

Structural Engineers Association of Utah

7th Annual Education Conference

February 26 & 27, 2019

Utah Valley Convention Center

Provo, UT



Conference Overview

The SEAU Board of Directors would like to invite you to the SEAU 7th Annual Education Conference to be held at the Utah Valley Convention Center in Provo, Utah on February 26th and 27th, 2019.

Topic Overview

- ASCE 7-16 Wind Provisions
- AISC 360-16 Changes
- AISC 341 Changes
- 2018 IBC/IEBC
- Top 10 Lessons from Stadium Structures
- Legal Aspects
- Tilt-Panel Design
- Masonry Seismic Design
- Round Table Discussion

Two classes will be going on concurrently, as shown on the enclosed Conference schedule. Attendees will be able to choose which classes to attend throughout the day while at the Conference.

Each conference attendee will have the opportunity to receive up to 12 Professional Development Hours (PDH) over the two-day event. **PDHs will be awarded ONLINE this year through the SEAU website.** You will receive a code in each class that is required to redeem your PDH certificate.

Hardcopies of IBC 2018, IEBC 2018, AISC 360-16, & AISC 341-16 are offered at a discounted price with conference registration. Class notes will be available to download on the SEAU website prior to the conference.

Lodging

Hyatt Place Provo (Across the street from the Utah Valley Convention Center)

180 West 100 North
Provo, Utah, United States, 84602
Phone: 801-609-2060

A limited number of rooms are available at a discounted rate of **\$139.00 a night**. This discounted room rate is available for hotel stays on February 25th, 26th, 27th.

Please use the link below or the online code **G-SEAU** for online reservations or you can call the hotel and ask for the SEAU conference rate.

https://www.hyatt.com/en-US/hotel/utah/hyatt-place-provo/pvuzp?corp_id=G-SEAU

Note: The discounted rate is only guaranteed for reservations made prior to **January 21, 2019**; after that date rates are subject to change.

Parking & Directions

Visit

<http://www.utahvalleyconventioncenter.com/parking> for parking locations and directions.

Location

Utah Valley Convention Center
220 West Center Street
Provo, UT 84601

Dietary Restrictions

If you have specific dietary needs such as vegetarian, gluten-free, etc. please contact Katelyn Vidmar no later than **January 21, 2019** with your request. We will do our best to accommodate you. We cannot meet requests submitted after this date.

Conference Registration

DEADLINES:

- **Early Registration Deadline:** January 21, 2019 at 5:00pm
- **Code Order Deadline:** January 21, 2019 @ 5:00pm
- **Late Registration:** February 4, 2018 at 12:00am

REGISTRATION FEES:

Early Registration		Late Registration	
General			
One Day Only	Both Days	One Day Only	Both Days
\$150	\$260	\$180	\$310
Student			
Block (4 Hours)	All Day	Block (4 Hours)	All Day
\$20	\$70	\$25	\$80

Cancellation Policy:

- All cancellations will be subject to a \$10.00 cancellation fee.
- Cancellations received prior to **January 1, 2019** will receive a 100% refund, minus the \$10.00 cancellation fee.
- Cancellations received from January 1, 2019 through February 4, 2019 will receive an 80% refund, minus the \$10.00 cancellation fee.
- Beginning **February 4, 2019**, no refunds will be issued; however, you may transfer your registration to another person at no cost.
- Please contact Katelyn Vidmar at katelynvidmar@gmail.com for any cancellation and transfer requests.

NEW!!! Online Registration:

We are excited to announce a new registration system this year! You may now purchase books, registrations, etc. all in one transaction. To register and pay for the Conference, click on the link below. Select the ticket that best meets your schedule.

PLEASE NOTE: registration does not work in Google Chrome. Please use another internet browser such as Internet Explorer, Fire Fox, or Safari.

REGISTER HERE

For registration questions, contact Katelyn Vidmar at 928-245-8086 or Katelynvidmar@gmail.com or Zach Hansen at 801-782-6008 ext. 8231 or zachh@arwengineers.com .

Code Book Orders:

(Available until January 21, 2019)

- [IBC 2018: \\$112](#)
- [IEBC 2018: \\$62](#)
- [AISC 360-16: \\$130](#)
- [AISC 341-16: \\$80](#)



Partial funding for this training program has been provided by the **Division of Occupational & Professional Licensing (DOPL)** from the 1% Surcharge Funds on all building permits. We wish to thank DOPL for their support!

Schedule

	Tuesday		Wednesday		
7:30am	Registration & Breakfast		Registration & Breakfast		
Location	Conference Room 1	Conference Room 2	Conference Room 1	Conference Room 2	TBD
8:30am	How to Use ASCE 7-16 Wind Provisions <i>Donald Scott</i>	AISC 360-16: What Your Fabricator Wishes You Knew About HSS <i>Kim Olson</i>	2018 IBC/IEBC Significant Structural Changes <i>Chris Kimball</i>	Masonry Seismic Design <i>Ed Huston</i>	
10:00am	Break		Break		
10:30am	How to use ASCE 7-16 Wind Provisions <i>Donald Scott</i>	Top 10 Lessons from Stadium Structures in Seismic Zones <i>Rafael Sabelli</i>	2018 IBC/IEBC Significant Structural Changes <i>Chris Kimball</i>	Masonry Seismic Design <i>Ed Huston</i>	
12:00pm	Lunch, Committee Short Reports		Lunch & Raffle Drawing		
1:30pm	Legal Aspects <i>David Bradshaw & Craig Coburn</i>	AISC 360/341 Changes <i>James Malley</i>	2018 IBC/IEBC Significant Structural Changes <i>Chris Kimball</i>	Local Project Case Studies <i>Moderated by: Craig Wilkinson</i>	
3:00pm	Break		Break		
3:30pm	Design and Pitfalls of Tilt-Panel Design <i>Trent Nagele</i>	90 Seismic Ideas in 90 Minutes <i>James Malley & Rafael Sabelli</i>	2018 IBC/IEBC Significant Structural Changes <i>Chris Kimball</i>	Structural Performance and Design with Cast Steel Connections <i>Michael Gray</i>	BREAKOUT Round Table Discussion (All principal engineers invited to attend) <i>Moderated by: SEAU Board of Directors</i>
5:00pm	Classes Conclude		Classes Conclude		

CLASS DESCRIPTIONS

How to Use the ASCE 7-16 Wind Provisions

Presenter: Donald Scott

This session will review the ASCE 7-10 Wind Load Provisions and how to apply them to common buildings and building components designed by the profession. A review of the proper application of wind loads on buildings and load combinations will be reviewed and sample calculations provided. Also an explanation of the new ASCE 7-16 Wind Load Provisions will be provided.

Legal Aspects

Presenter: David Bradshaw & Craig Coburn

- Identification of the factors that drive professional liability risk including the relationship of technical errors and non- technical risk drivers
- The interrelationship of business risks and professional liability risk
- Managing the non-technical risk drivers including specific recommendations applicable to structural engineers working as sub consultants to architects.
- Practical tools and recommendations to minimize professional liability risk.
- Cyber risks and available insurance for both liability exposures and firm financial risks.
- Recent developments and trends in professional liability including Utah's new indemnity law for architects and engineers working on public projects.
 - Including a discussion of the applicability of the law to structural engineers whose contract is with an architect who is contracted to a public entity.
 - The standard of care as defined by the new Utah law.

AISC 360-16: What Your Fabricator Wishes You Knew About HSS

Presenters: Kim Olson

There is a common misconception that structures using hollow structural sections (HSS) are more expensive than those comprised primarily of open sections even though HSS sections are often more geometrically economical - mainly due to the difference in cost on a unit weight basis. HSS member design and connections have a significant influence on the total fabricated cost of a structure. The Steel Tube Institute has conducted surveys and focus groups with fabricators to learn how to reduce the costs of HSS connections. Attendees of this presentation will learn which details work (and which don't); what you need to know about HSS in AEES applications; tolerances and how to detail for them; and relative costs of HSS fabrication. Additionally, we will review AISC 360-16 Chapter K, which underwent a significant change in the 2016 Specification. Attendees of this presentation will learn the background for the changes, an overview of the updates, and see that the differences are not as extreme as it first appears. Examples and resources will be provided.

Top 10 Lessons from Stadium Structures in Seismic Zones

Presenter: Rafael Sabelli

TBD

AISC 360/341

Presenter: James Malley

American Institute of Steel Construction (AISC) document 360, *Specification for Structural Steel Buildings*, is the basic reference for the design, fabrication and erection of structural steel buildings and other "building-like" steel structures in the United States. When applied in conjunction with AISC 360, AISC 341, *Seismic Provisions for Structural Steel Buildings*, is the standard reference document for the seismic design of steel structures throughout the United States. Updates to both AISC 360-16 and 341-16 have been incorporated with ASCE 7-16 into the 2018 International Building Code. Both AISC documents have significant technical modifications and updates that will be summarized in this presentation.

90 Seismic Ideas in 90 Minutes

Presenter: James Malley & Rafael Sabelli

This presentation will provide a rapid-fire series of ideas for engineers to consider in the implementation of seismic designs of new steel buildings. The ideas include the following:

- Thoughts on proper implementation of the seismic design philosophy behind AISC 341
- Discussion of various system options and applications
- Concepts for innovative design strategies and proper system configurations
- Recommendations for addressing commonly faced detailing issues
- Calculation tools and methods for various design topics
- Discussion of applications for steel materials and welding processes
- Identification of various helpful resources

The ideas will provide numerous potential ideas that can be implemented on your next steel design project!

2018 IBC/IEBC Significant Structural Changes

Presenter: Chris Kimball

Many of the structural code provisions will change with the adoption of the 2018 International Building Code® (IBC®). Most of these changes occur to structural standards that are referenced by the IBC. This class will go over the significant structural changes within the IBC itself, and will then discuss several of the major changes that have occurred to the referenced standards, such as the 2016 version of ASCE 7. Some of the IBC changes that will be discussed include changes to what must be provided on the construction documents, modified live loads, increased roof components and cladding loads, increased seismic ground motions and changes to site coefficients, new regional snow load data, new tsunami design provisions, new balcony provisions, and much more. In addition to the IBC changes, the last portion of the class will go over significant changes to the 2018 International Existing Building Code (IEBC) in relation to structural design. This class will help design professionals and enforcement personnel to understand how structural design requirements will be changing with the adoption of the 2018 IBC and will help them to stay up-to-date with the new structural provisions of the building codes.

Masonry Seismic Design

Presenter: Ed Huston
TBD

Design & Pitfalls of Tilt-Panel Design

Presenter: Trent Nagele

Most tilt-up walls are designed using the Alternative Method for Out-of-Plane Slender Wall Analysis in Section 11.8 of ACI 318-14. These provisions include checks for both strength and serviceability, and are not always well understood. This presentation will present an overview of tilt-up wall design starting with the basics and moving toward some examples of its application to common building conditions. From there, we'll dig a little deeper and look at some of the common pitfalls that have crept into design. Whether your office is using hand calculations, spreadsheets or commercially available software, once these methods are established the underlying assumptions are often used for some time without being revisited or updated. At other times, engineers may believe they've improved upon the code provisions with alternate equations from research or simply using a much more involved computational process with complex iterations or finite element modeling. While it might be tempting to deviate from the design provisions within ACI 318 it is important that it is done with a clear understanding of the ramifications, which in reality can often be invalid and unconservative.

Structural Performance & Design with Cast Steel Connections

Presenter: Michael Gray

The use of steel castings in the design and construction of building and bridge structures is a fast-growing trend in North America. Modern design and manufacturing methods for cast steel are used to address challenges in engineering, design, and construction that would otherwise be very difficult to tackle using conventional steel fabrication. Included in this presentation are descriptions of conceptual development, material fracture characterization, non-linear analyses, and testing for several capacity designed and yielding castings for seismic force resisting systems.

The freeform capability of casting manufacturing provides designers with unparalleled geometric freedom in architecturally exposed structural steel – contributing to appearance and sustainability goals. With technical information and examples, this presentation will show how castings are successfully integrated into a wide range of projects to enhance the structural performance and architectural quality of key structural connections, including connections for high-performance seismic applications.

Round Table Discussion (all principal engineers invited to attend)

Moderator: The SEAU Board of Directors

This year we'll be offering a long overdue opportunity for those in senior management to rub shoulders with one another in discussing the future of structural engineering in Utah. It will be a collaborative question and answer session where the business side of our profession has the main focus. Financial concerns can be expressed in a non-competitive setting, where other seasoned engineers can offer solutions that have worked for them and their firms. Fiscal experts are predicting that we are on the brink of another economic downturn, so we feel that this breakout session is timely.

PRESENTERS

Donald R. Scott P.E., S.E., F.SEI, F.ASCE: is a Senior Principal at PCS Structural Solutions and has been a Principal of the firm since 1986. He has led many of the firm's educational, commercial, healthcare, institutional and private projects for new and renovated construction. Don's proficiency in high-end structural analysis is a strong resource at PCS Structural Solutions, a 70-person firm with offices in Seattle, Tacoma, and Portland. Don is a civil and structural engineering graduate of the University of Idaho with civil and structural engineering licenses in Washington and seven other states. He was recently honored as the recipient of the 2018 Walter P. Moore, Jr. award for his contributions to the development of structural codes and standards.

Don has authored many technical publications, and has presented numerous seminars and webinars for ASCE/SEI and NCSEA on wind design throughout the country. He has been a member of the ASCE 7 Wind Load Committee since 1996, shaping future IBC provisions for wind design, and currently serves as Chairman. He is also a member of the SEI Board of Governors, the ASCE 7 General Provisions committee, a member of the ASCE 7 Steering Committee, Chairman of the NCSEA Wind Committee, and a former Chair of the SEAW Wind Load Committee and former Chairman of the NIST Community Resiliency Panel Buildings and Facilities Committee.

D. David Bradshaw, CPCU: is President of American Insurance and Investment Corporation, an independent insurance agency placing \$50 Million in annual premiums from its two offices in Salt Lake City and Las Vegas. American has earned the PAR Excellence Award from Assurex Global in each of the past twelve years.

As an insurance agent and broker, Mr. Bradshaw has a strong background working with a wide variety of business organizations concerning risk and insurance issues. He specializes in providing insurance and risk management services to Architects and Engineers and has served as a risk management advisor on numerous local and national committees of the American Council of Engineering Companies and the American Institute of Architects.

During Mr. Bradshaw's tenure as President, American has grown from \$7.5 Million in premiums to today's \$50 Million. During this period of rapid growth, Mr. Bradshaw has been able to maintain high standards of customer service as

evidenced by the agency's PAR Excellence Awards. Under Mr. Bradshaw's leadership, American consistently outperforms the industry in all financial measures, including client retention and customer loyalty.

Mr. Bradshaw graduated Cum Laude from the University of Utah with a degree in Business/Finance and has earned the Chartered Property and Casualty Underwriter designation (CPCU) awarded by the American Institute for Property and Liability Underwriters, Inc. In 2013 he was recognized by the Utah Chapter of the American Institute of Architects with an Honorary Membership in AIA Utah.

Mr. Bradshaw is a past President of Professional Liability Agents Network, Inc. (PLAN), a non-profit organization of insurance brokers from all fifty states and Canada who specialize in providing Professional Liability insurance.

Mr. Bradshaw resides in Park City, Utah and is an avid motorsport enthusiast. In his spare time he volunteers as a High Performance Driving Instructor for the Intermountain Porsche Club and competes in sports car races sanctioned by the National Auto Sports Association.

Rafael Sabelli, S.E.: is a Principal and Director of Seismic Design at Walter P Moore. Rafael has earned a Special Achievement Award from AISC, as well as the T.R. Higgins Lectureship award. He is active in the development of seismic design standards for steel systems and is vice-chair of the AISC Seismic Provisions Committee, the ASCE 7 Seismic Task Committee, and the NIST Building Seismic Safety Council's Provisions Update Committee. Rafael is the chair of the AISC Seismic Design Manual committee and was the Project manager for the 5-volume SEAOC Seismic Design Manual.

Rafael is co-author of Ductile Design of Steel Structures, and has written extensively on the design and behavior of steel seismic systems. He has served as Chair of the Seismology Committee of the Structural Engineers Association of California and as President of the Structural Engineers Association of Northern California.

James O. Malley, S.E.: is a Senior Principal with Degenkolb Engineers. He received both his Bachelors and Masters Degrees from the University of California at Berkeley. Mr. Malley has over 35 years of experience in the seismic design, evaluation and rehabilitation of building structures. He was responsible for the analytical and testing investigations performed as part of the SAC Steel Project in response to the Northridge earthquake damage. In 2000, AISC presented Mr. Malley its' Special Achievement Award. Mr. Malley is Chair of the AISC Specifications Committee and the Past-Chair of the AISC Seismic Subcommittee. He was named the 2010 T.R. Higgins Lectureship Award winner for his work on the AISC Seismic Provisions, and in 2012 was given presented with a Lifetime Achievement Award by AISC. Mr. Malley is also a member of the AWS Subcommittee on Seismic Welding Issues. Mr. Malley was also one of the authors of the PEER Tall Buildings Institute "Guidelines for the Performance-Based Seismic Design of Tall Buildings" and is involved in the peer review of numerous tall building projects in areas of high seismic risk. Jim has served as a member of the SEAONC and SEAOC Board of Directors, and was President of SEAONC in 2000-2001 and SEAOC in 2003-2004. He was named a SEAOC Fellow in 2007 and an Honorary Member of SEAONC in 2014. He also was a member of the Board of Directors of NCSEA, serving as President in 2010-1011. Mr. Malley also served as a member of the Board of Directors of EERI and is presently on the Board of the Applied Technology Council.

Chris Kimball, S.E.: Chris has more than 18 years of experience in the design, construction, and building safety industries. He is a licensed structural engineer as well as an ICC Master Code Professional. He maintains ICC certifications as a certified building official, certified fire code official, combination plans examiner, combination inspector, etc. He has performed plan reviews for thousands of projects throughout Utah, Nevada, Washington, Texas, Wyoming, California and Arizona.

Ed Huston, S.E.: TBA

Craig Coburn: Craig counsels and represents design professionals, owners, developers, contractors, and subcontractors in design/construction matters. Throughout his career he has focused on risk management, dispute resolution, and government affairs. Craig has maintained an active commercial/construction mediation & arbitration practice since 1985 and is the practice chair for the Construction Industry Group and Charitable Foundation at Richards Brandt.

Trent Nagele, P.E., S.E.: Trent is a Structural Engineer and Principal with VLMK Engineering + Design in Portland, Oregon. In addition to tilt-up design, he has worked with a broad range of project and construction types,

including seismic design and upgrade of existing structures. Trent is a member of ACI's 551 Tilt-up Concrete Committee. He is also a member of the Oregon Seismic Commission which advises the state's Governor and Legislature on seismic issues and policy, the City of Portland's Structural Advisory Board, and is a Past-President of the Structural Engineers Association of Oregon.

Kim Olson: Kim has over 18 years of experience as a structural engineer, including her current position as a Structural Engineer at FORSE Consulting. Currently she offers design, consulting and other support services to architects and engineers. Prior to joining the company in 2012, Kim worked for Bentley Systems, providing technical demonstrations and product trainings for structural engineers worldwide on each of the RAM structural engineering software programs. She was a practicing engineer at Martin/Martin, Inc. in Denver for seven years managing and designing a wide variety of structures including research laboratories, sporting grandstands, recreation centers and schools. Kim is a licensed professional engineer (PE) in the state of Colorado and a member of the NASCC Planning Committee and AWS D1.1 TG7 Tubular Committee.

As a technical advisor to the HSS Committee of The Steel Tube Institute, Kim works to educate architects and engineers on the many benefits of HSS.

Michael Gray, Ph.D., P.Eng.: Co-Founder and Executive Vice-President. An inventor of the technology behind the Scorpion Yielding Connector and a co-founder of the company, Michael is the Executive Vice-President at Cast Connex Corporation. He received both his Bachelor of Applied Science and Engineering and his Doctor of Philosophy in Structural Engineering from the department of Civil Engineering at the University of Toronto. Michael's ground-breaking Doctoral work on the use and design of cast steel yielding elements in high-ductility non-buckling braced frames forms the basis of the Scorpion line of products. Michael has won several prestigious provincial, national, and industry scholarships and fellowships including the Steel Structures Education Foundation (SSEF) G.J. Jackson Fellowship, the Canadian Institute of Steel Construction John L. Kellerman Fellowship, and the Canadian Society for Civil Engineering Donald Jamieson Fellowship in Structural Engineering. In addition to his expertise in non-linear finite element analysis, seismic design, mechanics, and low cycle fatigue of steel materials, Michael also has extensive experience in structural engineering and steel connection design and detailing.