



# Newsletter

Volume 40 • November 2017

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*Photo Credit: Andrea  
Sunderland*



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## Message from the President



David Harvey, P.Eng.  
SEABC President

### SEABC Reflections

No doubt our 800 or so members have many different viewpoints on SEABC and its purpose. SEABC is an established brand and we have shared values, but there will be differences in what the members expect from our Association.

Engineering is often regarded as the silent profession, but that is far from SEABC's style. We make an effort to communicate regularly and effectively with members and outside organizations and I believe these efforts have paid off. Our newsletters are widely read and we are routinely contacted by members, external contacts, and the public. We maintain contact with our sister SEAs, the Institution of Structural Engineers (IStructE), and recently, the International Association for Bridge and Structural Engineering (IABSE). We have established connections with CSCE, ASCE and EGBC. All this keeps us current and relevant which is essential to being a vibrant organization that delivers quality services to its members.

Today's structural engineers are much more than we once were. We do not just add rebar details to someone else's concrete outline, nor are we the technical experts of the past who expected their work to speak for them. Our work today demands leadership, multi-discipline interaction, and excellence in project management and communication. We must develop skills which add value, and find new ways to carry out our work. Our structural engineering services include idea-generation, and our vision for the future. We need our customers to see structural engineers as trusted advisors and value us as reliable contributors to their project teams.

We need to counter misunderstanding of our role that follows in the wake of a failure; e.g., Elliot Lake, the De la Concorde overpass, or Station Square. Criticism can be fueled by the media, often when the facts are undiscovered. We rely on public confidence in us, and happily in British Columbia, professional engineers enjoy a high level of public respect. How can SEABC help? By representing and promoting structural engineering, we build public confidence. Outside organizations and the public turn to SEABC for help with structural engineering issues and we respond. On the education front, SEABC courses and seminars keep our members informed of the latest developments. Training helps staff be more effective for employers and our events provide valuable networking opportunities. Our ongoing approach is to keep doing the things we do well, keep our core activities updated, try new activities, and keep our eyes peeled for opportunities. SEABC is committed to structural engineering excellence.

Which brings me back to IABSE. You may have noticed that SEABC recently hosted the 2017 IABSE Symposium in Vancouver. This flagship international conference is held across the globe, and the SEABC Board wanted to showcase our brand of structural engineering to the world. We did just that – check out the article describing the event in this newsletter. By adding the Seismic, Young Engineers, Timber, and Forensic Workshops to the pre-conference events, we enhanced the learning opportunity for conference delegates, and particularly for our members who were able to interact with world-class experts attending the Symposium. By boldly supporting this initiative, the SEABC Board clearly demonstrated its commitment to excellence.

So, thank you to the chairs, the Local Organizing Committee, our conference organizer, our volunteers, our presenters and the many others who have helped create a very successful event. You all worked incredibly hard on behalf of SEABC, you were wonderful to work with, and contributed to the advancement of structural engineering. Now we can look forward to further and even better activities to serve our members and our profession. Let's keep up the good work!

# IABSE 2017



Adam Lubell, PhD, P.Eng.  
Read Jones Christoffersen Ltd  
Symposium Co-Chair



Katrin Habel, Dr. Sc. Techn.  
P.Eng.  
Associated Engineering  
Symposium Co-Chair

SEABC hosted the 39<sup>th</sup> IABSE Symposium from September 18 to 25, a three-day technical conference at The Westin Bayshore hotel in Vancouver, preceded by a program of pre-conference workshops and the Annual Meetings of IABSE's technical committees and working groups. Technical Tours to local structural engineering projects followed the conference.

The event provided a high quality professional environment for the international structural engineering community to meet, discuss, and learn. The pre-conference workshops, keynote speakers, and diverse presentations were excellent. The symposium attracted over 800 participants and had a strong international and local participation including many young engineers.



*Dennis Thomas from the Tsleil-Waututh First Nation, welcomes the delegates during the Opening Ceremony (photo by Andrea Sunderland)*



September 21 to 23, 2017

The Westin Bayshore, Vancouver

[www.iabse2017.org](http://www.iabse2017.org)

## Technical Program

Over three full days, participants learned from an impressive roster of speakers, panelists, and industry stakeholders representing design, research, construction, and socio-economic and political aspects of structural engineering. Session formats included 62 technical sessions with some including coordinated discussion components, and two poster sessions with short presentations. Additionally, ten special sessions were presented by IABSE technical commissions and by the Symposium's supporting organizations. Over 450 papers were presented in total.

Electronic proceedings and an abstract collection were distributed to all Symposium participants. A limited number of printed abstract books (\$25 + GST) are still available for purchase. Contact [info@iase2017.org](mailto:info@iase2017.org) for more information and to order your copy.

The Symposium program also included keynote addresses by the following distinguished speakers:

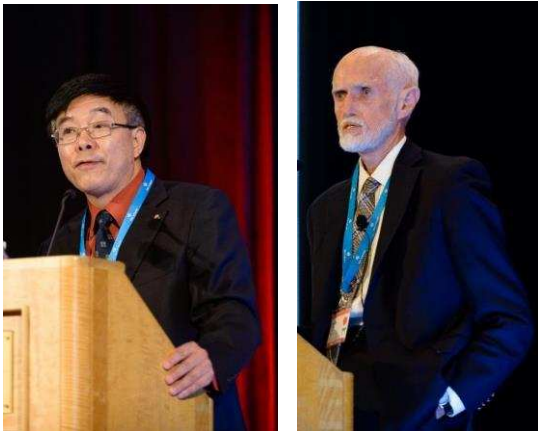
- **Seismic Assessment and Rational Renovation of the Structural Heritage**  
Dr. G. Michele Calvi, Director of the ROSE School, Pavia, Italy;
- **Challenge and Innovation of Long Span Bridges in China and over the World**



Dr. Yaojun Ge, Professor at Tongji University, Shanghai, China;

- **Developments in the Wind Engineering of Tall Buildings**  
Dr. Peter Irwin, founding partner and principal, RWDI, Guelph, Ontario, and Professor at Florida International University;
- **Measuring, Monitoring and Evaluating Community Resilience using Remote Sensing Technologies**  
Mr. Ron Eguchi, CEO, ImageCat Inc., Long Beach, California.

These keynote addresses were well received by the audience and video recordings will be made available to SEABC members later this year.



*Our keynote speakers – Yaojun Ge, Peter Irwin, Ron Eguchi and Michele Calvi (photos by Andrea Sunderland)*

Two young engineers Colin van Niejenhuis, Canada, and Travis Thonstad, USA, were awarded prizes for the Outstanding Young Engineer Contribution Award.

## Pre-Conference Workshops

Four pre-conference workshops were held between September 18 and 20, attracting nearly 150 local and international participants. The workshops, presented by renowned local, national and international experts focussed on the diverse structural engineering topics of: Seismic Engineering, Timber Engineering, and Forensics. A workshop targeted to Young Engineers was also held and focussed on Bridge Dynamics, using the Golden Ears Bridge as an example with hands-on software support by Bentley Systems.



*Timber Workshop – Paul Fast and Michael Flach discussing structural systems (photo by Andrea Sunderland)*



*Young Engineers Workshop – group work to solve the assignment questions (Photo by Andrea Sunderland)*

## Social Program

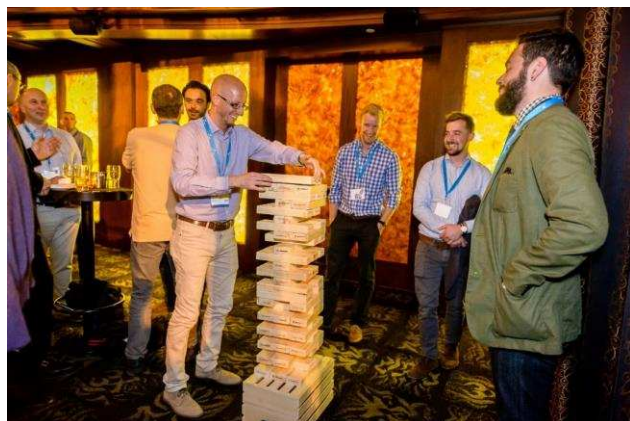
Well attended social events were held on all evenings during the Symposium. The Icebreaker Reception on September 22 served as a welcome to all participants and was held in the upper ballroom

and foyer of the Westin Bayshore. As a true Canadian event, a real icebreaker even made its appearance!



*Andrew Seeton and Stanley Chan at the Icebreaker reception (photo by Andrea Sunderland)*

On September 23, all participants were invited to the Rogue Waterfront to network and socialize in a relaxed and informal setting. IABSE's fellows joined the Young Engineers at the Westin Bayshore for the short walk to Rogue creating an excellent opportunity for conversation and the exchange of ideas between younger engineers and those that are young at heart. Structurecraft generously provided a mega-Jenga game to enhance interaction between participants at Rogue.



*Networking Social at Rogue – full size Jenga game in action (photo by Andrea Sunderland)*

The main social event of the Symposium was the Gala Dinner on September 24, held on the 3<sup>rd</sup> floor of the Vancouver Convention Centre West. This extra-fee event was fully sold out. Participants were treated to a sumptuous dinner accompanied by Canadian-themed entertainment by the local band Famous Players. After dinner, all conference

delegates were invited to participate in a free after-party held at the same venue. Famous Players continued to entertain and managed to keep the dance floor full the entire evening, while others continued to mingle over quieter conversation and drinks on the VCC balcony overlooking the harbour.



*Gala Dinner Reception at the Vancouver Convention Centre (photo by Andrea Sunderland)*



*Gala Dinner at the Vancouver Convention Centre (photo by Andrea Sunderland)*





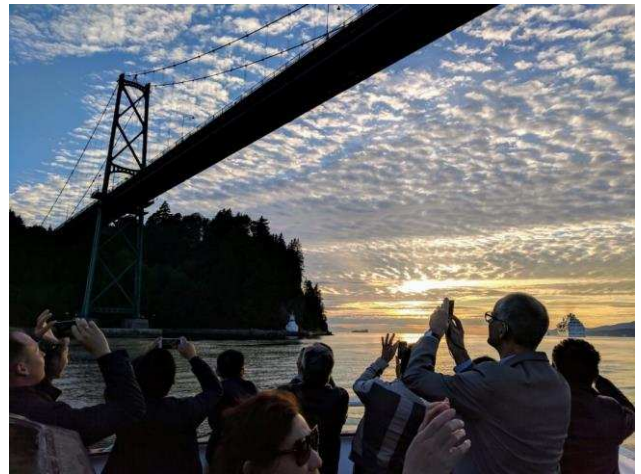
*After party at the Vancouver Convention Centre  
(photo by Andrea Sunderland)*

A Social Hub was organized at the conference venue for accompanying people to facilitate interaction between guests and to help them make arrangements for their days exploring Vancouver. Well attended historical walking tours through downtown led by Andy Coupland were also organized.

In addition to the Symposium social events, IABSE sponsored a reception at the Vancouver Rowing Club during the Annual Meetings on September 19. The historic setting and short walking distance from the Westin Bayshore allowed for a great networking opportunity of the Annual Meeting participants. IStructE hosted a reception in the Westin Bayshore for its members on September 18. The SEANW council meeting was held in conjunction with the Symposium on September 23.

## Technical Tours

Three technical tours took place after the Symposium: Bridges of Vancouver Harbour Dinner Cruise, the Paddle-Wheeler Boat Tour for Bridges on the Fraser River and the two-day Sea-to-Sky and Whistler Adventure Tour. All tours were well organized and well appreciated by the participants.



*Admiring the Lions Gate Bridge during the Bridges of Vancouver Dinner Cruise (photo by Andrew Seeton)*



*Fun at the Whistler Tour*



*Relaxing after the event (photo by Katrin Habel)*

## A big Thank You!

We would like to thank all people involved in the Symposium for their great contributions and for making the event a success, including, but not limited to:

- The supporting organisations: SEABC, IStructE, SEI of ASCE, CSCE, CAEE and EGBC
- The Scientific Committee:
  - Chair: Maria-Anna Polak
  - Secretary: Colin van Niejenhuis
  - Vice-Chairs: Evan Bentz, Adam Lubell, Peter Taylor, Scott Walbridge
  - 75 international IABSE members
- The keynote speakers: Michele Calvi, Ron Eguchi, Yaojun Ge, and Peter Irwin
- The workshop presenters: Michele Calvi, Andre Filiatrault, Michael Flach, Johannes Natterer, Paul Fast, Robert Ratay, John Duntemann, David Peraza, Peter Irwin, Dusan Radojevic, Peter Taylor and staff from Bentley Systems.
- The Local Organizing Committee:
  - Peter Taylor, West Vancouver, BC (Honorary Chair)
  - Katrin Habel, Associated Engineering, Vancouver, BC (Co-chair)
  - Adam Lubell, Read Jones Christoffersen, Vancouver, BC (Co-chair)
  - David Ellis, McElhanney Consulting Services, Victoria, BC (Sponsorship and Exhibition)
  - Lucas Epp, StructureCraft Builders, Delta, BC (Social Program)
  - Bernhard Gafner, ACC Structural Engineers, Vancouver, BC (Young Engineers Program)
  - David Harvey, Associated Engineering, Vancouver, BC (Supporting Organizations and SEABC Liaison)
  - Adrian Gyax, Gyax Engineering Associates, Vancouver, BC (Canadian Group of IABSE Liaison & Workshops)
  - Andrew Seeton, Glotman Simpson Consulting Engineers, Vancouver, BC (Technical Tours)
  - Thomas Surtees, COWI, North Vancouver, BC (Treasurer)
  - Raya Smertina, Associated Engineering, Vancouver, BC (Communications)
  - Jeff Yathon, BC Hydro, Vancouver, BC (Secretary)
  - Prerna Sohal, Kyle Sullivan, Hendrik Westerink, Tijana Vulic
- Stephen Pienaar for website hosting and IT support,
- All volunteers at the event
- Our sponsors and exhibitors
- Michael Tolboom, Andrea Sunderland and Venue West, and
- All session moderators, speakers, delegates and other participants who made the event a great success.



*The Core Conference Organising Team: Colin van Niejenhuis, Marianna Polak, Peter Taylor, Katrin Habel and Adam Lubell (photo by Andrea Sunderland)*



*IABSE Headquarter staff and Katrin Habel (photo by Andrea Sunderland)*



## A few more pictures of the event...



*Captivated audience during the plenary sessions  
(photo by Andrea Sunderland)*



*IStructE special session (photo by Andrea Sunderland)*



*Discussions at the poster session (photo by Andrea Sunderland)*



*Enjoying the coffee break (photo by Andrea Sunderland)*



*Peter Collin from Sweden closing the Pecha Kucha Session with his ukulele (photo by Andrea Sunderland)*



## Symposium Sponsors

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### NETWORKING SOCIAL/ YE NETWORKING EVENT



### TECHNICAL TOURS



### LUNCHES



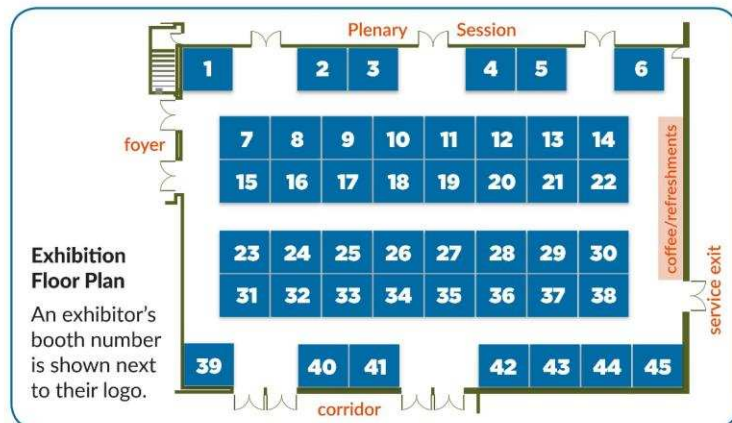
### COFFEE BREAKS



Thank you Sponsors!

## Symposium Exhibitors

1  <b>taylor devices inc.</b>	21  <b>EPIC</b> POLYMER	34  <b>HRC</b>
2  <b>FREYSSINET</b>	22  <b>CNC</b> Contractors Materials Company	35 <b>DYWIDAG-SYSTEMS INTERNATIONAL</b> 
3  <b>REINFORCED EARTH</b>	23 <b>Oasys</b>	36  <b>outokumpu</b>
4 + 5  <b>Bentley</b> Advancing Infrastructure	24  <b>SolidCAD</b> A Cansel Company	37  <b>Dlubal</b>
6  <b>S-FRAME</b> SOFTWARE	25  <b>KRYTON</b>	39  <b>RJ Watson Inc</b> making bridges better
7  <b>L'GONQUIN</b> BRIDGE	26  <b>Atlas Tube</b> A DIVISION OF ZEKELMAN INDUSTRIES	38 <b>mageba</b>
8  <b>NUCOR</b> VULCRAFT CANADA, INC.	27  <b>BTG</b> TECHNOLOGIES & CONSULTING GmbH	40  <b>LUSAS</b> Bridge Analysis Software
9  <b>FATZER</b> BRUGG	28  <b>ČERVENKA</b> CONSULTING Concrete Engineering & Software Solutions	41  <b>marcon</b>
10  <b>MyTiCon</b> Timber Connectors	29  <b>ACROW</b> BRIDGE	42  <b>VICODA</b> Vibration Control • Devices • Applications
11  <b>SOFISTIK</b>	30  <b>MAURER</b>	43  <b>UBC</b>
12  <b>VSL</b> A member of Bouygues Construction	31  <b>CANAM</b> BRIDGES	 <b>SFA</b>
13  <b>PERI</b>	32 <b>Redaelli</b>	 <b>BCIT</b>
14  <b>MAPEI</b>	33  <b>BRIDGE</b> DRAINAGE	44  <b>armtec   precast</b>
15  <b>The Weir-Jones Group of Companies</b>		45 <b>CASTCONEX</b>
16  <b>HILTI</b>		
17  <b>skylinesteel I</b> a NUCOR company		
18  <b>AEGION</b> Stronger. Safer. Infrastructure.		
19  <b>BRIDON · BEKAERT</b> THE ROPES GROUP		
	20  <b>BERD</b>	



## Thank you Exhibitors!



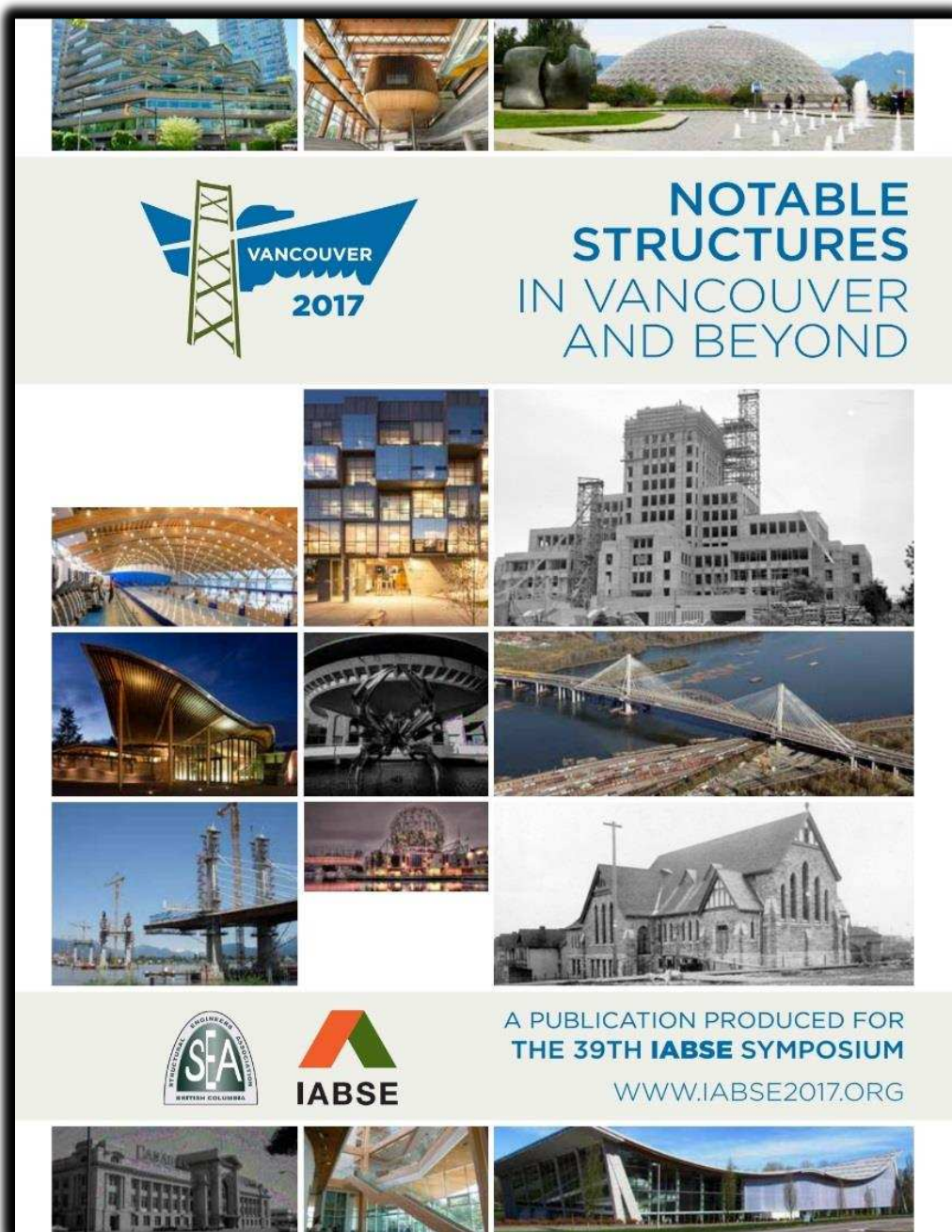
## Notable Structures in Vancouver

To help Symposium participants explore the many impressive structures in Vancouver, a booklet containing information on recent, notable and historically significant structures was compiled by the Organizing Committee. Sixty three structures are featured, mainly located in downtown Vancouver, UBC and the environs.

The booklet is available in electronic format on the Symposium website:  
[www.iabse2017.org/vancouver/notable-structures](http://www.iabse2017.org/vancouver/notable-structures).

A limited number of printed booklets are still available for purchase for \$30 plus GST. Please contact [info@iabse2017.org](mailto:info@iabse2017.org) to obtain your copy of this fantastic local publication.

Thanks go out to all contributors for their efforts in making this brochure a memorable souvenir of the event! Katrin Habel coordinated the overall effort. David Harvey and Adam Lubell reviewed and edited all submissions contributed by numerous SEABC members. A complete list of contributors is available in the Preamble of the booklet.



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## Committee Reports

### Technical Committee



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

SEABC was recently approached by Engineers and Geoscientists British Columbia to develop a professional practice guideline for the “Structural Condition Assessments of Existing Building and Designated Structures”. The Board of Directors has agreed to take the lead on this initiative. The technical committee is looking for volunteers interested in participating in the task group responsible for developing this practice guideline. If you are interested, please email us **before November 30<sup>th</sup>** at: [info@seabc.ca](mailto:info@seabc.ca)

Anyone with interest in participating on a Technical Subcommittee 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.

### Communications Committee



David Harvey, P.Eng.,  
Struct.Eng.  
Director SEABC

Planning for the recent IABSE Symposium highlighted the importance of communication. For over three years, SEABC maintained ongoing communications with multiple external organizations and their memberships, vendors and exhibitors, plus of course the many suppliers and service organizations required to host a major international conference. In addition, we were heavily involved in the sales and marketing side of running a successful high-profile event. All in all, a phenomenal volume of work.

Normally, the SEABC Communications Committee is responsible for our website and this newsletter, so we clearly needed help. The conference organizing team therefore included a strong marketing effort and graphic design component which helped enormously, but there was still much to do. Happily, it all worked out thanks to the strong commitment from those involved.

If you have an interest in publishing or website development, please let us know – we would love to hear from you. Your Communications Committee has survived the challenges of hosting the IABSE Symposium and is now looking for new horizons. So, come and join our editorial team and help keep SEABC members well informed!



### Young Members Group



Thomas Duke, EIT.

### Young Members Group Committee

The SEABC YMG has been busy over the last few months attending the CCSSEE held at the University of British Columbia, preparing the second edition of the YMG Structural Challenge, and getting prepared



for the upcoming 2018 YMG Presentation Competition.

## China-Canada Symposium on Structural and Earthquake Engineering

The first China-Canada Symposium on Structural and Earthquake Engineering (CCSSEE) was a highlight of 2017. The event took place between August 20-24 at UBC's Vancouver campus. Over the past few years, the symposium has evolved from a collaboration between UBC & Tongji University, one of China's leading universities in Engineering and Technology, to an international event attracting researchers from more than ten universities in North America and Asia.

This year's symposium was attended by a large audience from both academia and industry who were excited to learn about the state-of-the-art methods and technologies developed by many professors and graduate students. The symposium consisted of several sessions that covered a variety of topics related to both buildings and bridges. SEABC members are highly encouraged to take advantage of this event when it is hosted by UBC in the future.

Thanks to UBC you are able to view presentation recordings at the symposium website, if you did not have a chance to attend.



*The First CCSSEE*

## So You Think You Can Give a Seminar? Call for Contests!

Do you have an interesting project that you would like to present on? Email your project title and a 250 word description to [ymg@seabc.com](mailto:ymg@seabc.com) to apply for

the 2018 YMG Presentation Competition. Chosen applicants will give a 10-15 minute presentation in front of an audience and panel of judges during the competition which will take place early next year. The top overall presenter will receive a prize of \$1000. The only restriction is that presenters must be SEABC members with less than ten years of experience. More details for the 2018 competition will be released soon, so begin thinking about which project you would like to present on!



*The 2017 YMG Presentation Competition*

## The YMG Structural Challenge

The YMG is thrilled by the number of participants in the first YMG Structural Challenge published in last edition of the Newsletter. Twenty-five engineers provided responses, representing a wide range of companies. The first winner is announced in this edition of the YMG Structural Challenge which features quiz questions related to two new building and bridge projects. Find clues in the description, the photo or do your own research and get a chance to win a prize! All members are encouraged to participate.

*Do you have in mind an interesting project that you would like to share and could prepare fun questions about? The YMG would like to hear from you! Email us at [ymg@seabc.ca](mailto:ymg@seabc.ca)*

See the next challenge at the end of the newsletter!

## On the Web

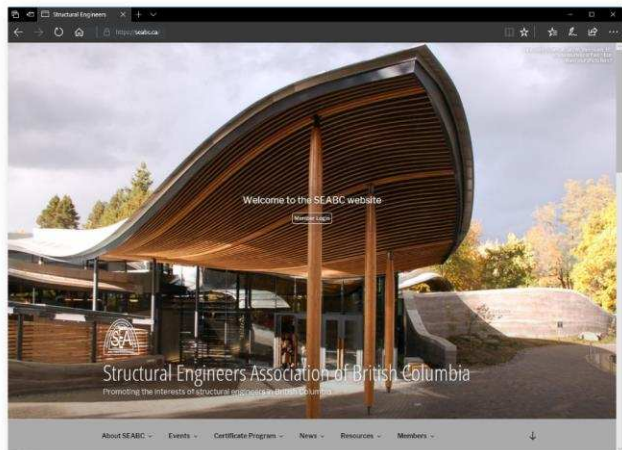


Stephen Pienaar, P.Eng.

Webmaster

## Website refresh

We launched the refreshed SEABC website on October 4. There were many sighs of relief; the project has been struggling with delays. The new website provides a fresh new appearance, better performance on smaller screens (mobile phones), and an all-round better experience for members. Not all the pieces of the puzzle are in place yet; we will roll out more website updates in coming months to complete and refine functionality.



We welcome members' feedback and participation on several levels:

- Report any errors or inaccuracies
- Suggest improvements
- Contribute to the new "photo of the month" feature

Please send your comments to [webmaster@seabc.ca](mailto:webmaster@seabc.ca).

## Current activities on the website

- **January 2018 Term of the Certificate in Structural Engineering Program:**  
Registration is open for the upcoming term. Four courses will be offered with classroom and live interactive webcast options:
  - C4-2: Advanced Concepts in Earthquake Engineering and Seismicity
  - C54: Seismic Bridge Analysis for Force-Based & Performance-Based Design
  - E12: Design of Steel Structures for Seismic Resistance
  - E15: Applications of Dynamic Analysis for Seismic Design of Structures
- **November evening seminar:**  
Registration is open for the **NBC 2015 Commentary L** seminar on November 30. Andy Metten, Ron DeVall and John Sherstobitoff will discuss the repair and seismic upgrading of several heritage buildings in Vancouver over the past five years along with the need for and the development of guidelines for doing this type of work.
- **Membership renewal:**  
Please log in to renew your membership for 2018:  
[seabc.ca/members](http://seabc.ca/members)
- **Past seminars:**  
Members can log in to watch **video recordings** of seminars.  
[seabc.ca/events-archive](http://seabc.ca/events-archive)
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Follow us on **Twitter** for announcements of SEABC events.  
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Sincerely,  
Stephen Pienaar, P.Eng  
SEABC Webmaster



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# IStructE News



Robert Jackson P.Eng.,

## Graduate Member, IStructE Council

### IStructE Memberships

As many of you know, the Institution of Structural Engineers (IStructE) in London offers the MStructE chartered membership, which is an internationally recognized designation in our field. This designation is often achieved by local practicing engineers by way of the APEGBC Struct.Eng. application process. This is because writing the IStructE exam is often the preferred choice of Struct.Eng. applicants.

As a young member on the IStructE council in London, I have been involved in discussions surrounding other grades of membership and their associated benefits. Specifically, the student and graduate memberships which do not require writing the exam. It occurred to me that these grades of membership may not be well known out here in B.C., so I thought I'd write a note to share these with you all.

### Student Membership

Student members of the Institution are aspiring structural engineers who are studying structural and/or civil engineering courses (either full-time or part-time), at an undergraduate level. This would apply to almost all 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> year students at the UBC, BCIT, UVic, and Camosun civil engineering programs. 4<sup>th</sup> year students are probably better off to wait until graduation, and apply for the graduate membership in May.

As a student member you will get access to many of the Institutions online resources, such as the

*Essential Knowledge Series*, and the *Structural Behavior Course*. You will also get a monthly copy of the Institution's flagship publication, *The Structural Engineer* magazine. This grade of membership is completely free of charge and is highly recommended for students who are already SEABC student members!

More information on the application process can be found [here](#).

### Graduate Membership

Graduate members are engineers who have completed an accredited structural and/or civil engineering degree or equivalent. Graduate members are usually those who are working towards becoming chartered members. This would apply to graduates of almost all civil engineering undergraduate programs at accredited Canadian or U.S. universities. Essentially if you are an E.I.T. or P.Eng out there and are a ways off from your MStructE designation, this one is for you.

As a graduate member, you will get access to all of the Institutions online resources, such as the *Essential Knowledge Series* and their *E-Library* which has an incredible amount structural engineering resources. You will also get a monthly copy of *The Structural Engineer* magazine and discounts on technical publications, access to the benevolent fund, and other various recruitment and professional development resources.

More information on the application process can be found [here](#).

As a younger engineer, I have found it very rewarding to be a part of the IStructE, as it exposes you to the global structural engineering community. I would like to encourage younger engineers who are currently SEABC members to consider signing up for one of the IStructE memberships discussed above, you will not be disappointed!

# Performance-Based Seismic Design of Tall Buildings - Lessons Learned from Peer Reviews



Farshid Borjian P.Eng.,  
Struct.Eng.

## Education Committee

On June 22, 2017 SEABC educational committee arranged an evening seminar and asked Dr. Farzad Naeim who was in Vancouver for another event, to have a presentation on performance-based design of tall buildings and lessons learned from peer review. The presentation was held in UBC Robson Square and had more than 75 attendees.



*Dr Farzaf Naeim*

Dr. Farzad Naeim is the President of Farzad Naeim Inc., CEO of Mehrain Naeim International Inc., an Adjunct Professor at UCI and a faculty member at the European School for Advanced Studies in Reduction of Seismic Risk (ROSE). He is the recipient of the 2017 Bruce Bolt Medal jointly awarded by Earthquake Engineering Research Institute and the Seismological Society of America (SSA). In 2007, he received the Fazlur Khan Medal for lifetime achievements in seismic design of tall buildings from the Council on Tall Buildings and Urban Habitat. He

has served two terms as the President of the Los Angeles Tall Buildings Structural Design Council. Dr. Naeim is a Past-President and an honorary member of EERI.

Performance-based earthquake engineering practice for tall buildings in United States was discussed and lessons learned from peer reviewing. More than a dozen of such buildings were presented. New developments embodied in the newly released PEER-TBI II and Los Angeles Tall Buildings Structural Design Council (LATBSDC) Guidelines for seismic analysis and design of such buildings were also reviewed. A large number of tall buildings in western United States are currently being designed using this approach rather than prescriptive code procedures. Successful further development of this method requires close collaboration between researchers and practicing engineers. Such a collaboration is needed for meaningful definition of desired performance objectives, consequences of not meeting these objectives, dependable characterization of system and component level behavior states, meaningful representation of earthquake ground motions, improved understanding of the performance of structures and their contents, soil-foundation-structure interaction, and bridging the gap between and advancing both experimental research and our analytical capabilities.

This presentation briefly discussed these issues and provided examples of problems and solutions that the speaker has encountered in dealing with these needs.



*Farshid Borjan, Dr Farzah Naeim and Tejas Goshalia*



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# Certificate in Structural Engineering Program



Shannon Remillong,  
CSE Program Co-ordinator

## The January 2018 term is just weeks away!

The following four courses offered this January 2018 at UBC Robson Square are:

- **C4-2** Advanced Concepts in Earthquake Engineering and Seismicity
- **C54** Seismic Bridge Analysis for Force-Based & Performance-Based Design
- **E12** Design of Steel Structures for Seismic Resistance
- **E15** Applications of Dynamic Analysis for Seismic Design of Structures

Registration for the January 2018 is open until end of day Monday, January 8<sup>th</sup> through the SEABC website:

[www.seabc.ca/certificate.html](http://www.seabc.ca/certificate.html).

Early-bird rates apply until Friday, December 15. Classes will be on either Tuesday or Thursday evenings beginning the week of January 9 and ending the week of April 5 with a mid-term break in the week of February 20.

Courses fill up fast so not to be disappointed, register early and take advantage of the savings!



## Registration Inquiries and Requests/Suggestions

Please contact Shannon Remillong, Certificate Program Administrative Assistant:

[courses@seabc.ca](mailto:courses@seabc.ca)

## CSE Board of Directors

John Pao, M.Eng., P.Eng., Struct.Eng., Bogdonov Pao Associates Ltd. (Chair)

Shannon Remillong (Administrative Assistant)

Farshid Borjian, M.A.Sc., P.Eng., C.Eng., M.I.Struct.E., Struct.Eng.

Svetlana Brzev, Ph.D., P. Eng.,

Anthony El-Araj, P. Eng, Struct Eng, PE, SE, LEED AP, Glotman Simpson Consulting Engineers

Andreas Felber, Ph.D., P.Eng.,(on temporary leave), BC Hydro

Darrel Gagnon, M.Sc., P. Eng., Cowi N.A. Engineering

Chris Jacques, P. Eng., MStructE, LEED AP, Read Jones Christoffersen Ltd

Bishnu Pandey, Ph.D., P. Eng., British Columbia Institute of Technology

Carlos Ventura, Ph.D., P.Eng., University of British Columbia

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## Mark Your Calendar

### Upcoming Seminars and Industry Events

#### NBC 2015 Commentary L

Date: Thursday November 30, 2017

Presenters: Andy Metten, P.Eng, Struct Eng. (Bush Bohlman & Partners LLP)

Ron DeVall, PhD, P.Eng. (Read Christofferson Ltd)

John Sherstobitoff, P.Eng. (Ausenco)

Time: Refreshments at 6pm, Presentation 6:30pm

Venue: Theatre C300, UBC Robson Square, 800 Robson Street.

#### The Elephant in the Room: How to have a Tough Conversation

Date: Friday January 12, 2018

Time: 8:00 AM-8:30 AM: Registration and Breakfast

8:30 AM-4:30 PM: The Elephant in the Room- How To Have a Tough Conversation

Location: Vancouver, BC

Presenter: Claudia Verburgh, CMC, CPHR

Leadership and Team Development Consultant, Coach and Trainer

Registration: [www.egbc.ca/Events/Events](http://www.egbc.ca/Events/Events)

#### Writing Effective Proposals and Reports

Dates: Wednesday December 6, 2017

Presenter: Eric Tung, MA, Principal Consultant, Prolepsis Consulting

Location: Vancouver, BC

Time: 8:00 AM-8:30 AM: Registration and Continental Breakfast

8:30 AM-4:00 PM: Writing Effective Proposals and Reports

Registration: [www.egbc.ca/Events/Events](http://www.egbc.ca/Events/Events)

#### BCIT Student and Industry Night

Date: Tuesday November 28, 2017

Time: 6:30 PM–7:30 PM: Panel (SE6- Telus Theatre)

7:30 PM–9:00 PM: Networking (SE2- Habitat Pub)

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Presenters: Amanda Richardson, Lead Advisor, Talent Acquisition, Metro Vancouver and Brian Yu, Hydrologic Technologist, Metro Vancouver.

Venue: British Columbia Institute of Technology (BCIT), 3700 Willingdon Avenue, Burnaby, BC

More information:

[www.egbc.ca/Events/Events/2017/17NOVBCS](http://www.egbc.ca/Events/Events/2017/17NOVBCS)

### Wood WORKS! Events

#### Fundamentals of Structural Timber Engineering Workshop

Location: Victoria, BC

Date: Wednesday, December 6, 2017

Radisson Hotel Vancouver Airport, 8181 Cambie Road, Richmond, BC

More information:

[www.eventbrite.ca/e/fundamentals-of-structural-timber-engineering](http://www.eventbrite.ca/e/fundamentals-of-structural-timber-engineering)

#### Fundamentals of Structural Timber Engineering Workshop

Location: Radisson Hotel Vancouver Airport, 8181 Cambie Road, Richmond, BC

Date: Thursday December 7, 2017

More information:

[www.eventbrite.ca/e/fundamentals-of-structural-timber-engineering](http://www.eventbrite.ca/e/fundamentals-of-structural-timber-engineering)

#### Wood Design Luncheon

Location: Delta Hotels by Marriott Grand Okanagan Resort, 1310 Water Street, Kelowna, BC

Date: Wednesday, November 22, 2017

More information: [wood-works.ca/bc/educational-events/luncheon-conferences/](http://wood-works.ca/bc/educational-events/luncheon-conferences/)



## Wood Design Luncheon

Location: Delta Hotels by Marriott Ocean Pointe  
Resort, 100 Harbour Road, Victoria, BC

Date: Friday, November 24, 2017

More information: [wood-works.ca/bc/educational-events](http://wood-works.ca/bc/educational-events)

## 14th Annual Wood Design Awards in BC

Date: Monday, February 26, 2018

Location: Vancouver Convention Centre, West, 1055  
Canada Place, Vancouver, BC

(Nominations Open from October 2 – November 30,  
2017)

More information: [www.wood-works.ca/bc/wda/](http://www.wood-works.ca/bc/wda/)

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# 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](http://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](mailto: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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Grandview Heights Aquatic Centre



*Grandview Heights Aquatic Centre features an undulating roof structure with hanging timber 'cables', suspended between large concrete buttresses. While hanging systems have historically used steel cables, Fast + Epp took a novel approach, pioneering one of the firm's most ambitious and daring designs in its 30-year history. Engineers chose wood as a cost-effective, structurally-efficient and aesthetically-pleasing alternative, cleverly balancing form and function. The resulting structure fulfills the Client's desire for an iconic building that will be a catalyst for civic growth, and is believed to be the world's most slender long span timber catenary roof.*

**Client:** City of Surrey | **Architect:** HCMA Architecture + Design  
| **Engineer:** Fast + Epp

**Question 1:** How many different radii of glulams are included in the roof structure?

- a) 1
- b) 2
- c) 6
- d) Each glulam is different

**Question 2:** How many glulam splices per timber 'cable' occur in the 55m long span?

- a) 0
- b) 1
- c) 2
- d) 3

**Question 3:** What is the maximum sectional span to depth ratio in this building?

- a) 10
- b) 20
- c) 100
- d) 200

Question submitted by: *Thomas Duke, Fast + Epp*

The Sheikh Zayed Bridge



Photo Credit: Mohannad Khatib (02 June 2012)  
License: CC-BY 2.0, Image-ID 271972

*Spanning 842 m long with a main span of approximately 140 m long, the Sheikh Zayed bridge was constructed to link the city of Abu Dhabi with the mainland over the Maqta channel. It was the fourth bridge that linked Abu Dhabi to the mainland. The two-way four lane highway bridge consists of cantilevered decks that are suspended from asymmetric steel arches that form a sinusoidal wave, illuminated with more than 200 automated lights to represent the sand dunes of the region. Considered to be one of the most intricate and complex bridges ever built, and at times deemed impossible to be constructed, it took nearly 8 years of construction to open the bridge to the public in late 2010.*

**Contractor:** Archirodon Construction | **Architect:** Zaha Hadid |  
**Engineer:** High-Point Rendel (now Rendel) | **Erection Engineer:**  
Buckland & Taylor Ltd. (now COWI)

**Question 1:** Two piers have been built in the water to form the support for the main span. Through the east and west arch spans, the arch rises between the two decks. How high does the arch rise from the water at the central span (at the highest point)?

- a) 40-45 m
- b) 50-55 m
- c) 60-65 m

**Question 2:** During the erection engineering, a system of temporary towers needed to be built around each arch location, lifting a total of 6 arch ribs (22 segments) with a max segment weight of 670 tonnes. Approximately how many tonnes of structural steel did the falsework need to support for the bridge (for the 22 segments)?

- a) 5,000 tonnes
- b) 8,000 tonnes
- c) 11,000 tonnes

**Question 3:** The largest foundation had a pile cap width approximately 81.5 m by 41 m with a 5 m height. Approximately how many piles was needed?

- a) 30-35 piles
- b) 140-145 piles
- c) 300-305 piles

Question submitted by: *Arman Shahnaz, COWI NA*

**[Click here to participate!](#)**

**PRIZE : \$25 gift cards or AGM dinner**

**Deadline:** January 15th, 2018

**Note:** One winner drawn among the participants who answered correctly to all three questions.

*Increase your chance of winning by answering both the building and the bridge YMG Structural Challenge quiz!*

Answers from the previous YMG Structural Challenge:

The Arc Building Q1: b) / Q2: a) / Q3: c)

The Lions Gate Bridge Q1: b) / Q2: c) / Q3: c)

Last YMG Structural Challenge winner: *Griffen Yu, Pragmatic Homes Inc.*

***Interested in submitting your questions to share your project to the community?***

Email [ymg@seabc.ca](mailto:ymg@seabc.ca) for more information about how to contribute to the YMG Structural Challenge!