



CONNECTIONS

December 2013 Volume 14 Issue 3

Newsletter of the
Structural Engineers
Association of Oregon

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Upcoming SEAO Meetings and Events:

Thursday, December 12, 2013: Deadline for Entry Registration for Construction Design & Build Competition

Future Event to Occur Between April 7—April 13, 2014.

See pages 12 & 13 for additional information.

Thursday, December 19, 2013: SEAO YMF Happy Hour

Location: To Be Determined (Save the Date & Check the Website for Confirmed Location)

Time: 5:30 pm to 7:30 pm

See page 5 for more information on YMF events and contacts.

Thursday, January 9, 2014: SEAO YMF Lunch Meeting

Location: KPFF Consulting Engineers, 111 SW 5th Ave, 26th Floor Conference Room, Portland, Oregon

Time: 12:00 pm to 1:00 pm

See page 5 for more information on YMF events and contacts.

Wednesday, January 29, 2014: SEAO Lunch Meeting

Topic: Ducks v. Huskies: The Ins and Outs of Engineer Liability in Oregon and Washington

Speakers: Ryan M. Lee, Senior Associate Attorney and Robert W. Kirsher, Associate Attorney, Scheer & Zehnder, LLP

Location: Portland City Grill, 111 SW 5th Avenue, 30th Floor, Portland, Oregon

PDH Credit: 1 hour

Time: 11:30 am check-in & social, 12:00 pm lunch & program

Wednesday, February 19, 2014: SEAO Seminar

Topic: The 2012 IBC & ASCE 7-10 Code Change Structural Provisions

Speakers: SK Ghosh & Susan Dowty

Location: Embassy Suites, 9000 SW Washington Square Road, Tigard, Oregon

Time: 8 am to 4:30 pm

Additional information will be confirmed and posted in January's newsletter.

Thursday, February 27, 2014: SEAOSF TRADE SHOW

Location: Monarch Hotel & Conference Center, 12566 SE 93rd Avenue, Clackamas, OR

Time: 5:00 pm to 8:00 pm — Seminar times to be determined and printed in February's Newsletter.

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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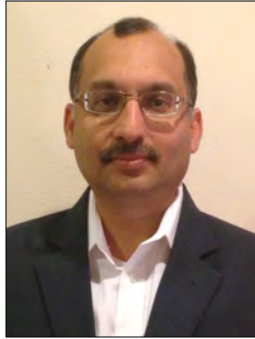
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PRESIDENT'S MESSAGE: A SEASON OF GIVING

By: Amit Kumar, P.E.



On behalf of the SEAO board, I would like to wish all our members and their families, A Very Happy Thanksgiving, a Joyous Christmas, and wonderful Holidays.

It's hard to believe that the holiday season is already upon us. It is that time of the year when we reflect on the year past, give our thanks to

our family and friends, and extend a helping hand to those who may be less fortunate. In this season of giving, I know there are a lot of organizations and charities competing for and deserving of your generosity; however, may I suggest that you consider giving back to your profession by adding the Structural Engineers Association of Oregon Scholarship Foundation (SEOSF) to your list for consideration. The scholarship fund is a 501(c)(3) charitable organization, which means that you can make a tax deductible donation to the extent allowed by tax laws. The scholarship fund currently is used to provide scholarships to deserving undergraduate or graduate students pursuing or thinking of a career in structural engineering. It is important that we advocate for our profession, and what better ways than to encourage students to pursue structural engineering as a career and to contribute to society.

As I pen these words, I am watching on television the devastation that typhoon Haiyan has wrecked in the Philippines and the commentators bemoaning the shoddy construction practices as one of the reasons for such high number of casualties. How many times have we heard this after a major earthquake, a tornado, a hurricane, or even man-made disasters, which only goes to prove how important the work we as structural engineers do. Unfortunately, this does not seem to have an impression on today's youth as borne out by declining enrollment in universities across America (and dare I say globally) in structural engineering. I personally know a couple of children among my friends circle who after initially enrolling in structural engineering switched fields completely (one of them after having earned a degree in Civil Engineering) to what they perceived to be other more lucrative fields of engineering. How many such bright minds and future innovators have we lost to other fields of engineering? Encouraging students by providing scholarships is but one small way that we can help in reversing this trend. Over the last couple of years, contributions made by individuals to the scholarship fund have declined considerably. In this season of giving I am appealing to all of you to consider giving back to the profession by contributing to the scholarship fund. You can contribute on line by logging onto the website <http://www.seaosf.org> or by sending a check to:

SEAO Scholarship Foundation

9220 SW Barbur Blvd. #119
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Thank you for your generosity. If you have suggestions for other initiatives that you believe the SEOSF board should consider, please let us know. Your input is valuable to SEOSF.

I also wanted to take this opportunity to thank all of you for making our October monthly meeting a success, with over 70 of you attending the meeting. It is probably the first time, that I know of, that we had to switch venues at the last minute because the original facility could not accommodate the numbers we had attending the meeting. Thanks to our own SEAO member Andrea Hektor for sharing her expertise on the very intriguing topic of Glass Design. I imagine that just like me, this presentation would have at the very least piqued your interest to explore this topic further. Thank you, Andrea! Again, as I had mentioned earlier if there are topics that you think our membership would be interested in or will benefit from for our monthly meetings, please let us know. We are always looking for ideas to maximize our member's time and benefits.

In November, SEAO organized a seminar on ASCE 41-13, which is the new standard that combines the current ASCE 31-03 and ASCE 41-06. This combined document is to be used in evaluating and rehabilitation of existing buildings. The combined document attempts to eliminate a number of inconsistencies found between the existing ASCE 31 and ASCE 41 documents. It will be a very valuable tool for all of us when dealing with existing buildings. Robert Pekelnicky, one of the lead authors of the new standard, did a wonderful job introducing the document. It was unfortunate that ASCE 41-13 document itself was not available. This document was scheduled to be published in summer of 2013. When we set up the seminar we were told that it would be available at the beginning of November. It was then pushed back to end of November. Now it is scheduled to be available for use in the spring of 2014. The document has passed all committees and is being held up, not because of any technical issues, but due to some publishing problems. Nevertheless, I hope the seminar will prove useful, not only when ASCE 41-13 is available but in the interim, and will provide some insight into the use of the current standards. Again, we had a great turnout and some good feedback on the seminar. For those of you who may have missed the seminar and are interested in the topic, you can order a video of the presentation through SEAO. Please contact Jane via email at jane@seao.org.

The monthly meetings and seminars are one of the most tangible benefits of being an SEAO member, and we hope to continue to bring quality programs in the future and we hope you will continue to attend these meetings. Just a reminder, that for every monthly meeting or a seminar you attend, you will be entered into a drawing for a fully-guided fishing trip on the Rogue River. You do not have to have any fishing experience or equipment to participate. So keep that attendance going!

Another quick reminder: Dues notices were sent out earlier this month. I would like to urge you to send in your dues as soon as possible. Payments can be made on the SEAO website for your convenience. Thank you.

Finally, as the year 2013 comes to an end and the new year begins, I would like to wish all of you a VERY HAPPY AND A PROSPEROUS NEW YEAR. Have a great Holiday season.

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OCTOBER MEETING RECAP WEDNESDAY, OCTOBER 30, 2013

Summary By: David Tarries, P.E.

Topic: Glass 101, Background Design Theory, Design Thought Process

About the Presenter:

Andrea Hektor is an Associate with KPFF Consulting Engineers. She has been with the company since 2006 and has designed a variety of projects involving structural glass and glazing. She holds a B.S. in Civil Engineering and an M.S. in Structural Engineering from Cornell University.



Much of the information in this presentation was collected from documentation from the COST Group (European Cooperation of Science and Technology).

Introduction:

The current trend in building design is to be more transparent. Use of glass as a structural material is becoming more common. As an example, the Apple stores in New York City and Shanghai are almost completely transparent. As buildings get more transparent it can lead to occupant safety issues as the inhabitants have difficulty determining the outline of structures such as stairs and walls. Regardless of how glass is used in a structure, it is not uncommon for engineers to be asked to provide designs for glass members as structural components. Today's engineer can benefit from an understanding of glass as a structural material.

History:

Most glass occurs naturally as a result of volcanic activity; however, most of the varieties are full of impurities and are of little practical use. In a more cultivated form, glass has been used by humans for centuries. One of its first possible uses was in Egypt around 3500 B.C. The Romans developed glass production techniques in the 1st century, and a Middle Eastern glass recipe was discovered dating back to about 600 A.D. As glass production advanced, its use as an architectural component became more common. Hand-blown glass methods such as broad sheet glass and crown glass developed after about the 13th century and were common until around the 20th century. Blown glass was blown by hand and then transferred to a punt before being manipulated to form a sheet and then cut into panes. Blown glass tended to be non-uniform in thickness and have imperfections. Mechanical methods of drawing glass were developed around the beginning of the 20th century. Mechanically manufactured glass is more uniform in thickness, has fewer imperfections, and can be produced in larger pieces than hand-blown glass. Drawn glass was mechanically pulled from a circular tank, annealed and cut into sections and then flattened. Drawn glass fell out of favor before the middle of the 20th century. Float glass was made by floating molten glass on a bed of molten metal such as tin or lead and was advanced by the British glass manufacturer Pilk-

ington. It is the primary method of commercially produced glass today. Soda-lime, or soda-lime-silica glass is the most common type currently in use. It is chemically stable, hard, workable, and inexpensive. Modern float lines produce large quantities of soda-lime glass of varying thickness up to about 1" with a typical sheet size of about 20'x10'. Though float glass marks a vast improvement over earlier forms of glass, imperfections not necessarily visible to the naked eye can form where the glass makes contact with the molten tin. These imperfections effect the structural properties of the material and reducing them is a key part of glass production advancement today.

One significant advancement in glass manufacturing was the fusion overflow process. Corning developed this process and the resulting glass is known as "Gorilla Glass". To make Gorilla Glass molten glass is drawn down over a tapered wedge and the two sides fuse together at the bottom to form one sheet. Flaws in the glass are reduced as it does not make contact with molten tin as it does in the float method. The glass is additionally submersed in a molten alkali salt bath for toughening. The glass is extremely strong, but it is currently only economical to produce in small pieces. Most commonly it is used in consumer electronics in products such as smartphones.

Advancements in glass have not been limited to glass production and materials. A new glass cutting method using water jets is able to cut glass in precise shapes and reduces the roughened edge of the cut, which reduces a source of crack propagation.

In recent years glass has taken on more and more of a structural role. Apple and its founder Steve Jobs had a vision for their retail outlets that involved transparency. They began building stores in places such as Manhattan out of glass using the latest technology and design methods. In order to push the designs beyond what was accepted at the time a significant amount of money was spent on research and development of new glass production and design techniques. When Apple opened its Manhattan store it was a pioneer in glass design. Six years later it was retrofitted with better materials and methods based on glass research and development funded by Apple.

Properties of Glass:

Float glass can be strengthened by heat or chemical treatment after production. It is important to note how a glass is treated when specifying glass in design as the change in properties can be significant. The basic float glass is annealed, or slowly cooled to relieve internal stresses. Heat strengthened glass uses heat, or a chemical treatment such as potassium nitrate, to create a compression stress at the outer surface of the glass. Heat strengthening can double the strength of annealed glass. Fully tempered glass is similar to heat strengthened glass but the surface compression is

(continued on Page 4)

OCTOBER MEETING RECAP (CONT.)

Summary By: David Tarries, P.E.

greater. Tempering can increase the strength of annealed glass by around four to six times and research in different chemical treatments continues to build on that strength.

Glass is very sensitive to surface conditions and it fails over time due to subcritical crack growth. Surface flaws can be caused by the aforementioned impurities at the tin interface during production, or by scratches that can be caused by anything from manufacturing errors, to installation errors, to everyday use.

The stiffness/deflection properties of glass are not changed by the residual stress adjustments of heat strengthening or tempering, but the fracture mechanics are significantly altered. Strengthened glass has energy entrained in it that effects how it breaks. It resists fracture better than annealed glass, but when it does break the entrained energy is released and it breaks into tiny pieces. As a result tempered glass is commonly used in a laminate glass configuration so a transparent plastic film, such as PVB, can capture the pieces. Holding glass in place with interlayers is a benefit of laminate glass which can help reduce the risk of catastrophic failure.

Designing with Glass:

Glass design is based on two methodologies: Explicit and Stochastic. Explicit design is based on theoretical fracture mechanics. Stochastic design is based on physical testing. ASTM E1300 is a standard that many international codes reference. ASTM E1300 is based on the stochastic method. There is a movement toward more explicit design in glass, but it lags behind other materials such as steel and concrete in that regard. Eurocode stochastic values appear to be similar to explicit calculations using the current methods. Current explicit methods take into account the typical flaw depth after about 10 years of use, crack velocity growth, and stress intensity, as well as load duration. Stress duration is important in glass design regardless of the design method used. Glass strength is time dependent, somewhat like wood, where long term loads have a more significant effect than short term loads. Glass strength is dependent on load history and it accumulates damage over time. When determining the capacity of glass in an existing condition, the past loads need to be considered. Loads are not summed directly, but are converted into equivalent stresses at a given time. Surface defects from use or vandalism also should be considered when determining strength of glass.

Glass does not yield before failure; it is brittle and fractures when its capacity is exceeded. This property makes glass a challenging material for use in structural members. Glass treatment also affects how glass will break. Annealed glass will break in large pieces with sharp edges. Tempered glass breaks into small shards that are less likely to cut occupants. Another unique condition of glass is that it can break without warning even when it is not overloaded. This phenomenon is known as a spontaneous nickel sulfide inclusion failure. This failure occurs randomly as a result of impurities in the glass from the float process that builds surface stress over time. As glass failures are catastrophic and can occur randomly, designing redundancy in a glass system is a necessity. Robustness of connections and members is very important. Lamination and surface treatments are some methods that can prevent total failure of a system. Post-tensioned cables and other alternative load paths can also be useful in designing redundancy.

Design Codes:

Chapter 24 of the International Building Code on glass and glazing includes some guidance on glazing loading and references ASTM E1300. ASCE 7 mentions glazing impact resistance for curtain walls with reference to ASTM E1996 but does not directly deal with glass structural members. ASTM E1300 is not actually codified for design of glass structural members but is generally accepted as a design standard for glass even though notes in ASTM E1300 state that it should not be used for most structural members. It is set up primarily as a series of charts for different glass types, loading, and support conditions and is based on the stochastic method of empirical testing of windows in frames. ASTM E1300 also has some information for laminated glass. It is limited to Polyvinyl Buteral (PVB) interlayers, though there are other interlayers that are considerably stronger and stiffer available today. The strength of the interlayer is very important in determining the strength of an assembly. ASTM E1300 does not very well take into account the thickness or material used in the interlayer.

A new code is being developed for use in glass design, but its completion and adoption date is unknown at this time. It should include requirements for robustness and will likely contain more explicit design methodology. In the interim until the new code is released there are a couple of other outlets to assist with structural glass design that are often more accurate than ASTM E1300. DuPont has a glass design tool on their website. A new design method out of Italy called, the Enhanced Effective Thickness Method can be found on the web, but it can be tedious to use. Finite element analysis can also be used but may be too involved for most designers.

Conclusion:

This presentation is a brief overview of the history, properties, and methodology of glass design. There are many other items of interest that were not included in this presentation, including: bolted connections, adhesive connections, and hybrid glass beams. Additional information on glass structural design can be found at the European Cooperation of Science and Technology, DuPont's website, and in ASTM E1300. If you have additional questions you can contact Andrea Hektor at <mailto:andrea.hektor@kpff.com>.

YOUNG MEMBER FORUM ACTIVITIES

By: Phil Davis & Seth Thomas

SEAO YMF PE and SE Library: The YMF is currently compiling a library of materials for the PE and the SE exam. To make the testing process as easy as possible, the YMF is putting together a reference library of useful study materials for the PE and SE exam that members will be able to check out and borrow. In addition, the YMF will also be putting together a document helping explain the application process and providing helpful tips for taking the tests. Check the website soon for these documents.

Please contact Phil Davis (Phillip.davis@kpff.com) or Seth Thomas (setht@wrkengrs.com) if you are interested in borrowing any of these materials.

Already taken the PE or SE? If anyone has already taken the PE and/or the SE and has leftover study materials they would like to donate please contact Phil Davis or Seth Thomas, and we will get the materials from you and add them to the library. Any donations are greatly appreciated.

Upcoming Events:

Thursday, December 19th – Happy Hour – Location to be determined. Save the date.

Thursday, January 9th – YMF Lunch Meeting at KPFF Consulting Engineers, 111 SW 5th Avenue, 26th Floor Conference Room from noon to 1 pm. Join us for our bi-monthly lunch meeting to discuss future events and activities. This is a great way to get involved.

SEAO YMF Education Outreach Needs Your Help!

Last year the YMF gave presentations on structural engineering to 34 classrooms reaching over 1,000 middle school and high school students in the Portland area. This year we want to go even bigger, but we need your help. Our goal this year is 1,500 students which means we need to find more schools and teachers to go visit. If you know of a middle school or high school teacher who is interested in having a couple of YMF members come to their class and give a short presentation about what structural engineering is and what we do and follow the presentation up with a fun activity let us know. Interested teachers should contact Seth Thomas at (setht@wrkengrs.com).

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.

EDUCATIONAL OPPORTUNITIES

PRESTRESSED CONCRETE DESIGN CLASS

SPONSORED BY KNIFE RIVER AND THE
OREGON PRECAST CONCRETE INSTITUTE

CE 486/586 - Prestressed Concrete (3 credits)

Prerequisite: Course in reinforced concrete design

Instructor: Dr. Keith Kaufman of Knife River

Winter Term: 6 to 9 PM on Tuesdays starting January 7th on the OSU campus in Corvallis.



MASONRY DESIGN CLASS

SPONSORED BY MASONRY INSTITUTE OF OREGON

CE 482/582 - Masonry Design (3 credits)

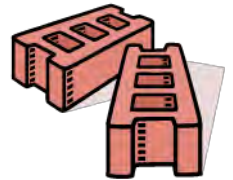
Prerequisite: Course in reinforced concrete design

Instructor: Nathan Wallace of CH2M-Hill

Winter Term: 6 to 9 PM on Thursdays starting January 9th on the OSU campus in Corvallis.

Register for these regular university courses that can be used towards a degree or for PDHs. Admissions and registration information can be found on the OSU web page: <http://oregonstate.edu/>

If you have any questions, please contact Prof. Tom Miller at OSU at (541) 737-3322 or thomas.miller@oregonstate.edu.



NEW MEMBERS

Welcome to our newest members:

Gregory Lewis, Peterson Structural Engineers
Andrea Hektor, KPFF Consulting Engineers
Curtis Gagner, CIDA, Inc.

MEMBER OF THE MONTH

PAT MERRIMAN OF MASONS SUPPLY COMPANY

Pat joined SEAO in 1989, helping to plan the first "SEAO Trade Show" at Montgomery Park. Since that time, Masons has supported SEAO with a booth every year at the Trade Show. Last year Pat worked on the SEAO/OACI Golf tournament and helped to secure many sponsors and golfers making the tournament a success.

Pat Merriman started working for Masons Supply in 1978, learning the family business from the ground up. Pat has lived and worked in both Portland and Seattle doing whatever is required for the success of Masons Supply and in the best interest of the family business. Another element that has not changed is the fact that Masons Supply looks like it will continue to be a family-owned and operated business, supporting local families and the economy. Pat's daughter, Katie, and Nick's son, Nick Jr., are following in their fathers' footsteps at Masons Supply. Pat has been happily married for 33 years to Carroll, and has two children: Katie, 31 and Daniel, 28. His favorite pastimes include hunting and fishing. Congratulations to Pat on receiving Member of the Month.



SEISMIC QUIZ

This seismic quiz has been put together by the Seismic Subcommittee of SEAO. This month's theme is **Shear Walls**. Enjoy!

1. Per ASCE 7-05, what R value should be used for special reinforced concrete shear wall design when the walls are not required for gravity support or tied columns are provided in the walls?
2. When shear wall-frame interactive systems are used, what minimum story strength requirements apply to the wall and frame, respectively?
3. True or False? Reinforcement development lengths in concrete shear walls may be reduced based upon load demand per ACI 318-11 Section 12.2.5.
4. In seismic design category D, what is the height limit for a wood frame shear wall?
5. What is the height limit for a dual system comprised of special concrete moment frames and special reinforced concrete shear walls?

See page 7 for answers.

SEISMIC EVENTS

ASCE Webinars (www.asce.org)

Thursday, January 23, 2014, 9:00 to 10:00 AM PST.
Introduction to the Seismic Design of Nonbuilding Structures to ASCE 7-10.

Tuesday, January 28, 2014, 9:00 to 10:00 AM PST.
Seismic Assessment and Design of Pipelines.

EMPLOYMENT OPPORTUNITIES

CIDA, Inc -- Small multi discipline A&E firm seeks a structural designer/EIT with experience designing a variety of building types and structures in various building materials, including concrete, steel, masonry, and wood-frame construction. Experience in structural detailing, seismic design, and evaluation of existing structures a plus. The successful candidate must be capable of preparing structural calculations and construction drawings for commercial, residential, mixed-use, and industrial projects. Candidates must have earned a bachelor's degree in engineering and should have a minimum of two years of relevant experience. The candidate should be articulate and self-motivated, have good verbal and written communication skills, be organized, and be proficient in AutoCAD with BIM/Revit experience preferred.

We offer a friendly and supportive work environment and opportunity for growth and advancement. Benefits include medical, dental, and vision insurance coverage; paid vacation, holiday, and sick leave; a 401k plan; and a cafeteria plan.

For general company information and profiles of some of our noteworthy projects, please visit our website, www.cidainc.com. To apply please e-mail resume to info@cidainc.com.

KPFF Portland is looking for talented Structural Engineers interested in opportunities 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 creative engineers, BIM/CAD technicians, architects, project managers, contractors, and client teams.

The preferred candidates 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 our website: [CLICK HERE](#)

KPFF is an equal opportunity employer.

OBITUARY: CYRIL V. BURGSTAHLER SEAO LIFE MEMBER FEBRUARY 12, 1923 – OCTOBER 17, 2013

On October 17, 2013, Cyril (known as Cy) Burgstahler, passed away at his home of natural causes. He was in his 91st year and still working as a structural engineer and involved with his family, friends, business, and his acreage on Parrett Mountain.

Cy had provided engineering for projects from coast to coast and in Japan. This list included numerous projects on Mt. Hood at Timberline Lodge, Mt. Hood Meadows, and Government Camp. He originally opened his own Structural Engineering firm in Portland in 1960. Later, it grew to become Burgstahler, Holmes, Carlson. After dissolving that partnership in 1981, Cy continued his engineering work as a sole proprietor in Sherwood. He never actually retired from engineering as he remained working until the day he passed. Cy Burgstahler was elected SEAO President in 1962-63 and was an SEAO Life Member. He also had served on the Oregon State Board of Engineers Examiners during the 1960's.

Cy had been active in the First Presbyterian Church in Portland and more recently at the Calvin Presbyterian Church in King City. He enjoyed many activities including raising horses, skiing, hunting, fishing, camping, dancing, his cabin on an airstrip, and flying. He cherished his Cessna 185 Skywagon, which he flew across the country on business trips and also for pleasure.

SEISMIC QUIZ ANSWERS (FOR QUIZ ON PG 6)

1. $R=6$ per system B.5 per ASCE 7-05 Table 12.2-1. This is applicable when a complete building gravity frame is present without the walls. When the walls are required for gravity support and integral tied columns are not provided, system A.1 applies, with $R=5$.
2. Per ASCE 7-05, 12.2.5.10, the minimum strength of the shear walls must be at least 75% of the story shear and the frame strength must be at least 25% of the story shear.
3. False. Reinforcement shall be developed or spliced for f_y in tension per ACI 318-11 Section 21.9.2.3. Where yielding of longitudinal reinforcement is likely, development lengths shall meet $1.25 \cdot f_y$ per Section 21.9.2.3(c).
4. 65 feet per ASCE 7-05 Table 12.2-1 item A.13.
5. No limit per ASCE 7-05 Table 12.2-1 Item D.3.

Section 1803.5.12 Geotechnical Reports for Foundation Walls and Retaining Walls

CHANGE TYPE: Modification

CHANGE SUMMARY: The requirement that geotechnical reports address earthquake loads on foundation walls and retaining walls in Seismic Design Categories D, E, and F has been modified so that it only applies to those walls supporting more than 6 feet of backfill.

2012 CODE: 1803.5.12 Seismic Design Categories D through F. For structures assigned to Seismic Design Category D, E, or F, the geotechnical investigation required by Section 1803.5.11 shall also include all of the following as applicable:

1. The determination of dynamic seismic lateral earth pressures on foundation walls and retaining walls supporting more than 6 feet (1830 mm) of backfill height due to design earthquake ground motions.

2.-4. (no significant changes to text)

CHANGE SIGNIFICANCE: Geotechnical reports have previously been required to address earthquake loads on foundation walls and retaining walls for buildings in Seismic Design Categories D, E, and F. In the application of the requirements, there was no exemption based on the height of the wall or the amount of soil supported by the wall. This was deemed to be overly restrictive for foundation walls supporting light-frame construction, small retaining walls, and swimming pools. Evidence from recent earthquakes and recent experimental research results, including work recently completed at the University of California– Berkeley, has demonstrated that retaining wall structures must move in order to develop the failure wedge postulated in the so-called Mononobe and Okabe method. However, the postulated condition can only occur when the wall has already failed due to other causes. The current body of field evidence does not provide any evidence for the existence of this mechanism of failure. It was determined that the requirement in the 2009 IBC and ASCE 7-05 imposed an unjustifiable burden on the permit applicant to investigate a site for small retaining structures such as foundation walls, retaining walls, and swimming pools that support no more than 6 feet of backfill.



Retaining wall (Photo Courtesy of Alan D. Wilcox, P.E.)



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.

2013 NCSEA CONFERENCE REPORT

By: Ed Quesenberry, PE, SE
SEAO Permanent Delegate

The 2013 NCSEA Annual Conference was held September 18-21 in Atlanta, Georgia. SEAO sent me as the Permanent Delegate and Seth Thomas, Young Member Forum Co-Chair, to represent SEAO at the conference. The conference kicked off with a full day of NCSEA committee meetings on September 18. Seth and I split up and attended three separate committee meetings to get caught up on NCSEA's progress on different fronts. I attended the Basic Education Committee and Advocacy Committee meetings, while Seth attended the SECB Committee (Structural Engineering Certification Board) meeting.

The Basic Education Committee's efforts over the past few years is to address the apparent gap between the level of preparedness of college graduates with BSCE degrees and the performance expectations of SE firms. In order to gain insight into the depth of this perceived gap, the BEC prepared a curriculum survey and sent it out to over 100 universities that have accredited BSCE programs. The goal of the survey was to determine what structural engineering classes were offered, which were required for graduation, and to see if there was uniformity of requirements nationally. The results were somewhat sobering, as many accredited institutions did not offer courses in Timber or Masonry Design, and some programs allowed graduation without Steel Design. With this knowledge, NCSEA BEC has been working diligently to encourage these universities to enhance their course offerings to include design classes in all primary materials design as well as technical writing. Economics and budget constraints are hurdles for these universities, so over the past year, the BEC has been pushing for the adoption of a Student Certificate in Structural Engineering, which would be awarded to students who have taken the full battery of structural analysis and materials design courses. Depending on the university they attend, some students may have to seek courses at neighboring universities in order to fulfill the requirements for certification. To bolster the effort, NCSEA has now teamed with SECB to further the Student Certificate program in the coming year.

The Advocacy Committee is focused on finding ways to promote the profession on multiple fronts. Firstly, they are refining the "What is Structural Engineering" presentation intended for middle and high school students to include videos, demonstrations, and more hands-on projects. SEAO's YMF is the national leader in the number of students reached with this presentation in 2013, so I shared our experiences and lessons learned with the committee. The committee has also developed reports on *Creating Good Media Relationships* and *Writing a Press Release*, which are valuable resources to members seeking to promote their own work or the profession as a whole. These reports are available on the NCSEA website.

The SECB committee was formed in spring of 2012 with the purpose of promoting the advancement of the SE license. Away from the West Coast there are a limited number of states that recognize the SE license. In many states that do not currently have the SE license, there is resistance to moving away from the PE being the "standard of practice". Many on the committee feel that this is mostly due to the large number of experienced PEs who are worried about what would happen to themselves. In the last 5 years a handful of states (i.e., Utah and Nevada) have adopted the SE license and have had a grandfathering system to admit PEs that can prove they have sufficient experience. The committee feels that this kind of system will be necessary to get the buy off required to make this happen in other states. The bulk of the committee meeting was spent discussing a few items: lessons learned from states trying (unsuccessfully) to get an SE license (primarily Texas), discussion on what are the key reasons we want a unified national PE/SE system, and the development of a new SECB website. The website will contain information about the SE license, with links to the requirements for each state while also containing information for states looking to get an SE license. The website launch is targeted for late this year.

The second day of the conference was filled with technical sessions, topics of which can be found on the NCSEA website. Each session was filmed, and it is NCSEA's intent to make these available in some fashion to all members. The morning of the third day was filled with the member organization delegate reports from all 46 member states and presentations given by several vendors that were present at the trade show. That evening the annual *NCSEA Excellence in Structural Engineering* awards banquet was held. Many impressive projects were on display, and special recognition awards were presented to NCSEA members that have provided distinguished service to the organization. A new award in memory of Sue Frey, SEAO's longstanding delegate that passed away this year, was established and awarded to Sue's husband Rich in a very touching tribute. The Susan M. Frey NCSEA Educator Award will be awarded to future recipients based on their distinction in the education of practicing structural engineers. The conference concluded on the morning of September 20th with the NCSEA Annual Business Meeting. This meeting included a financial report, committee reports, and general discussion amongst the delegates.

Seth and I would like to thank SEAO and its members for sponsoring our attendance at the conference this year. As one of the top 5 largest member organizations in NCSEA, SEAO is looked to by other smaller SEAs as they try to build their own organizations. The conference provides an excellent venue for the sharing of ideas and resources between MOs which in turn helps SEAO to further its commitment to all SEAO members. The 2014 conference will be held in New Orleans September 17-20, and I encourage you to consider attending what promises to be yet another great event, and also consider entering a project or two for an *NCSEA Excellence in Structural Engineering* award.

Lastly, I would like to recognize the efforts of Sue Frey. I attended several conferences with Sue in the role of alternate delegate and was always amazed at the depth of her commitment to and involvement in both SEAO and NCSEA. Her passing has left a large, palpable void in both of these organizations. I am humbled to be Sue's replacement as SEAO's Permanent Delegate and will strive to represent SEAO as she would have expected—a tall order indeed. Sue, you will be missed.

2013 WESTERN COUNCIL OF STRUCTURAL ENGINEERS ASSOCIATION (WCSEA) CONFERENCE REPORT

By: Ed Quesenberry, PE, SE
WCSEA Delegate Representing SEAO

Annual Meeting and Conference, October 3-5, 2013, Hapuna Resort, Hawaii

SEA delegates from Washington, Arizona, Idaho, Hawaii, and Oregon gathered for the annual WCSEA meeting and conference this year on the Big Island on Hawaii. This meeting usually takes place in concert with the NCSEA or SEA Northwest conference; however, every three years WCSEA holds a Roundup which is hosted by one of the WCSEA Member Organizations (MO). This year is a Roundup year, and the conference was hosted by SEAH (Hawaii). Due to their relatively small size, SEAH combined the Roundup with an annual conference of the CCPI (Cement and Concrete Products Industry of Hawaii) and Board Meeting for ACI. Consequently, the technical programs were mainly focused on ACI code issues and concrete construction practices.

For WCSEA delegates, the conference kicked off with the annual WCSEA business meeting. WCSEA financial reports were reviewed, and each MO presented a summary of their past years' activities. In addition, ideas relating to sharing resources such as speakers and seminars between WCSEA MOs were discussed. Following are the highlights from this meeting:

- WCSEA has one representative on the Applied Technology Council (ATC). This is a 3-year appointment, and the current representative, Don Scott from SEAW, is serving the last year of his term. The WCSEA Board will be looking for a volunteer to fill this position, so if you are interested in learning more, please let me know and I will get you pointed in the right direction.
- WCSEA members participate in the administration and grading of the National SE Exam. Exams have been given, and the SE Exam Committee is meeting at Clemson University next month to grade them. SEAO has several members that participate in grading sessions, but more volunteers are needed. Interested parties should either be an SE or not be in a position to need to take the exam in the future. The SE Exam committee meets 6 times a year at various locations. Attendance at all of these meetings is not mandatory. For participating graders, reasonable travel expenses (airfare, hotel, etc.) are reimbursed. If you are interested in learning more, contact me or Shelly Duquette.
- From the reports given by the other MO delegates, a few potential programs of interest to SEAO were identified. These will be reported to the SEAO Board and SEAO Program Committee for their consideration. These programs include *Engineering Ethics and Structural Calculations (SEAA)*, *Internal Curing of Concrete (SEAI)*, *Blast and Progressive Collapse Design of Light Gage Structures (SEAH)*, and *Cal EMA Certification Seminar (SEAW)*.
- New business items included a discussion of the potential for WCSEA to undertake the development of a western states snow load map. ASCE desires to update the national snow load map in ASCE 7, and approached WCSEA about this possibility as a means of obtaining the Northwest region's data for the national map. It was felt by the WCSEA Board that since the maps for each of the member states are of various vintages and not based on a single set of current data, and that to update them all to one single standard would require resources that WCSEA does not have, WCSEA will inform ASCE that it is unable to fulfill this request.
- Locations of future WCSEA Board meetings have been set. The 2014 meeting will be held at the SEA Northwest Conference in Seattle on September 18 through September 20. The 2015 meeting will be held at the NCSEA conference, which may be in Las Vegas, Nevada.

The WCSEA Board meeting concluded with a presentation by Gary Chock of SEAH on the development of a Tsunami Design chapter slated for inclusion in ASCE 7-16. A Tsunami Design Committee has been working for the last 30 months developing the proposed standard, and if the effort stays on course, provisions for tsunami design of critical and essential facilities will be incorporated into ASCE 7-16. Lessons learned from the Tohoku earthquake and tsunami were integrated into the new provisions, which will include hydrodynamic loading and redundancy criteria as well as debris impact provisions. The intent of the provisions is to improve the redundancy and toughness of buildings built within known tsunami inundation zones. The presentation was very informative and may be one that SEAO will bring to a monthly meeting in the next year.

I would like to personally thank each and every SEAO member and the SEAO Board for sending me to this conference. With SEAO being the second largest SEA member organization in the Western Council, I feel it is very important that our organization have representation at these meetings. The ideas we get and information we gather at these conferences is vital to making sure that the interests of SEAO and its members are served and that SEAO's mission of delivering relevant and interesting learning opportunities to its members is furthered. I would also encourage all of you to attend the 2014 SEA Northwest Conference that will be held September 18-20 in Seattle—put it on your calendars, as it promises to be a great opportunity for PDHs and networking, and it is only a short 3-hour drive away!

SEAO BOARD RETREAT 2013 – FISHCAMP

By: JoMarie Farrell, PE

On the beautiful weekend of October 4th – 6th, members of the 2012-2013 incoming SEAO board, a committee chair, two active members, and one lone newsletter editor held a retreat at “FishCamp”. Hosted, at no cost to SEAO, by Mike Bair (a fellow SEAO member) and Bill Voss. The retreat was an opportunity for the Board and attending members to discuss the activities for the year ahead. There were seven of us that were able to attend the fishing retreat: Amit Kumar, Jennifer Eggers, Shelly Duquette, Andy Stember, Tonya Halog, Dmitri Wright, and JoMarie Farrell.

FishCamp, as the name suggests, is a camp oasis tucked alongside the Rogue River, just outside Shady Cove, Oregon, owned by Bill Voss and his wife, Dede. It is a long stretch of land alongside the river that contains Bill and Dede’s new home, their previous one-room cabin (their home while building their current house), three to four cabins with bunk beds, and a bath house. There is also a trailer set up to serve as the outdoor kitchen area for the guests staying in the older home and cabins.

The retreatants were welcomed to FishCamp Thursday evening and treated to a sumptuous dinner prepared by Bill and his wife, Dede. This was followed by a get-to-know each other session with our hosts and the board members by a roaring campfire.

Early next morning we were paired up in small boats called “drift boats”, each pair with a guide. After some Fishing 101 lessons from our guides, we set off on the beautiful Rogue River on our quest to catch some steelhead. After spending all day on the river with moderate success and a few keepers, we returned exhausted early in the evening. We were again treated to a wonderful dinner followed by a campfire retreat and discussion of SEAO activities and brainstorming ideas to provide more value to members.



After a great meal and lively discussion, we went to bed at the prospect of another day of fishing on the Rogue the next day. Saturday morning was another crisp but clear one. Another day on the river went by fast. Jennifer (aka “New Big Fish”) and Dmitri’s boat had the most keepers for the day! Shelly also had a beautiful keeper. JoMarie considers herself lucky that, while she appeared to catch the most trees on Saturday, she lost no gear. We got back to camp early enough on Saturday to play Fish camp Putt Putt (putt putt golf in the rough around the campground). Saturday was topped off with yet another wonderful meal, a warm fire, wine, and more lively discussion and conversation!

On Sunday morning, we had a wonderful community breakfast together, had a grand tour of Bill and Dede’s home, celebrated our success and fishing skills, and got on the road to head home.



Fish camp was an amazing retreat and a great bonding, educational, and learning experience for the Board and attending members. The Board, Tonya, Andy, Dmitri, and JoMarie would like to thank Mike Bair, Bill Voss, and Dede for being such gracious and wonderful hosts. We appreciate and thank you for your continued support of SEAO.

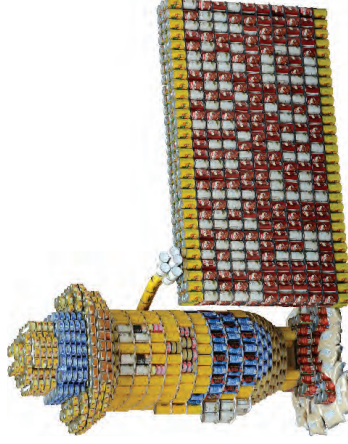
FYI: This is the same fishing trip that is being raffled off by attending SEAO events. Each SEAO event you attend will garner you one more ticket for entry into the raffle. The more SEAO events you attend, the more chances you get to win a trip to fish on the Rogue River—an event you will not want to miss!

**Juror's Favorite
 People's Choice
 Most Meals & Most Cans**



BergerABAM | Holland Partner Group
Game Over Hunger

Best Use of Labels



DOWA-IBI Group Architects | Mayer/Reed | MulvanneyG2
Twinkie the Kid

Structural Ingenuity



Catena Consulting Engineers | R&H Construction
New Seasons Market | One Fish, Two Fish, Help Us Fill a Dish

Best Meal

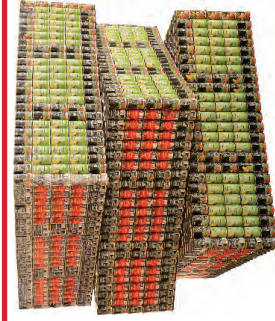


Degenkolb Engineers | Emerick Construction
Oh planning+design, architecture
How Does Your Garden Grow?

Honorable Mention



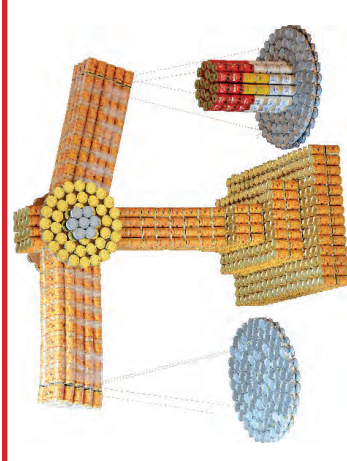
Group Mackenzie | Hoffman Construction Company
Go Buy Food



GBD Architects | Turner Construction
Solve the Hunger Puzzle



Ankrom Moisan Architects | Arciform
Lighting the Way to Better Days



KPFF Consulting Engineers | SRG Partnership
Tipping the Scales Against Hunger



YEAR-TO-DATE STATISTICS

17 years of structures
 490,582 lbs of food
 168,948 dollars
 874,780 meals

2013 STATISTICS

Raised 45,982 lbs of food
 and over \$21,058
 for Oregon Food Bank,
 equaling 97,661 meals.

Interface Engineering | S.D. Deacon
A Well-Rounded Meal



CALL FOR ENTRIES

THE 18TH ANNUAL DESIGN AND BUILD COMPETITION

TO BENEFIT OREGON FOOD BANK

WHO

Teams of Portland Metro area Architects, Engineers, Contractors, Designers and Students attending Schools of Architecture, Engineering and Design.

WHEN

December 5	Kickoff Meeting
December 12	Deadline for Entry
April 7	Build Out
April 13	Decanstruction

ENTRY FORM (mail or e-mail to Amber Corsen)

Firm _____

Contact _____ Phone _____

Address _____

E-mail _____

Teaming with Firm _____

Contact _____ E-Mail _____

CONTACT US

Amber Corsen, canstruction Chair
phone: 360-571-5577
e-mail: canstruction@sda-portland.org



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