May 2022 EQUILIBRIUM

Newsletter of the
Structural Engineers Association of Washington
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Seattle Chapter May Meeting!
"Lateral System Design of the New SoFi Stadium – BRBF Overview and Application"

Date: Tuesday, May 31st, 2022
Time: 4:00 PM - 5:00PM PST
Location: GoToWebinar
Cost: SEAW Members and Students-**FREE!**
Non- Members - $15
PDH: 1 Hour PDH certificates will be emailed to attendees after the webinar.

Register to Attend: Click here. After registering, you will receive a confirmation email containing information about joining the webinar.

Presentation:
The presentation addresses the unique aspects of the design of SoFi Stadium, a sports and entertainment complex in Inglewood, California. The presentation will highlight challenges posed by the scale of the stadium and its unique design, as well as the methods used to overcome these challenges. In particular, the presentation will discuss the large-capacity braces (which required new fabrication techniques), bracing connections to skewed columns and frames resulting from the oval shape of the stadium, compact frames and short braces resulting from the stadium's sloped raker beams, and methods of effectively modelling and over 1000 BRBs to allow for an efficient structure and a streamlined structural-design process incorporating the capacity-based design of steel frame members based on brace expected strength.

Speakers:

Rafael Sabelli



Rafael Sabelli is a Senior Principal and Director of Seismic Design at Walter P Moore. Rafael has earned a Lifetime Achievement Award and a Special Achievement Award from AISC, as well as the T.R. Higgins Lectureship award. He is a member of the AISC Committee on Specifications, where he is vice-chair of the Technical Committee on the Seismic Provisions, and a member of the AISC Committee on Manuals, where he is chair of the Seismic Design Manual committee.

He is a member of, the ASCE 7 Seismic Task Committee and the NIST Building Seismic Safety Council's Provisions Update

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Committee. Rafael was coeditor for the SEAOC Structural/Seismic Design Manual.

Rafael is co-author of *Ductile Design of Steel Structures* and has written extensively on the design and behavior of steel seismic systems. He has published technical papers on braced frames, connection design, and structural stability. He is the past President of the Structural Engineers Association of California.

Rafael was Structural Engineer of Record of landmark projects including the award-winning San Francisco International Airport Air Traffic Control Tower and of the Los Angeles Rams Sofi Stadium.

Zac Vidmar, P.E.



Zac Vidmar, P.E. is a Senior Engineer at CoreBrace, LLC. He is an experienced professional focused on steel construction. His current role includes coordination with design professionals to aid in the implementation of BRBF systems in various applications. Zac's work includes the development of modeling aids, connection design aids, and overall coordination of necessary design values for connections in projects of all levels of complexity. In additional to this upfront coordination, he also manages the project coordination and completion of final BRB design for large-scale stadium and high-rise BRBF projects—including leading the CoreBrace team on the SoFi stadium project

Come Socialize with YMG!

By Jessica Lim, YMG

Members form SEAW YMG were able to gather and connect at Rhein Haus mid-April. It was a great time to meet other professionals in the industry and connect on similar interest. People from the greater Seattle area and even from California came to socialize and enjoy a meal together. SEAW YMG is looking forward to similar events this upcoming summer, and we can't wait to see you there!

The next YMG event will be May 18 at the Redhook Brewlab on Capitol Hill (714 E. Pike St.), from 5-7 PM. Join us and learn more what YMG is all about!



Turnout for the YMG social event in April was excellent! Joininfor the next event in May.

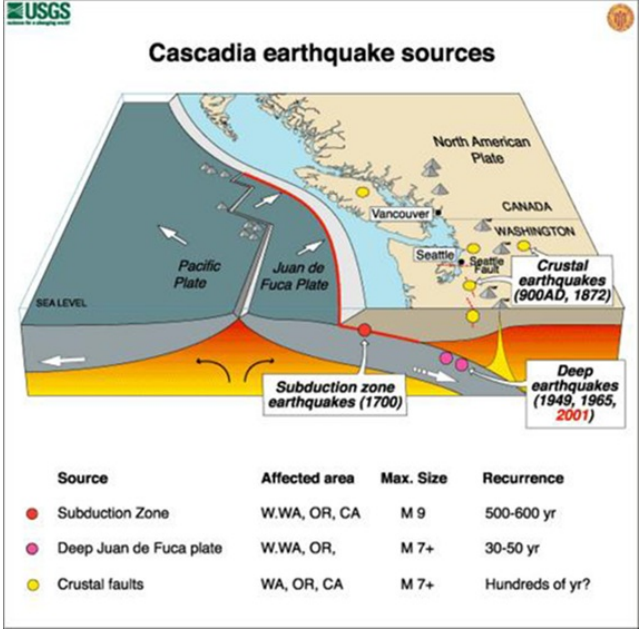
Please RSVP for the event

Reminder: SEAW Participating in June Cascadia Rising Exercise

By Joyce Lem, DPRC

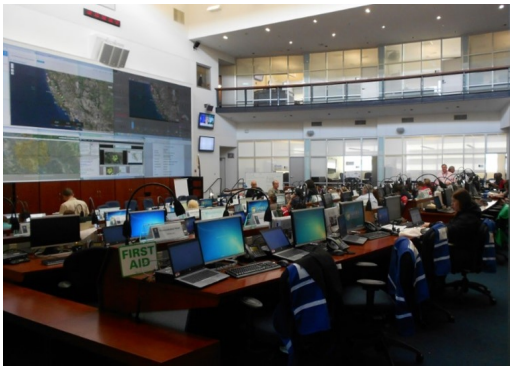
Cascadia Rising 2022 (CR22) is a regional earthquake preparedness and response exercise taking place June 13 – 16, 2022. The purpose of CR22 is to practice responses to a 9.2 Subduction Earthquake along the Cascadia Subduction Zone (full 700-mile long "rip"). The CR22 exercise "starts" four days after the assumed earthquake, and it is assumed that communications systems are functioning.

As part of CR22, local and county building



officials and emergency management offices will work through the process of requesting assistance of volunteer Building Safety Evaluators. *SEAW members registered as WAsafe Building Safety Evaluators (BSEs) can expect a series of messages via text and/or email from the WAsafe (WAserv) communications system on June 13 – 15. Please respond to the messages – which will include a statement about this being a drill, not an actual emergency or disaster –to help test the WAsafe system. Responses can be tracked inside the communications system so we can review and learn how to better use it.* ***To the more than 100 SEAW members who are currently registered as WAsafe BSEs: Please review and update your contact information*! *And thank you!***

What are WAsafe and WAserv? ***WAsafe*** is our statewide program for volunteer BSEs who have registered in ***WAserv***, the electronic registry for enrolling, managing, and dispatching volunteers following a disaster such as a major earthquake.
How do I qualify to join WAsafe? Take one of the WAsafe trainings. Or, if you're a first-time enrollee, you can qualify by taking our online "Concept of Operations" module after having taken one of the following trainings: ATC-20, ATC-45, Cal OES SAP Evaluator. Registration in WAsafe is valid for 5 years. You can renew by taking a WAsafe training or, hopefully soon (we're working on it!) an online Refresher Course.
While no WAsafe trainings are scheduled at this time, an ATC-20 *Post-earthquake Safety Assessment of Buildings training* is scheduled for May 24, 9AM - 1PM. Sponsored by the National Earthquake Technical Assistance Program (NETAP), the online training free of charge for anyone in Washington, Oregon, or Alaska. For more information and registration details, see **NETAP ATC-20**.
For more details about the Cascadia Rising Exercise, WAsafe, and the DPRC, see the **SEAW Disaster Prep and Response Committee (DPRC) webpage** To receive committee announcements and meeting agendas, join the DPRC email list (see instructions on the webpage). Join us at our monthly committee meetings online on third Tuesdays, 12-1PM (links are sent in the emailed agendas). Our committee welcomes new members and those who want to find out more.

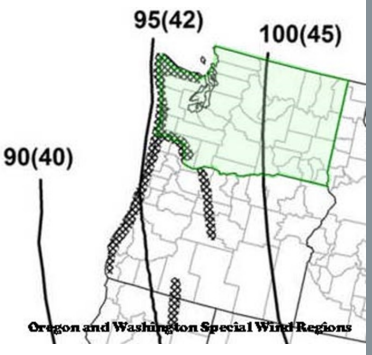


Emergency Operations Centers coordinate responses to disasters.

SWR Draft Report is Available, Makes Recommendations

By Scott Douglas, WEC Chair

The Wind Engineering Committee (WEC) offers the following report for May:



Washington/Oregon Special Wind Regions (SWR) Study– CPP has completed the preliminary draft report for all the special wind regions in Washington state. This preliminary draft report recommends that the Special Wind Region along the Columbia River and North Olympic Peninsula be amended to follow the Risk Category design speeds from the ASCE 7-16 wind maps, versus being classified as a Special Wind Region. The Special Wind Region along the Washington Pacific Coast will remain, with recommended wind loads in general slightly lower than most of the current AHJ recommendations. For those interested in receiving a copy of this preliminary draft report please contact Scott

Douglas at **sdouglasscott@gmail.com**.

ASCE 7-16 Figure 26.5-1B

The results of CPP's preliminary study for the Washington SWRs are presently being reviewed by the SEAW WEC. Once the WEC's comments are incorporated, the final report will be submitted to the SEAW State Board for approval. SEAW's final recommendations will then be submitted for adoption by the Washington State Building Code Council, and eventually for inclusion in ASCE 7 and the IBC.

Update to the 2004 SEAW commentary on wind code provisions (ATC 60) –The NCSEA Publications Committee (of which SEAW member Chun Lau is co-chair) is studying the possibility of NCSEA facilitating the update of this 18-year-old publication. The NCSEA Code Advisory Wind Engineering Subcommittee would likely spearhead this effort, with the SEAW WEC contributing.

Participation – All SEAW members, whatever their experience, are encouraged to participate at in WEC meetings. Please contact the WEC chair, Scott Douglas at sdouglasscott@gmail.com to join the SEAW WEC and receive additional information and announcements on Committee activities and actions.

Next Meeting – Friday June 24 from 12:00 noon to 1:00 pm. Meeting will be virtual via the following Zoom link:

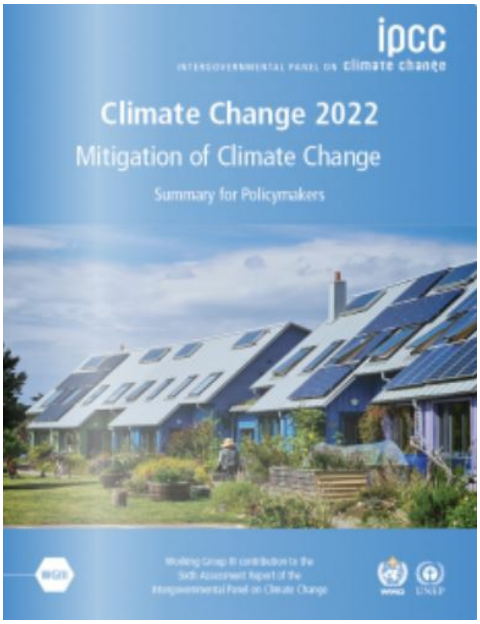
https://us02web.zoom.us/j/86920849906?pwd=cGE5VkpNRk9mRXNqRGN0U0dYVnRwQT09

Meeting ID: 869 2084 9906
Passcode: 271801

Reducing Structural Systems' Environmental Impacts

By Chris Jeseritz, Sustainability Committee

In April, the United Nations' Intergovernmental Panel on Climate Change (IPCC) released the report, **"Climate Change 2022: Mitigation of Climate Change**." The report states that emissions have continued to rise, and it will be "impossible" to stay below 1.5° Celsius without more decisive climate action this decade. This is a cause for concern. However, now is not the time to be discouraged, now is the time for action. As structural engineers, we are in a fortunate position to reduce the environmental impacts of the building and infrastructure sector through various strategies. Below are three strategies that can be implemented on almost any project that allows for the potential of the structural system's environmental impacts to be reduced.



Read the IPCC's Climate Change 2022 report online to learn more about carbon emissions.

Selection of Structural System
During the schematic design phase, it is important to select a structural system that maximizes material efficiency while meeting the building code's requirements and architectural expression of the building. By maximizing efficiency, less structural material can be utilized. If feasible, it is also best practice to begin quantifying the environmental impacts of the different structural systems under consideration. These estimates can help the project team make well-informed decisions on which system meets the project's goals and vision. Quick estimates can come from the Carbon Leadership Forum's **Embodied Carbon Benchmark Study**, the SE 2050's **Embodied Carbon Intensity Diagrams**, or **Embodied Carbon Order of Magnitude Estimator**.

Performance-Based Concrete Specifications
Typical concrete specifications include information about the performance of the concrete and elements of the mix. These specifications will likely have prescriptive requirements such as a minimum amount of slag or a maximum water-cement ratio. In contrast, performance-based specifications only include the required properties of the concrete. The performance-based approach allows the concrete producers freedom to use any product or process that will produce concrete with the desired properties. Since Portland cement is one of the most expensive and carbon-intensive ingredients in a concrete mix, performance-based specifications can reduce the amount of cement compared to an equivalent mix with prescriptive specifications. This reduction of Portland cement can lower the concrete's cost and embodied carbon. To learn more about performance-based concrete and how to implement it on your next project, visit the National Ready Mix Concrete Association's (NRMCA) Prescriptive to Performance (P2P) Initiative's **website**.

Type 1L Cement
While Portland cement is the most well-known cementitious material, it is not the only one. Alternate cementitious materials can be blended with Portland cement for use in concrete mixes. Example supplementary cementitious materials (SCM) include slag, silica fume, and fly ash. Type IL cement (ASTM C595) is another commonly blended cement. It is a mix of Portland cement and limestone that has become increasingly common in concrete mixtures in the Pacific Northwest. Testing has shown that 15% of Portland cement can be replaced with limestone with little effect on the properties of the final mix.

For additional information and discussion opportunities on sustainability, consider joining the SEAW Sustainability Committee. Through speakers and open forums on monthly calls, the committee discusses developing technologies, practices, and tools available to structural engineers to make embodied carbon reductions possible on every type of project.

SEFW Fundraising Campaign Highlights World's Fair Education, Outreach

By Angela Gottula Twining, SEFW

For the month of May & June, the Structural Engineers Foundation of Washington will be having its annual fundraising campaign. Only a handful of member firms around the United States have associated 501(c)3 organizations dedicated to charitable activities – and Washington is one of them! Founded in 2010, SEFW has a mission to advance the profession of structural engineering through scholarships, education, research, and outreach.

This year's fundraising campaign will focus on the anniversary celebration for the 1962 Seattle World's Fair. Be on the lookout for our fundraising emails as we spotlight some of SEFW's activities in relation to the 1962 event, including:



SEFW's 2012 documentary "Structural Engineers of the 1962 Seattle World's Fair" interviewed nine of the original engineers on the Seattle Center campus. The engineers were (L-R) Einar Svensson, Tom Kane, Bob Mast, Dick Chauner, Jack Christiansen, Norm Jacobson, Fred Pneuman, Victory Gray, and Gary Curtis.

- In 2012, for the 50th anniversary of the World's Fair, SEFW facilitated filming nine of the original structural engineers of World's Fair projects (including the Space Needle, Coliseum, monorail, and Science Pavilion) and produced the interviews into a documentary, "Structural Engineers of the 1962 Seattle World's Fair." What a remarkable experience this was! If you have not yet done so, go watch or re-watch the documentary to revel in the history and innovation of the event. Share it with your friends or on social media!

- One of SEFW's first efforts was to establish a "**Hall of Fame**" which maintains legacy biographies of Washington structural engineers. The intention is that the engineers are celebrated and memorialized for their contributions to the profession. The Hall of Fame includes past SEAW leadership and award winners, SEAW scholarship winners, and other great local engineers including all of the individuals interviewed for the World's Fair project. Thank you to Marga Rose Hancock for maintaining the biographies and her tireless advocacy for this project.

- After the documentary was released, SEFW forged a partnership with Washington STEM, a charitable partner organization committed to bringing STEM education into Washington classrooms. Washington STEM arranged with the Highline School District for several underserved school groups to take field trips to the Seattle Center, where SEFW led tours of the iconic World's Fair structures. More than 100 students were able to learn about the design and construction of the buildings in a very up-close-and-personal way.



Former SEFW Chair Mark D'Amato shows high school students some of

Structural engineering is a respected profession and SEFW has been proud to share that message for more than a decade. At the anniversary of the World's Fair, we are eager to commemorate these great architectural and structural accomplishments and draw attention to the innovation in engineering. SEFW is always looking for additional pathways for education and outreach, and we welcome ideas from anyone at SEAW and the community on this mission. Are there sites around your city that could have structural engineering tours? Do you have contacts in Washington classrooms and ideas of how to present structural engineering? What would you like to see out in the community? Please share your thoughts with us at **admin@sefw.org**.

the structural features of the "U.S. Science Pavilion," which we know as the Pacific Science Center.

Thank you again for considering making a donation at this time of our annual fundraising campaign. Look for emails in your inbox or make a donation at **www.sefw.org** today!

Calendar of Events

- May 18 - May YMG Happy Hour with ASCE YMF, 5-7pm @ Redhook Brewpub, Seattle
- May 24 - ATC-20 Training (Virtual) 9am-1pm
- May 31 - Seattle Chapter Meeting, 4-5pm (Virtual Meeting)

For more details and registration on events visit the website.

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:

- Lars Anderson
- Abby Van Harpen
- Beatriz Arostegui
- Gus Shryack
- Dev Bell
- Jake Rust
- Kara Zhu
- Eduardo Avelar
- Adam Phillips
- Blake Hoskisson
- William Silvers
- Daniel Bech

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**

MC Squared Inc.

MC Squared Inc. is a Structural Engineering design firm located in Olympia, Washington. We service the Pacific Northwest as well as 20 other US states. We provide structural engineering for projects ranging from small residential projects to the full structural design of multi-story buildings. Typical projects include structural design for additions and modifications to existing buildings, glass store fronts, seismic upgrades for existing buildings, retaining walls, soil retention systems, and marina/port facilities.

We are currently in search of candidates who have experience in structural engineering design. We do not require a PE or SE license, but we are interested in candidates who do. If you are licensed outside of Washington State, you should be able to become licensed in Washington State within 6 months.

MC Squared offers all employees paid vacation and sick leave, retirement plan with company matching, and health and dental insurance for employees and immediate family.

Qualified candidates should have:

- Bachelor of Science in Civil/Structural Engineering
- A EIT or PE or SE license in Washington State
- Experience with Microsoft Office, Risa 3D, Adapt, Enercalc, RetainPro, Simpson CFS Designer, Forte, RedSpec, and Allpile

To apply, please send resume with cover letter to MC Squared Inc., Attn: Jim Farley, via email at **office@mc2-inc.com**.

MLA Engineering

MLA Engineering has a **Senior Structural Engineer** position available immediately.
Position requires seven to fifteen years of experience, specifically in a consulting design office that provides structural engineering on buildings that require close coordination with a multi-discipline team. We look forward to talking with engineers who are exceptionally skilled designing with all major construction materials and communicating well on a project team.

MLA Engineering (MLA) has a solid reputation and success designing local, national and international projects, including:

- Aquarium, zoo, and entertainment facilities;
- Public infrastructure: maintenance, wastewater and solid waste facilities;
- Evaluation, repair and seismic improvements of structures.

Our Seattle staff enjoys designing diverse projects that require critical thinking and creativity. We combine the opportunity of engineering unique and exciting projects with the flexibility, culture and benefits of a small business.

Qualifications:

- Master of Science'
- Licensed Structural Engineer;
- Strong technical and analytical skills;
- Intuitive and practical;
- Competent using REVIT as a design tool;
- Excellent communication skills;
- Skilled at providing accurate work;
- Excels in a team environment.

MLA is an equal opportunity employer with a comprehensive benefits package including 401K matching contribution (up to 4%), medical, dental, vision insurance, HRA account, bonus potential and flexible work environment.

For more information, visit our website at **www.mlaengineering.com**
Please send your résumé and cover letter to **info@mlaengineering.com**

Holmes

Holmes is a structural and fire engineering firm, with offices in San Francisco, Los Angeles, Portland and Seattle. We are part of the New Zealand based Holmes Group, with offices around the Pacific Rim. Compelled by the possibilities, we are relentlessly pursuing Why – to create what is Best.

We are seeking Engineers for our San Francisco, Los Angeles, Portland and Seattle offices. Candidates must be fast learners, ambitious, have the ability to handle increased responsibilities, have excellent verbal and written communication skills, and be able to interact effectively with clients, project teams, and colleagues. We are looking for all levels of Engineers.

Check us out at **www.holmes.us**.

INTERESTED IN JOINING US? PLEASE visit **Holmes - Career Page** TO SUBMIT AN APPLICATION.

Swenson Say Fagét

Structural Staff Engineer / Project Engineer
What's missing from Swenson Say Fagét? You! SSF has immediate openings in our Seattle and Tacoma offices for talented Structural Engineers. All experience levels are encouraged to apply. Responsibilities include being smart, having common sense, playing well with others, and tackling challenges like a dog with a bone.

We approach project design with open minds and technical chops to find solutions to some real head-scratchers. Our loyal clients provide staff at all levels opportunities to directly collaborate with architects, owners, contractors, developers, artists, and public and private entities on projects of all types and sizes. Our office culture is informal. Besides being flexible, hardworking, and

technically savvy, did we mention we're also really nice people and like to have a ton of fun?

We've been in business for 27 years and remain committed to creating a place where people want to spend their time and energy. Pay is dependent on experience and benefits are great. Check us out at **www.ssfengineers.com**. If you like what you see, we'd love to hear from you.
Submit your resume to **info@ssfengineers.com**.

Message from the Chair



By Darrell Staaleson, PIC

In the coming months we will be updating the Charter of SEAW Public Information Committee (PIC) to incorporate the excellent past work and giving committee members new opportunities to create our Vision for the future and contribute to public awareness for SEAW in the future.

One of the benefits of working on the Public Information Committee is an opportunity to sharpen your technical writing skills and public speaking skills. And as Dale Carnagie said in his master work "How to Win Friends and Influence People," "being able to write well and present yourself makes you more valuable to employers and clients."

Opportunities include:

- "Equilibrium"
- "Hall of Fame"
- SEAW Brand Ambassador to NCSEA

All SEAW members, whatever their experience, are encouraged to participate in PIC meetings. Please contact the PIC chair, Darrell Staaleson at **dstaal@staaleng.com** or 253.520.0388 to join the SEAW PIC and receive additional information and announcements on activities and actions.