December | 2019

STATE EQUILIBRIUM

Newsletter of the
Structural Engineers Association of Washington

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State Leadership

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In the Issue

1. SEAW Refresher Course
2. Happy New Year from SEFW
3. November Seattle Dinner Meeting Recap
4. SEAW Outreach Committee Update
5. Simpson Strong - Tie Awards Master's Degree Fellowship to WSU's Madison

Seattle Chapter Meeting

Annual Student/Young Member Group Sponsored Meeting

Click Here to Register to Attend Today!

Details:

Date: Tuesday, January 28th, 2020
Time: 5:30 - 9:00 PM
Location: UW Waterfront Activity Center
3710 Montlake Blvd NE Seattle, WA 98195
Click here for directions.

Registration Fees:

Members, Non-Members, & Guests - $20
Students - Free
Table Sponsorship - $250
Fee may be split with another company

Agenda

5:30 - 6:30 pm Registration/Networking
6:30 - 7:30 pm Dinner
7:15 - 7:30 pm Welcome/Announcements
7:30 - 9:00 pm Student Showcase

Annual Student/Young Member Group Sponsored Meeting

Seattle Chapter Younger Member Forum featuring a Firms Showcase and Student Project Showcase. The meeting will take place at the UW Waterfront Activities Center. Our meeting will kick off with the popular Firms Showcase networking event from 5:30 pm to 6:30 pm. The showcase is an opportunity to introduce attendees to a variety of structural design firms in the Seattle area, their work on various types of projects, and answer questions from students on what it's like to work

Broers
6. State and Chapter Committee Reports
7. SEAW 2019 Fall Seminar Recap
8. YMG Corner
9. Membership Postings
10. Employment Opportunities
11. Save the Date: 2020 SEA NW Conference
12. Upcoming Events
13. From the Editor



for a Seattle area structural design firm.

Student Project Showcase

After dinner, the evening's main program will feature presentations from students at Seattle University and the University of Washington. This will be an exciting opportunity to learn about the student projects and academic research going on in our professional community.

Table Availability:

Due to space limitations we must limit the showcase to 8 tables, which will be reserved on a first come, first served basis.
Secure your spot as soon as possible by emailing seawymg@gmail.com Tables are available for a sponsorship fee of $250 (Tables may be split between two smaller firms under one registration. Just note the name of the second firm with your full table registration). Your sponsorship fee will enable students to attend free of charge. We are working with the students at SU and UW, as well as the Younger Member Group, and should have a good turnout for this event. When you register you will be sent instructions on the types of materials you will be allowed to have.

Register Today

SEAW Refresher Course

Date: February 4 - March 24, 2020

Time: 6:30-8:30 PM

Webinar Access!

Registration Fees: Members - $350 / Non-Members - $425
Notes Only: Members - $150 / Non-Members - $200

Register Now!

SEAW Seattle Chapter, will hold its annual Refresher Course on Tuesday and Thursday evenings from February 4th through March 24th.

The course instruction and PDF notes are designed to assist engineers preparing for the NCEES Structural Exam and for practicing engineers who want to review principles of structural engineering. Fifteen two-hour lectures will present information regarding Structural Analysis, Wind Design, Foundations & Earth Retaining Structures, Seismic Design I & II, Structural Steel Design I & II, Concrete Design I & II, Pre-stressed/Post-tensioned Concrete Design, Bridge Design I & II, Wood Design, Masonry Design and Cold-Formed Steel Design.

Course presentations are exclusively offered online through GoToMeeting.

We would like to welcome Oregon SEAO members for the third year. SEAO Members may register at SEAW member pricing.

For those unable to attend the course, complete course notes of the most recent course are available via a download link for easy access at a price of $150 for SEAW members, and $200 for all others.

Course Schedule:

Tuesday, February 4 **Introduction & Analysis**
Bruce Erickson, P.E., S.E., KPFF Consulting Engineers

Tuesday, February 11 **Structural Steel Design I**
Mathew Wies, P.E., S.E., DCI Engineers

Tuesday, February 18 **Seismic Design I**
Mike Visser, P.E., S.E., Visser Engineering

Tuesday, February 25 **Concrete Design I**
Mark Whiteley, P.E., S.E., CKC Structural Engineers

Tuesday, March 3 **Bridge Design I**
Greg Hess, P.E., S.E., KPFF Consulting Engineers

Tuesday, March 10 **Prestressed Concrete Design**
Ron Mirahsani, P.E., S.E., CKC Structural Engineers

Tuesday, March 17 **Masonry Design**
John Hochwalt, P.E., S.E., KPFF Consulting Engineers

Tuesday, March 24 **Cold-Formed Steel Design**
Chris LeVan, P.E., S.E., KPFF Consulting Engineers Inc.

Thursday, February 6 **Wind Design**
Don Scott, S.E., F.SEI, PCS Structural Solutions

Thursday, February 13 **Structural Steel Design II**
Mathew Wies, P.E., S.E., DCI Engineers

Thursday, February 20 **Seismic Design II**
Mike Visser, P.E., S.E., Visser Engineering

Thursday, February 27 **Concrete Design II**
Mark Whiteley, P.E., S.E., CKC Structural Engineers

Thursday, March 5 **Bridge Design II**
Greg Hess, P.E., S.E., KPFF Consulting Engineers

Thursday, March 12 **Wood Design**
Dick Hemmen, P.E., S.E., DCI Engineers

Thursday, March 19 **Foundations & Earth Retaining Structures**
Andrew McGlenn P.E., S.E., Jacobs Associates

Register Now!

Happy New Year from SEFW

By Angela Gottula Twining

As the Structural Engineers Foundation of Washington board reflects on all that was accomplished in 2019, we are humbled by the support of individuals and companies who are committed to our mission of advancing the profession of structural engineering. It is exciting to consider the achievements in each component of the SEFW mission this year:

- **Scholarships:** SEFW funded the SEAW Scholarship Program, which in June awarded $16,000 (a record amount!) to four young women from prestigious universities including WSU, UW, Gonzaga, and Stanford. As part of a commitment to providing scholarships for other deserving individuals, SEFW also funded (with special thanks to co-funding firm Coffman Engineers) the fees for a YMG representative to attend the 2019 Northwest Conference in Oregon.
- **Education:** SEFW continues to maintain an online video library of structural engineering videos, supports the Hall of Fame legacy project, and is a resource for those seeking information on structural engineering. Additionally, our annual educational event, the Fall Forum, was attended by ~250 individuals who heard Council on Tall Buildings and Urban Habitat Executive Director Antony Wood give an incredibly engaging presentation about world growth, development trends, and how Washington measures up on a global scale.
- **Research:** At the request of the SEAW Wind Committee, SEFW has started a fundraising initiative in conjunction with the SEA organizations in Oregon and California to fund a Special Wind Region Study. The study will identify specific magnitudes and boundaries of the special wind regions in our respective states, greatly benefitting the profession when fully funded and completed.
- **Outreach:** SEFW has continued to fund the SEAW Outreach Committee, which has a new chair (thank you Gino Mazzotti!) and has been doing excellent work at STEM career fairs, expos, and

events around the region. We are excited that funds have been provided for the materials and construction of four new seismic simulator “shake tables,” one for each of the state SEAW chapters. These are incredibly useful for the outreach team to engage with K-12 students.

All the SEFW Board members find the work of advancing the industry in these areas incredibly rewarding. It is exciting to see young children learning about seismic simulation on structures, university professors sending their entire classes to the Forum lectures, and bright students receiving scholarship dollars to fund their education. This time of year, we are grateful for these efforts and all the firms and individuals that support us. Thank you! Have a great holiday season, and we will see you in 2020!



Attendees at the 2019 SEFW Fall Forum

November Seattle Dinner Meeting Recap

By Juzer Millwala and Alejandro Esparza

Last month’s dinner presentation was on the seismic retrofit on the existing I-90 bridge to support the addition of the new light rail. Yakov Polyakov and Mathew Barber from WSP and construction engineer James Collins spoke about the challenges of the design and the benefits of coordination in the field to bring about a successful project.

It was captivating to learn about the challenges of retrofitting bridges and the problems that occur in the field when the existing structure does not match the as-built drawings. They could not drill into the existing structure, so a high level of documentation was needed and was provided by the contractors to the engineers at WSP so they could understand the field conditions. The engineers then had to draw the existing conditions in AutoCAD to understand where they could add reinforcement.

When the contractor had to grout Pier 2 for the PT tendons, they had to low-pressure grout the cracks in the existing footing and then follow with high-pressure grouting to prevent leaks. Additionally, while designing the retrofit of the pile cap, the engineers had to go through the as-built drawings to understand its capacity and thus what was needed to strengthen it.

Learning about the force distribution at the piers was another interesting subject of the presentation. The existing design showed some of the piers taking a lot more force than the others. The engineers had to retrofit the other piers to stiffen them up in order to redistribute forces to them. Prismatic sections were retrofitted using steel jackets and non-prismatic sections were retrofitted using carbon fiber jackets. At the super piers where forces were high, the footings had to be enlarged, and extra tendons needed to be added.

Overall, an important theme of the presentation was coordination between the engineer and the contractor when dealing with existing structures. Both parties must have an open line of communication so that they can deliver a project on time. Engineers are assisted by the contractor in obtaining field conditions and the engineer provides different options for the contractor so they can choose the most efficient method for them to execute the design. It is a synergistic relationship between the structural engineers and the project engineer on site.



Yakov Polyakov presenting the fluid viscous dampers used in the I-90 bridge retrofit

SEAW Outreach Committee Update

By Gino Mazzotti

Help the SEAW Outreach Committee inspire growth and promote diversity in STEM education across the state. Together we can ensure that the work we do as Structural Engineers continues on through generations of STEM-inspired individuals.

VOLUNTEER with us at the following:

WABS After School STEM Academy
This 6-week program starts on January 13th and gives students an opportunity to work in teams to solve real-world STEM problems, design and build prototypes and troubleshoot issues along the way. As a local industry volunteer, you will facilitate the six one-hour activities and relate them to your engineering discipline. This gives students first-hand experience with how engineers work, think and interact in real life. Check out this video to see what volunteering in a classroom looks like.
Join the SEAW Outreach Committee and over 150 other industry volunteers that already take part in this program!
FILL OUT THIS FORM IF YOU ARE INTERESTED IN VOLUNTEERING

PSEC 2020 Engineering Fair
Sat Feb 8th, 2020
2-3 hour shifts between 9am & 5pm
Museum of Flight, 9404 E Marginal Way S, Seattle, WA 98108
The SEAW Young Members Group and Outreach Committee will be co-hosting this year's Shake Table booth complete with an endless supply of toothpicks and gumdrops for kids and “kids at heart” to build, shake and learn with. Come inspire students, educate parents and network with industry leaders.
FILL OUT THIS FORM IF YOU ARE INTERESTED IN VOLUNTEERING



SEAW Booth at the 2017 PSEC Engineering Fair

Simpson Strong - Tie Awards Master's Degree Fellowship to WSU's Madison Broers

By Sarah Dossey

Simpson Strong-Tie has awarded undergraduate scholarships to students in civil engineering, architecture and construction management disciplines for over twenty years.

In recognition of the importance of the master's degree for civil engineering students, Simpson Strong-Tie is awarding their first graduate fellowship to Ms. Madison Broers, an MS Civil Engineering student at Washington State University.

Madison's academic record is outstanding, along with excellent professional and leadership experiences. Madison is researching the effects of dynamic amplification of occupant loads on floor structures.

Editor's Note:

Madison also received a scholarship as part of the SEAW Scholarship Program this year. SEAW and SEFW provided a total of $16,000 to four recipients. SEAW welcomes industry partners who support students.



Madison Broers

State and Chapter Committee Reports

Contact the committee chair if you are interested in learning more or getting involved:

- NCSEA Delegate – Chun Lau
- Earthquake Engineering Committee – Kai Ki Mow
- One of the current main focus and an important topic that the committee hopes to address in the upcoming year is the Increased Seismic Load in the newly published ASCE 7-16.
- Members interested in EEC can find additional information regarding the meeting on the SEAW website calendar or can contact the committee chair.
- Outreach Committee - Gino Mazzotti
- To receive emails about volunteer opportunities please sign up on the SEAW Outreach page
- Sustainability Committee – Chris Jeseritz
- Refresher Committee – Mark Whiteley
- Public Information Committee – Darrell Staaleson
- Disaster Preparation/Response Committee – Joyce Lem
- WABO Liaison Committee – Matt Snook
- The SEAW/WABO Liaison committee is now available for questions from SEAW or WABO members. These questions can be about subjects addressed in the white papers already issued or general questions in the realm of structural engineering practice as it relates to interaction with the various building departments. Comments or questions can be emailed to matts@cplinc.com.
- Technology Taskforce – Morgan Wiese
- Membership Task Group – Jill Shuttleworth

· Continuing Education Committee – Nathalie Boeholt
· Scholarship Committee – Kevin Solberg

SEAW 2019 Fall Seminar Recap

By Theresa Daniel

At the end of September, the SEAW Education Committee hosted the SEAW 2019 Fall Seminar. In the full-day seminar, attendees were presented with *Updates to the Provisions of ASCE 7-16 and ASCE 41-17* by a total of nine civil, structural and geotechnical engineers who practice in various firms located the Seattle area. For this seminar, a new venue was used, the Bertha Knight Landes conference room at Seattle City Hall, in downtown Seattle.

Morning seminar topics covered updates to Chapters 1 through 31 of *ASCE 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures* and included: Load Combinations, Dead & Live Loads, Snow Loads, Flood Loads, Rain Loads, Ice & Atmospheric Loads (presented by Ed Huston, PE, SE), Tsunami Loads (presented by Cale Ash, PE, SE), Seismic Design Criteria, Site Specific Ground Motion Procedures, ASCE 41 Seismic Hazards (presented by Michael Chamberlain, EIT), Seismic Design Requirements for Building Structures, Seismic Design Requirements for Nonstructural Components (presented by Laura Rendos, EIT), Seismic Design Requirements for Nonbuilding Structures, and Nonlinear Response History Analysis (presented by Marcus Freeman, PE).

In the afternoon, seminar topics covered ASCE 7-16 Wind Provisions (presented by Donald Scott, PE, SE, F.SEI, F. ASCE) and updates to Chapters 2 through 13 of *ASCE 41-17 Seismic Evaluation and Retrofit of Existing Buildings,* including: Overview and General Provisions, (presented by Bryan Zagers, PE, SE), Evaluation and Retrofit Requirements, Tier 1 Screening Procedure, Tier 2 & Tier 3 Evaluation and Retrofit, Nonstructural (presented by Rebecca Hix Collins, PE, SE, LEEP AP), Analysis, Foundations, Steel, Concrete, Masonry, Wood, and Cold-Formed Steel (presented by Zach Whitman, PE).

There were approximately 125 attendees total. In addition to in-person attendance, a live webinar connection was utilized by 14 viewers who were located throughout Washington, California, Montana, Alaska, Idaho, and British Columbia. At two points in the day (mid-day and end-of-day), attendees were surveyed with an app-based polling system to provide real-time feedback on the seminar. Information collected will be examined by the SEAW Education Committee in formatting and improving future continuing education seminars and webinars.

If you missed the seminar, a recorded version, complete with seminar notes, or just the seminar notes, are available for purchase. Contact the SEAW office for more information at SEAW@AMInc.org.

Look for the next seminar presented by the SEAW Education Committee, *Updates to the Structural Provisions of the 2018 International Building Code,* coming in Spring 2020. More information and a save the date email will be sent to your inbox soon. If you have any questions or comments for the Education Committee, please contact Nathalie Boeholt at nathalie.boeholt@seattle.gov.



Donald Scott presenting changes to the ASCE 7-16 wind provisions at the Fall Seminar.

YMG Corner

By Linda Ji

We were nominated for YMG of the Year at the NCSEA summit this year. While the Seattle YMG did not win, we will continue running fun and educational events for our young members. We had a great time

at the conference, attending the SE3 symposium, learning about effective communication, and attending technical talks. Our next happy hour will be December 5th at PCS.



Chun Lau, Mike Visser, Alejandro Esparza, Linda Ji, Darrell Staaleson, and Jim Farley (left to right) at the 2019 NCSEA Summit

Membership Postings

In accordance with SEAW bylaws, membership applications are vetted by the executive director, granted probationary status by the chapter board, and posted for membership comment. Membership is considered accepted 30 days after posting if current year dues are paid and no member objections have been received. Read More

New Members:

- Asif Iqbal
- Justin Fox
- Andrew Makdisi
- Lee Dunham
- Jeff Baerwald
- Evan Jordan
- William Bader
- Leikune Aragaw
- Kristen Hester
- Amy Chollman

Employment Opportunities

Are you currently seeking employment as a structural engineer, senior manager, or a senior engineer technician? Check out our job board for current employment opportunities. **Learn More**

Lund Opsahl

Located across the street from T-Mobile Park, Lund Opsahl is a growing structural engineering firm that provides a wide spectrum of services, including planning, design, seismic and damage assessments, upgrades, additions, tenant improvements, and construction support for a variety of new and existing building types in the Pacific Northwest. Our reputation as creative innovators and technical experts is built on responsive service, collaborative teamwork, and lasting relationships. Our firm's size offers early opportunities to work on challenging projects and encourages exciting career growth uncommon at larger firms, especially for the ambitious.

Currently, we are looking for Structural Engineers with minimum of three (3) years experience.

BENEFITS:

- Competitive benefits and salaries
- Health, Dental, and Vision Insurance/Health Savings Account
- Performance-based bonuses
- Flexible working hours
- 401(k) with matching contribution
- Profit Sharing Plan
- PTO, and holidays
- Group activities and team events
- In-House education programs
- Free parking
- (Did we say we're next to T-Mobile Park?!)

Please visit our website, for additional information and job descriptions for each of these positions. Inquires and resumes may be sent to careers@lundopsahl.com.

Opportunities for Mid-level Design Engineer and Senior Project Manager

Seattle Structural is looking for qualified professionals to join our talented group practicing across a number of different industries. Seattle Structural offers an excellent opportunity to work on a variety of public and private institutional, healthcare, educational, and commercial projects both domestically and internationally. We offer a competitive salary and a relaxed, collaborative work environment. Benefits include medical insurance, transit reimbursement, and retirement matching. Seattle Structural is a firm that makes it easy to become personally invested in the achievements of your company.

Seattle Structural is an Equal Opportunity Employer.

We are filling two positions. Candidates must meet the following requirements:

- **Mid-level Designer**: 5+ years' experience.
- **Senior Project Manager**: 10+ years' experience.
- BS or MS in Structural, Civil/Structural, or Architectural Engineering.
- Experience in steel and concrete buildings, lateral analysis, deep foundations, and marine projects are desired.
- Working knowledge of CAD and Revit preferred.
- Strong emphasis on client service.
- Excellent communication skills.
- Strong technical skills.

Please address inquiries to:

Howard Burton, President
Seattle Structural PS Inc.
3131 Elliott Ave STE 600A
Seattle, WA 98121

HBurton@SeattleStructural.com

Plans Examiner - City of Issaquah

Project Engineers typically have the skill sets to excel in building code plan review. The City of Issaquah is seeking a **Plans Examiner** to join our team.

This position supports the Development Services Department by providing technical review of both residential and commercial projects for compliance with numerous complex, technical, and administrative codes and rules including all building, mechanical, plumbing, energy, and accessibility codes for both structural and nonstructural code compliance. The Plans Examiner works independently on technical review, is supported by a team of plans examiners and inspectors in the City, and reports to the building official.

Issaquah may be the place for you to expand your knowledge and dig into the building code industry. Our community of more than 38,000 is conveniently located and filled with a variety of project types to keep your interest. Nicknamed Trailhead City, Issaquah is a great location to enjoy trails and outdoor activities.
Consider a transition to the public sector and help support our mission to enhance lives through public service.

We offer a competitive salary and generous benefits package. Apply today! For more info & to apply, visit: **https://www.governmentjobs.com/careers/issaquahwa?keywords=plans**

Executive Director

Northwest masonry industry association is seeking an Executive Director. Responsibilities include association management; building code development; creation of educational programs and delivering technical presentations; technical support for design professionals; and coordination of industry research projects.

Northwest location permitting residence in Washington or Oregon. To express interest, submit a cover letter and resume to admin07@nwcma.org.

Position Requirements:

- Bachelor's degree in civil/structural engineering.
- Minimum 3-5 years' experience in commercial building design. A professional license is preferred.
- Excellent oral and written communication skills.
- Ability to work independently.
- Outgoing personality with the ability to provide design guidance and engage design professionals in discussions regarding building material selection. Existing contacts within the regional A/E/C community preferred.
- Some travel away from home with overnight stays.

For additional information please visit www.nwcma.org/careers.

Smith Company Structural Engineers

Smith Company Structural Engineers is looking for an engineer with some experience in all the structural
materials: concrete, steel, masonry and wood. In addition to engineering design, duties will include Revit modeling and drawing production, which we are willing to teach you. We are located in Woodinville. Please contact John Smith at **John.Smith@SmithCompanyStructuralEngineers.com**.

Save the Date for the 2020 SEA NW Conference "Innovations in Structural Engineering"

By Chun Lau

September 17 -18, 2020 · The Westin Hotel · Seattle, WA

The SEA NW Conference draws together Structural Engineers from British Columbia, Idaho, Montana, Oregon and Washington together for top-notch continuing education with expert speakers, a trade show and great fun with your peers.

Please save the date to be part of this event hosted by the SEAW Seattle Chapter.

Upcoming Events

November 19: SEAW / AIA DPRC Meeting
November 19: Seattle Chapter Board and Dinner Meeting
November 21: YMG Happy Hour
December 5: YMG Happy Hour
December 12: Seattle Chapter Informal Holiday Gathering
December 17: SEAW / AIA DPRC Meeting
January 16 - Volunteer w/ WABS After School STEM Academy
February 8 – Volunteer at PSEC Engineering Fair

For more details and registration on events visit website.

From the Editor.

Dec 2019



Equilibrium Publication Team:
John Gunn, Editor
Darrell Staaleson, Past Editor
Zohrah Ali
Allison Tran
Blaine Sanchez
Lisette Terry
Shivang Gupta

ACTION ITEMS:
1. All members are welcome to submit articles to Equilibrium. To help you with your writer's block, here are a few topics: Write “Engineer's Notes from Afield,” summarize an interesting technical design you worked on, write about how you have been successful and increased productivity with an accounting procedure or marketing technique, write about your experiences doing community service, or share some construction site photos and talk about lessons learned.

2. “A Picture and a Paragraph.” Please use the article submittal form provided and the picture needs a caption along with the names of the people in the photo.

3. Please submit your articles in Word format using the Article Template. [Article Template]

4. Please send your articles to **jmg485@cornell.edu**

CORRECTIONS:
None.

December Puzzle:
Which animated movie was being produced by Walt Disney when he died?

Clue: It has two live-action/photorealistic remakes.

Bonus: Who is the author of the book the movie is based on?

Look on the SEAW Facebook Page for a picture clue!

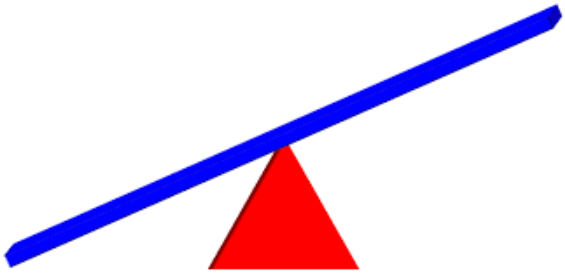
The first SEAW member to respond on our SEAW Facebook Page or at the next dinner meeting – ***with a correct and full answer*** - will get a prize.

November Puzzle:
According to the “Star Wars: The Clone Wars” animated TV series, what is the full name of Anakin Skywalker’s apprentice?

Clue: Anakin’s nickname for her is “Snips”.

Bonus: What is her codename in “Star Wars Rebels”?

Bonus Picture Clue:



Answer:

Ahsoka Tano is Anakin’s apprentice, and her code name is Fulcrum.

https://en.wikipedia.org/wiki/Ahsoka_Tano



Structural Engineers Association of Washington

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