for people after the event were evident. In addition to public utilities, many schools, grocery stores, and other facilities important to daily life were closed and people had to travel longer distances to meet their needs. Many people lost friends and family and everyone lost a sense of safety in their environment. The large scale demolition was demoralizing and formerly populated areas were reduced to empty lots. Through all of the demolition and repair there was a constant state of change in the city making it a challenge to find businesses and services from day to day. Public sentiment was summarized best perhaps in the local game parody, Quakeopoly, where each turn seems to lead to a delay or a step backward and waiting for an engineer's report is an unfavorable experience.



(Continued on Page 7)

APRIL MEETING RECAP (CONT.)

By: David Tarries, P.E.

Public understanding of structural damage versus engineering assessments was found to be very different after the event. Life Safety and Collapse Prevention may seem acceptable in an engineering discussion; however, the general public tends to see them as unacceptable levels. Superficial cracks are not significant to engineers, but the public has a tendency to become highly concerned. A green-tagged structure may be understood to still have risks to an engineer, but the public may mistake the tag for a guarantee. Public reaction to engineers changed over time after the event. At first people began to understand what a structural engineer was and they were thankful for their existence. Later, they wanted to know why they were not kept safe by the engineering community. Finally they complained why the city and its infrastructure were not fixed yet.

The public's understanding of risk was not in line with the engineering community. New Zealand uses a benchmark of a percentage of their new building standard to determine if a building is vulnerable to earthquakes. Anything with less than 33% of the current standard is prone and anything between 33% and 67% is in a gray risk area. Those citizens that were even aware of this system may have been additionally confused that some of the buildings with the biggest losses in Christchurch were above the 67% mark. It is difficult to explain to those unfamiliar with structural engineering that there can be recognizable deficiencies in any structure that may not trigger a code required retrofit or warning.

Royal Commission

The Royal Commission held a series of hearings on each building that had a loss of life due to the event. The hearings themselves were relatively unbiased; however, the media tended to make it appear that the engineers were on trial. This lowered public opinion of the engineering community. Some questions raised by the commission were if engineering education is adequate for engineers today and if the CPEng (similar to a P.E. license in the United States) certification is enough to differentiate engineers qualified for seismic design. Another question raised was the appropriateness of the placards used in post-earthquake building assessments. The commission found that a standard risk rating system is needed for seismic design in buildings and that URM retrofit standards need to be implemented on buildings still standing.

Future Preparation

Lessons that can be taken from the events in Christchurch include:

- Considering how a possible repair may be completed after a seismic event during the design phase.
- The engineering community should reach out to the public about codified seismic design levels and the amount of risk the owner and public are actually accepting.
- Translating actual risk of seismic damage should go beyond the architect and should be communicated directly to the building owner.
- Having a post-earthquake plan is important for a structural engineering business and its employees. Consider having the staff ATC-20 certified, including administrative staff. Consider the vulnerability of office space and how it affects business.

Personal Lessons of the Speaker:

- Communication risk is critical.
- Own your role in disaster preparedness and relief in your city.
- Load will go where it wants to go first, then where you tell it to go. Prepare load paths that do not go against the nature of the building. Regular buildings performed better than irregular ones.
- Ductility is directly proportional to damage and it is not good for repairs.
- More consideration in building design should be put towards protecting a building's contents. High interstory drift limits often resulted in stair damage.
- Pay attention to work scope when agreeing to take on retrofit or review/study work. Agreeing to complete a review in a time of crisis like Christchurch could be misconstrued as agreeing to design a retrofit.
- Minor structural damage can still result in very costly repairs, especially to finishes.
- The public learned a lot about structural engineering and it was important for engineers to be on the same page and make unified statements when addressing the public.

Lara returned to Seattle in 2013 and started her own structural engineering consulting firm where she incorporates her experience from Christchurch. She is an active member of the Structural Engineers Association of Washington and has presented this information to her own chapter in the past. For additional information readers are recommended to view a documentary by Frank Films (New Zealand) called When A City Falls.

OREGON CODE NEWS

STATE OF OREGON OSSC 2014 ADOPTION: The date for adoption of the 2014 OSSC has been modified to July 1, 2014. The State of Oregon Building Codes Division will allow at least a three-month transition period for implementation of the new code from July 1 to September 30, 2014. During the transition period an applicant has the option to submit for permit a structure that is designed either to the OSSC 2010 **OR** the new OSSC 2014. The structure must be designed completely to one or the other code. The applicant shall not mix and match the two codes. For instance, the OSSC 2014 code for life safety cannot be mixed with the OSSC 2010 for structural design. If you are submitting for permit after September 30th, only the OSSC 2014 shall be used.

2305 General Design Requirements for Lateral-Force-Resisting Systems

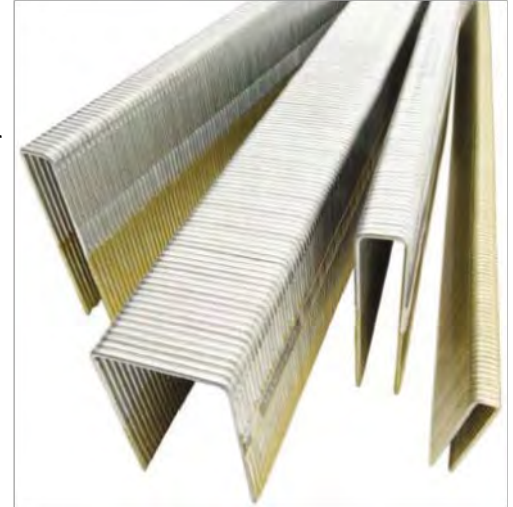
CHANGE TYPE: Modification

CHANGE SUMMARY: The provisions in Section 2305 for the lateral design of wood structures have been coordinated with those set forth in the 2008 edition of the AF&PA standard, *Special Design Provisions for Wind and Seismic* (SDPWS-08). Design and deflection values for stapled wood-frame diaphragms and shear walls remain in the code.

2012 CODE:

2305.1 General. Structures using wood frame shear walls ~~and~~ or wood frame diaphragms to resist wind, seismic, ~~and~~ or other lateral loads shall be designed and constructed in accordance with AF&PA SDPWS and the applicable provisions of Sections 2305, 2306, and 2307.

2305.2 Diaphragm Deflection. The deflection of wood frame diaphragms shall be determined in accordance with AF&PA SDPWS. The deflection (Δ) of a blocked wood structural panel diaphragm uniformly fastened throughout with staples is permitted to be calculated in accordance with the following Equation 23-1. If not uniformly fastened, the constant 0.188 (For SI: 1/1627) in the third term shall be modified accordingly by an approved method.



16-gage staples

$$A = \frac{5vL^3}{8EAb} + \frac{vL}{4Gt} + 0.188Le_n + \frac{\sum(\Delta_c X)}{2b} \quad \text{(Equation 23-1)}$$

$$\text{For SI: } A = \frac{0.052vL^3}{EAb} + \frac{vL}{4Gt} + \frac{Le_n}{1627} + \frac{\sum(\Delta_c X)}{2b}$$

where:

- A = Area of chord cross section, in square inches (mm^2).
- B = Diaphragm width, in feet (mm).
- E = Elastic modulus of chords, in lbs/in^2 (N/mm^2).
- e_n = Staple deformation, in inches (mm) [see Table 2305.2(1)].
- Gt = Panel rigidity through the thickness, in lbs/in (N/mm) of panel width or depth [see Table 2305.2(2)].
- L = Diaphragm length, in feet (mm).
- V = Maximum shear due to design loads in the direction under consideration, in lbs/ft (plf) (N/mm).
- Δ = The calculated deflection, in inches (mm).
- $\sum(\Delta_c X)$ = Sum of individual chord-splice slip values on both sides of the diaphragm, each multiplied by its distance to the nearest support.

(Continued on Page 9)

EXCERPT FROM THE *SIGNIFICANT CHANGES TO THE 2012 IBC (CONT)*

2305.3 Shear Wall Deflection. The deflection of wood-frame shear walls shall be determined in accordance with AF&PA SDPWS. The deflection (Δ) of a blocked wood structural panel shear wall uniformly fastened throughout with staples is permitted to be calculated in accordance with Equation 23-2:

$$\Delta = \frac{8vh^3}{EAb} + \frac{vh}{Gt} + 0.75he_n + d_a \frac{h}{b} \quad \text{(Equation 23-2)}$$

$$\text{For SI: } \Delta = \frac{vh^3}{3EAb} + \frac{vh}{Gt} + \frac{he_n}{407.6} + d_a \frac{h}{b}$$

where:

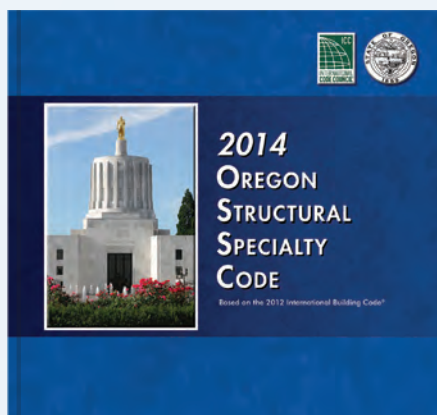
- A = Area of boundary element cross section in square inches (mm^2) (vertical member at shear wall boundary).
- b = Wall width, in feet (mm).
- d_a = Vertical elongation of overturning anchorage (including fastener slip, device elongation, anchor rod elongation, etc.) at the design shear load (v).
- E = Elastic modulus of boundary element (vertical member at shear wall boundary), in lbs/in^2 (N/mm^2).
- e_n = Staple deformation, in inches (mm) [see Table 2305.2(1)].
- Gt = Panel rigidity through the thickness, in lbs/in (N/mm) of panel width or depth [see Table 2305.2(2)].
- h = Wall height, in feet (mm).
- v = Maximum shear due to design loads at the top of the wall, in lb/ft (N/mm).
- Δ = The calculated deflection, in inches (mm).

CHANGE SIGNIFICANCE: Section 2305 references the 2008 edition of the AF&PA standard, *Special Design Provisions for Wind and Seismic (SDPWS)* for lateral design of wood structures. Design values for nailed diaphragms and shear walls have been deleted from the tables in Section 2306 because the values are in the SDPWS standard. However, design values for stapled shear walls and diaphragms still remain in the code. Although the deflection of nailed wood-frame diaphragms and shear walls is determined in accordance with AF&PA SDPWS, the deflection of stapled diaphragms and shear walls is not covered in the standard. Section 2305 provides the formulae and parameters required to calculate the deflection of blocked wood structural panel diaphragms and shear walls fastened with staples.

This updated code provision is from the *Significant Changes to the International Building Code, 2012 edition*, authored by John Henry, PE, Doug Thornburg, AIA and Jay Woodward. The book is available at iccsafe.org/store. Use ID # 7024S12.



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2014 SEAO / OACI GOLF TOURNAMENT



JULY 23RD, 2014
Pumpkin Ridge Golf Club
1:00 PM - SHOTGUN START!

EVENT DETAILS:

The S.E.A.O. and O.A.C.I. have joined together to hold another day of golf, fun and prizes for 2014! The biggest change this year? Location. We will be heading to the beautiful, **award winning course and facilities of the Pumpkin Ridge Golf Club!**

Only 20 miles West of Portland, OR, the Pumpkin Ridge Golf Club contains two championship courses, both beautifully etched into the landscape by renowned golf course architect Bob Cupp. The course we'll be playing on, **Ghost Creek, is a par-71, 6,839-yard classic course**, carefully carved through the natural and beautiful Portland wetlands, framed by lush stands of trees, and with dramatic mountain vistas.

We will have a shotgun start at 1:00PM, allowing us to all finish at the same time to share stories of the day's glory and despair, along with dinner, beverage and many prizes. We hope that you will come join us and support both organizations.

The course also offers a 17-acre practice facility to hone your skills prior to the tournament so come early. Power carts and range balls are included in the golf fee.

WHEN:

DATE: Wednesday, July 23rd
SHOTGUN START: 1:00PM
SOCIAL HOUR: 6:00PM
DINNER & AWARDS: 6:30-7:30PM

TOURNAMENT:

4-Person Scrambles

CONTACT:

Jane Ellsworth
ph: (503) 753-3075
em: jane@seao.org

Don't forget to bring money for the raffle prizes and string! This year's raffle prizes will be:

- 42" TV
- iPad Mini
- Nike Wedge
- Ocean Salmon Fishing Trip for 2
- Ocean Halibut Fishing Trip for 2
- Power Washer
- Gift Cards
- Much more!

WHERE:

PUMPKIN RIDGE GOLF COURSE
12930 NW Old Pumpkin Ridge Rd
North Plains, OR 97133
Phone: (503) 647-4747

DINNER:

Dinner Will Be Served

FEES:

Golf & Dinner: \$110/person
(Includes golf cart & driving range)
SEAO Young Members Forum: \$85
5' String \$20
Mulligan: \$5/ea
String & 5 Mulligans: \$35

Appropriate "Country Club" attire is required:

- Collared Shirts
- No Denim
- Shorts must have a 6" inseam
- Soft spikes only

NO REFUNDS FOR CANCELLATIONS AFTER JUNE 27TH

**PLEASE RETURN
THIS ENTRY FORM
BY JUNE 27th TO:**

S.E.A.O.

9220 SW Barbur Blvd. #119
PMB #336
Portland, OR 97219
(503) 753-3075 Phone
(503) 214-8142 Fax

☐ Check Enclosed

☐ VISA / ☐ MasterCard / ☐ AMEX Accepted

Name On Card: _____ Card #: _____ Exp. Date: _____

Contact Number: _____ Billing Zip Code: _____ 3-Digit Code On Back Of Card: _____

Player Names	Green Fees	Membership	Payment Enclosed
	<input type="checkbox"/> Golf & Dinner - \$110	<input type="checkbox"/> SEAO <input type="checkbox"/> OACI	\$ _____
	<input type="checkbox"/> Golf & Dinner - \$110	<input type="checkbox"/> SEAO <input type="checkbox"/> OACI	\$ _____
	<input type="checkbox"/> Golf & Dinner - \$110	<input type="checkbox"/> SEAO <input type="checkbox"/> OACI	\$ _____
	<input type="checkbox"/> Golf & Dinner - \$110	<input type="checkbox"/> SEAO <input type="checkbox"/> OACI	\$ _____
String & Mulligan Add-Ons (1 Mulligan = 1 Shot Per Person)			
<input type="checkbox"/> 5' String - \$20 (Limit 5' Per Foursome) _____ Qty			\$ _____
<input type="checkbox"/> Mulligans - \$5 ea (Limit 5 Per Foursome) _____ Qty			
<input type="checkbox"/> 5' String & 5 Mulligans - \$35 (Limit 1 Per Foursome) _____ Qty			

Total \$ _____

2014

SEAO / OACI

GOLF TOURNAMENT



JULY 23RD, 2014
Pumpkin Ridge Golf Club

Contact Info:

Jane Ellsworth
(503) 753-3075

oaci@comcast.net

Donation / Hole Sponsor Form

Sponsor Information:

Company Name: _____

Contact Name: _____

Phone: _____ Fax: _____

Email: _____

HOLE SPONSORSHIP

☐ **GOLD** - \$200 for flag at the hole and recognition on banner at dinner.
Hole Preference _____

☐ **SILVER** - \$150 for tee sign stationed driving range before golf and recognition on banner at dinner.

☐ **BRONZE** - \$125 recognition on banner at dinner.

RAFFLE PRIZES

☐ 42" TV | \$600

☐ iPad Mini | \$500

☐ Gift Cards | \$50 & \$100

☐ Ocean Salmon Fishing Trip for 2 | \$250

☐ Ocean Halibut Fishing Trip for 2 | \$400

☐ El Gaucho Gift Card | \$150

☐ Ringside Restaurant | \$150

☐ Nike Wedge | \$100

☐ Power Washer | \$500

SPECIAL SPONSORSHIP

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\$150
Hole Preference _____

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\$375
(Host drink cart for one beverage per participant to be redeemed during play)

☐ **19th Hole Sponsor**
\$250
(Host keg of Micro-brew)

☐ **Golf Cart Sponsor**
\$200
(Host the golf carts with a sign in each cart with your company name)

☐ **Scorecard Sponsor**
\$200
(Host the scorecards with the name of your company on each card)

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9220 SW Barbur Blvd., Suite #119, PMB #336
Portland, OR 97219

Fax: (503) 214-8142



Structural Masonry Design Seminar

Who Should Attend?

You should attend if you are involved in the design, construction or regulation of masonry structures. You will receive the latest information from the experts on how to use and interpret the masonry building code.

About the Seminar

This full-day seminar will focus on the new requirements and revised provisions of 2012 IBC Chapter 21 and the referenced masonry material standard TMS 402/ACI 530/ASCE 5. Both working stress and strength design of reinforced concrete masonry will be covered. Masonry building elements will be designed per the new code by manual and automated methods. The seminar material is designed to provide the engineer and code user with practical design knowledge.

Seminar Topics:

- Masonry Materials & Code Overview
- Beam and Column Design
- Anchor Bolts
- Walls Out-of-Plane
- Slender Wall Design
- Shear Wall Design
- Direct Design Method
- Crack Control
- Quality Assurance
- Constructability

And including explanation of code provisions and step-by-step design examples

Seminar Times:

Registration begins at 7:30 a.m. The seminar will be presented from 8:00 a.m. to 4:30 p.m. Morning coffee service, lunch, and afternoon break refreshments are provided.

Seminar Materials:

All participants will receive a seminar workbook, which includes a bound set of course notes and masonry technical bulletins.

Other design reference material and masonry design software will be available for purchase at special seminar prices.

Continuing Education:

Certificates of attendance listing contact hours that can be used for continuing education PDH units will be issued. The seminar will be registered with the AIA.

Instructors/Dates:

Ray Miller, S.E.	Miller Consulting Engineers, Portland, OR	March 13th Spokane, WA/June 17th Portland, OR
Jeff Mitchell, S.E.	Coffman Engineers, Spokane, WA	March 13th Spokane, WA
Ed Huston, S.E.	Smith and Huston Consulting Engineers, Seattle, WA	March 31st Bellevue, WA
Jill Shuttleworth, S.E.	Meier Architecture Engineering, Kennewick, WA	March 31st Bellevue, WA
Steve Hawk, S.E.	Coffman Engineers, Hood River, OR	June 17th Portland, OR (NEW DATE)

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Of Oregon



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Association



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of Washington



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Promotion Group



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of Oregon

Four Easy Ways to Enroll



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425.697.5298
425.828.0433



Mail to:

NWCMA
16300 Mill Creek Blvd, #208-C
Mill Creek, WA 98012



Fax:

425.697.2679

Seminar Registration Please check seminar location and date

☐ Spokane, WA - March 13, 2014

Instructors: Ray Miller, S.E.
Jeff Mitchell, S.E.
Register by Feb. 27, 2014

☐ Bellevue, WA - March 31, 2014

Instructors: Ed Huston, S.E.
Jill Shuttleworth, S.E.
Register by March 17, 2014

☐ Portland, OR - June 17, 2014

Instructors: Ray Miller, S.E.
Steve Hawk, S.E.
Register by June 3, 2014

Fees and Sign-up

Space is limited, please register early! You may register by mail, fax, web, or phone. Registration will not be confirmed until registration fee is received. **Please complete one application per person.**

Early Registration Fee - save by registering 14 days before your seminar

\$215.00 Early Registration Fee (\$195.00 Additional participants from same office location)

Add \$35.00 to above fees for registrations received less than 14 days in advance.

☐ Check or Money Order (payable to Northwest Concrete Masonry Association)

☐ Bill Me (copy of purchase order must be provided)

☐ Credit Card (check one) ☐ Visa ☐ Mastercard ☐ Discover ☐ American Express

Card Number _____ Name on Card _____

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Masonry Design Aids Will be distributed at seminar

☐ \$100.00 2011 MSJC Masonry Code (TMS 402/ACI 530/ASCE 5)

☐ \$90.00 Reinforced Masonry Engineering Handbook (Amrhein-2012)

☐ \$110.00 Masonry Designers Guide - 2012 Code

☐ \$45.00 Direct Design Handbook

Name: _____ Phone: _____ Fax: _____

Company: _____

Email Address: _____

Address: _____

City/State/Zip: _____

Registration Fee	\$	_____
Design Aids	\$	_____
Sales Tax	\$	_____
Add 9.6% for Design Aids in WA only.		
Total Due	\$	_____

Refund Policy

Substitutions are accepted at any time. If you notify us that you are unable to attend 7 or more business days before the seminar we will refund your registration fee. Cancellation requests received between 4-7 business days before the seminar will be subject to a \$75.00 administrative fee. No refunds will be given for cancellations received 3 business days or less prior to the seminar or for "no shows".

Confirmation

You will receive confirmation of your registration, including the date, location, and address of your seminar. Please register early. If insufficient enrollment necessitates canceling the seminar, all paid attendees will receive registration refunds.