



5th INTERNATIONAL  
**ORTHOTROPIC**  
BRIDGE CONFERENCE

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Santa Clara University, California, USA

August 14-16, 2019



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SANTA CLARA  
UNIVERSITY



STRUCTURAL  
ENGINEERING  
INSTITUTE

San Francisco

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## Welcome to the 5<sup>th</sup> International Orthotropic Bridge Conference in Sunny California



**Edward J. Thometz**  
*Co-Chair*

We are happy to extend a very warm welcome to bridge engineers who design and build long span bridges to the 5<sup>th</sup> International Orthotropic Bridge Conference (5OBC). This contributes to the economy and enhances livability of the region where our services are used to build such bridges. Invariably, not only orthotropic bridges are used for spanning large water bodies or over valleys with majestic towers to allow commuters, pedestrians, and bicyclist to safely go over the obstruction, but also our work leaves an indelible mark on the skyline. This conference



**Ajay Sehgal**  
*Co-Chair*

builds on the successes of the previous four conferences. Each conference has provided a platform for professors, designers, and construction engineers from all over the world to contribute through their valuable research and work experience in design, fabrication, and erection of steel orthotropic steel deck (OSD).

The 5OBC includes presentations from professors and engineers from all over the world related to research in new fatigue detailing, fabrication, maintenance and repair, executed on the existing OSD throughout the world. This conference will also feature a workshop which will cover the Federal Highway Administration (FHWA) *Orthotropic Bridge Manual* and development in Seismic Design of Steel Bridges in California. The FHWA manual was influenced by the contributions at previous OBCs. A new addition to the conference is a presentation by a bridge architect to highlight the aesthetic aspect of bridges.

This conference is a result of hard work by dedicated organizing members, volunteers, sponsors and authors of fine papers that will broaden your knowledge through their research related to repair strategies used to tackle vexing problems of fatigue cracks in OSD. Let us once again be under the same roof to further the development in the design, fabrication and maintenance of OSD!

Have a great conference while gaining new knowledge and also forge new friendship while rejuvenating the old friendships with fellow engineers from other countries at the beautiful Santa Clara University, located in the heart of Silicon Valley, in sprawling 106 lush acres with world-renowned gardens and state-of-the-art facilities, all surrounded by iconic Mission Revival Style buildings. You may take an opportunity to visit centers of innovation such as Google Campus and beautiful San Francisco with the iconic Golden Gate Bridge & the new Bay Bridge East Span, with its signature self-anchored suspension structure. Both these iconic structures have pedestrian and bike paths so that visitors can behold breath-taking views of the San Francisco Bay and consign their cares to the windswept bay!

Sincerely,



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Ajay Sehgal, *Co-Chair*, 5<sup>th</sup> International Orthotropic Bridge Conference



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Edward J. Thometz, *Co-Chair*, 5<sup>th</sup> International Orthotropic Bridge Conference





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## California Long-Span Bridge Expert Charles “Chuck” Seim (1925-2019)

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Former T.Y. Lin International (TYLI) bridge engineer, Charles “Chuck” Seim, P.E., passed away on April 28, 2019, at the age of 93. A highly respected bridge engineer, Seim served the industry for over 50 years, 24 of which were spent as TYLI Senior Vice President.

Following a successful, 25-year career with the California Department of Public Works, now the California Department of Transportation (Caltrans), Seim joined TYLI in 1980, when he came to work for renowned TYLI founder, T.Y. Lin, in San Francisco. Seim was known as a specialist in long-span bridges, with noteworthy U.S. projects such as the seismic retrofit of the world-famous Golden Gate Bridge; the San Mateo Bridge and Richmond San Rafael Bridge; and the signature Arthur Ravenel Jr. (Cooper River) Bridge in South Carolina. He continued consulting on iconic projects with enthusiasm well into his 80’s. These include the San Francisco-Oakland Bay

Bridge New East Span where he provided his expertise on the steel orthotropic deck and the epoxy asphalt concrete pavement.

Seim’s bridge engineering expertise was also applied to international projects for the firm. These include the Lake Maracaibo Bridge in Venezuela, the Bridge of the Americas Crossing of the Panama Canal in Panama, and the Nanjing Third Yangtze River Bridge in China.

Seim remained active in industry organizations throughout his long career, including the American Society of Civil Engineers (ASCE), where he was a Life Member, and the International Bridge Conference (IBC). In 2006, the IBC awarded Seim with the prestigious John A. Roebling Medal for lifetime achievement in bridge engineering.

### Conference Schedule

#### Wednesday, August 14, 2019 - Friday, August 16, 2019

<b>8:30am</b>	<b>4:00pm</b>	Registration	Fess Parker Theater
<b>8:30am</b>	<b>4:00pm</b>	Exhibitors	O'Connor Hall, Room 105
<b>8:30am</b>	<b>4:00pm</b>	Break room, test room available to all presenters (equipped with projector)	O'Connor Hall, Room 110

### Main-Conference Schedule

#### Wednesday, August 14, 2019

<b>8:30am</b>	<b>9:30am</b>	Breakfast	Lobby, Fess Parker Theater
<b>9:30am</b>	<b>12:00pm</b>	Opening Ceremony	Fess Parker Theater
<b>12:00pm</b>	<b>1:00pm</b>	Lunch	Atrium- Benson Memorial Center
<b>1:00pm</b>	<b>2:30pm</b>	Session D1A1	O'Connor Hall, Room 106
<b>2:30pm</b>	<b>3:00pm</b>	Break	O'Connor Hall, Room 105
<b>3:00pm</b>	<b>4:30pm</b>	Session D1A2	O'Connor Hall, Room 104

### Main-Conference Schedule

#### Thursday, August 15, 2019

<b>7:00am</b>	<b>8:30pm</b>	Breakfast	Benson Memorial Center
<b>8:30am</b>	<b>10:00am</b>	Session D2M1	O'Connor Hall, Room 104
<b>10:00am</b>	<b>10:30am</b>	Break	O'Connor Hall, Room 105
<b>10:30am</b>	<b>12:00pm</b>	Session D2M2-A [Track1]	O'Connor Hall, Room 107
<b>10:30am</b>	<b>12:00pm</b>	Session D2M2-B [Track2]	O'Connor Hall, Room 106
<b>12:00pm</b>	<b>1:00pm</b>	Lunch	Atrium- Benson Memorial Center
<b>1:00pm</b>	<b>2:30pm</b>	Session D2A1-A [Track1]	O'Connor Hall, Room 104
<b>1:00pm</b>	<b>2:30pm</b>	Session D2A1-B [Track2]	O'Connor Hall, Room 106
<b>2:30pm</b>	<b>3:00pm</b>	Break	O'Connor Hall, Room 105
<b>3:00pm</b>	<b>4:30pm</b>	Session D2A2	O'Connor Hall, Room 107
<b>4:30pm</b>	<b>6:00pm</b>	Break	N/A
<b>6:00pm</b>	<b>9:00pm</b>	Banquet /Conference Dinner	Fiorillo's Restaurant 638 El Camino Real Santa Clara, CA 95050

### Main-Conference Schedule

#### Friday, August 16, 2019

<b>7:00am</b>	<b>8:30pm</b>	Breakfast	Benson Memorial Center
<b>8:30am</b>	<b>10:00am</b>	Session D3M1	O'Connor Hall, Room 104
<b>10:00am</b>	<b>10:30am</b>	Break	O'Connor Hall, Room 105
<b>10:30am</b>	<b>12:00pm</b>	Session D3M2	O'Connor Hall, Room 106
<b>12:00pm</b>	<b>1:00pm</b>	Lunch - Buffet	Fess Parker Theater
<b>1:00pm</b>	<b>2:30pm</b>	Symposium, Session D3A1	Fess Parker Theater
<b>2:30pm</b>	<b>4:30pm</b>	Closing Ceremony- Presentation of Certifications to Presenters	Fess Parker Theater

### Post-Conference Schedule

#### Saturday, August 17, 2019

<b>8:00am</b>	<b>2:00pm</b>	San Francisco/ Bay Area Tour	Sign up at registration desk in advance (Wed-Th.)
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## KEYNOTE SPEAKERS – OPENING CEREMONY

### Brian M. Kozy, Ph.D., P.E



Dr. Kozy is a Principal Bridge Engineer for Federal Highway Administration, Headquarters Office of Bridges and Structures (HIBS). He currently leads the HIBS Structural Engineering Team, which aims to identify, advance, and deploy the latest engineering and construction technologies to improve infrastructure performance on a national level. He is a former Professional Associate from HDR Engineering, Inc. and Adjunct Lecturer for the University of Pittsburgh Civil Engineering Department. Dr. Kozy has a rare blend of technical expertise, practical sense, and ability to improve the engineering practice and serve the public to support good stewardship and assure public safety. His technical background is focused in the area of advanced structural engineering; he has performed in-depth doctoral research on the strength and stability of tubular steel structures and on the dynamic behavior of masonry walls using nonlinear finite element analysis and experimental testing. In his current position, Dr. Kozy actively supports AASHTO, TRB, and other technical committees and routinely contributes to advancement in the industry body of knowledge by publishing technical papers and making conference presentations.

### Dr. Kentaro Yamada, Professor Emeritus of Nagoya University



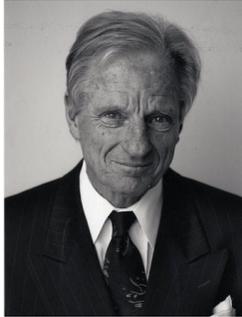
Dr. Kentaro Yamada was born in 1946 in Nagoya, Japan. After he obtained his Master of Engineering in Civil Engineering from Nagoya University, he went to University of Maryland, USA, where he obtained his Ph.D. in 1975.

After he returned to Japan, he worked at Department of Civil Engineering of Nagoya University until his retirement in 2010. Then, he worked as a technical advisor at Central Nippon Highway Engineering Nagoya.

Beside education he was very active in research on steel structures. He carried out stress and vibration measurements of various highway bridges, fatigue tests of welded joints and members, and application of fracture mechanics on fatigue. He was also interested in rehabilitation of aged and damaged steel structures, and restoration of historical steel bridges.

## KEYNOTE SPEAKERS – KEYNOTE PRESENTATION

### Donald MacDonald, FAIA



An internationally recognized architect, Donald MacDonald's bridge design work is evident in such Bay Area landmarks as the Golden Gate Bridge and the San Francisco-Oakland Bay Bridge Eastern Span- as well as outside of his home locale and in existence all over the nation. His vast structural background resulted from studying under renowned structural engineers Mendell Glickman (Frank Lloyd Wright's engineer) and Mario Salvadori (founding partner of Weidlinger Associates in New York and a former Columbia University professor). Owner/Principal of MacDonald Architects for over 40 years, the firm's constant project load has led to such projects as: South Carolina's Cooper River Bridge - North America's largest cable-stayed bridge; the Abraham Lincoln Bridge in Louisville, Kentucky, the Louis and Clark Bridge over the Ohio River in Indiana, and now under construction, the Fountain Bridge in Miami, Florida. Locally, he has worked on the Iron Horse Bridge in Pleasant Hill, the I-80 Bridge in Berkeley, and the Maxwell Bridge in Napa. A graduate from Columbia University, Mr. MacDonald originally left the east to teach architectural design at the University of California-Berkeley. He's been inducted as a Fellow of the American Institute of Architects in Design, as well as the recipient of over 170 International, National, and Regional Bridge Design Awards. Mr. MacDonald's television, radio and print media attention boast a national and international scale. Mr. MacDonald is the author of several books discussing the aesthetics of bridges: *The Golden Gate Bridge: History and Design of an Icon*, *Bay Bridge: History and Design of a New Icon*, and *Tilikum Crossing: Bridge of the People*, Portland.

### Xudong Shao, Ph.D., Professor



Dr. Prof. Xudong Shao is serving as the director of Department of Bridge Engineering, Hunan University, China. He received his Ph.D. degree in 1992 from Hunan University. His research interest is UHPC-based high performance bridge structures. Dr. Shao published over 100 technical papers in journals, including 14 papers in ASCE's *Journal of Bridge Engineering*. He published 5 books, in which the textbook "Bridge Engineering" is the best-seller of textbooks for bridge engineering in China, and he was authorized 23 invention patents. In addition, he won National Scientific and Technological Progress Award (2<sup>nd</sup> grade) once, and Provincial Scientific and Technological Progress Award (1st grade) for three times

## BANQUET SPEAKERS

### Marwan Nader, Ph.D., Eng., P.Eng., P.E



Dr. Marwan Nader is a Senior Vice President and Technical Director at T.Y. Lin International. He has 30 years of expertise in the design and construction of long-span bridges in United States and abroad. Dr. Nader served as the Project Manager and Engineer of Record for the San Francisco-Oakland Bay Bridge Self-Anchored Suspension Span, a landmark and award-winning structure. He is the Design Manager and Engineer of Record for the new Samuel De Champlain Bridge, a major cable-stayed bridge in Montreal that has recently opened to traffic in the summer of 2019. Dr. Nader was inducted into the CEE Academy of Distinguished Alumni Class at UC Berkeley and was the recipient of the 2004 Arthur M. Wellington Prize from ASCE. He is a colleague and friend of Chuck as they worked closely together on the design and construction of the Bay Bridge and many other international projects.

### Alfred R. Mangus, PE.



Mr. Alfred R. Mangus, PE is a civil engineer representing [www.PECG.org](http://www.PECG.org) Professional Engineers in California Government. He envisioned the orthotropic bridge conference in 1992 and recruited other professionals to create this venue via ASCE. Alfred is currently employed by the Federal Government and is a retired bridge engineer from Caltrans with 26.5 years of service. He served 12 years as an ASCE officer and is a life member of ASCE. He holds a PE in Civil Engineering in five states. Mr. Mangus has a Masters of Civil Engineering from the University of California Berkeley and a Bachelor of Architectural Engineering from Penn State University. His professional area of interest is orthotropic steel deck bridges and has published papers on this topic.

# 5OBC Bridge Tour

Directions from SCU Parking, Alviso Street, Santa Clara, CA, USA to SCU Parking, Alviso Street, Santa Clara, CA, USA

**A**

SCU Parking, Alviso Street, Santa Clara, CA, USA

**B**

Golden Gate Bridge

**C**

Alfred Zampa Memorial Bridge, I-80, Vallejo, CA, USA

**D**

Oakland Bay Bridge, San Francisco – Oakland Bay Bridge, San Francisco, CA, USA

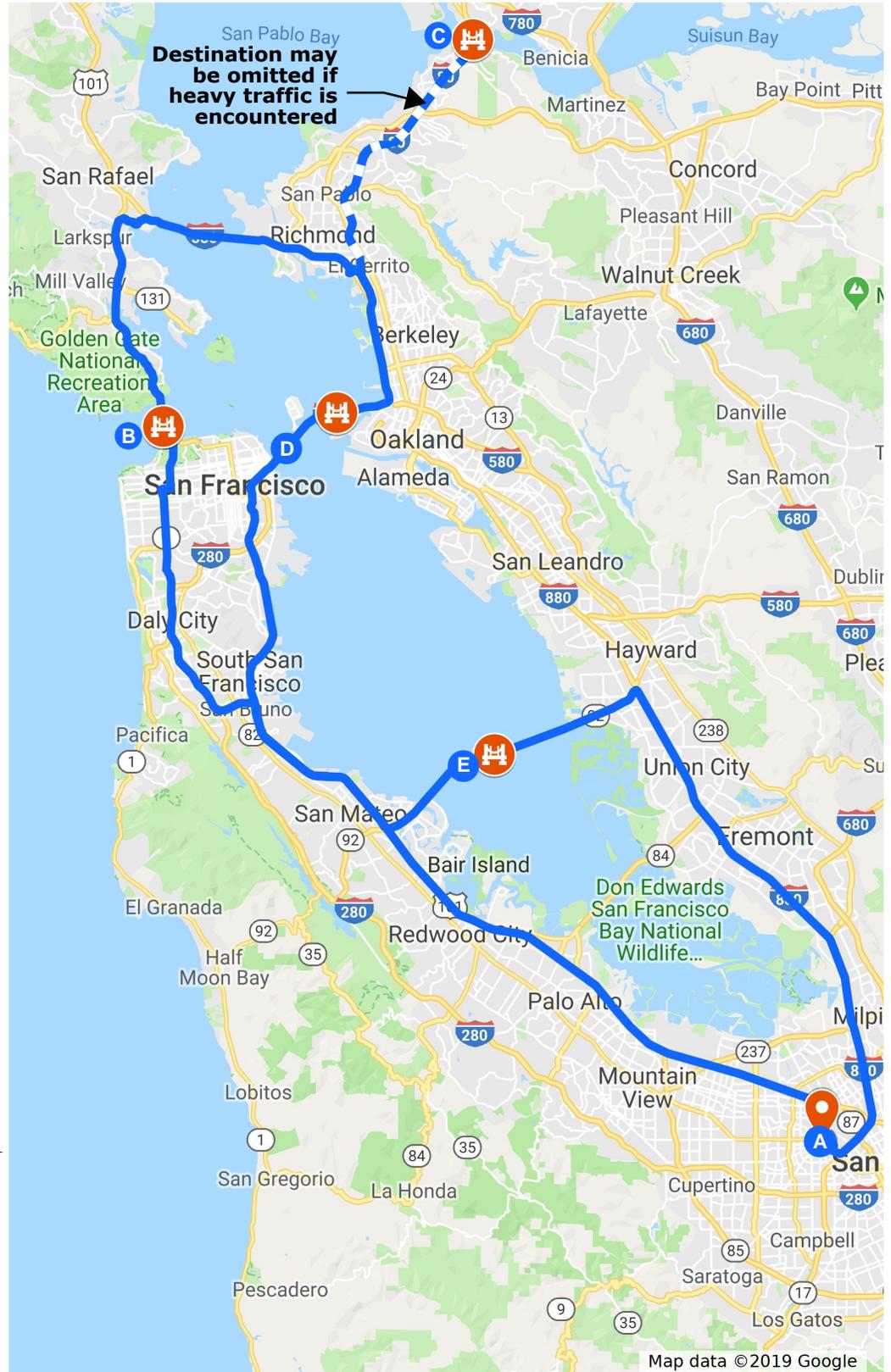
**E**

San Mateo Bridge, Foster City, CA, USA

**A**

SCU Parking, Alviso Street, Santa Clara, CA, USA

**Tentative agenda,  
route subject to  
change per  
request and traffic  
conditions.**



**Wednesday, August 14, 2019 - Friday, August 16, 2019**

8:30am - 4:00pm	<b>Registration</b>	Fess Parker Theater
8:30am - 4:00pm	<b>Exhibitors</b>	O'Connor Hall, Room 105
8:30am - 4:00pm	<b>Break Room for Presenters</b> (test room with a projector)	O'Connor Hall, Room 110

**Day 1, Wednesday, August 14, 2019**

**GENERAL SESSION**

**8:30am - 9:30am Breakfast**

Lobby, Fess Parker Theater

**9:30am - 12:00pm Opening Ceremony**

Fess Parker Theater

**Moderator:**

Dr. Amin Ghafooripour, PE, Department of Civil Engineering, Santa Clara University, USA

**Welcome Message:**

- The Honorable Lisa M. Gillmor, Mayor of the City of Santa Clara, USA
- Edward J. Thometz (Founder of SEI of ASCE -San Francisco Chapter, Caltrans) and Ajay Sehgal (Caltrans), Co-Chairs of the conference
- Phoebe Cheng, Chair of the SEI, San Francisco Chapter
- Professor Edwin P. Maurer, Head of the Civil Engineering Department at Santa Clara University, USA
- Dr. Amin Ghafooripour (Santa Clara University) and Dr. Lian Duan (Caltrans), Co-Chairs of the Scientific Committee

**Keynote: Developments in Orthotropic Steel Decks in the U.S.**

Dr. Brian Kozy, P.E., Principal Engineer, FHWA, USA

**Keynote: Recent Development of Fatigue Design and Crack Repair of Steel Orthotropic Decks in Japan**

Dr. Kentaro Yamada, Technical Advisor, Central Nippon Highway Engineering Nagoya, Co. Ltd.,

**12:00pm - 1:00pm Lunch**

Atrium, Benson Memorial Center

1:00pm - 2:30pm

O'Connor Hall  
Room 106

## Session D1A1 Recent Development, New Ideas, and State of the Art on Orthotropic Bridges

**Moderator:**

Dr. Zhaoshuo Jiang, P.E., LEED AP, Assistant Professor of Civil Engineering, San Francisco State University

**A-USA-10: Open Rib Orthotropic Decks – History and Recent Development**

Qi Ye, Liwei Han, Dan Wei, and Brian Gill, CHI Consulting Engineers, USA

**A-USA-41: Wind Analysis of Long-span Bridges Using Computational Fluid Dynamics**

Alexej Goering, and Rubina Ramponi, ARUP Inc., USA

**A-USA-20: Military Tank Live Load Distribution Factor on Composite Steel Decks**

Dr. Amin Ghafooripour, Fatemeh Mostofi, Santa Clara University, Padir Consulting Engineers, USA

2:30pm - 3:00pm

O'Connor Hall  
Room 105

## Break

3:00pm - 4:30pm

O'Connor Hall  
Room 104

## Session D1A2 Recent Development, New Ideas, and State of the Art on Orthotropic Bridges

**Moderator:**

Dr. Hisham Said, Associate Professor of Civil Engineering, Santa Clara University, USA

**A-USA-15: Design and Fabrication Against Root Cracking in Orthotropic Bridge Deck with Filled Floor Beams**

Sougata Roy, The State University of New Jersey, USA

**A-USA-40: Verrazano Bridge Orthotropic Deck Advancements in Design and Construction**

Dyab Khazem, Aris Stathopoulos, Carl Redmond, Piv Lim, Raul Carhuayano, and Peter Chang, Parsons Inc., USA

**B-USA-21: Epoxy Asphalt Waterproofing Membrane and Open-Graded Wearing Course System for Accelerated Deck Construction**

Can Chen, John Bors, and Yao Bo, Chem Co. USA

**Day 2, Thursday, August 15, 2019**

**7:00am - 8:30am Breakfast**

Benson Memorial Center

**8:30am - 10:00am Session D2M1: Analysis and Design**

O'Connor Hall

Room 104

**Moderator:**

Dr. Kentaro Yamada, Technical Advisor, Central Nippon Highway Engineering Nagoya, Co. Ltd., Japan

***J-CND-33: Orthotropic Steel Deck for Short Span Bridges Rehabilitation***

Frédéric Bergeron, Éric Lévesque, Maxime Ampleman, Canam Bridges Canada Inc., Canada

***J-USA-34: Finite Element Analysis and Full-Scale Laboratory Tests of Rib-to-Floor Beam Connections with Potential for Automated Fabrication***

Joseph Saunders, Yixin Chen, Jayne A. Marks, Ian Hodgson, Richard Sause, Leigh University, USA

***A-CHN-1: Basic Performance of Steel-UHPC Lightweight Composite Deck with Ultra-Short Headed Studs***

Junhui Cao, Xudong Shao, Ligu Wang, Yang Wang, and Meng Li, Hunan University, China

***A-CHN-2: Research on Mechanical Performance of Innovative Open-Rib Orthotropic Steel Deck with Transverse Connections***

Chuan Wei, Yizhi Bu, Qinghua Zhang, Gongyi Xu, and Xing Gao, Southwest Jiaotong University, China

**10:00am - 10:30am Break**

O'Connor Hall

Room 105

**10:30am - 12:00pm Session D2M2-A [TRACK1]: Keynote Presentation**

O'Connor Hall

Room 107

**Moderator:**

Ajay Sehgal, Co-Chair of the Conference; California Department of Transportation, USA.

***Designing Signature Bridges***

Donald MacDonald, FAIA, Bridge Architect, USA

***A-CHN-19: Recent Development of Innovative UHPC Lightweight Composite Steel Orthotropic Decks in China***

Xudong Shao, Lu Deng, Junhui Cao, Yang Wang, Jia Li, Hunan University, China

**10:30am - 12:00pm Session D2M2-B [TRACK2]: Stress and Fatigue Analysis**

O'Connor Hall  
Room 106

**Moderator:**

Brian Kehoe, SE, Associate Principal, Wiss, Janney, Elstner Associates, Inc., USA.

***A-BLG-3: Experimental Study of Structural Hot Spot Stress of Rib-to-Deck Joint in Orthotropic Steel Bridge Deck***

Nouman Iqbal, Heng Fang, Evy Van Puymbroeck, Hans De Backer, Ghent University Belgium

***A-CHN-6: Reasonable Weld Size and Fatigue Performance of Innovative Both-Side Welded Rib-To-Deck Joint***

Daoyun Yuan, Qinghua Zhang, Lin Xiao, Gongyi Xu, Xing Gao, Southwest Jiaotong University, China

***A-CHN-13: Fatigue Reliability Evaluation of Lightweight Steel-Uhpc Composite Deck System Considering Effect of Dynamic Vehicle Loading***

Shengquan Zou, Lu Deng, Xudong Shao, Hunan University, China

***A-HOL-18: Fatigue analysis of rib-to-deck welded joint in OSDs using linear elastic fracture mechanics***

Weijian Wu, Henk Kolstein, Milan Veljković, Delft University of Technology, Netherlands

**12:00pm - 1:00pm Lunch**

Atrium, Benson Memorial Center

**1:00pm - 2:30pm Session D2A1-A [TRACK1]: Workshops**

O'Connor Hall  
Room 104

**Moderator:**

Dr. Brian Kozy, P.E., Principal Engineer, FHWA, USA and Dr. Lian Duan, P.E., Steel Committee Chair; California Department of Transportation, USA

***Latest Developments in Orthotropic Steel Decks in the U.S***

- Dr. Brian Kozy, P.E., Principal Engineer, FHWA, USA
- Dr. Wang, P.E., Senior Bridge Engineer, FHWA.
- Dr. Robert Connor, Professor, Purdue University, USA
- Dr. Richard Sauce, Professor, Leigh University, USA

**1:00pm - 2:30pm**

O'Connor Hall  
Room 106

**Session D2A1-B [TRACK2]: Construction Methods, New Manufacturing Methods , and Case Studies**

**Moderator:**

Dr. Amin Ghafooripour, PE, Department of Civil Engineering, Santa Clara University, USA

**A-USA-5: Constructible Orthotropic Deck Details for The Throgs Neck Bridge**

Courtney Clark, Samuel Summerville, Qi Ye, Edmond Knightly, Yimin Chen, CHI Consulting Engineers, USA

**F-USA-31: Orthotropic Deck Manufacturing – Meeting Requirements Through Advanced Techniques and Robotics**

Terry Logan, Vice President, Atema, Inc., USA

**A-USA-11: Open Rib Orthotropic Decks for The Queensboro Bridge**

George Pappas, Brian Gill, Qi Ye, P.E. CHI Consulting Engineers, USA

**F-USA-29: Cold Roll Forming- New Technology for the Manufacturing of Structural Components**

Daniel Stancescu, P.Eng, Samuel &Son, Co., USA

**2:30pm - 3:00pm**

O'Connor Hall  
Room 105

**Break**

**3:00pm - 4:30pm**

O'Connor Hall  
Room 107

**Session D2A2**

**Moderator:**

Dr. Amin Ghafooripour, PE, Department of Civil Engineering, Santa Clara University, USA

**Seismic Design of Steel Highway Bridges in California**

Dr. Lian Duan, P.E., Steel Committee Chair, California Department of Transportation, USA

**4:30pm - 6:00pm**

N/A

**Break**

**6:00pm - 9:00pm**

Fiorillo's Restaurant  
638 El Camino Real  
Santa Clara, CA 95050

**Banquet / Conference Dinner**

**Moderator:**

Edward J. Thometz, Founder of SEI of ASCE -San Francisco Chapter, Co-Chair of the Conference, California Department of Transportation

**Presentation in the Honor and Commemoration of California Long-Span Bridge Expert Charles "Chuck" Seim (1925-2019)**

Marwan Nader, Ph.D., Eng., P.Eng., P.E., T.Y. Lin International, Ajay Sehgal, and Alfred Mangus

**Day 3, Friday, August 16, 2019**

**7:00am - 8:30am Breakfast**

Benson Memorial Center

**8:30am - 10:00am Session D3M1: Inspection, Damage Detection, and Retrofit**

O'Connor Hall

Room 104

**Moderator:**

Professor Connor Robert, Purdue University, USA and Ajay Sehgal, Co-Chair of the Conference, California Department of Transportation, USA

**A-JPN-16: Fatigue Life Evaluation for Cracks Around Welded Joint Between Deck Plate and U-Shaped Rib**

Susumu Inokuchi, Manabu Okumura, Shunichi Katano, Nobuhiko Hayashi, Japan Bridge Association, Japan

**C-JPN-29: Effective Inspection for Orthotropic Decks in Expressway Applying Crack Detection Vehicle "Mitsukeukun-K"**

Wataru Nabeshima, Shigeaki Tsukamoto, Hanshin Expressway Engineering Co. Ltd., Japan

**C-USA-38: Variability in Acoustic Properties of A709 Grades of Steel and UT Variability**

Connor Robert, and Schroeder Curtis, Purdue University, USA

**C-JPN-26: Retrofitting of OSD By Using SFRC**

Kentaro Yamada, and Toshiyuki Ishikawa, Central Nippon Highway Engineering Nagoya, Co. Ltd., Japan

**10:00am - 10:30am Break**

O'Connor Hall

Room 105

**10:30am - 12:00pm Session D3M2: Study on the Behavior of the Bridge Components**

O'Connor Hall

Room 106

**Moderator:**

Dr. Payman Khalili Tehrani, PE, SC Solution Inc. and Dr. Lian Duan, P.E., Steel Committee Chair, California Department of Transportation, USA

**G-USA-32: Modeling and analysis of Orthotropic Stiffened Panels Under Monotonic and Cyclic Demands**

Payman Khalili Tehrani, Eric Abrahamson, Alex Krimatot, SC Solutions, USA

**A-CHN-8: Study of Mechanical Characteristics of Plate and Box Girder in Long Span Railroad Cable Stayed Bridges**

Jun-Qing Lei, Zu-Wei Huang, Shu-Lun Guo, China

**A-JPN-14: Analytical Study on Local Stress of The Upper End of Vertical Stiffener**

Shiro Saito, Daisuke Uchida, Teruo Ogasawara, Kotaro Miyayama, Motoshi Yamauchi. Japan Bridge Association, Japan

**C-JPN-28: Propagation Behavior of Deck Plate Cracks in Existing Orthotropic Deck Bridges**

Shigeyuki Hirayama, Masumi Murano, Jun Murakoshi, Kosaku Kubota, Akihiro Takahashi, Takeo Irie, Highway Technology Research Center, Japan

12:00pm - 1:00pm  
Fess Parker Theater

**Lunch, Buffet**

1:00pm - 2:30pm  
Fess Parker Theater

**Symposium D3A1: The Future of Orthotropic Bridges in the US and the World, Challenges and Suggestions for Future Research**

**Moderator:**

Dr. Amin Ghafooripour, PE, Department of Civil Engineering, Santa Clara University, USA

**Standard Manufacturable Orthotropic Bridge Deck**

Sougata Roy, The State University of New Jersey, USA

**Round table and open discussions for all experts, authors and attendees: to exchange the ideas, experiences and suggest a road map for the future OBCs and researches**

Main Topics

- Current problems and questions that must be addressed in future investigations.
- Fatigue and welding problems.
- Pavement advancements and problems.
- Current design advancement requirements.
- Construction procedures.
- Conclusion.

**Coordinator Panel:**

- Construction: Ajay Sehgal, Edward J. Thometz,
- Construction Management and Green Design: Dr. Hisham Said
- Design: Professor Reynaud Serrette, Dr. Sougata Roy, Dr. Lian Duan, Dr. Payman Khalili Tehrani, and Dr. Amin Ghafooripour, Dr. Brian Kozy, Dr. Kentaro Yamada, Dr. Xudong Shao

2:30pm - 4:30pm  
Fess Parker Theater

## **Closing Ceremony & Presentation of Certifications to the Presenters**

***Moderator:***

Dr. Amin Ghafooripour, PE, Department of Civil Engineering, Santa Clara University, USA

***Closing Ceremony***

- Final remarks: Edward J. Thometz, Ajay Sehgal, and Prof. Reynaud Serrette
- Calling of the names: Dr. Amin Ghafooripour
- Handing the certificates: Edward J. Thometz, Ajay Sehgal, Dr. Lian Duan
- Closing Remarks on the next OBC

**Day 4, Saturday, August 17, 2019**

8:00am - 2:00pm

## **San Francisco / Bay Area Tour**

***Sign-up (Wednesday – Friday) at registration desk for further information***

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Thank you all who made this conference possible!

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#### SPECIAL THANK YOU

- Melanie Massie, Senior Administrative Assistant, Applied Math, Civil Engineering, and Engineering Management Departments, Santa Clara University
- Ken Miles, Administration, ASCE San Francisco Section
- Ashley Burke, Administration, ASCE San Francisco Section
- Anna Heider, Student Assistant, Applied Math, Civil Engineering, and Engineering Management School of Engineering, Santa Clara University
- Victor Romo, Student, Civil and Environmental Engineering, San Jose State University
- All the volunteers

#### EXHIBITORS

- Smith – Emery
- Kwik Bond Polymers
- ChemCo Systems
- SEI- SF



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SANTA CLARA UNIVERSITY  
SCHOOL OF ENGINEERING  
CIVIL, ENVIRONMENTAL, AND SUSTAINABLE  
ENGINEERING DEPARTMENT



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**CLOCKWISE:**

- Golden Gate Bridge
- Alfred Zampa Memorial Bridge
- San Mateo Bridge
- Oakland Bay Bridge



# Emergency Procedures

To better prepare yourself in the case of an emergency please review the following procedures:  
(More Emergency info at [www.scu.edu/emergency](http://www.scu.edu/emergency))

## BUILDING EVACUATION

- Safely stop your work
- If time allows, take personal belongings and ID, otherwise leave all belongings and get out.
- Close doors and windows if possible. **DO NOT LOCK**
- Assist others who are impaired
- Use nearest stairs and exit if safe, otherwise use alternate route. **DO NOT USE ELEVATOR**
- Proceed to the Emergency Assembly Point for your building (Emergency Assembly Points are indicated on Evacuation Maps posted throughout the building)
- Wait for further instructions from emergency responders
- **DO NO RE-ENTER** the building until instructed by authorities
- For a campus-wide disaster, Faculty and Staff report to your Department, Resident Students report to their Residence Hall (then Leavey if uninhabitable), Non-Resident Students report to Leavey and anyone needing shelter report to Leavey

## LOCKDOWN

*If there is advance warning of a potentially dangerous situation where being outside may put you at risk (e.g. nearby chemical release or shots fired)*

- **FIND ENCLOSED PROTECTION**—go into nearest building and stay inside
- Get others out of hallways and into rooms. Close all doors and windows
- Keep alert for further instructions from emergency responders

## MEDICAL EMERGENCY

- For serious injury or illness call **911** otherwise call Campus Safety at **408-554-4444 (x4444)**
- **DO NOT MOVE** the injured unless danger is present

## FIRE

- **PULL FIRE ALARM**
- **EVACUATE.** Keep low and cover your face
- **TEST** exit doors for heat, if hot **DO NOT OPEN** and use alternate route
- Close doors behind you. **DO NOT LOCK**

## HAZARDOUS MATERIAL

- Contact Campus Safety at 408-554-4444 (x4444) to report type and location of spill
- **ASSIST CONTAMINATED VICTIMS** to a safety shower/eyewash. Use personal protective equipment to avoid contact
- As needed, notify others in the vicinity to evacuate
- If needed, pull fire alarm to evacuate the building—evacuate upwind/uphill to a safe location

## CRIMINAL OR VIOLENT BEHAVIOR

- **DO NOT CONFRONT**
- Contact Campus Safety at 408-554-6821 (x4444) or go to any Blue Phone and push the red button
- Report the location and description of person(s) involved

## EXPLOSION

- **EVACUATE** upwind/uphill if possible to a safe location
- **DO NOT RE-ENTER** the building until instructed by authorities

## BOMB THREAT

- **EVACUATE.** Be observant and report suspicious objects to authorities. **DO NOT HANDLE**
- Do not touch light switched or open doors/cabinets
- Keep away from automobiles
- Leave windows and doors open

## ACTIVE SHOOTER

For immediately dangerous situations be aware of your surroundings and immediately take action. Three words to remember are **RUN, HIDE** or **FIGHT**.

### IF OUTDOORS:

- **RUN** off campus or seek cover
- Prevent others from entering the danger zone
- When safe, call 911 and report the incident

### IF INDOORS:

- Get inside a room that can be locked or barricaded
- Secure the door (lock, barricade, wedge, strap, etc.)
- Cover windows and turn off lights
- Stay on floor behind an interior barricade offset from the door or **HIDE** the best you can
- Turn phones to vibrate and check frequently for Campus Alert
- Call 911 if you know the location, description or identity of the shooter(s)
- Remain calm and prepare for an evacuation
- As a last resort, use improvised weapons and **FIGHT**

## EARTHQUAKE

### IF INDOORS: DROP, COVER and HOLD

- **DROP** to the ground; take **COVER** under a sturdy table or desk and **HOLD** on until the shaking stops.
- If there is no table or desk nearby cover your face and head with arms and crouch in an inside corner of the building
- Minimize your movements and stay where you are until the shaking has stopped and you are sure exiting is safe
- Stay away from glass, windows, outside doors and walls. Also avoid internal items that could fall or shift like light fixtures and furniture
- **DO NOT** exit until the shaking subsides
- **DO NOT** use elevators

*NOTE—Electricity may go out and sprinkler system or fire alarms may activate*

### IF OUTDOORS:

- Remain outdoors and move away from any buildings, streetlights and utility wires
- Get low to the ground and stay there until shaking stops

*NOTE—The greatest danger is directly outside building at exits and along exterior walls.*

### Emergency Phone Numbers:

Police, Fire, Paramedics—911  
Campus Emergency—408-554-4444 (x4444)  
Utility Failure—408-554-4444 (x444)

### Enroll in SCU Campus Alert!

SCU Campus Alert is the University's mass notification system for communication during an emergency. Receive alerts via email, phone and text. Enroll in eCampus today!

## How to be Prepared

The American Red Cross recommends a 3 step approach to emergency preparedness:

<b>Get a Kit</b>	All SCU Faculty, Staff and Students should have <u>at least 3-days</u> of emergency supplies in an easy to carry kit. Stock one for your car, office or resident hall room. We've arranged for a 25% discount on emergency kits from a vendor you can access at <a href="http://www.scu.edu/emergency">www.scu.edu/emergency</a> The Red Cross and other organizations sell emergency kits as well or you can build your own based on the information at <a href="http://www.redcross.org">www.redcross.org</a>
<b>Make a Plan</b>	You should know at least two evacuation routes and your building emergency assembly point to report to after an evacuation. You should have an out of area/state contact number where you can call to leave a status report. All people without an emergency response role are expected to leave the campus following a major emergency. Those that cannot leave the campus should report to Leavey Center for emergency shelter. Additional details are found in the Emergency Procedures (on the other side of this page).
<b>Be Informed</b>	You should review the Emergency Procedures (on the other side of this page) and be prepared to contact emergency response personnel if the emergency warrants it. You should also sign up for the SCU Campus Alert System (at <a href="#">eCampus</a> ) that provides emergency information to four phone numbers and two email addresses.

For more information about the three steps to preparedness, go to [www.redcross.org](http://www.redcross.org)

For more information regarding SCU's emergency preparedness, go to [www.scu.edu/emergency](http://www.scu.edu/emergency)

## SCU Emergency Contact Card

**Directions:**

- Print a card each for you and others that need your emergency information
- Complete the emergency contact information (last three lines)
- Carry this card as reference in the event of a disaster or other emergency

<b>SANTA CLARA UNIVERSITY</b> <b>Emergency Contact Card</b>
<b>Police:</b> Call 9-1-1 or for non-emergencies: 408-615-4700
<b>Fire Dept:</b> Call 9-1-1 or for non-emergencies: 408-615-5580
<b>Ambulance:</b> Call 9-1-1
<b>Poison Control Center:</b> 800-222-1222
<b>SCU Campus Safety:</b> 408-554-4444 or for non-emergencies: 408-554-4441
<b>Health Care Provider:</b>
<b>Out-of-Area Contact Person/Number:</b>
<b>Person/Number to text in an emergency:</b>

## WiFi Network for Guests

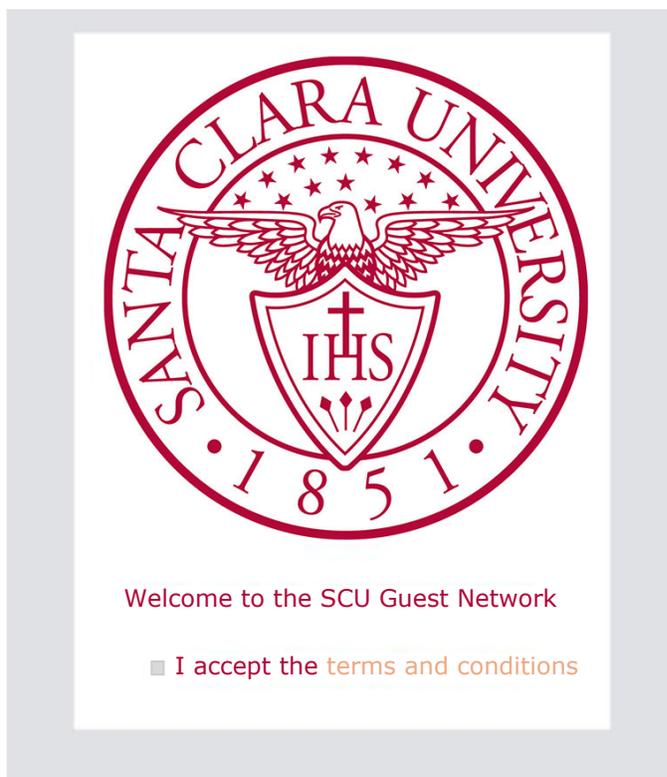
The SCU-Guest network is to allow visitors to our campus to acquire WiFi access without needing to supply an access code, logon ID, or password. It has the same protections and risks as using any public WiFi network.

This is an Internet-only, unsecured network with metered bandwidth per user. SCU-Guest has been built to provide adequate bandwidth to allow guests to check their email or calendars, and for normal Internet browsing activities

Faculty, staff, and students should use our high-speed secured networks SCU-Student or SCU-Employee, instead of SCU-Guest.

### Connect to SCU- Guest

1. Choose the SCU-Guest network from the list of available networks.
2. Using a browser, navigate to any web page to load the login page. Click on the "terms and conditions" link to review SCU's policy to use this network.



3. Close the policy, and click the box to agree to those terms and conditions..
4. Browse the internet!



Park here

Fess Parker Theater is inside Mayer Theater

8am-8pm

11am-4pm

Ask for Conference Parking Permit

Main Office: 408-554-4441  
 Emergency: 408-554-4444  
 campussafety@scu.edu

Lunch/Breakfast

SYMBOLS	
Zipcar Location	Z
EV Charging Station	E
Emergency Phone	J
Sustainable Features	S
Pay Station	PS
Bike Share	Bicycle icon
50BC Venue	Yellow box
Tourist Destination	Blue box
Tourist Destination	Blue outline box
Car Route	Black line
Walking Route	Dashed black line