In Memorial to Port Mann Bridge

THIRD ORTHOTROPIC BRIDGE CONFERENCE 2013

Conference Program
Welcome to the Third Orthotropic Bridge Conference
in Sunny California

We are fortunate to belong to the community that builds long span bridges. Orthotropic bridges are not only a monument to innovation and progress, but their sheer size makes them a majestic part of the skyline within the community where they are constructed. This conference builds upon the successes of the previous meetings in 2004 and 2008. Each meeting has provided valuable guidance in the development of this area of bridge engineering.

This conference will feature a workshop which will introduce the new FHWA Orthotropic Bridge Manual. This manual was, in part, influenced by input from many experts in public and private practice received at our 2004 and 2008 meetings. This is a shining example of partnership between the public sector and industry that has promoted innovation in the field of bridge design, construction and maintenance.

This program is a result of hard work by a committed team of volunteers, sponsors and authors of many fine papers and presentations that you will be enjoying during this week. Let’s continue to work together during this conference to once again make a positive step forward for design, construction and maintenance of orthotropic steel bridges!

Have a great conference during your stay in sunny California, consigning all your cares to the natural beauty and wind swept bay not too far from Sacramento!

Sincerely,

Alfred Mangus, Co-Chair
3rd Orthotropic Bridge Conference

Ajay Sehgal, Co-Chair
3rd Orthotropic Bridge Conference
You are invited to attend the Third International Orthotropic Bridge Conference, hosted by the Capital Branch, Sacramento Section of ASCE and the ASCE Structural Engineers Institute. Some of the world’s foremost orthotropic bridge engineers will be meeting at the Sacramento Grand Sheraton Hotel during June 24 - 28, 2013. The week will be packed with interesting technical presentations, workshops, technical tours, new methods and products, and opportunities to network. To register, please visit www.orthotropic-bridge.org.

The Federal Highway Administration (FHWA) has retained nine International experts to write the FHWA Orthotropic Bridge Manual. These experts will give a six-hour workshop to provide participants with an overview of this manual on Tuesday, June 25, 2013, an opportunity to improve your steel design skills, and receive training on this type of steel bridge.

Schedule:

Mon 24: International Workshop - 8 hours of presentations of orthotropic technologies from Belgium, Britain, China, Germany, Japan, Norway, and Russia.

Reception Tuesday Evening after Workshop - Meet ASCE Past-President, Andy Hermann.

Tuesday Night - Presentations and Discussions for Creating Orthotropic Standards

Wed 26 - Fri 28: Orthotropic Bridge Conference

Wed 26: Opening Comments - 8:00 - 8:15 AM
International Bridges - 8:15 - 11:40 AM
Luncheon Keynote Speaker: Dyab Khazem - 11:40-1:00 PM
Rehabilitation; Fatigue Design - 1:00 - 2:40 PM
Wearing Surface; Fatigue Testing - 3:10 - 4:50 PM

Wednesday Night - Committee Discussion - 7:00 - 9:00 PM

Thur 27: Fabrication; Fatigue Design - 8:00 - 9:55 AM
Wearing Surface; Fatigue Design - 10:20 - 12:00 PM
Luncheon Keynote Speaker: Andrew Herrmann
Presentation of Lifetime Achievement Award to Roman Wolchuk
Rehabilitation; Fatigue Design & Analysis - 1:00 - 2:40 PM
Design; Fabrication & Monitoring - 3:10 - 5:15 PM

Thursday Evening - Bus Tour of San Francisco/Oakland, SAS and Alfred Zampa Bridges

Fri 28: San Francisco/Oakland Bay Bridge - SAS 1 - 8:00 - 9:45 AM
San Francisco/Oakland Bay Bridge - SAS 2 - 10:10 - 11:15 AM
morning session concludes the conference.

Friday Afternoon - Alternative Lateral Load Resisting Steel Systems Workshop

Tours:

Sat 29: Optional Bus Tour of Bay Area Bridges
Sun 30: Optional Boat Tour of San Francisco Bay Area Bridges

To register, please visit www.orthotropic-bridge.org. We hope that you will join us.

2013 Sponsors

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Past Chairs: Alfred R. Mangus, PE
Natalie E. Calderone, PE
Matthew Socha, PE
Office Staff: Vivian Mevorah

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Branch President: Mario Carreón, PE
Editors: Craig A. Copelan, PE
Lian Duan, PhD, PE

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Mr. Simon Blank Dr. Khaled Mahmoud
Dr. Michel Bruneau Mr. Ronald Medlock
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Dr. Yan Gao Dr. Chia-Ming Uang
Dr. Zongyu Gao Dr. ChunSheng Wang
Dr. Susumu Inokuchi Mr. Roman Wolchuk
Dr. Björn Isaksen Dr. Kentaro Yamada
Mr. Dyab Khazem Dr. Eiki Yamaguchi
Mr. Charles King Mr. Xigang Zhang
Mr. Brian Kozy Dr. Y. Edward Zhou

More Sponsors and Vendors desired: https://www.facebook.com/OBC2013

# Agenda

## Monday, June 24, 2013

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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:00 am to 9:00 am</td>
<td>Registration for International Workshop</td>
<td>Tofanelli Room</td>
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<tr>
<td>8:00 am to 5:00 pm</td>
<td>International Workshop</td>
<td>Tofanelli Room</td>
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## Tuesday, June 25, 2013

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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tr>
<td>7:00 am to 9:00 am</td>
<td>Registration for FHWA Workshop</td>
<td>Camellia Foyer</td>
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<tr>
<td>8:00 am to 11:30 am</td>
<td>FHWA Workshop - Morning Session</td>
<td>Camellia Room</td>
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<tr>
<td>11:30 am to 1:30 pm</td>
<td>Lunch - Sponsored by AZZ Galvanizing</td>
<td>Magnolia Room</td>
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<tr>
<td>1:30 pm to 5:00 pm</td>
<td>FHWA Workshop - Afternoon Session</td>
<td>Camellia Room</td>
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<tr>
<td>5:30 pm to 7:30 pm</td>
<td>Reception for Honored Guest ASCE Past President Andy Herrmann - Sponsored by ASCE Capital Branch</td>
<td>Magnolia Room</td>
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<tr>
<td>7:30 pm to 9:30 pm</td>
<td>Concept for Creating ASCE Orthotropic Standards</td>
<td>Camellia Room</td>
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## Wednesday, June 26, 2013

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>7:00 am to 9:00 am</td>
<td>Registration</td>
<td>Magnolia Foyer</td>
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<tr>
<td>7:00 am to 8:00 am</td>
<td>Continental Breakfast in Vendor Hall</td>
<td>Magnolia Room</td>
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<tr>
<td>8:00 am to 8:15 am</td>
<td>Welcome Remarks</td>
<td>Camellia Room</td>
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<tr>
<td>8:15 am to 9:30 am</td>
<td>International Bridges 1</td>
<td>Camellia Room</td>
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<tr>
<td>9:30 am to 10:00 am</td>
<td>Morning Break in Vendor Hall</td>
<td>Magnolia Room</td>
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<tr>
<td>10:00 am to 11:40 am</td>
<td>International Bridges 2</td>
<td>Camellia Room</td>
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<tr>
<td>11:40 am to 1:00 pm</td>
<td>Lunch in Vendor Hall Keynote Address: Dyab Khazem</td>
<td>Magnolia Room</td>
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<tr>
<td>1:00 pm to 2:40 pm</td>
<td>Rehabilitation 1</td>
<td>Tofanelli Room</td>
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<td>Fatigue Design 1</td>
<td>Bataglieri Room</td>
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<tr>
<td>2:40 pm to 3:10 pm</td>
<td>Afternoon Break in Vendor Hall</td>
<td>Magnolia Room</td>
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<tr>
<td>3:10 pm to 4:50 pm</td>
<td>Wearing Surface 1</td>
<td>Tofanelli Room</td>
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<td>Fatigue Testing</td>
<td>Bataglieri Room</td>
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<tr>
<td>7:00 pm to 9:00 pm</td>
<td>Open Orthotropic Committee Discussion</td>
<td>Bataglieri Room</td>
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<tr>
<td>Time</td>
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<td><strong>Thursday, June 27, 2013</strong></td>
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<td>7:00 am to 9:00 am</td>
<td>Registration</td>
<td>Magnolia Foyer</td>
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<td>7:00 am to 8:00 am</td>
<td>Continental Breakfast in Vendor Hall</td>
<td>Magnolia Room</td>
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<td>8:00 am to 9:55 am</td>
<td>Fabrication 1</td>
<td>Tofanelli Room</td>
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<td>Fatigue Design 2</td>
<td>Bataglieri Room</td>
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<td>9:55 am to 10:20 am</td>
<td>Morning Break in Vendor Hall</td>
<td>Magnolia Room</td>
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<td>10:20 am to 12:00 pm</td>
<td>Wearing Surface 2</td>
<td>Tofanelli Room</td>
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<td>Fatigue Design 3</td>
<td>Bataglieri Room</td>
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<tr>
<td>12:00 pm to 1:00 pm</td>
<td>Lunch in Vendor Hall</td>
<td>Magnolia Room</td>
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<td>Keynote Address: Andrew Herrmann</td>
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<tr>
<td>1:00 pm to 2:40 pm</td>
<td>Rehabilitation 2</td>
<td>Tofanelli Room</td>
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<td>Fatigue Design 4 and Analysis</td>
<td>Bataglieri Room</td>
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<tr>
<td>2:40 pm to 3:10 pm</td>
<td>Afternoon Break in Vendor Hall</td>
<td>Magnolia Room</td>
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<td>3:10 pm to 4:45 pm</td>
<td>Design</td>
<td>Tofanelli Room</td>
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<td>Fabrication 2 and Monitoring</td>
<td>Bataglieri Room</td>
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<tr>
<td>5:15 pm to 11:00 pm</td>
<td>Bus Tour of SFO/OAK SAS, and Alfred Zampa Bridge</td>
<td>Meet in Hotel Lobby</td>
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<td>Note: Please arrive early - boxed dinner will be provided</td>
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<td><strong>Friday, August 29, 2008</strong></td>
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<td>7:00 am to 9:00 am</td>
<td>Registration</td>
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<td>7:00 am to 8:00 am</td>
<td>Continental Breakfast in Vendor Hall</td>
<td>Magnolia Room</td>
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<td>8:00 am to 9:45 am</td>
<td>SFOBB – SAS 1</td>
<td>Camellia Room</td>
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<td>9:45 am to 10:15 am</td>
<td>Morning Break in Vendor Hall</td>
<td>Magnolia Room</td>
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<td>10:15 am to 11:15 am</td>
<td>SFOBB – SAS 2</td>
<td>Camellia Room</td>
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<tr>
<td>11:15 am to 12:00 pm</td>
<td>Open Panel Discussion / Closing Remarks</td>
<td>Camellia Room</td>
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<td>1:00 pm to 6:00 pm</td>
<td>Lateral Load Resisting Steel Systems Workshop</td>
<td>Camellia Room</td>
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<td><strong>Saturday, June 29, 2013</strong></td>
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<tr>
<td>9:30 am to 10:00 pm</td>
<td>Tour of Northern California Orthotropic Bridges</td>
<td>Meet in Hotel Lobby</td>
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<td><strong>Sunday, June 30, 2013</strong></td>
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<tr>
<td>12:00 pm to 6:00 pm</td>
<td>Boat Tour of the East Spans SAS &amp; Golden Gate Bridge</td>
<td>Meet in Hotel Lobby</td>
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Monday - June 24th — International Workshop
Moderator: Bob Luscombe

8hrs of presentations of orthotropic technologies from Belgium (high speed rail bridges), Britain, China, Germany, Japan, Russia and Norway. Cost includes workshop only (meal not included)

Prof. dr. ir. Philippe Van Bogaert – Prof. Van Bogaert obtained his civil engineering master degree and doctorate PhD from Ghent University and is currently working as senior full professor with Ghent University and Head of Design Department with TUC RAIL Ltd, Brussels. He has worked for 38 years in bridge design and construction and designed some 35 long and medium-span steel bridges, various composite viaducts and bored tunnels, mainly for the high-speed railway network in Belgium and abroad. His main research themes are fatigue of orthotropic plated decks, curved bridge girder panels, steel plate stiffening, steel arch stability and tubular structures. He is national group chair and chair of the Scientific Committee for IABSE Rotterdam 2013 conference and has contributed to various conferences and journals.

Mr. Heinz Friedrich is deputy head of the section “steel construction, corrosion protection” in the Federal Highway Research Institute (BASl), Germany. He received his diploma in Civil Engineering (Dipl.-Ing.) from the Technical University Munich (TUM) in 1998. He is involved in numerous research projects with the focus on retrofitting-methods for orthotropic bridges. He is member in several national and international committees working on the evolution of Eurocode 3.

Mr. Motoishi Fujii graduated from the master course of Kyushu University with a masters degree of naval environmental and ocean engineering, and entered to NAMURA SHIPBUILDING Ltd. Company in 1996. Shipbuilding and naval architecture was majored. He works at the steel bridge design department. His major experience of design for the orthotropic deck bridge is the NAGOYA EXPRESSWAY etc. He has been a member of orthotropic deck committee in Japan Bridge Association. Main study is fatigue cracks initiated from remaining lifting piece on the deck plate.

Mr. Susumu Inokuchi graduated the doctor course of Kyushu University. He has been working for Yokogawa Bridge Corporation since 1997 and is the manager of Bridge Technical and Project Section. His specialty is fatigue assessment of orthotropic steel bridge with considers of asphalt pavement property. He is trying to visit orthotropic steel bridges all over Japan to record the information and to take pictures. Now, he is a member of sub-committee for orthotropic deck in Japan Bridge Association.

Dr. Bjørn Isaksen is Head of Bridge Planning and Design at NPRA (Norwegian Public Roads Administration), Directorate of Public Roads, Bridge Section, Norway. He has his doctorate in structural engineering (wind engineering). His main interests have been cable supported bridges and wind engineering. His focus since 2006 has been the detailed design of Hardanger Suspension Bridge, which has a main span of 1310m due to open in August 2013.

Mr. Atsunori Kawabata is a Bridge Engineer with Japan Bridge Association. He has been working for JFE Engineering Corporation since 1984. He received his diploma in Civil Engineering from Osaka University in 1982, and a Masters degree in Civil Engineering from Osaka University in 1984. He obtained the qualification of professional engineer in Japan. He is the chairman of the research group of the orthotropic decks in JBA.
Mr. Shiro Saito is a Bridge Engineer with Japan Bridge Association. He has been working for IHI Infrastructure Systems Co., Ltd. since 1998. He received his diploma in Civil Engineering from Tokyo University in 1996, and a Masters degree in Civil Engineering from Tokyo University in 1998. He obtained the qualification of professional engineer in Japan. He has been involved with research and development of durability of the orthotropic decks.

Mr. Vadim Seliverstov is a Chief Bridge Engineer with Giprotransmost Joint Stock Company, Moscow, Russian Federation. He received his diploma in Bridge and Tunnel Engineering from the Moscow Automobile-Road Technical University in 1981, and Ph.D. degree in 2004. He has been involved with the design and construction of the steel bridges with orthotropic decks, concrete and composite bridges in the former republics of USSR and in other foreign countries. He has received national award for his contributions to bridge engineering profession – Honoured Builder of Russian Federation in 2007. He has more than 100 publications in Russian and English.

Mr. Chris Walker is a Principal Engineer with UK based consultants, Flint & Neill Limited - part of the international COWI group. Chris joined Flint & Neill in 2004. He was responsible for the detailed design of the cable systems for the 3,300 m Messina Strait suspension bridge between Italy and Sicily and has worked on suspension bridge designs for the Fehmarnbaelt link between Denmark and Germany and the independent check of the Chiloe-Chacao Bridge in Chile. He is currently technical lead for the detailed design of the orthotropic steel deck for the Izmit Bay Bridge, a 1,550 m suspension bridge crossing the Sea of Marmara in Turkey. Chris is an active member of the IABSE British Group, and of the IStructE Research Panel.

Mr. Motoshi Yamauchi graduated the master course of Kyushu University. He has been working for MITSUBISHI HEAVY INDUSTRIES BRIDGE & STEEL STRUCTURES ENGINEERING CO., LTD. since 1999 and is the acting manager of Bridge Headquarters Engineering Division. He is a specialist of bridge construction and is a qualified Professional engineer. Now, he is a member of sub-committee for orthotropic deck in Japan Bridge Association.

Mr. Xigang Zhang, Senior Engineer/Professor, is Chief Engineer of China Communication Construction Group Ltd.(CCCC), Chairman of Board of CCCC Highway Consultants Co., Ltd.(HPDI), and Head of National Engineering Research Center of Highway Bridges. He has devoted himself to the design and research of bridges for more than 30 years, and led or participated in over 30 national major projects. He is the chief designer of Sutong Bridge, the first cable-stayed bridge whose span is over 1,000m in the world. Xigang Zhang was awarded the first prize of National Science and Technology Progress Awards, George S. Richardson Medal from International Bridge Conference, and Outstanding Civil Engineering Achievement Award from American Society of Civil Engineers(ASCE). He was also awarded Top 10 National Science and Technology Researcher, Top 10 Figure of Bridges in Chinese Transportation, and Top 10 Science and Technology Excellent Achievement Award in Transportation.

The program is subject to change, but we have laid out the meeting based on the assumption that all participants will be able to present their ideas.
In February 2012, the Federal Highway Administration published the Manual for Design, Construction, and Maintenance of Orthotropic Steel Deck Bridges. The authorship team represents several world leading experts for Orthotropic Decks. The new Manual presents an extensive summary of the current understanding and practical guidelines for application of orthotropic decks in bridge construction. It includes new and updated topics including finite element analysis, fatigue assessment, fabrication, wearing surfaces, inspection, amongst others. The new manual is based on over 40 years of research and experience since the last publication. In this workshop, the authors will present each chapter of the manual including the design examples contained in the final chapter. A question and answer session will provide ample opportunity for discussion with the experts.

Dr. Robert Connor, Associate Professor, School of Civil Eng., Purdue University - Dr. Connor has nearly twenty years of experience in the research and testing of bridges and related structures. He is currently an Associate Professor in the School of Civil Engineering at Purdue University. Prior to joining the faculty at Purdue, he was a Senior Research Engineer and the manager of the Infrastructure Monitoring Program at the ATLSS Engineering Research Center at Lehigh University. Over his career, he has conducted field evaluations of bridges throughout the United States and internationally. He has researched fabrication flaws, fatigue cracking, and failures and developed repair strategies for structures for a variety of agencies including state DOT, rapid transit authorities, construction companies, and structural consultants. He has developed and is currently developing fatigue design specifications for highway bridge structures and bridge expansion joints for NCHRP and state agencies. In addition, he has developed short courses focused on fatigue and fracture design for steel bridge structures geared toward practicing engineers and was the Chairman of the First International Conference on Fatigue and Fracture in the Infrastructure, held in August of 2006.

Vellore S. Gopalaratnam, P.E. — Dr. Gopalaratnam, Professor of Civil Engineering at the University of Missouri-Columbia and Fellow of the American Concrete Institute is a registered Professional Engineer in Missouri. He has also been active in other professional organizations including the American Society of Civil Engineers, American Academy of Mechanics, Society of Experimental Mechanics and the Materials Research Society. He has previously served as the chair of the ACI Fracture Mechanics Committee and Secretary of the ACI Fiber Reinforced Concrete Committee. His research interest includes experimental mechanics and stress analysis of bridges and other structures and fracture and failure of materials. Dr. Gopalaratnam has completed both laboratory and field research on the fatigue performance of wearing surface systems for steel orthotropic bridges, including the Poplar Street Bridge, MO, Bronx-Whitestone Bridge, NY, and San Mateo-Hayward Bridge, CA. He is the primary author of Chapter 9 on Wearing Surface for the FHWA Manual for Design, Construction, and Maintenance of Orthotropic Steel Deck Bridges.

Niels Bitsch is the Project Director and Head of Section at COWI A/S, and is a highly experienced designer within steel structures, especially steel superstructures for bridges. In the past 24 years, he has been involved in the design of steel decks for some of the most significant bridges in the world, Great Belt Bridge and Oresund Bridge, plus a number of not yet completed bridges, Messina Strait Bridge and Fehmarn Fixed Link Bridge. The design work has included orthotropic steel decks for both roadway and railway bridges. The design experience has from 2003 been supplemented with thorough knowledge of bridge rehabilitation and operation and maintenance of Fixed Links and in special major cable supported bridges.

Dr. Robert Connor, Associate Professor, School of Civil Eng., Purdue University - Dr. Connor has nearly twenty years of experience in the research and testing of bridges and related structures. He is currently an Associate Professor in the School of Civil Engineering at Purdue University. Prior to joining the faculty at Purdue, he was a Senior Research Engineer and the manager of the Infrastructure Monitoring Program at the ATLSS Engineering Research Center at Lehigh University. Over his career, he has conducted field evaluations of bridges throughout the United States and internationally. He has researched fabrication flaws, fatigue cracking, and failures and developed repair strategies for structures for a variety of agencies including state DOT, rapid transit authorities, construction companies, and structural consultants. He has developed and is currently developing fatigue design specifications for highway bridge structures and bridge expansion joints for NCHRP and state agencies. In addition, he has developed short courses focused on fatigue and fracture design for steel bridge structures geared toward practicing engineers and was the Chairman of the First International Conference on Fatigue and Fracture in the Infrastructure, held in August of 2006.

Prior to entering the academic profession, he worked as a design engineer responsible for the conceptual, preliminary, and final design of numerous bridge design and rehabilitation projects throughout the eastern United States.

Vellore S. Gopalaratnam, P.E. — Dr. Gopalaratnam, Professor of Civil Engineering at the University of Missouri-Columbia and Fellow of the American Concrete Institute is a registered Professional Engineer in Missouri. He has also been active in other professional organizations including the American Society of Civil Engineers, American Academy of Mechanics, Society of Experimental Mechanics and the Materials Research Society. He has previously served as the chair of the ACI Fracture Mechanics Committee and Secretary of the ACI Fiber Reinforced Concrete Committee. His research interest includes experimental mechanics and stress analysis of bridges and other structures and fracture and failure of materials. Dr. Gopalaratnam has completed both laboratory and field research on the fatigue performance of wearing surface systems for steel orthotropic bridges, including the Poplar Street Bridge, MO, Bronx-Whitestone Bridge, NY, and San Mateo-Hayward Bridge, CA. He is the primary author of Chapter 9 on Wearing Surface for the FHWA Manual for Design, Construction, and Maintenance of Orthotropic Steel Deck Bridges.
Kevin Irving is the Marketing Manager of the Northern Operations for AZZ Galvanizing Services. He is a Graduate of Harischfeiger Institute in Milwaukee, WI and a Dale Carnegie Graduate. Kevin has spent over 20 years in the Hot Dip Galvanizing Industry, and has over 25 years in operations management. He is a certified presenter of the American Galvanizing Association (AGA) for the Galvanize It and Sustainable Development Seminars.

Kevin is a Former Board Member for the American Galvanizing Association, and was the Vice President and General Manager for AAA Galvanizing until they were acquired by AZZ Galvanizing Services in April of 2008. He is a Board Member for (CCAII) Chemical Coaters Association International, and Vice Chair of the NACE Committee on Hot Dip Galvanizing TEG 428X. He has been a speaker for the International Bridge Conference for the last four consecutive years, a speaker at SSPC the last two years, a speaker at NACE 2013, a speaker for the 2012 NACE Western Area Conference, and a speaker at the 2013 Southeast Bridge Preservation Partnership TSP2. Kevin has been a member of NACE since 2008, and a member of SSPC since 2009.

Brian M. Kozy, Ph.D., P.E. — Dr. Kozy is a Senior Bridge Engineer for Federal Highway Administration, Office of Bridge Technology. He currently leads the federal Steel Bridge Program, which aims to identify, advance, and deploy the latest engineering and construction technologies to improve 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. In his current position, Dr. Kozy actively supports TRB and AASHTO steel bridge committees and routinely contributes to advancement in the industry body of knowledge by publishing technical papers and making conference presentations.

Brian J. Leshko is a Vice President, Principal Professional Associate and HDR’s Bridges & Structures Inspection, Management and Operations Program Leader based in Pittsburgh, PA. He received his B.S.C.E. from the United States Air Force (USAF) Academy, an M.S. in Structural Engineering from the University of Connecticut, and a Master of Civil Engineering with an emphasis in Structural Dynamics from The Johns Hopkins University. Following his Regular Commissioning in the USAF, Brian served 7 years on Active Duty as a Civil Engineering Officer with assignments as a Design and Construction Engineer, Quality Assurance Evaluator, and Instructor of Civil Engineering at the USAF Academy. He has devoted the last 20 years of his career as a bridge engineer. His experience includes NBIS/Pontis, FCM and in depth bridge condition inspections; new and rehabilitation designs; and ratings by working stress and load factor methods. He is an NHI-Certified Bridge Safety Inspector and a former SPRAT-Certified Level I Rope Access Technician with extensive rope access and structure climbing experience inspecting large and complex structures, including: tunnels; water control structures; pipeline structures; and plate girder, box girder, arch, suspension, cable-stayed, orthotropic, segmental concrete and various truss bridges (highway and railroad). Brian has been a Professional Engineer since 1992, and he is currently registered in 16 states.

Dennis Mertz, Ph.D, Lehigh University, University of Delaware, - Dr. Mertz has received numerous awards and honors, including the Richard S. Fountain Bridge Task Force Award from AISI in 2005, the Richard R. Torrens Award from ASCE in 2003, and the Structural Engineering Institute Certificate of Appreciation from ASCE. He has written specifications and manuals for the Departments of Transportation in many states.

David L. McQuaid is a Welding Consultant with D. L. McQuaid & Associates, Inc. Previously he worked for American Bridge Company and Philip Services Corporation.

In 1964, Mr. McQuaid graduated from West Virginia University with a Bachelor of Science Degree in Civil Engineering. He is a Registered Professional Engineer in the State of West Virginia and Pennsylvania. Upon graduation, he started his work with the American Bridge Division of U. S. Steel Corporation. During his 31 years with American Bridge he has held a number of positions in the Construction Department including Senior Welding Engineer, and Manager of Technical Services. Mr. McQuaid has been involved with Fabricating, Erecting and Welding Orthotropic Bridge Decks since 1978.

To compliment his training and career as a Welding Consulting Engineer, Mr. McQuaid is a member of the American Welding Society, Past Chairman and currently is a member of the AWS D1 Structural Welding Code - Steel, Chairman of the AWS D1.5 Bridge Welding Code and Past Chairman of the AWS Technical Activities Committee. He is Past Chairman and currently a member of the National Research Council Transportation Research Board AFH70 Committee on Fabrication and Inspection of Metal Structures.

Mr. McQuaid is currently a member and Vice President of the AWS Board of Directors.

Dr. Thomas Murphy joined Modjeski and Masters, Inc. in 2000, and is a Senior Associate with the firm. Dr. Murphy’s professional experience has included the analysis, design, and detailing of a variety of bridges including cable-stayed, suspension, arch, truss, and girder bridges with special emphasis on seismic analysis and design. Dr. Murphy has been involved in all stages of the bridge design process; from the development of design specifications, to the completion of conceptual studies for specific crossings, preliminary and final design, and construction stage issues. Recent assignments include the Engineer of Record for the design of twin through arches carrying I-74 across the Mississippi River.

Duncan Paterson, Ph.D., P.E. — Dr. Paterson has over twelve years experience working as both a Bridge Engineer and Structural Research Engineer. Dr. Paterson is currently an active member of AREMA Committee 15 – Steel Structures and serves as a subcommittee vice chair and on the Task Force for adoption of high speed rail loads in AREMA. Paterson is active in the technical community having published multiple peer reviewed papers and presentations.

The program is subject to change, but we have laid out the meeting based on the assumption that all participants will be able to present their ideas.
Sougata Roy, Ph.D. — Dr. Sougata Roy is a Principal Research Scientist with the ATLSS Engineering Research Center, at Lehigh University. He is an expert in Structural Engineering with specialization in Fatigue and Fracture of Steel Structures. He has led funded research on fatigue of steel bridges and highway structures, including enhancement of fatigue resistance and development of cost-effective connection details, which has led to several publications and development of AASHTO Specifications. Dr. Roy is leading significant analytical and experimental research on steel orthotropic bridge decks for developing cost-effective fatigue resistant connections and robust design standards. In addition to more than 14 years’ experience in the academia, Sougata worked 11 years in structural engineering consultancy, designing and managing large bridge projects.

**Discussion on** concepts for standardizing orthotropic decks. The goals are: understanding the needs for standardizing orthotropic bridge decks; recognizing the currently available information and their limitations; appreciating the challenges of developing standard orthotropic decks; strategies and priorities for developing orthotropic deck standards; and outlining the concepts of standard decks.

**Possible USA Standards**
Brian M. Kozy, Ph.D., P.E.

**Structural Deck Panels**
Eric Lévesque, Eng., M.Sc. Engineering Manager, New Products — Eric is a graduate of Laval University, and joined Canam Group in 1995 as a design engineer. He is a member of l’Ordre des ingénieurs du Québec, as well as professional engineering associations in Ontario and New Brunswick. He serves on the Transportation Association of Canada (TAC) Structures Standing Subcommittee and is a member of the Canadian Standards Association CSA-S6 Section 10 Steel Structures, the Canadian Standards Association CSA-S6 Section 13 Moveable Bridge Subcommittee, as well as an associate member of the CSA-S16 Committee.

**Hot Rolled Ribs**
Tom Ho, Ph.D., PE, SE — Dr. Ho is Vice President, Bridge Line of Business, *TY Lin International, SF*. He has 28 years of experience managing award-winning structural design projects, and more than 17 years of experience leading seismic retrofit projects for both buildings and bridges. He is responsible for project management, supervising the preparation of design calculations and drawings, and full construction services for bridges, transit, and special structures. His most notable projects are: San Francisco / Oakland Bay Bridge in California, Caiyuanba Bridge in China, Shibanpo Bridge in China, Dagu Bridge in China, Hangzhou Bay Bridge in China, and the San Francisco International Airport, Inbound/Outbound Ramps in California.

**High Speed Rail Details Used in Belgium**
Prof. dr. ir. Philippe Van Bogaert

**Russian Open or Flat Plate Rib System**
Mr. Vadim Seliverstov
Program

WEDNESDAY, JUNE 26, 2013

OPENING COMMENTS (8:00 – 8:15)
Moderator: Alfred Mangus

8:00 - 8:15 AM Welcome Remarks – Spokesperson from Caltrans
Andrew Herrmann- Past President ASCE

INTERNATIONAL BRIDGES - 1 (8:15 – 9:30 AM)
Moderator: Niels Bitsch, COWI

3OBC-01 Evolution of Orthotropic Steel Bridges in Japan
Susumu Inokuchi, Teruo Ogasawara, Yoshihiro Natsuaki, Atsunori Kawabata, Japan Bridge Association; and Kentaro Yamada, Central Nippon Highway Engineering, Japan

3OBC-02 Structural Solutions and Construction Techniques for Steel Orthotropic Bridges Russia
Vadim Seliverstov, Giprotransmost J.S.Co, Russia

3OBC-03 Orthotropic Deck Design of Norwegian Suspension Bridges – Experience and New Practice
Kristian Berntsen, Norwegian Public Road Administration, Norway

INTERMISSION (9:30 – 10:00 AM) - VENDOR ROOMS OPEN

INTERNATIONAL BRIDGES - 2 (10:00 AM – 11:40 AM)
Moderator: Duncan Paterson, HDR, USA

3OBC-04 Construction Management of Long Span Bridges with Orthotropic Deck
Dekun Li, PE, MBEC 8th Engineering Co., Ltd. China

3OBC-05 The Port Mann Bridge: Canadian Icon & North American Orthotropic Bridge First
Michael J. Roberts, Bittner-Shen Consulting Engineers, Inc, USA.

3OBC-51 Izmit Bay Suspension Bridge - Deck Design
Chris Walker, Chris Murphy, Paul Sanders, Flint & Neill Limited, UK; Lars Jensen, COWI A/S, Denmark

LUNCHEON KEYNOTE (11:40 AM- 1:00 PM)
Moderator: Ray Zelinski
Luncheon Speaker – Dyab Khazem
REHABILITATION – 1 (1:00 - 2:40 PM)
Moderator: - Brian Leshko, USA

3OBC-07 Rehabilitation of the Congress Parkway Bascule Bridge Rehabilitation over the South Branch of the Chicago River
Ahmad M. Hammad, Jamal Grainawi, and Roger Haight, P.E., Parsons Brinckerhof, USA

3OBC-09 Impact of Pavement Systems to Performance of Orthotropic Deck on a Steel Box Girder Bridge
Shilei Wang, Qiang Hu, Yong Zhang, Yan Gao, and Jianlei Liu
China Academy of Railway Sciences, Haidian District, Beijing, China

3OBC-54 Fatigue Monitoring of Steel Deck of HZMB Jianghai Navigation Bridge
Gejun Zhang, Bin Hu, Center of Bridges Inspection, CCCC, China; and Su Hao, ACII, INC., USA

FATIGUE DESIGN – 1 (1:00 - 2:40 PM)
Moderator: - Su Hao, ACII, INC., USA

3OBC-11 Fatigue Resistance of Cost-Effective Rib-to-Floor Beam Connection Details for Steel Orthotropic Bridge Decks
Sougata Roy, Xudong Zhao, Soham Mukherjee, Philipp Keller, John W. Fisher and Ben T. Yen, Lehigh University, USA

3OBC-12 Fatigue Durability Improvement of Welded Joint by Increasing Deck Plate Thickness in Orthotropic Steel Deck
S. Saito, Y. Kudo, N. Hayashi, D. Uchid, Japan Bridge Association; and T. Mori, Hosei University, Japan

3OBC-13 Additional Rules for the Fatigue Strength Of Welded Joints In Orthotropic Bridge Decks
M. H. Kolstein, Delft University of Technology, The Netherlands

3OBC–14 Fatigue Life Assessment of Orthotropic Bridge Decks Based on Fracture Mechanics
Wim Nagy, Hans De Backer, and Philippe Van Bogaert, Ghent University, Belgium

INTERMISSION (2:40 – 3:10 PM) - VENDOR ROOMS OPEN

WEARING SURFACE – 1 (3:10 – 4:50 PM)
Moderator: - Ken Brown, Caltrans, USA

3OBC-15 Influence of Wearing Courses on Fatigue Life of Orthotropic Bridge Decks
Hans De Backer, Amelie Outtier, Wim Nagy, and Philippe Van Bogaert, Ghent University, Belgium

3OBC-16 Studies for Selecting a Wearing Surfacing for Re-Surfacing the Orthotropic Steel Deck of the Fremont Bridge in Portland, Oregon
John Hinman, Donald Wagner and Charles Seim, USA

3OBC-17 Orthotropic Deck Wear Surface System Selection for the Lions Gate Bridge North Approach Viaduct
John Laxdal, AMEC, Canada

3OBC-18 Wearing Surface Performance on Orthotropic Steel Decks
— Implications of Composite Action
Vellore S. Gopalaratnam, and Ravi S. Chamathri, University of Missouri-Columbia; and Richard Maggenti, California Department of Transportation, USA
FATIGUE TESTING (3:10 – 4:50 PM)
Moderator: - Sougata Roy, Lehigh University, USA

3OBC-19 Full-Scale Fatigue Test of Steel Orthotropic Decks
Liang Tang, Gao Liu, CCCC Highway Consultants Co., Ltd. China; Chunsheng Wang and Bingning Fu, Chang'an University, China

3OBC-28 A Review of Fatigue Design and Evaluation Codes in Major Developed Countries and an Issue in Orthotropic Bridge Decks
Su Hao, ACII, INC., USA

3OBC-21 Investigation of Detection Limit of Through-Deck Type Fatigue Cracks in Steel Deck by Self-reference Lock-in Thermography
Yui IZUMI, University of Shiga Prefecture; Takahide SAKAGAMI, Kobe University; Shiro KUBO, Osaka University; and Takashi TAMAKOSHI, Bridge Division, Japan

3OBC-22 Experimental Investigation on Composite Orthotropic Bridge Deck
Kaili Chen and Shangmeng Zhou, China Zhongtie Major Bridge Engineering Group, China

THURSDAY, JUNE 27, 2012

FABRICATION - 1 (8:00 – 9:55 AM)
Moderator: - Y. Edward Zhou, URS Corporation, USA.
Announcements

3OBC-23 Cost-Effective Fabrication of Orthotropic Bridge Decks
Sougata Roy, Lehigh University; Ronald D. Medlock, High Steel Structures Inc., Xudong Zhao, Soham Mukherjee, Philipp Keller, John W. Fisher and Ben T. Yen, Lehigh University, USA

3OBC-24 Fabrication of Orthotropic Box Girder Segment of HZM Bridge
Guangrui Hu, China Railway Shanhaiguan Bridge Group Co, Lt, China

3OBC-25 Codifying Orthotropic Closed Rib Fabrication
Douglas E. Williams, USA

3OBC-26 Welding Quality Control for HZM Orthotropic Box Girders
Zhihu Cheng, CCSI, China

FATIGUE DESIGN – 2 (8:00 – 9:55 AM)
Moderator: - Henk Kolstein, Delft University of Technology, Netherlands
Announcements

3OBC-27 Fatigue Life Evaluation for Welded Joints between Deck Plate and Trough Rib using Reference Strain
S. Hirayama, S. Inokuchi, D. Uchida, and A. Kawabata, Japan Bridge Association, Japan

3OBC-20 Fatigue Performance Evaluation of Replacement Orthotropic Deck for a Signature Bridge by Full-Scale Laboratory Testing
Sougata Roy, Nirab Manandhar, Michael A. Molina, R.S. Deo Alapati, John W. Fisher, Lehigh University, USA

3OBC-29 Stress Intensity Factors for Fatigue Loaded Details between Crossbeams and Trapezoidal
Richard Pijpers, TNO, The Netherlands

3OBC-30 Fatigue Strength of Typical Welded Joints in Orthotropic Steel Bridge Decks
Chun-Sheng Wang, Lei Tian and Bing-Ning Fu, Chang'an University, China
INTERMISSION (9:55–10:20 AM) - VENDOR ROOMS OPEN

WEARING SURFACE – 2 (10:20 AM - 12:00 PM)
Moderator: - Ric Maggenti

3OBC-31 Lightweight Reinforcement Systems for Orthotropic Bridge Decks
Sofia Teixeira de Freitas, Henk Kolstein, Frans Bijlaard, Delft University of Technology, Netherlands

3OBC-32 Composite Bridge Deck System with Orthotropic Steel Deck and Compact Reinforced Reactive Powder Concrete Layer
Zhe Zhang, Xudong Shao, and Jia Li, Prof., Hunan University, China

3OBC-33 Challenges in Designing Wearing Surfaces for Orthotropic Bridge Decks
Vellore S. Gopalaratnam, Ravi S. Chamarthi, University of Missouri-Columbia, USA

3OBC-32 Composite Bridge Deck System with Orthotropic Steel Deck and Compact Reinforced Reactive Powder Concrete Layer
Zhe Zhang, Xudong Shao, and Jia Li, Prof., Hunan University, China

FATIGUE DESIGN-3 (10:20 AM - 12:00 PM)
Moderator: - Robert Conner, Purdue University, USA

3OBC-35 Influence of Remaining Lifting Piece on Fatigue Strength of Orthotropic Steel Decks
M. Yamauchi, M. Fujii and Japan Bridge Association; S. Kainuma and H. Hirai, Kyushu University, Japan

3OBC-36 Recent Developments in AASHTO Fatigue Specifications for Evaluation of Steel Bridges
Y. Edward Zhou, URS Corporation; Mark D. Bowman, Purdue University, USA

3OBC-37 Study on Mechanism of Bead-Through Cracks Initiated from Weld Root between Deck Plate and Trough Rib
T. Ogasawara, S. Saito, H. Matsushita, M. Yamauchi, Japan Bridge Association; Y. Izumi, University of Shiga Prefecture; T. Sakagami, Kobe University, Japan

3OBC-38 Evaluation of Local Stress Based Fatigue Design Guidelines for Orthotropic Bridge Decks
Sougata Roy, Yeun-Chul Park, Nirab Manandhar, John W. Fisher, Lehigh University, USA

LUNCHEON KEYNOTE (12:00 PM-1:00 PM)
Moderator: Craig Copelan

Luncheon Speaker – Andrew Herrmann - The ASCE Infrastructure Report Card
Presentation of Lifetime Achievement Award – Roman Wolchuk

Andrew W. Herrmann P.E., F.SEI, F.ASCE, principal with Hardesty & Hanover Consulting Engineers, served as President of the American Society of Civil Engineers (ASCE) for 2012. He was the first Chairman and now Chairman Emeritus of Heavy Movable Structures, Inc. an industry group dedicated to movable bridges. During his 39 years at Hardesty & Hanover, Herrmann has held many positions including structural detailer, structural engineer, project engineer, and associate engineer before becoming managing partner and then a principal. Herrmann’s experience includes design, inspection, rehabilitation, and construction along with managing some of the firm’s major movable bridge projects.

Roman Wolchuk, acting as practicing engineer, researcher, author of papers and handbooks and lecturer, made significant contributions to engineering progress in the field of steel bridges. His basic “Design Manual for Orthotropic Steel Plate Deck Bridges” (1963) introduced steel orthotropic decks in the U.S. and became a standard handbook for this type of bridges. Since 1964 R. Wolchuk attended over 50 national and international engineering conferences and seminars and was a featured speaker at 27 of them. The major publications authored by R. Wolchuk are the Bridge Design Manuals for the AISC and the FHWA, and the “Steel-Plate-Deck Bridges and Steel Box Girder Bridges” sections of the McGraw-Hill’s “Structural Engineering Handbook,” the 1968, 1977, 1990 and 1997 Editions.
REHABILITATION - 2 (1:00 – 2:40 PM)
Moderator: - Thomas Murphy, M&M, USA

3OBC-39 Retrofitting Fatigue Cracks in OSD by ICR Treatment
Kentaro Yamada, Central Nippon Highway Engineering, Toshiyuki Ishikawa, Assist. Prof., Kyoto University, and Takumi Kakiich, JFE Engineering Co., Japan

3OBC-40 Fatigue Damage Assessment of the Lions Gate Bridge North Viaduct Deck
David I Harvey, Saeed J. Niroumand, Associated Engineering, Canada

3OBC-41 Detection of Through-Deck-Type Fatigue Cracks in Highway Steel bridges by Self-reference Lock-in Thermography
Takahide SAKAGAMI, Kobe University; Yui IZUMI, University of Shiga Prefecture; Takuyo KONISHI, Technology Center of Metropolitan Expressway; and Yohei MATSUOKA, Kobe University, Japan

3OBC-42 Re-Surfacing the Orthotropic Steel Deck of the Fremont Bridge in Portland, Oregon
Adam V. Markell, Charles Seim, USA

FATIGUE DESIGN - 4 AND ANALYSIS (1:00 – 2:40 PM)
Moderator: - Dennis Mertz, University of Delaware, USA

3OBC-43 - How Finite Element Modelling Choices Influence the Assessment of Stress Concentrations at the Rib to Floor Beam Connections
Wouter De Corte, University College Ghent, Belgium

3OBC-44 Stress States at Intersection between Crossbeam and Longitudinal Stiffener
Eiki Yamaguchi and Hidenori Fujii, Kyushu Institute of Technology, Japan

3OBC-45 Study on the New Steel Bridge Deck Under Multi-Axial Fatigue Loading
Weizhen Chen, Shunyao Cai, Tongji University, China

3OBC-46 Local Stress Characteristics at Cross-Beam Web Cutout in Closed Rib Orthotropic Deck
Takeshi HANJI, Keito KATO, Kazuo TATESHI, and Sung-Min CHOI, Nagoya University; Shigeyuki HIRAYAMA, Japan Bridge Association, Japan

INTERMISSION (2:40 – 3:10 PM) - VENDOR ROOMS OPEN

DESIGN (3:10 – 4:30 PM)
Moderator: - Vellore S. Gopalaratnam, University of Missouri-Columbia, USA

3OBC-49 Compressive Strength of Orthotropic Deck Panels
Sougata Roy, WanChun Jen, Jacobs Engineering Group, USA; Ben T. Yen, Lehigh University, USA

3OBC-50 Influence of Load Position Versus Rib Location on the Wheel Print Characteristics and the Consequences for Orthotropic Bridge Calculations
Wouter De Corte, University College Ghent, Belgium

3OBC-56 In-Situ Fatigue Stress Measurement and Analysis of Orthotropic Steel Bridge Decks
Chun-Sheng Wang, Bing-Ning Fu, Mu-Sai Zhai, Lei Tian, Yu-Jia Sun, Chang’an University, China
FABRICATION - 2 AND MONITORING (3:10 -4:45 PM)
Moderator: - David McQuaid, USA

3OBC-52 Fatigue Cracking Monitoring and Evaluation Using AE Sensors for Orthotropic Steel Bridge Decks
Chun-Sheng Wang, Mu-Sai Zhai, Lei Tian, Yu-Jia Sun, Chang’an University, China

3OBC-53 Ultrasonic Determination of Closed-Rib Partial Joint Penetration Weld Size Using Area Amplitude Technique
David McClary, AECOM, USA

3OBC-55 - Structural Health Monitoring for Fatigue Life Prediction of Orthotropic Bridge Decks
Richard Pijpers, Lotfollah Pahlavan, Joep Paulissen, Henk Hakkesteegt and Rob Jansen, TNO, The Netherlands

3OBC-10 Shop and Field Welding Inspection for the Golden Gate Bridge Orthotropic Panel Redecking – A 27-Year Retrospective
Paul Hartbower, California Department of Transportation, USA

FRIDAY, JUNE 28, 2013

SFOBB-SAS -1 (8:00 – 9:45 AM)
Moderator: - Ray Zelinski

3OBC-57 The New San Francisco - Oakland Bay Bridge
Marwan Nader, TY Lin International; Brian Maroney, California Department of Transportation, USA.

3OBC-58 Design of Orthotropic Decks for the San Francisco-Oakland Bay Bridge Self-Anchored Suspension Bridge
George Baker, Marwan Nader, TY Lin International, USA

3OBC-59 Controlling Fabrication to Achieve the Orthotropic Design - San Francisco Oakland Bay Bridge
Pat Lowry, Hatch Mott MacDonald, USA

INTERMISSION (9:45– 10:15 AM) - VENDOR ROOMS OPEN

SFOBB-SAS -2 (10:15 – 11:15 AM )
Moderator: - Ajay Sehgal

3OBC-60 Integration of Fabrication Tolerances, Geometric fit and Design: San Francisco-Oakland Bay Self-Anchored Suspension Bridge
Hayat Tazir, George Baker, James Duxbury, TY Lin International; Wenyi Long, California Department of Transportation, USA

3OBC-61 San Francisco – Oakland Bay Bridge Fabrication Quality Control and Quality Assurance
Aaron Prchlik, Yiannis Kourakis, Mazen Wahbeh

OPEN PANEL DISCUSSION (11:15 – 11:45 AM) CONFERENCE CLOSING

REMARKS (11:45 AM – 12:00 PM)
Thursday Evening, June 27, 2013 • 6:00 PM to 11:00 PM
Host: Mr. Ajay Sehgal
Bus Tour of the Self-Anchoring Suspension Span of the San Francisco / Oakland Bay Bridge and the Alfred Zampa Suspension Bridge

Summary - Movies will be played on board these buses about these two bridges. (There may be two to three buses.) Tentative Tour Guides are Dyab Khazem, PE, of Parsons Transportation Group (Project Manager for the Alfred Zampa Memorial Suspension Bridge); Dr. Marwan Nader, PE, of T. Y. Lin International (Project Manager of the SFO-BB SAS Suspension Bridge; and Dr. Brian Maroney, PE of Caltrans (Toll Bridge Manager for the California Department of Transportation). ASCE and these organizations reserve the right to switch or substitute tour guides if needed. Tour guides will rotate between buses, at stops so all attendees can discuss details with them.

The listed times for the tour of Orthotropic Suspension Bridges are approximate. They may vary based on traffic and actual time spent visiting the two bridges.
1:00 - 2:00 — The Self-Anchored Suspension (SAS) span of the new East Span of the San Francisco-Oakland Bay Bridge consists of a dual box girder suspended from cables which are supported on a single tower located off the eastern shore of the Yerba Buena Island. The SAS spans 565 m between piers E2 and W2, with a 385-m main span, over the navigational channel, and a 180-m back span. The 160-m tower is composed of four steel shafts interconnected with shear links along its height. These links play a significant role in resisting the seismic loads as well as to supply the tower with the proper stiffness during service load conditions. The tower shear links are designed to satisfy the following criteria:

- Supply the tower with the required stiffness for service load conditions
- Remain almost elastic during a functional evaluation earthquake (FEE)
- Plastify during a safety evaluation earthquake (SEE); thus dissipating energy and limiting the damage in the tower shafts (shafts are designed to remain almost elastic)
- To be replaceable after an SEE, if necessary.

In order to satisfy the above requirements, various configurations of the tower were evaluated where the strength and stiffness of the shear links as well as their location along the height of the tower were varied. These studies were primarily done in the form of static pushovers to determine the response of the tower during service loads, wind loads, FEE and SEE loads. Finite element analyses were then performed to evaluate the local inelastic performance of these links as well as the need for replaceability (if any) after a major earthquake. The shear link behavior was also verified by laboratory tests. The use of thick high performance steel (HPS70W) at the shear link to tower shaft connection zone controlled the shear yielding area and maintained the integrity of the connection.

Seismic Design of the Single Tower of the Self-Anchored Suspension Bridge

by Marwan Nader, Ph.D., P.E., of TY Lin International;
and Brian Maroney, Ph.D. of Caltrans

Seismic Retrofit of the Antioch Toll Bridge

Presenter: Yong-Pil Kim, P.E.

2:00 - 2:45 — Senior Bridge Engineer at Caltrans with 25 years of bridge design experience. Has received B.S. and M.S. from the University of Illinois at Chicago. Was responsible for the delivery of major projects like the replacement of the Central Viaduct in San Francisco and the structural portion in the extension of the Routes 180, 41 and 168 in Fresno, consisting of 27 bridges. Also has participated in the design of the new Bay Bridge Skyway portion and the emergency replacement of the McArthur Maze structure.

Break from 2:45 - 3:00

I-35 Bridge Collapse

Presenter: Su Hao, Ph.D.

3:00 - 4:00 — Principal of ACII, INC., Ph.D. of Solid Mechanics and Structures, Zhejiang University of China, 1986. Post Doctorate from Tsinghua University of China and Northwestern University at Evanston, Illinois. Structural Engineer of GKSS, Hamburg-Geesthacht, Germany. 25 years experiences in failure and fatigue evaluations, structures’ designs and analysis, inspection and health monitoring. Conducted independent I-35W Bridge collapse analysis, participated in the inspection and residual life assessment projects of the Innerbelt Bridge, Cleveland, Ohio, and the Missouri Hurricane-Deck Bridge. Assisting CCCC for the health monitoring of the navigation channel cable-stayed bridge, HZAB project. Author of 32 publications in peer-reviewed journals such as ASCE JBE, and Int. J. of Solids & Structures. Received awards from various professional associations such as European Society of Structural Integrity (1995), and Structural Engineers Association of Illinois (2009).
4:00 - 5:00 — We have experienced a number of earthquakes in the past, and many seismic control devices and retrofit technologies developed. In this workshop, I will explain two examples of seismic control technologies. First is the axial damper for arch bridge and second is floor isolation system for the truss bridge.

**Axial damper:** Members of axial damper consist of low yield point steel, and seismic energy is dissipated by elasto-plastic hysteresis behavior. Applying the axial damper, energy absorption capacity of bridge system increases remarkably, and quantity of reinforcing members can be reduced.

**Floor isolation system:** Minato Oohashi Bridge, installed floor isolation system is the longest span truss bridge in Japan (Bridge length: 980m, Center span: 510m, Weight: 45,000 tons). According to the results of dynamic analysis of seismic motion, many members exceed the safety stress range. Main reason of this stress excess is fixed heavy floor system of truss bridge. To reduce the reaction of floor system due to the seismic motion, isolator is installed between truss and floor member. As a result, reinforcing members and reaction forces are reduced remarkably.
Saturday, June 29, 2013 • 9:30 am to 9:30 pm
Host: Mr. Alfred R. Mangus
Optional Tour of Seven Orthotropic Bridges in the San Francisco Bay Area
Separate registration includes bus fare and meals.

California has 25,000 bridges, or 4% of all USA bridges, but more than 25% of US orthotropic bridges. This bus tour will stop at five locations, see map above. Bridges discussed are: 1) BART Weathering Steel Twin Bridges - Berkeley (constructed 1972); 2) Maritime Off-Ramp (1997); 3) Miller-Sweeney bascule bridge - Alameda Island (1974); 4) San Mateo - Hayward (1968); 5) Golden Gate Bridge Redecking (1985); 6) The bus will drive to the San Francisco - Oakland Bay Bridge, and the 7) Alfred Zampa Bridge at Carquinez Straits (2003). These last two bridges are on the Thursday night tour, and we will not stop unless a majority of attendees wish to do so.
Sunday June 30, 2013 • 12:00 pm to 6:00 pm
Host: Mr. Alfred R. Mangus
Optional Boat Tour of the East Spans SAS & Golden Gate Bridge
Separate Registration
3rd Orthotropic Bridge Conference

P.O. Box 161114, Sacramento, CA 95816
E-mail: orthotropic_bridge_org_asce@yahoo.com
Phone & Fax: 916-961-2723 • http://www.orthotropic-bridge.org

San Mateo-Hayward Bridge
Hayward/San Mateo OCEA 1968
http://www.asce.org/opal/past_ocea.cfm#1968

Sheraton Grand Sacramento Hotel, 13th and “J” Street
1230 “J” Street, Sacramento, California 95814, United States, Phone: (916) 447-1700

Floor Plan

SECOND LEVEL
1. BATAGLIERI
2. TOFANELLI
3. CARR
4. COMPAGNO
5. SCHMIDT
6. DURANG
7. FALOR
8. BONDI
9. BEAVIS
10. CLARK
11. ROYAL
12. MCGINNIS
Thank You to Our Exhibitors
Location: Magnolia Room

ACROW Bridges
AZZ Galvanizing Services
CRSBG
ChemCo Systems
SEI-ASCE Structural Engineering Institute
TYLin International
ZTSS Bridge
YOUR OPINION INTERESTS US

Surname: __________________________  First Name: __________________

Company: _________________________  Country: ___________________

Would you attend a 2015 OBC Conference in China
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Would you attend a 2017 OBC Conference in New York
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Would you attend a 2019 OBC Conference in Europe
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Value of the papers
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Value of the abstracts in identifying paper topics
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Location and quality of the conference facilities
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Organization of the vendor display
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Organization of the bus tours
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Organization and general management
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

Quality of the catering
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

My overall impression
Low* ☐  Average* ☐  Good* ☐  Excellent* ☐

*Please mark the boxes according to your choice.

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