The 2015 International

BRIDGE CONFERENCE

PITTSBURGH, PA USA JUNE 8–11, 2015


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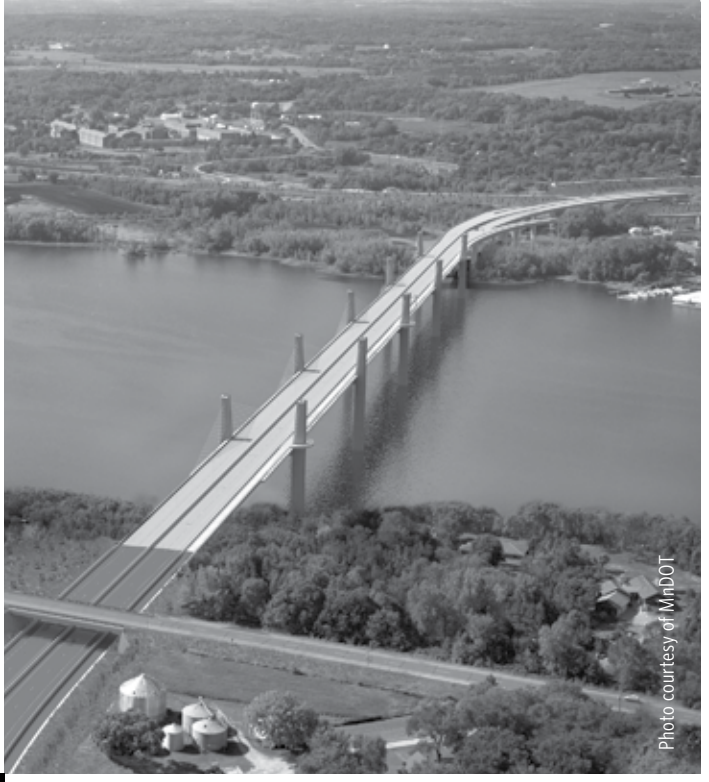

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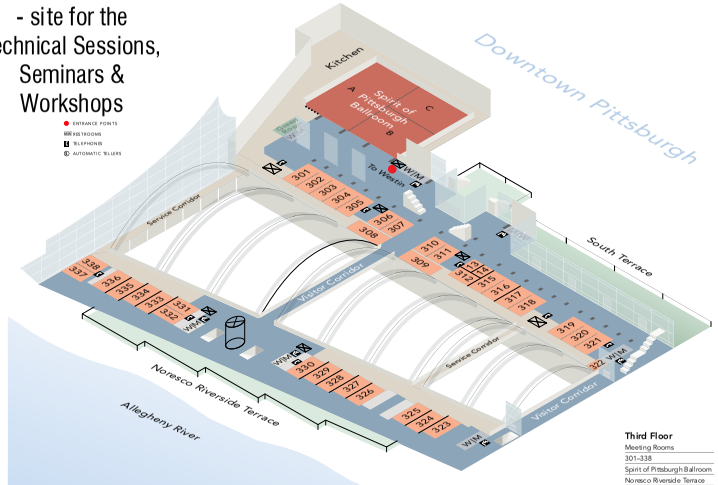
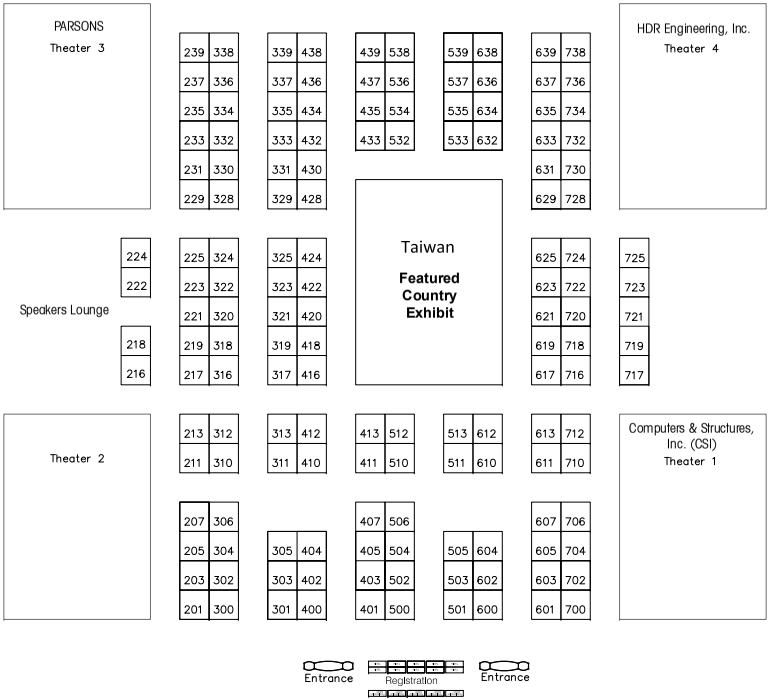
3rd Level Floor Plan of the David L. Lawrence Convention Center - site for the Technical Sessions, Seminars & Workshops





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GENERAL INFORMATION


Rachel Stiffler

Welcome everyone to the 2015 International Bridge conference at the David L Lawrence convention center. The ESWP (Engineers Society of Western Pennsylvania) along with the IBC (International Bridge Conference) executive committee greatly appreciate your attendance at this year's conference.

Taiwan is our featured agency and we anticipate approximately 100 delegates sent to the conference. They will have a much larger booth than the standard featured agency so please stop by, browse, introduce yourselves and make our Taiwanese visitors feel at home!! The delegates are quite excited to be showcasing their activities. They will have many projects and concepts to discuss!

The awards committee had an extremely difficult time selecting the winners this year. The George S Richardson award for single recent outstanding achievement was given to the Oakland Bay bridge. This was a 10 year+, $6.4 billion project designed by T Y Lin and truly will be an icon to the community for many, many years to come. We always have so many impressive and worthwhile projects submitted, so it is quite a difficult task to narrow the field to select the winners.

We are announcing to the conference attendees, that at this time next year, we will be hosting our conference at a new site and a new location. We are moving to the Gaylord National Resort and Convention Center in National Harbor Maryland for the IBC. It will be held June 6-10, 2016. We also have three new IBC executive committee members, Jane Ann Patton of AECOM, Shane Beabus of AECOM and Brian Kozy with FHWA. Shane and Brian are in the DC area and we are looking forward to having their assistance in making our next conference memorable.

We have loved the last 30-plus years here in the "City of Bridges" but look forward to our new location, and welcoming our attendees!

Rachel Stiffler
General Chair 2015

WELCOME TO THE 32ND 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 2014 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: 5:00–7:00 PM
- Monday: 7:00 AM–5:00 PM
- Tuesday: 7:00 AM–5:00 PM
- Wednesday: 7:00 AM–1:30 PM
- Wednesday: (*3rd Level) 1:30–5:00 PM
- Thursday: (*3rd Level) 7:00 AM–1:30 PM

REGISTRATION AND ADMISSION

Full Registration includes admission to the Keynote Session, Featured Country 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. 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: 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 7–10. 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, workshops 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

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

RESERVE & (NEW) PAPERS

Several sessions in this year's conference include an additional "reserve paper." These papers may not be presented during the conference, but will be included in the official conference proceedings. Also, some paper numbers may have been updated since earlier IBC publications - these are denoted with (New) in their title.

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 29 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 29, 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 BOAT 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 on the Allegheny River Boat dock, down the river walkway. Come join us for an afternoon of cruising Pittsburgh's Three Rivers with a spotlight on a technical discussion of the unique and varied bridges of the region. Our Tour will embark and disembark from the shores of the Allegheny River adjacent to the Convention Center. We will traverse upstream on the Allegheny River to the Highland Park Bridge, downstream on the Allegheny and Ohio Rivers to the McKees Rocks Bridge, upstream on the Ohio and Monongahela Rivers to the Hot Metal Bridge, then return to the Convention Center. Whether you are a first-time visitor to the City of Bridges, a life-long resident, or anywhere in between, you will find this guided tour to be informative and entertaining. Your tour guide will provide interesting historical and technical facts for more than 20 bridges covered by the tour. An additional fee of $40 is required; advance registration is required and seating is limited - check the registration desk for availability. Boat boarding begins at 12:30 PM; please arrive no later than 12:45 PM for check in.

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 AM–7:00 PM
- Tuesday: 8:00 AM–5:00 PM
- Wednesday: 8:00 AM–1:30 PM

The IBC will feature a Luncheon Buffet throughout the Exhibit Hall on Monday, June 8, Tuesday, June 9, and Wednesday, June 10 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).

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 32nd Annual International Bridge Conference® will be available on CD in late Summer 2015 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 on the session registry. Registry forms are located at the entrance to any of these sessions. ESWP is unable to verify your attendance in any session if you do not properly sign this registry!

IMPORTANT

CO-MEETINGS

APC / PennDOT Bridge Committee; Tuesday, June 9, 2015, 1:00 PM. Check the Registration Desk for room location

IBC GIFT ITEMS

Once again at this year's IBC, you will have the opportunity to purchase the popular IBC neckties, IBC Golf Shirts, and T-shirts. 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 2015 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 2016 IBC!

Join us in 2016 for the International Bridge Conference®, June 6-10, 2016 at our new location the Gaylord National Resort and Conference Center, in National Harbor, MD. This is the inaugural trip from the city of Pittsburgh for the IBC! Many different sponsorship and exhibit 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 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, Rachel Stiffler, for her leadership in planning this years conference.

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(CONTINUED)

IBC EXECUTIVE COMMITTEE (FROM PREVIOUS PAGE)

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www.pci.org

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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.

GENERAL CHAIRS

2015 Rachel Stiffler
2014 Calvin Boring, Jr.
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

FEATURED AGENCIES

2015 Taiwan
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.

2015 Edward P. Wasserman, Nashville, TN
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
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

2015 San Francisco-Oakland Bay Bridge New East Span, Oakland, CA
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. Virlogeux 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.

2015 Vimy Memorial Bridge, Ottawa, Ontario, Canada
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.

2015 Viaduc Léon Blum, Poitiers, France
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.

2015 "Nanjing Eye" Pedestrian Bridge in Youth Olympic Park, Nanjing, Jiangsu Province, P. R. China
2014 BC Ministry of Transportation, Squamish 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.

2015 Rehabilitation of the Corning Centerway Arch Bridge, City of Corning, NY
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

SPECIAL AWARD OF MERIT

Special and beyond the traditional guidelines of the medal categories.

2015 Paso Real Suspension Bridge, Rio Esteli, Condega, Nicaragu
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

PENNSYLVANIA P3 SESSION

TIME: 9:00–10:00 AM

ROOM: Ballroom B/C (Video)

Thomas P. Macioce, P.E., PennDOT, Harrisburg, PA; Kenneth J. Wright, P.E., HDR Engineering, Inc., Pittsburgh, PA; Ben Boisvert, P.E., Plenary Walsh Keystone Partners, Pittsburgh, PA

This session will provide an update on PennDOT's first infrastructure Public-Private Partnership (P3) known as the Pennsylvania Rapid Bridge Replacement Project. The Plenary Walsh Keystone Partners (PWKP) team is contracted to design and construct 558 bridges scattered throughout Pennsylvania, most of them single span bridges that are classified as structurally deficient. Additionally, the PWKP team is responsible for the maintenance of the bridges for 25 years, at which point they will be turned back to PennDOT. The project team was selected in late 2014 and the design is currently underway, with construction expected to begin in June. Discussion will include the owner's perspective on the selection process, discussion of key issues during the project start-up, and input from the PWKP team on how the project is being developed and key issues identified early in the project that have been addressed to achieve the desired end results. This is the first project of its type being performed as a PWKP, and will ideally provide some lessons learned that can be applied throughout the bridge industry to help owners maximize efficiencies within their programs.

KEYNOTE SESSION

ROOM: Ballroom B/C (Video)
CHAIR: Rachel Stiffler, General Chair,
Vector Corrosion Technologies, McMurray, PA

10:00 AM

Welcome Remarks

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

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

10:15 AM

Pennsylvania Turnpike – Modernizing America's First Superhighway

Craig R. Shuey,
Chief Operating Officer, PA Turnpike,
Middletown, PA

Craig was appointed as the Pennsylvania Turnpike's Chief Operating Officer by the Commissioners in January of 2011. In this role, Craig is responsible for oversight, management and planning for the day-to-day operation of the 552 miles of Turnpike, 65 toll-collection facilities, 27 maintenance facilities and 17 service plazas. The Chief Operating Officer has direct oversight of the following departments: Maintenance, Fare Collection, Legislative Affairs, Facilities, Traffic Engineering and Operations, Policy and External Affairs, Human Resources, and Diversity and Inclusion.

Craig joined the Pennsylvania Turnpike Commission as Government Affairs Director in August 2009 after 15 years with the Pennsylvania Senate. Prior to joining the Turnpike Commission, Craig served as Executive Director of the Senate Transportation Committee for two chairmen – Senator Robert C. Wonderling and Senator Roger A. Madigan. He held this post from 2001 through July 2009.

During his career, Craig has served as an advisor on a wide variety of transportation-related policy issues ranging from public safety and vehicle code issues to freight movement and aviation matters. He has been actively involved in the public discussion about adequate funding for highways, freight and public passenger transportation and served as a member of Governor Tom Corbett's Transportation Funding Advisory Commission (2011), the Transportation Advisory Committee's (PA) Future Funding Taskforce (2010), and as an advisor to the Transportation Funding and Reform Commission (2005-2006).

Craig is a graduate of Bloomsburg University and resides in Mechanicsburg, PA, with his wife and two children, where he is a member of the Board of Directors of the Cumberland Valley School District's Eagle Foundation and serves as Commissioner of the CV Youth Rugby Association.

10:30 AM

The Planning, Construction, and Maintenance Based on a Bridge Lifecycle

Dr. Fan Chih-Ku,
Administrative Deputy Minister, Ministry of Transportation and Communications, R.O.C., Taipei, Taiwan (R.O.C.)

Dr. Fan Chih-Ku earned his Ph. D. degree from the Department of Transportation and Logistics Management at National ChiaoTung University, Taiwan. He is now the Administrative Deputy Minister of the Ministry of Transportation and Communications (MOTC) which oversees railway, highway, and tourism affairs. Before his current position, Dr. Fan served as section head for the Taiwan Railways Administration (TRA). He also served as Chairman of the board of directors of the Taiwan Motor Transport Co., Ltd. Later, he transferred to the position of Deputy Director-General of the TRA before assuming the position of Director-General of the TRA in 2007.

In his service for the Taiwan Motor Transport Co., Ltd., he led the company's transfer from a government-owned enterprise to a privately-held company through an employee buy-out method. The TRA was previously the only rail service in Taiwan, whose market was severely challenged when the Taiwan High Speed Rail began operating in 2007. Dr. Fan brought innovational ideas, which were based on the advantages of 'round island track net' and 'excellent station location', to the TRA. These new strategies resulted in an enhanced public image and an increased number of riders.

11:00 AM

Building Bridges to Prosperity

Avery Bang,
CEO, Bridges to Prosperity (B2P), Denver, CO

Avery Bang first joined Bridges to Prosperity as a volunteer in 2006 and now serves as CEO. At B2P Avery has developed a scalable model for pedestrian bridge building and training in rural developing communities.

Avery was named an Engineering News Record Top 25 Newsmakers; she was honored on ENR Mountain Region's Top 20 Under 40 List in 2013, and was selected as one of American Society of Civil Engineers Fresh Faces in 2011, recognizing the top ten Civil Engineers under 30. Avery is a Distinguished Young Alumni of The University of Iowa, a recipient of the Recent Alumni Award from The University of Colorado at Boulder, and received an honorary doctorate of science degree from Clarkson University in 2014.

11:30 AM

Special Award Presentations & Closing Remarks

Special Merit Award presented to Bridges to Prosperity for the Paso Real Suspension Pedestrian Bridge spanning the Rio Esteli, near Condega, Nicaragua.

2015 James D. Cooper Graduate Student Award awarded to Matt Sloane and Claudio Gatti of Columbia University for the paper entitled "Active Corrosion Prevention with Non-destructive Corrosion Monitoring for Suspension Bridge Main Cables"

EXHIBIT HALL LUNCHEON

12:00–1:30 PM

Enjoy an opportunity to visit with exhibitors and network with all attendees during the strolling "Burger Day" buffet lunch–featuring a variety of slider burgers–throughout the Exhibit Hall. Be sure to see them all!

FEATURED COUNTRY SESSION: TAIWAN

TIME: 1:00–5:00 PM
ROOM: HDR Engineering Theater 4 (Video)

1:00 PM

Introduction of Featured Country
Chen Yen-Po, Director General/Taiwan Area National Freeway Bureau, MOTC

1:10 PM

Introductions
Ju Hsu, CEO/China Engineering Consultant, Inc.

1:15 PM

Quality and Aesthetic Design in Taichung Railway Viaduct

1:35 PM

Seismic and Flood-Resistance Capacity Promotion and Service Life Elongation Method for Existing Bridge by Employing Substructure Replacement Technique
Dr. Lin Cheng-Wei, Senior Engineer/CECI Engineering Consultants, Inc., Taiwan

1:55 PM

Introduction of the Taiwan Area National Freeway Bridge Seismic Retrofit Program
Peng Kang-Yu, Chief Engineer/T.Y. Lin International Taiwan Inc.

2:15 PM

Viaduct Engineering of The National Freeway No. 1 Widening Works in Taiwan
Chiang Chi-Heng, Manager/CECI Engineering Consultants, Inc., Taiwan

2:35 PM

Q&A / Open discussion

3:00 PM COFFEE BREAK

3:20 PM

Introductions
Dr. Shiah Ming-Shen, Deputy Director General/ Directorate General of Highways, MOTC

3:25 PM

Proactive Hazard Prevention and Early Warning System Applied to Highway Management in Taiwan
Chen Wen-Shin, Engineer/Directorate General of Highways, MOTC

3:45 PM

Bridge early forecasting system development for multiple hazards
Prof. Chang Kuo-Chun, Director/National Center for Research on Earthquake Engineering, Taiwan

4:05 PM

Innovative 3-Dimensional Bridge Modeling for Bridge Management in Taiwan
Liao Hsien-Ke, Ph.D. Candidate/National Central University, Taiwan

4:25 PM

Q&A / Open discussion

SPECIAL INTEREST SESSIONS (SIS)

SIS-1: Hot Dipped Galvanizing/Metallizing Bridges Case Studies

TIME: 1:00–3:00 PM

ROOM: CSI Theater 1

HOST: AZZ Galvanizing Services

This workshop will describe how zinc coatings, specifically hot-dip galvanizing/metallizing, can protect against steel corrosion and incorporate sound corrosion protection into the design of steel products that can significantly reduce maintenance costs over the life of a project.

Corrosion is a natural phenomenon, and thus can never be completely eliminated; however, it is a misconception nothing can be done. Estimates show 25-30% of steel corrosion could be eliminated if proper corrosion protection methods were employed.

This workshop will also show several case studies of Steel HDG/Metallized Bridges that are over 44 years old with no maintenance, and still have an average of over 6 mils of zinc on them today.
In the real harsh environment, there are duplex coated bridges that were hot dipped galvanized then painted. FHWA and Toll Authorities are looking for that 100 year maintenance-free bridge. Well, here is your 100 year maintenance-free bridge.

The audience will also understand how Green, Sustainable, and Recyclable HDG/metallized steel really is.
Speaker: Kevin Irving, AZZ Galvanizing Services, Joliet, IL

SIS-2: Precision Structural Bolting Using Torque and Angle

TIME: 1:00–2:30 PM

ROOM: Theater 2

HOST: LeJeune Bolt Company

The Torque and Angle method is used worldwide and is generally considered the most reliable way to install bolts. In this workshop, attendees will learn about the advantages of using Torque and Angle and how LeJeune Bolt Company's TNA Fastening System has perfected this theory.

Have you experienced bolts not meeting tension requirements in the shop or field? Or had exposed bolts in the structure begin to rust and not be confident in their ultimate performance? How about needing A490 coated bolts but being limited to hex bolts with sub-standard coatings? Would you like to be 100% confident that your bolts are installed to the same tension every time? How about using fewer bolts in every connection?
If you answered yes to any of these questions, this session will provide the detail you need to begin to change the way you view structural bolting. You will leave with:
- Working knowledge of Torque and Angle Theory
- Supporting research
- How LeJeune's TNA Fastening System works
- The benefits of the system
- Standards development and specifying

Speaker: Jeff Greene, LeJeune Bolt Company, Burnsville, MN

PROPRIETARY SESSION

TIME: 1:30–5:00 PM
ROOM: Parsons Theater 3
CHAIR: George M. Horas, P.E.,
Alfred Benesch & Company, Allentown, PA

1:30 PM

IBC 15-01: Rapid Overlay Construction with Fast Track Hydrodemolition and VESLMC

Patrick Martens, P.E., Bridge Preservation and Inspection Services, Jefferson City, MO; Glen Parker, HNTB Corporation, Richmond, VA

Fast Track Hydrodemolition with Very Early Strength Latex Modified Concrete (VESLMC) is an expedient and effective process for performing bridge deck rehabilitation and preservation. This method was recently used to quickly overhaul the deck surface of the Northbound Powhite Parkway Bridge in Richmond, Virginia. Limited to only weekend work, the project was one of the largest of its kind, setting a high standard for hydrodemolition production and volume of latex concrete placed.

2:00 PM

IBC 15-02: Health Monitoring of Post-tensioned and Cable Stayed Bridges using Elasto-Magnetic Sensors

Shahid Islam, Dywidag-Systems International, Bolingbrook, IL

Bridges are critical components of transportation infrastructure. Post-tensioning and cable stays are important parts of the bridge. DYNA Force® sensor was developed to measure force in pre-stressing steel during construction and life of the structure. These sensors are manufactured based on magneto-elastic properties of ferrous material. A readout unit is designed to measure the force which can be collected manually, automatically and remotely. This paper will describe its applications in the United States and overseas.

2:30 PM

IBC 15-03: Hillman Composite Beams - Exposed

John Hillman, PE, SE, M.ASCE, HCB, Inc., Wilmette, IL; Michael Zicko, P.E., M.ASCE, HCB, Inc., Apex, NC

Commercialization of the “Hillman-Composite Beam” (HCB) began with the first installation in 2008. Since that time, over 27 spans have been installed. Despite the benefits of the FRP materials, questions always arise regarding inspection, residual capacity and repair options. This paper presents what happens when the HCB is compromised and internal components are exposed or damaged. Examples will be provided showing current research related to impact testing and residual capacity of a damaged HCB.

3:00 COFFEE BREAK

3:30 PM

IBC 15-04: Hydrodemolition Repairs of the Liberty Tunnel

Edward Liberati, Hydro-Technologies, Inc., Jeffersonville, IN

Repairs of the Liberty Tunnel twin tubes in Pittsburgh, PA were performed during the summer of 2012. Over 200,000 sf of surface area of the arched tunnel walls were prepared using hydrodemolition technology in preparation for a new shotcrete surface. All work had to be performed nightly during the hours of 10:00 pm and 6:00 am. Presentation will include discussions on equipment used, results, finished repairs and about the extremely tough construction schedule.

4:00 PM

IBC 15-05: Bayou Lafourche Bridge – A Cost-Effective Full Depth Precast Deck Solution

Eddie He, AccelBridge, Hinsdale, IL

AccelBridge is a cost effective and durable full depth precast deck solution. It utilizes the simple method of compressing the deck by bridge girders. The cost of AccelBridge stressing and joining method is about 20% of other full depth precast deck systems, such as post-tensioning or UHPC joint, and is more robust in corrosion resistance and durability. The AccelBridge in Bayou Lafourche Bridge is sponsored by FHWA innovative bridge research and deployment program.

4:30 PM

IBC 15-06: Bridge Replacement using Lightweight Concrete Girders and Deck

Reid Castrodale, Castrodale Engineering Consultants, PC, Concord, NC; Brian Hanks, NCDOT, Raleigh, NC

North Carolina Department of Transportation has completed a two-span bridge with the first lightweight concrete (123 pcf fresh density) prestressed concrete girders and the first all lightweight concrete (105 pcf fresh density) deck and barriers in the state. The Department designed the bridge with assistance from the lightweight aggregate supplier. The paper discusses: design including assumed material properties; a comparison of lightweight and normal weight concrete designs; test results; special provisions; and lessons learned.

IBC 15-Proprietary Reserve: High Load Multirotational Bearings for the Dulles Corridor Metrorail Project

Ronald Watson, R.J. Watson, Alden, NY

Phase 1 of the new Dulles Corridor Metrorail Project is now complete. Since the owner, WMATA, has had problems with elastomeric and pot type bearings in the past, disk and spherical bearings were selected for this crucial aerial portion of the Metro Line. This paper will cover the development of disk and spherical bearings and highlight The Dulles Project and other case histories on bridges demonstrating the performance advantages of these devices.

RECEPTION WITH EXHIBITORS

5:00–7:00 PM

Join us at the evening reception of the 2015 IBC, held throughout the conference exhibit hall. This is a great networking reception to mingle with friends and colleagues.

POSTER SESSION

The IBC Poster Session offers additional opportunities to learn and network! Located in the IBC Exhibit Hall, posters are available for viewing whenever the Hall is open. Additionally, you may meet with the poster presenter at one of two times: Tuesday from 2:30–3:30 PM, or Wednesday, from 9:30–10:30 AM.

IBC POS-1: Innovative Thoughts in Constructing Scour Fragility Curves with Conceptual Equivalent Scour Load
Chun-Chung Chen, Ph.D., National Center for Research on Earthquake Engineering, Taipei, Taiwan (R.O.C.); Chi-Ying Lin, Prof. Kuo-Chun Chang, and Chun-Jen Liu, National Taiwan University, Taipei, Taiwan (R.O.C.)

IBC POS-2: Evaluation of Theoretical Methods to Calculate of Transvers Live Loads Distribution Factor of Concrete Beam Bridges
Rafat Edlebi, Ph.D. and Dina Tanbakji, Damascus University, Damascus, Syria

IBC POS-3: Seismic Behavior of Precast Segmental Bridge Piers with Shear Resistance Provided by Shear Keys
Yui-Chi Sung, National Center for Research on Earthquake Engineering, Taipei, Taiwan (R.O.C.); H.H. Hung, K.C. Lin, C.R. Jian, and K.C. Chang, National Taiwan University, Taipei, Taiwan (R.O.C.)

IBC POS-4: Analytical Modeling Approach for Seismic Evaluation of Curved Precast-Prestressed Concrete Bridges
Junwon Seo, Ph.D., P.E. and Luke Rogers, South Dakota State University, Brookings, SD

IBC POS-5: Long-Term Monitoring of Bridge Piers, Bearings, and Girders using Wireless SenSpot Sensors
Mehdi Kalantari Khandani, Ph.D. and Sina Farzinfard, Resensys LLC, College Park, MD

IBC POS-6: Evaluation of Structural Performance of Bridges by Ambient Vibration Measurements
Nader N. Tadros, P.E. and Hani Melham, Ph.D., P.E., Kansas State University, Manhattan, KS

IBC POS-7: Replacement of S.R. 0885 Bridge over Union Railroad
Patrick L. Minnaugh, P.E. and Steven Kocsuta, P.E., CDM Smith, Pittsburgh, PA

IBC POS-8: Finite Element Analysis of an Integral Abutment Bridge
Scott Brendler and Yasser Khodair, M.Sc., Ph.D., Bradley University, Peoria, IL

LONG SPAN I

TIME: 8:30 AM–12:00 Noon
ROOM: HDR Engineering Theater 4 (VIDEO)
CHAIR: Kenneth J. Wright, P.E.,
HDR Engineering, Inc., Pittsburgh, PA

8:30 AM

IBC 15-07: Burgoyne Bridge: A Case Study of Bridge Conceptual Design
William V. Anderson, Parsons, Markham, ONT, Canada; Jason Marr and Mike DiPaola, Region of Niagara, Thorold, ONT, Canada
The existing Burgoyne Bridge in St. Catharines, Canada is being replaced by a new structural steel box girder bridge with a single, central, structural steel arch supporting a main span of 125m and flanked by structural steel box girder spans. It was required that the bridge be a landmark enhancing the environment rather than merely mitigating negative environmental effects. Environmental enhancement derives from the appearance of the bridge and improved functional characteristics.

9:00 AM

IBC 15-08: The New Bridge over the St. Lawrence River – A Collaboration in Architecture and Engineering
Poul Ove Jensen and Kasper Svanberg Dissing + Weitling, Copenhagen, Denmark; Matt Carter and Dawn Harrison, Arup, New York, NY; Martin Hooton, Arup, London, United Kingdom
The New Bridge for the St. Lawrence Corridor Project is a 3 billion dollar urban highway project which is being procured through public private partnership. The signature structure for the project is a 3km crossing of the St Lawrence River which forms a vital link between the city of Montreal and the Brossard shore. This paper will describe the development of the design, with an emphasis on the unique architecture and construction challenges.

9:30 AM

IBC 15-09 (New): Rehabilitation for Truss Bridges using Post-tensioned Concrete Floor System
Cheyu Chang and Richard Lawrie, Hardesty & Hanover, LLC, Alexandria, VA
This proposal offers an innovative method for truss bridge rehabilitation by introducing a lightweight concrete floor system with edge beams and post-tensioning adjacent to the bottom chords of a through truss, or the top chords for a deck truss. The proposed method strengthens the existing bridge and provides redundancy which are the two most crucial issues for public safety. Furthermore, it provides a durable infrastructure with a greater resistance to deflection and vibration issues.

10:00 AM COFFEE BREAK

10:30 AM

IBC 15-10: Tilikum Crossing, Bridge of the People - a Signature Cable-stay Bridge in Portland, Oregon for Transit, Pedestrians and Cyclists

Jesse Kadekawa Miguel, HNTB Corporation, Kansas City, MO; David J. Tertadian and Steven L. Barrett, Tri-Met (Tri-County Metropolitan District of Oregon), Portland, OR; Semyon Treyger, P.E., S.E., HNTB Corporation, Bellevue, WA

Tilikum Crossing, Bridge of the People, is a $134 million signature cable–stay bridge over the Willamette River in Portland, scheduled to open September 2015. This bridge, to be the first new bridge in the United States dedicated to transit, pedestrians and cyclists, was required by TriMet for their Portland – Milwaukie Light Rail Transit Project. HNTB are the preliminary bridge engineers, with Donald MacDonald as bridge architect. The Design/Build Contractor is Kiewit Infrastructure West Co./T.Y.Lin.

11:00 AM

IBC 15-11: Ohio River Bridges East End Crossing

Marcos Loizias, Jacobs, Morristown, NJ

Procured under a public private partnership contract, the main river spans of the Ohio River Bridges East End Crossing feature a 2,280-ft long steel composite cable-stayed bridge with a center span of 1,250 ft and diamond towers. The paper discusses main design considerations, characteristic structural details including the means for achieving a 100-year service life, and the methods of construction (incremental launching and falsework for the flanking spans, balanced cantilever for the center span).

11:30 AM

IBC 15-12: P3 Procured Crossing - Mersey Gateway Project

Stuart Withycombe, CH2M Hill, London, United Kingdom

In March 2014 Halton Borough Council awarded the contract for the Mersey Gateway Project procured under an innovative P3 arrangement. The centre piece of this transformational scheme is a spectacular new 1km long cable stayed bridge over the estuary. The crossing will be tolled and includes several km of new and upgraded road and is due to open in 2017. The paper will discuss aspects of the development, procurement and early construction of the project.

ABC I

TIME: 8:30 AM–12:00 Noon
ROOM: Theater 2
CHAIR: Louis J. Ruzzi, P.E.,
PennDOT, Bridgeville, PA

8:30 AM

IBC 15-13: Rapid Replacement of a Multi-Span Curved Steel Girder Structure – Lees Avenue Underpass
Douglas Raby, P.Eng. and Michel Vachon, P.Eng., Ing., MMM Group Ltd., Ottawa, ONT, Canada; Dina Miron, P.Eng., Ministry of Transportation Ontario, Kingston, ONT, Canada
The Lees Avenue Underpass was rapidly installed in September 2014 and is one of the heaviest bridges to be replaced overnight in North America using SPMTs. Complex operation constraints, technical design issues) including curved bridge geometry, steel-box girder design, and nonstandard deck details are presented. Major project issues are discussed including construction staging issues associated with the change of span arrangement, re-use of existing abutments, SPTM stroke and maximum grade limitations, bearing tolerance, and bearing restraint.

9:00 AM

IBC 15-14: ABC Methods Keep Berwick Bridge on Track
Steven Hodgdon and Julie Whitmore, VHB, Bedford, NH
The Berwick Bridge, crossing the Salmon Falls River, is an important connection between the communities of Berwick, ME and Somersworth, NH. The existing bridge included deck mounted railroad flashers for the track crossing in Somersworth and painted steel girders. Accelerated construction techniques and practical design solutions, including precast concrete moment slabs for track support and new steel girders with a metalized coating, were used to maintain traffic and provide a low-maintenance, durable project solution.

9:30 AM

IBC 15-15: Ten Days in August: An Accelerated Bridge Reconstruction
Ryan Adams, P.E., Greenman-Pedersen, Inc., Lebanon, NJ; Scott Deeck, P.E., NJDOT, Trenton, NJ
A 90 year-old two-span 127 foot long thru-girder bridge was reconstructed over a 10-day period using Prefabricated Bridge Elements and Ultra High Performance Concrete. Despite extremely restrictive site conditions, portions of the substructure and the entire superstructure were replaced within this narrow time frame. The paper discusses the challenges faced during the design process, the constructability provisions developed for the contract documents, and the lessons learned from the construction phase of the project.

10:00 AM COFFEE BREAK

10:30 AM

IBC 15-16: Accelerated Construction Delivers SR 288 Bridge Replacement in Seven Days

Nikki Bedillion, P.E., JMT, Moon Township, PA; Louis Ruzzi, P.E., PennDOT, Bridgeville, PA

This project replaced a severely deteriorated concrete arch bridge carrying SR 288 over Wampum Run in Lawrence County, PA with a 78'-0" long rolled steel beam structure on integral abutments. The paper will describe the innovative ABC design and construction techniques used in order to minimize the inconvenience to the traveling public to just 7 days. The bridge features prefabricated elements, precast substructures and 3-two beam modules connected using Ultra High Performance Concrete.

11:00 AM

IBC 15-17: The Use of Full Depth, Full Width, Precast, Prestressed Concrete Deck Panels to Accelerate Major Bridge Rehabilitation Construction

Reed Ellis, Ph.D., P.E., Stantec, Edmonton, AB, Canada; Ruth Eden, M.Sc., P.E., Manitoba Department of Infrastructure and Transportation, Winnipeg, MB, Canada; Hugues Vogel, Ph.D., P.Eng., Stantec, Winnipeg, MB, Canada

This project involves the first application of full depth , full width, precast, prestressed concrete deck panels in the province of Manitoba. The deck panels were made composite with the girders using ultra-high performance concrete in the grout pockets and transverse joints. Due to the unusual method of construction and the importance of composite action, Manitoba Infrastructure and Transportation requested the use of structural monitoring to evaluate the performance of the deck, joints, and overall composite action and continuity.

11:30 AM

IBC 15-18: Accelerated Bridge Construction Practice in Florida

Jeffrey Ger, FHWA, Tallahassee, FL; Thomas Andres, Robert Robertson, and Dennis Fernandez, FDOT, Tallahassee, FL

This article presents case studies highlighting FDOT construction projects that utilize prefabricated bridge elements and systems (PBES) to accelerate construction operations and project delivery. The case studies compare conventional and prefabricated options with a focus on construction costs and project schedule. The case studies illustrate that in some situations PBES construction techniques provide effective solutions to complex engineering challenges. When bridge projects can be designed using large numbers of prefabricated elements, PBES alternatives have the potential to significantly reduce the project schedule, reduce direct costs, and reduce user costs.

REHABILITATION/PRESERVATION I

TIME: 8:30 AM–12:00 Noon
ROOM: Parsons Theater 3
CHAIR: Gary Runco, P.E., *VADOT, Fairfax, VA*

8:30 AM

IBC 15-19: Effective Retrofit Design of Cracking in Patterson Plank Road Bridge

Yeun Chul Park and Sougata Roy, Lehigh University, Bethlehem, PA; John Schroettner, Greenman-Pedersen, Inc., Lebanon, NJ

Fatigue cracks were found in the floorbeam web gaps of Paterson Plank Road Bridge in New Jersey. 3D Finite Element Analyses (FEA) of the bridge identified significant out-of-plane distortion in the web gaps as the cause of cracking. Stiffening of the web gap using angle and WT sections was investigated by 3D FEA and could significantly mitigate the out-of-plane distortion. The field measurements and the analyses identified the unique response characteristics of the structure under ambient loading.

9:00 AM

IBC 15-20: Heat-Straightening Riveted Built-Up Steel Bridge Girders

Michael Urban, Gannett Fleming, Inc., Audubon, PA

Heat-straightening a steel bridge girder is an economical and relatively quick way to repair impact damage. However, built-up I-girders can pose problems in successfully bringing the girder back to its original shape. This paper presents a successful heat-straightening repair of a riveted built up I-girder with two coverplates. Repair calculations, restraining force estimation, and steel repairs for this project as well as recommendations for other similar repairs are discussed.

9:30 AM

IBC 15-21: Easton - Phillipsburg Toll Bridge Rehabilitation Challenges

Edwin Skrobacz, Jr. and Dan Zaleski, Parsons Brinckerhoff, Lawrenceville, NJ

This important facility links Easton, Pa. with Phillipsburg, N.J. Rehabilitation work will extend the useful life by about 15 years and includes major structural work and recoating of seven structures including a 540- foot long Pennsylvania Thru Truss. Design and construction challenges were met through collaboration between stakeholders. Work included maintenance of heavy traffic, Historic structure aspects, structural steel/gusset plate rehabilitation, masonry repairs, historic iron railings restoration, drainage, high performance deck overlay, and aesthetic lighting.

10:00 AM COFFEE BREAK

10:30 AM

IBC 15-22: Lessons from NYSDOT's Corrective Repairs on 130 Bridges

Tariq Bashir, NYSDOT, Long Island City, NY

Presentation will share recent experiences of NYSDOT on three (3) corrective maintenance repair projects in the New York City region on a total of 130 bridges. The objective was to seek cost effective improvements and thus deferring the need for expensive major rehabilitations. Specifics of selection criteria, performance measures, data collection, targeted deficient elements, repair solutions, cost consideration, utilization of innovative technologies, construction challenges, and the necessary inter-agency coordination will be discussed.

11:00 AM

IBC 15-23: Green River Covered Bridge Rehabilitation

Robert Durfee, P.E. and Eric Ohanian, E.I.T., DuBois & King, Inc., Laconia, NH; Peter Bero, P.E., DuBois & King, Inc., South Burlington, VT

The Green River Covered Bridge in Massachusetts was closed in 2002 to vehicle traffic due to severe truss member deterioration. It remained open to pedestrians until 2011 when Tropical Storm Irene destroyed the east approach. A detailed analysis and rehabilitation design was performed addressing broken, deteriorated, and overstressed structural members, connections, timber decking and floorbeams, and new cast-in-place concrete abutments. The bridge was re-opened in 2014 with a total project cost of $1.3 million dollars.

11:30 AM

IBC 15-24: The Rehabilitation of the Alexander Hamilton Bridge

Suhail Albhaisi and Johnny Ho, Jacobs, New York, NY; Tariq Bashir, NYSDOT, Long Island City, NY

The Alexander Hamilton Bridge rehabilitation project rejuvenated a major link in the New York metropolitan area's transportation infrastructure, leading to enhanced mobility throughout the region, improved safety and a structure that will endure for generations. This project also restored existing and constructed new recreational facilities in the park land and provided safe play and gathering areas for local communities. This extremely complex, sensitive, and vital project, which was delivered on schedule and within budget.

CONSTRUCTION

TIME: 8:30 AM–12:00 Noon
ROOM: CSI Theater 1
CHAIR: Matthew P. McTish, P.E.,
McTish, Kunkel & Associates, Allentown, PA

8:30 AM

IBC 15-25: Geometry Control for SAS, VHR, and Queensferry Crossing Projects
Eugene Rosamilia, American Bridge Company, East Hanover, NJ
The innovative approach AB took to control geometry and quality in fabrication enabled the supply of complex steel structures while mitigating schedule and other project risks. This practice is unusual and attendees would gain valuable insight on how the AB approach facilitated the construction of these three iconic projects.

9:00 AM

IBC 15-26: Port Mann Bridge Main Span Demolition
Doug Whittaker, McNary Bergeron & Associates, Old Saybrook, CT; David Jeakle, McElhanney Consulting Services, Tampa, FL; Paul Hopkins, Flatiron Construction, Broomfield, CO; Bryan Lechner, Kiewit Infrastructure Engineers, Englewood, CO
The original Port Mann Bridge (1964) is a three span tied arch with a main span of 1200' and side spans of 360'. The deep and fast flowing Fraser River with commercial shipping made temporary support in the water difficult to construct. Temporary towers and stay cables were instead used to de-construct the arch in cantilever working from mid-span back towards the piers. This procedure closely followed the original construction method, except in reverse.

9:30 AM

IBC 15-27: Planning & Execution of High Risk Bridge Demolition
Steve Tissier, PCL Civil Constructors, Keene, NH; Tim Davis, PCL Civil Constructors, Inc., Tampa, FL
The I-91 Brattleboro replacement project required the removal of two 880' long steel truss bridges constructed in 1958. The demolition of the existing bridges provided a myriad of unique challenges that required innovative engineering, planning, and oversight to overcome. Bridge Information Models (BrIM) and structural analysis models were used extensively during the planning phase mitigating risks associated with the geometry constraints, limited access, and logistical challenges.

10:00 AM COFFEE BREAK

10:30 AM

IBC 15-28: Construction of the Basket-handle Tied Arch Bridge Across Kentucky Lake

Gregory Stiles, P.E., Michael Baker International, Asheville, NC; Michael Oliver, P.E., Kentucky Transportation Cabinet, Murray, KY; Ryan Gossom, P.E., Kentucky Transportation Cabinet, Frankfort, KY

Kentucky is replacing its US68/KY80 Kentucky Lake Bridge, with a three-quarter mile long structure including the 550-foot basket-handle tied-arch span over the navigation channel. This paper will present the first year of construction; the collaborative effort between Owner, Contractor, Fabricators and Engineer during procurement of the large diameter pipe piles with constrictor plates, the fabrication of arch members, and special testing of the seismic isolation bearings and wire rope hanger assemblies. Current Construction Photos included.

11:00 AM

IBC 15-29: Phased Construction of Long-Span River Crossing

Edward Terhune and Ahmad Ahmadi, Ph.D., SAI Consulting Engineers, Inc., Pittsburgh, PA; Donald Herbert, PennDOT, Uniontown, PA

Masontown Bridge is a seven span, 1,700-foot long bridge with a 440-foot main span over the Monongahela River. A unique drilled shaft deep foundation with 8½-foot diameter rock sockets includes a base wall cast in a form-lined sheet pile cofferdam. Considerations were required for large camber differences between two phases of superstructure construction. Other features presented include Osterberg cell testing, thermal control of mass concrete, a 40-foot high modular wall, and lessons learned.

11:30 AM

IBC 15-30: Rural Footbridges in Sub-Sahara Africa: Construction Methods, Logistics, and Philanthropy

Nathan Bloss, Bridging the Gap Africa, Seattle, WA; Kelley Rehm, Bridging the Gap Africa, CH2M Hill, Old Hickory, TN; Matthew Bowser, Bridging the Gap Africa, MMM Group Limited, Mississauga, ON, Canada; Eric Bonet, Bridging the Gap Africa, Kitale, Kenya; Natalie McCombs, Bridging the Gap Africa, HNTB Corporation, Basehor, KS

Throughout many parts of rural Sub-Sahara Africa crossing rivers is a life threatening experience due to animal attacks and swift currents. Constructing a simple footbridge significantly improves the quality of life in rural communities. This paper presents lessons learned by a non-profit organization that has built over 60 bridges in Africa. It emphasizes the means and methods used to construct rural footbridges with limited resources. And it explains how individuals and corporations can get involved.

EXHIBIT HALL LUNCHEON

12:00–1:30 PM

Enjoy an opportunity to visit with exhibitors and network with all attendees during our "Healthy Day" strolling buffet lunch, with lighter cuisine throughout the Exhibit Hall.

IBC BRIDGE BOAT TOUR

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, departing from the Convention Center at 1:00 PM on the Allegheny River Boat dock. Come join us for an afternoon of cruising Pittsburgh's Three Rivers with a spotlight on a technical discussion of the unique and varied bridges of the region. We will traverse upstream on the Allegheny River to the Highland Park Bridge, downstream on the Allegheny and Ohio Rivers to the McKees Rocks Bridge, upstream on the Ohio and Monongahela Rivers to the Hot Metal Bridge, then return to the Convention Center. Whether you are a first-time visitor to the City of Bridges, a life-long resident, or anywhere in between, you will find this guided tour to be informative and entertaining. Your tour guide will provide interesting historical and technical facts for more than 20 bridges covered by the tour. An additional fee of $40 is required; advance registration is required and seating is limited - check the registration desk for availability. Boat boarding begins at 12:30 PM; please arrive no later than 12:45 PM for check in.

DESIGN I

TIME: 1:30–4:00 PM
ROOM: HDR Engineering Theater 4 (VIDEO)
CHAIR: Richard L. Connors, P.E., PMP,
County of Allegheny DPW, Pittsburgh, PA

1:30 PM

IBC 15-31: Lifting over the Piscataqua - A New Lift Bridge for Maine and New Hampshire
Peter Roody, P.E., Hardesty & Hanover, LLC, New York, NY; Michael D. Hawkins, P.E., Hardesty & Hanover, LLC, New Haven, CT; Jeffrey S. Folsom, P.E., MaineDOT, Augusta, ME
The new 300-foot vertical lift bridge crossing the Piscataqua River between Maine and New Hampshire introduces new design features to carry vehicular, pedestrian and freight rail traffic. The design of the Sarah Long Bridge successfully utilized the CMGC (Construction Manager General Contractor) process that completed preliminary concepts through final design, environmental permitting and ROW in a period of 21 months. This process, as well as the innovative design techniques that maximized project value, are described.

2:00 PM

IBC 15-32: Rehabilitation of the Pennsylvania State Route 49 Bridge over the Cowanesque River - Temporary Steel-Framed Pile Cap Foundations with Geosynthetically-Reinforced Soil Backwalls
Steven Iszauk, P.E., Hatch Mott MacDonald, Pittsburgh, PA
The bridge rehabilitation project was delayed over three months, as poor stability of the riverbank precluded the use of the originally proposed foundations for the temporary truss bridge that would carry traffic during construction. An innovative design, consisting of steel-framed pile cap foundations and geosynthetically-reinforced embankments/backwalls, addressed all site constraints; which included riverbank stability, restrictive site geometry, and utility conflicts. Ultimately, the Contractor completed the rehabilitation project within seven days of the original deadline.

2:30 PM

IBC 15-33: I-91 Brattleboro Bridge Project - A Design/Build Tribute to Vermont
Garrett Hoffman, FIGG Bridge Engineers, Inc., Exton, PA
The I-91 Brattleboro Bridge Project is a Design/Build Project for the Vermont Agency of Transportation that includes the demolition and replacement of four bridges between Exits 2 and 3. The main bridge (Bridge 9) will be a single 1,036' long arching concrete bridge over State Route 30 and the West River. Each pier will feature a walkway to a viewing platform, along with kayak/canoe launches near each pier location. the natural habitat in Vermont is incorporated into bridge aesthetics, representing the theme "a bridge to nature."

3:00 PM

IBC 15-34: Route 17 NB over I-80 Superstructure Replacement and Widening

Rama Krishnagiri, Edwin Skrobacz, Tharmaraja Rishindran, and Walter Hucal, Parsons Brinckerhoff, Lawrenceville, NJ; Brian Mulcahy, NJDOT, Trenton, NJ

Design and construction of this sharply skewed, five-span horizontally curved deck with straight girders on non-parallel substructures, constructed in two stages posed many challenges including large girder layovers and differential camber for a proper field fit-up. Problems were compounded due to variable length splayed steel girders, proper cross-frame fit-up for a Total Dead Load Fit, variable deck cross-slopes and deck pours. The existing vertical clearance was improved on I-80 with the widening of Route 17.

3:30 PM

IBC 15-35: Clearfork Main Street Bridge Innovations Meet Multiple Challenges

John Dewar, P.E., S.E., Freese and Nichols, Inc., Fort Worth, TX

Challenged by competing demands of limited budget, stringent flood control requirements, urban pedestrian trail connectivity, and bridge aesthetics, the Clearfork Main Street Bridge employed a concrete spliced girder system (the second in Texas and the first in 25 years) with a unique steel pedestrian bridge suspended below. The vehicular bridge is composed of five beam segments spliced together with post-tensioning tendons to form one continuous three-span girder with a center span of 220 feet.

IBC 15-Design I Reserve: The Path 22 West Bridge - a pedestrian and bike bridge over the Snake River in Teton County, Wyoming

Jesse Kadekawa Miguel, AIA, NCARB, ENV SP and Tirzah Gregory, HNTB Corporation, Kansas City, MO; Sinclair Buckstaff, Nelson Engineering, Jackson, WY

The Path 22 West Project is a $13.5 million connection of existing shared-used pathways around Teton County, Wyoming, including a 700-foot long, four-span curved steel plate girder pedestrian bridge over the Snake River, with the Tetons serving as the backdrop in the viewshed to the north. Nelson Engineering of Jackson, Wyoming, led a consortium of eight different consulting firms, with HNTB Corporation providing bridge plans, aesthetic design, future lighting plans, geotechnical oversight, and construction services.

LONG SPAN II

TIME: 1:30–4:00 PM
ROOM: CSI Theater 1
CHAIR: Matthew A. Bunner, P.E.,
HDR Engineering, Inc., Pittsburgh, PA

1:30 PM

IBC 15-36: Replacing the aging US 52 Mississippi River Bridge

Greg Hasbrouck, P.E. and Martin Furrer, P.E., S.E., Parsons, Chicago, IL; Faith Duncan, P.E., IDOT, Dixon, IL

The presentation will discuss the impetus for replacing a rural Mississippi River crossing, the associated design and coordination challenges, as well as the selection and design of a 546ft steel tied-arch bridge with water line footing foundations instead of large cofferdams. The steel tied-arch design incorporates redundancy design criteria and seeks to simplify details and provide a durable structure that is easy to inspect and maintain.

2:00 PM

IBC 15-37: Vimy Memorial Bridge

Jack Ajrab, P. Eng., Sylvain Montminy, P. Eng., Ing., Marcel Delph, P. Eng., Parsons, Ottawa, ONT, Canada; William V. Anderson, Parsons, Markham, ONT, Canada

The Vimy Memorial Bridge is a unique structure crossing located in Canada's national capital, Ottawa. It crosses the Rideau River, a recognized National Historic Site in Canada and a UNESCO World Heritage Site. An overhead structure comprised of tubular triple arches that spans the entire waterway with a 125m main span exceeded the imposed design requirements and resulted in an iconic gateway structure.

2:30 PM

IBC 15-38: Ohio River Bridges Project - Downtown Louisville River Bridges

John Finke, P.E., S.E., Jacobs, St. Louis, MO

This presentation will focus on the unique challenges, design and project management, design and construction of the Louisville Downtown Cable Stayed Bridge under the design-build contract mechanism. Among those challenges are an in-depth drilled shaft testing program, thorough bridge security analysis, site specific seismic analysis, site specific wind study, erection analysis and a durability study aimed at achieving a 100 year service life using a probabilistic based approach.

3:00 PM

IBC 15-39: Nipigon River Bridge Replacement: Innovative Design for a Cable-stayed Bridge

Max Xiaosong Nie, P. Eng. and Bob Stofko, P. Eng., MMM Group Ltd., Mississauga, ONT, Canada; Armin Schemmann, Ph.D., P. Eng., Buckland & Taylor Ltd., North Vancouver, BC, Canada; Ray Krisciunas, P. Eng., Ministry of Transportation Ontario, Thunder Bay, ONT, Canada

This paper focuses on the innovative design of the first cable-stayed bridge in Ontario. The two-span steel-concrete composite deck cable-stayed bridge supports dual

two-lane roadways. The asymmetric deck is supported by three vertical planes of stay cables that are anchored into three individual pylons. As an industry first, this structure will be stage constructed in two halves to maintain traffic throughout construction, an extremely challenging concept for a cable stayed bridge.

3:30 PM

IBC 15-40: Technology Wanting - The Demise of the 1940 Tacoma Narrows Bridge

Charles Seim, Consulting Bridge Engineer, El Cerrito, CA

This paper briefly describes the history of bridge failures from wind, and the design of the 2,800-ft (853 m) suspension bridge crossing the Tacoma Narrows channel in the State of Washington, which led to the destruction of the four-month old structure from wind on November 7th 1940. The paper discusses the investigations of the collapse and the disappointment in finding a definitive cause, and the subsequent development of technologies to prevent such happenings from occurring again.

RAIL BRIDGES I

TIME: 1:30–4:00 PM
ROOM: Theater 2
CHAIR: Carl Angeloff, P.E.,
Con-Serv Inc., Aliquippa, PA

1:30 PM

IBC 15-41: Sarah Mildred Long Bridge – Two States, Three Bridges in One

William (Jay) Rohleder, Jr., P.E., S.E., FIGG Bridge Engineers, Inc., Exton, PA; Jeff Folsom, P.E., MaineDOT, Augusta, ME

The Sarah Mildred Long Bridge Replacement is a partnership between Maine and New Hampshire to build a new USRoute1Bypass Bridge across the Piscataqua River between Kittery, Maine and Portsmouth, New Hampshire. This project was developed using a Construction Manager/General Contractor (CM/GC) method with a builder on the design team. The new alignment includes a 300' long lift span with 2,430' of approach vehicular precast concrete box girder spans stacked over 1,440' of railroad spans.

2:00 PM

IBC 15-42: Sarah Mildred Long Bridge Vessel Collision Emergency Repairs

Jim Murphy and Loretta Doughty, HDR Inc., Boston, MA; Matt Low and Ed Weingartner, Hoyle, Tanner & Associates, Inc, Manchester, NH; Nickie Hunter, P.E., NHDOT, Concord, NH

The Sarah Mildred Long Bridge, a vertical lift double-deck steel truss carrying highway and rail traffic, was damaged when an oil tanker broke free from its mooring and collided with the bridge. After immediate closure, our team assessed the damage, provided recommendations concerning structure safety and explored repair options. Damaged truss members were replaced or repaired, and the damaged chord was heat straightened. Within 6-weeks of continuous work, the bridge reopened to pre-collision load posting.

2:30 PM

IBC 15-43: A Record-Breaking Railroad Truss Roll-In

Diane Campione, P.E., S.E., Alfred Benesch & Company, Chicago, IL; Soliman Khudeira, Ph.D., P.E., S.E., CDOT, Chicago, IL

On August 25, 2012, a 394-foot-long, 4.75-million pound, steel railroad truss was rolled into place using SPMTs. This bridge serves as the top tier of a multi-level grade separation project designed by Alfred Benesch & Company. The 130th Street and Torrence Avenue intersection improvement project is an extremely complex, $101 million effort by the Chicago Department of Transportation. Using Accelerated Bridge Construction techniques was an innovative solution to facilitating construction in a busy, urban environment.

3:00 PM

IBC 15-44: Rail-Structure Interaction in Freight and High-Speed Rail Viaducts

Gregor Wollmann, HNTB Corporation, Blacksburg, VA

The use of continuous welded rail on long viaducts requires special attention to the interaction between rail and structure. This presentation discusses design criteria and analysis approaches for rail-structure interaction for both ballasted track and direct fixation track under heavy and high-speed rail loading. It introduces methods to minimize rail structure interaction effects and presents typical results by means of a parameter study and a type study for a 400ft span railroad tied arch bridge.

3:30 PM

IBC 15-45: Aspects of a Complex Jacked-Box Rail Underbridge

Andrew Yeoward, FICE, CH2M HILL, Englewood, CO; John Sreeves, FICE, CH2M HILL, Swindon, Wiltshire, United Kingdom; Steve Beech, BAM Nuttal, Halesowen, West Midlands, United Kingdom

A new underbridge was constructed at a highly constrained site in the UK to remove a level-crossing on a major railroad. Key aspects of the new jacked-box underbridge are discussed where the contractor was allowed only a 101-hour track possession for installation. The solution faced considerable spatial constraints between the railroad and a canal, spanned a geological fault, and dealt with the post-industrial legacy of old mine workings, a canal basin and buried bridge abutments.

IBC 15-Rail I Reserve: Examining Accelerated Bridge Construction Techniques in the Clayton Street Bridge Replacement

Malek Al-Khatib and Daniel Deng, Louis Berger, Needham, MA; Elizabeth Ozhathil, Massachusetts Bay Transportation Authority, Boston, MA

The MBTA Ashmont Red Line bridge over Clayton Street in Boston, MA, was a 102-year-old structure that exceeded its lifespan and required replacement. Unprotected steel bents and low bridge clearance increased the probability of collisions, and narrow sidewalks necessitated removing these bents. ABC techniques provided the project team greater flexibility to address numerous operational, site and schedule constrains, reducing construction time by 10 months and saving approximately $2 million compared to conventional construction methods.

REHABILITATION/PRESERVATION II

TIME: 1:30–4:00 PM
ROOM: Parsons Theater 3
CHAIR: Rachel Stiffler,
Vector Corrosion Technologies, McMurray, PA

1:30 PM

IBC 15-46: Galvanic Corrosion Protection of Reinforced Concrete Bridge Decks and Substructures

David Whitmore, Vector Corrosion Technologies, Winnipeg, MB, Canada; Rachel Stiffler, Vector Corrosion Technologies, McMurray, PA

Corrosion is the primary cause of repairs to reinforced concrete bridges. Galvanic corrosion protection systems have been developed to provide long-term corrosion protection to existing bridge structures which are suffering from corrosion. Through the partnership and support of the Ohio Department of Transportation and the Ontario Ministry of Transportation, these systems have been installed and monitored on bridge decks and substructures. Some of these structures have been monitored for over 10 years. This paper presents the development, installation and 10 year field performance of these galvanic corrosion protection systems.

2:00 PM

IBC 15-47: Macdonald Bridge Redecking - Project Status Update

Keith Kirkwood, Buckland & Taylor, Ltd., North Vancouver, BC, Canada

As a follow-up to Buckland & Taylor's presentation in 2014, this presentation will give an update on the status of the Angus L. Macdonald Redecking Project in Halifax, Nova Scotia. A local fabricator has begun work on the 46 deck segments to be replaced in 10½ hour full bridge closures, while traffic is maintained during the day (and most weekends). The presentation will highlight fabrication progress to date, as well as work performed in the field in advance of deck segment replacement slated to begin in August, 2015.

2:30 PM

IBC 15-48: Angus MacDonald Bridge Redecking - Construction

Kevin Smith, American Bridge Company, Coraopolis, PA

The entire stiffening truss and road deck of the Angus L. MacDonald suspension bridge is being replaced. During 10-1/2 hour nightly closures, forty-six individual truss segments will be removed from the bridge and the 20m or 10m long gaps in the roadway will be spanned with a new orthotropic deck truss segment, all in time to re-open for morning traffic. American Bridge Canada Company will present the unique construction methods used for this challenging project.

3:00 PM

IBC 15-49: Macdonald Bridge Suspended Spans Deck Replacement - Cable Dehumidification Design

Thomas McNutt, M.A.Sc., P.Eng., Buckland & Taylor, Ltd., Halifax, NS, Canada; Keith Kirkwood, M.E.Sc., P.Eng., Buckland & Taylor Ltd., North Vancouver, BC, Canada

As part of the Suspended Spans Redecking Project on the Macdonald Bridge in Halifax, Nova Scotia a main cable dehumidification system will be installed to protect and extend the lifespan of the existing main cables. This paper describes the background of using dehumidification for corrosion protection, some of the design principles and the design processes that were used on this suspension bridge, from the preliminary inspection of the cables, through to the final design.

3:30 PM

IBC 15-50: Preserving the Suspension System of Maryland's WPL (Bay) Bridge - The First Main Cable Dehumidification Project in the United States

Shane Beabes, P.E., AECOM, Baltimore, MD; Mark Bulmer, CEng, MICE, AECOM, Leeds, United Kingdom; Abey Tamrat and Dan Williams, P.E., Maryland Transportation Authority, Baltimore, MD; Phillip Waldvogel, P.E., Ammann & Whitney, New York, NY

With limited funding available, bridge owners are focusing efforts on maintaining their inventory through system preservation projects. This has led to innovation in preserving the Nation's infrastructure. After thorough study, the Maryland Transportation Authority (MDTA) embarked on an innovative approach to the preservation of the suspension cables on the WPL (Bay) Bridge. With the assistance of AECOM and Ammann & Whitney, MDTA is installing the first full-length cable dehumidification system in the United States.

IBC 15-Rehab Reserve: Microbiologically-Influenced Steel Pile Corrosion at the Jamestown-Verrazzano Bridge

Michael Abrahams, Parsons Brinckerhoff, New York, NY; Peter Lamb, Henkels & McCoy, Inc., Johnston, RI

The Jamestown-Verrazzano Bridge includes a segmental concrete main structure supported by concrete-filled steel pipe piles. A 2006 inspection revealed small -holes in the piles. In 2011, the holes had increased in size and number. It was determined that corrosion had likely initiated at locations where the piles' protective coating had failed and was subsequently being accelerated by MIC. Repairs involve reinforcement and GFRP jacketing of seventeen deteriorated piles, and installation of a passive galvanic protection system. The nature, effects, and conditions that promote MIC are discussed.

INTERNATIONAL ATTENDEES WELCOME RECEPTION

TIME: Tuesday, June 9; 4:30 - 5:30 PM
ROOM: Ballroom B
HOST: Thomas G. Leech, P.E., S.E.,
Gannett Fleming, Inc., Pittsburgh, PA;
M. Myint Lwin, P.E., S.E.,
Consultant, Olympia, WA

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

TIME: Tuesday, June 9; 5:30–7:30 PM
ROOM: Ballroom B
HOST: Thomas G. Leech, P.E., S.E.,
Gannett Fleming, Inc., Pittsburgh, PA **with Roads and Bridges Magazine, Bayer MaterialScience, LLC, Bridge design and engineering Magazine, and TranSystems, Inc.**

Each year, the IBC recognizes award recipients in several categories over a special dinner in their honor. Join us for a special evening of celebration and commemoration. A separate registration is required. This year's honorees are:

- **Edward P. Wasserman, Nashville, TN** awarded the John A. Roebling Medal, recognizing an individual for lifetime achievement in bridge engineering.
- **San Francisco-Oakland Bay Bridge New East Span, Oakland, CA** awarded the George S. Richardson Medal, presented for a single, recent outstanding achievement in bridge engineering.
- **Vimy Memorial Bridge, Ottawa, Ontario, Canada** presented the Gustav Lindenthal Medal, awarded for an outstanding structure that is also aesthetically and environmental pleasing.
- **Viaduc Léon Blum, Poitiers, France** presented the Eugene C. Figg, Jr. Medal, 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.
- **"Nanjing Eye" Pedestrian Bridge in Youth Olympic Park, Nanjing, Jiangsu Province, P. R. China** awarded the Arthur G. Hayden Medal, recognizing a single recent outstanding achievement in bridge engineering demonstrating vision and innovation in special use bridges.
- **Rehabilitation of the Corning Centerway Arch Bridge, City of Corning, NY** presented the 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.
- **Paso Real Suspension Bridge, Rio Esteli, Condega, Nicaragu** presented a Special Award of Merit (presented during IBC Keynote Session).

EMERGENCY RESPONSE

TIME: 8:00 AM–12:15 PM
ROOM: CSI Theater 1
CHAIR: John C. Dietrick, P.E., S.E.,
Michael Baker International, Cleveland, OH

8:00 AM – NOTE TIME FOR EARLY START

IBC 15-51: Mathew Bridge Emergency Repairs: Unplanned Redundancy in a Fracture Critical Bridge
Jack Haynes, P.E., RS&H, Jacksonville, FL; Timothy Noles, P.E., Hardesty & Hanover, LLC, Sunrise, FL
In September 2013, the Mathew Bridge in Jacksonville was struck by a Navy ship being towed to a local shipyard. The geometry and stability of the bridge was compromised, requiring immediate replacement of a severed chord. Working with the Florida Department of Transportation, the RS&H team produced a full bid package for repairs within 76 hours. Working non-stop, the design and construction team repaired the bridge 12 days ahead of schedule while overcoming numerous obstacles.

8:30 AM

IBC 15-52: I-495 over the Christina River: A Case Study of the Emergency Repair of an Interstate Bridge
Barry Benton and Jason Hastings, DelDOT, Dover, DE; Neil Shemo, AECOM, Mechanicsburg, PA
The 34-span dual bridges supporting I-495 over the Christina River in Wilmington, DE were closed to traffic on June 2, 2014 due to serious substructure settlement and lateral displacement of the existing pile foundations. The bridge closure affected over 90,000 daily motorists and impacted the flow of goods to and from the nearby Port of Wilmington. This paper presents an overview of the operational, design and construction challenges encountered in handling this emergency.

9:00 AM

IBC 15-53: Emergency Jacking of the I-495 Bridge Superstructure
John Milius, AECOM, Philadelphia, PA; Joseph Rovnan, Jr., J.D. Eckman, Atglen, PA; Jonathan Eberle, AECOM, Mechanicsburg, PA
This paper presents the emergency jacking of the I-495 Bridge in Wilmington, DE compromised by substructure failures. Initial simplified analysis confirmed stability of the structure in its distorted shape. Ensuing work included finite element modeling of the displaced structure to size jacking supports and equipment and predict structural responses during jacking. A system of steel towers, header beams and jacks allowed for sequenced vertical and lateral realignment of two parallel six-girder multi-span continuous superstructure sections.

9:30 AM

IBC 15-54: I-495 in Wilmington, DE – The Leaning Towers; Lateral Squeeze Effects on Pile Supported Bridge Piers Due to Mudwave; Emergency Response and Retrofit.

Paul Moffitt, III, AECOM, Mechanicsburg, PA; Bruce Shelly, AECOM, Philadelphia, PA; Hany Fekry, DelDOT, Dover, DE; Karen Armfield, AECOM, New York, NY

In the summer of 2014, a soil stockpile adjacent to four bridge piers caused significant damage to the I-495 Bridge over the Christina River in Wilmington, Delaware. The affected piers were supported on deep foundations consisting of steel H-piles, approximately 140 feet long. The surcharge from the stockpile induced lateral squeeze through a 100 feet thick clay layer applying significant lateral load on the piles which resulted in the bridge piers tilting and displacing laterally.

10:00 AM COFFEE BREAK

10:15 AM

IBC 15-55: I-43 Leo Frigo Bridge Pier Settlement and Emergency Repairs

Kent Zinn, Michael Baker International, Chicago, IL; Bill Dreher, WisDOT, Madison, WI; Chad Halverson, Michael Baker International, Madison, WI

The Leo Frigo Bridge experienced an unexpected pier settlement that resulted in an emergency closure of I-43 in Green Bay. This 8,000' long viaduct includes a steel arch span over the Fox River and is one of the highest bridges in the state. Over the next 100 days, engineers and contractors mobilized to analyze the situation, develop repair solutions, and complete construction. The project moved at lightning speed to return service to 40,000 daily vehicles.

10:45 AM

IBC 15-56: Buckled Piling at I-43 Leo Frigo Memorial Bridge

Donald Green, Michael Baker International, Moon Township, PA

A foundation retrofit was completed for WisDOT to reopen the I-43 Leo Frigo Memorial Bridge, after 2 feet of abrupt settlement at Pier 22. A multi-faceted forensic investigation was completed to evaluate mechanisms that led to section loss and subsequent buckling of existing driven HP14x73 pile foundations. Post-tensioned footing extensions were used to tie existing footings to new concrete footing extensions supported on 5-foot diameter drilled shafts, which were lined with fiberglass electrical-isolation sleeves.

11:15 AM

IBC 15-57: Heat Straightening and Repair of a Collision-Damaged Curved FCM Girder Bridge

Eric Setzler and Ahmad Ahmadi, SAI Consulting Engineers, Inc., Pittsburgh, PA; Lou Ruzzi and Dean Poleti, PennDOT, Bridgeville, PA

A curved two-girder fracture critical bridge near Pittsburgh sustained significant damage when it was struck by an over-height truck. A 3-D finite element model was utilized to evaluate dead and live load stresses in the

damaged girder. Heat straightening was used to restore the damaged girder bottom flange and web nearly to their original alignment. Web cracks that developed during the impact and during heat straightening were retrofit to prevent future fatigue and fracture problems.

11:45 AM

IBC 15-58: Superstorm Sandy Scour- Emergency Repairs to Route 37 Viaducts

Rama Krishnagiri, Tam Sillick, and Steve Esposito, Parsons Brinckerhoff, Lawrenceville, NJ; John Longworth and George Kuhn, NJDOT, Trenton, NJ

Superstorm Sandy caused severe scour damage at twenty-two piers, requiring emergency repairs at these 4870-foot long parallel viaducts. Emergency work was geared towards preservation. The emergency response from a multi-disciplinary team for fast-track inspection, analysis and design with continuous team coordination was critical for a successful completion. Constructability, repetitious design details and due regards to construction methods and material with valuable contractor/supplier input ensured successful outcome in maintaining much needed traffic flow on both bridges.

INNOVATIVE MATERIALS

TIME: 8:30 AM–12:00 Noon
ROOM: Parsons Theater 3
CHAIR: Stephen G. Shanley, P.E.,
Allegheny County DPW, Pittsburgh, PA

8:30 AM

IBC 15-64 (New): Preserving History with Timber

Lauren Chervincky and Steven M. Hodgdon, VHB, Bedford, NH

Sewall's Bridge in York, Maine is an example of finding the balance of modern day function and old world charm. This presentation will show how a blend of materials can be used to preserve the look and feel of a historic structure while accommodating today's vehicle loading demands.

9:00 AM

IBC 15-59: Carbon Fiber Prestressing and ABC Combine for Innovative Bridge Replacement in Maine

Tom Kendrick, P.E. and Sam White, E.I.T., McFarland Johnson, Inc., Concord, NH; Leanne Timberlake, P.E., MaineDOT, Augusta, ME

This Accelerated Bridge Construction (ABC) project utilized PCI Northeast Extreme Tee (NEXT) beams pre-tensioned with Carbon Fiber Composite Cable (CFCC) to replace a structurally deficient concrete rigid frame bridge. This project represented one of the first bridge beam applications of CFCC in the United States, as well as its first use in a NEXT beam. The design and fabrication of the beams was challenging due to limited design and construction specifications for this emerging construction material.

9:30 AM

IBC 15-60: Oregon's Third ASTM A1010 Bridge

Hormoz Seradj, ODOT, Salem, OR

The Oregon Department of Transportation designed and supervised construction of two uncoated steel bridges utilizing corrosion-resistant ASTM A1010 steel. This paper describes the characteristics of the steel and the fabrication of those bridges. The evaluation of steel for bridges along the Pacific Ocean, based on section loss calculations in a marine climate of weathering steel compared to A1010, is also described. A life-cycle-cost analysis is presented.

10:00 AM COFFEE BREAK

10:30 AM

IBC 15-61: The Brookfield Floating Bridge

Josh Olund, P.E., Ph.D., T.Y. Lin International, Falmouth, ME; Jennifer Fitch, P.E., VTrans, Montpelier, VT

The Brookfield Floating Bridge, built in 1820, has been rebuilt several times since. The proposed flotation system for the current structure consists of ten FRP pontoons joined to form a monolithic float. The top-side of the structure is constructed entirely of timber to match the aesthetic appearance of the original construction. The project incorporates four major structural materials (FRP, timber, concrete, and steel) and project-specific design criteria for FRP and floating bridges.

11:00 AM

IBC 15-62: Repair Design of a Cast-In-Place Concrete Bridge Using FRP and Post-Tensioning Systems

Philip Ritchie and Maria Lopez de Murphy, Modjeski and Masters, Mechanicsburg, PA; Nohemy Galindez, Modjeski and Masters, Philadelphia, PA; David Petermeier, Modjeski and Masters, Edwardsville, IL

A four span continuous cast-in-place concrete T-beam bridge was investigated due to extensive cracking in all longitudinal girders. The proposed repair for the damaged sections involved the use of external post-tensioning as well as external FRP longitudinal sheets and FRP U-wraps to increase the flexure and shear capacity. This paper highlights the analysis methodology used to determine the redistribution of forces in the cracked structure and the design of the proposed repairs.

11:30 AM

IBC 15-63: Titanium Reinforcing for Strengthening RC Bridges

Christopher Higgins, Oregon State University, Corvallis, OR; Deanna Amneus, Mackenzie, Portland, OR; Laura Barker, David Evans and Associates, Inc., Salem, OR

A new titanium alloy bar was developed to strengthen existing reinforced concrete bridges. The bars have a unique deformation pattern for near-surface mounting (NSM) applications. Titanium alloy bars are noncorrosive, high-strength, and light-weight, with almost ideal elasto-plastic behavior. They can provide ductile behavior and be bent to enable mechanical anchorage. The titanium alloy bars were demonstrated in the laboratory on full-size bridge girders and were then used to strengthen an existing bridge overcrossing I84.

DESIGN II

TIME: 8:30 AM–12:00 Noon
ROOM: Theater 2
CHAIR: W. Jay Rohleder Jr., P.E., S.E.,
FIGG Bridge Engineers, Inc., West Chester, PA

8:30 AM

IBC 15-65: Challenging Skew: Higgins Road Steel I-Girder Bridge over I-90

Lance Peterman, P.E., S.E. and Julie Rivera, P.E., HDR Inc., Chicago, IL; Brandon Chavel, Ph.D., P.E., HDR Inc., Cleveland, OH; Nicholas Cervo, P.E., HDR Inc., Pittsburgh, PA

The Higgins Road Bridges over I-90 are twin structures consisting of six steel plate girders. Both bridges have two 280-foot spans with a total bridge length of approximately 560 feet. The most unique feature of these bridges is that the median pier and abutments are skewed 70 degrees. The severe skew leads to a unique framing arrangement and high lateral loads and displacements that must be resisted by the bearings and substructure.

9:00 AM

IBC 15-66: Increasing Our CFRP Footprint – Designing Prestressed Concrete with Carbon Fiber

Mario Quagliata, P.E., Bergmann Associates, East Lansing, MI; Daniel Baxter, P.E., S.E., Michael Baker International, Minneapolis, MN; Edward Bazink, P.E., Michael Baker International, Cleveland, OH; Matthew Chynoweth, P.E., MDOT, Southfield, MI; Nabil Grace, Ph.D., P.E., Lawrence Tech University, Southfield, MI

This paper details the design of the M-102 over Plum Creek bridges, which are the first Michigan Department of Transportation (MDOT) bridges to utilize Carbon Fiber Reinforced Polymer (CFRP) cables as primary longitudinal prestressing tendons, shear reinforcement, and primary reinforcement in the concrete deck. This unique design mixed the use of CFRP with conventional bridge components for the construction of these 75-foot, spread prestressed concrete box beam structures. The bridge analysis and design are discussed.

9:30 AM

IBC 15-67: Redesign of Circle Interchange, Chicago, Illinois

Dipal Vimawala and Dan Manojlovski, AECOM, Chicago, IL; David Liu, TranSystems Corporation, Schaumburg, IL

The Circle Interchange, located just west of downtown Chicago, was built in early 1960's. Many of the bridges are structurally and functionally obsolete and need to be reconstructed. It has been rated the slowest, most congested highway freight bottleneck in the nation. It accommodates more than 400,000 vehicles a day, of which 33,000 are trucks. Project impacts 22 existing bridges ranging from two spans to multi-span flyover ramps with anticipated project cost of $420 M.

10:00 AM COFFEE BREAK

10:30 AM

IBC 15-68: Design and Construction of the Trafford Memorial Bridge

Dan Patterson, P.E., Mackin Engineering Company, Pittsburgh, PA; Troy Pritts, PennDOT, Uniontown, PA

The Trafford Bridge carries S.R. 130 over the former site of the Westinghouse Trafford Foundry, a road, a stream and a railroad. Years of industrial use left behind PCB contamination and the site is now a Brownfield area, subject to Act 2 restrictions. Available pier locations were restricted by infrastructure of all sorts. This presentation highlights the many challenges overcome to design the new 9 span, 980' long prestressed concrete bridge.

11:00 AM

IBC 15-69: Bordeaux's New Iconic Movable Bridge

Paul Skelton, P.E. and Keith Griesing, P.E., Hardesty & Hanover, LLC, New York, NY

While the design creates a visual lightness, the five million pound, 330 foot-long vertical-lift span of the Jacques Chaban-Delmas Bridge in Bordeaux France is designed to carry four traffic lanes, two sweeping pedestrian and bicycle paths and two light rail tracks. The unique Design-Build process successfully drove a fierce competition resulting in five dramatic submissions. This process, as well as the innovative design techniques that maximized the local design codes, are described.

11:30 AM

IBC 15-70 (New): Design and Construction of New York City's First Segmental Platform Structure - with a Record 240' Simple Span

Andrea Travani, Rizzani de Eccher USA, Bay Harbor Islands, FL

The Manhattan West Platform is part of an important real estate development in the heart of Manhattan. It is a 110,000 sqft segmental post tensioned platform made of 16 adjacent bridges with a world record length of 240 feet. A high tech Launching Girder was used to smoothly assemble and place in final position the 2400 ton span by span beams over the active rails at the entrance to Penn Station.

EVALUATION/ANALYSIS/INSPECTION

TIME: 8:30–12:00 Noon
ROOM: HDR Engineering Theater 4
CHAIR: Raymond A. Hartle, P.E.,
GAI Consultants, Inc., Cranberry Township, PA

8:30 AM

IBC 15-71: Resilient Bridge Design to Extreme Loads
Shalva Marjanishvili, Hinman Consulting Engineers, Inc., San Francisco, CA; Francois Fayad, Hinman Consulting Engineers, Inc., New York, NY
This paper proposes a framework for quantitative measure of structural resiliency of bridges to minimize the potential for undesirable consequences. The assessment and design process follows logical steps, starting with the characterization of hazards, continuing through analysis simulations, damage modeling and loss assessment by finding and balancing relationships between design, analysis and consequences. The outcomes of each process are articulated through a series of generalized variables, termed as topology, geometry, and hazard.

9:00 AM

IBC 15-72: The Development of the Multi-hazard Design Guides for Highway Bridges
Phillip Yen, FHWA, Washington, DC; George Lee, State University of New York at Buffalo, Buffalo, NY
This paper describes a research project tasked by the Federal Highway Administration and aimed to explore the principles and approaches for establishing multiple-hazard (MH)-LRFD based on the rationale and reliability-based methodology of the AASHTO LRFD. An analytical framework has been developed to consider the non-extreme and extreme loads on a common reliability-based platform.

9:30 AM

IBC 15-SP: Active Corrosion Prevention with Non-destructive Corrosion Monitoring for Suspension Bridge Main Cables
Matt Sloane and Claudio Gatti, Columbia University, New York, NY
Active corrosion prevention through dehumidification for main cables of suspension bridges is experimentally analyzed on a full-scale mock-up cable. The effectiveness of the system is evaluated based on its ability to both reduce relative humidity to levels below 40% and subsequently maintain low, stable relative humidity levels within the mock-up specimen exposed to variable environmental and internal cable conditions. The study uses an embedded relative humidity and temperature monitoring system, as well as pressure and air flow monitoring to provide a robust image of the dehumidification profile throughout the entire cable. Dehumidification proved effective in creating a dry, isolated cable interior in a number of environments.

10:00 AM COFFEE BREAK

10:30 AM

IBC 15-74: Development and Verification of Web-based Bridge Monitoring Interface

Jason Lloyd, P.E. and Robert Connor, Purdue University, West Lafayette, IN

Robust and targeted instrumentation and data acquisition systems can be rapidly deployed with remote communications to probe specific parameters desired by bridge owners for bridgecondition assessment and monitoring. This project demonstrates a unique example where video data files captured truck impact on the Virginia Ave Bridge in Indianapolis, with a web-based interface and automated text and email notifications of onsite conditions and occurrences that provided real-time output of the impact events.

11:00 AM

IBC 15-75: A Comparative Investigation of Cross-Frame Chord Member Forces in Curved Steel I-Girder Analysis Software

Michael Murdock, P.E., Austin Clark, P.E., and Daniel Davis, P.E., TranSystems Corporation, Richmond, VA; Prasad Nallapaneni, P.E., VDOT, Richmond, VA

The estimation of cross-frame cord member forces in curved steel plate girder bridges is a complex endeavor. Several software packages available to the industry today boast of the capabilities to determine cross-frame chord member forces. A comparison of four software packages has been made in their determination of cross-frame chord member forces for a typical interior, pier, and abutment cross-frame of a three span continuous curved steel plate girder bridge.

11:30 AM

IBC 15-76: "Tunnel Inspection 101:" FHWA-NHI 130110 Tunnel Safety Inspection

Thomas Ryan, Michael Baker International, Moon Township, PA; Brian Leshko, HDR Inc., Pittsburgh, PA; Douglas Blades, FHWA, Washington, DC

Congress declared in MAP-21, and in the vital interest of the country, to inventory, inspect and improve the condition of the Nation's highway tunnels. FHWA has developed the National Tunnel Inspection Standards (NTIS), Tunnel Operation, Maintenance, Inspection and Evaluation (TOMIE) Manual, Specifications for the National Tunnel Inventory (SNTI), and FHWA-NHI Course 130110 Tunnel Safety Inspection to provide instructor-led comprehensive tunnel inspection training. The training course presents civil, structural, mechanical and electrical disciplines, and capstone exercise.

EXHIBIT HALL LUNCHEON

12:00–1:30 PM

Enjoy a final opportunity to visit with exhibitors and network with all attendees during our "Pittsburgh Day" luncheon buffet, featuring a taste of our local cuisine, displayed throughout the Exhibit Hall.

MONDAY JUNE 8				
9:00–10:00 AM	Pennsylvania P3 Session - Ballroom B/C, 3rd Floor			
10:00–11:45 AM	IBC Keynote Session - Ballroom B/C, 3rd Floor			
11:30 AM–7:00 PM	Exhibit Hall Grand Opening (strolling Burger buffet lunch at Noon, Reception at 5:00 PM), Hall B			
1:00–5:00 PM	Featured Country Session Taiwan, HDR Engineering Theater 4, Hall B			
1:00–3:00 PM	Hot Dip Galvanizing Special Interest Session, CSI Theater 1, Hall B			
1:00–2:30 PM	Structural Bolting Special Interest Session, Theater 2, Hall B			
1:30–5:00 PM	Proprietary Session - Parsons Theater 3, Hall B			
TUESDAY JUNE 9				
8:00 AM–5:00 PM	Exhibit Hall open (strolling Healthy Day buffet lunch at Noon), Hall B			
8:30 AM–12:00 Noon	Construction CSI Theater 1	ABC, Part 1 Theater 2	Rehab/Preservation, Part 1 Parsons Theater 3	Long Span, Part 1 HDR Theater 4
1:00–4:30 PM	APC Co-Meeting			
1:00–4:30 PM	IBC Bridge Boat Tour - pre-board at 12:30 PM; departs from Convention Center Boat Dock at 1:00 PM (Tickets Required)			
1:30–4:00 PM	Long Span, Part 2 CSI Theater 1	Rail Bridges, Part 1 Theater 2	Rehab/ Preservation, Part 2 Parsons Theater 3	Design, Part 1 HDR Theater 4
4:30–5:30 PM	International Attendees Welcome Reception, Ballroom B, 3rd Floor (tickets required)			
5:30–7:30 PM	IBC Awards Dinner, Ballroom B (tickets required)			

WEDNESDAY JUNE 10						
8:00 AM–1:30 PM	Exhibit Hall open (strolling Taste of Pittsburgh buffet lunch at Noon), Hall B					
8:30 AM–12:00 Noon	Emergency Response CSI Theater 1 *8:00 AM START!*		Design, Part 2 Theater 2		Innovative Materials Parsons Theater 3	Evaluation/Analysis HDR Theater 4
1:00 PM	W2: Bridge Architecture Room 326		W3: Load Rating Overweight Permit Room 325		W13: Ethics Workshop Room 324	
1:30–4:00 PM	Design, Part 3 Room 330		ABC, Part 2 Room 329		Rehab/Preservation, Room 328	Rail Bridges, Part 2 Room 327

THURSDAY JUNE 11						
8:00 AM	W4: ABC w/ Geosynthetic Soil Room 330	W5: BRIM Room 329	W6: FRP Composites Room 328	W7: SHM Room 327	W8: Bridging the Gap Room 326	W14: Ethics Workshop Room 325
1:00 PM	W9: ABC Research Room 330		W10: Steel Bridge Design Room 329	W11: Evaluation of Truss Bridges Room 328		W12: Bridge Preservation Room 327

W-2: BRIDGE ARCHITECTURE AND AESTHETICS

TIME: 1:00–5:00 PM

ROOM: 326

The main intention of this Workshop is to give the participants an enhanced understanding of the role architecture plays on transportation projects and news tools for sites with difficult contextual demands. We will also explore aesthetic lighting and how that relates to 'place making'. The session will present the latest approach for Context Sensitive Design where is site has a very strong existing context or where the context will be evolving. To provide the greatest value to the participants we will engage the group in a design exercise to test and explore the new tools and approaches offered in the first part of the session. This is typically a very engaging exercise where the participants have learned new techniques and enjoy the process!

Speakers: Michael Fitzpatrick, TY Lin International, San Francisco, CA; Noel Shamble, TY Lin International, Charlottesville, VA; Paul Kinderman, WasDOT, Lacey, WA; Ken Douglas, Illumination Arts, Bloomfield, NJ; Jesse Kadekawa Miguel, AIA, NCARB, ENV SP, HNTB Corporation, Kansas City, MO

W-3: BRIDGE LOAD RATING FOR OVERWEIGHT LOAD PERMITTING

TIME: 1:00–4:00 PM

ROOM: 325

HOST: Federal Highway Administration

Bridge load rating is the key component in the overweight load permitting process. National Bridge Inspection Standards stipulates bridges be rated following AASHTO MBE. If the capacity of a bridge is less than legal and unrestricted routine permit loads, the bridge must be posted or restricted. The objective of this workshop is to provide the participants with the fundamentals, lessons learned, and available resources to evaluate the live load carrying capacity of bridges for overweight load permitting. This workshop will highlight PennDOT's processes, practices and lessons learned in overweight load permitting, and will consist of presentations from FHWA, AASHTO, PennDOT and a software vendor. The Q/A session at the end will give participants an opportunity to discuss the topic further.

Speakers: Brian Kozy, Ph.D., P.E., Team Leader, FHWA (Moderator); Tom Macioce, P.E., Chief Bridge Engineer, PA Department of Transportation; Lubin Gao, Ph.D., P.E., FHWA; Dean Teal, Bridge Evaluation, Kansas DOT (representing AASHTOWare); Ron Love, P.E., Senior Product Manager, Bentley Systems

W-13: ETHICS WORKSHOP #1

TIME: 1:00–2:00 PM
ROOM: 324

Legal and Practical Consequences of Engineering Defects and Failures

The session will address:

•General Legal Consequences and Ethical Requirements at the time of a Failure

•Three Case Studies (1981 – Kansas City Hyatt Regency Skywalk Collapse; 2006 – Big Dig and the I-90 Connector Tunnel Ceiling Collapse; and 2007 – I-35W Bridge Collapse)

•Observations, Practical Considerations, Engineering Root Cause Analysis and Lessons Learned

Speaker: Brian Davidson, Dingess, Foster, Luciana, Davidson & Chleboski LLP, Pittsburgh, PA

DESIGN III

TIME: 1:30–4:00 PM
ROOM: 330
CHAIR: M. Patrick Kane, P.E.,
KCI Technologies, Inc., Pittsburgh, PA

1:30 PM

IBC 15-77: Seismically Isolating the New NY Bridge

Michael Martello, HDR Inc., Manhattan, NY; Nicholas McDowell, HDR Inc., Boise, ID

The New NY Bridge, designed for a 100-year service life, will replace the operationally deficient existing bridge. In order for this "essential" structure to meet the 100-year service life, a seismic isolation strategy was implemented for the approach spans to ensure essentially elastic performance during a high-level seismic event. This paper provides an overview of isolation as a seismic design strategy and discusses the procedures and techniques implemented in the global structural analysis models.

2:00 PM

IBC 15-78: Design and Construction of the Léon Blum Viaduct in Poitiers, France

Jean-François Blassel, Christian Rieser, and Daniel Garcia, RFR, Paris, France

The Léon Blum Viaduct spans over a large high speed rail network and the Boivre River in Poitiers. It replaces a concrete footbridge and expands the functionality of the crossing by accommodating a bus route and station on its deck. The bridge consists of a 310 meter long semi-Vierendeel composite truss, divided into 5 spans, up to 81 meters. Of critical importance was the integration into the constrained city surroundings and the railway platforms.

2:30 PM

IBC 15-79: Design and Construction of Nelson Mandela Pedestrian Bridge in Creil

Jean Francois Blassel, Raphael Royer De Vericourt, Minh Nguyen, and Christian Rieser, RFR, Paris, France

The Nelson Mandela Bridge is a landmark 100 meter long asymmetric suspension bridge in Creil, France. The 28 meter high pylon supports suspension cables, reaching the opposite river bank almost horizontally. The truss-like behavior of the dense network of inclined hanger rods makes possible an extremely slender deck. Among the challenges during construction were the launching of the cables, the fabrication of the deck in small precast elements, and the installation of the inclined hanger rods.

3:00 PM

IBC 15-80: Innovative Design for the SFOBB I-80 Ramps at Yerba Buena Island

Hohsing Lee, S.E., P.E., AECOM, Sacramento, CA; Allen Ely, P.E., Moffatt & Nichol, Long Beach, CA

San Francisco County Transportation Authority selected AECOM and Moffatt & Nichol for the design of the new westbound ramps providing access between the new east-span of San Francisco-Oakland Bay Bridge (SFOBB) and Yerba Buena Island. The new ramps will be a significant improvement geometrically and operationally over the current ramps. The construction contract of the project has been awarded on late 2013, and construction completion is targeted for late 2016.

3:30 PM

IBC 15-81: Unique Structural Countermeasure against Deep Scour for Pile Supported Piers: Thomas J. Hatem Memorial Bridge, MD

Ani Chatterjee and Geoffrey Kolberg, STV Inc., Baltimore, MD; David LaBella, Maryland Transportation Authority, Baltimore, MD; Damian Mesia, Athavale, Lystad and Associates, Rockville, MD; Jay Musser, McLean Contracting, Baltimore, MD

A unique structural scour countermeasure system, consisting of combination-walls comprised of drilled shafts and interlocked pipe piles was constructed for three pile supported piers for the Thomas J. Hatem Memorial Bridge in Maryland. The goal was to create a box like retaining structure around the existing piles that can retain the soil inside during 100-year storm events. The drilled shafts for the walls were socketed into bedrock that exists 50ft to 100ft below river bottom.

ABC II

TIME: 1:30–4:00 PM
ROOM: 329
CHAIR: M. Myint Lwin, P.E., S.E., *Consultant, Olympia, WA*

1:30 PM

IBC 15-82: The Lardo Bridge Slide-In

Brian Byrne and Dan Minturn, Lochner, East Hartford, CT; Lisa Hoeke, Lochner, Pittsburgh, PA; Rick Jensen, Idaho Transportation Department, Boise, ID

The Lardo Bridge replacement in the resort town of McCall, Idaho is ITD's first implementation of slide-in-bridge-construction (SIBC) technology with a permanent bridge. Construction of the new superstructure and abutment wall occurred to the north of the existing bridge to keep both lanes of the existing road open during the busy summer season. During the quieter fall season, the entire bridge was slid into place, using a non-proprietary system.

2:00 PM

IBC 15-83: Accelerated Bridge Construction of the Patroon Island Bridge Deck Replacement

Gary Dinmore, Dinmore Engineering, PLLC, Upper Black Eddy, PA; Vincent Siefert, Siefert Associates, LLC, Naugatuck, CT; Willam Frank, William J. Frank Engineering, Brewster, NY; S. Jayakumaran, SJH Engineering P.C., Princeton, NJ; Thomas Valenti, A.Servidone/B.Anthony Construction Corporation, Old Bridge, NJ

Rapid deck demolition & construction of the Patroon Island Bridge project crossing the Hudson River just above Albany, NY is currently in progress and is using the "Best Value" concept by New York State Department of Transportation. The contract dollar value is $145 million and was awarded to the joint venture of Halmar - A.Servidone/B.Anthony. This project is also part of the NY Work's Accelerated Bridge Construction program, as well as the Driver's First initiative.

2:30 PM

IBC 15-84: An Arch on the Move

Natalie McCombs, P.E., S.E., HNTB Corporation, Kansas City, MO; Marwan Nader, Ph.D., P.E., T.Y. Lin International, San Francisco, CA

The first and most cost-effective design the team proposed was a three-span pre-stressed concrete bridge. The key stakeholder would not approve the concept due to its limited aesthetic appeal, hazards associated with the substructure, and impacts to traffic. The bridge design includes a network tied arch using a post-tensioned concrete deck with a steel arch. An accelerated bridge construction method was used to assemble the arch off-site and move it into place using self-propelled modular transporters.

3:00 PM

IBC 15-85: Enhancing US331 over the Choctawhatchee Bay

Charles Rudie, Christopher Vanek, and John Poulson, Parsons Brinckerhoff, Tampa, FL

Nontraditional precast concrete elements were utilized on the Choctawhatchee Bay Bridge to accelerate construction and reduce marine operations. Heavily reinforced piles, thickened girder webs, and shear keys, allowed for the reduction of piles, minimization of pier footings, and elimination of diaphragms. Required causeway stabilization involved an innovative soil mixing method to provide both settlement and storm protection. A system of deep and shallow columns creates a bridging effect for load distribution.

3:30 PM

IBC 15-86: Construction Techniques– ABC Lateral-Slide Method

Kevin O'Neill and Vincent Siefert, Siefert Associates, LLC, Naugatuck, CT

The intent of this presentation is to highlight construction techniques implemented on a recently completed ABC project which utilized the Lateral-Slide method. The major design and construction issues included foundation type, temporary bent configuration, permanent structure analysis and modification, slide track detail and design, temporary bearing details, crane erection plans and demolition schemes.

IBC 15-ABC II Reserve: The 123's of SPMT's for ABC

Charles Neth, P.E., Siefert Associates, LLC, Naugatuck, CT; John Engberg, P.E., Barnhart Crane and Rigging, Memphis, TN

The continued use of Self-Propelled Modular Transporters [SPMTs] as a method of Accelerated Bridge Construction [ABC] necessitates a better understanding of the equipment and how it works. Thus far, there has been a limited amount of detailed technical information readily available. This paper presents Owners, Contractors and Engineers with specifications of the most common SPMT manufacturer, details how SPMTs operate and explores completed projects from throughout the Northeast to illustrate the operational limits of SPMTs and how they apply to ABC.

REHABILITATION/HISTORIC PRESERVATION

TIME: 1:30–4:00 PM
ROOM: 328
CHAIR: Donald W. Herbert, P.E., *PennDOT, Uniontown, PA*

1:30 PM

IBC 15-87: The Use of Tubular Steel Arches in Earth Filled Arch Rehabilitation

Dale Arnold, P.E. and David Jones, P.E., Jones-Stuckey, A Division of Pennoni, Columbus, OH

The 1918 Lithopolis-Winchester Road closed spandrel arch bridge was in good condition but required a wider concrete deck. The renovation consisted of an eight-foot wider deck supported by an inclined tubular steel arch and strut system bearing on the existing substructure. A crash-worthy reproduction of the original railing was constructed. The renovations preserved the structure's historic fabric without requiring structure replacement or extensive foundation work while providing substantial cost savings.

2:00 PM

IBC 15-88: Rehabilitation of the 105 year old Mulberry Street Bridge; Harrisburg's First Major Concrete Highway Bridge

Michael Cuddy, P.E, TranSystems Corporation, Philadelphia, PA; Geoffrey Elsavage, P.E. and Harivadan Parikh, P.E., PennDOT, Harrisburg, PA

Mulberry Street Bridge crosses Paxton Creek, AMTRAK, Norfolk Southern, 10th Street, and Cameron Street, adjacent to AMTRAK's Harrisburg Station. The 18-span 1,598-foot-long, reinforced-concrete arch bridge was the first major highway bridge in Harrisburg. The inspection, structural analysis, and material testing concluded a major rehabilitation was required, including a new concrete deck, selective member replacement, new strip seal dams, railings, and lighting. It was key that the rehabilitation would not adversely affect the character defining features.

2:30 PM

IBC 15-89: The Uncommon Duo: Precast Concrete Deck Panels on a Stone Masonry Arch

Quentin Rissler, P.E., Larson Design Group, Lititz, PA; Jeffrey Given, P.E., Loftus Construction, Inc., Cinnaminson, NJ

The superstructure of a four span masonry arch structure in Northampton County, PA was replaced and widened with precast concrete deck panels as an alternate design. This "simple", but unique, solution eliminated constructability concerns of forming the overhangs, minimized stream disturbance and reduced the duration of construction without increasing the overall construction cost. The high quality concrete deck with bituminous overlay and membrane waterproofing was successfully designed and constructed using teamwork, communication and innovative thinking.

3:00 PM

IBC 15-90: Shawsheen River Bridges: Rebuilding Infrastructure without Erasing History

Malek Al-Khatib, Daniel Deng, and Timothy Polson, Louis Berger, Needham, MA; Michael Ryan, Massachusetts Bay Transportation Authority, Boston, MA

The MBTA West Route Mainline bridges over the Shawsheen River are two historic stone arch bridges originally constructed in 1847. The arches were in poor condition, and in lieu of bridge closures speed restrictions were imposed, causing delays to commuter and freight trains. The community's desire to preserve the arches drove the design process: preserving the arches while hiding the new structures within the old bridges allowed trains to resume normal speeds.

3:30 PM

IBC 15-91: Preserving a Legacy of Exceptional Metal Truss Bridges in Pennsylvania

Thomas Leckrone, P.E., C.B.S.I., Gannett Fleming, Inc., Camp Hill, PA; Ira Beckerman, Ph.D., R.P.A., PennDOT, Harrisburg, PA; Michael Cuddy, P.E., TranSystems Corporation, Philadelphia, PA

Pennsylvania has the premier collection of historic metal truss bridges in the country for variety, materials, age, and technological innovation. However, factors like age, state of deterioration, increased traffic volumes, and increased weight limits have taken their toll. Consequently, metal truss bridges are being replaced at a rapid rate. This paper highlights efforts to manage this population of historic metal truss bridges to ensure the long-term preservation of the most historically significant structures.

IBC 15-Historic Preservation/Rehab Reserve: History in the Making: The Newest Era of the Washington Bridge No. 200

Thomas Hennessy, VHB, Providence, RI

Washington Bridge, is an 1800-foot-long spandrel arch structure. Initially serving as a bustling city bridge with a movable bascule span, the bridge subsequently functioned as the eastbound lanes of an interstate highway and, with the completion of the most recent design, will serve as a multi-use path and linear park. The rehabilitated, repurposed structure is anticipated to attract many recreational users as well as non-motorized commuters and the landmark bridge is preserved for future generations.

RAIL BRIDGES II

TIME: 1:30–4:00 PM
ROOM: 327
CHAIR: Jeremy Shaffer, Ph.D., PMP, Bentley Systems, Incorporated, Pittsburgh, PA

1:30 PM

IBC 15-92: Design for Future Rail on the New NY Bridge

Milos Vasiljevic, P.E., HDR Inc., Phoenix, AZ; Christopher Scollard, P. Eng., Armin Schemmann, and Jens Marcussen, Buckland & Taylor Ltd., North Vancouver, BC, Canada; Mohammad Shams, P. E., HDR Inc., New York, NY

The New NY Bridge incorporates design and construction solutions that allow the crossing to be expanded to accommodate future transport needs with a two-track railway bridge to be constructed between the adjacent roadway bridges. The roadway bridge foundations are designed to support the potential future railway bridge and loading without any strengthening. The paper provides the background of the project and a detailed description of the unique design solutions developed to expand the crossing.

2:00 PM

IBC 15-93: ABC Bridge Street Railroad Bridge Replacement Project- Hartford, VT

Adam Stockin and Keith Donington, Parsons Brinckerhoff, Manchester, NH

This Railroad Bridge project was constructed while maintaining train traffic on its existing alignment with only minimal closure periods. Several Accelerated Bridge Construction (ABC) design innovations including the direct fixation of the rails to the precast concrete beams and relief slabs supported on micro-piles which spanned historic granite abutments were utilized.

2:30 PM

IBC 15-94: Union Pearson (UP) Express Spur and T1 Station

Srdjan Brasic, AECOM, Mississauga, ONT, Canada; Paul Kim, AECOM, Boston, MA

UP Express is a Design-Build-Finance project led by Infrastructure Ontario and Metrolinx. This Spur Elevated Guideway is a 3km, multi-span structure carrying two tracks that connect the existing rail corridor and Toronto Airport with a passenger service line. The rail-structure interaction design was performed using non-linear 3D finite-element analysis. It included all Guideway superstructure, substructure and track including DFF fasteners with non-linear behavior. This innovative approach allowed staged design delivery to meet an accelerated construction schedule.

3:00 PM

IBC 15-95: Innovation in the Aerial Guideways for the Dulles Metrorail Extension

Gregory Shafer, Parsons, Baltimore, MD

The DC Metro extension to Dulles airport includes 7 miles of track on aerial guideway to minimize operational impacts to the airport. Two pretensioned concrete girders support each track with spans of 100-150' on

radii as tight as 800'. Good rock at shallow depths led to monoshaft foundations of up to 102" diameter supporting the hammerhead piers. At sharp skew crossings of existing roadways, post-tensioned concrete straddle bents spanning up to 125' were utilized.

3:30 PM

IBC 15-96: Light Rail Bridges that Save Big Dollars for Transit Agencies

Mansoor Ahsan, P.E., Bridgefarmer & Associates, Inc., Dallas, TX

Differences in load and lateral forces between heavy and light rail bridges have been calculated and the answers can save millions of dollars in construction costs. Bridgefarmer & Associates, Inc. researched and demonstrated that prefabricated, pre-stressed concrete panels, commonly used for vehicular bridges but not suitable for heavy rail bridges, are suitable for light rail transit bridges. This paper tracks the research that saved the Dallas Area Rapid Transit millions of dollars on their Orange Line Expansion.

W-4: ACCELERATED BRIDGE CONSTRUCTION USING GEOSYNTHETIC REINFORCED SOIL

TIME: 8:00 AM–12:00 Noon
ROOM: 330
HOST: Federal Highway Administration

This workshop will explore the use of geosynthetic reinforced soil (GRS) as an accelerated bridge construction technology. By combining GRS into an integrated bridge system (IBS), single span bridges can be built faster at substantially lower costs as compared to conventional bridge foundation alternatives. Through presentations by the Federal Highway Administration (FHWA), along with state bridge and geotechnical engineers, participants will gain a better understanding of the benefits, applications, and performance of this substructure solution.

Speakers: Jennifer Nicks, Ph.D., P.E., Research Geotechnical Engineer at FHWA; Michael Adams, Research Civil Engineer at FHWA; G. Randy Albert, P.E., Municipal Services Supervisor for PennDOT; Peter Connors, P.E., State Geotechnical Engineer for MassDOT

W-5: BRIDGE INFORMATION MODELING (BRIM) STANDARDIZATION & INTEROPERABILITY

TIME: 8:00 AM–12:00 Noon
ROOM: 329
HOST: FHWA Office of Bridges and Structures

The FHWA is currently seeking to promote the use of Bridge Information Modeling (BrIM) as a technological advancement to the way the bridge engineering community executes workflow and manages data across the full life cycle. The vision of the future is to exploit the full potential of computer technology by transforming the current practice into a full digital delivery practice and move towards multi-dimensional and visualized processes. One strategic goal of the FHWA initiative is to shepherd the industry towards development of a set of credible, robust digital standards that will allow software vendors to develop translators to automate transfer of data among different software applications in a common format.

Initial steps involve conducting workshops around the country with industry representatives from state Departments of Transportation, industry organizations (PCI, NSBA, etc.), private consultants, and contractors, to identify the basic bridge component model definitions required to develop functional 3D BrIM models for common girder bridges. This interactive workshop will be used to summarize progress, and have information exchange with the bridge engineering practice.

Speakers: Brian M. Kozy, Ph.D., P.E. Principal Bridge Engineer, FHWA, Washington, DC; Scot Becker, Bureau of Structures Director, Wisconsin DOT State Bridge Engineer, Madison, WI; Mike Bartholomew, P.E., Technology Director, North American Bridges, CH2M HILL, Corvallis, OR; Roger Grant, Program Director, National Institute of Building Sciences, Boston, MA; Tim Chipman, President, Constructivity, Ames, IA; Luke Faulkner, Director of IT Initiatives, American Institute of Steel Construction, Chicago IL; Dr. Peter Carrato, P.E., S.E., CEng, F. ASCE, F. ICE, Bechtel Fellow, Frederick, MD

W-6: RETROFITTING AND SERVICE LIFE EXTENSION OF BRIDGE STRUCTURES USING FRP COMPOSITES

TIME: 8:00–11:00 AM
ROOM: 328
HOST: ACMA

For over 20 years, FRP composites have provided bridge engineers and owners with innovative and cost effective solutions to rebuild and retrofit bridge structures demonstrating long-term durability especially in highly corrosive geographical regions. FRP 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. In retrofit and rehabilitation situations, FRP composites are faster to install and require minimal disruption to the structure while in service that extends the service life of bridge structures.

This workshop addresses the issues related to the aging bridge infrastructure with solutions on extending the service life of bridge structures such as durable marine protection systems for bridge piers or integrating pedestrian access to existing bridge structures. The presentations will cover recent world-wide bridge installations focused on design and construction of innovative pedestrian bridge retrofits, rehabilitation of high occupancy and large bridge installations using structural strengthening systems, bridge pier protection systems, and innovative sustainable concrete reinforced with FRP rebar. Attendees will learn 1) how to design and specify composites for bridge systems using existing bridge codes, 2) construction techniques and connections to adapt walkways to existing structures, 3) how to reduce risk and costs of corrosion with sustainable concrete solutions. Presentations will cover use of standards and cover the aesthetics, construction, and economics of using FRP composites to solve a variety of bridge infrastructure problems.

Speakers: John Busel, ACMA, Arlington, VA; Dustin Troutman, Creative Pultrusions Inc., Alum Bank, PA; Kevin Spoo, CCT, Owens Corning, Granville, OH; Crawford Dewa, Guardian Bridge Rapid Construction, Inc., Stratford, ONT, Canada; Scott Reeve, Composite Advantage, Dayton, OH; David White, P.E., Sika Corporation, Lyndhurst, NJ; James Jones, CCT Composites Consulting Group, DeSoto, TX

W-7: STRUCTURAL HEALTH MONITORING (SHM) – TECHNOLOGIES AND PRACTICES

TIME: 8:00 AM–12:00 Noon
ROOM: 327
HOST: Geocomp

Introduction to Structural Health Monitoring- What makes up a successful SHM program and the difference between component monitoring and SHM.

Emerging and Innovative Technologies – Emerging and innovative technologies applied to bridge structures will be discussed. These will include the use of fiber optics, innovative bridge component instrumentation and how they have been applied in real-world applications with example case studies.

Cost Effective Monitoring Programs for Structural Life Extension – This section will present four case studies that utilized SHM to validate models or verify performance issues that provided extension of service life and minimized maintenance/repair issues while saving the Owner millions of dollars for each structure. For each case study, the issue will be outlined, objective and cost for the SHM will be provided, and the results and cost savings will be presented.

Bridging the Future and monitoring for Risk Assessment and Asset Management- With the Panama Canal being expanded to allow for larger ships, the New Jersey Port Authority has access limitations for these new ships due to vertical clearance from three main Bridges; Bayonne, Tappan Zee and Goethals Bridge. As part of the port expansion plan these bridges will be modified or replaced to allow for the higher vertical clearance necessary from these new ships. Each of these Bridges will utilize a SHMS to provide real-time monitoring for the performance of the structure. As each Bridge has a different use for the SHM system, they are designed with a different objective in mind and will be discussed.

Speakers: Tom Weinmann, Practice Area Leader (PAL) - Structural Health Monitoring, Geocomp, Chicago, IL; Nicolas Betancur, P.E., Project Manager, Geocomp, Acton, MA

W-8: BRIDGES AS PHILANTHROPY - MAKING A DIFFERENCE IN A WALKING WORLD

TIME: 8:00 AM–12:00 Noon

ROOM: 326

HOST: Bridging the Gap Africa

The objective of this workshop is to provide information on Bridging the Gap Africa (BtGA), a non-profit bridge building organization that build bridges for rural communities in Africa (www.bridgingthegapafrica.org) and discuss how using creative technical design and construction techniques can make a difference to a rural village community. Resources for design and construction of these rural footbridges will be explored and a walk through of a typical bridge build, including the challenges, will be given. Discussions on social responsibility of corporations as well as universities will take place and students and professionals will discuss fundraising for engineering philanthropic efforts. An expert panel will answer audience questions.

Speakers: Kelley C. Severns, P.E. - Board Member, Nashville, TN; Harmon Parker - Founder BtGA, Nairobi, Kenya; Nate Bloss BtGA Field Engineer, Seattle WA; Natalie McCombs, HNTB, Technical Advisory Committee BtGA, Kansas City, KS; Eric Bonet, BtGA Field Engineer, Kitale, Kenya; Max Nie, P.Eng., MMM Group, Technical Advisory Committee for BtGA, ON, Canada; Jerry O'Connor – University at Buffalo, Buffalo, NY

W-14: ETHICS WORKSHOP #2

TIME: 8:00–9:00 AM
ROOM: 325
HOST: Gesk Moritz, LLC

Engineering ethics is (1) the study of moral issues and decisions confronting individuals and organizations involved in engineering and (2) how our legal framework impacts moral conduct, character, ideals and relationships of peoples and organizations involved in engineering and technological development.

Evolving technologies and increasingly complex contractual arrangements between clients and other design professionals make engineering ethics a subject worthy of continued attention from individual as well as firms. It is imperative that engineers have a clear understanding of the extent of their legal and ethical obligations and an awareness of common legal and ethical hazards.

This session will examine the National Society of Professional Engineers Code of Ethics and analyze certain Code provisions in the context of actual scenarios encountered by professional engineers.

Speakers: Mark J. Gesk, Esq. and Kristen Moritz, Esq. of Gesk Moritz, LLC; Rob Hughes, Esq., Ames & Gough

W-9: ACCELERATED BRIDGE CONSTRUCTION (ABC) IMPLEMENTATION PRODUCTS FROM ABC-UTC RESEARCH

TIME: 1:00–5:00 PM
ROOM: 330
HOST: Florida International University

The objective of this workshop is to present the recent trends in ABC area. Workshop will include ABC products developed in ABC University Transportation Center (ABC-UTC) (www.abc-utc.fiu.edu) research projects. These products will assist bridge owners in their implementation of ABC projects. Workshop will include trends and tools for decision making, comparing conventional methods of construction vs ABC, bridge systems suitable for ABC, use of UHPC in ABC, service life of closure pours utilizing different details including UHPC, application of ABC for retrofitting, seismic design considerations and barrier systems suitable for ABC."

Speakers: Atorod Azizinamini and David Garber, Florida International University; Brent Phares, Iowa State University; A. Mohebbi, M. Saiidi, A. Itani, M. Tazarv, University of Nevada-Reno

W-10: STEEL BRIDGE DESIGN AND PLANS PRODUCTION: FROM DESIGN TO CAMBER DIAGRAMS.

TIME: 1:00–2:00 PM
ROOM: 329
HOST: Bentley Systems

This workshop will describe the entire process of designing a steel i-girder bridge, and then how to leverage that information into producing a 3D model, generating automated plan drawings and camber diagrams within a CADD environment.ō

Speaker: Alexander Mabrich, P.E., MSc., Bentley Systems, BrIM Group, Sunrise, FL

W-11: EVALUATION, REHABILITATION, AND LOAD RATING OF TRUSS BRIDGES

TIME: 1:00–4:00 PM
ROOM: 328
HOST: Michael Baker International

This workshop will describe analysis, design, and rating considerations for new and existing truss bridges. A variety of recent projects, from various geographic areas of the country, that involved evaluation, inspection, repair, load rating, and rehabilitation of major steel truss bridges will be discussed. The presentation will cover unique aspects of inspecting older truss bridges for structural defects, strategies for effectively using computed-aided tools to analyze and evaluate trusses, and the application of the most recent codes and specifications relative to analysis, design and load rating of truss members and gusset plates. Accelerated construction techniques that have recently been used to repair and replace truss bridges will also be discussed.

Speakers: Dr. Francesco Russo, Ph.D., P.E., Michael Baker International, Philadelphia PA; Daniel Baxter, P.E., S.E., Michael Baker International, Minneapolis MN

W-12: BRIDGE PRESERVATION

TIME: 1:00–5:00 PM
ROOM: 327

This workshop session provides a detailed overview of proven bridge restoration and preservation techniques. Topics include rapid bridge deck rehabilitation using hydrodemolition, life extension of concrete elements with the use of cathodic protection, structural restoration with shotcrete, and fast curing bridge deck waterproofing systems. Each year maintaining agencies spend millions of dollars in bridge maintenance. This Bridge preservation workshop will not only demonstrate substantial sustainability benefits, but will also cover ways to reduce maintenance costs while minimizing disruption of traffic.

Speakers: Charles Hanskat, Hanskat Consulting Group, LLC, Northbrook, IL; Patrick Martens, Bridge Preservation and Inspection Services, Jefferson City, MO; Mohit Soni, Stantec, Boca Raton, FL; Dirk Uebelhoer, Sika Services AGStuttgart, Baden-Württemberg, Germany

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 Country display from Taiwan is prominently featured in the center of the Exhibit Hall. Thanks to all of our returning and new Exhibitors!

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–7:00 PM, featuring complimentary Burger Day lunch starting at 12:00 Noon.
- Tuesday: 8:00 AM–5:00 PM, featuring complimentary Healthy Day lunch starting at 12:00 Noon.
- Wednesday: 8:00 AM–1:30 PM, featuring complimentary Taste of Pittsburgh lunch starting at 12:00 Noon.

On the following page, you will find a numerical listing of all exhibitors, followed by an alphabetical listing with full contact information and company description. This listing contains all Exhibitors as of May 22, 2015

2015 IBC Exhibitors
Numerical By Booth Number

Center Featured Country: Taiwan
201 GOMACO Corporation
203 Certainty 3D
205 AUR, Inc.
207 TRC Engineers, Inc.
211 Short Span Steel Bridge Alliance
213 P. Joseph Lehman, Inc., Consulting Engineers
216 Gaylord National Resort & Convention Center, National Harbor, MD
217 Bridge Preservation and Inspection Services, LLC
218 IBC 2016
219 Diverse Business Supportive Services Center
221 Resensys LLC
222/224 VADOT: 2016 Featured Agency
223 Pultrall Inc.
225 Jiashao Bridge Construction Command Department
229 Chengdu Datong Road & Bridge Components Co., Ltd.
231 American Society of Highway Engineers
233 PA Turnpike Commission
239 HCB, Inc.
300 Wire Co World Group
301/303/400/402 CBSI (Clodfelter Bridge & Structures)
302 Loadtest
304 Armtec Limited Partnership
305/405 Acrow
306 All Access Rigging Co.
310 Pennoni Associates Inc.
311 HRV Conformance Verification Associates, Inc.
312 Intelligent Infrastructure Systems
313 CTS Cement Manufacturing Corporation
316 SPX Hydraulic Technologies
317/319 Spider

318 Big R Bridge
320 Headed Reinforcement Corp.
321 HAKS Engineers, Architects and Land Surveyors, P.C.
322 FRP Bridge Drain Pipe
323 Marine Solutions, Inc.
324 Tensa America - DEAL
325 Hatch Mott MacDonald
328 RJ Lee Group
329 Epic Polymer Systems
330 Wirerope Works Inc.
331 International Zinc Association
332 Contractors Materials Company
333 Bridge design & engineering
334 Bureau Veritas North America
335 STV Inc.
336 Vesam
337 American Engineers Group, LLC
338 Buzzi Unicem USA
339 BVA Hydraulics
401 Sika Corporation
403/405 American Composites Manufacturers Association
407 MDX Software
410 Skyline Steel
411 Bridge Grid Flooring Manufacturers Association
412 Central Atlantic Bridge Associates
413 Hilman Rollers
416 MAGEBA USA LLC
418 Sofis Company Inc.
420 National Steel Bridge Alliance (NSBA)
422 Moog USA Inc
424 Eriksson Technologies, Inc.
428 Euclid Chemical Company
430 Watson Bowman ACME
432 ICE - International Construction Equipment
433 Teledyne BlueView
434 GeoStructures, Inc./Geopier Foundation Company
435 Bridge Deck Solutions
436 WSP, Parsons Brinckerhoff
438 Multivista Construction Documentation
439 BDB Bridge
500 R.J. Watson, Inc.
501 Reinforced Earth Company, The
502 Epoxy Interest Group of CRSI
503 Advitam, Inc.
504 Stalite
505 Freyssinet
506 Emseal Joint Systems
510 Williams Form Engineering Corp.
511 Bentley Systems, Inc.
512 D.S. Brown
513 Viathor, Inc.
532 Seismic Energy Products, Inc.
533 Greenman-Pedersen, Inc.
534 Trinity Highway Products
535 ChemCo Systems
536 Evonik Corporation
537/539 Conduit Constructors
538 Cleveland Electric Laboratories Co.
600 Harcon Corporation
601 Klass Coatings (North America), LLC
602 St. Louis Screw & Bolt
603 Scougal Rubber Corp
604 Neel Company, The, T-WALL
605 Vector Corrosion Technologies
607 Dynamic Isolation Systems
610 Con-Serv Inc.
611 FIGG
612 Lusas
613 AZZ Galvanizing Services
617 McClain & Co., Inc.
619 Michael Baker International
621 AECOM Technical Services, Inc.
623 Pharos Marine Automatic Power
625 L.B. Foster
629/631/728/730 Safway Services LLC
632 Sealite USA
633/635 Seih-Ying Co., Ltd.
634 Brayman Precast
636 Bee Access Products
638 American Piledriving Equipment
639 AP/M Permaform
700 Dimetix USA
702 Nickel Institute
704 AASHTO
706 Perryman Company
710 Tideland Signal Corp
712 Mistras Group
716 Larsa Inc.
717 Rampart Hydro Services
718 Terrametrix
719 McDermott Light and Signal
720 Roads & Bridges
721 DYWIDAG Systems International (DSI)
722 American Segmental Bridge Institute (ASBI)
723/725 Anderson Hydra Platforms Inc.
724 MMFX Steel Corporation
732 Wasser Coatings
738 N.E. Bridge Contractors Inc.

2015 IBC Exhibitors
Alphabetical by company name

AASHTO

Booth: 704
Contact: Angel Williams
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Website: www.transportation.org

AASHTO is a nonprofit, nonpartisan association representing highway and transportation departments in the 50 states, the District of Columbia, and Puerto Rico. It represents all five transportation modes: air, highways, public transportation, rail, and water. Please visit our booth to hear more about publications, technical programs, and AASHTOWare, AASHTO's unique and powerful enterprise software suite designed by transportation professionals for transportation professionals.

ACROW

Booth: 305/405
Contact: Eugene Sobecki
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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.

ADVITAM, INC.

Booth: 503
Contact: Stephen Schorn
Phone: 703-674-0813
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E-mail: stephen.schorn@advitam-usa.com
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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 TECHNICAL SERVICES, INC.

Booth: 621
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Website: www.aecom.com

AECOM is a premier, fully integrated professional and technical services firm positioned to design, build, finance and operate infrastructure assets around the world for public- and private-sector clients. With nearly 100,000 employees–including architects, engineers, designers, planners, scientists and management and construction services professionals–serving clients in over 150 countries around the world, AECOM is ranked as the #1 engineering design firm by revenue in Engineering News-Record magazine's annual industry rankings.

ALL ACCESS RIGGING CO.

Booth: 306
Contact: Amy Guzma
Phone: 866-643-8303
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E-mail: amy@allaccessrigging.com
Website: www.allaccessrigging.com

AARC is a nationwide bridge inspection support service company with over 30 years of experience. We provide access to the most challenging structures while eliminating the need for lane closures and track time. We also provide traffic control, bridge maintenance & repair, certified welding services. PennDOT prequalified & hold PA & WV contractor licenses.

AMERICAN COMPOSITES MANUFACTURERS ASSOCIATION (ACMA)

Booth: 403/405
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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. Council members represent material suppliers, product manufacturers, consultants and academics with experience in this market. 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 ENGINEERS GROUP, LLC

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American Engineers Group, LLC provides engineering, geotechnical, environmental, water resources, land development, and surveying services to clients in the public and private sectors. Our staff includes engineers, geologists, hydrologists, environmental specialists, soils engineers, geophysicists, surveyors, inspectors, and GIS specialists. The foundation of all that we do centers on our relationship with our clients, and that relationship is something we never take for granted.

AMERICAN PILEDRIVING EQUIPMENT INC.

Booth: 638
Contact: Bill Ziadie
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E-mail: billz@apevibro.com
Website: www.apevibro.com

American Piledriving Equipment has long been a world leader in the manufacture of pile driving hammers. Recently APE launched a helical pile system, with piles made from micropile casing with a mechanical connection giving us the ability to grout under pressure during installation. Testing on grouted piles show capacity increases up to 5x a non-grouted pile. APE manufactures purpose built helical drivers which allows you to install using an excavator.

AMERICAN SEGMENTAL BRIDGE INSTITUTE (ASBI)

Booth: 722
Contact: William R. (Randy) Cox
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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.

AMERICAN SOCIETY OF HIGHWAY ENGINEERS (ASHE)

Booth: 231
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Website: www.ashe.pro

The mission of the American Society of Highway Engineers is to provide a forum for members and partners of the highway industry to promote a safe, efficient and sustainable highway system through education, innovation and fellowship. Currently over 6000, membership is available to individuals who have practiced or are now practicing in the highway industry. National Conferences are held annually, at rotating locations throughout the country. The next conference will be May 19-22, 2016 in Pittsburgh, PA.

ANDERSON HYDRA PLATFORMS INC.

Booth: 723/725
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Anderson Hydra Platforms, Inc. is the Manufacturer and Nationwide Sales, Service and Rentals of Hydra Platforms which has become the leading name in under-bridge access and work platforms ranging from 35 to 66 feet with a 180° platform rotation. All Anderson Hydra Platforms models utilize the patented Tower Separation System. This system enables operators to erect and extend the tower and platform over sidewalks and other barriers without restricting the under-bridge operations.

AP/M PERMAFORM

Booth: 639
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Website: www.permaform.net

CentriPipe® is a cost-effective, no-dig solution for structural relining and protection of deteriorated round, arched and elliptical pipe using a patented bi-directional spincaster to centrifugally cast a precision pipe-within-a-pipe. It is professionally applied through our global network of certified applicators. Another trenchless technology from AP/M Permaform – providing reliable solutions since 1976.

ARMTEC LIMITED PARTNERSHIP

Booth: 304
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Website: www.armtec.com

Armtec is the industry leader for noise barriers specifically designed for bridge applications. Our Acrylite SOUNDSTOP TL4 Noise Barrier System has been tested and approved by the FHWA in accordance with NCHRP Report No. 350 Test Level 4. The SOUNDSTOP TL4 Noise Barrier System not only meets the demanding crash-test requirements but also has a weight of less than 30psf. Lightweight on structure saves you money. Come see the noise barriers used on such iconic bridges as the Woodrow Wilson Bridge in VA and Whitestone Bridge in NYC.

AUR, INC.

Booth: 205
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Website: www.noscour.com

AUR, Inc. designs and manufactures customized streamlined scour-vortex-preventing products (scAURTM and VorGAURTM) for permanent and cost-effective scour prevention for bridge pier and abutment local scour and contraction scour. Products for both retrofits of existing bridges and new bridges are available. See www.noscour.com. This permanent solution costs less than 10% of temporary scour countermeasures over the life of a bridge.

AZZ GALVANIZING SERVICES

Booth: 613
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Website: www.AZZ.com

The steel fabrication industry has looked to AZZ as a leading provider of corrosion protection services for more than four decades. As North America's largest after-fabrication galvanizer, we assure durability and safety for decades by applying molten zinc to metal components. Zinc corrodes at a rate 30 times slower than steel. The resulting coating serves as a rust-free shield that can last for decades. AZZ Galvanizing is a family of plants located throughout the United States and Canada, offering state-of-the-art processing and coordinated multi plant operations. Our depth of expertise provides corrosion protection for a wide range of applications. From small parts that fit in the palm of your hand to heavy structural steel, AZZ always rises to the challenge.

BDB BRIDGE

Booth: 637
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Website: www.bdb.website

BDB Bridge is "bridging the gap between yesterday & tomorrow, today!" by providing rental services of their patented temporary bridge products. BDB Bridge Hydra-Towers are dynamic by means of hydraulics allowing for up to 8' extension and/or retraction with 1000 kip capacity. BDB Bridge also hold licenses for PRECASTEEL fascia forming systems; this system replaces the old bridge overhang brackets of yesteryear providing substantial cost savings to the end user in both labor & service life.

BEE ACCESS PRODUCTS

Booth: 636
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Website: www.beeaccess.com

Founded in 1996, Bee Access Products specializes in the manufacturing and distribution of temporary and permanent suspended access equipment. Our suspended scaffolding line includes hoists, powered platforms, accessories, davits, tieback anchors, rigging and safety equipment. Through our vast and experienced dealer network in North and South America, we pride ourselves in supplying premium products that are on time and on budget. Bee Access is unique in being able to provide fast solutions to special suspended access applications by either adapting our standard products, or creating new ones. Dealer and application support is second to none.

BENTLEY SYSTEMS, INC.

Booth: 511
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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: 318
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E-mail: jcarp@bigrbridge.com
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Big R Bridge specializes in the design and supply of value-engineered solutions in Prefabricated Bridges, Structural Plate Bridges, Retaining Walls, Abutments, Sound Barrier Walls and Corrugated Pipe. We serve the transportation, public works, railway, mining, forestry and development sectors.

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Website: www.braymanprecast.com

A commitment to safety, excellence and unparalleled customer service are the guiding principles behind Brayman Precast. Our Products include bridge and grid deck panels, bridge substructures, custom bridge products, cofferdams and precast stairs and landing systems. Brayman Precast is PCI & NPCA Certified and produces products for PennDot, ODOT and WVDOH.

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Website: www.bridgedecksolutions.com

Bridge Deck Solutions is an integrated supplier of bridge construction and repair products with a commitment to quality and customer satisfaction. Our catalogue includes formspan bridge decking and accessories, grid decking, rebar, light and heavy-gauge fabricated steel products, and painting services.

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BRIDGE GRID FLOORING MANUFACTURERS ASSOCIATION (BGFMA)

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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.

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Website: www.bridgepreservation.net

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Buzzi Unicem USA headquartered in Bethlehem, PA, is one of the larger cement companies in the U.S. The company produces rapid setting repair products for use on roadways, bridge decks, runways, and other surfaces, allowing traffic loading in less than one hour under normal weather conditions.

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Website: www.cbsiusa.com

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CENTRAL ATLANTIC BRIDGE ASSOCIATES

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JIASHAO BRIDGE CONSTRUCTION COMMAND DEPARTMENT

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North American manufacturer/distributor Si-Rex03 Silicone Resin Emulsion Paint (SREP) for concrete and masonry substrate protection. Water repellent yet highly breathable decorative coating. Excellent resistance to UV, weathering, chalking, peeling/flaking for durability that outlasts/ outperforms conventional paints. Inorganic pigments for fade resistant colors. Primers (penetrating sealers): Si-Prime silane/siloxane blend; Cremsil 80% active octylsilane thixotropic cream. Approved with PennDOT, CDOT, NMDOT, NYSDOT, TxDOT & WVDOT.

L.B. FOSTER

Booth: 625
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Phone: 304-281-8874
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E-mail: mbenson@lbfoster.com
Website: www.lbfoster.com

L.B. Foster Fabricated Steel Bridge Decking Products' cost-efficient grid reinforced concrete deck and open steel grid flooring systems are easy to install and maintain with minimum interruption to traffic during new construction or bridge repair. The Fabricated Bridge Division also specializes in Permanent Metal Deck Forms. Form depths range from 2 inches through 4.5 inches accommodating
girder spacings up to 12'-0.

LARSA INC.

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E-mail: info@larsa4d.com
Website: www.larsa4d.com

LARSA 4D BRIDGE Series is a leading software solution for the analysis and design of steel girder, precast, concrete segmental and cable-supported bridges. Standard in leading U.S. firms for bridge design and construction analysis, LARSA 4D continually pioneers engineering technology. LARSA's new Steel Bridge Module uses a wizard interface to simplify parametric 3D F.E. based modelling for complex girder bridges, while providing complete tools for AASHTO compliant code check and load rating.

LOADTEST

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Fax: 352-378-3934
E-mail: bubbaknight@loadtest.com
Website: www.loadtest.com

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LUSAS

Booth: 612
Contact: Terry Cakebread
Phone: 800-97-LUSAS
Fax: 212-257-6441
E-mail: info@lusas.com
Website: www.lusas.com

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MAGEBA USA LLC

Booth: 416
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E-mail: DMotter@magebausa.com
Website: www.magebausa.com

Mageba USA is a leading global manufacturer and supplier of bridge bearings, expansion joints, seismic protection devices and monitoring systems, which in recent years has contributed to the construction of major North American landmarks such as the John J. Audubon, Verrazano Narrows, Bayonne, Port Mann, Golden Ears and Deh Cho Bridges. Who we are, what we do and where we are located can be found on our website at www.magebausa.com

MARINE SOLUTIONS, INC.

Booth: 323
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E-mail: jloftus@msimarinesolutions.com
Website: www.MSImarinesolutions.com

Marine Solutions, Inc. (MSI) is an engineering and commercial diving firm specializing in marine engineering, bridge engineering, marine construction, and commercial diving. MSI's business has been focused on the inspection, assessment, analysis, and rehabilitation of existing structures since its inception. MSI is a woman owned, Disadvantaged Business Enterprise (DBE) and is qualified under most state and federal standards as a small business.

MCCLAIN & CO., INC.

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Website: www.mcclain1.com

McClain & Co. provides support services to Engineers, Contractors and Government Agencies for the Inspection, Maintenance, and Repair of our nation's bridges. We offer the largest rental fleet of specialized underbridge access equipment: UBIU's & Snoopers - Highway & Rail compatible - Platforms & Baskets reaching up to 75' under bridge. Visit our website today for UBIU Rentals, TTC Sales & Services, Bridge Utility & Construction Services.

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Fax: 718-381-0229
E-mail: vernon@mcdermottlight.com
Website: www.mcdermottlight.com

Manufacturer of solar or line operated Bridge LED Navigation Lights. Arrow boards, Led Floodlights, solar sign lights.

MDX SOFTWARE

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Website: www.mdxsoftware.com

MDX Software Curved & Straight Steel Bridge Design & Rating is in use by many top design firms and DOTs to design and rate steel girder bridges for compliance with AASHTO Specifications: the 7th Edition LRFD Bridge Design Specifications, the 2nd Edition Manual for Bridge Evaluation (LRFR), and the 17th Edition AASHTO Standard Specifications for Allowable Stress Design (ASD) and Load Factor Design (LFD).

MICHAEL BAKER INTERNATIONAL

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Michael Baker International has a rich heritage as a survey and civil engineering consulting firm founded in 1940, with continued growth and expansion over the past 75 years. Specializing in engineering design, planning, architecture, environmental, construction, program management,

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MISTRAS GROUP

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MMFX STEEL CORPORATION

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Website: www.mmfx.com

MMFX® Steel Corporation specializes in high-strength steel products with varying levels of corrosion resistance and high-strength efficiencies to best match the corrosion protection requirements of the structure. It's ChrōmX® 9000 Series rebar combines high-strength (Grades 100 and 120) with high corrosion resistance. Its ChrōmX 4000 Series rebar provides the same mechanical properties with mid-level corrosion protection. ChrōmX 2100 (Grade 100) offers an additional lower cost alternative high-strength steel option. Sold under the specifications ASTM A1035, these high-strength, corrosion-resistant steels are used in bridges and highway systems, high-rise buildings, sea walls, ports, marinas and numerous commercial/industrial applications.

MOOG USA INC

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Since 1980 Moog has been supplying their customers with state of the art mobile under-bridge inspection/maintenance equipment. Superior quality, innovative design, plus fulfilling our customer's requirements have been the driving force of Moog's success. Moog supplies units with reaches ranging from 15 ft. to 70 ft. and load capacities from 660 lbs. to 2,200 lbs.

MULTIVISTA CONSTRUCTION DOCUMENTATION

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N.E. BRIDGE CONTRACTORS INC.

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N.E. Bridge Contractors specializes in road and railroad bridge accessing equipment including: Under Bridge Inspection Trucks, Bucket Trucks, and Bridge Rigging. Underbridge Inspection Units are designed for completing all types of bridge inspection and maintenance work. You can easily access both roadway and railroad bridges with the large two-person basket. Our equipment can help you safely inspect, repair, and access every part of any bridge. Our equipment can help you safely inspect, repair, and access every part of any bridge.

NATIONAL STEEL BRIDGE ALLIANCE (NSBA)

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The National Steel Bridge Alliance, a division of the American Institute of Steel Construction (AISC), is a national, not-for-profit organization dedicated to advancing steel bridge design and construction. We are a unified industry organization of businesses and agencies interested in the development, construction and promotion of cost-effective steel bridges. We represent the entire steel bridge community including agencies and groups who have a stake in the success of steel bridge construction, including representatives from the American Association of State Highway and Transportation (AASHTO), the Federal Highway Administration (FHWA), state DOTs, bridge consultants, erectors, and representatives from the coatings, fastener and welding industries.

NEEL COMPANY, THE, T-WALL

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NICKEL INSTITUTE

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Nickel Institute is promoting the use of nickel-containing stainless steel reinforcement for concrete structures so that life-cycle costs are minimized. These alloys can provide long-term corrosion resistance when concrete is exposed to chloride-containing environments. NI is the global association of the world's primary nickel producers. Its mission is to promote and support the use of nickel in appropriate applications. NI grows and supports markets for new and existing nickel applications, including stainless steel.

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P. Joseph Lehman, Inc., Consulting Engineers offers a full complement of consulting engineering services available to its clients. From feasibility studies for new bridge construction or rehabilitation, to traffic control plans, to highway intersection and interchange design, to foundation and retaining walls, P. Joseph Lehman, Inc., Consulting Engineers is passionate about enhancing quality of life by delivering sound, innovative and responsible engineering and environmental solutions.

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PERRYMAN COMPANY

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PMAPI has been the industry leader in marine aids to navigation for over 50 years. We manufacture bridge lights, obstruction lights, buoys, bridge gates, and batter/solar arrays.

PULTRALL INC.

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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

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RESENSYS LLC

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Resensys offers a cost-effective solution for real-time remote monitoring of highway bridges. The solution uses Resensys's small, wireless, and easy to attach adhesive mount sensors to monitor strain, displacement, vibration, tilt, inclination, humidity, and temperature at as many points of a bridge as needed. Resensys sensors are designed for long term operation, and they offer minimum guaranteed battery life of 10 years. Resensys has bridge structural health monitoring systems on major highway bridges and tunnels in the US and around the world. In numerous instances, the systems have successfully detected structural issues in an early stage, leading to efficient and timely actions and cost effective repairs.

RJ LEE GROUP

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RJ Lee Group routinely conducts testing and evaluation of construction materials including concrete, stucco and aggregate using petrography, chemical analysis and physical tests according to standard methods or customized on a project basis. We have significant experience in conducting small and large-scale analytical programs to assess defects and premature failures of reinforced concrete structures.

ROADS & BRIDGES

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As the leading monthly trade publication for the transportation construction market, Roads & Bridges reaches 60,000 engineers, contractors, DOTs and other public officials (local, county, state & federal).

SAFWAY SERVICES LLC

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Safway Services, LLC offers two suspended access systems to help contractors reduce labor costs and enhance access for bridge construction during rehabilitation and maintenance. QuikDeck™ is a heavy duty multi-point suspended truss system, and QuikShield™ is a cable supported system that can support significant loads for painting and light-duty applications.

SCOUGAL RUBBER CORP

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Manufacturer of Steel Reinforced and Plain Elastomeric Bearings, PTFE Slide Bearings, Vibration Isolators as well as Cable Dampers and Sealing Boots. In business since 1916 Scougal Rubber has been a supplier to the bridge industry for over 40 years.

SEALITE USA

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Sealite manufactures Solar and AC powered LED bridge navigation lights. Products incorporate monitoring and alarm availability. We manufacture rotationally molded channel and regulatory buoys, lanterns and barge lights for all marine construction projects. Our Avlite division has a broad range of obstruction lights for bridge towers, including L810, L864, and L865 lanterns. Sealite offers a complete package for all bridge marking including bridge height gauges, temporary and permanent aids to navigation required by CFR 118.

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The Short Span Steel Bridge Alliance (SSSBA) is a group of bridge and buried soil structure industry leaders who have joined together to provide educational information on the design and construction of short span steel bridges in installations up to 140 feet in length. Short span steel bridges are reliable, durable, cost effective, quickly fabricated and installed, and 100% recyclable. Now available: free standard designs, customized for your project, online via the eSPAN140 design tool.

SIKA CORPORATION

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Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika's product lines feature high-quality concrete admixtures,

specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems. Sika Corporation is based in Lyndhurst, New Jersey.

SKYLINE STEEL

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Skyline Steel is a steel foundation supplier serving the U.S., Canada, Mexico, the Caribbean, Central America, and Colombia markets. It is a wholly-owned subsidiary of Nucor Corporation, the largest producer of steel in the U.S.

SOFIS COMPANY INC.

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STV INC.

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STV is an innovator in the design of highway and railway bridges. Founded over 100 years ago, STV is ranked among the top bridge and highway firms in the country. Our portfolio includes fixed and movable bridges, long-span and complex bridges and simple structures and viaducts. Our expertise covers all aspects of bridge engineering, including planning, design, inspections, and resident engineering. STV is a 100 percent employee-owned firm.

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TENSA AMERICA - DEAL

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Tensa America LLC is a specialized contractor, providing design, supply and installation of stay cables, post-tensioning, bearings, joints, anti-seismic devices and ground anchors for worldwide applications in civil engineering works. DEAL Srl is a designer and manufacturer of specialized equipment for bridge construction. Both companies are part of the de Eccher Group, a global general contractor with 20 years of construction history in North America.

TERRAMETRIX

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Terrametrix, is a professional survey-grade mobile mapping service provider with experience in safe efficient survey/engineering grade as-built data collection of bridges, roadways, railroads, airports and streetscapes to

support architects, engineers and surveyors. Since its formation in 2008, the Terrametrix team has completed 200 mobile mapping projects equating to more than 15,000 miles safely documented in 36 states and hundreds of miles of overhead utility and more than 10,000 bridge clearances. Terrametrix mobile mapping services utilize StreetMapper Terrestrial Mobile LiDAR Scanning (TMLS) technology to provide clients with survey accuracy at traditional surveying costs. Each member of the Terrametrix have evolved from survey backgrounds which allow projects to be completed in accordance with best practices compliant with professional and technical standards. In addition, the team has a solid foundation in LiDAR data evolving from static scanners through mobile mapping technology. Typical RMS error 0.01' – 0.03'.

TIDELAND SIGNAL CORP

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Tideland Signal Corporation is the world's leading manufacturer of marine aids-to-navigation, with a reputation for developing equipment to high performance specifications and with the reliability needed to withstand harsh marine environmental conditions. We continually utilize new technologies to enhance the performance of AtoN products while bridging the link in developing and manufacturing digital aids to navigation. Tideland has served Coast Guard and Lighthouse Authorities since 1954 as well as providing specialized aids-to-navigation equipment to the offshore oil and gas industry.

TRC ENGINEERS, INC.

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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 PRODUCTS

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Website: www.vector-corrosion.com

Innovative solutions for concrete corrosion repair and protection in bridge structures including: embedded galvanic anodes, galvanic jackets, activated arc-spray zinc metallizing, corrosion detection and evaluation, repair and mitigation services for post-tension corrosion.

VESAM

Booth: 336
Contact: Filipe Santos
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VESAM is a European company dedicated to the project, fabrication, assembly, monitoring and maintenance of steel and mixed constructions. Our core business are residential and services buildings, industrial facilities, bridges and special structures. Since we strongly believe that engineering is more than steel construction, we create innovative solutions for planning, management and structural health monitoring, linking the traditional civil engineering with the most modern technologies from electronics and computer sciences.

VIATHOR, INC.

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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 and other loads 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.

WASSER COATINGS

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Wasser is an industry leader in advanced coatings technology. Wasser offers complete bridge solutions from structural steel corrosion protection to bridge deck waterproofing. Moisture Cure Urethanes and Polyureas are the chemistries that Wasser utilizes to protect many of the World's most notable steel and concrete bridges.

WATSON BOWMAN ACME

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Website: www.wbacorp.com

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.

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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

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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.

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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.

WSP, PARSONS BRINCKERHOFF

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WSP and Parsons Brinckerhoff have combined strengths and formed one of the world's leading engineering and professional services consulting firms. This global organization provides services designed to transform the built environment and restore the natural one. The firms' range of expertise spans multiple disciplines from conducting environmental remediation and urban planning, to engineering iconic buildings and designing sustainable transport networks, as well as developing energy sources and enabling new ways of extracting essential resources.