Volume 46 • May 2019

## In this Issue



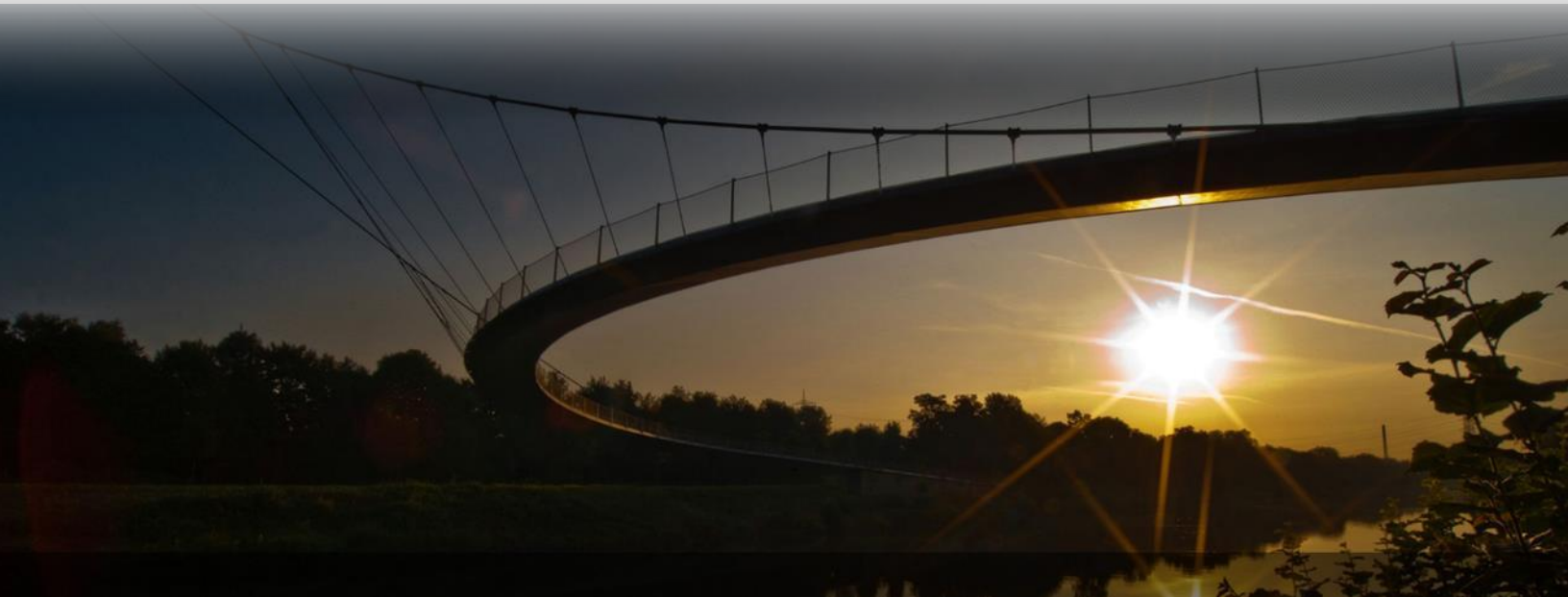
## Association News



## Final Words



*Grimberg Harbour Footbridge Photo courtesy of Schlaich Bergermann Partner*



# Message from the President

David Harvey, P.Eng.
SEABC President

## Structural Engineering Responsibilities

Don't you just love structural engineering? Ours is an amazing profession. We get to spend our careers problem solving – making structures happen. In doing so we shape the world around us. When we do it correctly, we make the world a better place.

We spend 80% of our lives indoors which makes buildings a very significant part of our life experience. When travelling, we rely on bridges to safely cross obstructions. Other structures are part of our utility systems and vital civic infrastructure. We rely on the integrity of structures, and the structural engineering behind them. This places an awesome responsibility on those of us that design and oversee construction of structures.

One unique aspect of structural engineering is that our designs are prototypes – untested, at least as complete structures. While machine performance is generally tested, and components are replaced when necessary, this is not the case for structures, which are designed to resist imposed forces and remain serviceable for their intended lifespan.

Structural failure can have significant consequences and failure is not an acceptable outcome. Our design codes recognize that and set a high reliability target for structural performance. It is our job to make sure that the required reliability and performance targets are met.

This is the minimum target approach to design that is built into our codes. For some structures this is all that is required from the designers. However, for iconic structures and many others we can do better. Better structural performance can improve structural lifespan; minimize maintenance; reduce seismic damage and protect building contents; and facilitate change of use when structures are repurposed.

For visible structures, aesthetics contribute to the urban landscape. When we design elegant structures, we enhance everyone's quality-of-life.

Achieving higher-than-minimum performance adds value to our services and is very satisfying to structural engineers who are passionate about their work. We constantly strive to make our designs more efficient, constructible and durable and are excited by advancing structural engineering practice.

In doing this we cannot lose sight of our prime responsibility to protect the public. Normally, we get things right. There are regulatory systems in place including independent checking and quality management guidelines to help minimize the risk of error. But when things do go wrong for structural engineers, there can be significant consequences. Problems can occur many years after a structure has been completed.

Recently, our regulatory body completed their investigation of a leading BC structural engineer. On April 30, Engineers and Geoscientists BC published a discipline notice. I encourage you to read it and learn about error-prevention.

The notice confirmed failure to undertake an adequate design process of a residential building, using less conservative code requirements while not using more conservative requirements, and failing to ensure that an independent design review was completed. The consequences were significant and included the resignation of the structural engineer.

Engineers and Geoscientists BC's CEO Ann English commented: *"The public deserves to have confidence that their homes are being designed to the current standard, and it's a serious matter when that trust is betrayed. This individual failed to meet the professional and ethical standards required of him as a professional engineer."*

This is a sobering message for structural engineers, one we must constantly keep in mind. Fortunately, in this case no one has been injured and the building has not been evacuated. None of us would wish to be involved in an investigation of our work, whether into an inadequate design or a structural failure. We must continue to do good work – be careful pushing boundaries, use checking procedures and always seek good senior advice. The public is relying on us.

# Committee Reports

## Young Members Group

Thomas Duke, P.Eng

The SEABC YMG has been active during the first part of 2019 hosting a number of different events. Highlights of the recent YMG activities are as follows:

### MEC Vancouver Store Tour

In February the YMG organized a tour of the new Mountain Equipment Co-op Vancouver Store. The new location will replace the current store, which the Vancouver based retailer has occupied since 1995. The new store will include 45,000 square feet of retail space on the first two levels with office space on the third floor. Working alongside Proscenium Architecture + Interiors Inc., the design embodies MEC's signature green building form and seeks to contribute to sustainable urban development. The tour was led by Fast + Epp's project engineer, Steve Bodley, who provided the attendees with an extensive site tour and overview of the structure. Attendees were encouraged to ask questions as they toured the site.

*MEC Vancouver Store Tour*

### 8th Annual Presentation Competition

The 8th Annual Young Members Presentation Competition was an incredible success. Five talented young engineers of our community gave presentations on topics of their choosing related to structural or bridge engineering. The topics were diverse, noteworthy, and were all well received by the audience. Presentations included:

- The GNW Pavilion – 555 Great Northern Way, Vancouver by Colin Gilbert, MASc, EIT, RJC Engineers
- Disproportionate Collapse Prevention for Mid-rise Mass-timber Buildings by Hercend Mpidi Bita, PhD Candidate, UBC
- Giant Observation Wheel Design – The Vegas High Roller by Brandon Sullivan, P.E., StructureCraft Builders Inc.
- New Dock Building at Royal Vancouver Yacht Club by Siyao Ma, MASc, EIT, EQUILIBRIUM Consulting
- The Art of Everyday Innovation: A Retrospective on R. Gary Black, P.E. by Conner Ferster, EIT, UBC Civil Engineering Student

Undoubtedly, the judges had a tough decision to make, there was high anticipation for a winner to be declared. After additional minutes of deliberation were provided, the judges ultimately declared Brandon Sullivan the winner! Brandon Sullivan was awarded the coveted YMG SEABC presentation competition trophy, and $1000 which will be presented to him at the SEABC Annual General Meeting, where he will deliver his presentation again to attendees.

The YMG group of SEABC would like to thank all the people who submitted an application to the competition, the presenters, and the audience who came out to support our engineering community. Additionally, YMG would like to extend their appreciation to all volunteers of the event and the judges including:

- Micheal O'Keefe from Glotman-Simpson Consulting Engineers
- Adrian Gygax from Gygax Engineering Associates Ltd
- Adam Lubell from RJC Engineers

The event MC and co-ordinator: Eytan Fiszman, MEng, EIT, RJC Engineers, the incredible effort of the lead Coodinator: Navpreet Bharaj, MEng, EIT and special thanks to the Keynote Speaker: Owen Berg, Engineering Manager of Kiewit.

*SEABC YMG 8th Annual Presentation Competition*

## The Fourth Structural Engineers Ask/Answer Questions (SEAQ) Event

The fourth Structural Engineers Ask/Answer Questions event (SEAQ 004) and the first bridge related SEAQ event, had a great turn out and engagement. SEAQ is a meet-up group of young practicing and non-practicing engineers that come together to ask each other questions in a non-judgmental and open environment. The event started with a brief presentation on recent bridge rehabilitation work, specifically the Westham Island Bridge Rehabilitation presented by Arman Shahnaz of Mott MacDonald and the Aggasiz Pier 7 Rehabilitation by Tian Wang of Klohn Crippen Berger. Following the presentations, an open discussion was had between the group about the presentation and bridge rehabilitation in general. The presenters and participants asked a range of questions and engaged in meaningful conversation, from conversations pertaining to what type of design detailing is robust and adaptable to potential changes with site conditions, to non-technical questions on how best to deal with fluctuation in field vs design measurements on rehabilitation projects.

*SEABC YMG's 4th SEAQ Event – Bridge Rehabilitation*

## EERI AGM – SEABC YMG Sponsored Evening Seminar and Social

The joint EERI Young Members Committee and SEABC Young Member Group social took place after a hectic second day of the main EERI Annual Meeting at the CRAFT Beer Market in Olympic Village. This social invited both SEABC and EERI members to come out and network and was a good opportunity for local professionals to connect with national/international conference attendees. An engaging presentation was given by Glotman Simpson on the renovation of the building that the event was held in, giving insight into the renovations of old timber buildings. After the presentation, attendees socialized over a round of drinks and appetizers.

*EERI AGM – SEABC YMG Sponsored Evening Seminar & Social*

## On the Web

Stephen Pienaar, P.Eng.
Webmaster

### Video Recordings and Slide Shows of Recent Seminars

- BCBC 2018 Part 4 and Material Standards Updates
  The Okanagan Branch welcomed presenter Andy Metten in Kelowna for evening on March 21. The seminar provided an overview of the major changes to Part 4 to BCBC 2018 and NBCC 2015, and the relevant material standards. This seminar was similar to the one presented by Andy in Victoria in January, but with additional content on shear walls.

- 2019 Pinnacle Lecture: Mike Schlaich
  SEABC's Pinnacle Lectures epitomize high caliber topics by distinguished speakers on themes that shape the future of our profession. Our first Pinnacle Lecture was presented by Mike Schlaich on March 14. Throughout his career, Mike collaborated with the likes of Frank Gehry, the offices of Richard Rogers and Sir Nicholas Grimshaw, engineers like Ted Happold and Fazlur Khan to strive for excellence and elegance. His passion to elevate technical norms to deliver free expression of geometrical curves was influenced by Felix Candela and Frei Otto amongst others. Encapsulating his experiences in an inspiring lecture for students and professionals at TU Berlin, Mike unfolded an energizing view on the history of structural engineering – its evolution and current trends, aimed to revitalize for an ever-optimized world of future structures.

- 2019 Annual Dinner Keynote Presentation: Light Weight Structures – Demystified
  Elegant, bold, sleek, barely visible, light weight. These are some of the many attributes and compliments that keynote speaker Mike Schlaich has garnered for his ingenious structural designs of buildings, towers, roofs, facades and bridges, throughout Europe, the North Americas, South America, Asia-Pacific, and the Middle East. A specialist in lightweight structures, Mike is a firm believer in a holistic, conceptual design approach, and in the engineers' responsibility to contribute more to 'baukultur'- that is the concept of producing quality structures to improve quality of life. Emulating it with his continued academic engagement and research at the TU Berlin, Mike has created his unique brand of technical excellence. At the March 13 Annual Dinner, Mike shared some of his achievements – demystifying how research can be readily transferred into a routine practice of generating elegant light-weight structures.

- 2019 Annual Dinner YMG Presentation: The Vegas High Roller
  The eighth annual Young Members Presentation Competition was held on February 20. The winner of the competition, Brandon Sullivan, entertained the March 13 Annual Dinner attendees with a repeat of his presentation.

Members can view these and past seminar recordings at seabc.ca/events-archive.

**Be first the first to know!!**
Follow us on **Twitter** for breaking news and announcements related to SEABC.
twitter.com/seabc

We welcome your suggestions for improving the SEABC website. Please send your comments to webmaster@seabc.ca.

Sincerely,
Stephen Pienaar, P.Eng
SEABC Webmaster

## Technical Committee

Kevin Riederer, M.A.Sc. P.Eng.,

Director SEABC

The task group developing a practice guideline for the "Structural Condition Assessments of Existing Buildings" has nearly completed the first draft of the guideline. The next step will be review by Engineers and Geoscientists BC, and a peer review by volunteers of SEABC. Members can look for the guideline to be published later in 2019.

Anyone with interest in participating on a Technical Subcommittee or task group is encouraged to contact SEABC. Any member with an issue or concern that they would like to have the Technical Committee consider is also encouraged to reach out to the committee.

## IStructE News

David Harvey, P.Eng. Struct.Eng

The Institution of Structural Engineers recently announced the award of the 2019 Gold Medal to James O'Callaghan of Eckersley O'Callaghan in recognition of his world-leading expertise in the creative and ambitious use of structural glass. The firm that James co-founded in 2004 has rapidly grown from a small domestic business into an internationally-renowned design practice. James was the Keynote Speaker at SEABC's Annual General Meeting last year and presented his astonishing portfolio of elegant designs, strongly accenting the creative use of structural glass.

## Communications Committee

David Harvey, P.Eng., Struct.Eng.

Director SEABC

Those of you who read the committee reports will notice that I regularly refer to the importance of communications, which are a huge part of what we do. Our Association needs to communicate with the membership just as effectively as we structural engineers need to communicate with our clients, our fellow team members, and third parties. While the means of communication may vary, accuracy, timeliness and completeness are always necessary. SEABC communication is almost completely electronic; however, we communicate directly with participating members when we host live events. The Directors enjoy meeting SEABC members so come on out to an SEABC activity. Naturally, you will enjoy mixing and mingling with your fellow professionals but don't forget to give us your feedback. We are always keen to receive contributions from SEABC members. Tell us and your peers what excites you about structural engineering. Send information for publication to:

newsletter@seabc.ca

Thank you for your interesting articles – we need plenty of them to keep our popular newsletter relevant to all readers. Would you like to edit the SEABC Newsletter? We are looking for a structural engineer that enjoys writing and publishing articles. Let us know if you are keen to join our team – we'd love some help and are seeking your help.

# 2019 AGM, Annual Dinner, and Pinnacle Lecture

David Harvey, P.Eng.
Struct.Eng

This year's Annual General Meeting was held on March 13 at the Fairmont Pacific Rim Hotel, Vancouver. There were six Directors among the 15 members present. President David Harvey called the meeting to order at 4.15 pm. The 2018 AGM minutes were approved, and the annual reports were presented. Candidates standing for election as Directors were profiled in the February Newsletter. Those nominated equalled the number of vacancies available on the Board and so all candidates were duly elected as Directors of the Association by acclamation.

This year the AGM was held before the Annual Dinner to provide more time for those present to hear the keynote speaker presentation. The Directors will reconsider the AGM timing next year.

Following networking time with the Keynote Speaker, the Annual Dinner commenced at 6 pm. David Harvey thanked the 2019 AGM sponsors, Fast&Epp, Glotman Simpson Consulting Engineers, Gygax Engineering Associates Ltd, Metrix Professional Insurance Brokers, S-Frame Software and WoodWorks! BC. John Pao then reported on SEABC's Certificate of Structural Engineering Program which offers top-notch training courses for professional development. The courses are offered in classrooms at UBC Robson Square and, increasingly, on-line. John then presented certificates to six students that had completed 12 CSE courses and achieved high marks.

The winner of this year's Young Members Group competition *"So You Think You Can Give a Seminar"* was Brandon Sullivan of StructureCraft Builders Inc. Brandon gave his winning presentation *"Giant Observation Wheel Design – the Vegas High Roller".* Brandon's fascinating talk took us through the design and construction of the world's tallest Ferris wheel.

Paul Fast then introduced the evening's keynote speaker, Professor Dr. sc. Tech. Mike Schlaich, Managing Director, Schlaich Bergermann Partner to give his presentation *"Light Weight Structures – Demystified".*

Elegant, bold, sleek, barely visible, light-weight, are some of the many attributes that were evident in Mike's ingenious structural designs. Mike showed us buildings, towers, roofs, facades and bridges he has been involved with throughout Europe, the Americas, the Asia-Pacific region and the Middle East.

A specialist in lightweight structures, Mike is a firm believer in a holistic, conceptual design approach, and in the engineers' responsibility to produce quality structures to improve life-experience. He also took us through his research work at Berlin Technical University. Mike's spectacular images of light-weight structures well illustrated his unique brand of technical excellence.

The following evening, Paul Fast again introduced Mike Schlaich, inviting him to deliver SEABC's first Pinnacle Lecture entitled, *"History of Structural Engineering … Leading to Future Trends."* The Pinnacle Lectures has been created to feature distinguished speakers exploring high-calibre topics which help shape the future of our profession.

Mike described a career of collaboration with famous architects, Frank Gehry, the offices of Richard Rogers and Sir Nicholas Grimshaw, and leading engineers including Edmund Happold and Fazlur Khan. Excellence and elegance were evident in his structural designs. His passion for free expression of geometrical curves was heavily influenced by Felix Candela and Frei Otto.

Mike's inspiring presentation featured many of Schlaich Bergermann's elegant structural designs including the pioneering work on retractable fabric roofs they are well known for, BC Place Stadium in particular. He included several bridge structures with dramatic features.

Through the evening, Mike unfolded an energizing view on the history of structural engineering – its evolution and current trends, aimed to revitalize for an ever-optimized world of future structures. Mike closed his talk with beautiful images of the stunning 28 m long footbridge for Trumpf GmbH, made from perforated 20 mm stainless steel plate.

## Schaich Bergermann Partner Projects

*Time Warner Center – Cable-Net Façade*

*Kampmann Bridge, German*

*Zhangjiatang Bridge, Shanghai*

*Neckar Bridge, Struttgart*

*Tottenham FC Stadium, London*

*Schierker Feuerstein Arena, Germany*

## Schaich Bergermann Partner Projects (cont.)

*A11 Bridges, Bruges, Belgium*

*Rio Olympic Park, Brazil*

*Stadium Wanda Metropolitano, Madrid, Spain*

*Rio Olympic Aquatics Stadium, Brazil*

*Getwingbruke, Zermatt, Switzerland*

*South Elbe Crossing, Hamburg, Germany*

## Schaich Bergman Partner Projects (cont.)

*Ernst & Young Plaza Roof, Luxemburg*

*Rio Olympic Tennis Stadoim, Brazil*

*Dongguan Gymnasium, China*

*Brasilia National Stadium, Brazil*

*FK Krasnodar Stadium, Russia*

*Trumpf Footbridge, Ditzingen, Germany*

# Northwest Conference

David Harvey, P.Eng., Struct.Eng.

This year's Northwest Conference of Structural Engineers Associations (NWSEA) will be hosted by the Structural Engineers Association of Oregon in Gleneden Beach, OR on August 15-16, 2016. The Northwest Council will meet on August 14. The conference sessions will take place on Thursday and Friday at the Salishan – Oregon's premier coastal-resort destination. The conference dinner features an interactive mind-reading illusionist/comedian. The technical program focuses on code updates including masonry design; wind effects; and seismic loading, design, evaluation and retrofitting – check out the flyer attached to this newsletter.

NWSEA comprises of Oregon, Washington, Idaho, Montana and British Columbia. Of the >2500 SEA members in the Pacific North West, BC represents about a quarter. BC therefore has a significant presence in the region and the other chapter members love having BC involved in the conference.

Northwest Conferences are always enjoyable, informative events in which you get to interact with our great neighbours to the south. Most conferences, including this year's event on the scenic Oregon Coast, are held in locations ideally suited to family vacations. There are always excellent presentations, industry-leading guest speakers, and family entertainment plus enjoyable social activities.

So please consider joining us in Gleneden Beach, OR, for August 15-16, 2019 and have a great family vacation while you are there!

# Avoiding Vicarious Liability from Subpar Subconsultants

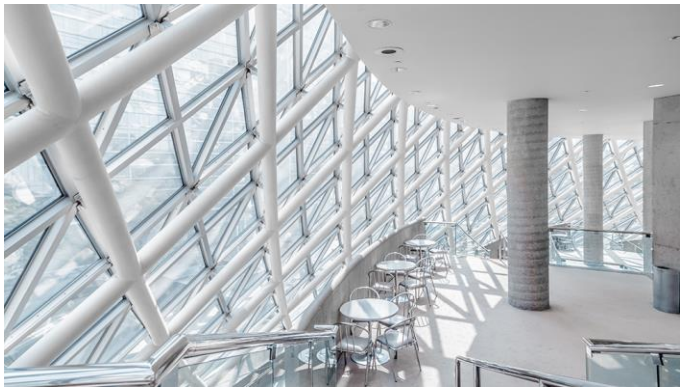
Rob McLeod, CIP, CAIB

Metrix Professional Insurance Brokers

Working with subconsultants is almost unavoidable in the architecture and engineering field. Despite the commonality of these relationships, a lot is at stake when you consider the amount of liability lead designers will shoulder. In particular, vicarious liability is something all lead designers should be aware of as they take on the liability for any errors or omissions made by subconsultants. To help design firms minimize these types of risk, this article covers important topics such as:

- Why you should develop a subconsultant roster
- Matching the right people for your project
- How to draft an integrated contract
- Setting your insurance requirements
- Being proactive about project management
- The importance of post-project reviews

See article: www.info.axisgroup



Rob McLeod, **CIP, CAIB**
Professional Liability Insurance Broker
rmcleod@mpib.com | 604-629-2680

# Photos of the Month

Thanks to generous and talented SEABC members and local professional photographers, we are dressing up the SEABC website with a beautiful new photo every month. The photo lights up the home page and forms a header image for other web pages.

We recognise recent contributions:

- April: "Johnson Street Bridge, Victoria, BC", by Stephen Pienaar.
- May: "Customs House, Victoria, BC", by Stephen Pienaar.
- June: "Granville and Burrard Bridges, Vancouver, BC", by Andrea Sunderland Photography

## Want to contribute photos?

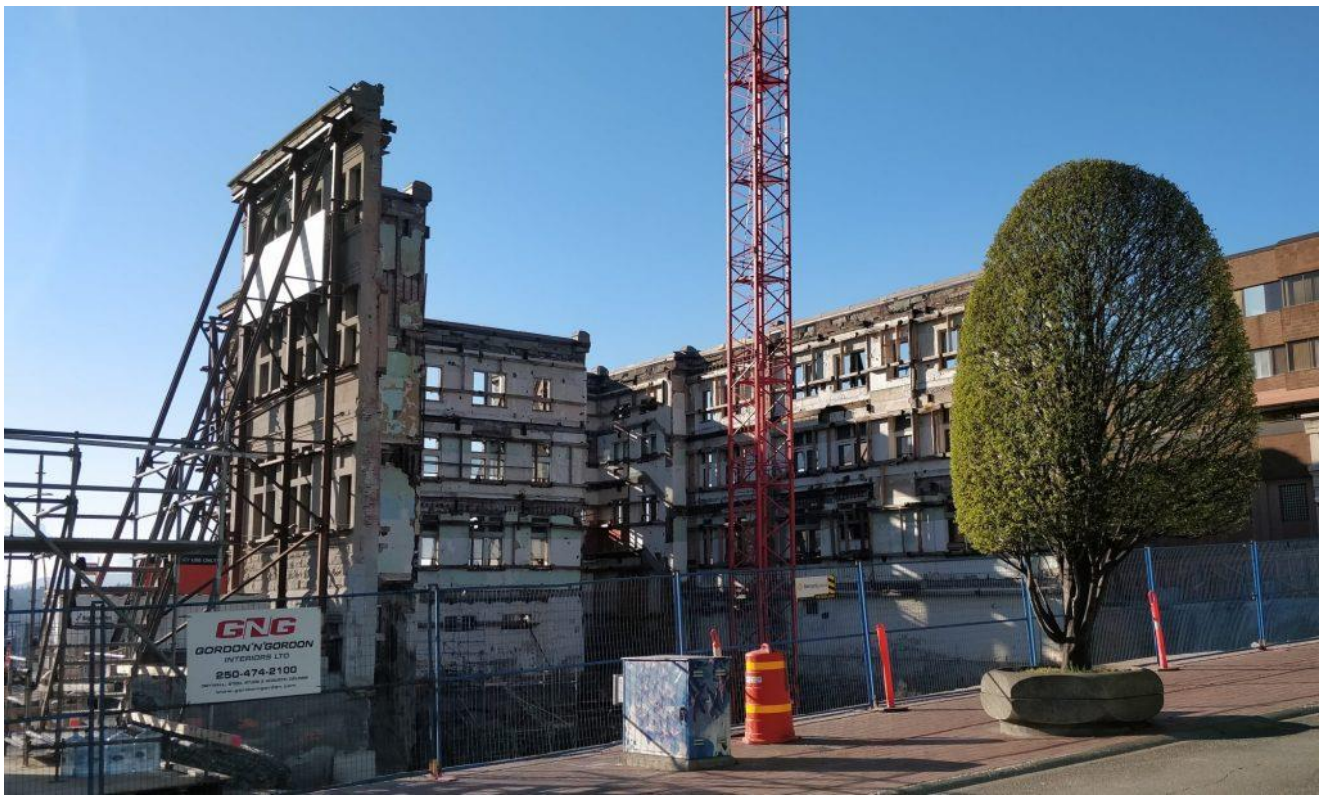
If you would like to feature a photo on the SEABC website, then please reach out to contact: webmaster@seabc.ca

Photo requirements:

- Theme: Structural engineering, e.g. building, bridge, or structural detail.
- Local context: Structure located in British Columbia or designed by an SEABC member.
- Size: Landscape orientation with horizontal resolution of 2,000 pixels or more.

We will credit your firm (or you, if an individual) on the SEABC home page together with a link to your website.

*Johnson Street Bridge, Victoria, BC.*




*Customs House, Victoria, BC.*

*Granville and Burrard Bridges, Vancouver, BC.*

# 2019 joint AAMA, IGMA Summer Conferences

Schaumburg, Illinois- Registration is now open for the 2019 Joint American Architectural Manufacturers Association (AAMA) and Insulating Glass Manufacturers Alliance (IGMA) Summer Conferences, to be held June 17-20, 2019, in Victoria, British Columbia. Because this is a combined AAMA and IGMA conference, only one registration fee per attendee is required. All registrations will be processed through AAMA. www.aamanet.org/events

Keynote speaker Dr. Patrick Moore, an ecologist and environmentalist, will deliver an address titled, "Sustainability, Energy and the Future," which will cover environmental factors impacting the fenestration industry. Moore began his career as an activist and leader in the Greenpeace movement. Today, he concentrates on collaborative efforts aimed at finding environmental solutions. Moore believes in the multi-stakeholder, consensus-based approach to resolving conflicts involving environmental, social and economic issues.

Mike Burk, North America technical representative for Sparklike, will lead a presentation as chair of the IGMA Glass Safety Awareness Council. His session will discuss incidents and near misses, safety equipment, Occupational Safety and Health Administration (OSHA) and other regulatory agency updates and more. Burk has worked in the technical and training areas of the insulating glass industry for more than 25 years.

Aiñe Curran, president and CEO of the Vinyl Institute of Canada, will provide an update on the Vinyl Institute of Canada, including information on the political climate in the country regarding plastics, as well as other potential impacts to the industry. She also will give an overview of the "Environmental Performance Agreement on Tin Stabilizer" with Environment and Climate Change Canada, which impacts all manufacturers of rigid window profiles in the country.

Oak Moser, a senior management professional with experience in leading and coaching teams, will host the Leadership Development Program, focusing on inter-personal skills such as listening, assessing and showing empathy. Those attending can learn to improve their understanding and ability to build stronger connections and influence people of all personality styles.

Optional events at the conference will include whale watching, a trip to Butchart Gardens and a scavenger hunt followed by dinner. Spouses attending the conference also are invited to an optional tea at the hotel. Separate registration for all optional events is required.

More information about AAMA and its activities can be found via the AAMA website, www.aamanet.org.

*Keynote speaker Dr. Patrick Moore*

Thanks to Meryl Williams, AAMA's communications coordinator for the report.

# Certificate in Structural Engineering

Shannon Remillong,
CSE Program Co-ordinator

Registration for the **September 2019 term** will open mid July 2019 through the SEABC website: www.seabc.ca/certificate-program Early-bird rates and SEABC Member's discounts will apply at that time. Classes will be on either Tuesday or Thursday evenings beginning the week of September 10th and ending the week of December 5th.

## The following courses will be offered in September:

- E11 National Building Code Part 4
- C13 Structural Steel Design of Buildings
- E24 Introduction to Marine Structures
- C1 Analytical Methods in Structural Engineering

Outlines for the four courses will be updated with relevant information by mid-June.

## Course Delivery:

- Courses will be held in Room C485, UBC Robson Square, 800 Robson Street, Vancouver.
- All courses will also be available via live webcast.
- Courses are once a week, 2 hours at either 4:00-6:00pm or 6:30-8:30pm.
- Courses are 13 consecutive weeks.

## Important Dates:

- Early bird deadline: Friday, August 16.
- Registration close: Monday, September 9.
- First lecture: Tuesday, September 10 and Thursday, September 12.
- Withdrawal Deadline: September 23.

***Courses will fill up fast so make sure to register early and take advantage of the savings!***

This year at the SEABC Annual Dinner and Presentation on March 13, 2019 the Certificate Program Executive Committee awarded the $500.00 Mahmoud Rezai Scholarships to six outstanding students who have taken a minimum of 2 courses over 2 consecutive years, with the highest grade point average.

The students who have accomplished this goal between 2017 and 2018 are:

- Charlene Hails (Bush Bohlman)
- Ben Moerman (Bush Bohlman)
- Kanish Mathur (Read Jones Christopherson)
- Michelle Zhang (SNC Lavalin, Clean Project)
- Jason Hu (Tetra Tech Canada)
- Craig Santos (CWMM Consulting Engineers Ltd)

Congratulations everyone, well done and we look forward to seeing you again in September!

## A Big Thank You!

We would also like to take this opportunity to thank Adrian Gygax for his generous contribution of $7,500 to the Mahmoud Rezai Awards which has increased the award recipients from 3 to 6 per year over the next 5 years!

The Executive Committee would also like to congratulate the following who have recently graduated from the SEABC Certificate Program, successful completing 12 courses.

- Brent Tretheway
- Vanessa Nodar
- Jackson Pelling
- Jason Hu

Registration Inquiries and Requests/Suggestions: Please contact Shannon Remillong, Certificate Program Administrative Assistant, at email: mailto:courses@seabc.ca

# Seismic Design Guide for Masonry Buildings, Second Edition-2018

Farshid Borjian P.Eng.,
Struct.Eng.

Prof. Don Anderson, and Dr. Svetlana Brzev, P.Eng., FEC, UBC Department of Civil Engineering, have recently completed the second edition of a comprehensive state-of-the-art guide on seismic design of masonry buildings in Canada.

This 350-page publication outlines key seismic design provisions in the NBC 2015 and the CSA S304-14 standard for masonry design, and provides a commentary explaining the underlying theoretical background and design rationale. The Guide contains 13 design examples that illustrate seismic load calculations, distribution of forces to building elements and the design of masonry shear walls.

A simple and user-friendly presentation facilitates the application of seismic design provisions and cross-referencing of code clauses. The Guide was written for practicing structural engineers, but it can serve as an excellent teaching resource for academics and civil engineering students.

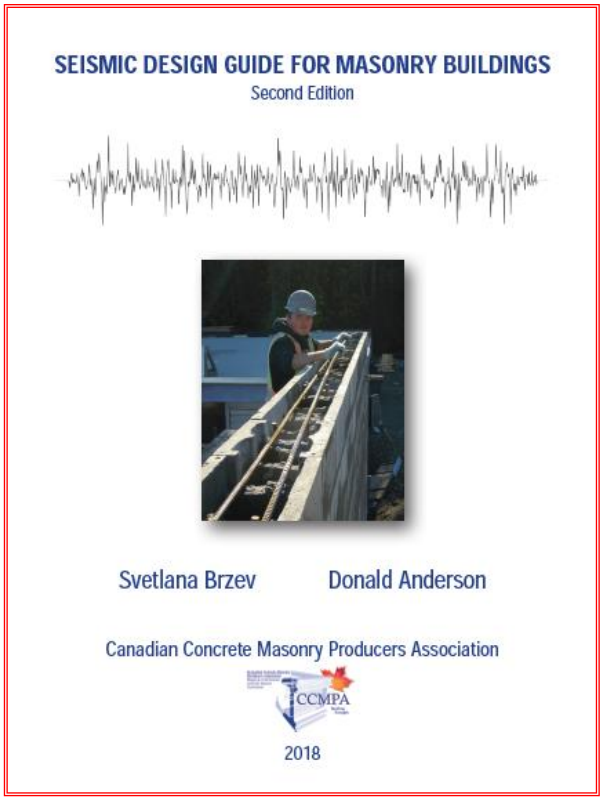
The original first edition of the Guide has been used since 2009. Development of the publication was sponsored by the Canadian Concrete Masonry Producers Association and it can be downloaded free of charge from the web site www.ccmpa.ca.

## About the Authors:

Svetlana Brzev, Ph.D., P.Eng., FEC, is Adjunct Professor at the Department of Civil Engineering, UBC, and was formerly a faculty at the Department of Civil Engineering, BCIT, Vancouver, BC. She has over 30 years of combined teaching, research, and consulting experience related to structural and seismic design and rehabilitation of concrete and masonry structures. Svetlana is a member of the CSA S304 Technical Committee on Masonry Design and is closely involved in the development of its seismic provisions.

*Authors Svetlana Brzev and Don Anderson*

Don Anderson, Ph.D.,P.Eng., is a Professor Emeritus at the Department of Civil Engineering, UBC, Vancouver, BC. He was a long-term member of the Canadian National Committee for Earthquake Engineering (CANCEE) responsible for the development of NBCC seismic provisions. He is a member of the CSA S304 Technical Committee on Masonry Design and is closely involved in the development of its seismic provisions.



# SEISMIC DESIGN GUIDE FOR MASONRY BUILDINGS

## Contents Summary

| | | |
|---|---|---|
| Chapter 1 | NBC 2015 Seismic Provisions | |
| ***Objective:*** *to provide background on seismic response of structures and seismic analysis methods and explain key NBC 2015 seismic provisions of relevance for masonry design* | | DETAILED NBC SEISMIC PROVISIONS |

| | | |
|---|---|---|
| Chapter 2 | Seismic Design of Masonry Walls to CSA S304-14 | |
| ***Objective:*** *to provide background and commentary for CSA S304-14 seismic design provisions related to reinforced concrete masonry walls, and discuss the revisions in CSA S304-14 seismic design requirements with regard to the 2004 edition* | | DETAILED MASONRY DESIGN PROVISIONS |

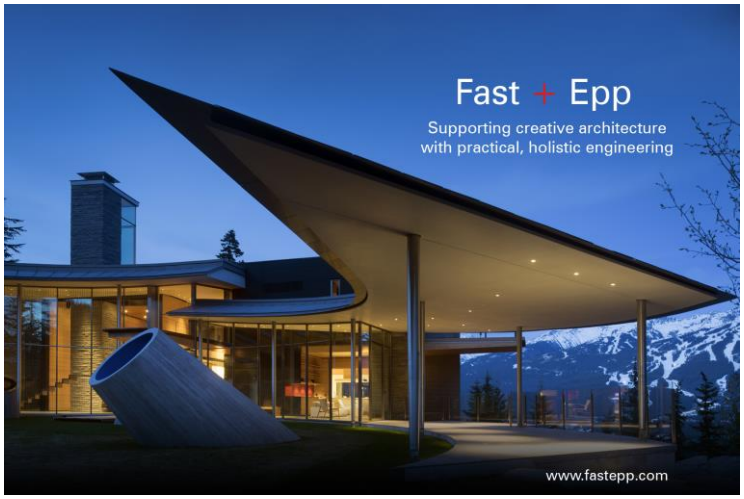
| | | |
|---|---|---|
| Chapter 3 | Design Examples | |
| ***Objective:*** *to provide illustrative design examples of seismic load calculation and distribution of forces to members according to NBC 2015, and the seismic design of loadbearing and nonloadbearing masonry elements according to CSA S304-14* | | DESIGN EXAMPLES |
| Appendix A | Response of Structures to Earthquakes | |
| Appendix B | Research Studies and Code Background Relevant to Masonry Design | |
| Appendix C | Relevant Design Background | |
| Appendix D | Design Aids | |
| Appendix E | Notation | |
| Free download available at: www.ccmpa.ca | | |

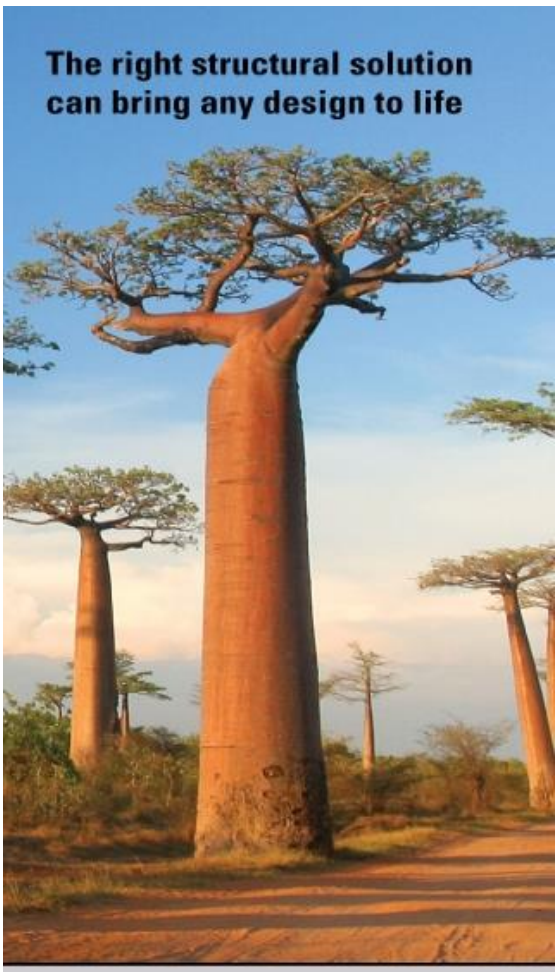
## Sponsors

A big thanks goes to all our Annual Dinner Sponsors:

- Fast&Epp [2016]
- Glotman Simpson Consulting Engineers
- Gygax Engineering Associates
- Metrix Professional Insurance Brokers
- S-Frame Software
- WoodWorks! BC.

Metrix
PROFESSIONAL INSURANCE BROKERS




# Mark Your Calendar

## Upcoming Seminars/Webinars and Events

### Geotechnical Earthquake Engineering

**Date**: June 3 – 5, 2019
**Time**: 8:00 AM–8:30 AM: Registration – Day 1
8:30 AM–4:30 PM: Geotechnical Earthquake Engineering – Day 1 – 3
**Location**: Vancouver, BC.
**For more info**: www.egbc.ca/Events

### OQM Certification Training Session

**Date**: Tuesday June 4, 2019
**Time**: 8:00 AM–8:30 AM: Registration and Continental Breakfast
8:30 AM–4:30 PM: Organizational Quality Management Training Course
**Location**: Coast Kamloops Hotel & Conference Centre
**For more info**: www.egbc.ca/Events/

### Introduction to Masonry Materials, Standards, Structural and Veneer Cladding Details

**Date**: Tuesday June 4, 2019
**Time**: 6:00 PM Refreshments, 6:30 PM Presentation
**Location**: Manteo Resort Waterfront Hotel & Villas, Kelowna, BC
**For more info**: seabc.ca/masonry-standards

### Microsoft Project Training for Engineers and Geoscientists

**Date**: Wednesday June 19 – Thursday June 20, 2019
**Time**: 8:00 AM–8:30 AM: Registration and Continental Breakfast – Day 1 and Day 2
8:30 AM–4:30 PM: Workshop – Day 1 and Day 2
**Location**: Vancouver, BC.
**For more info**: www.egbc.ca/Events

### Hydrotechnical Design of Hydropower Facilities

**Date**: Wednesday July 10 – Friday July 12, 2019
**Time**: 8:00 AM–8:30 AM: Registration- and Continental Breakfast
8:30 AM–4:30 PM: Hydrotechnical Design of Hydropower Facilities
**Location**: Burnaby, BC.
**For more info**: www.egbc.ca/Events

### MEL – Open House 2019

**Date:** Wednesday, June 12th 2019
**Time:** 6 – 8 PM
**Venue:** UBC Robson Square Campus (800 Robson St, Vancouver, BC V6Z 3B7)
**For more info:** www.apscpp.ubc.ca/news-events

### MEL- One-on-One Consultations — Vancouver – September

**Date:** September 5 2019
**Time:** 8:00 am – 7:00 pm
**Venue:** UBC Robson Square Campus (800 Robson St, Vancouver, BC V6Z 3B7)
**For more info:** www.apscpp.ubc.ca/news-events

### SEA Northwest Conference 2019

**Date**: August 15-17, 2019
**Location**: Gleneden Beach, OR, USA.
**For more info**: See flyer at end of newsletter

# Final Words

## Editorial Information

The SEABC Newsletter is published by the Structural Engineers Association of British Columbia. The current and past issues are available on the SEABC website at www.seabc.ca.

The Newsletter is edited and managed by the SEABC Communications Committee.

- Committee Chair: David Harvey
- Newsletter Editor: Catherine Porter
- Webmaster: Stephen Pienaar

Submissions are welcomed and all SEABC members are encouraged to actively contribute to the Newsletter. Submissions, letters to the Editor, questions and comments can be sent to: newsletter@seabc.ca.

The Committee reserves the right to include or exclude submitted material and in some cases edit submitted material to suit overall space requirements. If content is not to be edited, please advise so at submission time.

## SEABC Board of Directors

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## Advertising

Pre-paid rates per edition:

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# SEA NORTHWEST CONFERENCE 2019

Panic! in the Code Change

## Salishan Resort
## Gleneden Beach, OR
## August 15-17, 2019

Hosted by the Structural Engineers Association of Oregon

# SAVE THE DATE

August 15-17, 2019

It's time for a code change… are you prepared?

- Enjoy a dinner and evening with Hart Keene, an interactive illusionist, mind reader, and comedian
- Take your kids to Snapology workshops where they can learn the basics of STEAM (science, technology, engineering, art, and math) with LEGOs!
- Attempt to take down Oregon as the reigning water competition champions
- Relish in outdoor dining
- Take advantage of the resort's golf course
- Bask in the sun on the beautiful Oregon coast
- Register now and make lodging reservations directly with Salishan Resort using the code **SEAO2019**

**Note: the code should already be included when using this link. However, shall you choose to book a room outside of the included dates, you will need to contact the resort directly**

Guest Speaker Topics will Include:

- Engineering Tall Wood Buildings: The New Type IV Construction Types
- ASCE 7-16 The Wind Provisions: Changes Affecting the Design Provisions
- Designing with Structural Glass
- An Update to Changes to TMS 402/602-16
- AISI Cold Formed Steel Industry Updates
- Updates to Seismic Provisions in ASCE 7-16
- A Summary of Significant Updates in ASCE 41-17

For more information contact Jane:
503.753.3075
jane@seao.org

*More information on times to follow*