
INTERNATIONAL BRIDGE CONFERENCE®
2016
JUNE 6-10
INTERNATIONAL BRIDGE CONFERENCE®
OFFICIAL CONFERENCE GUIDE
IBC HAS MADE THE
MONUMENTAL
MOVE

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OTHER

# IBC

## SCHEDULE-AT-A-GLANCE

| TIME | SESSION | ROOM |
|---|---|---|
| **TUESDAY, JUNE 7** | | |
| 8:00 AM–12:00 Noon | W-01: LRFD for Concrete Highway Bridge Superstructures p.18 | Baltimore 3 |
| 9:00 AM–12:00 Noon | W-02: Load Rating and Posting of Locally Owned Bridges p.18 | Baltimore 5 |
| 9:30 AM–12:00 Noon | W-03: Enhancing Performance and Extending the Service Life of Concrete Bridges Using FRP Composites p.19 | Magnolia 3 |
| 1:00-4:00 PM | IBC Bus Tour-departs at 12:00 p.8 | Curbside |
| 1:00–5:00 PM | W-04: LRFD for Steel Highway Bridge Superstructures p.20 | Baltimore 3 |
| 1:00–5:00 PM | W-05: Service Life Design and Engineering of Bridges p.20 | Baltimore 5 |
| 1:00–4:30 PM | W-06: Long Term Bridge Performance (LTBP) Program Update p.21 | Magnolia 1 |
| 1:00–5:00 PM | W-07: International Bridge Engineering Practices p.21 | Magnolia 3 |
| 5:00–6:00 PM | International Attendees Welcome Reception p.21 | Cherry Blossom BR |
| **WEDNESDAY, JUNE 8** | | |
| 8:00–10:00 AM | Cable-Stayed Bridges p.23 | Woodrow Wilson B,C,D |
| 8:00–10:00 AM | Inspection/Evaluation p.24 | Annapolis 1,2,3 |
| 8:00–10:00 AM | Rehabilitation 1 p.26 | Woodrow Wilson A |
| 8:00–10:00 AM | Construction/Fabrication p.27 | Baltimore 3,4,5 |
| 10:30 AM–12:00 Noon | IBC Keynote Session p.29 | Cherry Blossom BR |
| 2:00–4:30 PM | Proprietary p.30 | Woodrow Wilson A |
| 2:00–5:00 PM | VDOT Featured Agency Session p.32 | Cherry Blossom BR |
| 2:00–3:00 PM | W-E: Legal & Ethical Impacts of Contract Delivery Mechanisms p.35 | Magnolia 1 |
| 2:00–3:00 PM | SIS-1: Integrated Analysis... following a BrIM Workflow p.35 | Magnolia 2 |
| 2:00–4:00 PM | SIS 2: Extraction of Bridge Measurements...p.35 | Magnolia 3 |
| 7:30–9:30 PM | Movie Night at the IBC! p.36 | Cherry Blossom BR |

# IBC

## SCHEDULE-AT-A-GLANCE

| TIME | SESSION | ROOM |
|---|---|---|
| **THURSDAY, JUNE 9** | | |
| 8:00–11:30 AM | Long Span p.38 | Woodrow Wilson A |
| 8:00–11:30 AM | Design 1 p.40 | Woodrow Wilson B,C,D |
| 8:00–11:30 AM | Special Purpose Bridges p.42 | Annapolis 1,2,3 |
| 8:00–11:30 AM | Rail p.44 | Baltimore 3,4,5 |
| 1:30–5:00 PM | Design 2 p.46 | Woodrow Wilson B,C,D |
| 1:30–5:00 PM | Foundations p.48 | Baltimore 3,4,5 |
| 1:30–5:00 PM | Segmental p.50 | Annapolis 1,2,3 |
| 1:30–5:00 PM | Rehabilitation 2 p. 52 | Woodrow Wilson A |
| 7:00–9:00 PM | Awards Dinner p.15 & 54 | Cherry Blossom Ballroom |
| **FRIDAY, JUNE 10** | | |
| 8:00 AM–12:00 Noon | Innovation p.56 | Annapolis 1,2,3 |
| 8:00 AM–12:00 Noon | Design 3 p.58 | Woodrow Wilson B,C,D |
| 8:00 AM–12:00 Noon | Rehabilitation 3 p.60 | Woodrow Wilson A |
| 8:00 AM–12:00 Noon | ABC p.63 | Baltimore 3,4,5 |
| 1:00–2:30 PM | W-08: Creating a World Class Safety Culture p.65 | Annapolis 1 |
| 1:00–2:00 PM | W-09: Design & Construction of Bridge Columns Incorporating Mechanical Bar Splices in Plastic Hinge Regions p.65 | Annapolis 2 |
| 1:00–2:00 PM | W-10: The Rehabilitation of the Wichita US-54 CBD Viaduct p.66 | Annapolis 3 |
| 1:00–3:00 PM | W-11: Bridge Inspection and Evaluation Technologies and Applications p.66 | Annapolis 4 |
| 1:00–3:00 PM | W-12: Practical Application of Drones in the Bridge Industry p.66 | Prince George's Hall E |
| Refer to Page 68 for the full Exhibit Hall schedule for luncheons and receptions | | |

*John Dietrick*

On behalf of the Engineers' Society of Western Pennsylvania (ESWP) and the Conference Executive Committee, welcome to the Gaylord National Resort and the 33rd Annual International Bridge Conference®! This year our Conference is making history, as we have moved our venue to the Nation's Capital after over three decades of successful conferences in Pittsburgh, PA. We believe that this new venue will create even more interest and enthusiasm for IBC, which has grown into the preeminent international technical bridge conference and exhibition.

We are excited about the Monumental Move that the International Bridge Conference has made this year. Like Pittsburgh, our nation's capital boasts of many outstanding bridges, and maintains a proud legacy of bridge building that includes the recently-constructed Woodrow Wilson Bridge over the Potomac River, just minutes from and within easy view of the National Harbor. We are also excited about the opportunity the conference offers our many international participants to visit our capital city. The IBC Magazine this year captures this theme with a photo contest focused on Bridges of Capital Cities.

Our Conference begins on Tuesday June 7 with a variety of activities that include a tour of the Turner Fairbanks Research Center in McLean, VA. The Center houses the Federal Highway Administration's Office of Research, Development, and Technology, which includes over 20 laboratories dedicated to some of the world's most innovative bridge research. Our program on Tuesday also includes an International Welcome Reception, as well as an Exhibit Hall Welcome Reception.

We are honored to have the Virginia Department of Transportation (VDOT) as our Feature Agency this year. On Wednesday June 8, VDOT will host a Feature Agency Session focusing on the many bridge projects and recent developments taking place around the State. VDOT will also host a special area on our exhibit floor, and we invite you to stop by and learn more about VDOT and their bridge program.

Our Keynote Session will also take place on Wednesday, and we are excited to be joined this year by Mr. Jian Wei Chen, Vice President of Chongqing Construction and Investment Company, one of the largest bridge construction companies in China. He will share insights into the exciting growth and expansion of bridge construction in his home country. Additionally, US Transportation Secretary Anthony Foxx has

been invited as our keynote speaker, and we look forward to his perspectives on the recently passed transportation funding bill and other developments affecting US infrastructure.

Throughout the four days of IBC, we will be offering a tremendous Technical Program that includes presentations that cover the entire spectrum of bridge engineering. We received a record number of abstracts this year, and the extraordinary level of interest in presenting at IBC is reflected in the outstanding quality of the Technical Program. As in the past, we also are offering a wide variety of workshops throughout the conference. This year, we are happy to partner with the Deep Foundation Institute (DFI), which has helped to sponsor a session dedicated to foundations and geotechnical issues associated with bridges. DFI will also have a dedicated area in our Exhibit Hall – please stop by thank them for their participation in this year's technical program.

Our Awards Dinner will take place Thursday, June 9, and again this year our Awards Committee was extremely impressed with the many outstanding projects nominated. The list of IBC award winners this year is second to none, and we are pleased to present Dr. Dennis Mertz of the University of Delaware with the John J. Roebling Lifetime Achievement Award, in recognition for his many years of service to our profession.

The response we have received from exhibitors this year has been outstanding, and we anticipate the Exhibit Hall at our new venue to be filled with booths from across our industry and from all over the globe. This year, our new Exhibit Hall will host all lunches and evening receptions during the conference, while enabling exhibitors to attend our technical sessions.

Please join me in thanking the volunteer Executive Committee members, as well as the ESWP Staff, for their efforts leading up to this conference. The conference is a result of the many hours of hard work and service from these dedicated individuals. As you walk around and enjoy the conference this year, feel free to stop and talk to any of our committee members and provide feedback - we are always looking for ways to make your conference experience the best it can be.

I look forward to meeting you during this year's monumental International Bridge Conference®

*John*

*John Dietrick, P.E., S.E., is the General Chair of the 2016 International Bridge Conference and a Senior Vice President and National Bridge Practice Director for Michael Baker International.*

## WELCOME

Welcome to the 2016 International Bridge Conference® (IBC), sponsored by the Engineers' Society of Western Pennsylvania (ESWP) — our 33rd annual conference! 2016 marks the first time the IBC is being held outside of the City of Bridges, Pittsburgh, PA. It is the same great IBC, but now located in National Harbor, MD, just outside of our nation's capital. The new location, ideally suited for the ever-growing IBC, is the Gaylord National Resort & Convention Center. The "Gaylord" will host all events of the IBC, and is located within walking distance of the Woodrow Wilson Bridge along the Potomac River. We are pleased to have Virginia Department of Transportation, (VDOT) as our Featured Agency to showcase their bridge program. Remember, the IBC is now a four-day event with many of our workshops scheduled both before and after the conference to enable attendees to take advantage of more conference offerings.

## ARRIVING

Getting to/from Gaylord National Resort & Convention Center and downtown Washington, D.C. is very easy. There are three major airports in the area:

- Ronald Regan Washington National (DCA): only 8 miles/15 minutes, we have a dedicated Gaylord shuttle that runs for $18 one way (taxi is about $25)
- Dulles International. (IAD): 35 miles/45 minutes, taxi is about $50
- Baltimore-Washington Int'l. (BWI): 37 miles/50 minutes, taxi is about $60

For those who prefer travel-by-train, there is also DC's Union Station, which is only 8 miles from the hotel.

The Gaylord also provides a daily shuttle from 8:00 A.M. – 8:00 P.M. which goes to two stops downtown and is $13 one-way or $20 round trip (location stops are Union Station and Ronald Reagan Building/2 blocks from the White House); it is a great way to get downtown and see the sights, or a way to get from Union Station to the Gaylord National Resort.

## LOCAL ATTRACTIONS

National Harbor is home to more than 150 diverse shops and boutiques and over 30 dining locations. National Harbor's vibrant downtown atmosphere will delight you. Learn more about the attractions at http://www.nationalharbor.com/

## IBC SPOUSE PROGRAM

The IBC Spouse Breakfast will be hosted at the Gaylord National Resort and Convention Center on Wednesday, June 8 at 10:00 AM. This includes a free continental breakfast and a brief presentation from the Director of Tourism of National Harbor. Also, there will be coupons and brochures offered for spouses to take with them. The IBC Spouse Breakfast is an opportunity for spouses to mingle and learn about the various activities they can explore during their stay.

## 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

## 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.

## THE NEW IBC APP

Check out our brand new IBC APP! All of the Conference details at the convenience of your smart phone or tablet. The new APP provides more detail than ever before - full program listing, speakers bios, enhanced exhibitor information, up-to-the-minute announcements, attendee messaging, and much more! Download the APP thru Google Play or the App Store, or use this link https://crowd.cc/s/dgTy - or scan this QR code...

## REGISTRATION

Full Registration at the IBC includes admission to the Keynote Session, Featured Agency Session, all Technical Sessions, Workshops, and Exhibit Hall (including daily Exhibit Hall buffet luncheons & receptions). One- or Two-Day Registration includes all sessions and Exhibit Hall functions corresponding to the day(s) selected.

As always, the heart of the IBC is the quality technical presentations described in detail in this Guide. 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" and "Special Interest Sessions" 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.

## REGISTRATION DESK

The Conference Registration Desk is located on the 2nd Level of the Gaylord Resort. During exhibit hall events, we will also staff an Information Desk near the Prince George Hall E Exhibit Hall. The hours of operation are:

- Tuesday: 7:00 AM–6:00 PM
- Wednesday: 7:00 AM–7:00 PM
- Thursday: 7:00 AM–7:00 PM
- Friday: 7:00 AM–3:00 PM

## EXHIBITS & SPONSORS

The IBC Exhibit Hall is filled with experts in the bridge industry and represents engineering consultants, designers, constructors, special interest groups, service providers and many others. More than 150 booths will offer attendees many more opportunities to extend their learning experience beyond the technical presentations made during the conference. Also, networking in the Exhibit Hall is enhanced by the luncheons and receptions presented there and open to all registered attendees.

## TOUR

Tuesday, June 7th 1:00–4:00 PM (Bus to depart at 12:00 Noon) – advance Reservations required. Some limitations apply.

The Turner-Fairbank Highway Research Center (TFHRC) is the Nation's premier federally owned and operated highway research and development facility. Located in McLean, VA as the research center for the Federal Highway Administration (FHWA), TFHRC coordinates and conducts an ambitious program of innovative highway research and development to address critical needs of the national highway system. Through its three research and development (R&D) offices – Infrastructure, Safety, and Operations – along with the Exploratory Advanced Research Program, FHWA engineers, scientists, and psychologists conduct applied and exploratory advanced research in vehicle-highway interaction, nanotechnology, and a host of other types of transportation research in safety, pavements, highway structures and bridges, human-centered systems, operations and intelligent transportation systems, and materials. With more than 20 laboratories, the center provides a vital resource for advancing the body of knowledge that has been created and developed by our researchers.

## MEETING INFORMATION

All IBC functions (exc. tours) are located in the Gaylord National Resort and Convention Center. 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, and pushed thru our new APP.

## 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.

## PRE-PRINTS AND IBC MERCHANDISE

Pre-prints for all technical presentations are available at the Merchandise Booth located near the IBC registration Desk. 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 33rd Annual International Bridge Conference® will be available in late Summer 2016.

## 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!

## 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.

## 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 EXHIBIT HALL E. You will be able to view the exhibits during the following hours:

- Tuesday: 6:00–8:00 PM
- Wednesday: 12:00 Noon–2:00 PM; 5:00–7:00 PM
- Thursday: 11:30 AM–1:30 PM; 5:00–7:00 PM

The IBC will feature a Luncheon Buffet throughout the Exhibit Hall on Wednesday and Thursday and evening receptions on Tuesday, Wednesday and Thursday all open at no additional charge to all conference-registered attendees and registered spouses.

Don't miss the Featured Agency Exhibit in Baltimore 1& 2, open most hours during the conference (Featured Agency Exhibit may be closed during IBC Exhibit Hall hours.)

## COFFEE STAND

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

## 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, where you can make your purchases throughout the Conference. Please be sure to stop by and shop and check out our newest styles for the 2016 IBC!

## ATTENDEE REGISTRATION LISTS

Conference registrations received prior to May 27 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.

An addendum to the registration list, "PART 2 of 2," will be available Friday morning of the conference and reflects those attendees who registered after May 27, 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.

## CO-SPONSORS/MEDIA PARTNERS

Thanks to our many co-sponsors and media partners, who support the IBC throughout the year!

American Concrete Institute (ACI) www.concrete.org

American Metal Market (AMM) www.amm.com

American Public Works Association (APWA) www.apwa.net

American Society of Highway Engineers (ASHE) www.ashe.pro

Associated Pennsylvania Constructors (APC) www.paconstructors.org

Deep Foundations Institute (DFI) www.dfi.org

National Council of Structural Engineers Association (NCSEA) www.ncsea.com

National Steel Bridge Alliance (NSBA) www.aisc.org/nsba

Pile Driving Contractors Association (PDCA) www.piledrivers.org

Precast/Prestressed Concrete Institute (PCI) www.pci.org

Short Span Steel Bridge Alliance (SSSBA) www.steel.org

The International Association of Foundation Drilling (ADSC) www.adsc-iafd.com

Transportation Research Board (TRB) www.trb.org

Media Partners

ACCESS Magazine www.uctc.net/access

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The Journal of Protective Coatings & Linings and Paintsquare.com (JPCL) www.paintsquare.com

ZweigWhite, LLC www.zweigwhite.com

## JOIN US AT THE 2017 IBC!

Join us in 2017 for the International Bridge Conference®, June 4-8, 2017 as we return to the Gaylord National Resort and Conference Center, in National Harbor, MD. Many different sponsorship and exhibit opportunities are available - don't miss out and make your reservation early to take full advantage of all promotions!

## QUESTIONS?

Loads of additional information is available on our website at eswp.com/bridge or you can use our new APP, scan the QR code to access the IBC website. Still have questions? Stop at the IBC registration desk, or ask any of the IBC staff.

## LOOKING AHEAD!

Interested in presenting a paper, workshop, seminar presentation at a future IBC? The IBC Call For Papers will open immediately following the 2016 Conference, and everyone is welcome to submit an idea for presentation. Visit www.eswp.com/bridge for more details.

## IBC EXECUTIVE COMMITTEE

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, John Dietrick, for his leadership in planning this years conference.

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# IBC

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The International Bridge Conference® (IBC) Executive Committee, in conjunction with Roads and Bridges Magazine, Covestro LLC, Bridge design and engineering Magazine, and TranSystems, Inc. is pleased to announce the recipients of the 2016 IBC Awards of Distinction. The IBC Awards will be presented in a ceremonial dinner on Thursday, June 9 during the IBC. Advance reservations are required. Check with the IBC Registration Desk for seating availability.

- Dr. Dennis Mertz, Newark, DE awarded the John A. Roebling Medal, recognizing an individual for lifetime achievement in bridge engineering.
- Student Award Winner: IBC 16-SP: Integral Connections for Precast-Prestressed Concrete Girders in Seismic Regions. Zhao Cheng and Robert Peggar, Iowa State University, Ames, IA
- Ma-an-shan Yangtze River Bridge, Ma'anshan, Anhui, China awarded the George S. Richardson Medal, presented for a single, recent outstanding achievement in bridge engineering.
- JiaShao Bridge, Shaoxing City, Zhejiang Province, China presented the Gustav Lindenthal Medal, awarded for an outstanding structure that is also aesthetically and environmental pleasing.
- Hulton Bridge Replacement, Pittsburgh, PA 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.
- Brookfield Floating Bridge, Brookfield, VT awarded the Arthur G. Hayden Medal, recognizing a single recent outstanding achievement in bridge engineering demonstrating vision and innovation in special use bridges.
- Martin's Mill Covered Bridge Rehabilitation Project, Antrim Township, Franklin County, PA 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.

# Poster
SESSION

The IBC Poster Session offers additional opportunities to learn and network! Located on the 2nrd Level Foyer near the IBC Registration Desk and Technical Sessions, posters are available for viewing throughout the conference.

**IBC POS 16-1: Fully Nonlinear System Capacity and Load Distribution at Ultimate for Composite Steel Girder Bridges**
*Fayaz Sofi, S.M. ASCE and Joshua Steelman, Ph.D., P.E., M. ASCE, University of Nebraska-Lincoln, Lincoln, NE*

**IBC POS 16-2: Australia Ushers in New FRP Solution for Repair of Corroded Culverts**
*Mo Ehsani, Ph.D., P.E., S.E., QuakeWrap Inc., Tucson, AZ; Stephen Day, Stephen Day and Associates P/L, Cairns, QLD, Australia; Tony White, QuakeWrap Australia, Brisbane, QLD, Australia*

**IBC POS 16-3: Bridge Weigh-in-Motion (BWIM)**
*Nicole Prete, Sarira Motaref, and Richard Christenson, University of Connecticut, Storrs, CT*

**IBC POS 16-4: Gillies Creek Bridge**
*Sagar Adivarekar and Gary S. Johnson, P.E., RK&K, Richmond, VA*

**IBC POS 16-5: Route 29 Solutions - Design-Build, Rio Road Intersection**
*Chris Vaught and Gary S. Johnson, P.E., RK&K, Richmond, VA*

**IBC POS 16-6: Route 250 Bypass at McIntire Road**
*Behrooz Rad and Gary S. Johnson, P.E., RK&K, Richmond, VA*

**IBC POS 16-7: I-64-Widening - Design-Build, Replacement Bridges over Little Tuckahoe Creek**
*Ashley Johnson and Gary S. Johnson, P.E., RK&K, Richmond, VA*

## W-01: LRFD FOR CONCRETE HIGHWAY BRIDGE SUPERSTRUCTURES

*Time: Tuesday, June 7; 8:00 AM–12:00 Noon*

*Room: Baltimore 3*

*Presented By: Federal Highway Administration*

The main intention of this workshop is to give the participant a sample of the presentations of the recently updated FHWA/NHI Course #130081: LRFD for Highway Bridge Superstructures (Concrete).This updated course describes Load and Resistance Factor Design (LRFD) for concrete highway bridge superstructures. The course includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The curriculum follows the AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014 (AASHTO LRFD), including the approved 2015 Interims.

The course curriculum materials are comprised of a comprehensive reference manual (FHWA Publication No. FHWA-NHI-15-047), lecture and workshop exercises intended to promote or enhance a working knowledge of AASHTO LRFD, and a participant workbook for lecture notes and exercises.

The curriculum material includes the following major topics: General superstructure design considerations; Preliminary design concepts for prestressed concrete superstructures; Prestressed concrete I-girder design; Spliced prestressed concrete girder bridges

The following topics will be presented in this workshop: Preliminary Design Concepts for Prestressed Concrete Superstructures including: Prestressed Loss in Pretensioned Concrete I-Beams. Prestressed Concrete I-Girder Design including: Flexure Design at Service Limit State; Flexure Design at Strength Limit State; Shear Design at Strength Limit State; Interface Shear Design at Strength Limit State; and Prestressed Girders Made Continuous

*Speakers: Brian Kozy, Ph.D., P.E., Team Leader, FHWA; Scott Vannoy, P.E., Project Manager, Michael Baker International; Frank Russo, Ph.D., P.E., Michael Baker International; William Nickas, P.E., Precast/Prestressed Concrete Institute (PCI)*

## W-02: LOAD RATING AND POSTING OF LOCALLY OWNED BRIDGES

*Time: Tuesday, June 7; 9:00 AM–12:00 Noon*

*Room: Baltimore 5*

*Presented By: Federal Highway Administration*

50% of highway bridges in the national inventory are owned by counties, cities or towns. Agencies have been challenged in managing these assets to meet both transportation needs and public safety. The objective of this Workshop is to provide participants with basic information, lessons learned, and available resources. Target audiences are engineers from local, State and federal agencies, and consultants. This Workshop will consist of panel presentations and roundtable discussions from FHWA, State and local agencies.

*Speakers: Lubin Gao, Ph.D., P.E., FHWA; Jonathan C. Mallard, P.E., Load Rating Program Manager, VDOT; Cindy Wang, P.E., Office of Structural Engineering, Ohio DOT; Kevin J. Sabolcik, P.E., Chief of Structural Design Section, Baltimore County Department of Public Works; Alex Pence, P.E., S.E., Bridge Rating Engineer, WisDOT*

## W-03: ENHANCING PERFORMANCE AND EXTENDING THE SERVICE LIFE OF CONCRETE BRIDGES USING FRP COMPOSITES

*Time: Tuesday, June 7; 9:30 AM–12:00 Noon*

*Room: Magnolia 3*

*Presented By: American Composites Manufacturers Association*

This workshop will educate attendees on recent material and product advancements including new concrete strengthening systems and FRP rebar products that compete with traditional materials, performance of FRP reinforced concrete panels subjected to fire that were also designed to protect against ballistic and blast threats that could be applied to critical bridge structures. In addition, durability of FRP reinforced concrete structures based on an academic – industry study to evaluate the performance of GFRP rebars used on historic bridges and structures after more than ten years in service where evidence shows the GFRP rebars did not experience any degradation or loss of mechanical properties as compared to steel used in these installations.

Attendees will learn about bridge design, construction, performance and testing using innovative FRP materials and products, including: 1) bridges designed in Canada using the highway bridge design code, 2) systems that provide fire and blast protection of concrete bridge structures, and 3) long-term durability of FRP rebar in concrete bridges and structures.

*Speakers: Brahim Benmokrane, Ph.D., P. Eng., FACI, FCSCE, FIIFC, FCAE, FEIC, University of Sherbrooke, Sherbrooke, QB, Canada; David White, P.E., Sika Corporation, Lyndhurst, NJ; Scott Reeve, Composite Advantage, Dayton, OH; Thomas Ohnstad, ME, High Impact Technology, LLC, Tigard, OR; Amol Vaidya, Ph.D., Owens Corning Science & Technology LLC, Granville, OH; Alvin C. Ericson, FACI, FPCI, Technical Consultant, Bonita Springs, FL; John P. Busel. FACI, American Composites Manufacturers Association, Arlington, VA*

## IBC BUS TOUR

Tuesday, June 7th 1:00–4:00 PM (Bus to depart at 12:00 Noon) – advance Reservations required. Some limitations apply. Refer to Page 8 in this Guide for full details.

## W-04: LRFD FOR STEEL HIGHWAY BRIDGE SUPERSTRUCTURES

*Time: Tuesday, June 7; 1:00–5:00 PM*
*Room: Baltimore 3*
*Presented By: Federal Highway Administration*

The main intention of this workshop is to give the participant a sample of the presentations of the recently updated FHWA/NHI Course #130081: LRFD for Highway Bridge Superstructures (Steel). This updated course describes Load and Resistance Factor Design (LRFD) for steel highway bridge superstructures. The course also includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The curriculum follows the AASHTO LRFD Bridge Design Specifications, 7th Edition, 2014 (AASHTO LRFD), including the approved 2015 Interims.

The curriculum material of the course includes the following major topics: General superstructure design considerations; Preliminary design concepts for steel I-girder superstructures; and Steel I-girder design

The following topics will be presented in this workshop: Preliminary Design Concepts for Steel I-Girder Superstructures including: Primary Span and Cross Section Layout Considerations; Primary Framing Plan Layout Considerations; and Primary Girder Type and Size Considerations. Steel I-Girder Design including: LRFD Strength Limit State Design for Flexure and LRFD Service Limit State Design

*Speakers: Brian Kozy, Ph.D., P.E., Team Leader, FHWA; Scott Vannoy, P.E., Project Manager, Michael Baker International; Frank Russo, Ph.D., P.E., Michael Baker International; Michael Grubb, P.E., M.A. Grubb & Associates, LLC*

## W-05: SERVICE LIFE DESIGN AND ENGINEERING OF BRIDGES

*Time: Tuesday, June 7; 1:00–5:00 PM*
*Room: Baltimore 5*
*Facilitator: Kelley Severns, WSP | Parsons Brinckerhoff, Nashville, TN*

Service Life Design (SLD) and Engineering of bridges strives for 100 year service life or longer through decision making processes leading to more durable and easier to maintain structures. This workshop will examine the factors impacting desired structural service life including: design details, rehab and replacement decision making, material choices, protection systems, construction methods, inspection methods, preservation strategies, and environmental considerations. FHWA / SHRP2 research and implementation on SLD will be highlighted. An expert panel session will be assembled to include bridge owners, design consultants, contractors, academia, government, and material suppliers.

*Speakers: Patricia Bush, AASHTO, Washington, DC; Mike Bartholomew, CH2M, Corvallis, OR; Anne Marie Langlois, COWI, Vancouver, BC, Canada; Iowa DOT, Des Moines, IA; Michael Brown, Virginia DOT, Richmond, VA. Panel Discussion Lead: Barton Newton, WSP | Parsons Brinckerhoff, Sacramento, CA*

## W-06: LONG TERM BRIDGE PERFORMANCE (LTBP) PROGRAM UPDATE

*Time: Tuesday, June 7; 1:00–4:30 PM*

*Room: Magnolia 1*

*Presented By: Michael Baker International*

This workshop's objective is to update and engage the bridge community on the Long Term Bridge Performance program. FHWA and their contractors are looking to "spread the word" about the LTBP program. The presentations would center around what they have accomplished, what they plan to accomplish, and to ascertain what the bridge community would like them to accomplish.

*Speakers: Hamid Ghasemi, Robert Zobel, Susan Lane, Yamayra Rodriguez, Hoda Azari, FHWA; Richard Dunne, Michael Baker International; Jeff Purdy, Pennoni & Associates*

## W-07: INTERNATIONAL BRIDGE ENGINEERING PRACTICES

*Time: Tuesday, June 7; 1:00–5:00 PM*

*Room: Magnolia 3*

*Presented By: M. Myint Lwin, P.E., S.E., QC/QA Consultant*

The main objective of this workshop is to provide a forum for bridge engineers from around the world to present and discuss bridge specifications, and practical solutions for solving bridge engineering issues. Six international speakers will share their practices in design and construction specifications, selection of bridge types for long span bridges, preservation of long span bridges, accelerated bridge construction, earthquake resistant designs, use of advanced analysis to determine the optimum construction sequence to meet stringent crack control in concrete, and many more. International bridge engineering practices are quite varied in different parts of the world. There are many good practices and valuable lessons to be learned. Attendees of this IBC workshop will be able to take away ideas and solutions that can be applied to their daily practice of bridge engineering.

*Speakers: M. Myint Lwin, P.E., S.E., Bridge Engineering Consultant; Jim McDonnell, USA; Barry Colford, U.K.; Weifeng Zheng, China; Pedro Pacheco, Portugal; Carlos Mendez, Mexico; Tomonobu Tokuchi, Japan*

## INTERNATIONAL ATTENDEES WELCOME RECEPTION

*Time: Tuesday, June 7; 5:00–6:00 PM*

*Room: Cherry Blossom Ballroom Lobby*

*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 EXHIBIT HALL RECEPTION

**5:00–7:00 PM in the Prince George Exhibit Hall E**

## CABLE-STAYED BRIDGES

*Time: Wednesday, June 8; 8:00–10:00 AM*

*Room: Woodrow Wilson B,C,D -*
*sponsored by Whitman, Requardt & Associates, LLP*

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

**8:00 AM**

**IBC 16-01: Innovative Structural System for Cable-Stayed Bridge**

*Thomas Spoth, P.E. and Seth Condell, P.E., PARSONS, New York, NY*

The Port Authority of New York and New Jersey is replacing the 1928 Goethals Bridge through a Public Private Partnership. The replacement crossing includes a modern cable-stayed bridge spanning the Arthur Kill between Elizabeth, NJ and Staten Island, NY. Overall, the bridge will consist of a 7,306 feet. Long elevated structure including the 1,635 feet. Overall length cable stayed bridge. Consistent with expected growth in the region, the design includes built-in future transit expansion capabilities.

**8:30 AM**

**IBC 16-02: Challenges/Innovation to the Cable Stays for Hybrid Structures**

*Erik Mellier, Freyssinet, Inc., Rueil Malmaison, France; Andrew Micklus, Jr., Freyssinet, Inc., Sterling, VA*

With its innovative design, of 1,408 m long central span and 58 m wide deck carrying 2 x 4 traffic lanes and two railway tracks in its center, the Third Bosphorus Bridge located in Istanbul, Turkey, is considered the widest hybrid suspension/stay cable bridge in the world. The presentation will emphasize the main issues and innovations that were needed for the stay cables to support the construction of this first of a kind bridge.

**9:00 AM**

**IBC 16-03: Numerical Model for Predicting Carbon Fiber Composite Cable Forces in a Cable-Stayed Bridge**

*Kathryn A. McDonald, B.Eng (Hons), City of Gold Coast, Gold Coast, Queensland, Australia; Andrew J. Goupee, Ph.D., Keith A. Berube, Ph.D., and Roberto Lopez-Anido, Ph.D., P.E., University of Maine, Orono, ME*

Carbon Fiber Composite Cables (CFCC) have high tensile strength, low weight and excellent corrosion resistance. As such they provide a viable replacement to traditional steel cables in many cable-stayed bridges, which may increase a structure's lifespan and reduce maintenance requirements. The Penobscot Narrows Cable-Stayed Bridge offers a unique opportunity to develop these technologies. This paper analyzes continuous CFCC structural health monitoring data, and investigates the relationship between the external ambient air temperature and CFCC forces.

**9:30 AM**

**IBC 16-04: Design Scheme into the Rail-cum-Road Cable-stayed Bridges with Span Length over 1000m**

*Zongyu Gao, China Railway Major Bridge Reconnaissance & Design Institute Co., Ltd., China; Houxin Wang, Ph.D., CITIC Metal Co., Ltd., Chaoyang District, Beijing, China*

The Hutong Yangtze River Bridge is a self-anchored cable-stayed bridge, with the longest span of 1092m in China. In order to meet the functions of such large structures, high performance steels with high strength, good low temperature toughness (≥120J@-40oC), excellent weldability as well as high fracture toughness, are utilized including Q500q, Q420q, and Q370q, etc., which are usually microalloyed by Nb to realize such high comprehensive properties.



## INSPECTION/EVALUATION

*Time: Wednesday, June 8; 8:00–10:00 AM*

*Room: Annapolis 1,2,3 - sponsored by PARSONS*

*Chair: M. Myint Lwin, P.E., S.E., QC/QA Consultant, Olympia, WA*

**8:00 AM**

**IBC 16-05: Applications of Modern Imaging Technologies in Bridge Asset Management**

*Y. Edward Zhou, AECOM, Germantown, MD; Mark Guzda, AECOM, Hunt Valley, MD; Christopher Higgins, Oregon State University, Corvallis, OR*

With the availability of high definition digital cameras and advanced digital image processing techniques, a procedure has been developed that documents and monitors concrete surface cracks in an efficient, complete, objective, and accurate manner. This paper discusses such procedure, as well as its applications for collection and processing of digital images of superstructure and substructure elements of concrete bridges. Based on these digital images, monitoring for condition changes over time can become a standardized and efficient process as part of the bridge management system for asset management purposes.

**8:30 AM**

**IBC 16-06: SHRP2 Advancement in Nondestructive Testing for Concrete Bridge Decks**

*Yajai Tinkey, Olson Engineering, Wheat Ridge, CO; Matthew DeMarco, FHWA Resource Center, Lakewood, CO; Larry Olson, Olson Engineering, Haymarket, VA*

Federal transportation funding under the current MAP-21 authorization requires state DOTs to assess the condition of bridge decks and plan for life-cycle maintenance expenditures per accepted asset management practices. To assist bridge owners, the SHRP2 program sponsored research into emerging non-destructive (NDT) scanning technologies to quickly assess the condition of concrete bridge decks – rapidly identifying

bridge deterioration mechanisms and evaluating the effectiveness of deck preservation techniques. Under the SHRP2 Implementation Assistance Program, eight state DOTs were awarded funding to supplement traditional method with the latest NDT technologies for improved condition assessment. This paper overviews each of the NDT technologies evaluated; highlights the broad array of deployment efforts underway across the IAP states; and emphasizes how NDT scanning data are to be effectively used within DOT inspection, maintenance and asset management programs.

**9:00 AM**

**IBC 16-07: Comprehensive Testing and Evaluation of the James River Bridge in Virginia - How to Chain Drag a Four and a Half Mile Bridge in One Night**

*Deanna Nevling and Philip Quillin, Michael Baker International, Virginia Beach, VA; Christopher Eggleston, VDOT, Suffolk, VA; Vihad Ganji, Michael Baker International, Hamilton, NJ*

The 4.4 mile long James River Bridge in southeastern Virginia underwent a thorough field evaluation to develop repair recommendations and estimate maintenance costs. Ground Penetrating Radar and Laser Crack Measurement Scans were performed on the entire bridge to locate deficient deck areas. Rebar cover measurement, sounding, half-cell potential, chloride profile sampling, and petrographic analysis tests were conducted on a small sample of decks for comparison. Similar tests were conducted in a small sample of beams.

**9:30 AM**

**IBC 16-08: A user friendly rating tool for Complex Bridge**

*Pamela Yuen, P.E., Shaoyun Sun, Ph.D., P.E., and Eddie He, Ph.D., P.E., S.E., PARSONS, Chicago, IL; Yihong Gao, P.E., MnDOT Bridge Office, Oakdale, MN*

NBIS requires all highway bridges on public roads must be rated. Commercially available software has been developed for the load rating of typical bridges; however, software for rating of complex bridges is not available. Typical methods for permit evaluation either require further advanced engineering analysis or complicated and time consuming procedures. A rating tool is developed that customized for the individual bridge and owner's rating criteria to easily and efficiently rate the bridge for standard legal loads as well as any wheel load configuration of permit vehicle. This paper will present the development of the rating tool along with MnDOT processes and practice in using this tool.

## REHABILITATION 1

*Time: Wednesday, June 8; 8:00–10:00 AM*

*Room: Woodrow Wilson A -*
*sponsored by Computers & Structures, Inc.*

*Chair: W. Jay Rohleder Jr., P.E., S.E., FIGG, West Chester, PA*

**8:00 AM**

**IBC 16-09: Maryland's Bay Bridge - The First Main Cable Dehumidification Project in North America**

*Shane Beabes, AECOM, Baltimore, MD; Philip Waldvogel, Amman & Whitney, New York, NY; Mark Bulmer, AECOM, Leeds, UK*

Since the Akashi-Kaikyo Bridge was built in 1998, eight new bridges and fifteen existing suspension bridges are known to have been dehumidified across Asia and Europe. In 2013, main cable dehumidification work began on the William Preston Lane, Jr. Memorial (Bay) Bridge in Maryland, USA – the first cable dehumidification project in North America. The presentation will provide an overview of the project including construction, system commissioning, and initial results obtain from the data acquisition system.

**8:30 AM**

**IBC 16-10: Retrofit and Reconstruction of the Century Old Historic Georgia Street Arch Bridge**

*Nathan Johnson and Ebrahim Amirihormozaki, Kleinfelder, San Diego, CA*

Constructed 100 years ago as "The Gateway to eastern San Diego", the Georgia Street Bridge is a three-hinge arch with a 700 foot long grade separation. The structures are badly deteriorated with poor seismic detailing. The entire superstructure and spandrels will be replaced and arch-ribs will be retrofitted using hydro-demolition and self-consolidating fiber reinforced concrete mix. Walls will be stabilized using ground anchors and new facing. The bridge rehabilitation/reconstruction will preserve the historic resource for future generations.

**9:00 AM**

**IBC 16-11: Route 37 EB Mathis Bridge Rehabilitation**

*Rama Krishnagiri and Steve Esposito, WSP | Parsons Brinckerhoff, Lawrenceville, NJ; Maria Yap, Milos Kivich, and Mark Soryal, Hardesty & Hanover, LLP, West Trenton, NJ; George Kuhn and John Longworth, New Jersey DOT, Trenton, NJ*

NJ 37, an evacuation route, links the mainland to beach communities in Seaside Heights, NJ. Three Eastbound lanes are carried by the 4,860-foot long, 66-span, 60-year old, double leaf bascule bridge. The deteriorated deck, bearings and substandard or obsolete mechanical/electrical components needed replacement. The $60-million rehabilitation preserves the existing structure, replaces the deck and bearings, improves traffic lanes and safety features, and includes customized resistance barrier gates, warning gates, substructure repairs and a major Electrical/Mechanical overhaul.

**9:30 AM**

**IBC 16-12: I-64 Dunlap Creek Bridge Deck Rehabilitation - Jointless Bridges, Deck Overlays, and Concrete Materials**

*Celik Ozyildirim and Gail Moruza, VDOT, Charlottesville, VA; Rex Pearce and Ikhyeon Kim VDOT, Staunton, VA*

Two Virginia interstate bridges (550 feet) built in 1966 were rehabilitated to prolong lifespan by preventing chloride leakage into joints and concrete cracks. Work performed was: milling/dry-hydrodemolition, deck extension, retrofitting "Micro Virginia abutment", shotcrete substructure repair, and general rehabilitations. Joints were replaced with closure pours using innovative fiber reinforced concretes. Shrinkage reducing admixtures or lightweight concretes were used for overlay installation. A project as such will provide benefit towards upcoming interstate bridge rehabilitation projects.

**IBC 16-Reserve: Rehabilitation 1: Corrosion Evaluation/ Mitigation of 15 Bridges Along I-395 in VA**

*Alireza Hedayati, WSP | Parsons Brinckerhoff, Herndon, VA; Siva Venugopalan, Siva Corrosion Services, Inc., West Chester, PA*

Parsons Brinckerhoff team has provided corrosion evaluation studies and plans for 15 bridges for VDOT, including deck and substructure corrosion evaluation for 15 bridges along I-395 corridor. Corrosion evaluation was performed on the King Street Bridge over I-395 to determine the current condition of the deck and substructures. The purpose of the corrosion evaluation was to calculate the remaining service life of the structure and to provide recommendations on cost effective life extension.

## CONSTRUCTION/FABRICATION

*Time: Wednesday, June 8, 8:00–10:00 AM*

*Room: Baltimore 3,4,5 -*
*sponsored by HDR Engineering, Inc.*

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

**8:00 AM**

**IBC 16-13: Almonte Viaduct Construction Process**

*David Arribas, Pedro Cavero, Pablo Bernal, and David Carnero, FCC Construccion, Madrid, Spain; Pablo Jimenez, Adif Alta Velocidad, Caceres, Spain*

The Almonte Viaduct is located in the south west of Spain into the high speed railway line Madrid-Extremadura. It is 996m (3,268 feet) long with a concrete arch in the main span of 384m (1260 feet) long. It is the world's largest high speed rail arch and the world's third-largest concrete arch taking into account also road bridges. The construction of the bridge has been a challenging process.

**8:30 AM**

**IBC 16-14: Construction of John Greenleaf Whittier Memorial Replacement Bridge**

*David Rogowski and Lisa Briggs, Genesis Structures, Kansas City, MO; Chris Daigle, Walsh Construction, Canton, MA*

With daily tide cycles of 9 feet and with areas inaccessible by cranes, an erection method utilizing two launched girders supporting overhead gantry cranes was implemented. This unique method was used to erect the approach spans, the arch floor system and a 200 ton crane which traversed the arch floor system to erect the upper arch. The launch girders were moved and will be reused to remove the existing bridge and erect the SB bridge.

**9:00 AM**

**IBC 16-15: Field Erection of Large Girder Assemblies for Tappan Zee Bridge**

*Tom Zieman, Zieman Engineering, LLC, Stamford, CT; Bill Batzel, Tappan Zee Constructors, LLC, Tarrytown, NY*

The new Tappan Zee bridge consists of over two miles of plate girder approaches, which are being built in preassemblies up to 420 feet long and weighing up to 2200 kips, and are set using a 1700-ton capacity floating shear leg crane. This presentation will describe the process of erection, the hydraulically adjustable lifting frame used to set the girders, stability and deflections of the girders, and connection of crossframes between the assemblies.

**9:30 AM**

**IBC 16-16: The Influence of Cold Cambering on the Toughness of Rolled I-beams**

*Michael Bresch, II and Ronnie Medlock, High Steel Structures, LLC, Lancaster, PA; Y. Frank Chen, Ph.D., Penn State University, Middletown, PA*

The practice of cambering steel I-shaped beams by a cold bending process is becoming increasingly popular. However, the impact of cold bending on the toughness and ductility of the steel has raised concern among some engineers. This research investigates these concerns by performing cold cambering tests. Specimens are taken from areas with the highest deformation and areas with no deformation. Charpy V-notch tests and tensile tests are performed and the results are presented and discussed.

**IBC 16-Reserve: Construction/Fabrication: Northwest Corridor Design-Build, Pier Construction**

*Ali Ghalib, PARSONS, Baltimore, MD; Alan Kite and Ahmad Khashan, PARSONS, Washington, DC*

The Northwest Corridor project is located in an urban area with numerous construction, geometry and traffic challenges. An innovative design and construction solution was utilized to mitigate these issues on two project bridges. To minimize disturbance to an environmentally sensitive stream area with limited access, precast hammerhead pier caps will be fabricated on-site, transported to the pier location and erected from the shoulder embankment. To minimize traffic disruptions at a second site, a precast inverted tee straddle bent pier cap will be erected.

## IBC KEYNOTE SESSION

*Time: Wednesday, June 8; 10:30 AM–12:00 Noon*

*Room: Cherry Blossom Ballroom*

*Chair: John C. Dietrick, P.E., S.E., Michael Baker International, 2016 IBC General Chair*

Be sure to be in your seats for the start of the IBC Keynote Session, as we will feature a special Color Guard presentation of the US Flag. The IBC Keynote Session includes special presentations by:

- Featured Agency – Virginia Department of Transportation; Aubrey L. Layne, Jr., Secretary of Transportation, Commonwealth of Virginia on "Project Prioritization and Public-Private Partnerships: The Virginia Experience"
- Mr. Jianwei Chen - Chairman of the Board, ChongQing City Construction Investment (Group) Co., Ltd. (CCCIC), on the "Bridges in Chongqing, the Past, the Present and the Future "
- The Honorable Anthony Foxx, Secretary of Transportation, US Department of Transportation (Invited)
- James D. Cooper Award Winner, presented to Zhao Cheng and Robert Peggar, Iowa State University for the paper: "Integral Connections for Precast-Prestressed Concrete Girders in Seismic Regions."



## IBC EXHIBIT HALL LUNCHEON

12:00 Noon–2:00 PM in the Prince George Exhibit Hall E

## PROPRIETARY

*Time: Wednesday, June 8; 2:00–4:30 PM*

*Room: Woodrow Wilson A -*
*sponsored by Computers & Structures, Inc.*

*Chair: Rachel Stiffler,*
*Vector Corrosion Technologies, McMurray, PA*

**2:00 PM**

### IBC 16-17: Jacking of Bridges/Underpasses, Under Active Railroad Tracks

*Riccardo Castracani, Petrucco USA LLC, Miami Beach, FL*

The need for safer Railroad Crossings is becoming very apparent during the recent years, due to increased train and vehicular traffic, making existing at grade crossings obsolete. The problem associated with going from an at grade crossing to an underpass, or an overhead bridge, is the oftentimes impossibility to stop the train traffic, or the cost involved in doing so. Petrucco has patented a very safe system that can temporarily support the railroad tracks, while a pre-cast underpass, or bridge, is jacked under this support system, therefore never needing to detours trains, interrupt the service, or stop them at all. The solution results in a safe, economical methodology to replace at grade crossings with underpasses, while eliminating the need to detour or stop trains. This methodology has been used very successfully all over Europe, and we have recently introduced the system in North America.

**2:30 PM**

### IBC 16-18: Recent Applications of Seismic Isolation and Energy Dissipation Solutions in Latin America

*Carlos Mendez Galindo, mageba Mexico, Benito Juarez, Mexico City, Mexico; Gianni Moor, mageba USA, New York, NY; Borja Bailles, mageba International, New York, NY*

The design of critical structures to withstand earthquakes continues to gain importance in Latin America. This paper presents some recent applications of such seismic protection in Mexico, Venezuela, Ecuador and Peru. All these countries are located in areas with strong earthquakes. The case studies presented are evidence of the increasing interest of designers, contractors and owners in ensuring safer, efficient structures, which above all ensure the safety of the population and mitigate structural damage.

**3:00 PM**

### IBC 16-19: Repair of Bridge Piles in a Crocodile-Infested River

*Stephen Day, Stephen Day and Associates P/L, Cairns, Queensland, Australia; Mo Ehsani, Quakewrap, Inc, Tucson, AR; Tony White, Quakewrap Australia, Yeronga, Queensland, Australia*

Octagonal PSC piles in a bridge over the crocodile-infested Barron River in Cairns in north Queensland, Australia, experienced severe ASR cracking and required remediation to protect against corrosion damage.

Forty piles were repaired underwater by encasing in a protective jacket consisting of thin glass FRP laminate sheets wrapped around the piles to create a seamless, impervious, cylindrical shell and subsequently filled with a low viscosity resin that sealed the concrete and filled any voids and cracks.

**3:30 PM**

**IBC 16-20: Accelerated Bridge Construction: 3 Methods**

*Pedro Pacheco, Hugo Coelho, André Resende, and Igor Soares, BERD, S.A., Matosinhos, Porto, Portugal*

Different factors of productivity in industrialized concrete deck construction are discussed, considering 3 different construction methods used in 3 projects with 3 different contexts. An introduction of an Organic Prestressing System is presented - an actively controlled prestressing system that increases structural efficiency and safety, confirming a positive impact in productivity.

**4:00 PM**

**IBC 16-21: Folded Steel Plate Girder System – Applications in Accelerated Bridge Construction**

*Matthew Macey, CDR Bridge Systems, LLC, Pittsburgh, PA*

The Folded Steel Plate Girder (FSPG) System is the culmination of over ten (10) years of research, development, and testing resulting in a short span steel alternative to concrete bridges. In this paper, the FSPG System's use as an accelerated bridge construction technique will be presented. The presentation will include the FSPG System design features, fabrication, and construction.

## VDOT FEATURED AGENCY SESSION

*Time: Wednesday, June 8; 2:00–5:00 PM*

*Room: Cherry Blossom Room*

**Introduction and Opening Remarks**

*Garrett Moore, P.E., Chief Engineer*

**Bridges in Virginia**

*Kendal Walus, P.E., State Structure and Bridge Engineer*

VDOT maintains and inspects 19,482 of Virginia's 21,113 highway bridges and large culverts. Virginia is required to inspect only the 13,499 structures that are part of the National Bridge Inventory (NBI), but, as a critical component of a proactive safety policy, Virginia inspects an additional 7,614 structures that are not large enough to be included in the NBI. Many of Virginia's bridges are approaching a critical age. About 63% percent of the bridges in the inventory are over 40 years old and thus approaching their anticipated 50 year service life. In order to meet the challenge, VDOT has adopted an asset management approach that emphasizes system preservation and maximum life-cycle value for every dollar spent. VDOT insists on durability for new and existing bridges, and requires materials and construction techniques that provide long life with minimal maintenance, which will reduce the maintenance burden for future generations of taxpayers. Some examples of this philosophy include: corrosion-resistant reinforcement, high-performance concrete in all bridge elements, jointless construction, and a detailed program for preventive maintenance. In some cases these treatments and materials have a slightly higher initial cost, but their true value will be realized in future years though reduced repair and maintenance costs.

**Construction of the Route 460 Connector Bridge**

*Gary Lester, P.E., Bristol District Structure and Bridge Engineer, and Mark W. Hirsch, P.E., Vice President, RS&H, Inc.*

VDOT's design-build contract for the Route 460 Connector Phase I in Buchanan County was completed mid-September 2015. The project included design and construction of twin high-level bridges, 1700 linear feet in length, located over Conaway Road (Route 610) and Grassy Creek, now the tallest in Virginia; a 0.8-mile four-lane divided highway (US Route 460) starting at the Kentucky State Line; an access ramp to Route 80, improving access to Breaks Interstate Park; and secondary connections to Routes 609 and 693 from Route 80.

**The Gilmerton Vertical Lift Bridge: A Project Risk Management Approach**

*Robert "Bud" Morgan, Ph.D., P.E., Virginia Department of Transportation, Marc E. Papini Esq., Haley & Aldrich, Inc., and Jim Holtje, P.E., PCL Civil Constructors.*

The replacement of the Gilmerton Bridge included several significant construction challenges which were compounded by an access restrictive site. The full re-

placement of the existing bridge was completed over top of the existing, active bridge and was constrained on either side by an existing rail bridge and existing businesses. Additionally, the project included the float-in of a new 5,200,000-LB lift span through the Port of Hampton Roads. In order to address these challenges, the project participated in a full stakeholder/joint risk management program to provide a collaborative, project-focused process to resolve problems. This program resulted in the successful completion of the project and some unexpected solutions to our problems.

**Replacement of Bridge Decks on Route 360**

*Chris Lowe, P.E., Central Office Structure and Bridge Division.*

The US 360 bridges over the Chickahominy River endures frequent high-water levels and a low roadway profile. Conventional voided slab bridges would normally tend to develop longitudinal "reflective cracking" due to failed or inadequate transverse connections in the adjacent voided slab beams. VDOT has developed an innovative bridge superstructure design using optimized inverted T prestressed concrete beams. VDOT Engineers adapted a design based on concepts of the "Poutre-Dalle" pioneered in France and variations that had been evaluated in Minnesota. Virginia's enhancement strove to reduce the propensity for cracking and to increase the ease of fabrication and placement.

**Preservation of PT Tendons in the Varina Enon Bridge**

*Michael Sprinkel, P.E., Associate Director, Virginia Transportation Research Council.*

The Varina Enon (VE) Bridge, which carries I-295 over the James River, was opened to traffic in 1990. One of the most significant bridges in Virginia the superstructure was constructed with precast post tensioned box sections, two sets of cable stays and 480 grouted external tendons. During a routine inspection in 2007 one of the tendons was found to have failed. Evaluations resulted in the replacement of 2 tendons, monitoring of several tendons, injection of four tendons with a corrosion inhibitor and ongoing discussions on how best to preserve the tendons over a 75 to 100 year life.

**Structural Retrofit & Rehabilitation of I-64 Delta-Frames over the Maury River**

*Rex Pearce, P.E., Staunton District Structure and Bridge Engineer.*

The Interstate 64 bridges over the Maury River and Kerrs Creek in Rockbridge County were designed in 1969 in built in 1976. These two bridges carry eastbound and westbound traffic on I-64 in the Lexington area. The bridges have a steel frame support and are called delta frame bridges. This project will rehabilitate the two bridges by repairing the structural steel frames, and replacing the deck, reconstructing abutments and providing slope work protection. Each bridge is 845-feet long and 43-feet wide. Roadway width is 39 feet. The existing bridges

are structurally deficient with steel fatigue cracks along with deck, joint and abutment problems plus slope erosion. This project has earned $15.5 million in federal grants under the Transportation Investment Generating Economic Recovery (TIGER) program.

**State Force Small Bridge Program**

*Teresa Gothard, P.E., Culpeper District Structure and Bridge Engineer.*

The State Force Small Bridge Program targets small bridges for replacement by state bridge crews. Small bridges eligible for the program are generally 60 feet or less in length, usually in rural areas, and in poor condition. Employing state bridge crews to replace a proportion of these bridges at low expense is a high-payoff way of using resources and funding because it reserves more resources for more difficult projects that must be performed by contractors.

## W-E: LEGAL & ETHICAL IMPACTS OF CONTRACT DELIVERY MECHANISMS

*Time: Wednesday, June 8; 2:00–3:00 PM*

*Room: Magnolia 1*

*Presented By: Varela, Lee, Metz & Guarino (VLMG)*

- Traditional design-bid-build and protections afforded to design professionals by the "economic loss doctrine" and "betterment defense"
- Design-Build and its potential curtailment on these defenses
- To whom are you loyal? In design-build is your duty to the contractor or the owner – how do you balance the inherent tension?

*Speaker: Kirk Niemi, Esq., Partner; Varela, Lee, Metz & Guarino, LLP*

## SIS-1: INTEGRATED GEOMETRY, DESIGN, AND ANALYSIS OF BRIDGES FOLLOWING A BRIM WORKFLOW

*Time: Wednesday, June 8; 2:00–3:00 PM*

*Room: Magnolia 2*

*Presented By: Bentley Systems*

Presenting Open Bridge Modeler from Bentley Systems that will streamline the design and, production of deliverables and generate a 3D model for construction and inspection. Open Bridge Modeler empowers the engineer to take full advantage of the roadway geometry and terrain information in order to study the best alternatives for a bridge location and type. Then, a direct connection to Bentley's analytical software allows for design calculations of the structure.

*Speaker: Alexander Mabrich, P.E., Msc, Bentley BrIM, Sunrise, FL*

## SIS 2: EXTRACTION OF BRIDGE MEASUREMENTS, FEATURES AND 3D MODELS FROM POINT CLOUD DATA

*Time: Wednesday, June 8; 2:00–4:00 PM*

*Room: Magnolia 3*

*Presented By: Certainty 3D*

The objective of this workshop will be the introduction of a comprehensive workflow designed to effectively extract information from laser scanning data within the context of bridge planning, design, engineering and construction operations. Techniques for managing point cloud data sets will demonstrate how to organize and access point cloud data and images regardless of size. An intuitive, easy and well-documented procedure and associated software tools for assessing data quality will be introduced. Numerous tools and techniques for extracting valuable information, measurements and 3D models from the data will be demonstrated. Finally techniques for integrating point cloud data with virtual design models will be presented.

*Speaker: Ted Knaak, Certainty 3D, Orlando, FL*

## IBC EXHIBIT HALL RECEPTION

**5:00–7:00 PM in the Prince George Exhibit Hall E**

# Special
SESSION

## MOVIE NIGHT AT THE IBC!

**Bridging Urban America: The Story of Ralph Modjeski**

*Time: Wednesday, June 8; 7:30–9:30 PM*

*Room: Cherry Blossom Ballroom*

*Sponsored By: National Steel Bridge Alliance*

Free to all registered attendees! BRIDGING URBAN AMERICA celebrates one of America's greatest bridge designers and some of the most significant bridges of the 20th century, transforming American landscapes through innovation and ingenuity. View the magnificent San Francisco - Oakland Bay Bridge, the expansion of the Huey P. Long in New Orleans, the Quebec Bridge in Canada and Modjeski's masterpiece Ben Franklin in Philadelphia.

Riveting interviews with award-winning authors, historians, engineers, and cultural figures, such as Henry Petroski of Duke, Piotr Moncarz of Stanford, Richard Campanella of Tulane and photographer Dave Plowden, offer a deeper look into the scientific mind of a master engineer and artistic soul of a Polish-born, Paris-trained immigrant who contributed to the building of a modern America.

"Experiencing Modjeski's bridges first-hand was mind-blowing! The sheer size, complexity and skill and how many people were a part of it overwhelmed us. Erecting one such bridge was enough for the entire lifetime of an engineer. Yet Modjeski designed and constructed over 40 such structures and almost all of them are still serving us today." – Filmmaker Basia Myszynski

A film for bridge enthusiasts, history buffs, entrepreneurs and those interested in Science + Art and the power to influence the progress of a nation.

BRIDGING URBAN AMERICA brings awareness to the critical role engineering plays in the advancement of our society as future generations face urban challenges of their own and look to build sustainable cities.

Join us for a cinematic journey across America!

For information or upcoming screenings, please follow the movie's Facebook page: www.facebook.com/bridgingurbanamerica or contact Basia at bridginguamerica@solareye.biz

View Movie Trailer website: www.bridginguamericafilm.com

Produced and Created by Basia + Leonard Myszynski, sOlar eye communications and co-produced by Eric Wintemute


Established in 1915, WRA is a nationally recognized engineering, architectural and environmental firm. Our bridge engineering services include:

Accelerated Bridge Construction

Bridge Design and Rehabilitation

Design-Build

Fender and Dolphin Evaluation and Design

Field and Structural Investigations

Geotechnical Analysis and Foundation Design

Heat Straightening

Innovative Technologies

NBIS Bridge Inspections

PEOPLE FOCUSED • PROJECT DRIVEN

## LONG SPAN

*Time: Thursday, June 9; 8:00–11:30 AM*

*Room: Woodrow Wilson A -*
*sponsored by Computers & Structures, Inc.*

*Chair: Gary Runco, P.E.,*
*Virginia DOT, Fairfax, VA*

**8:00 AM**

**IBC 16-22: The New Hulton Bridge – Elegance and Efficiency**

*Christopher Vollmer, Eric Veydt, and Thomas Leech, P.E., S.E., Gannett Fleming, Inc., Pittsburgh, PA; Lou Ruzzi, Pennsylvania DOT, Bridgeville, PA*

The new Hulton Bridge represents a close collaboration between the owner and community resulting in an elegant and efficient structure. The structure lines and pier detailing are unique resulting in a bridge which will become both a gathering point and an icon to the community. The structure was designed with hybrid girders for optimal efficiency. The 500 feet main span was erected using strand jacking, the first application for a plate girder bridge in Pennsylvania.

**8:30 AM**

**IBC 16-23: I-64 Daniel Boone Bridge over the Missouri River**

*Michael Carroll and Kevin Eisenbeis, Burns & McDonnell Engineering Company, Kansas City, MO*

The new 2,615 feet Daniel Boone Bridge was constructed using an innovative design-build delivery solution. The design included the longest parallel flange, steel plate girder span on the Missouri River at 510 feet. Foundations include drilled shafts up to 11 feet in diameter, designed to resist large seismic and vessel collision loads. Unique ground treatment was utilized to mitigate soil liquefaction concerns. The Spirit of Saint Louis overpass was raised 24 inches to correct a low vertical clearance problem.

**9:00 AM**

**IBC 16-24: Design and Construction of the Queensferry Crossing**

*Carson Carney, American Bridge Company, Coraopolis, PA*

Once constructed, the Queensferry Crossing will be the longest spanning composite deck and multi towered cable stayed bridge in the world. Its unique crossing stays form and record length will assure it a place among the globe's elite structures. The Queensferry Crossing paper will provide an in depth review of the design and build process for a world class structure that has been delivered within the client's budget, their time schedule and the stakeholder's expectations.

**9:30 AM COFFEE BREAK**

**10:00 AM**

### IBC 16-25: Construction of the Ohio River Bridges East End Crossing Cable-stayed Bridge

*Marcos Loizias, Jacobs, Morristown, NJ*

Procured under a public private partnership contract (P3) and currently under construction with estimated completion at the end of 2016, the main river spans of the Ohio River Bridges East End Crossing feature a 2,280 feet long three-span steel composite cable-stayed bridge with a center span of 1,250 feet and convex curve diamond towers. To fast-track construction, the cable-stayed bridge is being constructed using a combination of several construction methods. The Indiana side span is incrementally launched while the Kentucky side span is stick-build on falsework, allowing for simultaneous construction of the superstructure steel grillage of the two side spans while the diamond towers are constructed. Upon completion of the towers, the center span is constructed by balanced cantilever. The paper will discuss the methods of construction for the substructure and superstructure of the cable-stayed bridge.

**10:30 AM**

### IBC 16-26: Design of John Greenleaf Whittier Memorial Replacement Bridge

*Gregor Wollmann, HNTB, Blacksburg, VA; Savas Kiriakidis, MassDOT, Boston, MA*

The John Greenleaf Whittier Memorial Bridge carries Interstate I-95 across the Merrimack River between Newburyport and Amesbury, Massachusetts. Constructed in 1951, it has reached the end of its useful life. Replacement of the Whittier Bridge is the signature project of MassDOT's three-billion dollar Accelerated Bridge Construction program. This paper explains the exceptional resiliency of the network tied arch structural system selected for the main span and presents some of the details developed to arrive at an efficient and durable structure.

**11:00 AM**

### IBC 16-27: Chesapeake Bay Bridge Dehumidification Design

*Marwan Nader, George Baker, James Duxbury, Carol Choi, T.Y. Lin International, San Francisco, CA*

The Chesapeake Bay (William Preston Lane) Bridge in Maryland, USA, is the first cable dehumidification project in North America, one that will prevent future corrosion and extend the service life of the bridges. This paper presents a theory for maintaining air flow for timely cable dry-out and guidelines for effective sealing, optimal placement of injection and exhaust points, calibrated instrumentation, and effective mechanical, monitoring and control systems.

## DESIGN 1

*Time: Thursday, June 9; 8:00–11:30 AM*

*Room: Woodrow Wilson B,C,D -*
*sponsored by Whitman, Requardt & Associates, LLP*

*Chair: Donald W. Herbert, P.E.,*
*Pennsylvania DOT, Uniontown, PA*

**8:00 AM**

### IBC 16-28: Steel Girder Cross-Frames - Design, Fabrication & Erection

*Shane Beabes, P.E., and Patrick Holinda, AECOM, Baltimore, MD; Ronald Medlock, P.E., High Steel Structures, Lancaster, PA*

Fabricated steel girder bridges constitute a significant part of the U.S. bridge inventory, and on a typical bridge it is not uncommon for the fabricated costs of the cross-frames to exceed that of the girders. Therefore, there are strong merits to evaluating the design, fabrication and erection of cross-frames to promote satisfactory performance and an economical design. The presentation couples a designer and fabricator's discussion on contemporary issues while using a recent project as a backdrop.

**8:30 AM**

### IBC 16-29: History Matters: Compatible Bridge Design in Historic Districts

*Michael Cuddy, P.E., TranSystems, Philadelphia, PA; Peter Berg, Pennsylvania DOT, King of Prussia, PA*

Bridges are not mere conduits for transportation, but play important roles in shaping the identity of a place. What happens when a bridge located in a historic district need to be replaced? How do you design a new bridge compatible with the setting? This paper will explore the issues and offer insight into appropriate designs. Highlights include understanding history; decoration versus preservation; overshadowing history with applied decoration; and effective design principles.

**9:00 AM**

### IBC 16-30: Conceptual Design of Earthquake Resistibng Bridge Structures: a Practical Approach

*Alejandro Perez Caldentey, FHECOR North America, Falls Church, VA; Hugo Corres Peiretti, Jose Romo Marin, Javier Torrico Liz, FHECOR Consulting Engineers, Madrid, Spain*

Bridge design must always begin with a good conceptual design which analyzes and compares different possible solutions which fit a given set of constraints. One major constraint can be the location of the structure in a seismic area. In such cases, different strategies can be adopted for design, from ductile behavior to damping and seismic isolation. This paper presents a practical approach to decide the best strategy. The methodology is illustrated by focusing on a specific case study.

**9:30 AM COFFEE BREAK**

**10:00 AM**

**IBC 16-31: Design of a Modern Concrete Arch Bridge at the University of California, San Diego**

*Anthony Sanchez, Ph.D., P.E. and Gernot Komar, P.E., Moffatt & Nichol, San Diego, CA; Garrett Dekker, P.E., Moffatt & Nichol, Walnut Creek, CA*

Bridges on California freeways have become so standardized that it's difficult to tell one from the next. This project will break that paradigm and provide a visually interesting bridge across the busy I-5 corridor. An elegant and modern concrete arch will clear-span the freeway and unite the UCSD campus. Caltrans-style cast-in-place construction methods will keep the cost reasonable. The structure will provide a visual cue to motorists, and become a landmark for the University.

**10:30 AM**

**IBC 16-32: Seismic Design of Steel Girder Bridges over Two Western Kentucky Lakes**

*Brad Robson, Ph.D., P.E. and David Rust, P.E., Palmer Engineering Company, Winchester, KY; Kyle McLemore, P.E., Palmer Engineering Company, Nashville, TN*

The Kentucky Transportation Cabinet is constructing new bridges over Kentucky Lake and Lake Barkley in the heart of the New Madrid Seismic Zone. More than a mile of steel girder approach spans were designed to remain functional after a large earthquake. Extensive field testing along with site-specific hazard and soil response analyses provided comprehensive input for structural design. Nonlinear time history analyses allowed accurate representation of soil-structure interaction and seismic damper performance.

**11:00 AM**

**IBC 16-33: Updating the AASHTO LRFD Wind Load Provisions**

*Wagdy Wassef, AECOM, Mechanicsburg, PA; Jon Raggett, West Wind Laboratory, Monterey, CA*

Traditionally, wind load provisions in AASHTO Bridge Design Specifications were based on the fastest-mile measure of wind speed. Modern wind codes are all based on constant averaging time. AASHTO adopted new wind load provisions using the 3-second gusts and new wind maps to be in line with the current practices of the National Weather Service and the ASCE 7 and to provide uniform reliability. This paper introduces the research and the new provisions.

## SPECIAL PURPOSE BRIDGES

*Time: Thursday, June 9; 8:00–11:30 AM*

*Room: Annapolis 1,2,3 -*
*sponsored by PARSONS*

*Chair: Jonathan Moses, P.E.,*
*Pennsylvania DOT, Bridgeville, PA*

**8:00 AM**

**IBC 16-34: The First Arch Supported Stress Ribbon Bridge in the U.S.**

*John Dewar, P.E., Freese and Nichols, Inc., Fort Worth, TX; Miguel Rosales, Rosales + Partners, Boston, MA; Michael Stein, schlaich bergermann partner, New York, NY*

Completed in 2012, the Phyllis J. Tilley Memorial Pedestrian Bridge is the first arch-supported stress ribbon bridge in the United States. This bridge has a central steel arch supporting a stressed ribbon at midspan, thus reducing the ribbon sag and counteracting the high ribbon anchorage forces with offsetting arch thrust reactions. This results in an extremely slender, elegant profile, with spans of up to 160 feet with only a 10 inch deck depth.

**8:30 AM**

**IBC 16-35: Capital Cascades Connector Bridge**

*Jeff M. Walters, P.E., FIGG, Tallahassee, FL; Gary Phillips, Blueprint 2000 Intergovernmental Agency, Tallahassee, FL*

The new Capital Cascades Connector Bridge is part of the Capital Cascades Trail located just south of the Capital Building in Tallahassee, FL. This 163 feet -2 inches long signature pedestrian bridge consists of a 13 feet - 10 inches wide precast post-tensioned concrete span over the heavily traveled Monroe Street. Features include solar canopies capturing the sun's energy to power light displays at night and provide shade for pedestrians. The presentation will highlight the bridge and trail construction recently completed.

**9:00 AM**

**IBC 16-36: Parkside Pedestrian Bridge Design Challenges**

*Steven Paulovich, CH2M, Herndon, VA; C. Todd Springer, VDOT, Richmond, VA; Ravindra Ganvir, DDOT, Washington, DC*

DDOT's Parkside Pedestrian Project features challenges and complexities which drove the design towards prefabrication and construction techniques that will decrease interfaces and impacts with railroad and utility facilities. Innovative inter-agency agreements were also developed to facilitate the work. The signature bridge spans have a length of approximately 400 feet. It crosses over DC 295, CSXT and WMATA tracks and right-of-way and under PEPCO's overhead power transmission lines which represents a significant utility conflict.

**9:30 AM COFFEE BREAK**

**10:00 AM**

**IBC 16-37: Fort Street Bridge over the Rouge River**

*Jeffrey Routson, P.E., S.E., F.ASCE, Hardesty & Hanover, Okemos, MI; Jose Garcia, P.E., Michigan DOT, Lansing, MI*

The Fort Street Bridge over the Rouge River is the second largest bascule leaf in the world, by deck area. It is 86 feet wide by 176 feet long and weighs over 8,000,000 pounds. Due to the efficient rolling-lift design, it requires minimal power to operate the bascule normally. Two 150-HP motors will move the bascule against the design ice and wind loads. Stringers, floorbeams, and two 13 feet deep pony trusses support the steel grid-reinforced concrete deck.

**10:30 AM**

**IBC 16-38: A New Bascule Bridge Over the Gut - South Bristol, Maine**

*Peter Roody, P.E., Hardesty & Hanover, LLC, New York, NY; Joyce Taylor, P.E., Maine DOT, Augusta, ME*

A new Cable Stayed Bascule Bridge is being constructed across the Gut in South Bristol, Maine. The final bridge concept was developed with the local community's input. The project includes the bridge replacement (including foundations), construction of an operator's house, new traffic warning systems, approach work and a temporary runaround. Key challenges included a highly congested worksite, bedrock with no overburden, heavy year round navigation (over 8000 openings per year), and traffic maintained throughout construction.

**11:00 AM**

**IBC 16-39: Unique Design Challenges Associated with a 643' Wide Steel Plate Girder Bridge**

*Clayton VanVerth, Pennoni, Uniontown, PA; James Pezzotti, Pennoni, Philadelphia, PA*

The rehabilitation of seven adjacent bridges over the Vine Expressway (Interstate-676) in Philadelphia, PA, included combining two adjacent bridges to create a 643 feet wide bridge in order to expand Shakespeare Park. Designing for the unusually high seismic forces as well as the extreme transverse thermal movements associated with such an uncharacteristically wide bridge presented one of several unique design challenges that will be addressed as part of this presentation.

## RAIL

*Time: Thursday, June 9; 8:00–11:30 AM*

*Room: Baltimore 3,4,5 -*
*sponsored by HDR Engineering, Inc.*

*Chair: Carl Angeloff, P.E., MSCE,*
*Con-Serv Inc., Georgetown, SC*

**8:00 AM**

### IBC 16-40: Construction of Precast Concrete Simple-Supported Box Beams on Changsha Maglev Line, China

*Guo-rong Chen, Ph.D. and Gong-lian Dai, Central South University, Changsha, Hunan China; Y. Frank Chen, Penn State University, Harrisburg, PA*

Changsha maglev line, completely developed in China, is 18.54km long, connecting between the city's main railway station and the international airport. This maglev line is predominantly composed of simple-supported bridges (80%). All simple-supported beams were prefabricated in a factory and assembled in place. The whole construction took only fifteen months to complete. This paper will describe and discuss the rapid construction method and the mechanical properties the maglev simple-supported beams.

**8:30 AM**

### IBC 16-41: Honolulu Rail Transit Project – Precast Segmental Solution for Success

*Jose Rodriguez, FIGG, Exton, PA*

The Honolulu Rail Transit Project (HRTP) in Honolulu, Hawaii is a twenty-mile elevated light rail line being constructed by the Honolulu Authority for Rapid Transit (HART) that will connect West Oahu with downtown Honolulu. Precast segmental construction was selected for speed and quality of construction and long term durability. Most of the aerial guideway structure is being constructed down the median of existing roadways while maintaining traffic on these important links in the local roadway network.

**9:00 AM**

### IBC 16-42: Design Challenges of the Light Rail Transit Overhead Crossing Seismic Fault Zones

*Sami Megally, Ph.D., P.E., S.E., Fatemeh Kavianipour, P.E., and Keith Gazaway, P.E., Kleinfelder, San Diego, CA*

The Light Rail Transit Overhead, San Diego, California, is a 12-span bridge crossing over an active heavy railroad. The project has significant geometric, constructability, traffic, and seismic design challenges. The most significant challenge is the bridge crossing of a major seismic fault with substantial ground movements. The bridge is designed and detailed to accommodate these severe conditions. This paper focuses on the design of bridges for such extreme conditions using this bridge as a case study.

**9:30 AM COFFEE BREAK**

**10:00 AM**

**IBC 16-43: Dallas Streetcar - Rehabilitation of the Houston Street Viaduct**

*Greg Kochersperger and John Quintero, HDR Engineering, Inc., Dallas, TX*

The City of Dallas secured a TIGER grant in 2011 to construct a modern streetcar line between downtown and Oak Cliff across the Trinity River. The line would utilize the historic Houston Street Viaduct, a 100 year old concrete arch bridge, for this critical link. This paper will highlight the specific challenges and techniques used to rehabilitate and repurpose the bridge for streetcar use.

**10:30 AM**

**IBC 16-44: Construction and Span Replacement for CSX Bridge over Potomac River**

*John Boschert, Genesis Structures, Kansas City, MO; Matt Struemph, OCCI, Fulton, MO*

CSX Bridge 64 is a double-track bridge near Cumberland, Maryland and consists of three-150 feet spans. The bridge was successfully replaced during a multi-phased project, highlighted by the main span replacement during a 34-hour closure. Following erection of the new 900-ton bridge spans adjacent to the existing bridge on temporary falsework supports, accelerated bridge construction techniques were executed using independent sliding systems for removal of the existing bridge and for installation of the new DPG spans.

**11:00 AM**

**IBC 16-45: Rail Structure Interaction Analysis - Fundamentals and Modeling Considerations**

*Douglas Heath, P.E., Paul Kim, Latif Ebrahimnejad, Ph.D., and Firooz Panah, P.E., AECOM, Boston, MA*

This presentation summarizes rail-structure-interaction (RSI) analysis experience gained from a major light rail project in the Middle East. The project involved nearly 20km (12.4 miles) of viaduct connected to continuously welded rail using direct fixation fasteners. The presentation highlights structural modeling details which are useful for RSI analyses. Further, it provides perspective on the effect of different bridge characteristics (e.g. geometry and boundary conditions) on structural behavior.

**IBC 16-Reserve Rail: Experimental Study on the Dynamic Response of Continuous Slab Tracks and Simply Supported Bridges**

*Lvjun Long, Gong-lian Dai, and Guorong Chen, Ph.D., Central South University, Changsha, Hunan, China; Y. Frank Chen, Penn State University, Middletown, PA*

Continuous slab track (CST) is widely used in China. In order to analyze the dynamic characteristics of a track and bridge system when the train travels at a high speed, a dynamic response experiment was carried out on a passenger dedicated line. Through the field experiments and data analysis, the natural frequency and damping ratio of the beam can be obtained. The vertical and transverse accelerations and displacements of each layer structure are measured too.

## IBC EXHIBIT HALL LUNCHEON

**11:30 AM–1:30 PM in the Prince George Exhibit Hall E**

## DESIGN 2

*Time: Thursday, June 10; 1:30–5:00 PM*

*Room: Woodrow Wilson B,C,D -*
*sponsored by Whitman, Requardt & Associates, LLP*

*Chair: Ronald D. Medlock, P.E.,*
*High Steel Structures, Lancaster, PA*

**1:30 PM**

**IBC 16-46: Reconstructing the I-55 and Lake Shore Drive Interchange**

*Christopher Stine, AECOM, Chicago, IL*

The I-55 and Lake Shore Drive Interchange is located two miles south of downtown Chicago and joins the north end of I-55 to U.S. Route 41 (Lake Shore Drive). Replacing a highly deteriorated interchange with more durable structures was hampered by the desire to provide additional lanes during construction and eliminate two planned detours. This project was IDOT's first large-scale use of thermal-spraying (metalizing) that was used to protect over 7,500 tons of structural steel.

**2:00 PM**

**IBC 16-47: Bridge over the Vistula River in Kamień**

*Adam Igielski and Wojciech Jarominiak, CH2M, Warsaw, Masovian, Poland*

The presentation will raise issues concerning the design and construction of a bridge over the Vistula River in Kamień. It is one of the longest bridges in Poland and is situated in a protected area of ecological importance in the EU. The bridge is 1039.9 m long and has ten spans (2x80m + 8x108m).The superstructure is a steel orthotropic box compositely working with a fiber reinforced concrete slab.

**2:30 PM**

**IBC 16-48: VDOT Staff Designs the 1,910 ft. Continuous Bridge on Route 340 over South Fork Shenandoah River**

*Junyi Meng, VDOT, Richmond, VA; Eulogio Javier, II and Ashraf Antonius, VDOT, Staunton, VA; Mohamed Ali, VDOT, Suffolk, VA*

The existing Route 340 steel deck truss bridge was built in 1941. The new continuous 1,910 feet. Steel plate girder bridge will feature six travel lanes with bike and pedestrian facilities. This will be the longest jointless bridge in Virginia. The unique Virginia Abutment was employed to accommodate significant thermal movements. VDOT engineers were engaged to design this bridge, utilizing multiple materials and technologies to achieve an aesthetically pleasing and sustainable low maintenance structure.

**3:00 PM COFFEE BREAK**

**3:30 PM**

**IBC 16-49: Route 72 Manahawkin Bay Bridges Project, New Parallel Bridge**

*Steve Esposito, Joseph Mumber, and David Rue, WSP | Parsons Brinckerhoff, Lawrenceville, NJ; Pankesh Patel, NJDOT, Trenton, NJ*

Route 72 in Ocean County, NJ is the only connection to Long Beach Island and is critical for hurricane evacuation. To increase redundancy, a new 17-span, 2,400 feet long parallel bridge is designed to withstand a 2,500 year earthquake and support critical utilities. The structure's piers are founded on six-foot diameter drilled shafts and support 79 inches deep prestressed beams with 150 feet maximum span length and a 55-foot vertical clearance over the Atlantic Intracoastal Waterway.

**4:00 PM**

**IBC 16-50: Calibration of Service Limit States for Concrete in AASHTO LRFD Bridge Design Specifications**

*Wagdy Wassef, AECOM, Mechanicsburg, PA; Hani Nassif, Rutgers University, Piscataway, NJ; John Kulicki, Modjeski and Masters, Mechanicsburg, PA; Dennis Mertz, Ph.D., University of Delaware, Newark, DE*

The strength, or ultimate, limit states (ULS) of the AASHTO LRFD were calibrated through structural-reliability theory to achieve a certain level of safety. Exceeding the strength limit state results in a collapse or failure. Unlike strength limit states, the consequences of exceeding the service limit states are not well defined and these limit states were not statistically-calibrated. This paper presents the work performed to statistically calibrate the service limit states for concrete.

**4:30 PM**

**IBC 16-51: Experimental Performance Assessment of Spliced Continuous Prestressed Concrete Girder Bridges**

*Reza Baie, Mary Beth Hueste, and John Mander, Texas A&M University, College Station, TX*

This paper presents a competitive design approach for bridges spanning between 200 to 300 feet. In-span splicing technique is adapted along with taking advantage of a load balancing design approach to propose an economical spliced concrete girder bridge. Based on experimental observations and measurements on a full scale specimen, as well as meticulous numerical modelling, recommendations for design, construction sequence, and splice detailing will be presented.

## FOUNDATIONS

*Time: Thursday, June 10; 1:30–5:00 PM*

*Room: Baltimore 3,4,5 -*
*sponsored by HDR Engineering, Inc.*

*Chair: Richard L. Connors, P.E., PMP,*
*County of Allegheny, DPW, Pittsburgh, PA*

**1:30 PM**

### IBC 16-52: Lateral Resistance of Abutment Piles Near Mechanically Stabilized Earth Walls

*Kyle Rollins, Ryan Budd, and Andrew Luna, Brigham Young University, Provo, UT; Robert Gladstone, Association for Metallically Stabilized Earth, Reston, VA*

Pile foundations at bridge abutments often resist lateral loads produced by earthquakes and thermal change. When a mechanically stabilized earth (MSE) wall is used at an abutment, little guidance is available in designing for lateral load. In this study 16 lateral load tests were performed on piles at different distances behind a 20 feet high MSE wall. P-multipliers were developed to account for reduced lateral resistance and equations were developed to predict increased reinforcement tensile force.

**2:00 PM**

### IBC 16-53: Sellwood Bridge: Foundation Engineering to Optimize Construction

*Paul Axtell, P.E., DGE, Dan Brown and Associates, Overland Park, KS; Nathan Glinski, EI, Dan Brown and Associates, Knoxville, TN; Mike Lopez, P.E., S.E., CH2M, Portland, OR*

Foundations for the Sellwood Bridge in Portland include groups of large drilled shafts designed to bear 20 feet into hard basalt bedrock. At places, this resulted in shafts over 200 feet deep. The design didn't rely on base resistance until a embedment of 20 feet into the bedrock. Post-award, the contractor proposed a Value Engineering study to reduce the length and mitigate construction risks. The VE was accepted so long as the proper QA was performed during construction by the foundation engineer.

**2:30 PM**

### IBC 16-54: Foundation Design of the Abraham Lincoln Bridge in the Design-Build Realm

*Dan Yang, COWI North America (Formerly Buckland & Taylor Ltd.), North Vancouver, BC, Canada; Yu Zhang and Sam Christie, COWI North America, Seattle, WA*

This paper will focus on how structural and geotechnical designers work together with the contractor to address the design needs for the cable-stayed bridge foundations. In the design-build realm, this will encompass both bidding efforts and final design solutions using the state-of-the-art testing technologies, and resolving on-going construction issues, including retrofitting a defective 12-foot diameter drilled shaft supporting the tower. This paper emphasizes the collaboration between the contractors and the designers under the design-build environment.

**3:00 PM COFFEE BREAK**

**3:30 PM**

**IBC 16-55: The Virginia Route 340 Bridges: Challenges for Foundations in Karst Terrain and the Importance of Coordination During Design and Construction**

*Jim Sheahan, HDR Engineering, Inc., Pittsburgh, PA; Chaz Weaver, VDOT, Staunton, VA; Michael Mo, HDR Engineering, Inc., Norfolk, VA*

What does it take to successfully complete a bridge project? While the technical capabilities and experience of those involved in design and construction are clearly important, the inter-discipline communication during design and construction can also be critical to a successful project. Case studies for two bridges in Virginia using micropile and H-pile foundations with karst-related, variable conditions will illustrate how coordination between geotechnical engineers, structural engineers and the construction staff resulted in a successful project.

**4:00 PM**

**IBC 16-56: TDOT Loudon Bridge No. 3 VEAC Design to Construction**

*Timothy Siegel, Dan Brown and Associates, PC, Knoxville, TN; Mark Madgett, Seaboard Foundations, Inc., Blountville, TN*

The State of Tennessee designed a new bridge over the Tellico Canal in Loudon County, Tennessee. As is typical for many State projects of this type, the bridge was to be constructed on rock-bearing spread foundations that would involve challenging techniques in a karstic geology. Furthermore, it would require rock excavation and likely blasting near the existing bridge. At the request of the general contractor for the project Charles Blalock & Sons, the team of Seaboard Foundations, Inc., Dan Brown and Associates, PC, and Bittner-Shen Consulting Engineers, prepared an alternate design consisting of rock-socketed drilled shafts. An innovative aspect was the use of concrete forms that were lifted in placed and then temporarily anchored using the drilled shafts. For each bent, the concrete form was lowered to the rock surface, dewatered, and then used as the base for installation of the cap. The alternate achieved its purpose by saving time and helping to minimize problems at a site with numerous challenges.

**4:30 PM**

**IBC 16-57: Augered Cast-in-place Piles for Bridge Foundation Support**

*Morgan NeSmith, DFI ACIP Pile Committee, Atlanta, GA*

Although Augered, Cast-in-place (ACIP) piles are commonly used in highway construction for embankment, soundwall and MSE wall support, there remains a reluctance among state agencies to approve the technology for support of bridge foundations. FHWA Geotechnical Circular 8, The Design and Construction of CFA Piles, was developed to provide a framework for the inclusion of these piles in state-level highway foundation support.

The author will present three relatively recent case-histories where ACIP piles were used for bridge-approach support, temporary support of a tower-crane for bridge construction, and the direct support of an elevated roadway in an urban area, respectively. Additionally, the author will present recent developments in the areas of automated installation monitoring and non-destructive testing that can provide a level of certainty regarding the integrity of constructed ACIP piles to allow their inclusion as foundation support for all aspects of transportation projects.

## SEGMENTAL

*Time: Thursday, June 10: 1:30–5:00 PM*

*Room: Annapolis 1,2,3 - sponsored by PARSONS*

*Chair: Elfatih Ahmed, Ph.D., P.E., A&A Consultants Inc., Pittsburgh, PA*

**1:30 PM**

### IBC 16-58: I-90 Dresbach Bridge Over the Mississippi River

*John Dvorak, Figg Bridge Inspection, Inc., Winona, MN; Eric Breitsprecher, MnDOT, Winona, MN*

The new Interstate 90 Dresbach Bridge over the Mississippi River between La Crescent, Minnesota and La Crosse, Wisconsin will be a highly utilized river crossing serving as a gateway for regional and interstate needs and as a local connection for the adjacent communities. MnDOT is replacing the deficient I-90 structure with a new, modern, and ecologically conscious four-lane concrete bridge. The design inspiration for the new river bridge comes from the natural, picturesque landscape of the surrounding area.

**2:00 PM**

### IBC 16-59: Design of Riyadh Metro System Segmental Viaducts, Lines 1 and 2

*Firooz Panah, P.E., Latif Ebrahimnejad, Ph.D., and Paul Kim, P.E., AECOM, Boston, MA; Brian Guzas, P.E., AECOM, Providence, RI; Ahmad Abdel-Karim, P.E., AECOM, Sacramento, CA*

The Riyadh Metro Project is commissioned and supervised by Arriyadh Development Authority (ADA), the executive arm of the high Commission for the Development of Arriyadh. Designed by AECOM, BACS consortium (consisting of Bechtel, Almabani, CCC, and Siemens) is constructing over 21 km of precast segmental viaducts for Lines 1 and 2 of the project. The approach that the design-build team took to create this world class transit system is discussed and presented in this paper.

**2:30 PM**

**IBC 16-60: Lesner Bridge - A New Signature Bridge for the City of Virginia Beach**

*Christopher Ursery, P.E., FIGG, Tallahassee, FL*

The City of Virginia Beach's new Lesner Bridge has created excitement for both the local community and the thousands of tourists who visit Coastal Virginia each year. The new signature bridge, designed by FIGG, crosses the Lynnhaven Inlet along the Atlantic Coast and features two 1575-foot-long twin precast segmental concrete bridges. This paper highlights the innovative design solutions and construction methods used to build the new signature bridge.

**3:00 PM COFFEE BREAK**

**3:30 PM**

**IBC 16-61: Temporary Support of Balanced Cantilever on Bearings**

*David Konz, P.E., S.E., Atkins, Tampa, FL*

The River Dee and River Don Crossings are sister CIP Segmental structures (394 feet mainspan) within the Aberdeen Western Peripheral Road PPP. The 91 feet wide, single-cell boxes will be erected with balanced cantilevers resting on the permanent bearings. The temporary props consist of two, post-tensioned concrete columns (63 inch square), each designed to carry cyclical compression and tensile loads from the erection moments. The props were placed just 16 feet away from the column on top of the permanent footings.

**4:00 PM**

**IBC 16-62: Detection of Voids, Soft Grout and Tendon Corrosion in Internal Bridge Post Tensioning Ducts**

*Paul Fisk and Benson Armitage, NDT Corporation, Sterling, MA*

NDT Corporation has successfully used nondestructive testing methods to identify specific locations within internal post tensioning ducts where grout voids and soft grout exist. Nondestructive testing results are verified by drilling a small hole to the duct, opening the duct with tools designed for this task, and verifying grout condition with probing and documenting tendon corrosion with video bore scope imaging. The results of these investigations are used to determine appropriate repair methods and prepare repair bid documents.

**4:30 PM**

**IBC 16-63: Winona Bridge over the Mississippi River - MnDOT's First CMGC Project**

*John Dvorak, Figg Bridge Inspection, Inc., Winona, MN; Eric Breitsprecher, MnDOT, Winona, MN*

The historic Winona Bridge carries Highway 43 over the Mississippi River at Winona, Minnesota. A new 2,300 feet long bridge is being constructed with a 450 feet concrete segmental main span that will eventually carry two southbound lanes, shoulders and a pedestrian path. After rehabilitation, the existing bridge will carry

two northbound lanes. To accelerate the project, MnDOT utilized the Construction Manager/General Contractor (CMGC) method of project procurement for the first time. This allowed construction to move forward while under design and saved approximately one year in the overall project schedule.

## REHABILITATION 2

*Time: Thursday, June 10; 1:30–5:00 PM*

*Room: Woodrow Wilson A - sponsored by Computers & Structures, Inc.*

*Chair: Jane-Ann Patton, LOCHNER, Pittsburgh, PA*

**1:30 PM**

### IBC 16-64: Rehabilitation of the Historic Richland Avenue Bridge, Athens, Ohio

*William Vermes, Jones-Stuckey, A Division of Pennoni, Akron, OH*

The project began as a deck replacement of an 80-year old bridge, but research quickly identified it as one of the first continuous steel girder bridges in the United States. With encouragement from the owner, the rehabilitation economically preserved elements of the bridge's historic fabric, including reuse of the original cast-in-place concrete rails, which typically would have destroyed. Additionally, the bridge closure was limited to a tight closure window to accommodate the adjacent Ohio University academic calendar.

**2:00 PM**

### IBC 16-65: Cable Replacement Work on Multiple-Span Cable-Stayed Bridge: Nhat Tan Bridge in Vietnam

*Tomonobu Tokuchi, Kenji Matsuno, Naoya Taki, and Victor Maina, IHI Infrastructure systems Co., Ltd., Sakai, Osaka, Japan*

The stay cable replacement work processes with various locations in height and length for Nhat Tan Bridge which is located in Hanoi, Vietnam, are described. The work was performed and completed just prior to the public opening. Five out of 220 stay cables for a six span continuous cable-stayed bridge were replaced in 40 days at the site. This replacement method can be applied to existing cable stay bridge rehabilitation works.

**2:30 PM**

### IBC 16-66: Methodologies Used in the Rehabilitation of Piers for Two Virginia Bridges

*Hari Aamidala, Alpha Corporation, Dulles, VA; Edmund Okerchiri, VDOT, Fairfax, VA*

As part of VDOT's bridge preventive maintenance and rehabilitation efforts, two Bridge Maintenance and Rehabilitation projects with Piers with similar levels of deterioration were identified for repair with cathodic protection systems. Strengthening of the Pier Caps is achieved using FRP System at one bridge, while con-

crete encasement with additional reinforcing bars was used at the other bridge, which would allow us to observe relative performance over the years.

**3:00 PM COFFEE BREAK**

**3:30 PM**

**IBC 16-67: Rehabilitation and Seismic Retrofit of the North Torrey Pines Road Bridge**

*Keith Gazaway, Nathan Johnson, and Mark Creveling, Kleinfelder, Inc., San Diego, CA*

The historic and structurally deficient North Torrey Pines Road Bridge in San Diego County required extensive seismic upgrades and significant repairs to corrosion. This coastal project navigated complex political, engineering, economic, and environmental constraints in an effort to preserve the visual character of a landmark bridge. Ultimately, a nonlinear time history seismic analysis combined with creative construction techniques led to successful implementation of a unique and elegant retrofit and rehabilitation strategy.

**4:00 PM**

**IBC 16-68: Bridge within a Bridge - A Practical Approach for Stone Masonry and Concrete Arch Preservation**

*Joseph Spadea, Pennoni, Newark, DE; William Cameron, Pennoni, Mechanicsburg, PA; Gregory D. Burkhart, P.E., J.D. Eckman Inc., Atglen, PA*

How do you rehabilitate a 100 year old stone masonry and concrete arch bridge without impacting its natural aesthetic? Factor in that the bridge is the only access point for a prominent Philadelphia family, relatives of renowned architect Frank Furness. The Furness Bridge is a 100 feet. Crossing spanning Ridley Creek in Media, PA. With one of the bridge's three arch spans partially collapsed, Pennoni proposed a unique design – construct a new bridge within the existing.

**4:30 PM**

**IBC 16-69: Fracture Behavior of Damaged Steel Bridge Members Repaired through Heat-Straightening**

*Kaiyuan Liu, PARSONS, Seattle, WA ; David Mukai, Ph.D., University of Wyoming, laramie, WY*

This paper discusses the fracture behavior of heat-straightened steel plates with strain ratios up to 200, while the current limiting strain ratio for heat-straightening is 100. Unprecedentedly, the crack resistance curve (or the J-R curve) is applied to describe the stable crack growth rate and crack length of heat-straightened steel. Some findings on fatigue resistances are discussed as well. The conclusion is that heat-straightening of a damaged steel bridge member may not be recommended under some circumstances.

**IBC 16-Reserve-Rehabilitation 2: Major Retrofit of a Houston Tollway Bridge prior to Widening**

*Nestor Rubiano and Alberto King, HNTB Corporation, Houston, TX; Quinton Alberto and Matthew Kainer, Harris County Toll Road Authority, Houston, TX*

A major 30-year-old 24-span-long railroad overpass bridge along the Hardy Toll Road in Houston was evaluated prior to widening it for increased traffic demand. Significant structural deficiencies affecting the bridge strength and stability were found. Although precast prestressed concrete beams generally had adequate service and ultimate capacity, a significant number of columns and foundations were inadequate for the proposed widening. Extensive substructure retrofit was successfully implemented before widening the bridge using a variety of retrofit solutions.

## IBC EXHIBIT HALL RECEPTION

**5:00–7:00 PM in the Prince George Exhibit Hall E**

## IBC AWARDS DINNER

*Time: Thursday, June 9; 7:00–9:00 PM*

*Room: Cherry Blossom Ballroom*

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

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 ticketed registration is required (check the IBC Registration Desk for availability). This year's honorees are:

Dr. Dennis Mertz, Newark, DE awarded the John A. Roebling Medal, recognizing an individual for lifetime achievement in bridge engineering.

Student Award Winner: Integral Connections for Precast-Prestressed Concrete Girders in Seismic Regions. Zhao Cheng and Robert Peggar, Iowa State University, Ames, IA.

Ma-an-shan Yangtze River Bridge, Ma'anshan, Anhui, China awarded the George S. Richardson Medal.

JiaShao Bridge, Shaoxing City, Zhejiang Province, China presented the Gustav Lindenthal Medal.

Hulton Bridge Replacement, Pittsburgh, PA presented the Eugene C. Figg, Jr. Medal.

Brookfield Floating Bridge, Brookfield, VT awarded the Arthur G. Hayden Medal.

Martin's Mill Covered Bridge Rehabilitation Project, Antrim Township, Franklin County, PA presented the Abba G. Lichtenstein Medal.

See Page 15 of this Guide for a full description of the IBC Award Medals.

Bayonne Bridge Navigational Clearance Project
Bayonne, New Jersey and Staten Island, New York

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## INNOVATION

*Time: Friday, June 10; 8:00 AM–12:00 Noon*

*Room: Annapolis 1,2,3 - sponsored by PARSONS*

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

**8:00 AM**

**IBC 16-70: Unique Pi Girder Design offers Functional Solution for Multimodal Bridge Structure**

*Rebekah Gaudreau and Keith Donington, WSP | Parsons Brinckerhoff, Manchester, NH*

Bridge 1 over the Piscataqua River provides vehicular, rail, and pedestrian access to the Portsmouth Naval Shipyard. The original 300 feet long, 4-span bridge consisted of steel through girders and cantilevered sidewalks. Innovative steel plate girders shaped like the Greek letter Pi were used to address the heavy rail loading and structural depth limitations. This unique design improved the functionality of the structure by moving the entire support system below deck, creating an open concept solution.

**8:30 AM**

**IBC 16-71 (New): A signature Bridge on the Fast Track**

*Christopher Vanek, WSP | Parsons Brinckerhoff, Seattle, WA; Adrian Moon and Matthew Durshimer, WSP | Parsons Brinckerhoff, Tampa, FL*

Signature bridges are inherently complex and unique to their specific application and require detailed consideration into construction techniques. The inherent high cost of the non-traditional designs tends to significantly increase the cost of the project, sometimes rendering it unfeasible. During the development of a Signature Bridge project for the Veterans Memorial Bridge in Volusia County, Fl. the application of Accelerated Bridge Construction technologies were seen as essential to delivering the project. The proposed bridge is composed of a pure concrete open spandrel arch bridge with a main span through-deck arch over the Halifax river. This paper will describe the engineering design process beginning with conceptualization that satisfies the owner's specific objectives and ending with the structural elements and erection techniques that minimizes cost and construction duration.

**9:00 AM**

**IBC 16-72 (New): Extradosed Prestressed Bridge Proportioning and Design Considerations**

*Steven Stroh, AECOM, Tampa, FL*

An extradosed prestressed bridge is a girder bridge that is externally prestressed, using stay cables over a portion of the span. Propositioning guidelines are presented for efficient span layouts, deck depth, tower height, efficient span ranges, and stay layouts. Strength and fatigue design guidelines for the stay cables specific to the extradosed bridge type are presented. The results of these guidelines are demonstrated with respect to the design for the Pearl Harbor Memorial Bridge.

**9:30 AM**

**IBC 16-73: Advances in FRP Composites in Transportation Infrastructure**

*Jerome O'Connor, P.E., Institute of Bridge Engineering, Buffalo, NY; Wayne Frankhauser, Jr., P.E., Maine DOT, Augusta, ME*

A scan team consisting of seven state DOT engineers scanned the U.S. in 2015 to identify the most prevalent uses of fiber reinforced polymer (FRP) composites in highway infrastructure. The presentation will summarize the applications identified as being mature and ready for widespread use. In mature applications, the FRP's behavior is well understood and documented as a result of research and development; mathematical models have been validated by laboratory testing under controlled conditions; design and construction guidelines have been vetted by experts and users in the field; trial applications have been undertaken and evaluated; and the performance is being monitored under service conditions. Less common uses will also be discussed, citing knowledge gaps and other factors that may be hindering use by the civil engineers.

**10:00 AM COFFEE BREAK**

**10:30 AM**

**IBC 16-74: Artful Bridges: VDOT/Arlington County Artwork Collaboration for the Route 50/Courthouse Road/10th Street Interchange, Arlington, Virginia**

*Angela Adams, Arlington Public Art, Arlington, VA; Calvin Britt, P.E., VDOT, Fairfax, VA; Michael Jelen, P.E. and Elliott Mandel, P.E., AECOM, Arlington, VA; Vicki Scuri, Vicki Scuri SiteWorks, Lake Forest Park, WA*

A unique collaboration between agencies and artist Vicki Scuri led to the transformation of a bridge project into the first large-scale, integrated public art project attempted by VDOT. The interchange features bridge and wall structures that incorporate striking artwork. The approach promotes community identity, environmental awareness and aesthetics, transforming infrastructure into creative places. The project demonstrates that bridges can serve as a forum for the integration of public art, transforming their function into a multi-faceted transportation project.

**11:00 AM**

**IBC 16-75: Utilizing Unmanned Aerial Systems (UAS) for Bridge Inspections**

*Jennifer Zink, Minnesota DOT, Oakdale, MN; Barritt Lovelace, Collins Engineers, St. Paul, MN; Tara Kalar, Minnesota DOT, St. Paul, MN*

The Minnesota Department of Transportation and Collins Engineers have been researching the use of Unmanned Aerial Systems (UAS) as a tool for bridge inspections. Phase I of an implementation study has been completed and a Phase II study is underway. These research studies look at current FAA regulations and are evaluating the advantages and challenges of using UAS for bridge inspections with promising results.

**11:30 AM**

**IBC 16-76: GRS-IBS Design and Construction: 27th Street Bridge over Broad Branch Stream, Washington, DC**

*Zahra Dorriz, P.E., District DOT, Washington, DC; Michael Jelen, P.E., and Elliott Mandel, P.E., AECOM, Arlington, VA*

Replacement of the 27th Street Bridge is the District of Columbia's first use of the Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS). This simplified construction approach resulted in higher durability, a shortened schedule, reduced costs and an ability to be built by general labor trades. The design used recommendations from the FHWA/Turner-Fairbanks Highway Research Center. This project provides further understanding of GRS-IBS leading to wider implementation of the technique in Washington, DC and across the country.

## DESIGN 3

*Time: Friday, June 10; 8:00 AM–12:00 Noon*

*Room: Woodrow Wilson B,C,D - sponsored by Whitman, Requardt & Associates, LLP*

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

**8:00 AM**

**IBC 16-77: University Drive over I-75: Design-Build Spawns Innovation**

*Mario Quagliata and Matthew Wagner, Bergmann Associates, Lansing, MI*

The University Drive over I-75 design-build bridge replacement project in Auburn Hills, Michigan included construction of the first Diverging Diamond Interchange in the state of Michigan. Innovations and unique cost saving measures that were developed in collaboration between the designers and the contractor to reduce construction costs will be discussed. These included significantly reducing the bridge skew and realigning the interchange to avoid deposits of soft organic soils near the existing abutments.

**8:30 AM**

**IBC 16-78: Ultimate and Fatigue Responses of UHPFRC-Filled, Transverse Angle-Joint in Full-Depth, GFRP-Reinforced, Precast Bridge Deck Panels**

*Mahmoud Sayed Ahmed, Ryerson University, Toronto, ON, Canada; Khaled Sennah, Ryerson University, Toronto, ON, Canada*

The laterally restrained precast full depth deck panel (FDDP) was constructed with transvers joint resting over steel twin girders. The 200-mm thick precast FDDP is made of normal strength concrete and reinforced with GFRP-bars. The transverse angle-joint has 175-mm of projected GFRP bars, female shear key, bottom tongue, and joint-filled with Ultra High Performance Reinforced Concrete UHPFRC). Ultimate monotonic load, constant fatigue and variable fatigue loading were performed under truck wheel footprint showed good results.

**9:00 AM**

**IBC 16-79 (New): Design & Construction Guidelines for Skewed/Curved Steel I-girder Bridges**

*Vincent Liang, Brian McFadden, and Scott Johnsen, GPI (Greenman-Pedersen, Inc.), Lebanon, NJ*

This paper is based on AASHTO design specifications; available research papers/reports; and GPI's past project experience, and provides guidance on how to properly address out-of-plumb issues for skewed and curved steel I-girder bridges. Aspects covered include: theory and analysis, out-of-plumb tolerances, techniques to minimize girder differential deflection, cross-frames detailing methods, design considerations for cross-frames, understanding thermal behavior and determining bearing fixity layout and guided bearing orientation, design consideration for deck joints, and connection detailing.

**9:30 AM**

**IBC 16-80: Innovative Use of Precast Concrete Girder in Urban Grade Crossing**

*Yuling Teo, City of Seattle DOT, Seattle, WA; Hong Guan and Mark Johnson, CH2M, Bellevue, WA*

The highly unusual Y-shaped geometry of the East Marginal Way Grade Separation and tight vertical clearance over railroad tracks called for an innovative solution that enables accelerated bridge construction, minimum construction impacts to railroad operations, and an economical and low lifecycle cost bridge. The solution was a creative use of precast concrete girders by pre-cambering method. The project has to-date one of the largest pre-cambered geometry of precast/prestressed I-girders in the State of Washington.

**10:00 AM COFFEE BREAK**

**10:30 AM**

**IBC 16-81: I-49 Lafayette Connector**

*Kenneth Butler, AECOM, Glen Allen, VA; Zhengzheng "Jenny" Fu, LADOTD, Baton Rouge, LA*

The I-49 Lafayette Connector project consists of a significant amount of structure and bridge including: 3.5-miles of elevated mainline viaduct; a signature arch or cable stayed bridge; 20 ramp connectors; 3-level interchange; 3 railroad bridges; and a bridge over the Vermillion River. The total bridge deck area is approximately 2,900,000 square feet. A major element of the project is evaluating life cycle costs for the mainline viaduct including steel box girders; prestressed concrete u-girders and precast segmental box girders. Additionally, context sensitive solutions are being developed based on community input. The focal point of the project will be a signature arch or cable stayed bridge. The presentation will focus on the early design development of the project and how the community is being engaged.

**11:00 AM**

**IBC 16-82: Finite Element Analysis of the Andy Warhol Self-Anchored Suspension Bridge**

*Aaron Colorito, P.E. and Richard Schoedel, P.E., Michael Baker International, Moon Township, PA*

The Andy Warhol Bridge is an eyebar-chain, self-anchored suspension bridge carrying Seventh Street over the Allegheny River in the city of Pittsburgh, PA. This bridge is one of the "Three Sisters" bridges constructed from 1924 to 1928 which comprise the only trio of identical, side-by-side bridges in the world and the first self-anchored bridges constructed in the United States. A three-dimensional finite-element analysis is carried out to identify rehabilitation needs of this unique structure.

**11:30 AM**

**IBC 16-83: Ship & Barge Collisions with Highway Bridges – Risk Analysis Refinements**

*Michael Knott, Moffatt & Nichol, Richmond, VA; Mikele Winters, Moffatt & Nichol, Raleigh, NC*

Recent decades have demonstrated the potential vulnerability of major highway bridges to catastrophic collapse due to extreme event loads. The paper will discuss ship and barge collision with bridges over navigable waterways using lessons learned from historical accidents; analysis procedures in the AASHTO Vessel Collision Design of Highway Bridges, 2nd Edition 2009 for both new and existing bridges; and application of AASHTO risk analysis procedures to complex navigation channel geometries near bridges, water elevations and scour for risk analysis, consideration of bow crushing in the development of bridge substructure and protection, and risk analysis protection factors.

## REHABILITATION 3

*Time: Friday, June 10; 8:00 AM–12:00 Noon*

*Room: Woodrow Wilson A -*
*sponsored by Computers & Structures, Inc.*

*Chair: M. Patrick Kane, P.E.,*
*A&A Consultants Inc., Pittsburgh, PA*

**8:00 AM**

**IBC 16-84: Bronx Whitestone Bridge: Approach Widening**

*Roger Haight, WSP | Parsons Brinckerhoff, New York, NY; Ronald Paproski, WSP | Parsons Brinckerhoff, Briarcliff Manor, NY; Christopher Saladino, MTA Bridges and Tunnels, Bronx, NY*

The TBTA widened both approaches on New York's Bronx Whitestone Bridge. The new approach structures provide six AASHTO standard traffic lanes, full-width standard shoulders and a median barrier, with expansion capacity for an additional lane in each direction for future demand. The widened structures comprise cast-in-place concrete piers; redundant, multi-span continuous roadway girders; and a composite cast-in-place concrete roadway. Ancillary features of the projects include a neighborhood park, a new maintenance shop, and noise walls.

**8:30 AM**

**IBC 16-85: Repair of Truck Impacted/Damaged Steel Beams, I-66 over Route 29, Fairfax County, Virginia**

*John Michels and Alireza Hedayati, WSP | Parsons Brinckerhoff, Herndon, VA; Edmund Okerchiri, VDOT, Fairfax, VA*

The presentation will discuss the evaluation process and repair details for steel beam truck impact/collision damage to the NBL I-66 Bridge over Route 29. The discussion will include selecting a repair type, identifying repair challenges and achieving the desired service life for the owner. Repair methods to be discussed include: strengthening of bent girder flanges, temporary support for partial beam replacement, beam strengthening, bolted cover plates, diaphragm replacement, and cover plate weld inspection.

**9:00 AM**

**IBC 16-86: Rehabilitation of the Passyunk Avenue Bascule Bridge**

*Colin Drager, P.E. and Leon Lung-Yang Lai, Ph.D., P.E., S.E., Specialty Engineering, Inc., Bristol, PA; Timothy Gresham, P.E., Gresham Consulting, LLC, Chalfont, PA; Gregory Off, P.E., AECOM, Conshohocken, PA*

The Passyunk Avenue Bridge is a double-leaf dual-structure bascule in the City of Philadelphia. Major rehabilitation of the bridge is underway. The key and unique design items include heat-straightening of the damaged fracture-critical girders, replacement/redesign of the non-functioning center locks, new FRP bike lane decks, installation of a debris shielding system under the open-grid deck, and installation of a new wireless controlling system to replace the existing under-channel electric cable system.

**9:30 AM**

**IBC 16-87: Iowa DOT Bridge Deck Expansion Joint Maintenance Program and Research Overview**

*James Nelson, Iowa DOT, Ames, IA; Charles Jahren, Iowa State University, Ames, IA*

In 2012, the Iowa DOT began an aggressive contract maintenance program to repair and replace bridge deck expansion joints. In order to more effectively implement the contract maintenance repair program, research was sponsored including rapid expansion joint replacement investigation, modified strip seal expansion joint termination detail investigation and an effort to standardize details for semi-integral abutments for bridge joint retrofits. This paper presents an overview of the contract maintenance program, and associated research results.

**10:00 AM COFFEE BREAK**

**10:30 AM**

**IBC 16-88: Interstate Delta Frames: Structural Steel Retrofit, & Restoration to Essentially Infinite Fatigue Life**

*Loai El-Gazairly, Whitman, Requardt and Associates, LLP, Richmond, VA; Rex Pearce and Park Thompson, VDOT, Staunton, VA; Jose Gomez, VDOT VTRC, Charlottesville, VA*

For the last 20 years the Delta Frames of the I-64 bridges over Maury River experienced fatigue cracking causing noticeable structural deterioration and continuous deficiency in the bridge inventory rating. Analytical investigation showed that the bridge could achieve infinite fatigue life by introducing two directional composite behavior with the deck. The deck is replaced using lightweight concrete and a sophisticated computer model was developed to monitor its construction sequence. An experimental program was also implemented.

**11:00 AM**

**IBC 16-89: Rehabilitation of Three Parallel Bridges Adjacent to the Lewiston Pump-Generating Plant**

*Mark Horschel, P.E., Bergmann Associates, Rochester, NY; John C. (Cort) Baker, P.E., Oakgrove Construction, Elma, NY*

This $41.3 million bridge rehabilitation project included the staged superstructure replacement of three adjacent 813 feet. Long bridges carrying I-190 NB & SB and the NY Route 265 Bridges over the New York Power Authority reservoir in Niagara County, NY. The project included removal of the existing 12 span post-tensioned concrete I-girder superstructure for each bridge and replacement with three sets of 4-span continuous galvanized steel multi-girder superstructures. Pre-engineered platforms were used for debris containment.

**11:30 AM**

**IBC 16-90: Developing a Corrosion Mitigation Strategy for Service Life Extension**

*Rex Gilley, WSP | Parsons Brinckerhoff, Virginia Beach, VA; Ali Akbar Sohanghpurwala, CONCORR, Inc., Sterling, VA; Christopher Eggleston, VDOT, Suffolk, VA*

Many states and federal entities are interested in extending the service life of aging infrastructure facilities. The Hampton Roads Bridge Tunnel approach trestles are exposed to an extreme marine environment and are exhibiting corrosion induced damage. Condition evaluations utilizing the latest testing protocols, service life modeling, and life cycle cost analyses produced optimal solutions for rehabilitation. The presentation will discuss the techniques used for evaluating and repairing existing structures, minimizing the need for costly replacement.

## ABC

*Time: Friday, June 10; 8:00 AM–12:00 Noon*

*Room: Baltimore 3,4,5 -*
*sponsored by HDR Engineering, Inc.*

*Chair: Stephen G. Shanley, P.E.,*
*Allegheny County DPW, Pittsburgh, PA*

**8:00 AM**

**IBC 16-91: 50 Day Complete Bridge Replacement**

*Adam Stockin, Keith Donington, and Karie-An James, WSP | Parsons Brinckerhoff, Manchester, NH*

This bridge project used accelerated construction techniques to construct a 120 feet precast prestressed butted box beam span to provide an economical and efficient solution within 50 days. This span alleviated the need for a pier in the river, thereby reducing construction time and future maintenance. Several unique details were developed to accommodate this 45 degree skewed bridge and lessons were learned that will benefit engineers in the increasing demand to build bridges within short closures.

**8:30 AM**

**IBC 16-92 (New): Alternative Analysis and Innovative Design Solutions for Monroe Street Bridge N.E. over Railroad, Washington D.C.**

*Amir Ahmad Hedayati, PARSONS, Washington, DC*

This presentation includes the alternative analysis and innovative design solutions to resolve the construction complications and alleviate the existing site constraints for the Monroe Street Bridge NE in Washington, DC over Brookland-CUA Metro Station, Washington Metropolitan Area Transit Authority (WMATA) tracks and tracks operated by CSX Transportation. Final recommendation is provided based on the life-cycle and cost-benefit analyses of the following alternatives: i) complete rehabilitation, ii) superstructure replacement and substructure retrofit iii) new single-span structure.

**9:00 AM**

**IBC 16-93: Substructure Considerations for Successful Accelerated Bridge Replacement Projects**

*David Whitmore, Vector Corrosion Technologies, Winnepeg, MB, Canada; Brian Pailes, Vector Corrosion Services, Wesley Chapel, FL; Tore Arnesen, Vector Corrosion Technologies, Inc., Boomfield, CO; Rachel Stiffler, McMurray, PA*

This paper discusses substructure considerations for successful accelerated bridge replacement (ABR)projects and will present several ABR case studies completed by DOT's in the USA and Canada. The presentation will include pre replacement condition, rehabilitation and construction details of each project. In order to realize the full benefit of ABR, serious consideration must be given to the existing substructure. Items to be considered are its structural capacity, its existing condition, and the options available to repair and/or extend its service life. The full benefit of ABR can be achieved if the exist-

ing substructure can be rehabilitated or otherwise modified to provide a service life which meets or exceeds a service life of the new bridge deck or substructure.

**9:30 AM**

**IBC 16-94: Low-Cost Bridge Solutions for Local Owners - GRS-IBS Abutment Bridges**

*Bryan Dietrich, P.E., RETTEW, Pittsburgh, PA; Dave Hoglund, P.E., RETTEW, Lancaster, PA*

GRS-IBS abutment bridges are a cost-effective solution for local governments since they can be constructed by public works staff with assistance from the design engineer. This paper will discuss the various challenges encountered and solutions developed for three distinctive GRS-IBS bridge abutment projects. Notable challenges include: design/construction windows less than 6-months, skewed abutments, GRS construction inside existing abutments and wings, in-field adjustments to correct as-built errors, first-time construction by maintenance forces and limited access construction.

**10:00 AM COFFEE BREAK**

**10:30 AM**

**IBC 16-95: Evaluation of Modular Press-Brake-Formed Steel Tub Girders for Short Span Bridge Applications**

*Gregory Michaelson, Marshall University, Huntington, WV; Karl Barth, West Virginia University, Morgantown, WV; Michael Barker, University of Wyoming, Laramie, WY; Daniel Snyder, Steel Market Development Institute, Washington, DC*

This paper and presentation is focused on the development of modular shallow trapezoidal boxes fabricated from cold-bent structural steel plate using standard mill plate widths and thicknesses. This concept was developed by a technical working group within the Steel Market Development Institute's Short Span Steel Bridge Alliance (SSSBA), led by the current authors. This paper will provide an overview of experimental testing and parametric studies focused on assessing the system's behavior and performance.

**11:00 AM**

**IBC 16-96: Superstructure Replacement of U.S. Route 9 Southbound over Green Street Utilizing Accelerated Bridge Construction**

*Brian Atkinson, Laura Coley, and David Hicks, Dewberry, Bloomfield, NJ*

Dewberry recently completed a $6,000,000 NJDOT project utilizing ABC techniques in a heavily congested section of U.S. Route 9 in Woodbridge, NJ. Initially identified for deck slab replacement, it became evident that conventional staged construction would cause major traffic disruptions. To shorten the construction duration, a superstructure replacement was recommended. Modular construction, coupled with a viable detour route and a complete weekend closure of Route 9 southbound, accelerated the schedule to achieve the project objectives.

**11:30 AM**

**IBC 16-97: Large Scale, High Production Preassembly of Girder Units for the New Tappan Zee Bridge**

*Tom Zieman, Zieman Engineering, LLC, Stamford, CT; Neil Napolitano, Tappan Zee Constructors, Tarrytown, NY*

The new Tappan Zee Bridge consists of over two miles of plate girder approaches that are being built off-site in 135 preassemblies, which are up to 420 feet long and weigh up to 2200 kips. This presentation will focus on the yard where the units are being assembled and loaded on to barges at a rate of over 3,000,000 lbs. of steel per week. Various custom equipment which constitutes an assembly line will be described.

## W-08: CREATING A WORLD CLASS SAFETY CULTURE

*Time: Friday, June 10; 1:00–2:30 PM*

*Room: Annapolis 1*

*Presented By: Atema*

Want to lower your costs, increase your profits and improve your productivity? We'll show you how a culture in which safety is the shared value of every employee accomplishes that – and how you can implement one in your organization. You'll learn how to lead and implement a safety culture, involve employees in recognizing and identifying hazards, use measurement tools to quantify the effectiveness of your safety culture, and apply continuous improvement methods to evaluate and improve your safety efforts. You'll be able to watch your business thrive by incorporating safety into the foundation of every strategy, decision, operation and action.

*Speaker: Tim Neubauer, Atema, Chicago, IL*

## W-09: DESIGN & CONSTRUCTION OF BRIDGE COLUMNS INCORPORATING MECHANICAL BAR SPLICES IN PLASTIC HINGE REGIONS

*Time: Friday, June 10; 1:00–2:00 PM*

*Room: Annapolis 2*

*Presented By: South Dakota State University*

The main objectives of this workshop are to (1) introduce suitable couplers for bridges, (2) discuss the performance of couplers, (3) discuss the seismic performance of columns incorporating mechanical bar splices in the plastic hinge region, (4) present constructability and speed of construction for mechanically spliced columns, (5) introduce a generic material model for couplers, (6) present simple design equations including a modified plastic hinge length, and (7) present design examples.

*Speaker: Mostafa Tazarv, Ph.D., South Dakota State University, Brookings, SD*

## W-10: THE REHABILITATION OF THE WICHITA US-54 CBD VIADUCT

*Time: Friday, June 10; 1:00–2:00 PM*

*Room: Annapolis 3*

*Presented By: WSP | Parsons Brinckerhoff*

The objective of the workshop is to demonstrate the innovative nondestructive testing and modern techniques of preserving a $70 million structure at a critical juncture of the structural life of the bridge. Highly developed post-tension inspection and repair technologies were employed to meet the unique and difficult repairs of a highly sensitive PT system. Bridge preservation was accomplished by means of in-depth partnering with Academia through advanced research and collaborating with construction industry national experts in PT systems.

*Speakers: Abdul Hamada, P.E. and Nichole Witushynsky, P.E., WSP | Parsons Brinckerhoff, Wichita, KS*

## W-11: BRIDGE INSPECTION AND EVALUATION TECHNOLOGIES AND APPLICATIONS

*Time: Friday, June 10; 1:00–3:00 PM*

*Room: Annapolis 4*

*Presented By: M. Myint Lwin, P.E., S.E., QC/QA Consultant*

The main objective of this workshop is to present and discuss recent developments in techniques, equipment, and applications in bridge inspection and evaluation, including underwater bridge inspection. Applications in meeting the MAP-21 requirements for collecting and reporting bridge element inspection data will be discussed. The attendees will gain a good understanding of the inspection equipment, methods and techniques that can provide quality information on the conditions of the bridge elements, including the portions under water. Quality information is essential for making sound and cost-effective decisions on safety, repair, rehabilitation and replacement.

*Speakers: M. Myint Lwin, P.E., S.E., QC/QA Consultant; Derek Constable, FHWA; Claude Napier, VADOT; Edward Zhou, AECOM; John Loftus, Industry*

## W-12: PRACTICAL APPLICATION OF DRONES IN THE BRIDGE INDUSTRY

*Time: Friday, June 10; 1:00–3:00 PM*

*Room: Prince George's Exhibit Hall E*

*Presented By: UAV - US AERIAL VIDEO*

Based in Pittsburgh, PA, US Aerial Video (UAV) specializes in aerial data collection, HD imagery & video, photogrammetry and magnetic field detection. As one of the first drone companies in the United States and commercially approved by the FAA, UAV can provide detailed visual inspections, mapping, modeling, marketing & promotional material and a range of other services. UAV's custom built aerial platforms are specifically designed for each individual mission. We pride ourselves in dedication, ingenuity and safety. During this workshop you'll see a few of the drones in person with a short video to highlight bridge inspection using drones. A flight demonstration is tentatively scheduled.

*Speakers: Luke Wylie, UAV - US Aerial Video, Pittsburgh, PA; Shane Boone, SDB Technologies Inc., Wilson, NC; Adam Eppinger, US Aerial Video, Renfrew, PA*

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# Exhibit Hall

PRINCE GEORGE HALL E, LOWER LEVEL

The IBC Exhibit Hall is the place to be for attendees and exhibitors! The IBC Exhibit Hall is located in Prince George Hall E of the Gaylord National Resort, on the lower level of the hotel. “Thanks” to all of our returning and new Exhibitors!

In addition to the many vendor exhibits, the IBC Exhibit Hall hosts the reception during the conference on Tuesday, Wednesday, and Thursday, and luncheons on Wednesday and Thursday. All registered attendees are welcome to enjoy these events during the IBC. Please stop by and visit with our many exhibitors while enjoying your lunch and receptions.

The IBC Exhibit Hall is open:

- Tuesday: 6:00–8:00 PM, reception with appetizers and drinks!
- Wednesday: 12:00 Noon–2:00 PM, featuring lunch starting at 12:00 Noon; and 5:00–7:00 PM reception with appetizers and drinks!
- Thursday: 11:30 AM–1:30 PM, featuring lunch starting at 11:30 AM; and 5:00–7:00 PM reception with appetizers and drinks!

Below, 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 23, 2016

Baltimore 1-2 – VDOT 2016 Featured Agency
100 WireCo World Group
101/103/200/202 CBSI (Clodfelter Bridge & Structures)
102 Euclid Chemical Company
104 Bridge Grid Flooring Manufacturers (BGFMA)
106 McClain & Co., Inc.
107 NANOKOTE North America, Inc.
109 Klaas Coatings (North America)
110 mageba USA LLC
111/113 Tideland Signal Corporation
112 Crafco Inc.
114 Anderson Hydra Platforms, Inc.
115 Eriksson Technologies, Inc.
116 Pultrall Inc.
118 Buzzi Unicem USA
119 A.H. Beck Foundation Company
121 Foundation Technologies Inc.
122 McCrossin Foundations
123 Berkel & Company Contractors
124 Tensa America, LLC / DEAL
125 Deep Foundations Institute (DFI)
126 Atlas Tube
127 Loadtest
128/130 Pieresearch
131 Williams Form Engineering Corp.
133 Pile Driving Contractors Association (PDCA)
134 Cianbro
135 Roctest
136 American PileDriving Equipment
137 Specialty Diving of Louisiana, Inc.
138 Moffatt & Nichol
139 AI Engineers, Inc.
140 Portadam, Inc.
142 Aur, Inc.
143 Whitman, Requardt and Associates, LLP
145 Perryman Company
146/148 Cleveland Electric Labs
147 Roads & Bridges
149 E-Chem, LLC
150 Stronghold Coating Systems, Ltd.
151 AP/M Permaform
152 SOFiSTiK AG
201/203 Michael Baker International
206 D.S. Brown
207 MDX Software
208 Pentair
209 National Steel Bridge Alliance
210 KCI Technologies, Inc.
211 Certainty 3D
212 FRP Bridge Drain Pipe
213 Teledyne Blue View

# Exhibit Hall

PRINCE GEORGE HALL E, LOWER LEVEL

214 StructurAlert™ by MISTRAS
215 Lusas
218 Moog USA, Inc.
219 Sofis Company Inc.
220 HRV Conformance Verification Associates, Inc.
221 Marine Solutions, Inc.
222 Bridge Preservation LLC
223 Computers & Structures, Inc.
224 Wirerope Works Inc.
225 STV
226 Evonik Corp.
227 Dimetix USA
230 Emseal Joint Systems
231 Viathor, Inc.
232 Flagger Force Traffic Control Services
233 Salit Specialty Rebar
234 Armtec LP
235 Kamatics RWG
237 P. Joseph Lehman, Inc., Consulting Engineers
238 Mabey Inc.
239 Carl Stahl DecorCable
243 V&S Galvanizing
244 New Millennium Building Systems
245 Contractors Materials Company
246 Bridge design & engineering
247 Headed Reinforcement Corporation (HRC)
248 Volkert, Inc.
249 Wasser Coatings
250 International Road Dynamics Inc.
251 Hydro-Technologies / Modified Concrete Suppliers
252 Pharos Marine Automatic Power
300/302 Acrow Corporation of America
301 R.J. Watson, Inc.
303 Hilman Rollers
307 Stalite
308 All Access Rigging Co.
309 Scougal Rubber Corp.
310 St. Louis Screw & Bolt
311 WSP | Parsons Brinckerhoff
312 American Segmental Bridge Institute (ASBI)
313 Big R Bridge
314 AZZ Galvanizing Services
315 Larsa, Inc.
319 L.B. Foster
320 The Neel Company
321 Wire Rope Industries
322 Resensys LLC
323 CONCORR, Inc.
324 Intelligent Infrastructure Systems
325/327/424/426 Safway Services
326 Pennoni
331 Central Atlantic Bridge Associates
332/334 BVA Hydraulics
333 LeJeune Bolt Company
335 BERD, S.A.
336 A. Morton Thomas and Associates
337 Whitlock Brothers Inc.
338 I&I Sling
339 BDB Bridges/Precasteel
343 Bentley Systems, Inc.
345 GHD Limited
346 Bureau Veritas North America, Inc.
347 ChemCo Systems
348 HAKS Engineers, Inc.
349 District DOT - 2017 IBC F.A.
350 Jenik
351 MMFX Steel Corporation
352 Coastal Precast Systems
400 Harcon Corp.
401 Sika Corporation
402 FIGG
403/405 American Composites Manufacturers Association (ACMA)
406 Reinforced Earth Company, The
407 CTS Cement Manufacturing Corporation
408 Advitam Inc.
409 TRC Engineers, Inc.
410 Freyssinet, Inc.
412 Vector Corrosion Technologies
414 Greenman-Pedersen, Inc.
418 AECOM
420 Contech Engineered Solutions
422 Nickel Institute
432 Terex BidWell
434 Pickering, Corts & Summerson
436 Redaelli Engineering Division
437 T.Y. Lin international
438 Phoenix National Laboratories
439 Short Span Steel Bridge Alliance
441 Watson Bowman Acme
443 DBi Services
444 RK&K
446/448/450 Spider
452 Danbro Distributors

# Exhibitors

ALPHABETICAL LISTING

## A. Morton Thomas and Associates, Inc.

Booth #: 336
Contact: Khoss Babaei
Phone: 301-881-2545
Fax: 301-881-0814
E-mail: kbabaei@amtengineering.com
Website: www.amtengineering.com
AMT provides multidisciplinary services including engineering, environmental, landscape architecture, surveying and construction management and inspection in the eastern United States for a variety of public and private clients. More than 450 strong, AMT maintains our reputation by teaming with our employees, clients and community to provide high-quality, sustainable projects. We utilize the best engineering practices, scientific principles and management solutions to deliver high-quality, ecologically conscious and cost effective projects on time and within budget.

## A.H. Beck Foundation Company, Inc.

Booth #: 119
Contact: Scott Carroll
Phone: 813-247-2211
Fax: 813-247-2212
E-mail: scott.carroll@ahbeck.com
Website: www.ahbeck.com
A.H. Beck Foundation Co., Inc. is a specialty deep foundation, ground improvement and earth retention contractor that has been in business since 1932. The company's heritage includes the pioneering effort of helping start the drilled shaft foundation industry in the United States.

In the decades that followed, A.H. Beck has continued to remain at the forefront of the deep foundation and ground improvement industry, and is regarded as one of the premier foundation contractors in the United States. With accomplishments that include mechanically installing the first drilled shaft foundations in the United States to thousands of successful deep foundation and ground improvement projects, including many large bridges and bridge repair projects in the United States.

## Acrow Corporation of America

Booth #: 300/302
Contact: Eugene Sobecki
Phone: 973-244-0080
Fax: 973-244-0085
E-mail: esobecki@acrow.com
Website: www.acrow.com
Acrow Corporation of America is a full-service design and engineering firm, Acrow Bridge specializes in prefabricated modular steel bridging solutions for permanent, temporary and emergency use. For more than half a century, Acrow has supplied tens of thousands of bridges to urban and rural locations all over the world to help customers build strong and sustainable transportation infrastructure

# Exhibitors

ALPHABETICAL LISTING

## Advitam Inc.

Booth #: 408
Contact: Stephen Schorn
Phone: 703-674-0813
Fax: 703-342-0426
E-mail: stephen.schorn@advitam-usa.com
Website: www.advitam-group.com
Advitam provides a distinct integrated solution that unifies visual inspection and monitoring data to optimize infrastructure management and decision processes. ScanPrint® is our software that optimizes bridge inspections and management of any infrastructure. EverSense® systems are turnkey instrumentation deliveries used for monitoring anything from a single bridge to large infrastructure networks. EverScan® is a unique portfolio of nondestructive measurement methods focusing on cable & post tensioned structures.

## AECOM

Booth #: 418
Contact: Mary Ellen Grainger
Phone: 804-290-7920
Fax: 804-515-8308
E-mail: maryellen.grainger@aecom.com
Website: www.aecom.com
AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A Fortune 500 firm, AECOM had revenue of approximately $18 billion during fiscal year 2015. See how we deliver what others can only imagine at aecom.com and @AECOM.

## AI Engineers, Inc.

Booth #: 139
Contact: Abul Islam, P.E., FASCE
Phone: 860-635-7740
Fax: 860-635-7312
E-mail: aislam@aiengineers.com
Website: www.aiengineers.com
AI Engineers, Inc. is an ENR Top 500 Design firm with principal expertise in bridge design, inspection and load rating. As a multidisciplinary firm we also provide construction engineering and inspection, civil engineering, building systems engineering and Design-Build services to clients throughout the Northeast and Mid-Atlantic States. Over the last 25 years, we have steadily grown to a staff size of approximately 170 with headquarters in Middletown, CT and regional offices in VA, NY, MA and RI.

# Exhibitors

ALPHABETICAL LISTING

## All Access Rigging Co.

Booth #: 308
Contact: Maria Carpio
Phone: 866-643-8303
Fax: 866-491-2140
E-mail: maria@allaccessrigging.com
Website: www.allaccessrigging.com
All Access Rigging Company - We are Certified Contractors offering rental and sales of the latest Under Bridge Inspection Units , Work Platforms, & Comprehensive Traffic Control Services that strictly follow both federal and state guidelines as defined within the MUTCD . We specialize in engineered cable rigging & bridge washing services. We have provided support services to some of the most challenging bridges. We have 2 strategic locations, in Aliquippa, PA and Waterbury, CT.

## American Composites Manufacturers Association (ACMA)

Booth #: 403/405
Contact: John P. Busel
Phone: 914-961-8007
Fax: 914-961-8007
E-mail: jbusel@acmanet.org
Website: www.compositesinfrastructure.org
ACMA is the world's largest composites trade association. The Transportation Structures Council and FRP Rebar Manufacturers Council serve to inform and educate engineers on FRP composites used in infrastructure applications. Council members represent material suppliers, 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 PileDriving Equipment

Booth #: 136
Contact: Jimmy Deemer
Phone: 866-399-7500
Fax: 757-518-9741
E-mail: jimmyd@apevibro.com
Website: www.apevibro.com
American Piledriving Equipment, and its wholly owned subsidiary J&M Foundation Equipment, manufacture and sell deep foundation construction equipment direct to the contractor. APE is one of the largest providers of deep foundation installation equipment in the world. We manufacture Vibratory hammers, diesel and hydraulic impact hammers, rotary drills & augers, wick drain installation equipment, drill rigs, pile rigs and leader systems. A recent introduction of APE's HD drilling equipment makes possible the fast installation of high strength piles in all ground conditions. APE services its equipment throughout the world, counting service managers and offices in Asia, Europe, South America, The Caribbean, Canada, Mexico and the US. APE equipment drives the largest piles in the world.

## American Segmental Bridge Institute (ASBI)

Booth #: 312
Contact: William R. Cox
Phone: 512-523-8214
Fax: 512-523-8213
E-mail: wrcox@asbi-assoc.org
Website: www.asbi-assoc.org
The American Segmental Bridge Institute (ASBI) was incorporated in 1989 as a nonprofit organization to provide a forum where owners, designers, constructors, and suppliers can meet to further refine current design, construction and construction management procedures, and evolve new techniques that will advance the quality and use of concrete segmental bridges. ASBI is a unique organization in that all components of the bridge construction industry are included as members.

## Anderson Hydra Platforms, Inc.

Booth #: 114
Contact: Cyndi Mitchell
Phone: 803-366-8195
Fax: 803-366-0603
E-mail: cyndi@inspectabridge.com
Website: www.inspectabridge.com
Manufacturers of Under Bridge Inspection Work Platform Trailers and Trucks

## AP/M Permaform

Booth #: 151
Contact: Keith Walker
Phone: 800-662-6465
Fax: 515-276-1274
E-mail: info@permaform.net
Website: www.centripipe.com
AP/M Permaform's CentriPipe® is the engineered centrifugally cast concrete pipe solution for cost-effective trenchless rehabilitation of deteriorated round, arched and elliptical CMP, brick, and RCP storm and sanitary sewer pipes. Our trained, experienced applicators use the best equipment, including our patented bi-directional spin-caster, and specially designed high-strength materials to ensure the longest lasting, highest quality rehabilitation results. CentriPipe is approved, installed, and trusted by DOT's and municipalities for proven, cost-effective, trenchless, structural spin-cast culvert lining.

## Armtec LP

Booth #: 234
Contact: Eric Humphries
Phone: 860-873-1737
Fax: 860-760-6658
E-mail: eric.humphries@armtec.com
Website: www.armtec.com/soundwalls
Armtec LP manufactures and designs transparent and absorptive noise barrier systems. Acrylite Soundstop is a transparent acrylic, lightweight

# Exhibitors

ALPHABETICAL LISTING

## Atlas Tube

Booth #: 126
Contact: Chris Ragan
Phone: 816-863-3180
Fax: 816-734-1297
E-mail: chris.ragan@atlastube.com
Website: www.atlaspipepiles.com/
Atlas Tube's Piling Division operates out of Chicago, IL USA and Harrow, ON Canada. We deliver new ERW steel pipe piling for deep foundation projects across North America and overseas to construction giants, general contractors, service centers, pile drivers, and even our own competitors. Our steel pipe piles are spec for use both on friction and load bearing geotechnical applications. Our own staff metallurgist is available to address your specific issues and find economical solutions

## Aur, Inc.

Booth #: 142
Contact: Roger L. Simpson
Phone: 540-961-3005
Fax: 866-223-8673
E-mail: rogersimpson@aurinc.com
Website: www.noscour.com
Local scour of bridge piers and abutments is a common cause of failure of highway bridges. 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 #: 314
Contact: Mike Stroia
Phone: 330-327-2080
Fax: 330-445-2172
E-mail: mikestroia@azzgalv.com
Website: www.azzgalv.com
For over 40 years, AZZ has been central to protecting critical infrastructure around the globe. As North America's largest galvanizer, the steel industry has looked to AZZ as a leading provider of corrosion protection.
AZZ Galvanizing protects more than steel. New AZZ GalvaBar is the most durable and economical corrosion resistant rebar available to prevent concrete failure.

# Exhibitors

ALPHABETICAL LISTING

## BDB Bridges/Precasteel

Booth #: 339
Contact: Jim Benzing or Gary Dinmore
Phone: 470-Benzing
E-mail: Bflok@structuralservices.com
Website: www.structuralservices.com
BDB Bridge is a rental company that specializes in temporary bridge supports & structures. BDB strives to put themselves ahead of others thru innovations in jacking equipment; such as our HYDRA-TOWER™ which makes splicing girders and bearing replacements easier than ever. BDB also shares in the innovative product that's revolutionizing the way bridge overhangs are constructed, namely PRECASTEEL® SIP Fascia Forms.

## Bentley Systems, Inc.

Booth #: 343
Contact: Barbara Day
Phone: 800-Bentley
E-mail: barbara.day@bentley.com
Website: www.bentley.com
At its core, Bentley Systems is a software development company that supports the professional needs of those responsible for creating and managing the world's infrastructure, including roadways, bridges, airports, skyscrapers, industrial and power plants as well as utility networks. Bentley delivers solutions for the entire lifecycle of the infrastructure asset, tailored to the needs of the various professions – the engineers, architects, planners, contractors, fabricators, IT managers, operators and maintenance engineers – who will work on and work with that asset over its lifetime. Comprised of integrated applications and services built on an open platform, each solution is designed to ensure that information flows between workflow processes and project team members to enable interoperability and collaboration.

## BERD, S.A.

Booth #: 335
Contact: Brigitte Rouquet
Phone: +351229399520
Fax: +351925770882
E-mail: brigitte.rouquet@berd.eu
Website: www.berd.eu
BERD researches, develops and applies state-of-the-art solutions to bridge construction methods and explores the potential of OPS (Organic Prestressing System) with a professional multi-disciplinary research & development team. BERD's Movable Scaffolding Systems and Launching Gantries with OPS are used in the construction of concrete bridges with deck lengths from 20 to 120m. Due to its accumulated experience BERD offers the possibility of building bridges with enhanced construction quality, significant cost savings and fast construction cycles.

# Exhibitors

ALPHABETICAL LISTING

### Berkel & Company Contractors, Inc.

Booth #: 123
Contact: Clay Davis
Phone: 770-941-5100
E-mail: cdavis@berkelapg.com
Website: www.berkelandcompany.com
Berkel is a national specialty geotechnical contractor with offices across the US offering design-build services for Auger Pressure Grouted (APG) & Displacement (APGD) piles, Ground Improvement, Sheeting/Shoring, Underpinning, Secant Walls, Tiebacks, Pressure Grouting, Driven Piles & Drilled Shafts.

### Big R Bridge

Booth #: 313
Contact: Rick Sauer
Phone: 770-315-3248
E-mail: rsauer@bigrbridge.com
Website: www.bigrbridge.com
Big R Bridge, a member of the AIL Group of Companies, is a world leader in developing innovative engineered solutions in Prefabricated Bridges, Structural Plate, MSE Wall Systems, Sound Wall Systems, and Corrugated Pipe for the transportation, public works, railway, mining, forestry and development sectors.

### Bridge design & engineering

Booth #: 246
Contact: Lisa Bentley
Phone: +44 207 973 4698
Fax: +44 207 973 6677
E-mail: l.bentley@hgluk.com
Website: www.bridgeweb.com
Bridge design & engineering magazine (Bd&e) is exclusively dedicated to the international bridge industry. This high quality, visually stunning quarterly publication offers subscribers details of latest innovations, technical features, interviews, and project reports. Topics regularly covered include structural engineering, architectural design, construction engineering, asset management, cable technology, software, formwork, coatings, seismic safety and new products/technologies across all bridge engineering sectors. If you finance, plan, design, build, maintain, operate or own a bridge, you need Bd&e.

### Bridge Grid Flooring Manufacturers (BGFMA)

Booth #: 104
Contact: Phil Gase
Phone: 877-257-5499
E-mail: bgfma@bgfma.org
Website: www.bgfma.org
BGFMA…this next generation Bridge Grid Flooring Manufacturers Association industry group is comprised of companies who fabricate steel grid deck systems for bridges and other companies with an interest in this market. Building on the 70-year service history of filled grid systems, this expanded 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.

### Bridge Preservation LLC

Booth #: 222
Contact: Joseph Bilotti
Phone: 203-322-5684
Fax: 913-951-0601
E-mail: jbilotti@bridgepreservation.com
Website: www.bridgepreservation.com
Specializing in the rail and highway markets, Bridge Preservation manufactures high performance spray applied waterproofing membrane systems designed to permanently protect rail and highway structures. These rapid setting high build elastomeric spray applied waterproofing systems are impervious to deicing chemicals, water, ballast, stray current and other factors that contribute to accelerated deterioration and wear of elevated structures.

### Bureau Veritas North America, Inc.

Booth #: 346
Contact: Richelle McGuire
Phone: 412-921-8833
Fax: 412-921-8833
E-mail: richelle.mcguire@us.bureauveritas.com
Website: www.us.bureauveritas.com
Founded in 1828, Bureau Veritas is a global leader in Testing, QA Inspection and Certification, delivering high quality services to help clients meet the growing challenges of quality, safety, environmental protection, and social responsibility. Bureau Veritas offers innovative solutions that go beyond simple compliance with regulations and standards, while reducing risk, improving performance and promoting sustainable development. Our technical services are administered by licensed Professional Engineers and our staff includes AWS CWI, NACE, ASNT, ACI and PCI certified inspectors. The value of our service is realized by our clients when, through our meticulous attention to detail, they are assured of receiving a finished product compliant to specified quality, thereby preventing costly construction delays and increasing the probability of sustained usable life.

# Exhibitors

ALPHABETICAL LISTING

## Buzzi Unicem USA

Booth #: 118
Contact: William Krupa
Phone: 610-882-5013
Fax: 610-882-0421
E-mail: william.krupa@buzziunicemusa.com
Website: www.buzziunicemusa.com
Buzzi Unicem USA headquartered in Bethlehem, PA, is a world-wide cement company, producing Portland, oil well, masonry, and CSA cements. For rapid repairs of pavement, runway, parking deck, bridge deck, and warehouse floors we offer products allowing reopening to traffic or travel in one hour or less.

## BVA Hydraulics

Booth #: 332/334
Contact: Patrick Deveney
Phone: 816-891-6390
Fax: 816-891-6599
E-mail: katie@sfacompanies.com
Website: www.bvahydraulics.com
BVA Industrial Hydraulics located in Kansas City, Missouri is one of the world's leading manufacturers of heavy duty hydraulic lifting equipment. BVA products have pressure ranges up to 10,000 PSI with steel and aluminum cylinder capacities of up to 1,500 Tons; manual, air, electric motor and gas/diesel engine pumps; hydraulic gear pullers, nut splitters, flange spreaders, air lifting bags, H-frame presses, bottle jacks, maintenance kits and hydraulic fittings, hoses and accessories to name a few.

## Carl Stahl DecorCable

Booth #: 239
Contact: Patrick Kelly
Phone: 312-474-1100
Fax: 312-474-1789
E-mail: sales@decorcable.com
Website: www.decorcable.com
Carl Stahl DecorCable offers a comprehensive range of cable, rod, and mesh systems for architectural, structural and design applications. Part of the global Carl Stahl Group, we are uniquely able to furnish the resources necessary for a successful project, no matter what its complexity or location. Specialized design services including tensile engineering, statics, and 3-D modeling are available. Our products include X-TEND® Flexible Stainless Cable Mesh and I-SYS® S.S. Cables, Rods & Hardware.

# Exhibitors

ALPHABETICAL LISTING

## CBSI (Clodfelter Bridge & Structures)

Booth #: 101/103/200/202
Contact: Jerry V. Clodfelter
Phone: 713-675-1180
Fax: 713-675-1140
E-mail: jvclodfelter@cbsii.com
Website: www.cbsiusa.com
CBSI is the definitive resource for engineering matters relating to cable-supported structures. In addition to consulting services, CBSI personnel design, contract for, storehouse, and supply both custom and standard bridge strands, ropes and related structural sockets, casting and forgings. We are driven by a determination to provide each client with the finest products and services available today. We know the excellence of our work is our most important asset.

## Central Atlantic Bridge Associates

Booth #: 331
Contact: Monica Schultes
Phone: 302-222-1385
E-mail: info@caba-bridges.org
Website: www.caba-bridges.org
Central Atlantic Bridge Associates (CABA) represents precast/prestressed concrete bridge manufacturers in NJ, PA, DE, MD, VA, WV, DC. CABA's mission is to advance the prestressed concrete industry and promote precast concrete as the material of choice for the region. It disseminates knowledge and information relating to the composition and use of precast concrete. It stimulates and encourages more extensive research relative to the manufacture and use of prestressed concrete. It promotes and educates on behalf of PCI the Precast Concrete Institute.

## Certainty 3D

Booth #: 211
Contact: Ted Knaak
Phone: 407-248-0160
Fax: 407-641-9062
E-mail: info@certainty3d.com
Website: www.certainty3d.com
Certainty 3D is software company focused on the productive, high performance processing of LiDAR data. C3D's primary product, TopoDOT®, is a comprehensive solution successfully addressing the challenges of processing LiDAR data across the spectrum of data management, quality assessment and extraction of features, topographies and 3D models.

# Exhibitors

ALPHABETICAL LISTING

## ChemCo Systems

Booth #: 347
Contact: John Bors
Phone: 650-261-3790
Fax: 650-261-3799
E-mail: bors@chemcosystems.com
Website: www.chemcosystems.com
Epoxy Asphalt is the highest performing surfacing for long span bridges around the world. With a design life typically exceeding 20 years, this pavement provides high bond strength and fatigue resistance on orthotropic steel decks. As a thermoset polymer, this pavement does not melt, offering superior performance in hot climates

## Cianbro

Booth #: 134
Contact: Michael McGeady
Phone: 443-400-8226
Fax: 410-636-3111
E-mail: mcmcgeady@cianbro.com
Website: www.cianbro.com
Cianbro is a world-class construction and construction services contractor specializing in highway and rail bridge projects across the USA. We self-perform civil, structural, mechanical, electrical, instrumentation, fabrication and specialty coatings services for complex fixed and movable bridges, interchanges, deep foundations and waterfront infrastructure. Performing in several different capacities, Cianbro has experience in Construction Management, Design-Build, CM/GC and conventional Design-Bid-Build project delivery. As a safety and health innovator, Cianbro has been building client confidence since 1949.

## Cleveland Electric Labs

Booth #: 146/148
Contact: Rodger Shepherd
Phone: 330-425-4747
E-mail: rs@cel-atg.com
Website: www.clevelandelectriclabs.com
Fiber Optic Structural Health Monitoring System capable of real-time measurements of strain, temperature, displacement, crack propagation, vibration, tilt, and more. All displayed and reported via our graphic user interface software system. Other fiber optic sensing systems include perimeter security, pipeline leak detection, manhole cover monitoring, aerospace applications and more. Visit our website at www.clevelandelectriclabs.com

### Coastal Precast Systems

Booth #: 352
Contact: Joe Rose
Phone: 757-545-5215
Fax: 757-545-6296
E-mail: joe@cpsprecast.com
Website: www.cpsprecast.com
Coastal Precast Systems provides high quality precast for highway, rail, and marine construction. The owners of Coastal Precast Systems have over sixty years of experience in the precast concrete industry. CPS has multiple patents, and prides itself on its innovative approach to precast solutions, as well as the most efficient service that this industry has to offer.

### Computers & Structures, Inc.

Booth #: 223
Contact: Atif Habibullah
Phone: 510-649-2200
Fax: 510-649-2299
E-mail: sales@csiamerica.com
Website: www.csiamerica.com
Founded in 1975, Computers and Structures, Inc. (CSI) is recognized globally as the pioneering leader in software tools for structural and earthquake engineering. Its five primary software packages include SAP2000, CSiBridge, ETABS, SAFE, and PERFORM-3D. These products set the industry standard and are used by thousands of engineering firms in over 160 countries worldwide.

### CONCORR, Inc.

Booth #: 323
Contact: Ali Akbar Sohanghpurwala
Phone: 571-434-1852
Fax: 571-434-1851
E-mail: ali@concorr.com
Website: www.concorr.com
CONCORR, Inc., for over a quarter century has been providing solutions for rehabilitation and extension of service life of reinforced concrete structures throughout the world. It has caved a path of innovation in the application of cutting edge technology for assessment, repair, and corrosion mitigation. We are leaders in the evaluation of condition of reinforced concrete elements, service life modelling, design of repair and corrosion mitigation systems including all types of cathodic protection systems, quality control and quality assessment during implementation of corrosion mitigation technology, and monitoring and maintenance cathodic protection systems.

# Exhibitors

ALPHABETICAL LISTING

## Contech Engineered Solutions

Booth #: 420
Contact: David Corr
Phone: 513-645-7130
E-mail: dcorr@conteches.com
Website: www.conteches.com
Contech Engineered Solutions offers an unparalleled choice of structural plate, precast concrete arch and truss bridges for vehicular and pedestrian needs. Spanning five feet to 250 feet or more, our innovative, modular solutions lower your in-place costs and trim schedules, and bring you the support of an expert team of product development, manufacturing, and installation specialists.

## Contractors Materials Company

Booth #: 245
Contact: Garey Mahoney
Phone: 513-719-0129
Fax: 513-956-3173
E-mail: gmahoney@cmcmmi.com
Website: www.cmcmmi.com
Contractors Materials Company is North America's largest supplier of stainless steel rebar. We offer stainless reinforcement bars in the austenitic and duplex grades. Stock bars #3 thru #11 in straight lengths up to 60' long. Highly resistance to corrosion makes this product ideal for concrete reinforcement in bridges, parking garages and coastal facilities. In addition, CMC offers a complete line of bridge accessories products.

## Crafco Inc.

Booth #: 112
Contact: Lisa Zentner
Phone: 480-505-8048
Fax: 480-961-0513
E-mail: lisa.zentner@crafco.com
Website: www.crafco.com
Since 1976, Crafco has supplied the pavement preservation industry with quality products including crack sealant, joint sealant, patching products, bridge deck waterproofing, geo-composites, and related application equipment. Headquartered in Chandler, AZ, Crafco has sealant plants strategically located around the United States. Crafco pavement preservation products and equipment are distributed worldwide.

### CTS Cement Manufacturing Corporation

Booth #: 407
Contact: Chris Davis
Phone: 973-568-3134
Fax: 732-223-2692
E-mail: cdavis@ctscement.com
Website: www.ctscement.com
CTS manufacturers Rapid Set® cement and Type K shrinkage compensating cement (SCC). Rapid Set allows bridge deck overlays to be completed faster, with higher quality, long-term performance than Portland cement concrete. SCC has been used in over 800 bridge decks with reduced permeability, excellent durability and little to no cracks.

### D.S. Brown

Booth #: 206
Contact: Bob Rose
Phone: 419-257-3561
Fax: 419-257-2200
E-mail: brose@dsbrown.com
Website: www.dsbrown.com
The D.S. Brown Company is a manufacturer of infrastructure construction products. D.S. Brown product offerings include: Steelflex® Modular, Strip Seal and Delcrete® Expansion Joint Systems, Versiflex™ HLMR, Disc and Elastomeric Bearing Assemblies, SEP Seismic Isolation Bearings, Delastic® Preformed Neoprene Compression Seals, Delpatch™ Elastomeric Concrete and a number of specialty products such as our Cableguard™ Elastomeric Wrap and Deckguard® Waterproofing Membrane. Our high quality engineered products are available worldwide for both new construction and rehabilitation projects.

### Danbro Distributors

Booth #: 452
Contact: Pat Haffert
Phone: 215-271-7700
Fax: 215-271- 7701
E-mail: pat@danbro.com
Website: www.danbro.com
Danbro Distributors supply, service and support the CHANCE brand of helical piers and anchors in the Northeast and Mid-Atlantic states.

### DBi Services

Booth #: 443
Contact: Scott Pedigo
Phone: 703-475-6206
E-mail: spedigo@dbiservices.com
Website: www.dbiservices.com
DBi Services offers a wide range of maintenance and preservation services for bridges, tunnels and all transportation-related structures. Work is performed by experienced project

professionals to assist and compliment transportation agencies in order to meet their growing needs and ensure all structures continually operate properly and safely for their expected service life and beyond. DBi Services provides infrastructure maintenance, operations and management solutions in North America and Europe for government agencies, utilities, private industries, railways, retailers and other infrastructure owners.

### Deep Foundations Institute (DFI)

Booth #: 125
Contact: Mary Ellen Bruce Large, P.E., D.GE
Phone: 973-423-4030
Fax: 973-423-4031
E-mail: staff@dfi.org
Website: www.dfi.org
Deep Foundations Institute® was incorporated in 1976 in the State of New Jersey as a 501(c)(6) non-profit association. DFI is an international association of contractors, engineers, suppliers, academics and owners in the deep foundations industry. Our multi-disciplinary membership creates a consensus voice and a common vision for continual improvement in the planning, design and construction of deep foundations and excavations. DFI brings together members through networking, education, communication and collaboration.

### Dimetix USA

Booth #: 227
Contact: Darrin Kiessling
Phone: 484-212-0636
Fax: 206-338-4281
E-mail: info@dimetix-usa.com
Website: www.dimetix-usa.com
DIMETIX USA is the exclusive US distributor for Dimetix laser distance sensors. We stock the complete line of Dimetix lasers along with the full line of optional components including enclosures, brackets, cables, controllers, adapters and software. Make DIMETIX USA your partner by choosing a Dimetix laser distance sensor or integrated laser monitoring system as the non-contact measurement solution for your next structural monitoring, engineering, or construction project.

### District DOT - 2017 IBC Featured Agency.

Booth #: 349
Contact: Richard Kenney
Phone: 202-671-2249
Fax: 202-671-4710
E-mail: richard.kenney@dc.gov
Website: www.ddot.dc.gov
The District Department of Transportation (DDOT) manages a transportation system serving the people who live, work and visit Washington, DC. The Department strives to achieve a multi-modal transportation system that makes the city more livable, sustainable, prosperous and attractive, offering everyone in the District

exceptional travel choices. The city's bridge inventory includes major river crossings as well as iconic, historical structures. DDOT is delighted to have been selected as next year's IBC feature agency.

### E-Chem, LLC

Booth #: 149
Contact: Richard O'Malley
Phone: 484-408-2366
Fax: 505-217-3721
E-mail: richard@e-chem.net
Website: www.e-chem.net
E-Chem is a company specializing in the design, manufacturing, marketing and supply of epoxy polymer products for concrete. E-Chem offers our customers the highest quality products available by utilizing high-end raw materials and strict QCQA procedures; our products undergo extensive testing and field evaluations. We specialize in bridge overlayments and High Friction Surface systems.

### Emseal Joint Systems

Booth #: 230
Contact: Irene Friedman
Phone: 508-836-0280
Fax: 505-836-0281
E-mail: ifriedman@emseal.com
Website: www.emseal.com
EMSEAL JOINT SYSTEMS contributes to the preservation and sustainability of the built environment. EMSEAL is the leading innovator and manufacturer of BEJS, the premium preformed expansion joint system for bridges. BEJS uniquely solves changes in plane, terminations, and transitions with factory-fabricated universal-90 degree units, kickouts, and custom pieces to ensure a watertight seal.

### Eriksson Technologies, Inc.

Booth #: 115
Contact: Roy Eriksson
Phone: 813-989-3317
Fax: 813-989-3317
E-mail: ncrodriguez@lrfd.com
Website: www.lrfd.com
Eriksson Technologies & Software provides consulting engineering services and develops/markets engineering design software. Engineering primarily rendered to precast/prestressed concrete fabricators that serve the transportation market.

# Exhibitors

ALPHABETICAL LISTING

## Euclid Chemical Company

Booth #: 102
Contact: Bernie McGuire
Phone: 813-886-8811
Fax: 813-920-1516
E-mail: bmcguire@euclidchemical.com
Website: www.euclidchemical.com
For over 100 years, The Euclid Chemical Company has served the global building market with a full line of quality products for the concrete and masonry industry. Euclid Chemical designs and manufactures admixtures, fibers, curing and sealing compounds, structural grouts, epoxy adhesives, floor hardeners and toppings, joint fillers, industrial and architectural coatings, a full line of decorative concrete products, and a comprehensive selection of restoration materials.

## Evonik Corp.

Booth #: 226
Contact: Peter DeNicola
Phone: 732 887-9975
Fax: 732-981-5275
E-mail: peter.denicola@evonik.com
Website: www.protectosil.com
Bridges, especially the deck surface, are subjected to harsher conditions than other building structures. Heavy use of deicer salts, proximity to salt water, freeze-thaw conditions and vehicular traffic accelerate damage. High performance products are necessary to combat these tough conditions. The cost of the protective treatment is not just the material price, but includes application labor, lane closure and retreat time. Protectosil® products for bridges are extremely cost effective, offer easy spray on application, fast dry time, can be applied down to 20°F/ -7°C, 10+ years retreatment time, mitigates rebar corrosion and ASR as well as seals microcracks.

## FIGG

Booth #: 402
Contact: Linda Figg
Phone: 850-224-7400
Fax: 850-224-5428
E-mail: lfigg@figgbridge.com
Website: www.figgbridge.com
FIGG specializes in bridge design and construction engineering and management. Celebrating over 30 years of Creating Bridges as Art® for our customers with more than 350 awards for innovation, economy and aesthetics. Our focus on bridges allows us to create landmarks that incorporate function, sustainable design and beauty to enhance the quality of life for communities across America.

### Flagger Force Traffic Control Services

Booth #: 232
Contact: Austin Moran
Phone: 717-482-8801
E-mail: sales.group@flaggerforce.com
Website: www.flaggerforce.com
Traffic control company with more than 1,500 safety-driven construction zone flaggers, servicing all of the Mid-Atlantic region.

### Foundation Technologies Inc.

Booth #: 121
Contact: Nick Milligan
Phone: 678-407-4640
Fax: 678-407-4645
E-mail: nick@foundationtechnologies.com
Website: www.foundationtechnologies.com
Manufacturer and distributor of specialty products for foundation construction industry. ShaftSpacer®, BarBoot®, and Cagecaster® are products for centralizing rebar within drilled shafts: UNISPACER™ for single bar reinforcement positioning within Auger-cast, mini-piles, and tie-backs: Yellow Jacket™ friction reduction for piling associated with MSE walls. Slickcoat™ friction reduction system for coating piles.

### Freyssinet, Inc.

Booth #: 410
Contact: Marit Chasse
Phone: 703-378-2500
Fax: 703-378-2700
E-mail: marit.chasse@freyssinetusa.com
Website: www.freyssinetusa.com
Freyssinet, Inc. offers integrated and innovative technical solutions in the construction, repair and maintenance of structures in its specialist areas:- Stay Cables & Hangers - Suspensions Cables - Post-tensioning Systems - Structural Repair, Strengthening & Monitoring - Barrier Cables -Expansion Joints, Bearings, Seismic Devices & Structural Dampers - Heavy Lifting & Handling. Freyssinet, Inc. executes work as a specialty subcontractor, general contractor and supplier throughout the United States.

### FRP Bridge Drain Pipe

Booth #: 212
Contact: Nathan Peters
Phone: 636-938-6313
Fax: 636-938-3120
E-mail: npeters@westfallcompany.com
Website: www.frpbridgedrainpipe.com
For over 30 years our company has been committed to providing the highest quality fiberglass drainage materials in North America. By providing engineers with a corrosion resistant, light weight, high strength pipe that is practically limitless in its scope

of custom capabilities, we have supplied engineers with a product that solves the problems typically associated with bridge drainage systems.

### GHD Limited

Booth #: 345
Contact: David Gagne
Phone: 289-356-1421
Fax: 905-432-7877
E-mail: david.gagne@ghd.com
Website: www.ghd.com/canada
GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. Committed to creating lasting community benefit, our connected global network of 8500 people delivers engineering, environmental and construction services to public and private sector clients across five continents – Asia, Australia, Europe, North and South America – and the Pacific region. www.ghd.com

### Greenman-Pedersen, Inc.

Booth #: 414
Contact: Ralph Csogi
Phone: 631-587-5060
Fax: 631-587-5027
E-mail: rcsogi@gpinet.com
Website: www.gpinet.com
Greenman-Pedersen, Inc. is celebrating 50 years as a top national engineering design and construction services firm involved on major projects throughout the U.S. and overseas. GPI provides engineering, planning, survey, mapping and construction management and inspection on major highway, bridge, transit, rail and coatings projects for traditional and alternative delivery projects.

### HAKS Engineers, Inc.

Booth #: 348
Contact: Sharon Ames
Phone: 410-605-0592
Fax: 410-605-0593
E-mail: sames@haks.net
Website: www.haks.net
HAKS has been conducting award-winning bridge biennial inspections for over two decades and bridge inspections throughout the Northeastern U.S. The 650-person full-service consulting firm ranked 131 on ENR's 2016 Top 500 Design Firms and was recognized in 2015 as "One of the Best Firms to Work for" by the Zweig Group. Our New York City headquarters is ISO 9001:2008 certified for all departments. Always client-focused, we strive to improve communities while enhancing social, economic and environmental conditions.

## Harcon Corp.
Booth #: 400
Contact: Enyce Thompson
Phone: 717-305-0020
E-mail: enyce@harconcorp.com
Website: www.harconcorp.com
Harcon Corporation provides bridge access services for bridge inspection, maintenance and utility installation. Our unique equipment allows 100% hands on access without lane closures and without the additional costs of traffic management. It is the safest way to approach bridge access saving both time and more importantly lives.

## Headed Reinforcement Corporation (HRC)
Booth #: 247
Contact: Jeremy Maldonado
Phone: 714-557-1455
Fax: 714-557-4460
E-mail: jeremy@hrc-usa.com
Website: www.hrc-usa.com
High Performance Reinforcement Products for Structural Integrity and Constructability

## Hilman Rollers
Booth #: 303
Contact: Jeff Hill
Phone: 732-462-6277
Fax: 732-462-6355
E-mail: sales@hilmanrollers.com
Website: www.hilmanrollers.com
Hilman Rollers are an essential component for bridge construction projects. They have proven their value in rapid bridge replacements, launching bridge segments, launching entire spans, as travelers for gantries; as well as being used in casting yards to move heavy segments. Hilman Rollers move the Heavyweights!

## HRV Conformance Verification Associates, Inc.
Booth #: 220
Contact: H. Rochelle Stachel
Phone: 412-299-2000
Fax: 412-299-2007
E-mail: hrstachel@hrvinc.com
Website: www.hrvinc.com
HRV provides global, cost-effective quality assurance inspection services to both public and private entities. Specializing primarily in the bridge and highway construction industry, HRV offers steel fabrication, precast and prestressed concrete fabrication, and coatings inspection services. Additional services include construction management, scheduling and nondestructive testing.

# Exhibitors

ALPHABETICAL LISTING

## Hydro-Technologies / Modified Concrete Suppliers

Booth #: 251
Contact: Ed Liberati
Phone: 502-693-3253
Fax: 614-389-4991
E-mail: eliberati@hughesgrp.com
Website: www.hydro-technologies.com
Hydro Technologies and Modified Concrete Suppliers specializes in the repair and preservation of bridge decks utilizing Hydrodemolition Surface Preparation followed by the installation of Latex Modified Concrete Overlays. This work can be performed very cost effectively, with accelerated construction methods and will increase the service life of an existing bridge deck for over 30 years. Latex Modified Concrete Overlays have been used successfully on thousands of bridge decks since the 1960's.

## I&I Sling

Booth #: 338
Contact: Aaron Manarin
Phone: 410-746-2832
Fax: 703-550-9407
E-mail: aaron@iandisling.com
Website: www.iandisling.com
I & I Sling prides itself in being a one stop shop to meet all of your rigging supply needs. This includes a full line of custom fabricated slings and pads, rigging hardware products, local delivery service, inspection, repair, testing, certification and training. All locations are able to fabricate made to order slings including wire rope, chain, web, polyester and high performance synthetic slings. Each plant has calibrated testing equipment ranging from 150 to 600 ton capacity. Whether it's an emergency delivery or technical support, our team of trained and experienced product advisors will travel to your job site to provide unmatched customer support.

## Intelligent Infrastructure Systems

Booth #: 324
Contact: Andy Katz
Phone: 215-254-7877
E-mail: akatz@iisengineering.com
Website: www.iisengineering.com
The mission of Intelligent Infrastructure Systems is to continuously advance the state-of-the-practice in infrastructure operations, condition evaluation, and management, and to enhance performance through more effective preservation, rehabilitation, and restoration strategies. We design and install structural health monitoring systems, do structural testing, finite element modeling and model calibration, advanced load ratings, asset management and applied research. For more information, visit iisengineering.com

### International Road Dynamics Inc.

Booth #: 250
Contact: Tom Der
Phone: 306-653-6600
Fax: 306-242-5599
E-mail: tom.der@irdinc.com
Website: www.irdinc.com
IRD is a Highway Traffic Management Products and Systems Technology Company, operating in the ITS Industry. Experts in advanced technologies to detect and weigh vehicles at highway speeds, the integration of these and other complementary ITS Technologies into systems designed to solve traffic problems and in supplying custom designed systems.

### Jenik

Booth #: 350
Contact: Sylvain Hubert
Phone: 819-701-2072
Fax: 450-446-5950
E-mail: shubert@jenik.ca
Website: www.jenik.ca
Jenik was founded in 1984 in Montreal, Canada. We specialize in Sales & Rentals of Under Bridge Work Access Platforms and Bucket Trucks suitable for all types of work relating to bridge inspection, construction, repair, and maintenance in Canada for over 15 years and now expanding operations to the USA. Our rental fleet includes well-known brands such as Moog, Barin, Hydra Platforms and Aspen Aerials. Our equipment complies with ANSI Standards.

### Kamatics RWG

Booth #: 235
Contact: John Bertolini
Phone: 860-769-3277
E-mail: marketing@kaman.com
Website: www.kaman.com/engineered
With over 20 years of experience, our vast knowledge and understanding of bearings enable our team of over 35 design engineers to work closely with each customer to design and implement application-specific bearing solutions.

# Exhibitors

ALPHABETICAL LISTING

## KCI Technologies, Inc.

Booth #: 210
Contact: John Hudacek
Phone: 410-316-0817
E-mail: john.hudacek@kci.com
Website: www.kci.com
KCI is a 100% employee-owned, multi-disciplined engineering firm, employing more than 1,100 staff operating out of offices in 12 states and DC. ENR recently ranked KCI at #77 among top engineering firms. KCI provides a full range of planning, engineering, and construction inspection services for all modes of transportation, offering innovative solutions in both the traditional design-bid-build and Design-Build environments. Our Transportation Structures staff specialize in Bridge Design, Analysis, Inspection, Underwater Inspection, and Contractor Services.

## Klaas Coatings (North America) LLC

Booth #: 109
Contact: Richard Taylor
Phone: 866-317-3633
Fax: 214-363-8422
E-mail: info@klaascoatings-northamerica.com
Website: www.klaascoatings-northamerica.com
North American manufacturer/distributor of Si-Rex03 Silicone Resin Emulsion Paint (SREP) coating system for concrete and masonry substrates. Water repellent yet highly breathable coating for protection integrity that extends infrastructure service life. Proven coating system with excellent resistance to UV, weathering, chalking for durability that outlasts/outperforms conventional paints. Inorganic pigments for fade resistant colors in up to 10,000 different hues. Primers: Si-Prime silane/siloxane/acrylic blend; Cremsil 80% active octylsilane thixotropic cream. Approved with CDOT, NMDOT, NYSDOT, PennDOT, TxDOT and WVDOT.

## L.B. Foster

Booth #: 319
Contact: Mike Benson
Phone: 304-281-8874
Fax: 412-928-3514
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.

Booth #: 315
Contact: John Horner
Phone: 800-LARSA-01
Fax: 631-454-5252
E-mail: info@larsa4d.com
Website: www.larsa4d.com
LARSA 4D BRIDGE SERIES is recognized as the premier software for bridge engineers with the innovative tools necessary to support bridge projects through design, construction and rehabilitation. Informed by three decades of experience working closely with its loyal client base, 4D BRIDGE SERIES has become one of the most reliable software packages of its kind for segmental, cable-stay, suspension, steel girder, stressed-ribbon and other bridge forms, as well other structures requiring geometric or material nonlinearity.

## LeJeune Bolt Company

Booth #: 333
Contact: Mark Hundley
Phone: 800-872-2658
Fax: 952-890-3544
E-mail: mhundley@lejeunebolt.com
Website: www.tightenright.com
LeJeune's exclusive TNA® Fastening System now has ASTM designation F3148. The specification allows specifying and use to an ASTM standard so users have the full backing and confidence that the industry has reviewed and accepted the system. Put an end to installation failures. Use 20% fewer bolts in every connection. Protect your workers by using the safest installation method available. Stop by our booth to Get Your Tight Right.

## Loadtest

Booth #: 127
Contact: Bubba Knight
Phone: 850-260-5528
Fax: 352-378-3934
E-mail: bubbaknight@loadtest.com
Website: www.loadtest.com
Loadtest removes uncertainty in foundation design and construction by establishing confidence, reliability, efficiency and economy through advanced deep foundation analysis, quality control and testing. We help specify the testing program to optimize the testing budget and results. Loadtest provides focused risk management decisions through confirmed excavation quality conditions, calibrated foundation designs, and verified production foundations.

# Exhibitors

ALPHABETICAL LISTING

## Lusas

Booth #: 215
Contact: Terry Cakebread
Phone: 646 837 8756
Fax: 212 257 6441
E-mail: info@lusas.com
Website: www.lusas.com
LUSAS Bridge software is used for cost-effective analysis, design and load rating of all bridge types. Use LUSAS for fundamental frequency, seismic, dynamic, nonlinear, buckling, fatigue, staged construction modelling, concrete creep and shrinkage, heat of hydration, and prestress / post-tensioning, cable tuning analysis, traffic load optimisation to AASHTO and other design codes, geotechnical and soil-structure interaction analysis; and rail track-structure interaction modelling. LUSAS is used on major projects worldwide (and on small-scale structural integrity jobs).

## Mabey Inc.

Booth #: 238
Contact: Jim Porreca
Phone: 412-475-6087
Fax: 410-379-2801
E-mail: j.porreca@mabey.com
Website: www.mabey.com
Mabey carries a broad range of products for temporary bridges, permanent bridges, excavation and trench shoring, structural shoring and temporary roadways. From PE certified engineered plans to on-site support, Mabey carries what you need to complete your project on time and on budget.

## mageba USA LLC

Booth #: 110
Contact: Gianni Moor
Phone: 212-644-3335
Fax: 212-644-3339
E-mail: info@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 Verrazano Narrows, Bayonne, Tappan Zee, Port Mann, Golden Ears and St. Lawrence Bridge. Mageba USA is certified as per AISC and has its own production facilities in USA, Europe and Asia. 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 #: 221
Contact: Noelle Ziobro
Phone: 443-484-2394
Fax: 859-554-4100
E-mail: nziobro@msimarinesolutions.com
Website: www.msimarinesolutions.com
Marine Solutions is an engineering and commercial diving firm specializing in marine engineering, bridge engineering, marine construction, and commercial diving. Our business has been focused on the inspection, assessment, analysis, and rehabilitation of existing structures since our inception. We are a woman owned, Disadvantaged Business Enterprise (DBE) and are qualified under most state and federal standards as a small business.

### McClain & Co., Inc.

Booth #: 106
Contact: Lisa Albertson
Phone: 540-423-1110
Fax: 540-423-1110
E-mail: info@mcclain1.com
Website: www.mcclain1.com
McClain & Co., Inc. provides rental equipment & supporting services to Engineers, Contractors & Government Agencies for the Inspection, Maintenance & Repair of our nation's bridges. Specialized UBIU equipment including highway & rail compatible units A-75, A-62, UB-60, UB-50, A-40, A-30, B-32 & platforms units by Moog reaching up to 75' horizontally. Insulated Bucket & Boom Trucks 40-110', Traffic Safety Sales & Services, Bridge Utility& Construction Services.

### McCrossin Foundations

Booth #: 122
Contact: James B. Pease, P.E.
Phone: 717-471-4242
Fax: 717-298-1874
E-mail: jpease@mccrossin.com
Website: www.mccrossinfoundations.com
McCrossin Foundations proudly offers the most comprehensive geotechnical solutions and services throughout the Mid-Atlantic, Ohio Valley, and Northeast regions. Comprised of recognized industry professionals with nearly a century's worth of national experience, we are the premier choice for routine, or complex, foundation and ground improvement needs.

# Exhibitors

ALPHABETICAL LISTING

## MDX Software

Booth #: 207
Contact: Chris Douty
Phone: 573-446-3221
Fax: 573-446-3278
E-mail: sales@mdxsoftware.com
Website: www.mdxsoftware.com
MDX Software Curved & Straight Steel Bridge Design & Rating is for designing and rating steel girder bridges for compliance with AASHTO LRFD, LRFR, LFD, and ASD Specifications.

## Michael Baker International

Booth #: 201/203
Contact: John Dietrick
Phone: 216-776-6626
Fax: 216-664-6532
E-mail: jdietrick@mbakerintl.com
Website: www.mbakerintl.com
Michael Baker International – a global leader in engineering, planning and consulting – has been partnering with communities and agencies since 1940 to solve their most complex infrastructure challenges with a legacy of expertise, experience, innovation and integrity. Supported by more than 6,000 employees in 90 offices, we provide a full continuum of life-cycle engineering consulting, specialized global construction, base operations, security management, systems integration and intelligence solutions that enhance client projects worldwide. We Make a Difference.

## MMFX Steel Corporation

Booth #: 351
Contact: Mizka Brick
Phone: 949-705-5485
E-mail: mizka.brick@mmfx.com
Website: www.mmfx.com
MMFX® Steel Corporation is a global specialty steel company that has removed long-standing limitations faced by structural engineers and the construction industry by introducing its ChrōmX 9000, 4000 and 2000 Series, grades 100 and 120 high strength concrete reinforcing steel products with varying levels of corrosion resistance, so designers can utilize the high strength efficiencies and best match the uncoated, corrosion protection requirements of a given project delivering solutions to problems faced by steel customers.

### Moffatt & Nichol

Booth #: 138
Contact: Cole Rocca
Phone: 562-590-6500
E-mail: crocca@moffatnichol.com
Website: www.moffatnichol.com
Moffatt & Nichol is a leading global infrastructure advisor specializing in the planning and design of facilities that shape our coastlines, harbors and rivers as well as an innovator in the transportation complexities associated with the movement of freight.

### Moog USA, Inc.

Booth #: 218
Contact: Cindy Watson
Phone: 540-586-6700
Fax: 540-586-6161
E-mail: cwatson@moogusa.com
Website: www.moogusa.com
Since 1980 Moog has been supplying their customers with state of the art mobile under-bridge access equipment. Superior quality, innovative design, plus meeting and 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.

### NANOKOTE North America, Inc.

Booth #: 107
Contact: Simon King
Phone: 844-855-3345
Fax: 469-420-5378
E-mail: info@nanokote.com
Website: www.nanokote.com.au
2016 IBC witnesses the launch of NANOKOTE North America, Inc. and its breakthrough product/technology PRIMOGUARD Concrete+. A 10-year proven track record in Europe, South-East Asia and Australia, PRIMOGUARD Concrete+, designed using nanomaterials, showcases latest advancements to protecting concrete bridge and road infrastructure including tunnels. Patented, single coat direct to concrete process, this high performance coating protects against harsh weather and deicing salts and has inherent anti-graffiti resistance for easy cleaning/removal. And can be applied in temperatures down to 36oF (2oC) and up to 95% RH.

# Exhibitors

ALPHABETICAL LISTING

## National Steel Bridge Alliance (NSBA)

Booth #: 209
Contact: Matt Shergalis
Phone: 312-363-8218
E-mail: shergalis@aisc.org
Website: www.steelbridges.org
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.

## Neel Company, The

Booth #: 320
Contact: Jessie Lewis
Phone: 703-913-7858
Fax: 703-913-7859
E-mail: jlewis@neelco.com
Website: www.neelco.com
The Neel Company is a nationally recognized firm specializing in the design, supply, and sale of the T-WALL® Retaining Wall System. Our clients are the country's largest consultants and contractors, DOT's, Class I railroads, and other industry owners. Thirty years of experience allow us to provide customized solutions including grade separations, bridge approaches, and marine structures. Our engineers work with you to create innovative solutions while reducing cost, time, and materials whenever possible.

## New Millennium Building Systems

Booth #: 244
Contact: Bob Hudson
Phone: 803-251-5111
E-mail: bob.hudson@newmill.com
Website: www.newmill.com
New Millennium engineers and manufactures steel building systems, including Bridge-Dek® for bridge spans up to 14 feet and Rhino-Dek® galvanized and polymer laminated decking for spans over brackish and salt water. Both product lines are custom manufactured for new construction and bridge rehabilitation.

## Nickel Institute

Booth #: 422
Contact: Frank Smith
Phone: 613-544-1697
Fax: 613-544-4181
E-mail: fnsmith01@gmail.com
Website: www.nickelinstitute.org
Nickel Institute promotes the use of nickel-containing stainless steel rebar in order to achieve longevity and low life-cycle cost for concrete highway bridges.

### P. Joseph Lehman, Inc., Consulting Engineers

Booth #: 237
Contact: Marty Malone
Phone: 814-695-7500
Fax: 814-695-7505
E-mail: mmalone@lehmanengineers.com
Website: www.LehmanEngineers.com
P. Joseph Lehman, Inc., Consulting Engineers is passionate about enhancing quality of life by delivering sound, innovative and responsible engineering and environmental solutions. Lehman Engineers has offices in Hollidaysburg, Bedford, Pittsburgh, and Harrisburg, PA.

### Pennoni

Booth #: 326
Contact: Jennifer Laning
Phone: 443-449-2503
E-mail: jlaning@pennoni.com
Website: www.pennoni.com
Pennoni offers comprehensive bridge engineering services, including structural design, instrumentation, structural health monitoring, asset management, condition evaluation and inspection of highway, rail, movable, historic and long span structures. Our bridge engineers have successfully completed bridge projects that include underwater inspections, 3-D finite element analyses, emergency structural repairs, and constructability assessments for federal, state, and local agencies. For more information, visit www.pennoni.com

### Pentair

Booth #: 208
Contact: Mike Amos
Phone: 440-248-0100
Fax: 440-248-0723
Website: www.erico.pentair.com
Pentair delivers industry-leading products, services and solutions for its customers' diverse needs in water and other fluids, thermal management and equipment protection and LENTON engineered systems for concrete reinforcement applications.

### Perryman Company

Booth #: 145
Contact: Brian Brandstetter
Phone: 724-746-9390
Fax: 724-746-9392
E-mail: bbrandstetter@perrymanco.com
Website: www.perrymanco.com
Perryman Company is a vertically integrated titanium producer from melting of ingot to finished products. The company's product portfolio includes ingot, bar, coil, fine wire, net shapes, and hot rolled products. A titanium global leader, Perryman supplies and services customers in the aerospace, medical, consumer,

industrial and recreation markets worldwide. Perryman Company is headquartered in Houston, Pennsylvania. Company offices are located in Philadelphia, Warsaw, IN, Los Angeles, London, Zurich, Tokyo and Xi'an.

### Pharos Marine Automatic Power, Inc.

Booth #: 252
Contact: Phillip White
Phone: 713-228-5208
Fax: 713-228-3717
E-mail: pwhite@automaticpower.com
Website: www.automaticpower.com
Pharos Marine Automatic Power, Inc. designs, manufactures, installs, and services navigation aids, including lanterns, beacons, fog signals, fog detectors, bridge lights, Litepipes, traffic gate systems, solar/battery charging systems, warning and alarm systems, aviation obstruction lights, and other related equipment. We have been the industry leader for over 50 years, and our custom-made products are designed to provide the highest level of reliability, visibility, and safety.

### Phoenix National Laboratories, Inc.

Booth #: 438
Contact: Alex Zuran III
Phone: 602-431-8887
Fax: 602-431-8889
E-mail: alexiii@pnltest.com
Website: www.pnltest.com
At PNL we offer laboratory and job-site services including: Testing of Elastomeric Bearing Pads, Physical/Mechanical Testing, Nondestructive Testing, Welding Technology Services, and QA/QC Fabrication Services to the bridge fabrication and transportation industries.

### Pickering, Corts & Summerson

Booth #: 434
Contact: Tanya Swartz
Phone: 215-968-9300
Fax: 215-968-3649
E-mail: tswartz@pcs-civil.com
Website: www.pcs-civil.com
Pickering, Corts & Summerson is a completely integrated one-stop engineering firm. We have a long history of providing comprehensive consulting engineering, planning, and land surveying services to a wide variety of public, private, and institutional clients since 1918, making PCS one of the oldest and most respected engineering firms in the region.

## Pieresearch

Booth #: 128/130
Contact: Stan Agee
Phone: 817-994-1050
Fax: 817-275-2335
E-mail: stanagee@pieresearch.com
Website: www.pieresearch.com
Pieresearch manufactures specialized concrete accessories to position reinforcing bar cages in drilled shafts.

## Pile Driving Contractors Association (PDCA)

Booth #: 133
Contact: Stevan A. Hall
Phone: 888-311-7322
Fax: 904-215-2977
E-mail: steve@piledrivers.org
Website: www.piledrivers.org
The Pile Driving Contractors Association (PDCA) is an organization of pile driving contractors that advocates the increased use of driven piles for deep foundations and earth retention systems. To do this, we: Promote the use of driven pile solutions in all cases where they are effective, Support educational programs for engineers on the design and efficiency of driven piles and for contractors on improving installation procedures, encourage and support research that will improve the reliability, usefulness, and cost effectiveness of driven piles, and give contractors a larger voice in establishing procedures and standards for the installation and design of driven piles.

## Portadam, Inc.

Booth #: 140
Contact: Timothy McTigue
Phone: 856-740-0606
E-mail: tmctigue@portadam.com
Website: www.portadam.com
Established over 35 years ago, Portadam offers its water management solutions to national and international clients. Our engineered, modular system is highly flexible and can be used effectively for temporary cofferdam, flood protection and fluid storage needs.
When deployed as a temporary cofferdam, our equipment enables contractors to perform their in-water work in a dry condition. The system is currently available in heights up to 12 ft and individual units can be quickly combined to accommodate varying subsurface elevations and configurations/contours helping to minimize the contractor's overall rental costs.

# Exhibitors

ALPHABETICAL LISTING

## Pultrall Inc.

Booth #: 116
Contact: Roxanne Fortier
Phone: 418-335-3202
Fax: 418-335-5117
E-mail: roxanne.fortier@putrall.com
Website: www.vrodusa.com
Established in 1987, Pultrall Inc. is the pioneer of non-metallic concrete reinforcement solutions in North America. A stronger, well tested, widely used and corrosion proof reinforcement that advantageously replaces the easily corroded steel rebar. Our solution, V-ROD!

## R.J. Watson, Inc.

Booth #: 301
Contact: Marc Stafford
Phone: 716-901-7020
Fax: 716-901-7015
E-mail: mdstafford@rjwatson.com
Website: www.rjwatson.com
R. J. Watson manufactures high load multi-rotational disc bearings, seismic isolation bearings, bridge expansion joints, waterproofing membranes, and FRP Composite Systems for strengthening and rehabilitation.

## Redaelli Engineering Division

Booth #: 436
Contact: David Ward
Phone: +44 1302 378327
E-mail: david.ward@redaelli.com
Website: www.redaelli.com
Redaelli Engineering is a world leading manufacturer of steel cable systems for tensile structure applications. Founded in 1819, prestigious global bridge projects include the complete suspension system for the Storebaelt Suspension Bridge and replacement hanger cables for Forth, Alvsborg & Bosporus suspension bridges. Our innovative approach to cable system design, together with proven engineering and project management expertise means we successfully deliver a wide variety of cable solutions to stayed, tied arch and suspended structures.

## Reinforced Earth Company, The

Booth #: 406
Contact: Alicia Inthirath
Phone: 703-547-8797
E-mail: ainthirath@reinforcedearth.com
Website: www.reinforcedearth.com
The Reinforced Earth® Company has over forty five years of experience designing and supplying materials to contractors for MSE retaining walls, sound walls and precast arches used in civil engineering applications.

## Resensys LLC

Booth #: 322
Contact: Mehdi Kalantari
Phone: 301-395-3892
E-mail: mehdi@resensys.com
Website: www.resensys.com
Resensys offers wireless solutions for remote monitoring of highway bridges based on its award winning wireless SenSpot sensors. Wireless SenSpot sensors provide a versatile platform for remote monitoring of strain (stress), vibration, tilt, inclination, displacement, temperature, and humidity. Examples applications of SenSpots include monitoring tilting of piers; monitoring strain and deflection in girders, beams, and steel members; and monitoring movement of bearings and expansion joints. Additionally, Resensys's quick-to-deploy wireless strain SenSpot sensors provide an attractive solution for fast and reliable load rating of highway bridges. SenSpot sensors offer 10 years of guaranteed battery life.

## RK&K

Booth #: 444
Contact: Gary Johnson
Phone: 804-782-1903
Fax: 804-782-2142
E-mail: gjohnson@rkk.com
Website: www.rkk.com
Founded in 1923, RK&K is a 1,100+ person multi-disciplinary consulting firm with expertise in transportation and construction engineering. Ranked 69th on ENR's Top 500 Design Firms, RK&K serves an array of federal, state, and local clients from 22 offices in eight states. The firm employs a well-diversified staff of engineers, designers, and inspectors. RK&K's services include traditional and design-build project delivery, feasibility studies, preliminary and final engineering design, construction and program management, and construction inspection.

## Roads & Bridges

Booth #: 147
Contact: Ryan Hanson
Phone: 847-391-1059
Fax: 847-390-0404
E-mail: rhanson@sgcmail.com
Website: www.roadsbridges.com
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).

# Exhibitors

ALPHABETICAL LISTING

## Roctest

Booth #: 135
Contact: Bill Villalpando
Phone: 978-284-0610
Fax: 978-284-0610
E-mail: bill.villalpando@roctest.com
Website: www.roctest.com
Roctest is the leading manufacturer of vibrating wire and fiber optic sensors for geotechnical and structural instrumentation, which include: Piezometers; Jointmeters; Inclinometers; Strain gauges. For application such as : Dams; Tunnels and bridges; Offshore. Roctest also manufacturers in-situ testing equipment such as pressuremeters and dilatometers.

## Safway Services, LLC

Booth #: 325/327/424/426
Contact: Heather Shugarman
Phone: 518-381-6000
Fax: 518-381-4613
E-mail: heather.shugarman@safway.com
Website: www.safway.com
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(tm) is a heavy duty multi-point suspended truss system, and QuikShield(tm) is a cable supported system that can support significant loads for painting and light-duty applications. Visit our booth to learn more!

## Salit Specialty Rebar

Booth #: 233
Contact: Kevin Cornell
Phone: 716-299-1990
Fax: 716-299-1993
E-mail: kcornell@stainlessrebar.com
Website: www.stainlessrebar.com
Salit Specialty Rebar is North America's premier Stainless Steel Rebar fabricator and distributor. With two plants dedicated to SS rebar and extensive inventories SSR is the one stop for SS rebar, SS Welded Wire Mesh, SS Tie Wire, SS couplers and outstanding customer service. Located in Niagara Falls and Buffalo ,New York Salit Specialty is able to ship material throughout the United States and Canada.

### Scougal Rubber Corp.

Booth #: 309
Contact: Scott Nelson
Phone: 775-284-8500
Fax: 775-284-8501
E-mail: scottn@scougalrubber.com
Website: www.scougalrubber.com
Manufacturer of elastomeric bridge bearing pads, bearing assemblies, PTFE slide assemblies, and custom molded rubber parts

### Short Span Steel Bridge Alliance (SSSBA)

Booth #: 439
Contact: Richard Tavoletti
Phone: 412-458-5822
E-mail: rtavoletti@steel.org
Website: www.shortspansteelbridges.org
The 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.

### Sika Corporation

Booth #: 401
Contact: Andre Eisenmann
Phone: 201-508-6718
E-mail: eisenmann.andreas@us.sika.com
Website: www.usa.sika.com
Sika Corporation, based in Lyndhurst, NJ, is a leading supplier of specialty chemical products and industrial materials serving construction and industrial markets including transportation, marine, and automotive. Its technologies are focused on sealing, bonding, damping, reinforcing and protecting. Sika's product lines include roofing, concrete admixtures, specialty mortars, epoxies, structural strengthening systems, industrial flooring, sealants, adhesives, specialty acoustic and reinforcing materials. Sika Products are used in a wide array of applications and always fulfill the highest quality standards. We are committed to customer satisfaction, innovation, and teamwork.

### Sofis Company Inc.

Booth #: 219
Contact: Bill Sofis
Phone: 724-378-2670
Fax: 724-378-3719
E-mail: wsofis@sofiscompany.com
Website: www.sofiscompany.com
Sofis Company, Inc has been providing Bridge Inspection Support Services since 1959. We have always been a DOT certified general contractor, specializing in bridge and substructure repair. We supply operated, certified under bridge inspection units, cable rigging, lift trucks , steel and concrete sampling, and traffic control. Our employees are trained, tested and certified. We also have one of the best safety records in the industry.

# Exhibitors

ALPHABETICAL LISTING

## SOFiSTiK AG

Booth #: 152
Contact: Andrea Weber
Phone: +49 911 399010
Fax: +49 911 39901 6661
E-mail: info@sofistik.com
Website: www.sofistik.com
The German company SOFiSTiK is one of the leading European suppliers of structural analysis and BIM software and Autodesk® Industry Partner. Software solutions range from basic tools for more productive drafting to 3D analysis suites. SOFiSTiK's Authorized Training Center BiMOTiON provides training and consulting for all aspects of implementing BIM-Workflows.

## Specialty Diving of Louisiana, Inc.

Booth #: 137
Contact: Deborah Wallace
Phone: 985-542-8770
Fax: 985-345-7602
E-mail: dwallace@sdive.com
Website: www.sdive.com
Commercial and industrial diving and marine services. Inspection, Maintenance, Construction, Repairs, Consultation, Salvage. Certified NHI Underwater Bridge Inspectors. Proficient in various repair applications underwater, including epoxy applications, pile encapsulations, bank stabilizations.Serviced Department of Transportations throughout the United States since 1991.

## Spider

Booth #: 446/448/450
Contact: Steve Cabral
Phone: 877-774-3370
E-mail: spider@spiderstaging.com
Website: www.spiderstaging.com
Since 1947, Spider has been putting contractors to work at height for all phases of bridge construction, maintenance, painting, blasting, and repair. From standard swing stages, work baskets, and hoists to custom NextGen SafeDeck float platforms, Spider can get bridge contractors to the work safely every time. With 24 locations in the Americas, we offer consistent, reliable products, service, and training no matter where your bridge is located.

## St. Louis Screw & Bolt

Booth #: 310
Contact: Joseph Howard
Phone: 800-237-7059
Fax: 314-389-7510
E-mail: slhoward@stlouisscrewbolt.com
Website: www.stlouisscrewbolt.com
St. Louis Screw & Bolt is one of the longest operating bolt manufacturers in the United States. SLSB specializes in HEX HEAD BOLTS in A325 & A490. We also custom manufacture Anchor

Bolts & Tie Rod Assemblies. SLSB also specializes in and has among the nations largest stock of TC bolts ASTM F2280/A490 & ASTM F1852/A325

### Stalite

Booth #: 307
Contact: Ken Harmon
Phone: 704-232-0160
Fax: 770-213-3089
E-mail: kharmon@stalite.com
Website: www.stalite.com
STALITE manufactures high performance, high strength lightweight aggregate for use in structural concrete and other applications. Concrete produced with Stalite lightweight aggregate offers design flexibility and substantial cost savings by providing less dead load, longer spans, better fire ratings, thinner sections, smaller size structural members, less reinforcing steel, and lower foundation costs. Stalite also provides internal curing allowing more complete hydration resulting in reduced autogenous shrinkage, reduced early age cracking, decreased permeability and increased service life.

### Stronghold Coating Systems, Ltd.

Booth #: 150
Contact: Larry F Grimenstein
Phone: 937-746-7632
Fax: 937-746-7632
E-mail: Strongholdone@cs.com
Website: www.strongholdone.com
Stronghold Coating Systems sells polymeric coatings for all types of special applications. We have also just gotten approval of a new Bridge Bearing material that is used thru out Europe. We have the rights to this material for all North America. Stronghold has a complete R&D lab to do analysis and development of special products for difficult applications like the Bridge Bearing material. There is a new spray process of two part materials for areas the have extreme corrosion problems. It is very simple and use able in the field with just a small air compressor. One rehab bridge company is looking at it to do field repairs on small areas on bridges that because of location have extreme corrosion problems.

### StructurAlert™ by MISTRAS

Booth #: 214
Contact: Terry Tamutus
Phone: 609-716-4000
Fax: 609-716-0706
E-mail: sales@mistrasgroup.com
Website: www.StructurAlert.com
StructurAlert™ utilizes Acoustic Emission technology to “listen” for signs of damage, optimizing your asset’s structural and operational integrity. Through expert system software and sensor-fusion technology, StructurAlert™ provides results with

quantifiable cause and effect; providing 24/7, continuous, local and wireless remote on-line monitoring of suspension, cable stay, post tensioned, concrete or steel bridges. StructurAlert™ prioritizes maintenance and enables real-time condition monitoring to minimize bridge closures, reduce capital expenditures, and increase your bridge's lifespan.

### STV

Booth #: 225
Contact: Ani Chatterjee
Phone: 443.545.4362
E-mail: Aniruddha.Chatterjee@stvinc.com
Website: www.stvinc.com
STV is a leading, award-winning professional firm offering engineering, architectural, planning, environmental and construction management services. We consistently rank among the country's top 25 firms in education, corrections, highways, bridges, rail and mass transit.

### T.Y. Lin international

Booth #: 437
Contact: Thomas Perry
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Website: www.tylin.com
T.Y. Lin International (TYLI) is a premier, full-service infrastructure consulting firm, providing leading-edge engineering and architectural services to clients in the aviation, bridge, facilities, ports and marine, rail and transit, and surface transportation markets. TYLI has more than 2,500 professionals in 50 offices throughout the Americas and Asia.

### Teledyne Blue View

Booth #: 213
Contact: Jon Robertson
Phone: 425-492-7400
E-mail: swa_sales@teledyne.com
Website: www.blueview.com
Teledyne BlueView is the leading manufacturer of underwater 2D and 3D Multibeam acoustic imaging tools. 2D and 3D sonar are used for used for underwater infrastructure inspection, scour and undercut monitoring, concrete spalling, damage inspections and debris inspections. These versatile sonar can be mounted to multiple platforms, vessel, tripod or remotely operated vehicle, to collect high resolution data on any structures.

### Tensa America, LLC / DEAL

Booth #: 124
Contact: ANDREA TRAVANI
Phone: 703-835-2189
Fax: 305-866-9917
E-mail: travani@tensaamerica.com
Website: www.tensaamerica.com
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.

### Terex BidWell

Booth #: 432
Contact: Marty Bachey
Phone: 605-987-2603
Fax: 605-987-2605
E-mail: Marty.Bachey@terex.com
Since 1961 Terex Bid-Well has been an industry leader in the development and manufacture of a complete line of versatile and specialized concrete paving machines for the heavy and highway construction market. The Terex Bid-Well full line of concrete pavers includes bridge deck pavers, overlay machines, airport, road and street pavers, texturing/curing machines, specialized paver/trimmer for slopes and canal paving, along with work bridges that meet any job requirement.

### Tideland Signal Corporation

Booth #: 111/113
Contact: Jeff Varenkamp
Phone: 831-818-8418
E-mail: jeff.varenkamp@tidelandsignal.com
Website: www.tidelandsignal.com
Tideland Signal delivers world leading aids to navigation solutions, products, services and customer care, with innovation, safety and compliance at the core of our mission.

### TRC Engineers, Inc.

Booth #: 409
Contact: Robert Schamber
Phone: 916-366-0632
Fax: 916-366-1501
E-mail: rschamber@trcsolutions.com
Website: www.trcsolutions.com; www.trcbridgedesignsoftware.com
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.

### V&S Galvanizing

Booth #: 243
Contact: Tim Woll
Phone: 313-535-2600
Fax: 313-535-0862
E-mail: timw@hotdipgalv.com
Website: www.hotdipgalvanizing.com
V&S Galvanizing is the preferred choice of thousands of architects and steel fabricators when corrosion protection is a major concern. V&S offers:
•The highest-quality galvanizing for structural steel and fasteners.
•The exclusive DUROZINQ® package combining hot dip galvanizing services, shipping, consultation, and custom zinc paints to match your installation.
•The exclusive COLORZINQ® system that combines zinc protection and custom-matched colors.
•Unique architectural finishes for intricate projects.
•AIA accredited seminars for architects.
We currently have 7 galvanizing plants to serve your needs in Columbus, OH, Redford, MI, Perth Amboy, NJ, Jonestown, PA, Taunton, MA, New Castle, DE and Memphis, TN.

### Vector Corrosion Technologies

Booth #: 412
Contact: Rachel Stiffler
Phone: 204-489-9611
Fax: 204-489-6033
E-mail: reneet@vector-construction.com
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.

### Viathor, Inc.

Booth #: 231
Contact: Clark Verkler
Phone: 916-987-0246
E-mail: vinfo@viathor.com
Website: www.viathor.com
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.

### Volkert, Inc.

Booth #: 248
Contact: Ginny Finley
Phone: 703-772-6256
Fax: 703-642-8106
E-mail: virginia.finley@volkert.com
Website: www.volkert.com
Ranked #115 in ENR's Top Engineering Firms, Volkert 's multidisciplinary firm provides transportation engineering and construction management services throughout the United States and abroad. Volkert's expertise covers bridge, roadway, drainage/H&H, and traffic engineering; landscape architecture; environmental services; P3 /design-build engineering and quality assurance; and right-of-way acquisition services. Construction management capabilities include construction engineering inspection, constructability reviews, scheduling and cost estimating. Volkert serves clients from 35 offices located in fourteen states and Washington, DC.

### Wasser Coatings

Booth #: 249
Contact: Benjamin Forde
Phone: 617-366-6277
E-mail: bforde@wassercoatings.com
Website: www.wassercoatings.com
The industry leader in advanced coatings technology, Wasser manufactures a full line of high-performance industrial maintenance coatings that provide unprecedented levels of protection. Our state-of-the-art product line, proven solutions and expertise enable superior, compliant applications for every project. Wasser's innovative corrosion protection products provide superior protection while employing traditional application methods. Our Moisture-Cure Polyurethane (MCU) can be applied in extreme environmental conditions expanding the "application window" while reducing operational costs... no wonder that Wasser MCU coatings have become the product of choice for facility owners, engineers and applicators alike. Cutting-edge product innovation with consistent and long lasting protection that meets or exceeds industry VOC standards gives you the Wasser Advantage!

# Exhibitors

ALPHABETICAL LISTING

### Watson Bowman Acme

Booth #: 441
Contact: Steve Pabst
Phone: 716-691-7566
Fax: 716-691-9239
E-mail: steve.pabst@basf.com
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.

### Whitlock Brothers Inc.

Booth #: 337
Contact: Bruce Nelson
Phone: 757-285-7240
Fax: 757-461-0879
E-mail: bruce.nelson@whitlockbrothers.com
Website: www.whitlockbrothers.com
For 80 years, Whitlock Brothers, Inc. has supplied the mid-Atlantic region with construction products for infrastructure, civil, commercial, industrial projects. We also specialize in traffic control products and bridge/highway construction. Whitlock Brothers has a continuing commitment to provide you with quality, value, and service to meet the needs required for today's complex building projects.

### Whitman, Requardt and Associates, LLP

Booth #: 143
Contact: Melanie Hustead
Phone: 443-224-1770
Fax: 443-224-1875
E-mail: mhustead@wrallp.com
Website: www.wrallp.com
Established in 1915, WRA is a nationally recognized engineering, architectural and environmental firm that consistently ranks among the Top 125 Design Firms by Engineering News Record. WRA's services cover all aspects of bridge engineering including new field and structural investigations, testing, analysis, load rating, feasibility studies, foundation evaluations and design, life-cycle cost estimating, contract preparation and cost estimating, and construction related services for the repair, rehabilitation, and replacement of existing structures and new structures alike.

### Williams Form Engineering Corp.

Booth #: 131
Contact: Ryan Williams
Phone: 616-866-0815
Fax: 616-866-1890
E-mail: ryan@williamsform.com
Website: www.williamsform.com
Williams Form Engineering Corporation has been providing threaded steel bars and accessories to the bridge construction industry for over 90 years. Williams' pre-stressing / post tensioning 150 KSI All-Thread-Bars are high tensile steel bars available in seven diameters from 1" to 3" with guaranteed tensile strengths to 1027 kips.

### Wire Rope Industries

Booth #: 321
Contact: Kevin Tellier
Phone: 514-426-6448
Fax: 514-697-2927
E-mail: tellierk@wirerope.com
Website: www.wirerope.com
Manufacturer of structural cable systems for use in all types of cable supported bridges.
Full range of wire and wire rope types including bridge rope, bridge strand, locked coil. Class A, B, C galv, Galfan (Bezinal, Bezinal 3000).
Sockets, clamps and specialty castings.
Prestressing, socketing, proofloading of complete range of diameters.

### WireCo World Group

Booth #: 100
Contact: Richard Humiston
Phone: 816-270-4700
E-mail: richardhumiston@wirecoworldgroup.com
Website: www.wirecoworldgroup.com
WireCo Structures, a WireCo® WorldGroup brand, 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.

# Exhibitors

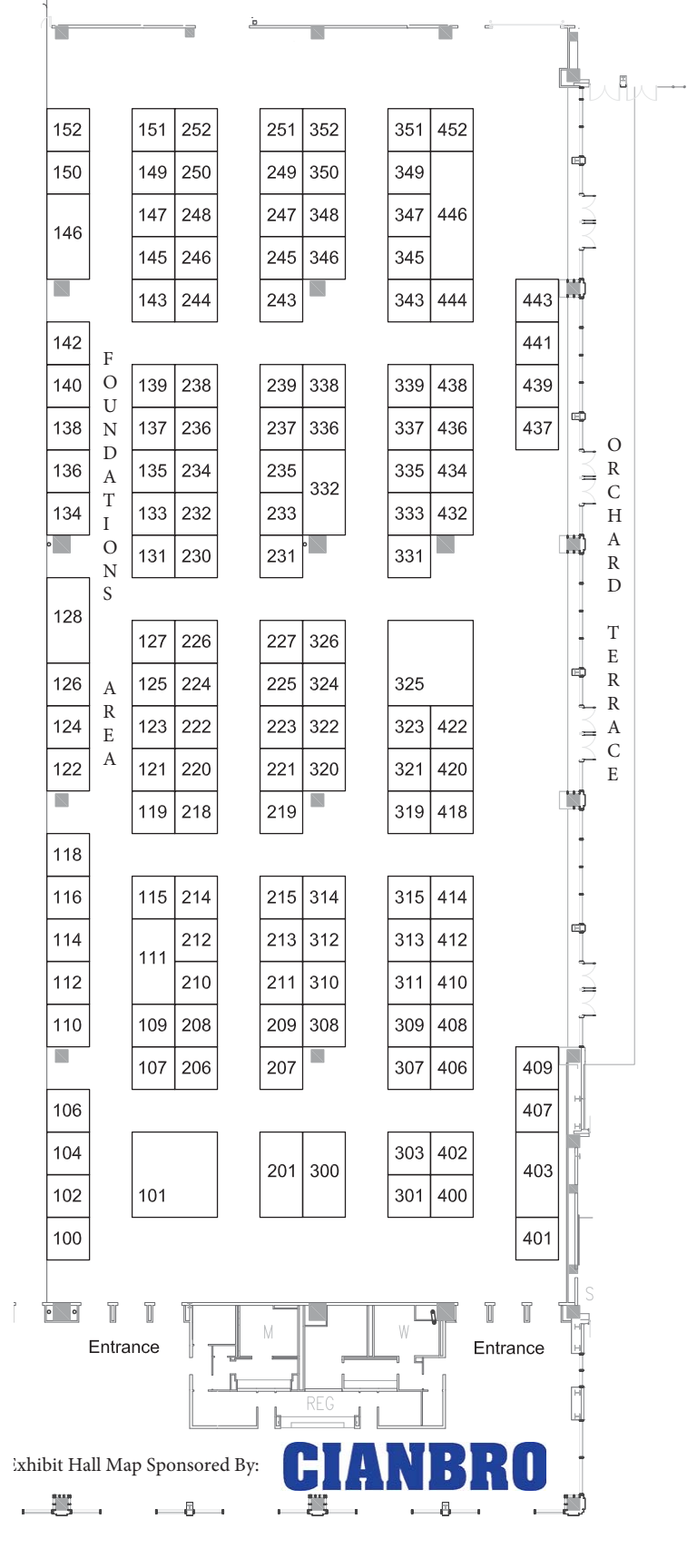
ALPHABETICAL LISTING

## Wirerope Works Inc.

Booth #: 224
Contact: Mark Reeves
Phone: 570-506-9096
Fax: 570-327-4274
E-mail: m.reeves@wireropeworks.com
Website: www.wireropeworks.com
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, and suspension bridges. Bethlehem Wire Rope products are recognized the world over for superior quality, service and outstanding value.

## WSP | Parsons Brinckerhoff

Booth #: 311
Contact: Amy Gilleece
Phone: 916-567-2506
E-mail: Gilleece@pbworld.com
Website: www.wsp-pb.com/usa
WSP | Parsons Brinckerhoff provides a full range of services for bridges—from feasibility studies and environmental permitting, through preliminary and final design, to construction management, inspections and rehabilitation. Experienced in both steel and concrete, the firm has worked on cable-stayed, arch, truss, segmental, suspension, girder, movable and floating structures as well as state-of-the-art thermoplastic and FRP bridges. For more than a century, WSP | Parsons Brinckerhoff has contributed to some of the world's most notable bridges.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