3RD ORTHOTROPIC BRIDGE CONFERENCE

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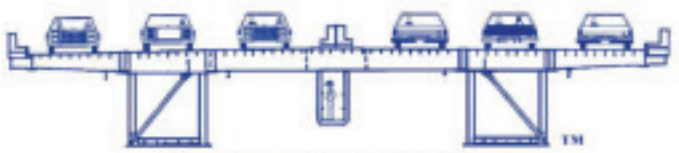
Phone & Fax: 916-961-2723 • http://www.orthotropic-bridge.org



San Mateo-Hayward Bridge

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

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)

Philippe Van Bogaert

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 (BASt), 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. Motoshi 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.

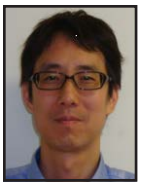
Dr. Bjørn Isaksen is Head of Bridge Planning and Design at NPRA (Norwegian Public Roads Administration), Directorate of Public Roads, Bridge Section, Norway. He has his doctorate in structural engineering (wind engineering). His main interests have been cable supported bridges and wind engineering. His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

Compiegne Bridge, France

Izmit Bay Bridge - Turkey

Fabian Way
Cable-Stayed Bridge - UK

Taunton Third Way Bridge - UK

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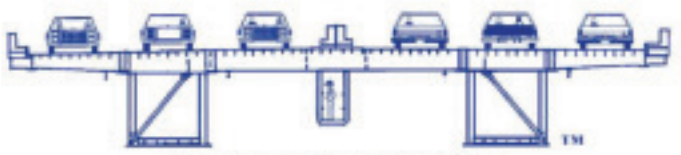

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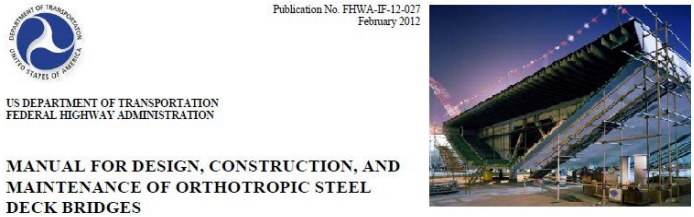
TUESDAY - JUNE 25TH — Free FHWA Workshop
Moderator: Duncan Paterson
Manual for Design, Construction, and Maintenance of Orthotropic Steel Deck Bridges

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.



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 Harischfeger 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 (CCAI) 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 TSP.2. 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.

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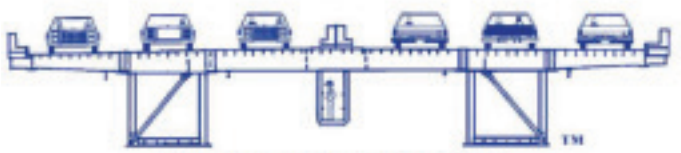

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Lateral Load Resisting Steel Systems Workshop
Natalie Calderone - Moderator
Friday, June 28, 2013 • 1:00 - 6:00 P.M.

Dr. Marwan Nader

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

Dr. Brian Maroney

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 of the shear yielding area and maintained the integrity of the connection.

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

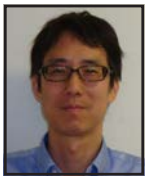
I-35 Bridge Collapse

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).

Examples of Seismic Control Technologies of Steel Bridges in Japan

Presenter: Motoshi Yamauchi, P.E., Jp



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

Closeup of the San Francisco / Oakland Bay Bridge Tower

Wood Mockup of San Francisco/Oakland Bay Bridge Tower

Antioch Bridge Seismic Retrofit