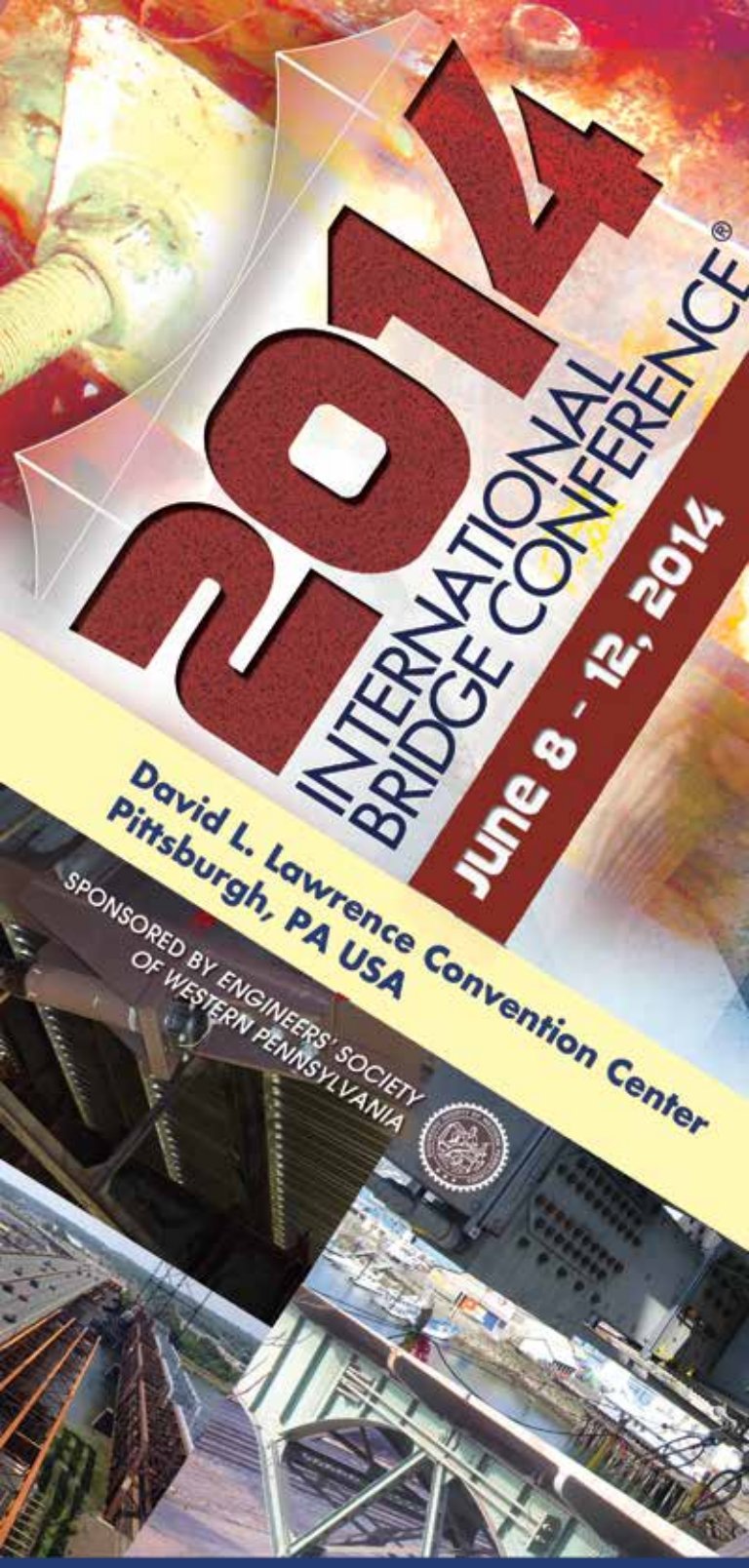

CONFERENCE PROGRAM GUIDE

WELCOME TO THE 31ST ANNUAL INTERNATIONAL BRIDGE CONFERENCE®

Please read the following general information to learn about many of the new features of the IBC! With our return to the David L. Lawrence Convention Center (DLLCC), we have the opportunity to offer many new and exciting elements to the Conference, and many new improvements from the 2013 IBC. As always, Conference personnel (found at the Registration Desk) and IBC Executive Committee Members (look for their ribbons!) can be an additional valuable source of information!

REGISTRATION DESK

The Conference Registration Desk is located in HALL B* of the DLLCC, on the riverside of the convention center. The hours of operation are:

- Sunday, June 8: 5:00 - 7:00 PM
- Monday, June 9: 7:00 AM - 5:00 PM
- Tuesday, June 10: 7:00 AM - 5:00 PM
- Wednesday, June 11 : 7:00 AM - 2:00 PM
- Wednesday, June 11: (*3rd Level) 2:00 - 5:00 PM
- Thursday, June 12: (*3rd Level) 7:00 AM - 1:30 PM

REGISTRATION AND ADMISSION

Full Registration includes admission to the Keynote Session, Featured Agency Session, daily Technical Sessions, Workshops, IBC Exhibit Hall, and the Monday, Tuesday, and Wednesday Exhibit Hall Buffet Luncheon. One-Day Registration includes the Technical Sessions, Workshops, and IBC Exhibit Hall and corresponding functions for that day only.

With so many new events included in the IBC, we hope to provide you with a better understanding of the various offerings for Conference attendees. You will still see the quality technical presentations as offered in all previous IBC's; these are referred to as "Technical Sessions", and include papers grouped into sessions of common subject matter. Again, we are offering several "Seminars" that are educational programs for continued training - these require a separate tickets registration. We also offer for your consideration a number of "Workshops" presented by many of our co-sponsors and other industry-leading groups on an even wider variety of bridge industry subject matter.

Remember: seminars, tours, the IBC Awards Dinner, and conference proceedings require an additional registration fee. Please visit the Conference Registration Desk for details.

BADGE IDENTIFICATION

Please wear your IBC name badge at all times during the conference; it is your passport to all Conference activities. ESWP has authorized Room Monitors on staff to deny access to anyone not wearing the appropriate badge. As a safety consideration, we do suggest that you remove your badge when leaving the Conference.

MESSAGE BOARD

As a service to Conference registrants, a Message Board will be located in the Registration area of the DLLCC. The board will be available on June 8 - 10, 2014. Messages will be retained until the end of each day.

MEETING INFORMATION

IBC functions are located in the DLLCC. Please check individual listings throughout this program for specific locations and times for all technical sessions, seminars and social functions. Events which require tickets will identify the specific location for these functions. Any changes in the program schedule will be posted or announced at the Conference Registration Desk.

COFFEE STAND

Complimentary coffee breaks are available at various times throughout the Conference as noted in your Program Guide. Most breaks are presented in the Exhibit Hall.

VIDEO RECORDED SESSIONS

NEW THIS YEAR! The IBC is video recording several sessions during the conference this year. As an added benefit to conference registrants, you will be able to view these sessions in entirety following the conference. Now, you no longer have to choose between the many different sessions - attend one now, and watch the other after the conference! Look for the video camera symbol next to those sessions planned for recording. *(Note: attendees who participate in these recorded sessions imply consent to appearing in the video and audio recording)*

IMPORTANT

CELL PHONES AND PAGERS

As a courtesy to the Speakers and fellow attendees, the IBC requests that all cell phones and pagers be turned off or switched to silent mode in all Presentation Rooms.

ATTENDEE REGISTRATION LISTS

Conference registrations received prior to May 30 have been compiled in the "IBC PRE-REGISTRATION LIST - PART 1 of 2", and is available to all registered attendees in .PDF format, available to transfer to *YOUR FLASH DRIVE*. Please note, as we try to continually green the IBC, we no longer print Registration Lists.

An addendum to the registration list, "PART 2 of 2," will be available Thursday morning of the conference and reflects those attendees who registered after May 30, or on-site during the conference.

An electronic copy, produced in MS Excel, of the entire Attendee Registration List is available for purchase. The cost is $25 for IBC Exhibitors, and $95 for all others, the list will be e-mailed to you following the conference. Please know that the IBC never provides email addresses as a courtesy to our registered attendees.

IBC BRIDGE TOUR

Tuesday, June 9; 1:00 - 4:30 PM

Pittsburgh is the city of bridges, and the IBC is pleased to once again offer our tour of unique area bridges. This guided tour departs from the Convention Center at 1:00 PM and will visit the. (An additional fee of $40 is required; advance registration is required and seating is limited.) A signed waiver and release and appropriate footwear will be required to enter the construction area.

IBC EXHIBIT HALL

One of the main attractions of the Conference is the IBC Exhibit Hall. As you stroll through the many exhibits, you will be able to explore the latest technologies, products and services the bridge industry has to offer. Additionally, don't forget to participate in our popular "Exhibit Hall Bingo" game for your chance to receive cash prizes, simply by visiting the exhibitors on your bingo card. All registered attendees will have a bingo card in their registration packet.

The IBC Exhibit Hall is located in HALL B. You will be able to view the exhibits during the following hours:

- Monday: 11:00 A.M. - 5:00 P.M.
- Tuesday: 8:00 A.M. - 5:00 P.M.
- Wednesday: 8:00 A.M.- 1:30 P.M.

The IBC will feature a Luncheon Buffet throughout the Exhibit Hall on Monday, June 9, Tuesday, June 10, and Wednesday, June 11 and is open (at no additional charge) to all conference-registered attendees and registered spouses.

HOST HOTEL INFORMATION

Enjoy the luxury and convenience of the IBC Headquarters Hotel, the Westin Convention Center Hotel. Linked to the DLLCC via Skybridge, or by an easy outdoor walk across Penn Avenue. Hotel reservations can be made by contacting the Westin Convention Center Hotel directly at 412-281-3700.

Westin Convention Center Hotel
1000 Penn Avenue
Pittsburgh, Pennsylvania 15222

PARKING

The Westin Convention Center Hotel does have its own parking facility, and valet parking is available for an additional cost of $22 per day. Simply pull up to the front door of the hotel to utilize this service. Parking at the David L. Lawrence Convention Center is also available. Self parking lots are in the immediate vicinity. Maps are available on line at http://www.pittsburghcc.com/cc/Directions.pxp

PRE-PRINTS AND IBC MERCHANDISE

Pre-prints for all technical presentations are available at the Merchandise Booth located just inside of the Exhibit Hall near the Conference Registration Desk. Pre-prints can be purchased for just $3.00 per copy. Again this year: purchase a 1 GB flash drive that contains all available pre-prints in .PDF format for only $30.00. Also, you can find copies of previous years' IBC Proceedings (for $55 per volume). The Merchandise Booth will be open:

- Monday: 11:00 A.M.- 5:00 P.M.
- Tuesday: 8:30 A.M. - 5:00 P.M.
- Wednesday: 8:30 A.M. - 1:30 P.M.

PROCEEDINGS

Proceedings are an optional order-only purchase and may be ordered in advance or on-site at the IBC for $30.00. Following the conference, proceedings may be ordered for $55.00. The official proceedings of the 31st Annual International Bridge Conference® will be available on CD in late Summer 2014 and mailed to you at that time.

PDH'S

Earn Professional Development Hours (PDHs) by attending the IBC! The Engineers' Society of Western Pennsylvania (ESWP), sponsor of the IBC, is recognized as a Continuing Education Provider by the New York State Board of Professional Licensure and Florida Board of Professional Engineers, as well as many other state licensing boards. As such, your attendance at the IBC will qualify for continuing education credits in these states.

To obtain verification of attendance at the IBC from the ESWP, you must submit a PDH Request Letter. Official confirmation from the IBC Offices regarding each attendee's eligibility for PDHs will be mailed after the Conference. PDH Request Letters must be returned to ESWP. (PDH Letters can be obtained at the Conference Registration Desk or website, or by contacting the Engineers' Society of Western PA, sponsors of the IBC.) NOTE - For fulfilling continuing education requirements with New York State, attendees are required to sign in-and-out of IBC technical sessions, workshops or seminars on the session registry. Registry forms are located at the entrance to any of these sessions.

Please note that ESWP is unable to verify your attendance in any session if you do not properly sign this registry!

IMPORTANT

IBC GIFT ITEMS

Once again at this year's IBC, you will have the opportunity to purchase the popular IBC neckties, IBC Golf Shirts, T-shirts, and Hats. These items are high quality and feature the popular IBC logo. The Gift Item Table is located near the Registration Desk, just inside of Hall B, where you can make your purchases throughout the Conference until Wednesday at 1:30 PM. Please be sure to stop by and shop before Wednesday and check out our newest styles for the 2014 IBC!

AMERICANS WITH DISABILITIES ACT

The International Bridge Conference® and ESWP support the Americans with Disabilities Act (ADA), which prohibits discrimination against, and promotes public accessibility for those with disabilities. We ask those requiring specific equipment or services as an attendee to contact the Conference Registration Desk

LOOKING AHEAD!

Interested in presenting a paper, workshop, seminar presentation at a future IBC? The IBC Call For Papers will open immediately following the 2015 Conference, and everyone is welcome to submit an idea for presentation. Visit www.eswp.com/bridge for more details.

JOIN US AT THE 2015 IBC!

Join us in 2015 for the International Bridge Conference,® June 8/11, 2014, David L. Lawrence Convention Center, Pittsburgh, PA. Many different sponsorship opportunities are available - don't miss out and make your reservation early to take full advantage of all promotions!

IBC EXECUTIVE COMMITTEE

The International Bridge Conference® (IBC) is sponsored by the Engineers' Society of Western Pennsylvania (ESWP), a membership based, not-for-profit organization, located in Pittsburgh, PA. Learn more at www.eswp.com. The IBC is planned mainly through the volunteer efforts of these top industry professionals who make up the IBC Executive Committee. ESWP extends a sincere thank you to the entire Executive Committee (listed below in alphabetical order) for their efforts in planning this year's conference. A very special thanks goes to the General Chair, Calvin Boring, Jr., for his leadership in planning this years conference.

VICTOR E. BERTOLINA, P.E.
SAI Consulting Engineers, Inc.
Budget Chair

CALVIN BORING, JR.
Brayman Construction Co.
General Chair / Co-Meetings Chair

ENRICO T. BRUSCHI, P.E.
Consultant
Mew Membership Chair

MATTHEW A. BUNNER, P.E.
HDR Engineering, Inc.
Seminars/Workshops Chair

JOHN C. DIETRICK, P.E., S.E.
Michael Baker Jr., Inc.,
Technical Program Chair

RAYMOND A. HARTLE, P.E.
GAI Consultants, Inc.

DONALD W. HERBERT, P.E.
Pennsylvania Department of Transportation

GEORGE M. HORAS, P.E.
Alfred Benesch & Company
Magazine Co-Chair

DONALD KILLMEYER, JR., P.E.
ms consultants, inc.
Tours Co-Chair

ERIC S. KLINE, PCS
KTA-Tator, Inc.

THOMAS G. LEECH, P.E., S.E.
Gannett Fleming, Inc.
Awards Chair / Magazine Co-Chair

M. MYINT LWIN, P.E., S.E.
Consultant

THOMAS P. MACIOCE, P.E.
Pennsylvania Department of Transportation

MATTHEW P. MCTISH, P.E.
McTish, Kunkel & Associates
Construction Chair

RONALD D. MEDLOCK, P.E.
High Steel Structures, Inc.
Co-Meetings Chair

GERALD J. PITZER, P.E.
Consultant

MATTEO POZZI, Ph.D., P.E.
Carnegie Mellon University
Student Award Chair

W. JAY ROHLEDER JR., P.E., S.E.
FIGG

GARY RUNCO, P.E.
Virginia Department of Transportation
Strategic Planning Chair

HELENA RUSSELL
bridge design & engineering magazine

LOUIS J. RUZZI, P.E.
Pennsylvania Department of Transportation

JEREMY SHAFFER, Ph.D., PM
Bentley Systems, Inc.

STEPHEN G. SHANLEY, P.E.
Allegheny County Department of Public Works
Attendance/Marketing Chair

RACHEL STIFFLER
Vector Corrosion Technologies
Exhibits/Co-Sponsors Chair

JAMES L. STUMP, P.E.
Pennsylvania Turnpike Commission

DANIEL D. URANOWSKI, P.E.
Nicholson Construction Co.

THOMAS J. VENA, P.E.
A&A Consultants, Inc.
Keynote / Featured Agency Chair

KENNETH J. WRIGHT, P.E.
HDR Engineering, Inc.

HONORARY MEMBERS

CARL ANGELOFF, P.E.
Con-Serv, Inc.

RICHARD L. CONNORS, P.E., PMP
County of Allegheny
Rules Chair

JAMES DWYER
Advanced Rail Management Corporation

JOHN F. GRAHAM, JR., P.E.
Graham Consulting

HERBERT M. MANDEL, P.E.
GAI Consultants, Inc.

LISLE E. WILLIAMS, P.E., PLS
Consultant

EMERITUS MEMBERS

JOEL ABRAMS, Ph.D.
Consultant

REIDAR BJORHOVDE, Ph.D., P.E.
The Bjorhovde Group

ARTHUR W. HEDGREN, JR., Ph.D., P.E.
Consultant

INTERNATIONAL BRIDGE CONFERENCE®

Since 1983, the International Bridge Conference® (IBC) has been sponsored by the Engineers' Society of Western Pennsylvania (ESWP), a membership based, not-for-profit organization, located in Pittsburgh, PA. During this time, the IBC has amassed an impressive collection of archives, including the previous recipients of the IBC Medals, Previous Featured States/Countries/Agencies, and our previous General Chairmen. The following pages of IBC Historical Information recognizes these past honorees.

PREVIOUS GENERAL CHAIRMEN

2013 W. Jay Rohleder Jr., P.E., S.E.
2012 Matthew P. McTish, P.E.
2011 Thomas J. Vena, P.E.
2010 Jeffrey J. Campbell, P.E.
2009 Louis J. Ruzzi, P.E.
2008 Eric S. Kline, PCS
2007 M. Myint Lwin, P.E., S.E.
2006 Kenneth J. Wright, P.E.
2005 Enrico T. Bruschi, P.E.
2004 Thomas G. Leech, P.E., S.E.
2003 Robert F. Wellner, P.E.
2002 Donald W. Herbert, P.E.
2001 James D. Cooper, P.E.
2000 Donald J. Killmeyer, Jr., P.E.
1999 Gary Runco, P.E.
1998 Gerald J. Pitzer, P.E.
1997 Charles M. Schubert, P.E.
1996 Eric S. Kline
1995 Arthur W. Hedgren, Jr., Ph.D., P.E.
1994 Richard L. Connors, P.E., PMP
1993 Lisle E. Williams, P.E., PLS
1992 Dr. Reidar Bjorhovde
1991 Victor Bertolina, P.E.
1990 Carl Angeloff, P.E.
1989 Herbert M. Mandel, P.E.
1988 Peter Florian
1987 James D. Dwyer
1986 Stephan H. Dake
1985 John F. Graham, Jr., P.E.
1984 William J. Vandermark

PREVIOUS FEATURED AGENCIES

2014 AASHTO
2013 Massachusetts
2012 Missouri
2011 Republic of Korea
2010 Maryland
2009 Pennsylvania
2008 Federal Highway Administration
2007 The People's Republic of China
2006 Delaware
2005 Maine
2004 Pennsylvania Turnpike
2003 South Carolina
2002 Utah
2001 New York
2000 Kentucky
1999 Louisiana

1998 Massachusetts
1997 New Jersey
1996 Minnesota
1995 West Virginia
1994 Virginia
1993 North Carolina
1992 Ohio
1991 California
1990 Texas
1989 Illinois
1988 Michigan
1987 Connecticut
1986 Florida
1983 Pennsylvania

JOHN A. ROEBLING MEDAL

Awarded to an individual for lifetime achievement in bridge engineering. Major achievements may include design, construction, research and/or educational endeavors.

2014 Malcolm T. Kerley, P.E., Virginia Department of Transportation (retired)
2013 M. Myint Lwin, P.E., S.E., Federal Highway Administration
2012 Dann H. Hall, Bridge Software Development International, Ltd.
2011 Michael J. Abrahams, P.E., Parsons Brinckerhoff. Inc.
2010 John M. Kulicki, Ph.D, P.E., Modjeski and Masters, Inc.
2009 Harold R. Sandberg, P.E., S.E., Alfred Benesch & Company
2008 Leonardo Fernandez Troyano, Carlos Fernandez Casado S.A.
2007 William B. Conway, P.E., Modjeski and Masters, Inc.
2006 Charles Seim, P.E., F. ASCE, T.Y Lin International
2005 John E. Breen, Ph.D., University of Texas, Austin
2004 William Brown, Ph.D., Brown Beech & Associates Ltd
2003 Hiroyuki Fujikawa, Honshu-Shikoku Bridge Authority
2002 Jackson Durkee, C.E., P.E., Structural Engineer
2001 James E. Roberts, California Department of Transportation
2000 Eugene C. Figg, Jr., P.E., Figg Engineering Group
1999 Abba G. Lichtenstein, P.E., Ph.D., A.G. Lichtenstein & Associates, (retired)
1998 Man-Chung Tang, P.E., TY Lin International
1997 Christian Menn, Ph.D., Swiss Federal Institute of Technology
1996 Frank D. Sears, Modjeski and Masters, Inc.
1995 John W. Fisher, Ph.D., Lehigh University
1994 Jean M. Muller, Ph.D., J. Muller International
1993 Arthur L. Elliott, California DOT, (retired)
1992 Frank L. Stahl, Amman & Whitney
1991 Herbert Rothman, Weidlinger Associates
1990 TY Lin, TY Lin International
1989 Blair Birdsall, New York DOT, (retired)
1988 Carl H. Gronquist, Steinman, Boynton, Gronquist, & Birdsall
1987 Gerald F. Fox, Howard Needles Tammen & Bergenfodd

GEORGE S. RICHARDSON MEDAL

Awarded for a single, recent outstanding achievement in bridge engineering. Fields of endeavor may include design, construction, research or education

2014 Missouri Department of Transportation, Stan Musial Veterans Memorial Bridge, St. Louis, MO
2013 Shandong Hi-Speed Qingdao Expressway CO., LTD, Jiaozhou Bay Bridge, Qingdao City, Shandong Province, China
2012 Nanjing Command Section of Beijing-Shanghai High-speed Railway, Nanjing Dashengguan Yangtze River Bridge, Nanjing, Jiangsu Province, China
2011 Arup & Highways Department Hong Kong, Stonecutters Bridge in Hong Kong, China
2010 Tianxingzhou Bridge Construction Headquarter of Huhanrong Railway Hubei Co., Ltd
Wuhan Tianxingzhou Rail-cum-road Yangtze River Bridge
2009 Minnesota Department of Transportation, I 35-W Bridge over the Mississippi Bridge in Minneapolis, MN
2008 Nantong City, P.R. China, Sutong Bridge, Nangtong City, Jiangsu Province, China
2007 Maine Department of Transportation, Penobscot Narrows Bridge and Observatory, Waldo and Hancock Counties, ME
2006 Donald White, Ph.D., William Wright, Ph.D., Mr. Michael Grubb, LRFD Unified Design Specifications for Steel Deck Girder Bridges
2005 GEFYRA S.A., Greece, Rion - Antirion Bridge
2004 CalTrans (Eugene Thimmhardy accepting), New Carquinez Bridge
2003 HNTB Corporation (Ray McCabe accepting), Leonard P. Zakim Bunker Hill Bridge
2002 British Columbia Ministry of Transportation, Lions Gate Bridge, Vancouver, British Columbia
2001 Rede Ferroviaria Nacional EP, Portugal, Tagus River Suspension Bridge Rail Addition Project
2000 HNTB Corporation (Ray McCabe accepting), Storrow Drive Bridge
1999 Gerard Sauvageot, J. Muller International, Confederation Bridge, Northumberland Strait, Canada
1998 Honshu-Shikoku Bridge Authority, Akashi-Kaikyo Bridge
1997 Virginia DOT, Parsons Brinckerhoff and Tidewater Construction Corp., George P. Coleman Bridge, Yorktown, VA
1996 John M. Kulicki, Modjeski and Masters, Inc., Development and Approval, LRFD Design Specifications
1995 Michel P. Virlogues and Bertrand Deroubaix Normandy Bridge
1994 Figg Engineering and Eastern Federal Lands Highway Div of FHWA, Natchez Trace Parkway Bridge, Tennessee
1993 Colorado Department of Transportation, Hanging Lake Viaduct, Glenwood Canyon, Colorado

1992 Washington State Department of Transportation, Lake Washington Floating Bridge
1991 James W. Neal, Jr., John F. Beasley Engineering, Inc., Roosevelt Lake Bridge
1990 Denny A. McLeod, Rigging International, Oakland Bay Bridge, California
1990 L. Ray Davis, Hardaway Company, Ben Sawyer Bridge, South Carolina
1989 Tsutumu Yamane, Honshu-Shikoku Bridge Authority, Honshu-Shikoku Bridge Routes, specifically the Kojima-Sukaide Route
1988 Jean M. Muller and Euguene C. Figg, Jr., Figg and Muller Engineers, Inc., Sunshine Skyway Bridge across Tampa Bay, Florida

GUSTAV LINDENTHAL MEDAL

Awarded for a single, recent outstanding achievement demonstrating harmony with the environment, aesthetic merit and successful community participation.

2014 South Norfolk Jordan Bridge, Cheasapeake, VA
2013 Government of the Northwest Territories, Deh Cho Bridge, Fort Providence, Northwest Territories, Cananda
2012 Pennsylvania Turnpike Commission, I-76 Allegheny River Bridge, Oakmont, PA
2011 Buckland & Taylor Ltd., North Arm Fraser Crossing, British Columbia, Canada
2010 Construction Command Office of Zhoushan Island and Mainland Link Project of Zhejiang Province, Xihoumen Bridge, China
2009 VDOT and Maryland State Highway Administration, Woodrow Wilson Bridge, South of Washington, DC linking VA and MD
2008 FHWA, WVDOH, and ODOT, Route 50 Bridge over the Ohio River and Blennerhassett Island, Parkersburg, West Virginia
2007 Construction Command Office of Nanjing No. 3 Yangtze River Bridge, Nanjing No. 3 Yangtze River Bridge, Nanjing, P.R. China
2006 South Carolina DOT, Arthur Ravenel, Jr. Bridge
2005 Compagnie Eiffage du Viaduc de Millau, Millau, France, Viaduct of Millau
2004 The Pennsylvania Turnpike Commission, Mingo Creek Viaduct, Pennsylvania
2003 Alexandre Chan, President JK Bridge, Brazil
2002 Figg Engineers, Broadway Bridge, Daytona Beach, Florida
2001 Henrik Christensen, Øresundskorsortiet, Denmark, Oresund Fixed Link Bridge Project
2000 Celia Kupersmith, Golden Gate Bridge, GGB Highway & Transportation District
1999 Kazu Hayashida, Hawaii Dept. of Transportation, Interstate H-3 Winward Viaduct

EUGENE C. FIGG, JR. MEDAL

Awarded for a single recent outstanding achievement in bridge engineering that, through vision and innovation, provides an icon to the community for which it was designed.

2014 Da Nang Department of Transportation, Dragon Bridge, Da Nang, Vietnam
2013 New York State DOT & Vermont Agency of Transportation, Lake Champlain Bridge, Crown Point, NY & Addison, VT
2012 Municipality of La Paz, The Triplet Bridges, Bolivia
2011 Central Federal Lands Highway Division of the Federal Highway Administration, Mike O'Callaghan-Pat Tillman Memorial (Hoover Dam By-Pass) Bridge, Connecting AZ & NV
2010 New Jersey Department of Transportation, George Street Bridge, New Brunswick, NJ
2009 T.Y. Lin International, Sanhao Bridge over the Hunhe River, Shenyang, China
2008 Ohio Department of Transportation, High-Main Street Bridge, Hamilton, Ohio
2007 Florida Department of Transportation, Royal Park Bridge Replacement, West Palm Beach, FL
2006 T.Y. Lin International, Dagu Bridge, Tianjin, China
2005 Turtle Bay Museums and Arboretum on the River, Sundial Bridge at Turtle Bay, Redding, CA, USA
2004 Shanghai Lu Pu Bridge Investment Development Co., Ltd, Lu Pu Bridge, China
2003 Buckland & Taylor, Ltd., Rama 8 Bridge, Bangkok, Thailand
2002 Jiangsu Provincial Department of Communications, Jiangyin Bridge, China

ARTHUR G. HAYDEN MEDAL

Awarded to recognize a single recent outstanding achievement in bridge engineering demonstrating innovation in special use bridges such as pedestrian, people-mover, or non-traditional structures.

2014 BC Ministry of Transportation, Squarnish Pedestrian Overpass, Squamish, BC, Canada
2013 Phu My Hung JV, LLC, Starlight Bridge, Ho Chi Ming City, Vietnam
2012 ILEX, Peace Bridge, Derry-Londonderry, Ireland
2011 New Plymouth District Council, Te Rewa Rewa Bridge, New Plymouth, New Zealand
2010 Cambridgeshire County Council, Riverside Bridge, River Cam, Cambridgeshire County, UK
2009 Museum of Flight, T. Evans Wyckoff Memorial Bridge, Seattle, Washington
2008 City of Weil Amrhein, Tri-Countries Bridge, Weil Am Rhein, Germany
2007 Project Bureau Ijburg, Nesciobrug, Ijburg, Amsterdam, The Netherlands
2006 BAA Gatwick, Gatwick Pier 6 Airbridge, Gatwick Airport, London U.K.
2005 City of Greenville, South Carolina, Liberty Bridge
2004 City of Winnipeg, Canada, Esplanade Riel Pedestrian Bridge, Canada
2003 Schlaich Bergermann und Partner, Duisburg Inner Harbor Footbridge, Germany

ABBA G. LICHTENSTEIN MEDAL

Awarded for a recent outstanding achievement in bridge engineering demonstrating artistic merit and innovation in the restoration and rehabilitation of bridges of historic or engineering significance.

2014 Vermont Agency of Transportation, Checkered House Bridge, Richmond, VT
2013 Oregon DOT, Willamette River (Oregon City) Bridge, Oregon City & West Linn, OR
2012 Florida DOT, Bridge of Lions Rehabilitation, St. Augustine, FL

HISTORIC PRESERVATION AWARD

Special and beyond the traditional guidelines of the medal categories.

2010 Walkway Over the Hudson, Poughkeepsie Highland Railroad Bridge, Hudson River, Albany & New York, NY

ENGINEERING EXCELLENCE AWARD

Special and beyond the traditional guidelines of the medal categories.

2011 FHWA Manual entitled: “Analysis and Design of Skewed and Curved Steel Bridges with LRFD Reference Manual”

JAMES D. COOPER STUDENT AWARD

A Student Paper Competition Open to all Graduate and Undergraduate Students Attending an Accredited College or University that Offers a Civil Engineering Major.

2012 Zachary B. Haber, University of Nevada, Reno, Seismic Performance of Emulative Precast Bridge Column Elements with Grouted Coupler Connections
2011 Behrouz Shafei, University of California at Irvine, CA, A Novel Vulnerability Index for Design of RC Bridges Subjected to Seismic Hazards and Environmental Stressors (IBC 11-SP)
2010 Sarira Motaref, University of Nevada, Reno, Performance of Precast Bridge Columns with Energy Dissipating Joints (IBC 10-SP)
2009 Michael Loy, Oregon Episcopal High School, Developing a Novel pH Buffer Methodology to Inhibit Corrosion of Steel Reinforcement in Concrete (IBC 09-16)
2008 Graduate: Woo Seok Kim, The Pennsylvania State University, Simplified Nonlinear Numerical Analysis Method for Integral Abutment Bridges (IBC 08-43), Under Graduate: Heidi Clayville, Theresa Howell & Kristen Erickson, Washington University in St. Louis, MO, The New Daniel Boone Bridge Project: US Route 40/I-64 Across the Missouri River
2007 Jessica T. Newlin and K. Sham Bhat, The Pennsylvania State University, Identification and Prioritization of Stream Channel Maintenance Needs at Bridge Crossings (IBC 07-18)
2006 Seung Dae Kim, Chi Won In, Kelly E. Cronin, Carnegie Mellon University, A Reference-Free Debonding Monitoring Technique for CFRP Strengthened RC Structures Using Active Sensing

KEYNOTE SESSION

Room: Ballroom B/C (Video Recorded)
Chair: Calvin Boring, Jr., Conference Chair
Brayman Construction Corporation, Exton, PA

8:30 - 8:45 A.M.

Welcome to the IBC

Charles R. Toran, Jr., ESWP President Sci-Tek Consultants, Inc., Pittsburgh, PA

Rich Fitzgerald, Chief Executive, County of Allegheny, Pittsburgh, PA

8:45 - 9:10 A.M.

Gregg C. Fredrick, Chair AASHTO Subcommittee on Bridges & Structure, Assistant Chief Engineer, Wyoming Department of Transportation, Cheyenne, WY

Gregg currently serves as the Assistant Chief Engineer for the Wyoming Department of Transportation. In this role, he oversees the planning and engineering programs responsible for the delivery of the State's transportation improvement program. Gregg is a member of the AASHTO Standing Committee on Highways and is the Chair for AASHTO's Subcommittee on Bridges and Structures (SCOBS). Gregg served as the State Bridge Engineer from 2001 – 2010 where he supervised the State's bridge inspection and operations, hydraulic design, and structural design activities. He was a member of the Subcommittee on Bridges and Structures from 1996 to 2010 were he participated in the activities of the Technical Committee for Guardrail/Bridge Rail; the Technical Committee for Structural Steel Design; the Technical Committee for Bridge Management, Evaluation and Rehabilitation; and he chaired the Technical Committee for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. He was also the bridge liaison to the Technical Committee for Roadside Safety. Gregg served on the

TRB General Structures Committee and the Steel Bridge Committee. Prior to 2001, Gregg inspected bridges and completed the design and oversight of a variety of bridge replacement and rehabilitation projects. Gregg is a licensed professional engineer in the State of Wyoming.

9:10 - 9:35 A.M.

The National Highway Infrastructure – Impact of MAP-21 and Expectations of the Next Highway Bill"

Walter C. Waidelich, Jr., FHWA Associate Administrator for Infrastructure, Washington, D.C.

Walter "Butch" Waidelich assumed the position of Associate Administrator for Infrastructure on August 5, 2013. He oversees the development and administration of national highway programs, technical and program assistance for improving highway and bridge infrastructure, and the Federal highway program performance. He provides leadership and strategic direction to a professional staff of 100 highway, bridge, and related engineering experts, as well as guidance to over 1500 professionals throughout the FHWA in developing and implementing FHWA's annual $40 billion Federal-aid highway program for improving the condition of the nation's roads and bridges. He leads the development and deployment of new and innovative materials, technologies, methods, tools, and programs to State DOT and related industry groups in support of FHWA's Every Day Counts initiative to shorten transportation project delivery time.

After graduation from the Colorado School of Mines with a B.S. in Mining Engineering, he entered active duty military service as an Engineer Officer in the United States Army. In 1988, Butch joined the FHWA's Highway Engineer Training Program, and then served in progressive field assignments that led to him becoming the FHWA Division Administrator in Utah, and then Division Administrator in California. Prior to his current assignment, he was the FHWA Director of Field Services–West where he was responsible for supervisory oversight of 13 Western State Division Offices with a collective program size of over $8.0B and a staff of over 300. He provided executive leadership and direction in assuring that western division offices accomplish U.S. Department of Transportation and FHWA strategic goals and objectives, mission and vision.

He has been the recipient of numerous performance and honor awards including the Secretary of Transportation's Partnering for Excellence Award, and the J. K. Martin Memorial Peer Award.

9:35 - 10:00 A.M.

Lane's P3 Experience

Dennis Galligan,
Vice President of Business,
Lane Industries, Inc.,
Pittsburgh, PA

After receiving a degree in Mechanical Engineering from Lehigh University, Dennis Galligan began his professional career at Ebasco Services (now part of URS), a large EPC contractor with roots in the power engineering and construction business. At Ebasco, he helped to develop several cogeneration and independent power facilities, eventually becoming a member of the Board of Directors of the parent company's development division. After Ebasco, he became Executive Vice President of Balfour Beatty Infrastructure, the US subsidiary of the UK's largest civil contractor and later Executive Vice President of Tetra Tech EC, the construction division of parent company Tetra Tech. At each of these companies he was responsible for the EPC components of non-recourse financed projects and he has extensive experience in power, transportation and water resource development projects. At Lane Construction, he is Vice President of Business Development with responsibility for pursuit of large design-build and public-private partnership projects. He brings over forty years in the infrastructure design and construction business to his current position.

10:00 - 10:25 A.M.

Unleashing Value with P3

Herbert W. Morgan, P.E.,
Senior Vice President,
Fluor Enterprises, Inc.,
Richmond, VA

Herb Morgan graduated from Virginia Tech in 1974 with a B.S. in civil engineering (CE). He has over 38 years in the engineering and construction industry with experience managing domestic and international heavy civil projects that include highway, road, and bridge construction for major expressways and construction of industrial and medical complexes.

Mr. Morgan's career began when he joined the consulting engineering firm of HNTB as a field engineer and worked on the downtown expressway that runs through Richmond, VA. Two years later Mr. Morgan joined Daniel Construction, an engineering firm based in Greenville, SC that was acquired by Fluor in the 1980s. During his 36 years with Fluor, he has been given assignments with increased responsibilities from construction engineering manager, to construction manager, to project manager to project di-

rector before becoming vice president of operations in 2002. Currently, Mr. Morgan serves as Senior Vice President of Operations for Fluor's Infrastructure Business Line with responsibility for worldwide operations.

Mr. Morgan's extensive civil engineering experience includes design engineering, construction management and project management and his responsibilities have encompassed project planning, final design, scheduling, procurement and contract administration, quality assurance and control, and safety in both the domestic and international arenas.

The past ten years of his career have been spent advancing innovative contracting practices in the infrastructure community, and he is recognized as a national leader for assembling teams and delivering projects under public private partnerships (PPP). Mr. Morgan's initial foray into the PPP arena was the Pocahontas Parkway project and has since been involved in delivering other major design build or PPP highway projects.

He is a member of the American Society of Civil Engineers (ASCE) and participates in the Transportation Construction Management Institute at Virginia Tech where he frequently addresses attendees to provide inspiration for the future development of their careers. He has an ongoing association with and participation in the Virginia Tech Construction Affiliates, the Myers-Lawson School of Construction Advisory Board and the Myers-Lawson School of Construction Affiliates Program. He serves as an advisor on Public Private Partnerships and is the executive sponsor for the Fluor/Virginia Tech College Relations Program. Mr. Morgan has been published in professional publications and has been invited numerous times to present at national conferences. He is also a registered professional engineer in Virginia.

Mr. Morgan lives in Rockville, VA with his wife Marsha.

10:25 - 11:00 A.M.

PennDOT P3 Rapid Bridge Replacement Project

Tom Macioce, P.E., Chief Bridge Engineer, PA Department of Transportation, Bureau of Project Delivery, Bridge Design and Technology Division, Harrisburg, PA

Tom Macioce is the Chief Bridge Engineer with the Pennsylvania Department of Transportation in the Bureau of Project Delivery. Mr. Macioce has a M. S. Degree from the University of Pittsburgh and a B. S. degree from Pennsylvania State University. Mr. Macioce is on several AASHTO Technical Committees that develop the national specifications for Cul-

verts, Loads, Bridge Inspection, Timber, Steel and Concrete design. As Chief Bridge Engineer, Mr. Macioce develops the policy for design, construction, maintenance, inspection and management of bridges and structures. Mr. Macioce has been involved in several research projects that use innovative girder configurations, forensic investigations of bridge failures, analysis of girders during bridge erection and long term performance of bridges.

FEATURED AGENCY SESSION: AASHTO

Room: CSI Theater (Video Recorded)

For 100 years, the American Association of State Highway and Transportation Officials (AASHTO) has worked to foster the development, operation, and maintenance of an integrated national transportation system. Established by and made up of state highway and transportation officials, AASHTO serves as a liaison between states and the Federal government on a wide range of transportation issues. The Subcommittee on Bridges and Structures (SCOBS) addresses every element of the planning, design, construction, and maintenance of bridges, tunnels, culverts, retaining walls, and other structural components of the nation's transportation system. The work of SCOBS, through standards setting and policy development, impacts both the public and private transportation sectors and ensures that the nation's transportation infrastructure is safe, efficient, and state-of-the-art.

Paul Degges, Deputy Commissioner and Chief Engineer of the Tennessee Department of Transportation, and Paul Trombino, Director of the Iowa Department of Transportation, will share some of AASHTO's history and how it will help its members meet current challenges in the transportation industry. During the second part of the session, SCOBS members will share some of the work currently being done in the bridge industry. The latest in AASHTOWare's Bridge Design-Rating Software will be presented by Dean Teal with the Kansas Department of Transportation. Bruce Johnson, Oregon's State Bridge Engineer, will discuss National Performance Measures for Bridges. After a short break, Innovations in Bridge Construction will be covered by Joshua Sletten of the Utah Department of Transportation. Matt Farrar, the State Bridge Engineer of Idaho, will discuss Element Level Bridge Inspection, followed by Kevin Western of Minnesota with a Research Update

1:00 - 5:00 P.M.

AASHTO HISTORY

1:00 P.M.

Introduction

Gregg C. Fredrick,
Wyoming Department of Transportation

1:05 P.M.

100 Years of AASHTO and Its Role in Transportation

Paul Degges,
Tennessee Department of Transportation

1:35 P.M.

Current Challenges in the Transportation Industry

Paul Trombino III,
Iowa Department of Transportation

TECHNICAL WORK OF AASHTO

2:05 P.M.

AASHTOWare Bridge Design-Rating Software

Dean Teal,
Kansas Department of Transportation

2:40 P.M.

National Performance Measures for Bridges

Bruce Johnson,
Oregon Department of Transportation

COFFEE BREAK 3:00 - 3:20 P.M.

3:20 P.M.

Innovations in Bridge Construction

Joshua Sletten,
Utah Department of Transportation

3:40 P.M.

Element Level Bridge Inspection

Matt Farrar,
Idaho Department of Transportation

4:00 P.M.

Research Update

Kevin Western,
Minnesota Department of Transportation

4:20 P.M.

Q&A / Open discussion

PROPRIETARY SESSION

1:30 - 5:00 P.M.

Room: Parsons Theater

Chair: Rachel Stiffler

Vector Corrosion Technologies, McMurray, PA

1:30 P.M.

IBC 14-01: State-of-the Art Saddle Technology for Cable Stayed Bridges

Andrew Micklus, P.E., Freyssinet Inc., Sterling, VA

In response to the increasing demand for extended design lives, the industry has responded with improved stay cable technologies. Durability of stay cable systems is critical to the long-term health and performance of our cable supported bridges and as such; design, materials, performance testing, and system qualification have been closely scrutinized. Stay cable system details have been developed to ensure that modern stay cables are designed, tested, fabricated, installed and maintained to comply with design lives of up to and beyond 100 years. Over the past 30 plus years, saddle technology for cable stayed bridges has gone through major developments from simply placing making the stays continuous through the pylons with embedded steel pipe to today's highly refined systems that provide improved performance, durability, inspection and replacement. This presentation will review some of the past systems and focus on the many improvements and advantages available with current saddle technologies used for cable stayed bridges rendering the use of saddles an attractive alternative for designers, owners and contractors.

2:00 P.M.

IBC 14-02: Integral Bridges and the Modeling of Soil-Structure Interaction

Stephen Rhodes, Beng, MSc, Ceng, MICE, LUSAS, Kingston upon Thames, Surrey UK; Terry Cakebread, BSc(Hons), Ceng, MICE, LUSAS, New York, NY

No standard approach for the analysis of integral bridges appears in AASHTO LRFD Bridge Design Specifications or other international codes. This paper considers the approaches most suitable for modeling common integral bridge forms, expanding upon recent guidance regarding soil-structure interaction approaches. Issues including material properties, initial stress state and the incorporation of the effects of soil ratcheting are discussed and both continuum and spring-type finite element models are explored.

2:30 P.M.

IBC 14-03: New, Exciting Developments in AASHTOWare Bridge Management (Pontis)

Jeremy Shaffer, Ph.D., Ben Witter, Taylor Gilmore, Bentley Systems, Inc., Pittsburgh, PA

AASHTWOWare Bridge Management (formerly called Pontis) has a rich history of bridge advanced bridge management capabilities to over

40 DOTs. A major new effort is underway to update and improve the software and enhance DOTs capabilities.

COFFEE BREAK - 3:00 - 3:30 P.M.

3:30 P.M.

IBC 14-04: Cable Impregnation for Post-Tension Grouting Problems

David Whitmore, Vector Corrosion Technologies, Winnipeg, MB, Canada; Ivan Lasa, P.E., FL DOT, Gainesville, FL

Problems with post-tension grout materials and techniques has resulted in post-tension tendon corrosion due to the presence of voids, chloride contaminated grout and soft grout. The Florida Department of Transportation (FDOT) has spent more than $55 million repairing 11 post-tension bridges to date. A cost-effective corrosion mitigation technique has been developed to minimize the corrosion of post-tension bridges which have grouting issues.

4:00 P.M.

IBC 14-05: Use of NDT Tools in Inspecting Stay Cable Bridges

Siva Venugopalan, Sharat Menon, and Stuart Mundth, Siva Corrosion Services, Inc., West Chester, PA

Siva Corrosion Services, Inc. (SCS) used three different NDT tools (GPR, IR, Accoustic Monitoring)to identify voids or voids filled with water in the stay cables. SCS confirmed voids using a borescope at locations identified by NDT. SCS opened slecet voided areas to document the strand corrosion, collect grout samples for chloride, sulfate and petrographic testing to quantify the grout quality as it relates to corrosion of strands. SCS concluded that the strands/cables are not experiencing corrosion and that past corrosion is not significant.

4:30 P.M.

IBC 14-06: Monitoring and Analyzing the Movements of Suspension Bridges - Four Case Studies

Gianni Moor, Mageba USA LLC, New York, NY; Kleidi Islami and Thomas Spuler, Mageba SA, Bulach, Switzerland

This paper shall present the recently installed SHM systems of four suspension bridges on three continents, which measure high-frequency movements and thus enable a proper understanding of the bridges' behavior to be developed. In particular, the measured data is analyzed to eliminate the very prominent effects of temperature variations, enabling the lesser effects of traffic etc. to be much more easily assessed – and thus facilitating, for example, more reliable damage detection.

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LONG SPAN I SESSION

8:30 - 11:30 A.M.

Room: Theater 1

Chair: **Matthew A. Bunner, P.E.**
HDR Engineering, Inc., Pittsburgh, PA

8:30 A.M.

IBC 14-07: The Dragon Bridge

Christopher Gagnon, P.E. and Radu Dragan, Ammann & Whitney, New York, NY

In the spring of 2013 the City of Da Nang officially opened a landmark new bridge which since has become the symbol for the city.

The bridge, crossing the Han River, is a five-span continuous arch bridge with a main span of 200 meters and total length of approximately 650m; it carries a six-lane roadway with pedestrian access. The design intended to visually resemble a flying dragon, resulted in an iconic structure that also serves as an important transportation link, the design demonstrates that engineering projects can serve both cultural and functional purposes.

9:00 A.M.

IBC 14-08: Design of the I-74 True Arches Across the Mississippi

Thomas Murphy, Ph.D., P.E., S.E., Philip Ritchie, Ph.D., P.E., Andrew Adams, P.E., and Nohemy Galindez, Ph.D., P.E., Modjeski and Masters, Inc., Mechanicsburg, PA

The new I-74 crossing of the Mississippi river will consist of side-by-side true arches in a basket-handle configuration with minimal arch bracing. The overall design of the two bridges will be discussed, including the use of a cantilevered bike trail and the lateral load implications of this, the hanger and floor beam system, and aerodynamic mitigation measures. An in-depth evaluation of the stability of the arches will also be discussed.

9:30 A.M.

IBC 14-09: Key Technology of Steel Pylon Segments Erection of Yangtze River Bridge at Ma-an-shan

Dunhua Sun, B.E., Zheng Zhang, B.E., and Weifeng Zheng, M.C.E., Anhui Expressway Holding Group Co. Ltd., Hefei, Anhui, China

The steel and concrete composite and the rigid fixity of the tower and girder system were used for the mid pylon of the Yangtze River Bridge at Ma-an-shan. Through optimizing the schedule of construction, adjusting precisely the position of the rigid fixity of the tower and girder system, the expected goal was achieved successfully. Additionally, the largest tower crane called “D5200” has been made to assemble the large steel parts of which the largest one weighed 213.2 tons.

COFFEE BREAK - 10:00 - 10:30 A.M.

10:30 A.M.

IBC 14-10: CONSOL Energy Wing Tip Pedestrian Bridge

Schaun Valdovinos, P.Eng., Hatch Mott MacDonald, Seattle, WA; Michael Stein, P.E., Schlaich Bergermann and Partner, New York, NY

Spanning nearly 800' across a wide, wooded valley, the CONSOL Energy Wing Tip Pedestrian Bridge is designed to be a centerpiece of the new national camp for the Boy Scouts of America. The suspension bridge has a level main deck formed from wooden planks. Secondary walkways are placed atop the cables for the adventurous, with observation decks installed at the tops of the piers and at the belly of the bridge.

11:00 A.M.

IBC 14-11: Visually Transparent Kentucky Truss Overcomes Design Challenges

Craig R Klusman, P.E., URS Corporation, Louisville, KY; Donald N. Corda, P.E., S.E., URS Corporation, Hunt Valley, MD; C. Tony Hunley, Ph.D., P.E., S.E., Stantec, Lexington, KY

The Kentucky Transportation Cabinet replaced an aging structure in western Kentucky with a three-span continuous parallel-chord Warren truss. The new superstructure features an aesthetically pleasing and visually transparent bridge that is not cluttered with vertical members and sway bracing utilized in conventional truss designs. The challenge of providing this clean and open design in the New Madrid seismic region was met by paying particular attention to truss proportions, erection requirements, and connection details.

ABC I SESSION

8:30 A.M. - 12:00 Noon

Room: CSI Theater (Video Recorded)

Chair: Louis J. Ruzzi, P.E.
Pennsylvania Dept. of Transportation, Bridgeville, PA

8:30 A.M.

IBC 14-13: Easy As ABC: Accelerated Rehabilitation of the Stillwater Viaduct Bridge No. 278
Peter Chiu, P.E., Vanasse Hangen Brustlin, Inc., Providence, RI; David Morgan, P.E., RIDOT, Providence, RI
The historic Stillwater Viaduct, constructed in 1932, is a 450-foot-long concrete structure. This bridge served as an important example of Rhode Island's two remaining open spandrel concrete arch bridges. Due to its severely deteriorated condition, the superstructure was replaced with precast concrete components. By using accelerated bridge construction techniques, the bridge was substantially completed in seven months. The rehabilitated structure has increased load capacity and lifespan of the bridge.

9:00 A.M.

IBC 14-14: Overnight Replacement of Skagit River Collapsed Span
Christopher Vanek, Victor Ryzhikov, Charles Rudie, and John Poulson, Parsons Brinckerhoff, Tampa, FL
The procurement and construction of the permanent Skagit River replacement bridge span required complex accelerated bridge construction materials and techniques. To meet the project constraints, including aggressive schedule and geometric limitations, an integral concrete deck girder system was enhanced with an innovative full flexural-shear connection and the utilization of the state's first lightweight concrete girder system. This system was constructed on a parallel temporary steel support structure and replaced under a full overnight closure.

9:30 A.M.

IBC 14-15: To Build or Not To Build – The Rehabilitation Story of New York Avenue Bridge in Washington DC
Inmar Badwan, Ph.D., P.E. and Amir Arab, Ph.D., P.E., T.Y. Lin International, Alexandria, VA; Ali Shakeri, P.E. and Ronaldo "Nick" Nicholson, P.E., DDOT, Washington, DC
The presentation includes the innovative design and accelerated construction solutions successfully implemented to resolve the construction complications and alleviate the existing site constraints for the New York Avenue Bridge in Washington, DC, located north of the Union

Station. The major rehabilitation items included the addition of third middle girders to address redundancy concerns with the existing two-girder structural systems and the use of two-way post-tensioned precast deck panels with 12-ft cantilevers over the exterior girders.

COFFEE BREAK - 10:00 - 10:30 A.M.

10:30 A.M.

IBC 14-16: Replacing the Memorial Bridge

David Rogowski, P.E. and Josh Crain, Genesis Structures, Kansas City, MO; Steve DelGrosso, Walsh Construction, Canton, MA

The 90-year old Memorial Bridge served Portsmouth, New Hampshire as a major link to nearby Kittery, Maine. The vertical lift bridge performed daily lifts flawlessly; however, the bridge required replacement due to deterioration of the steel framing. This paper highlights the advantages of the new "gusset-free" truss concept selected for the project and demonstrates the procedures developed to meet the 18-month replacement including the float-out removal of existing spans and float-in installation of new spans.

11:00 A.M.

IBC 14-17: I-91 Brattleboro Bridge Improvements Project

Garrett Hoffman, P.E., FIGG Bridge Engineers, Inc., Exton, PA; Eric Foster, Vermont Agency of Transportation, Brattleboro, Vermont, VT

The I-91 Brattleboro Bridge Improvements Project located in Brattleboro, Vermont includes the replacement of four bridges with two new bridges (Bridges 8 & 9). The best value selected, design/build project is being designed by FIGG Bridge Engineers, Inc. and built by PCL Civil Constructors, Inc. for the Vermont Agency of Transportation (VTrans).

11:30 A.M.

IBC 14-18: Hurricane Deck Bridge Replacement over the Lake of the Ozarks

Martin Furrer, P.E., S.E. and Pamela Yuen, P.E., Parsons Corporation, Chicago, IL; Scott Gammon, P.E., American Bridge Company, Overland Park, KA; Dennis Heckman, P.E., MODOT, Jefferson City, MO

For the Hurricane Deck Bridge replacement the owner elected to employ an Alternate Technical Concept (ATC) procurement process to replace the existing 2,200-foot-long steel deck truss with 463-ft spans over the Osage Arm of the Lake of the Ozarks in Camden County, MO. This paper discusses the development of the delta frame baseline and the winning ATC design, the unique contracting approach and the construction of this bridge with piers in up to 85 feet of water.

REHAB/PRESERVATION I SESSION

8:30 A.M. - 12:00 Noon

Room: **Parsons Theater**

Chair: **Gary Runco, P.E.**
Virginia Department of Transportation, Fairfax, VA

8:30 A.M.

IBC 14-19: US 84 Mississippi River Bridge - Truss Pin Replacement

James Gregg, P.E., HNTB, Baton Rouge, LA

The Westbound US 84 Mississippi River Bridge is a 3,664-foot long 5 span cantilever truss bridge with one suspended span and two quasi-suspended spans located in Natchez, MS. Opened in 1940, the suspended and quasi suspended spans are supported by a total of 8 eye bar links and 16 – 10" diameter pins. Two of the pins have shifted and are now flush with the gussets. HNTB has developed plans to construct a temporary by-pass structures and remove and replace the two pins in concern. HNTB has also developed plans to replace the link if need be.

9:00 A.M.

IBC 14-20: Rehabilitation and Strengthening of the Freeport Bridge

Christopher Smith, P.E., Michael Irwin, P.E., and Christopher Ahlskog, P.E., Modjeski and Masters, Inc., Mechanicsburg, PA

This paper focuses on the rehabilitation of the Freeport Bridge steel deck truss bridge which is located 30 miles northeast of Pittsburgh, PA and carries State Route 356 over the Allegheny River. The main river crossing truss span concrete deck and stringers were replaced and all floorbeams and some main truss members were strengthened along with the complete replacement of the North and South steel multi-girder approaches. The rehabilitation also included tall rocker bearing replacement.

9:30 A.M.

IBC 14-21: Reconstruction of the Siegrist Covered Bridge

David Hoglund, P.E., RETTEW Associates, Lancaster, PA

Tropical Storm Lee's floodwaters ripped the Siegrist Covered Bridge from its abutments in September 2011. Once the water receded, Lancaster County salvaged the bridge from Chiques Creek and RETTEW evaluated it for reconstruction. With cooperation from federal, state, and local agencies, RETTEW designed and permitted the reconstruction using the original design and as much of the original timber as possible. The bridge is founded on new abutments that were elevated to minimize future flood damage.

COFFEE BREAK - 10:00 -10:30 A.M.

10:30 A.M.

IBC 14-22: Macdonald Suspension Bridge Deck Replacement: Engineering Challenges and Solutions

Keith Kirkwood, P.Eng., Dusan Radojevic, P.Eng., and Peter Buckland, C.M., P.Eng., Buckland & Taylor, North Vancouver, BC, Canada; Jon Eppell, P.Eng., Halifax Harbour Bridges, Dartmouth, NS, Canada

The suspended deck and hangers of the Macdonald Bridge in Halifax, NS, Canada will be replaced segment-by-segment starting in 2014 during full closures of the bridge at night (and some weekends), with traffic running during the day. The Owner's engineer, Buckland & Taylor, has developed erection sequences for the work. Challenges faced include a severe wind climate in Halifax and raising the main span deck after deck replacement is complete in order to increase headroom for ships.

11:00 A.M.

IBC 14-23: Preserving a Unique Seven Span Covered Bridge

Sean James, P.E. and Josif Bicja, P.E., Hoyle, Tanner & Associates, Inc., Manchester, NH

The Bath Village Covered Bridge is a 392'-6" long timber structure built in 1832. It is a rare type of covered bridge that consists of a unique truss and arch structure. The presentation will include an overview of the analysis of the bridge and rehabilitation design and then will focus on the construction phase of the project. The methods of re-introducing camber, methods of construction, materials used and lessons learned will be discussed in detail.

11:30 A.M.

IBC 14-24: Electrochemical Chloride Extraction, A Case Study: 12th Street Viaduct Rehabilitation

Mark Shafer, P.E., HDR, Inc., Kansas City, MI

A unique double-deck landmark structure, 12th Street Viaduct was constructed in 1915 and other than a 1965 rehabilitation had received only minor repair. Unless renovated, the only remaining option would have been to raze the bridge. Engineering evaluations focused on the acute repairs. Among solutions recommended and adopted involved the use of electrochemical chloride extraction (ECE). The benefit of the ECE process is that existing structures can often be salvaged, minimizing consumption of natural resources.

CONSTRUCTION SESSION

8:30 - 11:30 A.M.

Room: Theater 2

Chair: **Gerald J. Pitzer, P.E.**
Consultant, Pittsburgh, PA

8:30 A.M.

IBC 14-25: Long Span Steel I-Girder Bridge Design and Construction: I-270 over the Chain of Rocks Canal

Lance Peterman, P.E., S.E., HDR Engineering, Inc., Chicago, IL; Brandon Chavel, Ph.D., P.E., HDR Engineering, Inc., Cleveland, OH; Jared Cababe, P.E., HDR Engineering, Inc., King of Prussia, PA

This new continuous steel I-girder bridge over the over the main navigation channel for Mississippi River, located in southern Illinois, has spans of 250', 440', 490', 440', and 350'. The presentation will focus on the unique aspects associated with the design and construction of a long span steel plate girder bridge including structure type selection, haunched girders, top flange lateral bracing, deck placement sequence, design analysis, and development of a conceptual erection sequence during design.

9:00 A.M.

IBC 14-26: Design and Construction of St. Patrick's Pedestrian Bridge

Thomas Cooper, P.E., P.Eng. and Brent Whitcomb, Parsons Brinckerhoff, Denver, CO; Jean-Francois Blassel, Christian Rieser, and Daniel Garcia, RFR, Paris, France; Michael MCDONAGH, Parsons Brinckerhoff, Lawrenceville, NJ

The Saint Patrick's Bridge crossing the Bow River in Calgary is nearing completion. The footbridge is a three-span, 182 meter long network arch that will be completed in fall 2014. Construction has proceeded in spite of the unprecedented flooding of June 2013 that washed out critical deck falsework, causing damage to the recently completed deck.

9:30 A.M.

IBC 14-28: Steel Truss Bridge Redundancy Combined with Construction over a Busy Railyard

Jeffrey Cavallin, P.E., Parsons, Minneapolis, MN; Christopher Trcka, Matthew Curtiss, P.E., and Greg Hasbrouck, P.E., Parsons, Chicago, IL

The St. Anthony Parkway steel truss bridge replacement project, located in Minneapolis, Minnesota, USA, and crossing over the BNSF Northtown rail yard, incorporates unique load-path and internal redundancy measures, a post-tensioned concrete bottom chord member and eliminates fracture critical steel truss members. The replacement of the existing truss spans will require specialized construction techniques to minimize impacts to BNSF's heavily used rail yard including launching beams to remove the existing trusses and install the new truss span.

COFFEE BREAK - 10:00 - 10:30 A.M.

10:30 A.M.

IBC 14-29: The 11th Street Bridge - Reverse Analysis for Staged Construction

Shane Beabes, P.E., AECOM, Baltimore, MD; William Alko, P.E. and Raghu Krishnaswamy, P.E., AECOM, Pittsburgh, PA

What happens when the structural steel girders and cross-frames are already fabricated for a 916 ft. long 5-span, curved/kinked bridge and then the design-build contractor determines to re-sequence the work from original full-width construction to a two-stage sequence? Attend the presentation to learn about the reverse analysis that was performed and how all of the structural steel was salvaged in the new sequence with only minimal modifications needed to achieve both design and erection fit-up.

11:00 A.M.

IBC 14-30: University Avenue Bridge - Design & Construction Challenges

Jerome MacKenzie, P.E. and Evan Batchis, P.E., STV Incorporated, Boston, MA

The $29 million, 520-foot University Avenue Bridge spans the rugged and challenging terrain of the Merrimack River and adjacent hydro-power canal. This presentation explores our design methodology used for the new two span, deck truss river crossing, including development of permit documents as they relate to constructability of the bridge. We then explore the reality of the contractor's actual construction methods, some of the difficulties encountered, and solutions developed.

APC CO-MEETING AGENDA

9:00 A.M. – 12:00 Noon

Room: 330

1. **Tappan Zee Bridge – Focus on Construction Drivers to Bridge Design (80 minutes)**
   Ken Wright, P.E., HDR Engineering
2. **Bent Plate Modular Units (30 minutes)**
   Karl Barth, P.E., High Steel Structures
3. **Precast Bridge Decks (20 minutes)**
   Troy Jenkins, P.E., Northeast Precast Products
4. **Fabricated Structural Steel – Bolt Payment Issues (15 minutes)**
   Greg Burkhart, P.E., JD Eckman Inc.
5. **Use of Point Cloud Surveys for Existing Structures (15 minutes)**
   Joe Rovnan, P.E., JD Eckman Inc.
6. **Steel Diaphragms for Precast Girders (15 minutes)**
   Tom Macioce, P.E., PennDOT

DESIGN I SESSION

1:30 - 4:00 P.M.

Room: Parsons Theater
Chair: Matthew P. McTish, P.E.
McTish, Kunkel & Associates, Allentown, PA

1:30 P.M.

IBC 14-31: John K Tener Memorial Bridge: Design/Build Success and Lessons Learned

Jason DeFlitch, P.E., Ahmad Ahmadi, Ph.D., P.E. and Raymond Henney, P.E., SAI Consulting Engineers, Inc., Pittsburgh, PA; Michael Trettel, Joseph B. Fay Company, Tarentum, PA

With a total length of 1,770', the John K Tener Memorial Bridge (previously known as the Charleroi-Monessen Bridge) is a 12-span bridge carrying S.R. 2018 over the Monongahela River. The recently completed design/build project involved the replacement of the existing closed truss spans, with a total length of 1,011', and their supporting piers. The project included the design, fabrication, and construction of one of the longest span haunched steel multi-girder bridges in the region.

2:00 P.M.

IBC 14-32: Design and Reconstruction of the Jeremiah Morrow Bridge

Tony Shkurti, Ph.D., P.E., S.E., Michael Xin, Ph.D., P.E., HNTB Corporation, Chicago, IL

The Jeremiah Morrow Bridge is a cast-in-place segmental bridge on Interstate 71 north of Cincinnati. The twin-bridges will replace existing truss structures. The first structure was opened to traffic at the end of 2013. The new 6-span bridge is 2,252' long with 440' main spans. Each of the single cell boxes carries 55' wide roadway. The new bridge is the tallest bridge in Ohio at 239' above ground when the $88 million project is completed in May 2016.

2:30 P.M.

IBC 14-33: Ohio River Bridges Downtown Crossing D/B - Section 1 Design

William Amrhein, P.E., S.E., Stantec Consulting Services Inc., Lexington, KY; James Gallt, P.E., Palmer Engineering, Winchester, KY; Edward O'Dell, P.E., WMB, Inc., Lexington, KY; Rodney Riley, P.E., S.E., Jacobs, St. Louis, MI

This complex interchange rebuild in Louisville, KY involves the following project features: complexities in steel framing due to curvature, long spans, and severe skews; applications of steel and post-tensioned concrete integral pier caps; applications of micropile foundations in sensitive utility areas; development of a method for mitigating downdrag loads in deep foundations; and testing methods and corresponding retrofits of existing piers.

3:00 P.M.

IBC 14-34: Design Innovations for a Modern Vertical Lift Bridge

Sean-Philip Bolduc, P.E., M. ASCE and Daniel Warren, P.E., M. ASCE, Parsons, Baltimore, MD; Ted Henning, P.E., Parsons, New York, NY

The new Fore River Bridge consisting of a 324-foot long vertical lift span and 2,000 feet of approach structures joining the Boston, MA suburbs of Quincy and Weymouth will replace a temporary crossing erected in 2004 when the previous 1936 bascule bridge was demolished. The Design-Build project includes coordination, analysis, design, and construction planning, that has produced innovations in the design and construction of the Vertical Lift Bridge.

3:30 P.M.

IBC 14-35: I-90 Dresbach Bridge over the Mississippi River: A Bridge Springs Forth From Nature

Courtney Oltman and Stephen Fultz, P.E., S.E., FIGG, Englewood, CO; Manjula Louis, P.E., Minnesota Department of Transportation, Oakdale, MN

Construction is underway on the new Dresbach Bridge carrying I-90 over the Mississippi River linking Minnesota and Wisconsin's regional and interstate needs. MnDOT is replacing the deficient structure with a modern, ecologically conscious concrete bridge with 100 year life. Crossing the main channel are twin, cast-in-place post tensioned segmental concrete structures built from above in balanced cantilever with dual 508' main spans. East channel spans are a first-use of new MnDOT deep precast beam standards.

LONG SPAN II SESSION

1:30 - 4:00 P.M.

Room: CSI Theater (Video Recorded)
Chair: Herbert M. Mandel, P.E.
Consultant, Pittsburgh, PA

1:30 PM

IBC 14-36: Construction of Yangtze River Bridges at Maanshan

Yonggao Yin, M.C.E., Likui Zhang, B.E., and Weifeng Zheng, M.C.E, Anhui Expressway Holding Group Co. Ltd., Hefei, Anhu, China

The Yangtze River Bridges at Maanshan consists of two major bridges. The major bridge crosses over the main stream with a suspension bridge with three main towers and two major spans of 1,080 meters (3,543 ft) in span length. The middle tower of the suspension bridge is the composite tower made up of steel structure at its upper part and reinforced concrete structure at its lower part.

2:00 P.M.

IBC 14-37: A New Cable-Stayed Bridge across the Mississippi River

Hans Hutton, S.E., HNTB, Kansas City, MO; Randy Hitt, P.E., MODOT, St. Louis, MO; Jeff Smith, P.E., HNTB, St. Louis, MO

A new Mississippi River Bridge has been opened to traffic in St. Louis, MO. This bridge is the cornerstone of a multi-phase project that will provide significant relief for commuters in the St. Louis area. The bridge possesses the third longest cable-stayed span (1500-ft) in the United States. Design and construction challenges include being located in a relatively high seismic area and over a major, navigable waterway subject to significant fluctuations in water surface elevation.

2:30 P.M.

IBC 14-38: Design of the St. Croix River Crossing

Kevin Western, P.E., MNDOT, St Paul, MN; Don Bergman, P.E. and Nedim Alca, P.E., Buckland & Taylor Ltd, North Vancouver, BC, Canada; Philip Walker, P.E., HDR, Tampa, FL

The presentation will cover the design of the new St. Croix River extradosed bridge near Stillwater, MN. When complete the bridge will be the largest extradosed structure in North America and one of the largest in the world. The presentation will focus on why an extradosed bridge was selected, the environmental challenges of the project, the design issues unique to extradosed bridges in general and to the St. Croix Bridge in particular.

3:00 P.M.

IBC 14-39: Gerald Desmond Bridge Replacement - Seismic Design of the Main Span Bridge and MSS Construction of Approach Spans

Matt Carter, P.E., Arup, New York, NY; Neil Carstairs, P.E., Arup, Los Angeles, CA

The Gerald Desmond Bridge Replacement in the Port of Long Beach will be California's first major cable stay bridge. The main span bridge has 500 ft tall reinforced concrete mono-pole towers which are protected from damage by seismically isolating the superstructure with viscous dampers. This paper will describe the seismic design of the main span bridge as well as the use of a moveable scaffold system (MSS) self launching formwork in order to rapidly construct the approaches.

3:30 P.M.

IBC 14-40: New Kentucky Lake Bridge: Design of a Basket-handle Network Tied Arch

Chou-Yu (C.Y.) Yong, P.E., S.E. and Jason Stith, Ph.D., P.E., S.E., Michael Baker Jr., Inc., Louisville, KY; Richard Schoedel, P.E., Michael Baker Jr., Inc., Moon Township, PA

This paper will focus on the rationale for the selection of various features of the KY Lake arch bridge superstructure such as the selection of network hanger arrangement, integral floor system, open H-section rib, and non-welded knuckle plate connection. This is explored by outlining the goals established for the design of the arch such as minimizing the extent and severity of fatigue prone details, simplification of details for fabrication, and planning for a low-maintenance/ inspection friendly structure.

RAIL SESSION

1:30 - 4:00 P.M.

Room: Theater 1
Chair: Carl Angeloff, P.E.
Con-Serv Inc., Aliquippa, PA

1:30 PM

IBC 14-41: Alteration of Mobile and EJ&E Railroad Bridges

Kamal Elnahal, Ph.D., P.E., US Coast Guard, Washington, DC; Chuck Davis, P.E., Scott Bridge Co., Inc., Opelika, AL

The presentation will address various challenges and unusual construction techniques used to replace the old narrow spans over the waterway of the Mobile and EJ&E Railroad Bridges with new long lift spans that provide a wide navigation opening that meets today and future navigation needs. Also, the presentation will address valuable and useful information about two methods of accelerated bridge construction techniques used to construct the new bridges with the least interruption to rail and river traffic.

2:00 P.M.

IBC 14-42: Great River Bridge: A Focus On Gusset Plate Replacement

Andrew Bradshaw, P.E. and Mark Ennis, P.E., STV Incorporated, Boston, MA

The Great River Bridge Project involved restoration of a historic, 368-foot, two-span continuous truss bridge. Unexpected complexity arose during rehabilitation when the deck was removed. It became apparent that bottom chord members and gusset plates were more significantly deteriorated than expected. Repairs for the deteriorated bottom chord and gussets involved steel collars designed to connect to chord members around each gusset, allowing removal of gusset plates without deflection that could lock stress into truss members.

2:30 P.M.

IBC 14-43: Design of the New CTA Wilson Station and Elevated Track Structure

Johann Aakre, P.E., S.E. and Marco Loureiro, P.E., HNTB Corporation, Chicago, IL

The Wilson Red-Line Station Reconstruction project will be one of the largest CTA 'L' station projects in the agency's history. The reconstruction will replace the severely deteriorated station along with 1,800 feet of elevated structure supporting 4 tracks leading to and from the station. The design of the elevated structure track faced a number of challenges, including details for the direct fixation system, foundations layout in a congested urban setting, and staged construction considerations.

3:00 P.M.

IBC 14-44: Direct Fixation Track for High-Speed Rail on Aerial Structures

Gregor Wollmann, Ph.D., P.E., HNTB, Blacksburg, VA

The advent of high-speed rail has revealed the limitations of ballasted track and promoted the development of ballastless track systems in Asia and Europe. This presentation provides an overview of such direct fixation track systems with a focus on their application on aerial structures. Structural design considerations and cost implications will be briefly discussed. In certain environments the higher cost of direct fixation track can be economically justified if reduced maintenance demands and higher track availability are considered.

3:30 P.M.

IBC 14-45: Major Bridge Structure at the World Trade Center

Martin Kendall, P.E., STV Incorporated, New York, NY; Kishor Doshi, P.E., STV Incorporated/ Downtown Design Partnership, New York, NY

The reconstruction of the World Trade Center complex in New York City includes the construction of a unique underground bridge structure. This bridge supports two subway tracks and Cortlandt Street Station to span over the PATH Transit Hall, and the newly reconstructed Greenwich Street through the heart of the WTC site. The primary trusses of the bridge structure are completely composed of heavy welded construction, both shop welded fabrication and field welded assembly.

EVALUATION/ANALYSIS SESSION

1:30 - 4:00 P.M.

Room: Theater 2
Chair: Raymond A. Hartle, P.E.
GAI Consultants, Inc., Cranberry Township, PA

1:30 P.M.

IBC 14-46: Performance of Accelerated Bridge Construction Connection in Bridges Subjected To Extreme Events

W. Phillip Yen, Ph.D., P.E., FHWA, Washington, DC; M. Saiid Saiidi, Ph.D., UNR, Reno, NV; Michael Keever, P.E., Caltrans, Sacramento, CA

This paper summarizes the findings from NCHRP Project 20-68A, Domestic Scan 11-02 on "Best Practices Regarding the Performance of Accelerated Bridge Construction (ABC) Connections in Bridges Subjected to Multi-Hazard and Extreme Events". The objective of this Domestic Scan was to identify connection details that can be used for ABC and which perform well under extreme events, including waves and tidal or storm surge loads, earthquakes, blast, and other large lateral forces.

2:00 P.M.

IBC 14-47: Evaluation of Cross -frame Designs for Highly Skewed Steel I-Girder Bridges

Matija Radovic and Jennifer Righman McConnell, Ph.D, University of Delaware, Newark, DE

Current AASHTO specifications do not provide clear guidelines for designing cross-frames of highly skewed bridges. This paper presents an evaluation of the differences in structural responses as a result of four differing commonly used cross frame designs for highly skewed bridge. Twelve FEA models of different cross frame designs were analyzed. Preliminary results show that the peak cross-frame stresses can vary by more than double simply due to the cross-frame configuration.

2:30 P.M.

IBC 14-48: Inspection and Evaluation of the Main Cables of the Anthony Wayne Bridge over the Maumee River in Toledo, Ohio

Martin Smith, P.E., Philip Ritchie, Ph.D., P.E., and Scott Eshenaur, P.E., Modjeski and Masters, Inc., Mechanicsburg, PA; Doug Rogers, P.E., OHDOT, Bowling Green, OH

Modjeski and Masters, with assistance from Piasecki Steel Construction, ARCADIS, Lucius Pitkin and ODOT, conducted an investigation of the suspension cables of the Anthony Wayne Bridge in Toledo, Ohio. The cables are comprised of 3,534 parallel wires. A cable strength evaluation was performed using the recommendations in NCHRP Report 534, "Guidelines for Inspection and Strength Evaluation of Suspension Bridge Parallel Wire Cables". This paper discusses the inspection, laboratory testing and determination of the cable strength.

3:00 P.M.

IBC 14-49: Nonlinear Redundancy Analysis of Truss Bridges

Graziano Fiorillo and Michel Ghosn, Ph.D., City College of New York, New York, NY

This paper describes the results of the redundancy analysis of a typical simply supported truss bridge superstructure and its ability to continue to carry vehicular loads beyond the elastic limit. The analysis' objective is to investigate the residual capacity of the structure above the design load and the ensuing nonlinear behavior. The numerical model reflects the characteristics and the connection details of a real truss bridge tested up to failure in a recent study.

3:30 P.M.

IBC 14-50: Design of Bridges for Service Life: A Comprehensive and Systematic Approach

Atorod Azizinamini, Florida International University, Miami, FL

The objective of this presentation is to provide, briefly the general philosophy and major steps that could lead to comprehensive design of bridges for service life and outline the major steps involved in service life design. Presentation will provide the outline of systematic and comprehensive approach that is developed in U.S. under SHRP2 R19A project for design of bridges for service life. The recommendation of the project is summarized in a stand-alone publication called Design Guide for Bridges for Service Life. This publication became available in April 2013 through following web site. http://www.trb.org/Main/Blurbs/168760.aspx

INTERNATIONAL RECEPTION

Tuesday, June 10; 4:30 - 5:30 P.M.

Room: Allegheny Overlook

Host: Thomas G. Leech, P.E., S.E.
Gannett Fleming, Inc., Pittsburgh, PA

Open to all international attendees, the Executive Committee hosts a gathering for our guests who traveled beyond borders to attend the IBC. The reception is free to international attendees, but tickets are required and can be obtained at the IBC Registration Desk.

IBC AWARDS DINNER

Tuesday, June 10; 5:30 - 7:30 P.M.

Room: Ballroom B

Host: Thomas G. Leech, P.E., S.E.
Gannett Fleming, Inc., Pittsburgh, PA

ESWP, in association with Bridge design and engineering (bd&e) Magazine, Roads and Bridges Magazine, Bayer MaterialScience LLC, and TranSystems, Inc. presents the 27th Annual IBC Bridge Awards Ceremony. Following Tuesday's sessions, unwind and network apart from the Conference with fellow attendees and celebrate the Award winners at our IBC Awards Dinner. A separate registration is required with a fee of $40 ($50 without conference registration). seating is limited, so please check at the IBC Registration Desk for availability.

The International Bridge Conference® annually recognizes individuals and projects of distinction. Honorees will be recognized as follows:

JOHN A. ROEBLING MEDAL

Malcolm Thomas Kerley, P.E., Richmond, VA recognizing an individual for lifetime achievement in bridge engineering.

GEORGE S. RICHARDSON MEDAL

Stan Musial Veterans Memorial Bridge, St. Louis, MO awarded for a single, recent outstanding achievement in bridge engineering.

GUSTAV LINDENTHAL MEDAL

South Norfolk Jordan Bridge, Chesapeake, VA, awarded for an outstanding structure that is also aesthetically and environmental pleasing.

EUGENE C. FIGG, JR. MEDAL

Dragon Bridge, Dan Nang, Vietnam awarded for signature bridges, recognizing a single recent outstanding achievement for bridge engineering, which is considered an icon to the community for which it is designed.

ARTHUR G. HAYDEN MEDAL

Squamish Pedestrian Overpass, Squamish, BC, Canada recognizing a single recent outstanding achievement in bridge engineering demonstrating vision and innovation in special use bridges.

ABBA G. LICHTENSTEIN MEDAL

Checkered House Bridge Route 2 Design-Build, Richmond, VT, awarded for a recent outstanding achievement in bridge engineering demonstrating artistic merit and innovation in the restoration and rehabilitation of bridges of historic or engineering significance.

TAPPAN ZEE BRIDGE SESSION

8:00 A.M.- 12:00 Noon

Room: CSI Theater

Chair: Kenneth J. Wright, P.E.
HDR Engineering, Inc., Pittsburgh, PA

8:00 A.M.

IBC 14-51: Tappan Zee Bridge Design Build - An Owner's Perspective
Jay Wagner, P.E. and David Capobianco, P.E., NYS Thruway Authority, Tarrytown, NY
This paper provides NYSTA's experience utilizing design build for the Tappan Zee Bridge project. This will include a brief project overview, why design build and the effort to deliver this type of project, contract and procurement development, selection process, early interaction with the Design Builder, NYSTA oversight roles, and finally NYSTA perspective of design build.

8:30 A.M.

IBC 14-52: The New New York Bridge Approach Spans Superstructure Design
James Bintrim, P.E., HDR Engineering, Pittsburgh, PA
The New NY Bridge is a Design-Build project with the New York State Thruway Authority. The project consists of twin structures composed of a precast deck system supported on steel plate girders. The bridges are 5-span continuous units utilizing a girder/substringer system. The framing system supports conventionally reinforced precast deck panels with conventionally reinforced transverse joints. The design details of the approaches have been tailored to the end product envisioned by the owner while accommodating the means and methods of the contractor.

9:00 A.M.

IBC 14-53: Design of the New NY (Tappan Zee) Bridge Cable-Stayed Main Span
Don Bergman, P.E., Armin Schemmann, Ph.D., Chris Scollard, Ph.D., Matt Kleymann, P.E., and Tjen Tjhin, Ph.D., P.E., Buckland& Taylor, North Vancouver, BC, Canada
The 3.1 mile long New NY (Tappan Zee) Bridge will replace the existing Tappan Zee Bridge, which is functionally obsolete and increasingly expensive to maintain. The iconic main span structure is the centerpiece of the new crossing, comprising twin cable-stayed bridges, with 1,200-foot main spans and 515-foot side spans. Each bridge deck will carry four traffic lanes and the bridge is designed for the future addition of a cable-stayed rail transit deck between the roadway decks.

9:30 A.M.

IBC 14-54: Precast Substructure Elements for New NY (Tappan Zee) Bridge

Nicholas Burdette, P.E. and Michael Lamont, P.E., S.E., HDR Engineering, Pittsburgh, PA

Precast substructure elements were widely used for the 3.1 mile long New NY (Tappan Zee) Bridge to speed construction, improve safety, and provide a durable final product meeting 100 year service life requirements. Massive precast concrete pile cap tubs and prestressed precast concrete pier cap shells are used for nearly 60 approach piers. Design features and challenges are presented for these precast elements, which are made fully composite in the final structure.

COFFEE BREAK - 10:00 - 10:20 A.M.

10:20 A.M.

IBC 14-55: 100 Year Service Life Considerations for the Tappan Zee Hudson River Crossing

Brad J Pease, Ph.D. and Carola Edvardsen, Ph.D., COWI A/S, Kongens Lyngby, Denmark; Anne-Marie Langlois, Buckland & Taylor, LTD, North Vancouver, BC, Canada

The new Tappan Zee Hudson River Crossing, with exposure to aggressive brackish river water and deicing chemicals, among others, has a 100 years' service life requirement for non-replaceable concrete components, including the main-span towers, substructure, and superstructure. This paper presents the probabilistic-based service life design approach, originally developed in Europe, which was implemented to determine requirements to concrete quality (i.e., chloride migration coefficient) and cover thickness for the Tappan Zee Hudson River Crossing.

10:45 A.M.

IBC 14-56: Innovative Precast Deck System for the Tappan Zee Hudson River Crossing

Mike LaViolette, P.E., HDR Engineering, Inc., Tarrytown, NY; Mike Lamont, P.E., S.E., HDR Engineering, Inc., Olympia, WA; Rahul Saggar, P.E., URS, New York, NY

The paper presents the design and details for the precast deck panel system of the New NY Bridge. The system includes full-depth precast panels and cast-in-place concrete joints with a permanent, integral bottom form system that eliminates the need for stripping after joint concrete placement. The design incorporates Eurocode and AASHTO LRFD provisions to satisfy stress and serviceability considerations.

11:10 A.M.

IBC 14-57: Behavior of Large Diameter Friction Piles for the New NY (Tappan Zee) Bridge

Robert Palermo, P.E. and Stephen Spink, P.E., GZA GeoEnvironmental, Inc., Norwood, MA; Thomas Cooling, P.E., D.GE, URS Corporation, St. Louis, MO; Brian Keaney, P.E., HDR Engineering, Inc. of the Carolinas, Raleigh, NC

One third of the piers of the New NY (Tappan Zee) Bridge are underlain by alluvial deposits of organic clay and glacial lake deposits of varved silt and clay that extend up to 750 feet deep. Due to the depth of these deposits, end-bearing piles as used for the remainder of the bridge were impractical. This paper describes results of the load test program, static design methods, and impacts to the friction pile design.

11:35 A.M.

IBC 14-58: Security Design for the New NY Bridge (Tappan Zee Bridge)

Kenneth Wright, P.E., HDR Engineering, Inc., Pittsburgh, PA; Peter Totten, P.E., URS Corporation, New York, NY; Robert Bosco, CCP, FCP, HDR Engineering, Inc., Orlando, FL

This paper will discuss the approach taken to developing an overall security plan for the New NY Bridge. A critical component of the security design was the development of an Accident, Threat and Vulnerability Risk Assessment (ATVRA). The process of developing this assessment was critical in finalizing the crossing design, and was made more challenging by the design-build procurement process. An overview of how specialized analysis and structural analysis informed design choices will be discussed.

PEDESTRIAN SESSION

8:30 A.M. - 12:00 Noon

Room: Theater 1

Chair: **John C. Dietrick, P.E., S.E.**
Michael Baker Jr., Inc., Cleveland, OH

8:30 A.M.

IBC 14-59: Conceptual and Preliminary Design of the Terwillegar Stressed Ribbon Footbridge

Reed Ellis, Ph.D., P.E. and Manoj Medhekar, Ph.D., P.E., Stantec Consulting Ltd., Edmonton, AB, Canada; Jason Reske, M.Eng., P.Eng., City of Edmonton, Edmonton, AB, Canada

When the City of Edmonton called for proposals in January 2013 for a new 300m (990 ft.) footbridge across the North Saskatchewan River, consultants were challenged to develop concepts that were innovative, fit the context of the deep natural river valley, and meet strict budgetary requirements. A stressed ribbon option was selected consisting of a slender precast concrete, post-tensioned, cable supported structure that will be erected segmentally, having no expansion joints. Design challenges are described.

9:00 A.M.

IBC 14-60: Design and Construction of the Mike Gotch Memorial Bridge

Tony Sanchez, Ph.D., P.E., Moffatt & Nichol, San Diego, CA; Frank Gaines, P.E., City of San Diego, San Diego, CA; Eric Lindebak, AIA, Safdie Rabines Architects, San Diego, CA

The Mike Gotch Memorial Bridge spans 300 ft over Rose Creek channel and fills a gap in the San Diego bicycle system. Although many structure types were evaluated, including cable supported options, a simple, cast-in-place, prestressed concrete structure was chosen for its ability to clear-span the channel as well as its elegance and durability. Standard details and construction methods favored by local California contractors were adapted to provide an economical and beautiful bridge.

9:30 A.M.

IBC 14-61: The Knoxville South Waterfront Bicycle/ Pedestrian Bridge

Richard Lawrie, P.E., Hardesty & Hanover, LLP, Alexandria, VA; Charles Redfield, P.E., CR Consulting Engineer, Mill Valley, CA; Dawn Foster, C.E.P., City of Knoxville, Knoxville, TN

This bridge will maximize safety for pedestrians and bicyclists by allocating a crossing unshared by vehicles, and will aid in minimizing environmental impacts, and transportation-related fuel consumption by providing safe and attractive alternative transportation and commuting options. Due to the potential loadings, models and wind tunnel studies are essential. The design effort will provide appropriate functional details. Construction methods and construction stresses are also included. The design goals are elegance, function, and minimal maintenance.

COFFEE BREAK - 10:00 - 10:30 A.M.

10:30 A.M.

IBC 14-62: Design and Construction of a Hybrid Stressed Ribbon Pedestrian Bridge

Joseph Tse, P.E., Parsons Brinckerhoff, Inc., New York, NY; David Charters, P.E. and Timothy Hayes, P.E., Parsons Brinckerhoff, Inc., Raleigh, NC

The American Tobacco Trail pedestrian bridge is a hybrid structure that combines the classical stressed ribbon deck with 30-inch diameter steel arch ribs to form a self-anchored structure. The length of deck is 268 feet, with width varying from 13.5 to 17 feet. The anchorages (abutments) and the deck near the midspan are cast-in-place concrete, while the deck spanning in-between is comprised of 9-inch thick precast deck panels. Post-tensioning tendons extend from anchorage to anchorage.

11:00 A.M.

IBC 14-63: The Capital Cascades Connector Bridge, Tallahassee, FL

Manuel Feliciano, P.E., FIGG, Tallahassee, FL; Dave Snyder, P.E., Blueprint 2000, Tallahassee, FL

This new signature pedestrian bridge in Tallahassee will provide a link for Capital Cascades Park and Trail System. The bridge is 13'–10" wide and 163'–2" long with a 72'–6" long precast span over South Monroe Street. The presentation will include technical details on the bridge foundations and unique superstructure design along with details on incorporating state of the art solar technology into the canopy fabric and blending the bridge design with its surroundings.

11:30 A.M.

IBC 14-64: Chicago Lakefront Trail – Navy Pier Flyover Pedestrian Bridge

Marco Loureiro, P.E. and Johann Aakre, S.E., P.E., HNTB, Chicago, IL

This project involves the design and construction of a new 1,700-foot elevated, multi-use (pedestrian/bicyclist) path along the Chicago Lakefront and the Navy Pier facilities. Due to the highly-visible location of the proposed structure and the Navy Pier facilities which attract nearly 9 million tourists a year, bridge aesthetics are especially important. HNTB worked with the City of Chicago and the project architects to develop a bridge configuration that was both aesthetically pleasing and functional.

DESIGN II SESSION

8:30 - 11:30 A.M.

Room: Theater 2
Chair: W. Jay Rohleder Jr., P.E. S.E.
FIGG, West Chester, PA

8:30 A.M.

IBC 14-65: Design and Construction of the I25 / Santa Fe Interchange Bridges in Denver Colorado

Gregg Reese, P.E., Summit Engineering Group, Inc., Littleton, CO

The reconstruction of the IH25 interchange at Santa Fe Boulevard in Denver, Colorado includes two unique, curved, long span, precast concrete bridge structures that utilize different solutions in a congested urban environment. The Ramp 1 bridge uses curved precast girders and the I25 overpass bridge uses straight precast girders with kinked splices to accommodate a curved roadway alignments. The paper will describe the challenges and the solutions that were successfully implemented during design and construction.

9:00 A.M.

IBC 14-66: I-70 Eastbound Clear Creek Bridge; Making the Best of Difficult Constraints

Kenneth Saindon, P.E., S.E., Atkins, Denver, CO

The difficult site of the new I-70 Eastbound Clear Creek Bridge presented many design challenges requiring consideration of multiple unique features. The resulting 3-span bridge incorporates integral abutment and pier fixity, post-tensioned pier caps, uplift considerations due to poor span balance and skew, erection sequence considerations, micropile and drilled shaft foundations, and mass concrete.

9:30 A.M.

IBC 14-67: I-49 North, Segment K Interchange Project – Featuring Dual Design in Precast Concrete Segmental and Trapezoidal Steel Box Girders with Architectural Enhancements, Shreveport Louisiana

Durk Krone, P.E., Xianzhi Liu, and Michael Paul, P.E., TRC Engineers, Inc., Baton Rouge, LA; Bradley Touchstone, A.I.A., Touchstone Architecture, Tallahassee, FL; Robert A. Schamber, TRC Engineers Inc., Rancho Cordova, CA

Attendees will observe the approach to the dual design of precast concrete segmental post-tensioned box girders, utilizing balanced cantilever construction, and trapezoidal steel box girders to promote competitive bidding to get the LA DOTD the most cost effective alternate. The incorporation of architectural enhancements to the structures will be addressed. The presentation will also highlight the management approach, design criteria, and QC/QA management plan that was utilized to maintain quality during an aggressive design schedule.

COFEE BREAK - 10:00 - 10:30 A.M.

10:30 A.M.

IBC 14-68: Fort Lauderdale International Airport Expansion of Runway 9R-27L

Marco Loureiro, P.E., Johann Aakre, P.E., S.E., and Kenneth Price, P.E., S.E., HNTB, Chicago, IL

The entire project is estimated at $750 million and it extends the airport limits by raising the southern runway (Runway 9R-27L) over major vehicle and rail traffic. The structural design of the runway elevation 9R-27L consists of extending the existing 5,300-ft long runway landing zone to a new 8,000-ft runway. HNTB designed the elevated structures that consisted of 6-ft deep prestressed modified FDOT I-beams with a transversely post tensioned deck.

11:00 A.M.

IBC 14-69: Achieving Seismic Resilience Using Common Bridge Bearing Components

Jessica Revell, P.E., Parsons, Chicago, IL; Larry Fahnestock, Ph.D., P.E. and James LaFave, Ph.D., P.E., Univ. of Illinois Urbana-Champaign, Urbana, IL

In regions at risk for large magnitude earthquakes at long return periods, the cost of advanced isolation systems is not necessarily justified, yet seismic resilience is still critical. The Illinois Department of Transportation in collaboration with the University of Illinois at Urbana-Champaign has developed an Earthquake Resisting System for typical highway bridges utilizing conventional bridge bearings to provide a robust and economical earthquake resisting system for moderate seismic zones.

REHAB/PRESERVATION II SESSION

8:30 A.M. - 12:00 Noon

Room: Parsons Theater

Chair: **Richard L. Connors, P.E., PMP**
County of Allegheny – Department of Public Works, Pittsburgh, PA

8:30 A.M.

IBC 14-71: Restoration of the Corning Centerway Bridge

Joseph Logan, P.E. and Emily Smith, P.E., Fisher Associates, P.E., L.S., L.A., P.C., Rochester, NY

This paper focuses on the in-depth inspection and evaluation of the historic Corning Centerway Arch Bridge, a 7-span 720 ft. long earth-filled concrete arch bridge built in 1922. Through use of non-destructive concrete testing techniques, it describes the approach to restoring a bridge which has been subject to Alkalai-Silica Reaction. Presented are the design concept, detailed testing and structure evaluation, final design details, and highlights of the contractor's key construction methods.

9:00 A.M.

IBC 14-72: Structural Rehabilitation of the Squirrel Hill Tunnel

Jonathan McHugh, P.E., F. SEI, Gannett Fleming, Inc., Pittsburgh, PA; Lou Ruzzi, P.E., PADOT, Bridgeville, PA

The rehabilitation of the Squirrel Hill Tunnel includes comprehensive updating of the electrical, lighting, control, and ventilation systems; structural repairs to the walls and arched ceiling, and addition of a dry standpipe system- all within a length of 4,225 linear feet. This rehabilitation will increase vertical clearance to reduce the number of delays due to overheight trucks, improve lighting to allow motorists to maintain speed through the tunnels, and provide a safer environment for motorists.

9:30 A.M.

IBC 14-73: Rehabilitation of I-794 and Hoan Bridge

Robert W. Bondi, P.E., Michael Baker Jr., Inc., Moon Township, PA; Carolynn Gellings, P.E., WISDOT, Milwaukee, WI

The rehabilitation of elevated I-794 located in downtown Milwaukee, Wisconsin includes redecking, steel repairs and painting of the Hoan Bridge, a twin span steel-girder and tied arch structure running north/south, overlaying and repairs to the concrete box structures of the Lake Interchange, and replacement of concrete box girders adjacent to the Milwaukee River with steel multi-girder structures. This paper will focus on the rehabilitation design and construction schedule and effective strategies developed for project delivery.

COFFEE BREAK - 10:00 - 10:30 A.M.

10:30 A.M.

IBC 14-74: The Reconstruction of the Manhattan Bridge in New York City

Ralph Csogi, Greenman-Pedersen, Inc., Babylon, NY

The NYCDOT began the 30 year rehabilitation and reconstruction efforts in 1984 with a Program budget of $1.2 billion. A unique strengthening system was constructed on the Suspended Spans to create a “torque tube” to reduce torsional rotation of these spans caused by the subway lines. This “twisting” of the Suspended Span framing was causing severe fatigue cracking in primary members such as floorbeams. This work also included a “first of its kind” rehabilitation process which entailed the complete re-anchoring of one end of one of the main cables.

11:00 A.M.

IBC 14-75: Preserving a Long Truss with Arches

Josif Bicja, P.E. and Sean James, P.E., Hoyle, Tanner & Associates, Inc., Manchester, NH

The Blair Covered Bridge is a rare 299-foot long timber covered bridge built in 1870 which utilizes Long Trusses with nail laminated wood arches. The focus of this paper is the structural analysis and construction phase of this unique covered bridge, methods used to re-introduce camber and strengthen the bridge and lessons learned. To ensure that the design intent and analyses assumptions were met, field verifications of the prestressing induced into the trusses were completed.

11:30 A.M.

IBC 14-76: Innovative Techniques for the Rehabilitation of the MacDade Boulevard Concrete Arch

Michael Cuddy, P.E., TranSystems, Philadelphia, PA; Henry Berman, Ph.D., P.E. and Peter Berg, PENNDOT, King of Prussia, PA; Chris Galletly, P.Eng., The Neel Company, Springfield, VA

MacDade Boulevard crossed Darby Creek on a seven-span structure totaling 189 feet. The reinforced-concrete, open-spandrel ribbed arch main-span was flanked with three reinforced-concrete slab spans at each approach. Deemed structurally deficient, the main-span was rehabilitated and problematic approach spans eliminated. The T-WALL® system allowed the approach span substructure to remain as the concrete slabs were replaced with pavement supported on retained earth. By carefully planning the layout and custom casting panels, the team minimized conflicts.

FOUNDATIONS/BURIED STRUCTURES SESSION

1:30 - 3:30 P.M.

Room: 330
Chair: **Daniel D. Uranowski, P.E.**
Nicholson Construction Company, Cuddy, PA

1:30 P.M.

IBC 14-78: I-70/I-71 Interchange: The Design of Two Buried Bridges

Matt Lawler, P.E., Patrick Toman, P.E., and Johnny Ng, P.E., DLZ, Columbus, OH

As part of the reconstruction of the I-70/71's east interchange in Columbus, Ohio, two unique bridges were required to meet the needs of the site geometry and the client. Each bridge consists of a single-span of concrete I-girders with concrete deck over a portion of the girders and carrying an average of 8' of roadway embankment contained by spandrel walls. This presentation will describe the intricacies of the design of these two bridges.

2:00 P.M.

IBC 14-79: Kentucky Lake Bridge: Seismic Design of Piers for Tied Arch Navigation Span

Gregory Stiles, P.E., Michael Baker International, Asheville, NC; Stephen Ross, P.E., Michael Baker International, Columbia, SC; Scott Zang, P.E. and Terrence Tiberio, P.E., Michael Baker International, Moon Township, PA

Kentucky's replacement bridge across the Tennessee River features a 550-foot basket-handle tied arch span over the navigation channel as a gateway into the "Land Between the Lakes." Three-column bents with 12-foot diameter outrigger columns supporting the arch were designed for Seismic Category D (New Madrid Fault) and Vessel Collision forces. A Pile Load Test Program was performed for the proposed 72" diameter steel pipe piles in 70 feet deep water. Construction began in February 2014.

2:30 P.M.

IBC 14-80: PDA Underestimates Pile's Actual Capacity: Myth or Reality?

Aravinda Ramakrishna, P.E. and Raymond Mankbadi, P.E., Hardesty & Hanover, LLC, West Trenton, NJ; Elizabeth Trimpin, P.E., New Jersey Turnpike Authority, Woodbridge, NJ

The Pile Driving Analyzer (PDA) testing is widely employed on projects all across the world to determine the pile's actual load carrying capacity. However, suspicion still exists among Engineers that the PDA underestimates pile's actual load carrying capacity. This paper investigates and presents a comparison study between the estimated capacity of 30-inch PPSC pile measured from both PDA and Static Load tests based on the data collected at bridge construction sites in New Jersey.

3:00 P.M.

IBC 14-81: Complex Structures at Interchange 6 of the New Jersey Turnpike Widening Program

David Rue, P.E., Kwang Ro, Ph.D., P.E., Lyly Lau, P.E., and Thomas Fisher, P.E., Parsons Brinckerhoff, Inc., Lawrenceville, NJ

NJTA is completing a $2.5 billion program to widen the New Jersey Turnpike from Interchange 6 to 9, including the construction of five complex curved ramp bridges connecting the Turnpike mainline to/from the Pearl Harbor Memorial Turnpike Extension at Interchange 6. Design and construction considerations included: the use of HPS 70W transverse steel pier caps and self-consolidating concrete for drilled shafts; stone columns for ground improvement; value engineering refinements during design; and various contractor innovations.

ABC II SESSION

1:30 - 4:00 P.M.

Room: 329

Chair: **Donald W. Herbert, P.E.**
Pennsylvania Dept. of Transportation, Uniontown, PA

1:30 P.M.

IBC 14-82: Montour Run Bridge No. 6 "Super" Replacement

Mark Pavlick, P.E., HDR Engineering, Inc., Pittsburgh, PA; Michael Dillon, P.E., County of Allegheny, Pittsburgh, PA

The Montour Run Bridge No. 6 (MT06) replacement was performed over the Thanksgiving, 2012 weekend. The existing adjacent concrete box beam bridge with a bituminous wearing surface needed to be replaced and was the only means of access to five businesses. With the use of ABC techniques and prefabricated bridge elements and systems (PBES), partial demolition and bridge replacement was completed in a little over three days, approximately 1 ½ days ahead of schedule.

2:00 P.M.

IBC 14-83: Lessons Learned from VDOT Accelerated Bridge Construction Project

Jorge M. Suarez, P.E., Michael Baker International, Moon Township, PA; Scott J. Fisher, P.E., VADOT, Richmond, VA

I-95 is a north-south, six-lane, divided, interstate highway that crosses through Richmond and Henrico County, Virginia. It is a major thoroughfare for Richmond metropolitan area commuters and for east coast travelers. Over the past three years, eleven dual bridges (northbound and southbound structures) were replaced using state-of-the-art accelerated bridge construction (ABC) techniques. Construction management of these ABC bridge restorations and lessons learned from all phases of the work during the construction process allowed VDOT to mitigate challenges.

2:30 P.M.

IBC 14-84: Sibley Pond Bridge

G. Keith Donington, P.E., Parsons Brinckerhoff, Inc, Manchester, NH; Hany Riad, Ph.D., P.E., Parsons Brinckerhoff, Inc, Boston, MA

The Sibley Pond Bridge, located in Pittsfield/Canaan Maine, marks the first design of the Precast/Prestressed Concrete Institute's Northeast Extreme Tee (NEXT D) type double T-beam with a full depth integral deck section. Design-build project delivery plus utilization of several innovative ABC techniques played an important role in the design and construction of this 790-foot-long, 10 span two-lane structure. The bridge was opened to traffic more than 10 months ahead of the MaineDOT's project schedule.

3:00 P.M.

IBC 14-85: Precast Network Arch Bridge

Dean Van Landuyt, P.E., TXDOT, Austin, TX

The Texas Department of Transportation designed a series of six 163' post-tensioned spans in Fort Worth. The arches were cast on their sides four blocks from the bridge site. After being rotated, Self-Propelled Mobile Transporters moved the arches to the columns that are located just outside of the existing bridge railings. After demolition of the existing structure, a total of 102 precast, pre-tensioned, SCC, floor beams were connected to the ties of the through-arches and the deck installed.

3:30 P.M.

IBC 14-86: Bridge Slide Solves Challenging Site Conditions in Maine

Thomas Kendrick, P.E. and David Kull, P.E., McFarland Johnson, Inc., Concord, NH; Nathaniel Benoit, P.E., MaineDOT, Augusta, ME

This Accelerated Bridge Construction (ABC) project replaced a functionally obsolete, single span steel truss bridge. After evaluating several conventional replacement options, the design team selected the bridge slide construction method, which allowed the project to be completed within a 30-day roadway closure period. This project was the first bridge slide developed by the MaineDOT, and it represented a cost-effective use of ABC technologies, with greatly reduced impacts to the local community and the traveling public.

EVALUATION/ANALYSIS II SESSION

1:30 - 3:30 P.M.

Room: 328

Chair: **Stephen G. Shanley, P.E.**
Allegheny County, Department of Public Works, Pittsburgh, PA

1:30 P.M.

IBC 14-87: Recognizing and Protecting Scour Critical Bridges

William Horne, P.E., CHA Consulting Inc., Albany, NY

Extreme storm events causing scour erodes/removes streambed material from around bridge foundations. This damages over-water bridges and is the #1 cause of bridge failures in the US. If a bridge is determined to be scour critical, the FHWA mandates a response. This technical paper will summarize proactive approaches bridge owners use when implementing Plans of Action (POA's) for scour vulnerable structures and installing protective scour countermeasures (armoring layer) as a long term bridge preservation tool.

2:00 P.M.

IBC 14-88: Condition Evaluation of Post Tensioning Tendons of the Oneida River Bridge

Stephen Percassi Jr., P.E., Bergmann Associates, Rochester, NY; Christopher Ligozio, P.E., KPFF Consulting Engineers, Rochester, NY; Nicholas DeCirce, P.E., NYSDOT, Syracuse, NY

The twin I-81 Bridges over the Oneida River in Syracuse, New York, were the longest, prestressed concrete superstructures in the country at the time of their construction in 1958. Due to severe deterioration of post tensioning tendons in the bottom flange of the fascia girders, NYSDOT elected to perform an in-depth structural evaluation of the existing structure. State-of the art non-destructive testing techniques including half cell potential and ultrasonic shear wave tomography were employed to identify probable areas of corrosion and tendon duct voids. Minimally destructive techniques were also used to expose tendon wires and confirm the NDT test results.

2:30 P.M.

IBC 14-89: Framework for Reliability-Based Bridge Inspection

Glenn Washer, Ph.D., P.E. and Massoud Nasrollahi, University of Missouri - Columbia, Columbia, MO; Robert Connor, Ph.D., Purdue University, West Lafayette, IN

This paper presents a proposed new methodology for determining bridge inspection intervals and procedures. The methodology was developed using established risk-based methodologies with the objective of ensuring bridge safety and serviceability, as well as an effective

use of resources for bridge inspection. This new approach may transform the calendar-based, uniform inspection strategy currently in use to a new, risk- based approach that will better allocate inspection resources and improve the safety and reliability of bridges.

3:00 P.M.

IBC 14-91: Hands-on Inspection of the Stays of Cable-Stayed Bridges

Michael S. Januszkiewicz, P.E. and Thomas P. Murphy, Ph.D., P.E., S.E., Modjeski and Masters, Inc., Poughkeepsie, NY

This paper will discuss the inspection of several cable-stayed bridges using industrial rope access techniques, including some of the fundamentals of industrial rope access, a brief comparison of industrial rope access vs. "standard" rigging, a brief review of some of the governing rules and regulations, rigging considerations, potential for various NDT methods, cable protective systems and potential defects that may be found. A case study of some major cable-stayed bridges will be showcased.

WORKSHOPS

1:00 - 2:00 P.M.

W-1: Designing, Installing and Maintaining Remote Monitoring and Data Acquisition for Bridges

Room: 327

Presented By: Campbell Scientific

Bridge owners, designers, and contractors are increasingly responsible for installing and maintaining instrumentation systems. The concepts can be reduced to simple principles that will allow you as a stakeholder to evaluate proposals and make sound decisions in your infrastructure monitoring projects. The purpose of this workshop is to provide an overview of the fundamentals of integrating sensors with dataloggers, building wired and wireless networks, and making the data available to decision makers.

Speakers: Mike Adams and Shaun Dustin, Ph.D., P.E., Campbell Scientific

1:00 PM - 4:00 PM

W-2: Cost Effective Innovative Design and Construction of Bridges Structures Using FRP Composites

Room: 326

Presented By: American Composites Manufacturers Association

FRP composite products have been successfully used in thousands of new bridge construction and rehabilitation installations for over the past 20 years. Many of these installations demonstrate composites long-term durability for bridge decks subjected to highly corrosive chemicals used in North America and Canada. Composites have provided bridge engineers and owners with innovative and cost effective solutions. Composites features such as lightweight, corrosion resistance, and prefabrication have reduced assembly and installation time resulting in lower installation costs and delivery for new construction. For repair and rehabilitation, features such as speed and minimal disruption to the structure while in service have provided bridge owners with solutions for extending the service life of bridge structures with minimal disruption to the public.

This workshop presents how composites were designed and constructed from recent bridge installations on high occupancy, large, historic, and movable bridges from the U.S., Canada, and Europe. The presentations will cover a wide variety of products and applications including FRP composites bridge deck panels, rebar, and innovative pedestrian bridges where the installations demonstrate economic equality and financial benefit when compared to traditional bridge construction materials and products. In rehabilitation applications, structural strengthen-

MONDAY JUNE 9				
8:30 - 11:30 A.M.	IBC Keynote Session - Ball Room B & C, Third Floor			
11:00 A.M. - 5:00 P.M.	Exhibit Hall Grand Opening (strolling buffet lunch at noon), Hall B			
1:00 - 5:00 P.M.	Featured Agency Session AASHTO - CSI Theater, Hall B			
1:30 - 5:00 P.M.	Proprietary Session - Parsons Theater, Hall B			
TUESDAY JUNE 10				
8:00 A.M. - 5:00 P.M.	Exhibit Hall open (strolling buffet lunch at Noon), Hall B			
8:30 A.M. - 12:00x Noon	Long Span, Part 1 Theater 1	Construction Theater 2	Rehab/Preservation Part 1 Parsons Theater	ABC Part 1 CSI Theater
9:00 A.M. - 12:00 Noon	APC Co-Meeting, Room 330			
1:00 - 4:30 P.M.	IBC Bridge Tour - departs from Street Level on East Lobby (Tickets Required)			
1:30 - 4:00 P.M.	Rail Theater 1	Eval/Analysis Theater 2	Design, Part 1 Parsons Theater	Long Span, Part 2 CSI Theater
4:30 - 5:30 P.M.	International Attendees Reception, Allegheny Overlook (tickets required)			
5:30 - 7:30 P.M.	IBC Awards Dinner, Ball Room B (tickets required)			

WEDNESDAY JUNE 11

8:00 A.M. - 1:30 P.M.	Exhibit Hall open (strolling buffet lunch at Noon), Hall B			
8:30 A.M.	Pedestrian Theatre 1	Design, Part 2 Theater 2	Rehab/Preservation, Part 2 Parsons Theater	Tappan Zee CSI Theater
1:30 P.M.	Foundations/ Buried Structures Room 330	ABC, Part 2 Room 329	Eval/Analysis Part 2 Room 328	
1:00 P.M.	W1: Designing Data Acquisition Room 327	W2: Cost Effective Design with FRP Room 326	W3: Duplex Coatings for Preservation Room 325	

THURSDAY JUNE 12

8:00 A.M. - 12:00 Noon SEMINAR: Current Developments and Recent Applications of Accelerated Bridge Construction (Tickets Required)				
8:00 A.M.	W4: LRFR Load Rating Room 330	W5: Steel Bridges Fracture Critical Room 329	W6: MASHH Mobile Air Shower Room 328	
1:00 - 5:00 P.M. SEMINAR: Load Rating of Complex Bridges (Tickets Required)				
1:00 P.M.	W7: High Speed Rail Bridges Room330	W8: Delivering the 100-Year Bridge Room 329		

ing systems applied to bridges will demonstrate the feasibility of using composites to restores the original design strength and performance of the bridge to extend the service life of these structures. This workshop will provide attendees with a wide array of knowledge on how FRP composites are used to solve the many problems bridge engineers and owners face today.

Speakers: John P. Busel, American Composites Manufacturers Association, Arlington, VA; Ryan Koch, P.E., Hughes Brothers, Inc., Seward, NE; Scott Reeve, Composite Advantage, Dayton, OH; Ehab Ahmed, Ph.D., P.Eng., Pultrall, Inc., Thetford Mines, Quebec, Canda; Mo Ehsani, PhD, PE, SE, QuakeWrap Inc., Tucson, AZ; Garry Joliffe, Gurit (USA), Inc., Bristol, RI; Philip James Reilly III, EIT, Villanova University, Villanova, PA

1:00 PM - 4:00 PM

W-3: Duplex Coatings for Bridge Preservation

Room: 325

Presented By: AZZ Galvanizing Services

This workshop will be covering the basics of Hot Dipped Galvanizing, coating and application over galvanizing, and real world bridge application of coatings over hot dipped galvanizing. The group will see how effective this new paint system applied over Hot Dipped Galvanized steel, will be a wave of the future when it comes to new bridges. We have one DOT that wants to take an existing bridge down HDG it, paint it, and reinstall the bridge. We will be able to HDG paint and reinstall the bridge girder in less than 36 hours.

Speakers: Kevin Irving, AZZ Galvanizing Services, Joliet, IL; Todd Williams, Bayer MaterialScience, Pittsburgh, PA; Bobby Meade, University of Kentucky, Frankfort, KY

8:00 AM - 11:00 AM

W-4: LRFR Load Rating and Posting of Highway Bridges

Room: 330

Presented By: FHWA

National Bridge Inspection Standards stipulates bridges be rated following AASHTO Manual for Bridge Evaluation (MBE). If the capacity is less than legal and unrestricted routine permit loads, a bridge must be posted. According to FHWA's policy, new bridges should be rated with Load and Resistance Factor Rating (LRFR) method. This workshop is to provide a short LRFR training and will include three presentations:

- Reliability-Based Load Rating Method: LRFR Fundamentals, by a FHWA presenter
- LRFR Bridge Load Rating: A State's Perspective and Lessen Learned, by a State's presenter
- Application of LRFR Load Rating Software, by a software vendor

Speakers: Joey Hartmann, Ph.D., P.E., Welcome and Moderator, FHWA; Lubin Gao, Ph.D., P.E., FHWA; Jon Rooper, P.E., Oregon DOT; Krisha Kennelly, P.E., Michael Baker Jr., Inc. (consultant representing AASHTOWare)

8:00 AM - NOON

W-5: Steel Bridges - Current & Future Practice Regarding Fracture Critical Determination

Room: 329

Presented By: National Steel Bridge Alliance (NSBA)

The current criteria that bridge designers and owners use for determining the fracture critical status of a steel bridge design are fundamentally based on assessing redundancy of the structure and it's resistance to failure. However; there are no clear, concise, generally accepted, science based methods of determining structural redundancy in a bridge structure and no consensus agreement of failure. This session will review current practice and present discussion and new research suggesting a process that can lead to fewer bridges being deemed fracture critical and thereby reducing the in-service inspection demand on bridge owners.

Speakers: Bill McEleney, National Steel Bridge Alliance; Atorod Azizinamini, Florida International University; Robert Connor, Purdue University; Karl Frank, Hirschfeld Bridge; Keith Ramsey, Texas DOT; Brian Kozy, FHWA; Dennis Mertz, University of Delaware

8:00 AM - 9:00 AM

W-6: MASHH - Mobile Air Shower - Protecting Workers from Silica and Lead Dust

Room: 328

Presented By: HalenHardy, LLC.

The purpose of this Workshop is to educate

bridge construction companies on the risks of dangerous dust exposure for their workers, making construction companies aware of the most innovative technology in the market for removing dangerous dusts from workers and their contaminated clothing.

Speakers: Donny Beaver, HalenHardy, LLC, Bellwood, PA; Bob Glenn, MPH, CIH, HalenHardy, Seabrook Island, SC

1:00 PM - 5:00 PM

W-7: High-Speed Rail Bridges
Room: 330

Presented By: PEDELTA Inc and FHECOR North America

The US is ready to start construction of their first High-Speed Rail Lines. This workshop will cover main design aspects and construction experience of HSR Bridges; providing public agencies and professionals a technical background based on the writers experience in dozens of built bridges. The workshop brings together American and International experience both on design and construction of High Speed Rail Bridges; the panel will be shared by Consultants and Contractors, both sharing their experience on existing projects. Special emphasis will be put on typical bridge configuration, loads, dynamic amplification, rail structure interaction, deck detailing, joint arrangement, pier and foundations, abutments and construction methods.

Speakers: Juan Sobrino and Javier Jordán; PEDELTA Inc., Miami, FL; Manuel Contreras and Alejandro Caldentey, FHECOR, Washington, DC; Jose-Emilio Herrero, FERROVIAL, Madrid, Spain; Gonzalo Garcia-Villalba, OHL, Madrid, Spain; Qiyu Liu and Jennifer Tures, ARUP, San Francisco, CA; Michael Stein, SCHLAICH BERGERMANN

1:00 - 3:00 P.M.

W-8: Delivering the 100 Year Bridge
Room: 329

Presented By: Michael Baker Jr., Inc.

How can the Design-Build team achieve a 100 year service life bridge, which many of the Bridge Owners are requesting in their RFP's? Panelists from SIMCO Technologies, High Steel & VSL, all experts in their respective fields will speak to how reinforced concrete, structural steel and cable elements can be designed and constructed to achieve the 100 year service life. In addition, panelists from Transpo Industries and Vector Corrosion Technologies, will discuss opportunities to protect and extend the service life of a concrete bridge deck, which is arguably the structural element that is most exposed/vulnerable to from traffic and environmental loadings.

Speaker: Richard Dunne, Michael Baker Jr., Inc., Hamilton, NJ

SEMINARS (TICKETS REQUIRED)

IBC Seminars are intensive, four-hour, single-topic focused sessions. An additional fee of $175 is required for each seminar and advance registration is required, and a ticket will be provided to you at that time. Tickets are required to attend all seminars. Seating for each Seminar is limited, so please register early. Certificates of Completion are awarded upon completion.

8:00 A.M. – 12:00 Noon

Seminar 1: Current Developments and Recent Applications of Accelerated Bridge Construction

Presented by: Michael Baker Jr., Inc., HDR Engineering Inc., Federal Highway Administration, Massachusetts Department of Transportation (invited)

With approximately 25% of the nation's 600,000 bridges requiring rehabilitation, repair, or total replacement, Accelerated Bridge Construction (ABC) technologies offer a variety of cost-effective techniques to quickly repair or replace existing bridges while reducing impacts to mobility and safety. Through the Every Day Counts initiative, state highway agencies are working with the Federal Highway Administration (FHWA) to implement ABC technologies in typical bridge rehabilitations and replacements as a part of their standard business practices. This seminar will cover a variety of timely topics associated with the application of ABC techniques and provide attendees with an understanding of the advantages and implications of ABC techniques currently available to bridge designers, owners and constructors. Attendees will see presentations that demonstrate the successful use of ABC across a wide range of applications from the use of precast elements to full bridge prefabrication and bridge moves. Presentations will include:

- The extensive use of large, precast elements on the $3.1B Tappan Zee Bridge Project to speed construction, improve safety, and provide a durable final product which meets the 100 year service life requirements
- An update on the Federal Highway Administration "Every Day Counts" program and current ABC initiatives
- Development of a Slide - In Bridge Construction (SIBC) Manual for Utah DOT and FHWA
- An update on advancements in the implementation of ABC in Wisconsin
- Owner's Perspective on Effective ABC Use – Massachusetts DOT (invited)

Speakers: Michael Arens, P.E., S.E., Michael Baker Jr. Inc., Salt Lake City, UT; Mike LaViolette, P.E., HDR Engineering Inc. Omaha, NE; Ben Beerman, P.E., FHWA, Washington, DC; Linda Kreuger, P.E. , Michael Baker Jr. Inc., Madison, WI: Eliza Partington, Massachusetts DOT, Boston, MA (invited)

1:00 – 5:00 p.m.

Seminar 2: Load Rating of Complex Bridges

Presented by: Michael Baker Jr., Inc.

This seminar will focus on tools and analysis methods available to engineers for the load rating of non-conventional and complex bridges. The seminar will demonstrate strategies for load rating of complex structures through the discussion of a number of recently load-rated structures from a variety different states, including but not limited to the following:

- Cleveland Central Viaduct Bridge Deck Truss over the Cuyahoga River (OH)
- Sherman Minton Trussed Tied Arch over the Ohio River (IN/KY)
- Daniel Hoan Memorial Bridge Steel Tied Arch Main Spans (WI)
- Daniel Hoan Memorial Bridge Concrete Box Girder Approaches (WI)
- Fulton Road Post-Tensioned Concrete Deck Arch (OH)
- Oklahoma DOT Post-Tensioned Segmental Box Girders

In addition, the seminar will introduce new functionality of the AASHTOWareTM Bridge Rating ("BrR" - formerly "Virtis") software related to the load rating of non-conventional bridge types including steel curved/skewed bridges and trusses. BrR is currently under evaluation by the Pennsylvania Department of Transportation for acceptance as an approved load rating tool for statewide bridges.

Topics covered in this seminar will include the use of 2D and 3D finite element modeling, appropriate modeling techniques, and LRFR code checking.

Speakers: Dr. Francesco Russo, Ph.D., P.E., Michael Baker Jr. Inc., Philadelphia, PA; Daniel Baxter, P.E., S.E., Michael Baker Jr. Inc., Minneapolis, MN; Rachel Sharp, P.E., Michael Baker Jr. Inc., Moon Township, PA

IBC EXHIBIT HALL

The IBC Exhibit Hall is located in Hall B of the David L. Lawrence Convention Center, accommodating even more displays than ever before ... heavy equipment, active displays and super-sized exhibits, along with numerous enhancements for your enjoyment. With more space than ever to accommodate additional features, the IBC Exhibit Hall is the place to be for attendees and exhibitors! In addition to the many vendor exhibits, the Featured Agency display from AASHTO is prominently featured in the center of the Exhibit Hall.

All registered attendees are welcome to enjoy our strolling luncheon buffets on Monday, Tuesday and Wednesday during the IBC, where you will find lots of goodies displayed throughout the Exhibit Hall. Please stop by and visit with our many exhibitors while enjoying your lunch. In addition, coffee breaks, when scheduled, will be located throughout HALL B.

The IBC Exhibit Hall is open:

- Monday: 11:00 AM - 5:00 PM, featuring complimentary lunch starting at 12:00 Noon.
- Tuesday: 8:00 AM - 5:00 PM, featuring complimentary lunch starting at 12:00 Noon.
- Wednesday: 8:00 AM - 1:30 PM, featuring complimentary lunch starting at 12:00 Noon.

Thanks to all of our returning and new Exhibitors! The following is a quick find numerical listing of all exhibitors. Following, an alphabetical listing with full contact information and company description can be found. This listing contains all Exhibitors as of May 27, 2014.

POSTER SESSION

Located within the Exhibit Hall, please take time to visit the IBC Poster Session. Posters are on display through the Exhibit Hall hours. To entertain questions from attendees, poster presenters are asked to attend their poster during 1 of 2 arranged time slots:

- Tuesday, June 10; 2:30 - 3:30 P.M.
- Wednesday, June 11; 9:30 - 10:30 A.M.

IBC POS-01: Better to be sustainable
Bernard Heritier, International Stainless Steel Forum, Brussels, Belgium

IBC POS-02: A Complete Inspection & Repairs (Pins) Of the Robert O. Norris Bridge
Bill Dritz, P.E., AI Engineers, Middletown, CT

IBC POS-03: Advanced Material Systems for the Maintenance and Sustainability
Michael S. Stenko, Transpo Industries, Inc., New Rochelle, NY

IBC POS-04: NDT Defect Detection in Grouted External PT Ducts: EScan Void Detector
Stephen Schorn, EIT, Advitam Inc., Sterling, VA

NUMERICAL BY BOOTH NUMBER

201 .....AP/M Permaform
203 .....BL Companies
205 .....Armtec Limited Partnership
207 .....Aslan FRP
211 .....LeJeune Bolt Company
213 .....MISTRAS Group
216 .....Epoxy Interest Group of CRSI
217 .....Headed Reinforcement Corporation (HRC)
218 .....Roads & Bridges Magazine
219 .....American Segmental Bridge Institute (ASBI)
220 .....China Railway Shanhaiguan Bridge Group
221/223 ...Taiwan (2015 Featured Country)
222 .....Watson Bowman ACME
224 .....TRC Engineers, Inc.
225 .....Evonik Industries
229/328 ...U.S. Bridge
231 .....Trinity Highway
233 .....Action Corrosion - Bridge Bearing Service
237 .....Cleveland Electric Laboratories
300 .....Klass Coatings (North America) LLC
301 .....Harcon Corporation
302 .....Scougal Rubber Corporation
303 .....St. Louis Screw & Bolt
304 .....Bentley Systems, Inc.
305 .....Campbell Scientific
306 .....Strand7 Pty Ltd.
310 .....FIGG
311 .....Wirerope Works, Inc.
312 .....AZZ Galvanizing Services
313 .....Lusas
316 .....McClain & Co. Inc.
318 .....Michael Baker Jr., Inc.
320 .....AECOM
322 .....LARSA
324 .....L.B. Foster
329 .....Sealite USA
330 .....Metal Fatigue Solutions
331 .....Pultrall Inc.
332 .....Phoenix National Laboratories
336 .....GeoStructures & Geopier Foundation
337/436 ...Pennoni Associates
400 .....Reinforced Earth Company, The
401 .....R.J. Watson, Inc.
402 .....Advitam, Inc.
403 .....Vector Corrosion Technologies
404 .....Freyssinet, Inc.
405 .....Carolina Stalite Company
407 .....Emseal Joint Systems
410 .....Hayward Baker
411 .....Modjeski and Masters, Inc.
412 .....Viathor, Inc.
413 .....D.S. Brown Company
428 .....Greenman-Pedersen, Inc.
429 .....Seismic Energy Products, Inc.
430 .....Williams Form Engineering Corp.
431 .....International Road Dynamics Inc.
433 .....Pharos Marine Automatic Power, Inc.
437/536 ...V&S Galvanizing / Hill & Smith Inc.

500 .....Sika Corporation
501/503/600/602 CBSI (Clodfelter Bridge & Structures)
502/504 American Composites Manufacturers Association (ACMA)
505/604 ...Acrow Corporation
506 .....MDX Software
510 .....Bridge Grid Flooring Manufacturers Asssociation (BGFMA)
511 .....STV
512 .....Hilman Rollers
513 .....Central Atlantic Bridge Associates
517 .....MMFX Steel Corporation
519 .....Sofis Company Inc.
521 .....National Steel Bridge Alliance
523 .....Moog USA, Inc.
525 .....Eriksson Technologies, Inc.
528 .....DOT Quality Services
529 .....Euclid Chemical Company
530 .....Brayman Precast
531 .....Reliable Underground Service Technicians
532 .....Stronghold Coating Systems
537 .....Ceratech Inc.
601 .....Wire Co World Group
603 .....Loadtest
605 .....FRP Bridge Drain Pipe
607 .....All Access Rigging Co.
610 .....HRV Conformance Verification Associates
611 .....Short Span Steel Bridge Alliance
612 .....CTS Cement Manufacturing Corporation
613 .....G.W. McCrossin
616 .....Neel Company, The / T-Wall
617 .....SPX Hydraulic Technologies
618 .....Bridge design & engineering
619 .....Spencer Group
620 .....Bridge Deck Solutions
621 .....Contractors Materials Company
622 .....Con-Serv Inc.
623 .....Epic Polymer Systems Corp.
624 .....Hatch Mott MacDonald
625 .....International Zinc Association
628 .....Skyline Steel
629 .....ChemCo Systems
630 .....Teledyne Blue View
631/633/730/732 Safway Services
636 .....HALENHARDY
637 .....Dynamic Isolation Systems
700 .....Pittsburgh Rigging
704 .....Deighton Associates Limited
706 .....Big R Bridge
710 .....DBi Services
712 .....Spider
716 .....R J Lee Group, Inc.
717 .....Mageba USA
718 .....P. Joseph Lehman, Inc., Consulting Engineers
720 .....Marine Solutions, Inc.
722 .....Lifting Gear Hire
724 .....ERICO
725 .....FYFE Co. LLC
726 .....Pennsylvania Crossings
728 .....N.E. Bridge Contractors Inc.

ALPHABETICAL BOOTH LISTING

Acrow Corporation
Booth #: 505/604

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Website: www.acrow.com

Acrow Corporation, a steel bridging company, has been in business for over 57 years. Acrow's primary business is the engineering, manufacturing, and supply of prefabricated modular steel bridges for emergency, temporary detour, and permanent application. Acrow is an industry world leader that specializes in the design, manufacture, and supply of modular prefabricated steel Acrow Bridges and Superprop Shoring Systems.

Action Corrosion - Bridge Bearing Service
Booth #: 233

Contact: Josh Burtons
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E-mail: josh@actioncorrosion.com.au
Website: www.actioncorrosion.com.au

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Advitam, Inc.
Booth #: 402

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Website: www.advitam-usa.com

Advitam provides solutions and services for infrastructure management. ScanPrint is our asset management system offering inventory, inspection, reporting and LCC modules for bridges and other highway structures and assets. Advitam is also an expert in structural health monitoring and NDT; our EverSense system provides short/long-term solutions for bridge monitoring.

AECOM
Booth #: 320

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Website: www.aecom.com

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All Access Rigging Co.

Booth #: 607

Contact: Amy Guzma
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Fax: 866-491-2140
E-mail: contact@allaccessrigging.com
Website: www.allaccessrigging.com

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American Composites Manufacturers Association (ACMA)

Booth #: 502/504

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Website: www.acmanet.org

ACMA is the world's largest composites trade association. The Transportation Structures Council and FRP Rebar Manufacturers Council serve to inform and educate engineers on FRP composites used in infrastructure applications. Products on display include FRP bridge decks, rebar, girders, bridge pier protection, and concrete repair/strengthening systems. Visit www.compositesinfrastructure.org, www.acmanet.org, www.thecamx.org.

American Segmental Bridge Institute (ASBI)

Booth #: 219

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E-mail: info@asbi-assoc.org
Website: www.asbi-assoc.org

The American Segmental Bridge Institute (ASBI) is a nonprofit organization providing a forum where owners, designers, constructors, and suppliers can meet to further refine current design, construction, and construction management procedures, as well as evolve new techniques to advance the quality and use of concrete segmental bridges.

AP/M Permaform

Booth #: 201

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E-mail: info@permaform.net
Website: www.permaform.net

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Armtec Limited Partnership

Booth #: 205

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Website: www.armtec.com

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Aslan FRP

Booth #: 207

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Website: www.aslanfrp.com

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Booth #: 312

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Fax: 815-723-5008
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Booth #: 304

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Fax: 919-851-8533
E-mail: Barbara.day@bentley.com
Website: www.bentley.com

Bentley Systems, Incorporated provides software for the lifecycle of the world's infrastructure. Bentley delivers Bridge Information Modeling (BrIM) technology for the entire bridge lifecycle. Bentley BrIM provides broad access to advanced bridge products in Bentley's comprehensive software portfolio. Bentley products provide an interoperable, data-managed bridge solution for planning, design, engineering, analysis, fabrication, construction, maintenance, and rehabilitation. These end-to-end solutions enable the transportation industry to efficiently and effectively address the challenges of new and aging bridges and deliver sustainable, long lasting infrastructure.

Big R Bridge
Booth #: 706

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BL Companies
Booth #: 203

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BL Companies is an employee-owned company providing architecture, engineering, land surveying and environmental services to a wide range of public and private sector clients for land development, building design and infrastructure projects.

Brayman Precast
Booth #: 530

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Booth #: 620

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E-mail: nate@bridgedecksolutions.com
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Bridge design & engineering
Booth #: 618

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Bridge Grid Flooring Manufacturers Asssociation (BGFMA)
Booth #: 510

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Website: www.bgfma.org

The Bridge Grid Flooring Manufacturers Association (BGFMA) industry group is comprised of companies who fabricate steel grid deck systems for bridges and other companies with an interest in this market. This professional organization is focused on the reliable development and application of open grid, grid reinforced concrete, and Exodermic™ bridge decks to meet the demands of the engineering community and traveling public.

Campbell Scientific
Booth #: 305

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Carolina Stalite Company

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Booth #: 501/503/600/602

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Central Atlantic Bridge Associates

Booth #: 513

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Ceratech Inc.

Booth #: 537

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CRSBG is well-known steel structure bridge fabricator in China. The Company is established in 1894.Its mother company, China Railway Engineering Group Co., Ltd (CREC), is one of the Top 500. CRSBG has its headquarter at Shanhaiguan District, Qinhuangdao City of Hebei Province, covering an area of nearly 2 million square meters. With the good quality and renowned reputation, CRSBG has acquired ISO certificates, AISC certificate, AWS certificate, Germany welding certificate and CWB certificate. Due to all these advantages and efforts, CRSBG has distributed its products to tens of countries and areas as USA, Canada, Germany, Norway, Serbia, New Zealand, Tanzania, Zambia and Hong Kong etc. CRSBG has fabricated Stonecutters Bridge in HK, Alaska Railway Bridge. Now it is fabricating orthotropic deck Panels for Verrazano-Narrows Bridge.

Cleveland Electric Laboratories

Booth #: 237

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CTS Cement Manufacturing Corporation
Booth #: 612

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DBi Services
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Deighton Associates Limited
Booth #: 704

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DOT Quality Services
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Dynamic Isolation Systems
Booth #: 637

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Website: www.dis-inc.com

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Booth #: 407

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Epic Polymer Systems Corp.

Booth #: 623

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Epoxy Interest Group of CRSI

Booth #: 216

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Website: www.epoxyinterestgroup.org

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Booth #: 525

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Euclid Chemical Company

Booth #: 529

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Booth #: 225

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Freyssinet, Inc.
Booth #: 404

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FRP Bridge Drain Pipe
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G.M. McCrossin
Booth #: 613

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GeoStructures & Geopier Foundation Company

Booth #: 336

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Booth #: 428

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HALENHARDY

Booth #: 636

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Booth #: 301

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Booth #: 410

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Booth #: 512

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Fax: 412-788-1697
E-mail: hrstachel@hrvinc.com
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International Road Dynamics Inc.

Booth #: 431

Contact: Tom Der
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Fax: 306-242-5599
E-mail: tom.der@irdinc.com
Website: www.irdinc.com

IRD is a Highway Traffic Management Products and Systems Technology Company, operating in the ITS Industry. Experts in advanced technologies to detect and weigh vehicles at highway speeds, the integration of these and other complementary ITS Technologies into systems designed to solve traffic problems and in supplying custom designed systems.

International Zinc Association

Booth #: 625

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Booth #: 300

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L.B. Foster

Booth #: 324

Contact: Chris Davis
Phone: 412-928-3548
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Website: www.lbfoster.com

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Phone: 800-LARSA-01
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Marine Solutions, Inc.

Booth #: 720

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Website: www.MSImarinesolutions.com

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Booth #: 316

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Developer of curved and straight steel bridge design and rating software for AASHTO ASD, LFD, LRFD, and LRFR.

Metal Fatigue Solutions

Booth #: 330

Contact: Ricky L. Morgan
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E-mail: morgan@metal-fatigue-solutions.com
Website: www.metal-fatigue-solutions.com

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MMFX Steel Corporation

Booth #: 517

Contact: Kevin McKown
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Modjeski and Masters, Inc.

Booth #: 411

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E-mail: debeaver@modjeski.com
Website: www.modjeski.com

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Moog USA, Inc.

Booth #: 523

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Booth #: 728

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National Steel Bridge Alliance (NSBA)

Booth #: 521

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Website: www.steelbridges.org

NSBA, a non-profit trade association, is the unified voice representing the entire steel bridge community. In addition to structural steel fabricators and producers, NSBA brings together the agencies and groups who have a stake in the success of steel bridge construction, including representatives from AASHTO, FHWA, state DOTs, bridge consultants, erectors, and representatives of the coatings, fastener, and welding industries. The NSBA's mission is to establish steel as the bridge material of choice.

Neel Company, The / T-Wall

Booth #: 616

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Pennoni Associates

Booth #: 337/436

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Website: www.pennoni.com

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Pennsylvania Crossings

Booth #: 726

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Phoenix National Laboratories

Booth #: 332

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Booth #: 331

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R J Lee Group, Inc.
Booth #: 716

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Reinforced Earth Company, The

Booth #: 400

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The Reinforced Earth Company (RECo) has completed over 40,000 structures in the US, building a reputation for engineering excellence, architectural creativity, and an unyielding focus on quality and customer support. With over 40 years of experience, RECo brings structural, geotechnical and economic value to projects of all types, sizes and complexities.

Reliable Underground Service Technicians

Booth #: 531

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Roads & Bridges Magazine

Booth #: 218

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Booth #: 631/633/730/732

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Booth #: 611

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The American Segmental Bridge Institute (ASBI) is a nonprofit organization providing a forum where owners, designers, constructors, and suppliers can meet to further refine current design, construction, and construction management procedures, as well as evolve new techniques to advance the quality and use of concrete segmental bridges.

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Booth #: 306

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Taiwan (2015 Featured Country)

Booth #: 221/223

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Booth #: 630

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Booth #: 224

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TRC is a national engineering, consulting and construction management firm providing integrated services to the energy, environmental and infrastructure markets to both public and private sector clients. TRC also markets, maintains and supports several bridge design software programs for many bridge structure types and offers training and workshops to consultants and public agencies. These software programs provide the necessary tools to model, analyze and design bridge components.

Trinity Highway

Booth #: 231

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U.S. Bridge

Booth #: 229/328

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Booth #: 412

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Viathor, Inc. is dedicated to the development of top quality, user friendly, bridge design and analysis software. VBent is a fully interactive substructure design tool for pier caps, columns and footings, for both non-integral and integral (monolithic) piers. VBent can read PAPIER input files, and has been approved and accepted for use by PennDOT. VBridge is a superstructure design program for reinforced or cast-in-place post-tensioned concrete bridges. VBridge can compute live load for any bridge configuration and support type (integral and non-integral piers). VBridge analyzes 3D bridge models, and creates Vbent input files by sharing geometry and load information.

Watson Bowman ACME

Booth #: 222

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Watson Bowman Acme provides comprehensive expansion joint solutions for the Bridge and Highway market. We offer a growing range of high performance products and systems to provide long lasting solutions to difficult construction or rehabilitation tasks. We are fully resourced to deliver results and exceed the expectations of our customers.

Williams Form Engineering Corp.

Booth #: 430

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Williams Form Engineering Corporation has been providing threaded steel bars and accessories for rock anchors, soil anchors, high capacity concrete anchors, micro piles, tie rods, tie backs, strand anchors, hollow bar anchors, post tensioning systems, and concrete forming hardware systems in the construction industry for over 85 years.

Wire Co World Group

Booth #: 601

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WireCo Structures designs, develops, and manufactures real-world, hard-working solutions for bridges and structures. Fabricated to meet demanding requirements, wire rope support and suspender cables have been proven to stand the test of time even in the world's toughest applications. WireCo Structures produces EN 12385-10 Full Locked Coil Rope and Spiral Strand, ASTM A586 Structural Strand and ASTM A603 Structural Bridge Rope in both Galvanised and Galfan coated. ASTM A416 Stay Cable Strand and prEN 10138 Prestressing Concrete Strand also complement our product portfolio. We are QPL Qualified and certified by both API and ISO. WireCo Structures is a WireCo WorldGroup® brand. WireCo WorldGroup is recognized throughout the world and used in a wide range of market applications. We provide the solutions to meet your most stringent requirements and always deliver on time.

Wirerope Works, Inc.

Booth #: 311

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Wirerope Works Inc. fabricates wire, wire rope and structural strand in the USA to meet the highest industry standards. Our Bethlehem Products are used as key components in such diverse structures as cable-supported and cable-suspended roofs,soaring suspension and pedestrian bridges. Bethlehem Wire Rope products are recognized the world over for superior quality, service and outstanding value.