Volume 47 • August 2019

## In This Issue



## Association News



## Final Words



*Photo Credit: Bridging the Gap Africa*

# Message from the President

David Harvey, P.Eng.

SEABC President

## Structural Engineering Sustainability

Everywhere you look these days, sustainability is mentioned. It is becoming fashionable to label everything as sustainable, whether or not it actually is. As a result, the term is heavily over-used.

We are familiar with each material manufacturer promoting their product as more sustainable than the competition. More often than not, their product claims focus on the drawbacks of the competing products while ignoring their own shortcomings. So, what is the true picture?

Wood, a natural material, often labeled as 'green' may not be quite as environmentally friendly as it seems. For example, longer, not faster growth cycles benefit carbon storage which is only permanent if the wood is permanently buried. Clear-cutting trees contributes to biodiversity loss. Consider also that a high percentage of the tree is wasted in producing usable timber. Combustibility of wood is also a significant consideration for timber structures.

Steel is widely touted as being infinitely recyclable – a valuable characteristic for a finite resource. However, steel is lost through the corrosion process and therefore maintenance is required to preserve integrity. Steel's main drawback is the significant energy required to produce and recycle the material.

Concrete, a naturally heavy material, is normally produced locally and is cost-effective for appropriate applications. When properly designed and constructed, concrete structures can be very durable and require little maintenance, offering several key advantages. Look around – you see plenty of concrete! Yet cement manufacture contributes to greenhouse gases through carbon dioxide production and process-energy consumption. As a result, the industry uses pozzolanic materials to reduce cement content in concrete and is moving to Type GUL cement which has a higher limestone content to reduce environmental impact. While this is generally beneficial, the sulphate resistance of GUL concrete may be lower than previously.

Other possible materials, such as aluminum, tend to be worse environmentally and higher cost. Plastics and glass have distinct limitations for structural use.

So, with climate change a rapidly escalating emergency, what should we do? Historically we have increased operational energy efficiency and sought renewable energy – important, but not enough. To meet climate targets, we need to think about greenhouse gasses, or embodied carbon. Confusingly, the carbon footprints of structural materials are not directly comparable.

So how can structural engineers assess embodied carbon? As a baseline, start with a recognized database which addresses the project specifics – the Quartz project is a good impact source although the carbon data is US-based. The gold standard is 'whole building life-cycle assessment' which requires special training; however, the software is designed to be used by building professionals.

The takeaway is that the structural systems comprise the majority of embodied carbon – up to about 80%. The main structural materials can be used in different ways to minimize the building's carbon footprint. So, to reduce the building's impact, it pays to involve the structural engineer early on.

We should consider other aspects – is building adaptation viable? Clearly, re-use of facilities and materials reduces the carbon footprint. Are we over-specifying? Are we using low-impact material sources? Should we consider what might happen during the design lifespan? Can we facilitate future modifications or change of use? This can be done at little or no cost if anticipated in the original design.

The good news is that structural engineers can have a positive impact. While there is uncertainty, we must start reducing embodied carbon to mitigate the impact of climate change. With sustainability in mind, we can consider the building's whole life-cycle. Thinking beyond choosing suitable materials and structural efficiency can open the door to untapped value and help even well-designed projects achieve their sustainability targets. Go for it!

# Committee Reports

## Young Members Group

Amr Farag, E.I.T. M.Eng

The 2018-2019 academic year was another big success for the UBC engineering teams that received financial support from the SEABC YMG. This newsletter edition highlights each of the student engineering teams and their accomplishments.

The SEABC YMG continued its SEAQ initiative over the summer; an overview of the summer event along with an exciting new mentorship program offered by Women in Consulting Engineering are also provided below.

## University of British Columbia Engineering Teams Highlights

### UBC Earthquake Engineering Research Institute Team

The UBC EERI Seismic Design Competition Team competed in March, bolstered by the largest EERI team to date. At the competition, the UBC EERI team ranked top 5 in multiple categories, with no violations deducted from their overall score, such as:

- 3rd in Architecture
- 3rd in Design Proposal
- 3rd in Technical Poster

*The UBC EERI Team*

### UBC Concrete Canoe Team

The 2019 UBC Concrete Canoe team created a canoe that featured a unique skeleton image running the full length of the canoe, building up on last year's coloured concrete innovation. This was done by utilizing two separate concrete mixes, a black and a white concrete, which was constructed and finished in four separate stages over the course of a month's time. Casting day was on February 16th, and on March 9th, the canoe was successfully demoulded in record time.

At this year's ASCE Pacific Northwest Student Conference, the UBC Concrete Canoe team finished with remarkable results, with 1st place in presentation, and 2nd place in design paper, final product, and overall competition standing. The team also attended the Canadian National Concrete Canoe Competition in May held in Montreal.


*The UBC Concrete Canoe Team*

### UBC Concrete Toboggan Team

This year, the UBC Concrete Toboggan team introduced a number of innovations to their concrete toboggan design including a pneumatic braking system, skis with a more pronounced lip, and concrete featuring hemp fibres, recycled seashells and rainwater, for a more sustainable concrete mix design. With the funding they received this year, the UBC Concrete Toboggan team was able to send 30 students to the competition in Edmonton. Overall, the team put up an impressive performance, placing 5th overall out of 22 teams. In addition, the team achieved remarkable results in individual design categories, such as:

- 3rd place in sustainability
- 3rd place in steering design

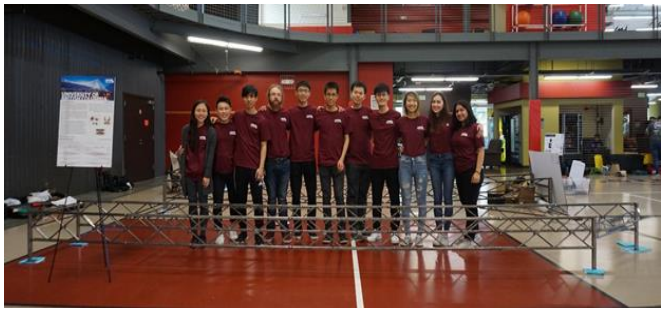
- 2nd place in fastest time; the toboggan peaked a max speed of 45km/h!
- 1st place in aesthetics

*The UBC Concrete Toboggan Team*

UBC Steel Bridge Team

This year, the UBC Steel Bridge Team brought something new to their design never done before: boltless slip connections. As a result of these new connections, the bridge's construction speed had been substantially improved. In addition, steel plates were introduced for the first time as structural components, allowing the bridge to increase in span by more than 20%, while still weighing less and performing better in respect to last year's design. While there were many improvements to this year's design, the team faced a number of challenges along the way, which caused delays and forced the team to look for more costly alternatives. The UBC Steel Bridge Team recognizes that the success of this year's innovations is largely due to the funding they had received through their supporters, which include SEABC.

In terms of competitions this year for the UBC Steel Bridge Team, the team participated in the Pacific Northwest Regionals Competition hosted by AISC as a guest team, where they caught the eyes of many students and professors for their innovative design. In May, the team attended the Canadian National Steel Bridge Competition which also took place in Montreal, competing against teams from nations around the world.



*UBC Steel Bridge Team*

## Structural Engineers Ask/Answer Questions (SEAQ) Summer Event

Bring your debate ties and critical thinking hats as the SEAQ events welcome young engineers for a brief presentation and an engaging discussion regarding various topics related to structural engineering and the construction industry. This past event was an invigorating session regarding software, automation, and computational design in building construction. Connor Ferster of RJC led the session with a broad overview of computational design and a peek into his design workflow using Python combined with LaTeX to design & document structural elements. Kyle Sullivan then spoke about his experiences with StructureCraft and the use of Grasshopper (a graphical algorithm editor) and Karamba (FEM addition to Grasshopper) to create timber gridshells and other geometrically expressive structures. An excellent discussion followed the presentations regarding the various aspects and usage of these tools/methods and how they may come to redefine the industry.

Continuing along the same vein, the next session will feature the same exciting topics for the bridge side of our profession. The event will take place in September and we welcome all inquisitive minds to come participate in the discussion!

## Women in Consulting Engineering Mentorship Program Kick-off

Women in Consulting Engineering (WCE) works to support and empower women in engineering and to increase gender diversity and inclusion in our industry. Facilitating mentorship connections between established women and budding new engineers is a big part of advancing this goal. WCE is

holding our Mentorship Kick-Off event on October 17th from 6:00-8:00pm at the Creekside Community Centre, which will launch our mentorship program. Participate as a mentee for the opportunity to ask senior women in engineering for guidance, advice, and support. Mentees will rotate through discussions with three different mentors throughout the evening for lively dialogue over appetizers and drinks. Our program strives to foster organic connections between mentors and mentees at the event, that grow into longer-term connections. The connection and commitment beyond the event is up to the participants. Sign-up for the WCE mailing list at WCEvancouver.com to receive this invite, and many more!

WCE thanks SEABC for their sponsorship to help hold this event.

*WCE Mentorship Kick-Off Event on Oct. 17th*

## On the Web

Stephen Pienaar, P.Eng.

Webmaster

SEABC volunteers are taking a break from organising evening seminars and Young Members Group event during the summer months. But that does not mean that there is nothing of interest for members on the SEABC website...

## Current activities on the website

- **September 2019 Term of the Certificate in Structural Engineering Program:**
  The upcoming term offers four courses, all available in classroom and live interactive webcast formats:
- E11 National Building Code Part 4
- C13 Structural Steel Design of Buildings
- C4-2 Advanced Concepts in Earthquake Engineering and Seismicity
- C1 Analytical Methods in Structural Engineering

  Courses will run between September 10 and December 5. Registrations close on September 9.
  seabc.ca/current-term
- **Struct.Eng. Resources:**
  We recently expanded the archive of IStructE exams with 2018 and 2019 exam papers, examiner's reports, and a collection of possible solutions.
  seabc.ca/struct-eng
- **Recordings of past seminars:**
  We maintain an extensive library of seminar video recording, including two acclaimed presentations in March by Mike Schlaich: the AGM keynote presentation and the inaugural SEABC Pinnacle Lecture. Members can log in to view recordings.
  seabc.ca/events-archive
- **Be the first to know:**
  Follow us on **Twitter** for announcements of SEABC events.
  twitter.com/seabc

## Photo 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. If you would like to feature a photo on the SEABC website, then please reach out to us!
seabc.ca/photo-of-the-month

## We want to hear from you

We welcome your comments for improving the SEABC's website and other online services. Please send your suggestions to webmaster@seabc.ca.

## 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

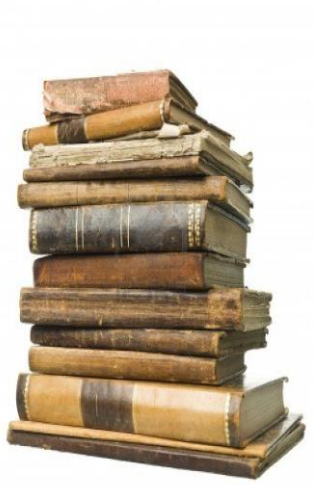
Thank you for your interesting articles – we need plenty of them to keep our popular newsletter relevant to all readers. Would you like to edit the SEABC Newsletter? We are looking for a structural engineer that enjoys writing and publishing articles. Let us know if you are keen to join our team – we'd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

## On the Web Resources

Did you know that our website contains useful exam preparation resources? Those of you interested in obtaining Engineers and Geoscientists BC Designated Structural Engineer specialist qualification can elect to take the IStructE Chartered Membership Exam. Passing this exam also is the key step in becoming a member of the Institution of Structural Engineers. Either way, preparing for the exam is important and significantly increases your chance of passing. This is where SEABC comes in!

Under the Resources tab on our website, you will find the StructEng folder which contains information of the exam; possible exam solutions; and recent exams and examiners reports including archived exam papers and reports going back to 1990. We have assembled more material than you can find on the IStructE website. If you were looking for them, we recently added CM Exam papers for January 2018, July 2018, January 2019 and July 2019; as well as Examiners Reports for January 2017, July 2017, January 2018, July 2018 and January 2019.

You may also be interested that the Institution has now launched an on-line exam preparation course with access to study material for up to 12 months. The cost is about $550 which is similar to the cost of the one-day course SEABC has run in past years. The on-line course cost is much less than the in-classroom courses run in London.



# IStructE News

David Harvey, P.Eng.
Struct.Eng.

As British Columbia Regional Group Representative, I recently attended the IStructE Council meeting in London. Attending Council meetings to provide regional input is SEABC's responsibility as a joint Regional Group with The Institution of Structural Engineers. The visit was enjoyable and informative and strengthened important international contacts. Networking is vital to building global relationships. We have very good connections with the other international Regional Groups, particularly with South Africa, the Caribbean and Australia representatives, as well as with the President, Vice Presidents and Past Presidents. We learn a great deal about structural engineering issues from our international contacts.

The Council meeting included formal business and the opportunity to meet the newly appointed chair of the Executive Board, Peter Terrell. However, the primary focus of the conference of more than 60 international delegates was the workshop series which examines and debates current topics. This Council meeting, the main topic was sustainability and ethics, exploring how structural engineers in delivering a sustainable built environment, could help address the UN's far-reaching 2030 Sustainable Development Goals, SDGs.

To stimulate debate, the delegates were treated to three compelling presentations. First up was Arup's William Arnold, describing how his firm had embraced the SGDs by attacking embodied carbon in several different ways, including reuse of structural materials, a direction inhibited by the overly restrictive requirements of new projects which tend to prevent re-use of perfectly usable materials. Will continued by describing how Arup used whole-building life-cycle assessment to help reduce the embodied carbon of the new Mexico City Airport. He then turned to Arup's push towards zero-carbon buildings which generate their own power. Will wrapped up his talk with a current high-rise building project. Charged by the client to minimize environmental impact, Arup's design has slashed embodied carbon to unprecedented levels.

Switching gears, Shalini Jagnarine gave a very different perspective from the West Indies. She described her work in rebuilding infrastructure in Dominica, seriously impacted by Hurricane Maria in September 2017. 95% of the island's infrastructure was destroyed and the island's electrical grid was wiped out. In designing the replacement structure, Shalini used an arched-roof design, more practical than a flat roof, with windows in the end-bays for natural lighting during power cuts. However, the most pressing issue for the entire Caribbean is climate change, with the expectation of sea-level rise. As it is impractical to install dykes on low-level islands, people are starting to migrate to more vertical parts of the world.

WSP's Rob Paul was the final workshop presenter. Rob surprised the room by outlining the sustainable objectives of the HS2 mega-project. A massive rail connection hub, Old Oak Common Station features a 1 km-long station box and signature 65 m span roof. The design cut roof steelwork by 27% and utilized the station box for energy storage. The engineers plan to extract waste heat from the tunnels to recycle energy into a local district heating system. The three presentations fuelled invigorating debate on sustainable structural engineering. The ideas generated will help develop the Institution's policy on addressing the UN's sustainability objectives.

The July Council meetings are away-days, this year returning to The Crystal, an attractive new sustainable development in the Docklands area of London, and a great venue for the meeting sessions. The networking dinner was a barbeque held on the deck of the stylish Sunborn Yacht Hotel, moored in the adjacent Royal Victoria Dock.

# Promoting Structural Engineers

*The National Council of Structural Engineering Associations (NCSEA) has published the following interesting article promoting the role of Structural Engineers (SEs).*

## WHY CONSIDER A CAREER AS A STRUCTURAL ENGINEER?

If you think about it, nearly every part of the built environment, from a skateboard park to a high-rise building, relies on structure to help fulfill its function. Determining the structure's strength, toughness and flexibility is the job of the structural engineer (SE). Through analysis and design, SEs specify the frameworks for things that rest on land, operate in water, and fly in air and space. SEs are entrusted with the responsibility for maintaining public safety within the built environment and earn a high degree of public respect as consequence. The work of SEs helps shape the world in which we live and offers opportunities for rewarding and satisfying careers.

## IS THERE A STRONG JOB MARKET FOR SEs?

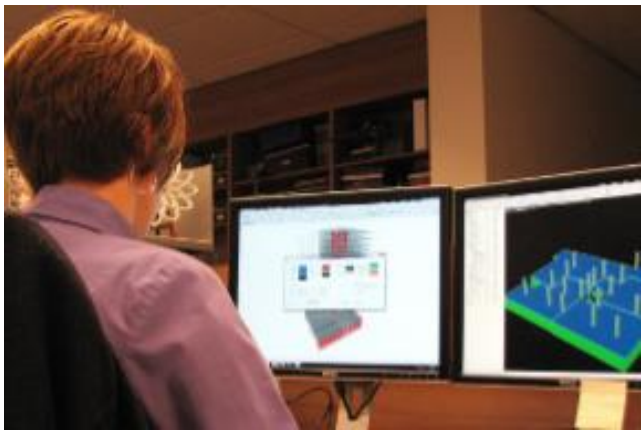
Absolutely. As global population expands so does the size of our cities and their infrastructure; and, the existing infrastructure requires constant restoration as it ages. All the while, SEs strive to make buildings more efficient, sustainable, and improve resiliency against forces due to earthquake and wind.

## WHAT EDUCATIONAL BACKGROUND IS REQUIRED?

In the U.S., SEs earn college degrees in Structural Engineering or Civil Engineering (with an emphasis on structures) or an Architectural-Engineering degree. Colleges and universities in the U.S. and around the world offer a range of accredited programs. Many students pursue graduate degrees and some obtain PhD's. Recommended course curriculums for structural engineering majors are available from the NCSEA.

## HOW DO SEs WORK?

SEs may work independently as sole proprietors or with a handful of skilled staff. Or, they may join large corporations with several hundred technical staff—sometimes combining the services of architecture and construction under one roof. SEs will often collaborate with teams of professionals from other disciplines including mechanical, geotechnical, electrical and civil engineering as well as urban planners and architects. Public and private construction projects employ such teams to develop plans for municipal buildings, dams, bridges and a myriad of other structures ranging from single family housing to high-rise buildings.



## DOES A STRUCTURAL ENGINEER NEED LICENSING?

Yes, because the public health and safety depend on the quality of the SE's work. Each state regulates the amount of experience and testing required for licensure. Typically, just prior to or after completing a bachelor degree, engineering majors take the "Engineering Fundamentals" exam. Once passed, the individual earns the designation of "Engineer-In-Training" (EIT). The next step involves passing the Professional Engineers (PE) exam for professional licensure, demonstrating the engineer's competence in the field.

Many states, especially those having more frequent earthquakes and windstorms, also require specialized "Structural" licensure in addition to the

PE for designing certain classes of projects—hospitals, for instance.

## WHAT IS THE STRUCTURAL ENGINEER'S ROLE?

In the building industry, SEs design structures to resist vertical and horizontal forces from gravity, earthquake, wind, water, soil and blast. SEs develop their designs by performing calculations on building frame components using computer- based finite element analysis. They then prepare construction documents used to build the structure.

SEs educate themselves throughout their careers, adapting to new roles, new materials and construction methods, and to evolving tools of the "trade" such as structural design and analysis software.

## WHAT BENEFITS DO SEs ENJOY?

In addition to competitive salaries, SEs often "grow" into business ownership positions becoming principals or shareholders in a firm. This high-profile opportunity can deliver substantial personal satisfaction and financial gains. Other SEs find fulfilling careers in government agencies that design or supervise public-works projects or enforce building construction regulations such as city or state building codes. The profession is naturally challenging, but also offers tangible job satisfaction. You can point to buildings or structures you've worked on and take pride in their enduring legacy.

## WHAT ELSE CAN SEs DO?

Many SEs enter the profession because they simply love the essence of structural design. Others may move out of the design field, choosing to work directly with builders, material suppliers, government agencies or even the legal profession. The SEs' analytical and project management skills make them natural problem solvers, attractive to a variety of industries and business enterprises.

# Northwest Conference

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

North West Conferences are always enjoyable, informative events in which you get to interact with our great neighbours to the south and are held in locations ideally suited to family vacations. This year's event, held on the scenic Oregon Coast, was no exception. There are always excellent presentations, industry-leading guest speakers, and family entertainment plus enjoyable social activities.

The 2019 conference was hosted by the Structural Engineers Association of Oregon in Gleneden Beach, OR on August 15-16, 2019 and included a North West Council meeting. The conference was held at the Salishan – Oregon's premier coastal resort destination. The conference dinner featured interactive mind-reading illusionist/comedian Hart Keene. Hart astonished his audience of around 70 delegates and guests with some extraordinary magic tricks which showcased his illusionist skills. Hart's sparkling personality and whacky humour endeared him to everyone. He followed up his hour-long show with an impromptu after-dinner magic session for the children who had been entertained separately.

The Council meeting included a favourable financial report and an updated plan for future conferences. The chapters each provided an activity report and shared information on engaging their young members. Most reported successful outcomes and some great mentoring ideas.

The conference technical program focused on code updates including masonry design; wind effects; and seismic loading, design, evaluation and retrofitting. The conference was kicked off by Fast + Epp's Dustin Willms who described the new Type IV tall-wood buildings. Dustin described the key features of UBC's Tallwood House design, and carefully explained its applicability. As the delegates were typically unfamiliar with tall mass-timber buildings, Dustin's interesting talk drew many questions from the floor. Don Scott then outlined the background to ASCE 7 Wind Provisions which are based on greatly-expanded data and new risk categories. Garrett Hagan followed by walking through the ASCE 41-17 provisions for performance-based design.

The Friday conference session started during a power cut which fortunately did not deter the speakers! Joshua Shultz gave us a vigorous presentation on designing structural glass including a simple explanation of the rationale for strength design of an essentially flawed material. Joshua's informative talk was both witty and energizing. He was followed by Ed Huston who walked through the principles behind the numerous masonry design-code updates and the design detail changes. Jared Brewe wrapped up the morning session by outlining the PCI Design Handbook 8$^{th}$ Edition and its connection design requirements.

After the conference lunch, Scafco's Jason Warren delved into the world of cold-formed steel framing, outlining the good and less desirable design details seen in practice. Magnusson Klemencic's John Hooper then analyzed the seismic provisions of ASCE 7-16 which contains many changes. These include new site amplification factors, new vertical ground motions, a change to accidental torsion, and significant new diaphragm requirements.

Fortunately, power was restored for the final presentation which was for me, the conference highlight. Seth Thomas of KPFF described the ASCE7-16 tsunami provisions and resiliency methodology. As a contributing author, Seth was well-versed in the subject and the information that it was based on, including the notable lessons learned from the Tohoku tsunami. Future structural tsunami design will benefit from an on-line geodatabase. Seth then described energy grade-line methods and how tsunami loads are developed which are critical in determining the structural and non-structural building systems. Seth then finished his fascinating exploration of tsunamis by walking through two vertical evacuation projects – Ocosta Elementary School and OSU's Marine Science Initiative Building. These very different projects provided delegates with an excellent grasp of designing for tsunamis.

So, look out for the 2020 conference, to be hosted by SEAW in Seattle's Westin Hotel on September 17 and 18. Next year's theme will be innovative design.


*Seth Thomas Explores Tsunamis with North West Conference Delegates*

*Illusionist Hart Keene*

*Gleneden Beach*

# ‘Be a Bridge Hike’ for Footbridges in Africa

Keith Holmes, P.Eng.

On Saturday August 10, the WSP Vancouver Bridge Team completed our annual “Be a Bridge” hike, now in its fourth year! The hike is a fundraiser to support construction of footbridges in Africa.

This year’s route was over 11 km of North Shore trails that included endless stairs and multiple bridge crossings. We had a great turnout with over 60 hikers, including friends from across our industry. And while we all love our bridges, we actually detoured around one and crossed Lynn Creek on foot! The idea is that our hike helps to highlight some of the benefits of footbridges. In our case, the challenges were simple: some cold water and slippery rocks. For people living in rural parts of Africa however, a new foot bridge can save lives and transform a community.

Our fundraising is in direct support of Bridging the Gap Africa (BtGA), a non-profit organization that has, over the past 20 years, enabled 63 footbridges in Africa. BtGA’s Country Manager in Kenya is Matthew Bowser, a bridge engineer and old friend who worked for WSP for many years. With Matthew now living in Kenya, our fundraiser has been a unique opportunity to support a trusted individual in the pursuit of meaningful "boots-on-the-ground" development.

This year’s fundraising focus is a new 30 m suspension bridge across the Nzoia River in Western Kenya (0°31’30”N and 34°44’14”E). The primary benefits of this new bridge are improved access to both a school and hospital. Just this past year, a 32-year-old man fell through the deck of the current bridge and drowned, leaving behind a young family. The new bridge will cost about $40,000 (CAD). So even with *six WSP Bridge Groups across Canada all participating*, we have our work cut out for us!

The Vancouver hike has raised over $6000, a significant contribution! My sincere thanks to everyone who participated in this year’s hike and/or donated.

If you would like to support this effort, please go here: www.canadahelps.org

*Existing Nzoia River Crossing to be Replaced*

*2019 Hikers Crossing Lynn Creek on Foot*

*Matthew and his Bridge Construction Team in Kenya*

*2019 Hike - So Many Stairs!*

*Water is cold!!*

*2019 Hikers on the New Seymour River Bridge*

*The New Oltulelei Bridge in Kenya*
*Funded by 2017 BE A BRIDGE*

# Mark Your Calendar

## Upcoming Seminars/Webinars and Events

### Design and Construction of Pile Foundations

**Date**: Thursday, September 5, 2019 - Friday, September 6, 2019
**Time**: 8:00 AM–8:30 AM: Registration
8:30 AM–4:30 PM: Day 1 and Day 2
**Location**: Vancouver, BC.
**For more info**: www.egbc.ca/Events

### Air Pollution Control

**Date**: Tuesday, September 10, 2019
**Time**: 8:30 AM–9:00 AM: Registration and Breakfast
9:00 AM–4:30 PM: Seminar
**Location**: Engineers and Geoscientists BC
4010 Regent Street
Burnaby, BC
V5C 6N2
**For more info**: www.egbc.ca/Events

### Free Webinar on Earthquakes and FEMAR P-1000

**Date**: Thursday, September 12, 2019
**Time**: 12:00 PM–1:15 PM: Pacific
**Registration Fee**: Free
**To Register**: www.register.gotowebinar.com

### OQM Certification Training Session

**Date**: Thursday, September 19, 2019
**Time**: 8:00 AM–8:30 AM: Registration and Continental Breakfast
8:30 AM–4:30 PM: Organizational Quality Management Training Course
**Location**: Vancouver, BC.
**For more info**: www.egbc.ca/Events

### Tour of Mariner Brewery and Kitchen

**Date**: Tuesday, September 24, 2019
**Time**: 5:30 PM–6:00 PM: Registration
6:00 PM–8:00 PM: Tours (in groups of 17 people each)
8:00 PM–8:45 PM: Networking
**Location**: 1100 Lansdowne Drive, Coquitlam, BC
This is a 15 minute walk from the Coquitlam Centre Skytrain station.
**For more info**: www.egbc.ca/Events

### Power Quality and Harmonics

**Date:** Tuesday, September 24, 2019- Wednesday, September 25, 2019
**Time:** 8:00 AM–8:30 AM: Registration and Continental Breakfast- Day 1 and Day 2
8:30 AM–5:00 PM: Power Quality and Harmonics- Day 1 (Lunch will be provided)
8:30 AM–5:00 PM: Power Quality and Harmonics- Day 2 (Lunch will be provided)
**Location:** Vancouver, BC
**For more info:** www.egbc.ca/Events

### Student and Industry Bowling Social Night

**Date:** Thursday, September 26, 2019
**Time:** 6:45 PM–9:00 PM
**Location:** Falcon Lanes- 2020 Falcon Road, Kamloops, BC
**For more info:** www.egbc.ca/Events

# 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

| | |
|---|---|
| President: | David Harvey |
| Past President: | Cameron Kemp |
| Secretary / Treasurer: | Surinder Parmar |
| Other Directors: | Perry Adebar, Stanley Chan, Paul Fast, Tejas Goshalia, Adrian Gygax, Kitty Leung, Kevin Riederer, Calvin Schmitke, Andrew Seeton, John Sherstobitoff |

**Committee Chairs:**

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| Education: | Tejas Goshalia |
| Structural Practice: | John Sherstobitoff |
| Technical: | Kevin Riederer |
| Seismic Resilience: | Andrew Seeton, |
| Communications: | David Harvey |
| Young Members: | Stanley Chan |

**Branch Chairs:**

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|---|---|
| Vancouver Island: | Thor Tandy |
| Okanagan: | Meagan Harvey |

## Advertising

Pre-paid rates per edition:

- $270 (quarter page), $360 (half page) or $450 (full page) plus GST. Rates include a banner advert on the Events page of the SEABC website.
- 50-word “Available for Employment” ads are free.

Please address advertising enquiries to: newsletter@seabc.ca.

Please support our advertisers!