CONNECTIONS

February 2015 Volume 15 Issue 5

Newsletter of the Structural Engineers Association of Oregon

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SEAO has a twitter account and can be followed at @SEAOregon.

Upcoming SEAO Meetings and Events:

Thursday, February 19th, 2015: YMF Happy Hour

Location: Fat Head's Brewing, 131 NE 13th Avenue, Portland
Time: 5:30 pm to 7:30 pm
See Page 4 for more YMF information.

Wednesday, February 25, 2015: SEAOSF Trade Show

Location: Monarch Hotel & Conference Center, 12566 SE 93rd Avenue, Clackamas, OR
Mini-Seminars Times: 12:30 pm to 5:15 pm
Trade Show Hours: 5:00 pm to 8:00 pm
PDH Credits Available: 5 maximum possible
(one PDH for each seminar attended plus one for attending the Trade Show)
See Pages 3, 4 and 9 for more information.

Wednesday, February 25, 2015: 51st Annual Engineer's Week High School Banquet

Location: Lloyd Center DoubleTree by Hilton Hotel, 1000 NE Multnomah Street, Portland, OR
Pre-Banquet Events: The Exhibit Hall & Student Seminars will be open from 4:00 pm to 6:15 pm for students, teachers, and engineers.
Banquet Time: 6:15 pm to 8:30 pm
See Pages 16 and 17 for more information.

Thursday, March 5, 2015: YMF Lunch Meeting

Location: KPFF Consulting Engineers, 111 SW 5th Avenue, 26th Floor Conference Room, Portland
Time: Noon to 1 pm
See Page 4 for more YMF information.

Tuesday, March 10, 2015: SEAO Spring Seminar

Topic: Design & Analysis of Masonry Structures Using Software and/or Hand Calculations
Speaker: Ed Huston, PE, SE, Principal, Smith & Huston
Location: Embassy Suites Hotel & Conference Center, 9000 SW Washington Square Rd, Portland, OR
Time: Registration Opens at 7:30 am, Seminar 8:30 am to 4:30 pm
Lunch will be included with your registration. PDH Credits: 6 (4 for viewing video)
See Pages 12 and 13 for more information and registration form.

Thursday, April 23—Saturday, April 25, 2015: Structures Congress 2015

Location: Oregon Convention Center, 777 NE MLK Jr. Blvd., Portland, OR
See Page 5 for more information.

Thursday, April 23, 2015: Excellence in Concrete 2015 Awards Banquet

Location: Salem Convention Center, 200 Commercial St SE, Salem, OR
Time: 5:30 pm Visit http://www.ocapa.net/excellence-in-concrete to register.

Thursday, July 16 - Saturday, July 18, 2015: SEA Northwest Conference

Location: Boise, Idaho
See Pages 8, 14 and 15 for more information. We will be updating the information in future news-letters.

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

Send membership inquires to:

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BOARD OF DIRECTORS

PRESIDENT'S MESSAGE: WOW, WHAT A TURNOUT!!

By: Jennifer Eggers, P.E., S.E.

All I can say is . . . **"WOW!"** At the January dinner meeting, we had an amazing turnout. We even needed to change to the larger ballroom. Thank you! I was so pleased to see so many new and returning faces. Before the meeting, we had a well-attended "Committee Information Session" and received positive feedback. SEAO will be hosting those more often as it was a useful way to provide an avenue for new (and even seasoned) members to learn about the committees available to join. If you happened to miss the session and would like more information about our committees, please don't hesitate to email me or take a look at our website for committee information.

Emily Guglielmo came up from the Bay Area and gave a fantastic presentation on common errors in wind design and how to avoid them. If you missed the presentation, please see the meeting recap write-up. Her very last slide was how the wind pressures were determined in 1976 by using a simple table. It is just interesting to see how codes have developed and changed.

Completely unplanned, but convenient . . . one of the main messages that I received from Emily's presentation extends way beyond wind design. The message was about code development. Codes are formed and developed by committees of volunteers. If you are not happy with or disagree with something in the code, the best way to change it is to get involved. Our goal at SEAO is to engage more members to get involved, which is why we hosted the committee information session which happened to be that same night.

SEAO committees are tied into the national committees. Getting involved in committee work allows us to stay apprised of anything happening locally and nationally. When you get involved, you can also share information with your peers and allow everyone to stay connected with upcoming code changes and where our practice is headed. Getting involved doesn't necessarily mean hours upon hours of work; it means attending a committee meeting every once in a while and providing your feedback and opinion. If you are interested in taking on more, the opportunity is there, but it certainly isn't required.

I would also like to encourage those SEAO members outside of Portland to join committees. Conference calls are always available for committee meetings. This will give you a chance to connect with other SEAO members as we know it is difficult to attend all meetings in Portland in person.

The Structural Engineers of Oregon Scholarship Foundation (SEAOSF) is hosting the annual fundraising trade show on Wednesday, February 25th! We hope to see you there to help support our scholarships. SEAOSF has been able to help three to four students per year with a financial scholarship for college. Many of these scholarship winners have gone on to become active members of SEAO. With your help, this year SEAOSF is awarding four scholarships to deserving students.

Due to the business that comes with spring break, SEAO does not have a March chapter meeting. Our next chapter meeting will be in April and will be on the new Tsunami code. This presentation should be a great introduction to the code development for this new chapter in ASCE 7.

Thank you for your continued participation and support. I am looking forward to seeing you at one of our upcoming events.

Jennifer

SEAO COMMITTEES

CODE ADVISORY COMMITTEE

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Wind
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Snow Load
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Young Member Forum
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CONTINUING EDUCATION COMMITTEE

Seminars
Andy Stember—andy@jasenginc.com

Professional Development
Open

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Roster
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Ed Quesenberry—edq@equilibriumllc.com

Seth Thomas (Alternate)—seth.thomas@kpff.com

SEAO SCHOLARSHIP FOUNDATION ANNUAL TRADE SHOW AND MINI-SEMINARS
WEDNESDAY, FEBRUARY 25, 2015

This year's show will include 8 seminars and 21 vendors and it promises to be very informative and entertaining.

This event provides a good deal of income to the scholarship fund in large part due to the continued support and participation of the vendors. Our past shows have been a great benefit to both the vendors and the foundations. To continue this success, we need our members to support the show and its participants with their attendance. You will have the opportunity to view a variety of products and discuss problems and ideas. It is an excellent chance for new SEAO members to see what materials and products are available and currently in use in the field. See page 4 for a list of participating vendors.

The mini-seminars will run from 12:30 pm until 5:15 pm, allowing vendors to go more in depth and offer more information to the members than might be available at the Trade Show alone. See page 9 for the list of mini-seminars available.

Again, we will be raffling off great prizes thanks to donations from some generous firms and companies that support our organization. See page 4 for a list of a few of the donated items. Tickets may be purchased at the Trade Show.

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

Date: Wednesday, February 25, 2015

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

Times:
Mini-Seminars: 12:30 pm to 5:15 pm (See schedule on page 9)
Trade Show: 5:00 pm to 8:00 pm
Dinner: Served at 6:00 pm

Cost: Complimentary dinner and beverage for SEAO members, $25 per person for non-members

Reservations:
Please call Jane Ellsworth before noon on Monday, February 23, 2012.
You only need to RSVP for the Trade Show — It is not necessary for mini-seminars.
Phone: (503) 753-3075.
Email to: Jane@seao.org

PDH Credit: SEAO recommends a maximum of 5 total hours of PDHs for the event. This includes a maximum of one hour for each seminar attended and one hour to those who register their attendance for documentation at the Trade Show. See Jane Ellsworth to sign-up specifically for that documentation.

TRADE SHOW RAFFLE

When you attend this month's SEAOSF Trade Show, you have the opportunity to purchase raffle tickets which help fund the scholarship foundation's annual scholarships to engineering students in Oregon.

SEAOSF continues to collect raffle prizes, including:

- A room for two with dinner at the Embassy Suites at Washington Square (donated by Embassy Suites).
- Tickets for two to a Trailblazer's Game (donated by Miller Consulting).
- Sunday Brunch for Two at The Monarch Hotel (donated by The Monarch Hotel).

- A room for two with parking included at the Airport Sheraton (donated by the Airport Sheraton).

If you have an item or service to donate, please contact Andy Stember at andy@jasenginc.com. All donations are greatly appreciated and generate more raffle ticket sales. Thanks to all the generous donors.

SEISMIC EVENTS

ASCE Webinars (www.asce.org)
Monday, March 2, 2015, 9:00 AM – 10:00 AM PT.
Advanced Topics in the Seismic Design of Nonbuilding Structures and Nonstructural Components to ASCE 7-10.

Wednesday, March 11, 2015, 8:30 AM – 9:30 AM PT.
Design of Multi-Story Light-Frame Shear Walls.

YOUNG MEMBER FORUM ACTIVITIES

By: Phil Davis & Seth Thomas

Upcoming YMF Events:

Thursday, February 19th – YMF Happy Hour —
Location: Fat Head's Brewing
131 NE 13th Avenue, Portland
Time: 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 March 5th – YMF Lunch Meeting
Location: KPFF Consulting Engineers
111 SW 5th Avenue, 26th Floor Conference Room
Time: 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.

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

TRADE SHOW VENDORS

When you attend the Trade Show, you have the opportunity to meet with industry product leaders and services who are available to answer your questions and to provide up-to-date catalogs and product information.

The following vendors have been confirmed for this year's Trade Show:

ASC Steel Deck
Boise Cascade
Contech Services
CoreBrace
Galvanizers Company
Knife River
LP Corp
Mason Supply Company
Powers Fasteners
Ram Jack
RedBuilt
RISA Technologies
Simpson Strong Tie
SR Contractors
Star Seismic
Trex Company
USP
Verco
Web Joist
Weyerhaeuser Trus Joist
Woodworks

It is through your participation that we have such a great turnout each year from the vendors. Come to the Monarch to network and gather information on the latest product developments. We hope to see you at the Trade Show on February 25th!

STRUCTURES CONGRESS 2015

Structures Congress 2015 - Oregon Convention Center
April 23- 25, 2015 - Premier Event for Structural Engineers

Register Early and Save Money

Join us to:

- Learn from dynamic technical sessions - choose from more than 120
- Take part in the Council of American Structural Engineers (CASE) Spring Risk Management Convocation
- Connect with colleagues - more than 1,200 attendees expected
- Be inspired by two renowned keynote speakers in Plenary Session: Tad McGeer, Ph.D., Founder and President of Aerovel Corporation and Avery Louise Bang, CEO of Bridges to Prosperity
- Earn Professional Development Hours (PHDs).
- Interface with students and young professional.
- Visit Portland for roses, parks, museums, outdoor adventures, great food, microbreweries, and so much more.

View all registration options and choose the one that works best for you. Flex Registration might interest you - learn more about this at registration option .

We expect the hotels to sell out in advance of the official cutoff date. Make your hotel reservation today.

Quick Links
View Technical Program 120 technical Sessions.
Instructions For International Travel
Materials to help convince your boss

1607.10.2 Alternative uniform live load reduction. .

This section establishes a minimum tributary area of 150 square feet as the threshold for live load reductions computed from Equation 16-24, which is plotted in Figure 1607-5. Note that Footnote m in Table 1607.1 prohibits the reduction of certain live loads unless a specific exception applies—see items one and two. Live loads in excess of 100 psf may not be reduced with two exceptions. First, the design live loads on columns supporting two or more floors may be reduced by 20 percent, and second, for usage other than storage, reduction is permitted when found acceptable by a registered design professional through rational analyses, as explained in Section 1607.10.1.2. Also, reduction is not permitted for passenger-vehicle garages except for a maximum 20-percent reduction for columns supporting two or more floors. An upper limit is also specified for the tributary width of a one-way slab for reduction calculations as 0.5 times the span of the slab, as explained in Section 1607.10.1.1. The maximum live load reduction permitted is 40 percent for members receiving loads from one level only and 60 percent for other members (such as columns or transfer girders).

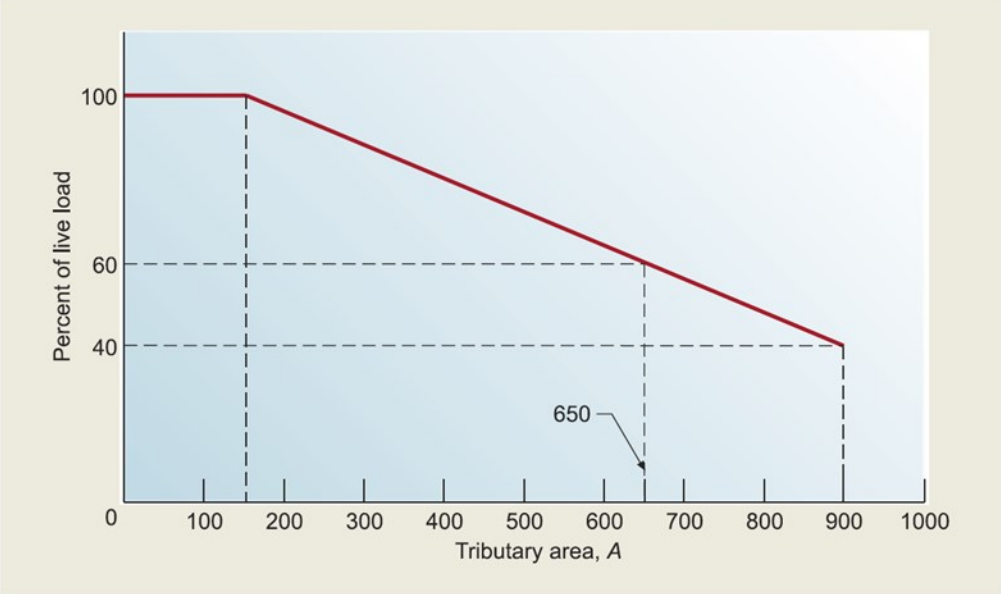


Figure 1607-5 **Live load reduction Equation 16-24.**

Equation 16-24 was derived so that if a structural member supporting a tributary area of sufficient size to qualify for the maximum reduction allowed by the equation were subjected to the full design live load over the entire area, the overstress would not exceed 30 percent.[14]

It may be noted from Equation 16-25 that the maximum live load reduction is proportional to the ratio of dead load to live load. Therefore, for heavy framing systems, the reduction is permitted to be greater than it would be for lighter framing systems. This reflects the thinking that for a given magnitude of overload on a structural system, the system with the heavier dead load is overstressed proportionately less than one with a lighter dead load. For example, if a floor system weighing 30 psf and designed for a live load of 40 psf were subjected to a 20 psf overload, the amount by which the structural system would be overloaded is about 30 percent, assuming the system was designed to support just the minimum design live load of 40 psf. If this floor had a dead load of 60 psf, the overload would be only 20 percent, again assuming that the system was designed to support just the 40 psf live load.

[14] The National Bureau of Standards, *Live Loads on Floors and Buildings, Building Materials and Structures Publication No. 133*, Washington, DC, 1952.

JANUARY MEETING RECAP
THE MOST COMMON ERRORS IN WIND DESIGN AND HOW TO AVOID THEM
SUMMARY BY: DEANNA AMNEUS

Presented by: Emily Guglielmo, SE

Emily Guglielmo is a Structural Engineer at Martin/Martin Inc. in San Francisco. She is active in several technical committees and has given this presentation across the nation. During the presentation Emily gave a brief overview of building enclosure classification, common analysis methods, and torsional wind effects on buildings. She also compared the changes from ASCE 7-05 to the ASCE 7-10 wind design methodology. The following are some highlights from the presentation:

Enclosure Classification

Enclosure classification (ASCE 7-10, Section 26.2):

- Open: A building having each wall at least 80% open
- Partially enclosed: The building must comply with both of the following conditions.
  1. The total openings of one wall must be 10% greater than the sum of the openings in the balance of the building envelope (walls and roof).
  2. The total area of openings in one wall exceeds 4ft^2 (or 1% of the area of wall) and the percentage of openings in the balance of the building is less than 20%.
- Enclosed: A building that does not comply with the requirements for open or partially enclosed buildings.

Openings: Anything that is designed to be opened during design winds, for instance, doors, operable windows, air intake exhausts

Enclosure classifications directly relate to the internal and external balance of pressure. In a partially enclosed building, air can enter the building but has no means of exit and, therefore, internal pressures can build.

(Depending on dimensions, this can be a partially enclosed building)

Wind Design Methods

When selecting a wind design method, one should consider the height of the building, enclosure classification, diaphragm, parapet, rooftop structures, and more.

Things to consider:

- Design for wind in each direction or controlling direction.
- If you have a partially enclosed case, consider owner-required wind speeds.
- Most parking garages classify as enclosed buildings.
- Most buildings are simple diaphragm buildings.
- NCSEA recorded that the majority of engineers use the all-heights methods while calculating wind loads in 2011.
- Different wind design methods will produce different wind loadings.

Enclosed buildings can use: Chapter 27, Part 1; Chapter 27, Part 2; Chapter 28, Part 1; Chapter 28, Part 2; or Chapter 31.

Partially enclosed buildings can use: Chapter 27, Part 1; Chapter 28, Part 1; or Chapter 31.

Open buildings can use: Chapter 27, Part 1 or Chapter 31.

Buildings taller than 60 feet can use: Chapter 27, Part 1; Chapter 27, Part 2; or Chapter 31.

Buildings taller than 160 feet can use: Chapter 27, Part 1 or Chapter 31.

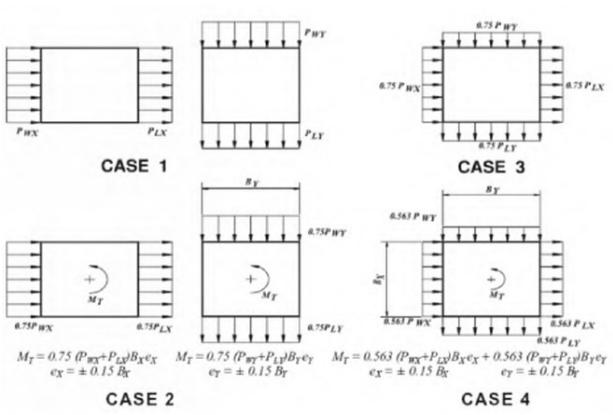
Buildings that are NOT a simple diaphragm can use: Chapter 27, Part 1 or Chapter 28, Part 1.

Torsional Design

Required when using the following:

- Chapter 27, Directional procedure.
- Using Chapter 28, Part 1 (except if the building is one story and less than 30ft).
- In some cases you may have to prove the building is torsionally regular (that the torsion load case would not control).
- Appendix D has several cases where you can ignore torsion.

Torsional loads cases for design consideration can be found in ASCE 7-10 Figure 27.4-8 (shown below).



ASCE 7-10

Overview of changes from the 7-5 to the 7-10:

- Chapter 6 is now reserved for future provisions, and wind load provisions have been moved to Chapters 26, 27, 28, 29, and 30.
- No importance factor for wind.
- Increased number of maps (where I=1) and speeds are at strength design levels.
- Load combination factor decrease from 1.6 to 1.0.
- Hurricane prone regions can now be classified with exposure D (reintroduced form previous code).

Comments

- Consider the intent of the code before applying wind loads.
- The changes were intended to make wind design more user friendly, not less!
- If you don't like the amount of analysis methods, talk to your code committee (the code cannot change if you only complain to your coworkers)!

SEA NW CONFERENCE
July 16-18, 2015

Structural Engineers of the Northwest!

As you have probably heard, Idaho is hosting the 2015 SEA Northwest conference in downtown Boise this summer! They have many special events planned for this conference for the Young Engineer, the Seasoned Engineer, and every Engineer in-between. J

On that note, they need your help! They are looking for nominations from you (and feel free to nominate yourself!) The two categories that they are looking for are:

1. Outstanding **Young Member** Engineer (preferably in their first 10 years of experience).
2. Outstanding **Mentor** for other Engineers (Preferably with more than 10 years experience- but not necessarily).

Please send all nominations names and contact info to Sarah McClendon at the email address below.

For more information on the 2015 SEA Northwest Conference: **www.SEAIdaho.org**.

You can now LIKE them on FaceBook, and FOLLOW them on Twitter, and CONNECT with them on LinkedIn.

Questions can be sent to:

Sarah McClendon
2015 SEA Northwest Conference Host
sarah@mcclendonengineering.com

See pages 14 and 15 for additional information.

CLACKAMAS ROOM

12:30- 1:30 PM
Simpson Strong Tie
Retrofit and Repair of Structural Members Using Externally-Bonded Composite Strengthening Systems
This presentation will cover Simpson Strong-Tie fiber-reinforced polymer (FRP) systems that can be used to retrofit and rehabilitate elements in buildings, bridges, parking garages, chimneys, piers/wharfs, tunnels, tanks/silos, and pipelines.

1:45 – 2:45 PM
Boise Cascade
Designing floors with Boise Cascade EWP.
We will discuss the most important variables to consider including vibration, deflection, floor sheathing, trouble areas, design rules of thumb, and filed problems and solutions.

3:00 - 4:00 PM
Simpson Strong Tie
Testing of Tension Only Steel Anchor Rods Embedded in Reinforced Concrete Slabs

This project investigated the conditions associated with shallow anchorage reinforcement and its effect on behavior and capacity of embedded anchors subjected to direct tension. Important recommendations are also made related to construction quality control and overall constructability. The goal of the final test report is to enhance the findings with useful design recommendations and data to support a successful proposal to change code provisions.

4:15 – 5:15 PM
Contech Services
Quality Control and Inspection of the Installation of Fiber Reinforced Polymers (FRP)

Sarah Witt will give an interactive seminar and will cover quality control issues and inspection of the installation of Fiber Reinforced Polymers (FRP). As the use of FRP for strengthening concrete and masonry structures is becoming more main stream, it is important that owners, contractors and designers are familiar with the installation process. These materials have multiple steps in the field with unique requirements to ensure a high quality installation, designed to last the life of the structure. The steps of FRP installation will be highlighted, from proper surface preparation techniques to testing requirements. The criteria of ICC AC 178, an inspection guideline, is presented as a reference for required inspection. A discussion of suggested special inspection will also be included.

WILLAMETTE ROOM

12:30- 1:30 PM
Powers Fasteners
ACI 318-11 Anchor Design Examples in PDA
The presentation discusses Concrete Anchorage According to IBC2012. Powers Design Assist software is used within the presentation to demonstrate adhesive and seismic design examples relative to changes in ACI 318-11 Appendix D and ACI 355.4.

1:45 – 2:45 PM
Ram Jack
Ram Jack Deep Foundation Systems
Ram Jack West owner Ken Marquardt explains using helical piles, drilled piles, and vibratory h-piles in remedial and new construction applications.

3:00 - 4:00 PM
Trex
Trex Elevations Steel Deck Framing
By designing a deck framing system with the outdoors in mind, we've reinvented the concept, creating a remarkably stable and consistently flat, triple-coated steel substructure on which to build a high-performance deck—something other deck frames could only dream about. Trex Elevations comes with a CCRR-0186 code compliance research report which approves Trex Elevations for exterior use and 25 year manufacturers warranty.

4:15 – 5:15 PM
RISA
Using RISA to Design Buildings
Learn how to design a building from foundation to roof using RISA software. This seminar will cover modeling, analysis, design and report printing as well as tips and tricks for modeling more efficiently.

TECHNICAL ARTICLE by JOSEPH WALTON SE, and PETER HATTON GM, STEEL ENCOUNTERS

Open Web Steel Joists

As I have transitioned my career from engineering design into the construction industry, I have learned a great deal of simple (I wish I knew this before) type of things. Little tips, tricks and rules of thumb can come in handy and potentially save the project from heartache and problems. It is important that we share some of these things in order to help us all enjoy a smoother design and construction process.

I enjoy discussions with steel detailers, erectors and contractors where I can often learn what to avoid and how to clean up the design and construction process. Our friends with hard hats and work boots have plenty of useful information to offer us if we are willing to listen and learn. Below are a few things to add to your quiver of knowledge regarding Open Web Steel Joists.

Economics

It's no secret that Open Web Steel Joists are a practical and economical product for framing roof and floor systems. The ability to minimize steel and maximize span capacities is inherent in the product. There are a few rules of thumb to follow in order to keep them practical and economical.

- Deeper might be Cheaper – Cost vs depth is a U-shaped curve. SJI catalogs offer great tables to help establish economical joist sizes. Learn and love the Economical Joist Guide. If there are ducts passing through joists or girders, put the duct OD and approx locations on your drawings, Check the web openings are large enough – see published guidelines for duct passage.
- Maximize the deck spans – joists are more economical with greater spacing. Installers' pricing is based on 'pieces handled'. Fewer joists means fewer days on site & lower installed cost.
- SJI catalogue joist vs load per foot joist designations – calling out a joist with "load per foot " criteria eg 28K (300/220 TL/LL in plf), in lieu of 28K6, allows the fabricator to economize the joist per the design criteria.
- Joists are built, bundled and shipped by depth. Bridging is more economical to install between joists of the same depth. Group your joist depths to the extent possible.

Non-Typical Loads

It's easy to place a note on the plans to say "basketball backstop – coordinate with joist supplier". This type of note will create problems as it creates an uneven bidding platform and, future change orders and finger pointing among the engineer, contractor, supplier and owner down the road when the change order rears its ugly head. Include an allowance on your drawings that will ensure those are covered on bid day. It is the responsibility of the design professional (EOR) to design and develop design criteria for the structure and its components. I recommend you add a note to your drawings "(6) basketball backstops – 2,000lb each, supported by (2) adjacent joists at (6) locations in Gym - confirm load and location with Architectural floor & RCP plans, and manufacturer during submittals. ".Be sure to review those loads for lateral bracing requirements.

This would also apply to Fall Arrest Anchors, sprinkler mains, partitions and any other elements that may be designed or specified after structural drawings are released.

For all future miscellaneous knowns and unknowns, specify an adload allowance (say) 500 lbs at any top or bottom chord panel point for joists and girders. Then you have an allowance for most any situation. That is inexpensive at bid time. If loads change during submittals, you can increase that allowance in one area and reduce it in another without cost impact.

Axial Loads

It is common for axial loads to be specified in joist chords and seats. A problem arises when axial loads are specified on a SJI Catalog joist (eg 24K9). The joist design engineer designs these joists as a beam/column and a typical SJI joist doesn't provide that information properly. When specifying axial loads on joists, only provide the TL/LL in plf so these joists can be properly designed.

Miscellaneous Thoughts:

- Wind uplift (gross vs net) – A common problem with this issue occurs when an engineer specifies a gross uplift value and dead loads are not specified on the drawings; or the uplift values are given as LRFD and dead loads as ASD. IBC #2207 requires the EOR to specify the net uplift values on a plan diagram or noted on plans so the clear design criteria is represented.
- Total load deflection limits can add significantly to the joist cost and are typically not necessary since the joist is typically cambered. Specify live load and dead load deflection limits, only.
- Don't place a joist less than 6ft (for 1.5" B deck, 8 ft for 3" N deck) from a rigid element (wall or ledger) as the camber of the joist will prevent the deck from landing on that element.
- If a brace connects to and imposes a load on a joist, the load should be given at the brace for design, and state what your design load combination requirements are. And add a note: " manufacturer to place a panel point at that location." Braces are best attached at top chords and the roof diaphragm, rather than bottom chords that may require additional bottom chord bracing material and labor costs.
- Dead load allowances: in your general notes specify your design dead loads for joists. Itemize how that was determined, eg 5 psf for joists, 3 psf for deck, 5 psf for roofing assembly, 10 psf for misc MEP. That tells the joist manufacturer and detailer what is included and what is not.
- A load diagram is a great way to communicate your intent, showing LL, DL, drift, concentrated loads, axial loads, etc.
- Did you know that Joist or girder chord sizes and web configuration are generally not known with certainty until joists are fabricated ? This is because joists are a design-build item and are being optimized right up to & during fabrication. It is also common for the joist design loading to change from Bid day to fabrication day due to MEP changes, which in turn, will change joist member sizes & configuration.
- If your steel framing details are dependent upon joist chord sizes, this creates tension between the Contractor, steel fabricator and the joist manufacturer. Its not too hard to

design steel details that are independent of chord sizes…ask us.

- If you need a specific web configuration, you need to negotiate that with a manufacturer long before bid, document the agreement, and make that configuration explicitly clear in your S drawings.
- As joists are slender members, they are rarely perfectly straight upon delivery. This is typically corrected during erection as bridging is installed.
- Engineers specifying steel joists should become thoroughly familiar with IBC 2012 section #2207 – Steel Joists. (#2206 in previous years)

More rules of thumb are presented by the Steel Joist Institute (SJI). www.steeljoist.org

Design & Analysis of Masonry Structures Using Software and/or Hand Calculations Seminar

(The principles taught for verifying the output of software packages are applicable to all materials. If you attend, you will learn much in this workshop.)

Presented by the Structural Engineers Association of Oregon (SEAO)

Date: **Tuesday, March 10, 2015 – 8:30 AM to 4:30 PM**
Registration Opens at 7:30 AM (Lunch Included)

Cost: $175 SEAO Member (Includes Class Notes) $225 Non-member
$25 Late Fee (if registration received after March 3, 2015)
Students $55 (Includes Notes) – Must show current student ID
No refunds after 12:00 noon, Tuesday, March 3, 2015

Register early; Maximum 100 people **Program to be Taped by Limelight Video**

Location: **Embassy Suites Hotel and Conference Center** 9000 SW Washington Square Rd Portland, Oregon (503) 644-4000

Continuing Education: **SEAO has recommended this seminar for 6 PDHs (4 PDHs for Viewing Video)**

Speaker: **Ed Huston, PE, SE, Principal, Smith & Huston,** Graduate of the University of Washington**,** Past President of NCSEA Board of Directors, Chair of the Code Advisory Committee

This course is intended to provide information on the design of masonry structures comparing hand calculations against software programs. This seminar is designed to present masonry design using the 2011 TMS 402 "Building Code Requirements for Masonry Structures" and the 2012 IBC. The target audience is practicing engineers who currently design masonry structures, engineers who would like a refresher course on masonry basics, and engineers who want to learn more about the accuracy of some of the standard computer programs in the market. Today most masonry designs are performed using one of several software packages. Some of these packages are better than others, depending on the members and loads you need to design for. Some of the workshop topics will be:

- Masonry design basics and updates to the 2011 TMS 402 Masonry Standard.
- How do you check your software? The licensing says you are responsible.
- How do you know that the input is modeling the element you are designing?
- Is the reinforcement in the correct position?
- How does the software check load combinations and which does it check?
- When do you have to make multiple runs for positive and negative lateral loads?
- How do you check a spreadsheet that you didn't create (or one from long ago)?
- When is faster to design it by hand?
- **Speaker is from SEAW**

Questions: Andy Stember at (503) 657-9800

Design & Analysis of Masonry Structures Seminar

Registration Form

Register Online at www.seao.org or

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

Make Checks Payable to:
SEAO

Firm Name: _____

Firm Address: _____

Phone _____

Name of Attendee(s) _____

_____

_____

_____

# of Attendee(s)	_____ @ $175.00 / each = (Nonmember $225.00)	$ _____
# of Late Fees	_____ @ $25.00 / each =	$ _____
# of Students	_____ @ $55.00 / each =	$ _____
# of Videos	_____ @ $150.00 / each =	$ _____
	Total Enclosed =	$ _____

Visa Or MasterCard (circle one)

Name (as appears on card) _____

Credit Card # _____ exp _____

3 digit code: _____ Billing Zip Code of Card: _____

Cardholder Signature _____

Bring A Guest!

(Or the entire family!)

- ✓ **Explore Boise!**
- ✓ Shop, eat, relax and play
- ✓ Finally, someone will get your jokes! (Bring a witness for this!)
- ✓ **A much needed Vacation**
- ✓ Kids can splash and play in the pool
- ✓ **Float the Boise River**
- ✓ Enjoy the art museum!
- ✓ **Date night with a view!**
- ✓ Go on a wine tour- or brewery tour
- ✓ **Spoil yourself at a boutique hotel**
- ✓ A Staycation!
- ✓ **Touch the blue turf**
- ✓ Hike the foothills
- ✓ **All the cool Structural Engineers will be there!**

✓All this plus an Engineering Conference!!

Now accepting Exhibitor applications and Sponsors!
For more information go to SEAIdaho.org

Thank you to our Exhibitors and Sponsors!

SEA Northwest Conference

Boise, Idaho | July 16-18, 2015

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SEA Northwest Conference
Boise, Idaho
July 16-18, 2015

Please help us make the 2015 NWSEA Conference a huge success! Your input is important!

Speaker or Topic Idea: _____

Favorite Vendor: _____

Other Ideas or Suggestions: _____

You can submit other suggestions by following us on facebook: www.facebook.com/NorthwestSEA
Or Twitter: @NWSEAconf

Or submit your suggestions to: Sarah McClendon / Conference Host at: Sarah@McClendonEngineering.com
Please submit your suggestions before February 28, 2015

51st Annual Engineers Week High School Program

Celebrating over 50 years of growing new engineers in Oregon & Washington

YOU are an essential part of the 51st Annual Engineers Week Program.

The 51st Annual Engineers Week High School Program is coming:

Date: **Wednesday, February 25, 2015**

Location: **Lloyd Center DoubleTree by Hilton Hotel**
1000 NE Multnomah Street, Portland

Pre-Banquet Events: The Exhibit Hall & Student Seminars will be open from **4 – 6:15 PM** for students, teachers and engineers.

The Annual Engineers Week High School Banquet begins at 6:30 PM. All sponsor engineers are encouraged to attend – this is the best opportunity to talk to students and share what you love about being an engineer!

To participate at E-week:

- Send in the attached form and a sponsor check (see details on next page).
- Email Tova Peltz at tova.r.peltz@odot.state.or.us for online registration and payment information.
- We will contact you with additional day of the event information.

THANK YOU ! We look forward to seeing you in February!

Engineers Week Sponsorship Levels

		Sponsor Included on E-week Web and Facebook Pages	Title Sponsor on all Event Publications*	Official Sponsor of College Seminars	Number of Sponsored Students	# Banquet Dinner Tickets for Your Organization
Platinum	$2,000	✓	✓	✓	20	15
Gold	$1,000	✓	✓	.	10	10
Silver	$500	✓	.	.	5	5
Individual	$75	.	.	.	1	1

**Title sponsors will be included on all event publications if program support is committed by December 31, 2014.*

E-week Registration

Company Name: _____

Contact Name: _____

Email Address: _____

Phone Number: _____

Sponsor level - check one:

- ☐ **Platinum $2,000**
- ☐ **Gold $1,000**
- ☐ **Silver $500**
- ☐ **Individual $75**
- ☐ **I cannot attend, but I would like to sponsor a student - $40**

Send this form and a sponsor check payable to "ASCE Oregon Engineers Week" to: Tova Peltz, c/o ODOT 5681 SW Arctic Drive, Beaverton, OR 97005.

The Engineers Week High School Program is a tax-deductible program affiliated with the American Society of Civil Engineers, a 501c3 non-profit organization.