CHAIRMAN’S WELCOME

Welcome to Pittsburgh and IBC 2008.

We particularly want to extend a warm Pittsburgh welcome to our Keynoters. Our slate of Keynoters includes US DOT Deputy Secretary VADM Thomas J. Barrett USCG (Ret.), ARTBA’s Dr. T. Peter Ruane, AASHTO’s Mr. John Horsley and AASHTO’s Subcommittee on Bridges and Structures (SCOBS) Chairman Mr. Mal Kerley, P.E. Gentlemen, you honor IBC and all bridge professionals by your willingness to come here and share your thoughts with us. The journey that has brought each of you here is truly uniquely American. We are anxious to hear your message and to be guided by your insights.

The Conference planning Committee has been hard at work for well over a year developing the format for the NEW IBC and planning this landmark 25th Anniversary Conference.

With IBC 2008, we are introducing a series of IBC firsts:

• We are celebrating IBC’s 25th Anniversary
• IBC outgrew its previous site and we have moved here to the new and spacious DLCC
• This is the first time that a US government agency, the FHWA, has been featured as the IBC Featured Agency
• This is the largest IBC program ever: There are over 80 peer-reviewed Technical Papers, 17 Workshops, three Seminars, two NHI Courses, and over 160 Exhibitors and a spouses program
• There are four Committees holding major meetings at IBC 2008. We welcome the Associated Pennsylvania Constructors, The National Steel Bridge Alliance (NSBA), the Mid-Atlantic States Committees for Economical Steel and Concrete Fabrication (SCEF) and the TRB Subcommittee AFF10 (2) Bridge Aesthetics mid-year meeting

In order to accomplish more with less travel, we are planning to invite many more Committees to utilize IBC as a place to meet in the future. Please let us know how you feel about the combination of events and meetings?

We extend a warm welcome to each of you. Please enjoy Pittsburgh’s 250 year Anniversary Celebration event while you are here

....eric

Eric S. Kline
2008 General Chair
KTA-Tator
IBC EXECUTIVE COMMITTEE & CO-SPONSORS

The Engineers’ Society of Western Pennsylvania wishes to thank and acknowledge the IBC Executive Committee members for the dedication to planning the premier bridge technology conference in the world: The International Bridge Conference®. Members include...

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GAI Consultants, Inc.

Matthew P. McTish, P.E.
McTish, Kunkel & Associates

Dennis R. Mertz, Ph.D.
University of Delaware
CONFERENCE INFO

The Engineers’ Society of Western Pennsylvania and the IBC Executive Committee gratefully acknowledge our Co-Sponsors and Publication Partners for their support and promotion of the IBC.

Co-sponsors
ADSC:  The International Association of Foundation Drilling
www.adsc-iafd.com
American Association of State Highway and Transportation Officials (AASHTO) www.transportation.org
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National Institute of Steel Detailers (NISD) www.nisd.org
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Northeast Association of State Transportation Officials (NASTO) www.nysdot.gov/portal/page/portal/nasto
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Prestressed Concrete Association of Pennsylvania (PCAP) www.pcap.org
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Publication Partners:
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The Journal of Protective Coatings and Linings (JPCL) and Paintsquare.com
www.paintsquare.com

June 2-4, 2008, Pittsburgh, PA USA
Welcome to the 25th Annual International Bridge Conference®

Please read the following general information to learn about many of the new features of the IBC! The move to a new location, and the celebration of the IBC’s 25th Anniversary have provided an opportunity to offer many new and exciting elements to the Conference. As always, Conference personnel (found at the Registration Desk) and IBC Executive Committee members can be a valuable source of information!

Badge Identification

Please wear your IBC name badge at all times during the conference. Not only is the badge your passport to all Conference activities, but it also lists several important local phone numbers on the back. ESWP has authorized 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.

Meeting Information

IBC functions are located in the David L. Lawrence Convention Center (DLCC) except for the IBC Awards Luncheon and daily Author’s Breakfast, which are held in the Westin Convention Center Hotel, located across the street from the DLCC. Additionally, the 25th Anniversary Celebration - open to all registered attendees - will be held at the Senator John Heinz Regional History Center, located in the Strip District within easy walking distance from the DLCC. Please check individual listings in the program for specific locations and times for all technical sessions, seminars and social functions. Events which require tickets will also identify the specific location for these functions. Any changes in the program schedule will be posted or announced at the Conference Registration Desk.

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.

Registration Desk

The Conference Registration Desk is located on the 3rd Floor of the DLCC, in the Ballroom Foyer. The hours are as follows:

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<thead>
<tr>
<th>Day</th>
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<tr>
<td>Sunday</td>
<td>5:30pm to 7:30pm</td>
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<tr>
<td>Monday</td>
<td>7:00am to 7:00pm</td>
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<td>Tuesday</td>
<td>7:00am to 5:00pm</td>
</tr>
<tr>
<td>Wednesday</td>
<td>7:00am to 1:30pm</td>
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Attendee Registration Lists

Registrations received prior to May 23 have been compiled in the “IBC PRE-REGISTRATION LIST - PART 1 of 2”, and is distributed free to all registered attendees.

An addendum to the registration list “PART 2 of 2,” will be available Wednesday morning of the conference and reflects those attendees who registered after May 24 or on-site during the conference.

An electronic copy of the entire list is available for $25 following the conference.

Message Board

As a service to Conference registrants, a Message Board will be located in the Registration area of the DLCC. The board will be available on June 1 - 4. Messages will be retained until the end of each day.
IBC Exhibition

One of the main attractions of the Conference is the IBC Exhibit Hall. As you stroll through over 170 exhibits, you will be able to explore the latest technologies, products and services the bridge industry has to offer.

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

- **Monday:** 11:00am to 7:00pm
- **Tuesday:** 11:00am to 5:00pm
- **Wednesday:** 7:00am to 1:30pm

The IBC will feature a Luncheon Buffet throughout the Exhibit Hall on Monday and Wednesday, open to all registered attendees and registered spouses. Also, don’t miss our popular Exhibitor Reception, on Monday evening from 5:00-7:00pm throughout the Exhibit Hall. All registered attendees will receive one ticket redeemable for a beverage at the reception. (Additional tickets can be purchased at the Conference Registration Desk.)

Host Hotel Information

**Westin Convention Center Hotel**
1000 Penn Avenue
Pittsburgh, Pennsylvania 15222

Pre-prints

Pre-prints for all technical presentations are available at the Pre-Print area located in the West Atrium of the Ballroom Foyer, 3rd level of the DLCC. Pre-prints can be purchased for just $3.00 per copy.

New for this year: You can purchase a 1 GB flash drive that contains all available pre-prints in .pdf format for only $25.00.

Also, you can find copies of previous years’ IBC Proceedings (for $55 per volume). The Pre-Print Booth will be open:

- **Monday:** 9:00am to 6:00pm
- **Tuesday:** 8:00am to 5:00pm
- **Wednesday:** 8:00am to 1:30pm

IBC Gift Items

Once again at this year’s IBC, you will have the opportunity to purchase IBC Golf Shirts, T-shirts, Hats and a limited supply of special 25th Anniversary Golf Shirts. These items are high quality and feature the popular IBC logo. The Gift Item Table is located at the Pre-print desk in the West Atrium where you can make your purchases throughout the Conference until Wednesday at 1:30pm. Please be sure to stop by and shop before Wednesday!

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 25th Annual International Bridge Conference® will be available on CD in late Summer 2008 and mailed to you at that time.

Coffee Stand

Complimentary coffee breaks are available at various times throughout the Conference as noted in your Program Guide. Most breaks are presented in the Exhibit Hall.
New for 2008 is a Spouse/Guest Program that will showcase some of the many attractions in Pittsburgh. Registration as a spouse or guest ($95) will grant you access to the exhibit area which includes the exhibitor cocktail reception on Monday evening and lunch on Monday and Wednesday in the exhibit area. In addition, you will be able to attend the 25th anniversary celebration on Tuesday evening at the Senator John Heinz Regional History Center. Finally, as a registered conference attendee, you will be able to participate in the scheduled tours (described below.) There is an additional fee for each of the tours.

A Spouse/Guest Get Acquainted Breakfast Reception will be available on Monday morning where you can meet other spouses & guests, and make new friends to enjoy the “City of Bridges” with. There will be a brief presentation by a conference representative, and a representative of VisitPittsburgh to orient you to the conference and its activities as well as a brief introduction to the City of Pittsburgh and some of its many attractions.

Attractions on the schedule* are:

- Just Ducky Tours, (Monday) A narrated sight seeing tour of Pittsburgh on a vintage WW II amphibious vehicle.
- Carnegie Natural History Museum, University of Pittsburgh Nationality Rooms, (Tuesday) A tour of the largest natural history museum in the country and the ethnic heritage of Pittsburgh displayed in 26 different rooms.
- Tour of PNC Park. (Wednesday) Tour the most beautiful ball park in America, according to ESPN.com.

All of these events are based on minimum participation* and subject to cancellation due to lack of participation. For more information contact IBC personnel at the registration desk. Additional fees apply.

The Mid-Atlantic States’ Committees for Economic Steel and Prestressed Concrete Fabrication (SCEF and PCEF) will be meeting during the course of this year’s IBC. The SCEF will be meeting Sunday evening, June 1st from 6-10 pm and the PCEF meeting time will be announced.

Both meetings are open to the general public. The committees are made up of representatives from FHWA and DOT offices in DC, DE, MD, NC, NJ, NY, PA, VA and WV; the respective industries; universities; and consulting firms. The committees were formed out of the recognized need to improve quality and economy of steel and concrete bridge structures through achieving uniformity and standardization of design and fabrication details, procedures and practices.
Over the past 27 years, the SCEF has developed and published standards in the areas of structural steel details, bearings, expansion joints, coatings, ancillary structures, and QC/QA practices for fabrication. Many of these standards have been elevated to the national level and have spurred the formation of other regional groups. In the past 10 years, the PCEF has developed regional standard shapes for prestressed concrete bulb-tees; economical diaphragm layouts; specification guidelines for precast/prestressed concrete bridge products, and a guidance manual for plants quality control.

Meetings of both committees will be carrying on the standardization efforts and strengthening the partnerships that have been forged over the years.

### STEEL BRIDGE COLLABORATION MEETINGS SUNDAY TO WEDNESDAY, JUNE 1-4, 2008

#### STEERING COMMITTEE (SC)
- Sunday, June 1, 7:00pm - open to all, meeting in Room 315.

#### TASK GROUPS

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<tr>
<th>TASK GROUP</th>
<th>DAY/TIME</th>
<th>COORDINATOR</th>
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<td>TG 1 Detailing</td>
<td>Monday, June 2, 6:00 to 10:00pm</td>
<td>Walter Gatti</td>
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<tr>
<td>TG 2 Fabrication Specification</td>
<td>Tuesday, June 3, 8:00am to noon</td>
<td>Heather Gilmer</td>
</tr>
<tr>
<td>TG 4 QC/QA</td>
<td>Tuesday, June 3, 1:00pm to 5:00pm</td>
<td>Denis Dubois</td>
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<td>TG 5 Repair Database</td>
<td>meeting w/ TG 2</td>
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<td>TG 8 Coatings</td>
<td>Monday, June 2, 6:00 to 10:00pm</td>
<td>Eric Kline</td>
</tr>
<tr>
<td>TG 13 Analysis of Steel Bridges</td>
<td>Monday, June 2, 5:00 to 10:00pm</td>
<td>Domenic Coletti</td>
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#### TASK GROUP MEETING SUMMARY CHART

<table>
<thead>
<tr>
<th>ROOM</th>
<th>MONDAY Evening</th>
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<th>TUESDAY Daytime</th>
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<td>315</td>
<td>TG 1</td>
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<td>311</td>
<td>TG 8</td>
<td>310</td>
<td>TG-2 &amp;TG-5</td>
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<td>310</td>
<td>TG 13</td>
<td>310</td>
<td>TG-4</td>
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#### MAIN COMMITTEE
- Wednesday, June 3, 1:00
  The Main Committee will meet Wednesday, June 3, from 1:00 to 4:00pm in Room 316.
SEMINAR: LRFD FOR HIGHWAY BRIDGE SUPERSTRUCTURES - STEEL (2-DAY)

Time: 8:00 AM-5:00 PM (Mon/Tues)
Room: 311
Presenter: NHI

This new course expands the suite of FHWA services to assist State and local governments in a successful implementation of load and resistance factor design (LRFD). The course promotes the philosophy of the LRFD design platform and establishes the motivation for LRFD as the reassurance that safe design practices are being applied where needed. For structural applications, the curriculum follows the AASHTO “LRFD Bridge Design Specifications,” 3rd Edition, 2004 (AASHTO LRFD), including the approved 2005 and 2006 Interims. This course is a combination of instructor-led discussions and workshop exercises. It includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The training includes the extensive use of student exercises and example problems to demonstrate overall design, detailing, and construction principles addressed in the reference materials, and provides hands-on experience in the AASHTO LRFD design and detailing of steel superstructures. Exercise and example problems are based on components of overall comprehensive bridge design examples using AASHTO LRFD and provide comparisons between ASD, LFD, and LRFD design methods where meaningful.

The curriculum materials are comprised of a comprehensive design manual, FHWA Publication No. FHWA NHI 06-001, lecture and workshop exercises intended to promote or enhance a working knowledge of the AASHTO LRFD specification, and a participant workbook for lecture notes and exercises.

The curriculum material contains the following major topics:

- Preliminary design concepts for steel superstructures
- Steel I-girder design (including miscellaneous steel detail design)
- Bearing design

OUTCOMES:

Upon completion of the course, participants will be able to:

- Describe the steel bridge superstructure design and construction process in accordance with the AASHTO LRFD specifications
- Identify the application of appropriate AASHTO LRFD specification articles dealing with selection of bridge type, size, and location; bridge economics; steel bridge superstructure design; and bearings selection and design
- Demonstrate the use of the AASHTO LRFD specification requirements for steel superstructure design through the completion of step-by-step procedures, student exercises, and design examples
- Successfully complete applicable learning outcome assessments with a combined score of 70 percent or higher.

TARGET AUDIENCE:

This course has been developed for the needs of practicing public and private sector structural and bridge engineers with 1-10 years of experience. The primary audience is agency and consultant structural designers. Pre-training Competencies: Individuals attending this course should have a minimum BSCE degree and have a working knowledge of the AASHTO LRFD or the “AASHTO Standard Specifications for Highway Bridges,” and have relevant design experience using either of these specifications on at least one bridge superstructure.
Vice Admiral Thomas J. Barrett, USCG (Ret.) Deputy Secretary of Transportation, U.S. Department of Transportation

Vice Admiral Thomas J. Barrett, USCG (Ret.) was confirmed as the Deputy Secretary of Transportation on August 8, 2007. Earlier, he became the Acting Deputy Secretary of Transportation on March 3, 2007.

In his role as Deputy Secretary, Barrett is helping the President and Secretary Mary E. Peters ensure that the United States and its citizens have a safe, efficient, and reliable transportation system that meets vital national interests and enhances the quality of life for Americans today and into the future.

Deputy Secretary Barrett serves as the Department’s chief operating officer, responsible for the day-to-day management of DOT’s $61.1 billion budget, 10 modal administrations, and approximately 60,000 employees.

Barrett was sworn in May 31, 2006, by then Transportation Secretary Norman Y. Mineta as the first administrator of the Pipeline and Hazardous Materials Safety Administration (PHMSA). The PHMSA Administrator is the agency’s Chief Executive Officer and advises the Secretary on all matters falling within PHMSA’s jurisdiction. The Administrator directs the agency’s national program for protecting against risks to life and property inherent in the transportation of hazardous materials in commerce and the transportation of liquid, natural gas, petroleum, and other hazardous liquids by pipeline.

Before becoming PHMSA Administrator, Barrett was the Vice President and Chief Operating Officer of the Potomac Institute for Policy Studies. Prior to that, he served 35 years in the United States Coast Guard and attained the position of Vice Commandant. In that capacity, he served as second in command, Agency Acquisition Executive, coordinated the Coast Guard Leadership Council, and co-chaired with the Vice Chief of Naval Operations the Navy-Coast Guard Board, an inter-service policy coordination body. He was instrumental in improving maritime security post 9/11, expanding Coast Guard support to the National Foreign Intelligence Community, supporting Operation Iraqi Freedom, and smoothly transitioning the Coast Guard into the new Department of Homeland Security.

Barrett earned a B.S. in Biology from LeMoyne College, Syracuse, N.Y., and a Juris Doctor with honors from the George Washington University. He is a graduate of the Army War College and the National Defense University Capstone Course in National Security Strategy and Military Capabilities.

Barrett is married to the former Sheila Walker of Syracuse, N.Y. They are proud parents of four children, Tom, a Major in the United States Army, Matt, Rebecca and Paul, a Lance Corporal in the United States Marine Corp Reserve. Both Tom and Paul are Iraq veterans.
Dr. T. Peter Ruane, President and CEO, American Road and Transportation Builders Association (ARTBA), Washington, DC

Pete is the President and CEO of ARTBA, a 104-year old national federation of public and private transportation construction interests with over 5,000 members. He has over 35 years of experience in economic development, transportation and construction fields. Prior to joining ARTBA, he served as President/CEO of the National Moving & Storage Association and Deputy Director of the Office of Economic Adjustment, the Office of the Secretary of Defense and the President’s Economic Adjustment Committee. He received numerous awards, including the top two government-wide management awards made available to a young federal executive. He is a graduate of Loyola College of Baltimore, holds a masters degree from Pennsylvania State University and a doctorate from George Washington University.

John Horsley, Executive Director, American Association of State Highway and Transportation Officials (AASHTO)

John Horsley has been the Executive Director of AASHTO since 1997. Horsley served at the U.S. Department of Transportation from 1993 to 1999. As Associate Deputy Secretary, he was an advocate for intermodal policies, quality of life initiatives, and liaison to state and local governments, U.S. Congress, and transportation constituencies. A native of the Northwest, Horsley was elected to five terms as County Commissioner in Kitsap County, a community just west of Seattle. He is a graduate of Harvard, an Army veteran, a former Peace Corps volunteer, and a Congressional aide. He did graduate study at Georgetown University. He is past President of the National Association of Counties, and was founding Chairman of the Rebuild America Coalition.

Malcolm T. Kerley, P.E., Chief Engineer, Virginia Department of Transportation

Mal Kerley, Chief Engineer for the Virginia Department of Transportation (VDOT), is a member of the AASHTO Standing Committee on Highways and has served as Chair of the AASHTO Highway Subcommittee on Bridges and Structures (SCOBS) since 2002. In July 2002, he was named Chief Engineer at VDOT, accountable for the quality, cost and timeliness of all engineering plans associated with the design of, and right-of-way acquisition for, VDOT transportation projects. He had served as Administrator of VDOT’s Structure & Bridge Division from 1992 to 2002, responsible for planning, design, construction, maintenance and inspection of more than 20,000 bridges and overpasses. He began his career with VDOT in 1971. He has a civil engineering degree from the Virginia Military Institute (BSCE, 1971) and Master’s degree from the University of Virginia (MECE, 1973).
The International Bridge Conference® in conjunction with Roads and Bridges Magazine, Bayer Corporation and Bridge design and engineering Magazine, annually awards five medals and one student award to recognize individuals and projects of distinction. The medals are named in honor of the distinguished engineers who have significantly impacted the bridge engineering profession worldwide. The student award is named in honor of a former IBC General Chairman, champion of the student award’s program and friend to the bridge community at large. All Awards will be presented at a special Luncheon Awards ceremony, opened to the first 300 registered attendees. The Luncheon is sponsored by the Sherwin Williams Company and will be held in the Grand Ball Room of the Westin Convention Center Hotel. Advance reservations are required, as there is limited seating available! Only those with tickets are eligible to attend. Please check at the conference registration desk for current information.

JOHN A. ROEBLING MEDAL

The John A. Roebling Medal recognizes an individual for lifetime achievement in bridge engineering. We, at IBC, are pleased to recognize Leonardo Fernandez Troyano as the 2008 recipient for his distinguished, more than 40 year career with Carlos Fernandez Casado S.A.

GEORGE S. RICHARDSON MEDAL

The George S. Richardson Medal, presented for a single, recent outstanding achievement in bridge engineering, is presented to recognize the Sutong Bridge, Nangtong City, Jiangsu Province, China.

GUSTAV LINDENTHAL MEDAL

The Gustav Lindenthal Medal, awarded for an outstanding structure that is also aesthetically and environmentally pleasing, will be presented to recognize the Route 50 Bridge over the Ohio River and Blennerhassett Island, Parkersburg, West Virginia.

EUGENE C. FIGG JR. MEDAL

The Eugene C. Figg Jr. Medal for Signature Bridges, recognizing a single recent outstanding achievement in bridge engineering, which is considered an icon to the community for which it is designed, will be presented to recognize the High-Main Street Bridge, Hamilton, Ohio.

ARTHUR G. HAYDEN MEDAL

The Arthur G. Hayden Medal, recognizing a single recent outstanding achievement in bridge engineering demonstrating vision and innovation in special use bridges, will be presented to recognize the Tri-Countries Bridge, Weil Am Rhein, Germany. This structure crosses the Rhine River between Weil Am Rhein, Germany and Huningue, France.
The James D. Cooper Student Award recognizes undergraduate/graduate students who demonstrate an interest and passion for bridge engineering. The award is presented to winners of a student competition for technical writing and engineering insight. The 2008 James D. Cooper Graduate Student Award is awarded to: Woo Soek Kim of the Pennsylvania State University for his paper entitled: Simplified Nonlinear Numerical Method for Integral Abutment Bridges. The 2008 James D. Cooper Undergraduate Student Award is awarded to: Heidi Clayville, Theresa Howell and Kristen Erickson of Washington University in St. Louis for their paper entitled: The New Daniel Boone Bridge Project: US Route 40/I-64 Across the Missouri River.

The committee would like to thank this year’s award referees: John Aidoo, Rose-Hulman Institute of Technology, Terre Haute, IN; James Garrett, Carnegie Mellon University, Pittsburgh, PA; Kent A. Harries, University of Pittsburgh, Pittsburgh, PA; Dennis Mertz, University of Delaware, Newark, DE

Workshop 1: Bridge Programs Forum (W-1)

Time:  1:00-4:00 PM
Room:  306/307

The Bridge Programs Forum in a new feature at IBC and is a part of IBC’s new continuously running construction industry track. Invited Owners from across the region will describe their upcoming bridge program. Attendees will get important details about participating owner bridge programs, including:

• bridges programmed for letting during the next 12 months
• major projects scheduled for letting in the next 3 to 5 years
• upcoming projects of interest to the large and medium sized contractors and fabricators
• the funding situation that is unique to each owner

In addition to presenting, Owner attendees will be able to assess the ongoing bridge construction and reconstruction programs in neighboring states in order to help ensure contractor capacity. Industry participants can find out and plan for bidding and teaming for upcoming projects. Consultants can learn about design projects scheduled for the next five years and perhaps beyond. This forum is a major new addition to the IBC array of mission critical session intended to add an entire new dimension to the IBC.
Workshop 3: The “New” Steel Bridge Design Handbook Workshop (W-3)

The original Highway Structures Design Handbook was produced by US Steel in the 1970s and subsequently maintained by AISC Marketing. Now, with federal grant money, the National Steel Bridge Alliance (NSBA), with HDR Engineering as the Principal Engineer, is undertaking the much-needed updating of this important industry document. Eventually, it will encompass 23 chapters and seven Design Examples. The chapters are being written by prominent engineers in the field and reviewed by a committee organized by NSBA. Presented by NSBA

The initial Chapters and Design Examples of the renamed Steel Bridge Design Handbook listed below are now available. This session will present an introduction to the new Handbook and review the
This session will bring construction industry specialists to the IBC to describe best practices for bridge design from the perspective of general contractors, fabricators, detailers, and erectors. Speakers will address:

- Quality plans and specifications – what defines high quality and how to achieve it
- Effective detailing – information needed to achieve what shop drawings should illustrate
- Material availability and considerations - cost and schedule impacts
- Achieving rapid project delivery - methods and practices that facilitate rapid delivery without adding undue cost
- Construction for durability - details that function well over the long haul
- Best practices for bridge erection - what needs to be communicated on plans

This guidance will help engineers achieve projects that are safe, constructable, and cost-effective, and can be readily inspected, and is a part of IBC’s new continuously running construction industry track forum.

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<tr>
<td>Cost Effectiveness through Constructability Reviews</td>
<td>Mick Girondo, Nyleve</td>
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<td>Detailing for Bridges - A guideline to achieving quality bridge shop drawings and the players involved</td>
<td>Jack Metcalfe, National Institute of Steel Detailing</td>
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<td>Steel Bridge Fabrication – Considerations for an Effective Project</td>
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<td>Bridge Erection – Ways and Means</td>
<td>TBD</td>
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Current bridge funding levels are inadequate to replace the quarter of our nation’s bridges that are classified as structurally deficient or functionally obsolete. Faced with budget constraints and an aging infrastructure, those responsible for bridge safety are challenged to maintain and preserve our nation’s bridges, of which almost half built prior to 1960 are steel. This challenge will be met by developing better evaluation and rehabilitation methodologies so owners can maintain and preserve their bridge inventories under increased funding constraints. This session is cosponsored by the Transportation Research Board (TRB) Steel Bridge Committee (AFF20) and Dynamics and Field Testing of Bridges Committee (AFF40).

Chair: Richard A. Walther, PE, SE, Chair, TRB Dynamics and Field Testing of Bridges Committee (AFF40)

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<tr>
<th>TIME</th>
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<tbody>
<tr>
<td>1:00</td>
<td>William Wright, Federal Highway Administration</td>
<td>Case Study of Minnesota I-35W Bridge Collapse</td>
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<tr>
<td>1:30</td>
<td>Glenn Washer, University of Missouri,</td>
<td>Evaluation Methodologies for Steel Bridges</td>
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<tr>
<td>2:00</td>
<td>Steven Altstadt, Purdue University</td>
<td>Recent Research: Inspection Frequency of Non-redundant Bridges and Damage Tolerant Design for Steel Bridges</td>
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<tr>
<td>3:00</td>
<td>Mark Bowman, Purdue University</td>
<td>Estimating Effect of Fatigue on Serviceability</td>
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<td>3:30</td>
<td>Michel Ghosn, City University of New York</td>
<td>Redundancy in Highway Bridges</td>
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<tr>
<td>4:00</td>
<td>Ray McCabe, HNTB</td>
<td>What Does the Future Hold?</td>
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<tr>
<td>4:30</td>
<td>Presenter Panel Discussion</td>
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## Workshop 6: AASHTO Technology Implementation Group (TIG) Bridge Moves with Self-Propelled Modular Transporters (SPMTs) (W-6)

- **Time:** 1:00-5:00 PM
- **Room:** 404
- **Chair:** Jim McMinimee, UDOT

**Objective:**
To inform bridge owners about the 2007 AASHTO Technology Implementation Group (TIG) national initiative to promote the use of self-propelled modular transporters (SPMTs) to quickly remove and replace bridges to minimize traffic disruption and improve work-zone safety. To highlight past, ongoing, and future bridge moves using SPMTs. To encourage bridge owners to consider the use of SPMTs for bridge replacement projects that would benefit from the speed and flexibility offered by this technology.

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<th>TIME</th>
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<tr>
<td>1:00</td>
<td>Hossein Ghara, Louisiana DOTD</td>
<td>AASHTO TIG Champions SPMTs: Free Assistance to Agencies Offered</td>
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<tr>
<td>1:20</td>
<td>William Nickas, Conven Engineering (prev. FDOT)</td>
<td>Florida DOT Keeps America Moving During Bridge Construction with SPMTs</td>
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<tr>
<td>1:45</td>
<td>Hossein Ghara, Louisiana DOTD</td>
<td>Louisiana DOTD Reduces Traffic Tangles with SPMT Bridge Moves</td>
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<tr>
<td>2:10</td>
<td>Jim McMinimee, Utah DOT</td>
<td>Utah DOT Program Adopts Ultra-Rapid Bridge Replacement with SPMTs</td>
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<tr>
<td>3:30</td>
<td>Audience Discussion of Issues Related to Moving Bridges with SPMTs,</td>
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## Workshop 7: Heat-Straightening Repair of Damaged Steel Bridges (W-7)

- **Time:** 1:00-5:00 PM
- **Room:** 401
- **Presenter:** FHWA

This program will focus on the latest strategies for the planning, design and implementation of heat straightening repair of steel bridges. A 250-page manual and two interactive training CD’s will be demonstrated. A hands-on demonstration will also be included. Actual, live demonstrations will be conducted on Tuesday, June 3 at 8:30 AM, 10:00 AM, 1:30 PM and 3:00 PM, outdoors curbside at the DLCC.

**Presenters:**
- Krishna Verma, FHWA, Washington, DC;
- R. Richard Avent, Louisiana State University, Baton Rouge, LA

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<tr>
<td>Room:</td>
<td>403</td>
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<tr>
<td>Presenter:</td>
<td>Jerry Dimaggio, FHWA</td>
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Structural foundations (shallow and deep foundations) for surface transportation structures continue to present one of the most challenging tasks to design and construction specialists in both private and public professional practice. Current trends like innovative contracting, risk management, limit states design (LRFD) and accelerated construction have further raised the bar for geotechnical, structural and construction specialists in order to meet project development and delivery demands on time and within cost estimates. These features are consistently on the critical schedule path, have significant costs, and are very risk prone to contract overruns and contract disputes.

The goal of this session is to share Best Practices to ensure future project success based on the presenter’s 35 years of international experience with design and construction of infrastructure features.

The following topics are addressed in this workshop (all design related material is presented based on AASHTO LRFD Specifications, 4th Edition 2007):

- Subsurface Investigation
- Communication between Geotechnical, Structural, Hydraulic and Con
- Foundation Selection
- Design Process and Procedures (structural and geotechnical)
- Extreme Event and Hazard Considerations
- Plans, Specifications and Contracting
- Construction Monitoring and Inspection
FEATURED AGENCY: FHWA SESSION

Time: 1:30–5:00 pm  
Room: 301-305  
Chairs: King W. Gee, Associate Administrator, Federal Highway Administration, and M. Myint Lwin, P.E., S.E., Director, FHWA, Office of Bridge Technology

IBC 08-01  
History of America’s Highways  
King W. Gee, Associate Administrator

IBC 08-02  
Research and Development of Bridge Technologies  
Ian Friedland, Technical Director on Research and Development

IBC 08-03  
The Highway Bridge Program  
Tom Everett, Principal Bridge Engineer

IBC 08-04  
Major Aspects of Geotechnical and Hydraulic Programs  
Jorge Pagan, Principal Bridge Engineer

IBC 08-05  
Major Bridges and Tunnels  
Vasant Mistry, P.E., Senior Bridge Engineer

IBC 08-06  
The Federal Lands Highway Bridge Program  
Gary Jakovich, Senior Bridge Engineer

IBC 08-07  
Technical Assistance in the Implementation of Bridge Technologies  
Shoukry Elnahal, Team Leader, Stewardship and Oversight of the Highway Bridge Program Division Bridge Engineer

IBC 08-08  
PennDOT’s Perspective on the FHWA Highway Bridge Program  
Tom Macioce, P.E., State Bridge Engineer

FHWA Display in Exhibit Hall  
Visit the FHWA mega-display in the Exhibit Hall during all posted hours of operation.

FHWA Concrete Mobile Laboratory  
The FHWA Concrete Mobile Laboratory will be on-site and equipped to demonstrate testing and acceptance of the latest concrete technology for pavements and bridges. The tractor measures 10’ wide x 35’ long and the trailer measures 10’ wide x 50’ long. The total length of the combination is around 85’ plus. The Mobile Lab is self-contained as a small concrete lab. with a generator for electricity. For IBC, there will be no mixing of concrete, but demonstration of equipment and methods. It is going to be very clean! Gary Crawford of FHWA will be the contact person for the Concrete mobile lab for this special IBC event. The trailer will be parked curb side so visitors can enter from the sidewalk without interruption to traffic. Demos will be available on Monday, Tuesday and Wednesday.
SEMINAR: LRFD FOR HIGHWAY BRIDGE SUPERSTRUCTURES - CONCRETE

Time: 8:00 am-5:00 pm (Tues & Wed)
Room: 401
Presented: NHI

This new course expands the suite of FHWA services to assist State and local governments in a successful implementation of load and resistance factor design (LRFD). The course promotes the philosophy of the LRFD design platform and establishes the motivation for LRFD as the reassurance that safe design practices are being applied where needed. For structural applications, the curriculum follows the AASHTO “LRFD Bridge Design Specifications,” 3rd Edition, 2004 (AASHTO LRFD), including the approved 2005 and 2006 Interims. This course is a combination of instructor-led discussions and workshop exercises. It includes LRFD theory applied to design examples and illustrates step-by-step LRFD design procedures. The training includes the extensive use of student exercises and example problems to demonstrate overall design, detailing, and construction principles addressed in the reference materials, and provides hands-on experience in the AASHTO LRFD design and detailing of concrete superstructures. Exercise and example problems are based on components of overall comprehensive bridge design examples using AASHTO LRFD and provide comparisons between ASD, LFD, and LRFD design methods where meaningful.

The curriculum materials are comprised of a comprehensive design manual, FHWA Publication No. FHWA NHI 06-001, lecture and workshop exercises intended to promote or enhance a working knowledge of the AASHTO LRFD specification, and a participant workbook for lecture notes and exercises.

The curriculum material contains the following major topics:

- Preliminary design concepts for prestressed concrete superstructures
- Pretensioned concrete I-girder design
- Continuous pretensioned concrete I-girder design
- Staged construction of prestressed concrete girder bridges
- Bearing design

OUTCOMES:
Upon completion of the course, participants will be able to:
- Describe the concrete bridge superstructure design and construction process in accordance with the AASHTO LRFD specifications
- Identify the application of appropriate AASHTO LRFD specification articles dealing with selection of bridge type, size, and location; bridge economics; concrete bridge superstructure design; and bearings selection and design
- Demonstrate the use of the AASHTO LRFD specification requirements for concrete superstructure design through the completion of step-by-step procedures, student exercises, and design examples
- Successfully complete applicable learning outcome assessments with a combined score of 70 percent or higher.

TARGET AUDIENCE:
This course has been developed for the needs of practicing public
and private sector structural and bridge engineers with 1-10 years of experience. The primary audience is agency and consultant structural designers. Pre-training Competencies: Individuals attending this course should have a minimum BSCE degree and have a working knowledge of the AASHTO LRFD or the “AASHTO Standard Specifications for Highway Bridges,” and have relevant design experience using either of these specifications on at least one bridge superstructure.

SEMINAR: THE USE OF STRUT AND TIE MODELING IN BRIDGE DESIGN

Time: 8:00 am-12:00 noon
Room: 402

This seminar will cover the history of the Strut and Tie method, steps for using the method, design examples of bridge elements and automated design tools. In addition to Dr. Martin, presenters will include.

Moderator:
- Dr. Barney T. Martin, PE, Modjeski and Masters

Presenters:
- Dr. David Sanders, University of Nevada, Reno;
- Dr. Daniel Kuchma, University of Illinois at Urbana-Champaign;
- Dr. Gregor Wollman, Michael Baker Jr., Inc.
Workshop 9: SSPC Coatings (W-9)

Time: 8:00 AM-5:00 PM
Room: 307
Presenter: SSPC

8:30-9:00 am: J. Peter Ault, P.E. and Christopher L. Farschon - Elzly Technology Corporation and Corrpro Companies, 20-Year Performance of Bridge Maintenance Systems: In 1986-1987, New Jersey DOT applied forty-seven (47) different coating systems to various spans of the Mathis Bridge. Each experimental system was applied to a complete span comprising approximately 4,000 square feet of steel. Experimental coating systems included metallicizing, various zinc-based systems, various levels of surface preparation, and several overcoating strategies (e.g., alkyd over a hand-tool cleaned surface). The paper will present the results of an inspection conducted in 2007, nominally 20 years after the initial coating application. The inspection showed varied service lives associated with the different coating systems. Some of the systems were in excellent condition after 20 years while others had completely broken down. In addition to the present condition of the test spans, the paper will review the historical performance of the various coating systems as well as the applied cost. Finally, several important implications for maintenance planners will be presented. These will include cost-benefit calculations and risk-reduction strategies.

9:00-10:00am: Dr. Michael O'Donoghue, ICI Devoe Coatings, Corrosion Mitigation For Steel Bridges: New Construction – Rapid Cure Polyaspartic Coating Systems Maintenance: High Ratio Calcium Sulfonate Coating Systems: In today's world of high performance coating systems the current milieu of multi-coat systems based on hard film formers provides some outstanding systems for new construction. Part A of this presentation outlines some of the best and most rapid curing systems available based on zinc, epoxy, polyurethane and polyaspartic coatings. For maintenance painting of bridges Part B of this presentation describes the successful use of an innovative high ratio calcium sulfonate coating system to solve corrosion problems in crevice corroded structure-critical connections and solve the problem of frozen bearings. Case histories and chemistry will be used to highlight the effective use of the technologies described.

10:00-10:15am Break

10:15-10:45am Eric S. Kline, PCS, KTA-Tator, Inc., One Hundred Years of Paint Performance: Fact or Fiction? Steel bridge painting is in its infancy as bridge construction extends back thousands of years. In those millennia the first bridge made of iron was built in 1779. The first steel was not used in a bridge until 1828. Some coated painted bridges are already over 100 years old. Can modern coatings protect steel bridges for the next hundred years? The author discusses how to achieve 100 years of service life using current materials and offers recommendations for research to improve the performance and economics of steel bridge painting.

10:45-11:15am Joseph Walker, Elcometer Instruments Limited Digital Data Management

11:15-11:45am Derrick Castle and Dee L. McNeill, Kentucky Transportation Cabinet and The Sherwin-Williams Company; Concrete Bridge Coatings in Kentucky: Progress in Lab and Field Testing Results; The continuing increase in usage of concrete structures, continued aging and deterioration of existing structures,
and ever increasing restrictions on the manufacturing parameters of coating systems are evidence that re-examination of the applicability and performance of protective coating systems for concrete structures is long overdue. The Kentucky Transportation Cabinet and the University of Kentucky, Transportation Research Center have partnered with manufacturers in the coatings industry to evaluate selected coating systems. The main objective of this project was to evaluate performance properties of various commercially available thin film coating systems for use on concrete.

• 11:45am-1:00pm Lunch
• 1:00-2:00pm, Sheri Thompson, The Sherwin-Williams Company, Boosting Your Customers Color Confidence Quotient, Learning Objectives:
  • Educate contractors on the basics of color, its influence on space and the customer
  • Develop a greater understanding of how environmental factors and light can affect color
  • Provide contractors with a list of questions to ask their customers, making the color selection process less daunting
  • Create an awareness of the selection tools available to contractors and their customers.

• 2:00-2:30pm, Stephen B. Karl, P.E., Greenman-Pedersen, Inc. (GPI) Visual Coating Condition Guide for NBIS Type Inspections; This section explores a potential solution to linking the knowledge and practices of coating evaluators and bridge safety inspectors via the introduction of an inclusive visual coding guide that can be integrated with a state DOT’s existing Bridge Management System. Most state DOTs maintain a comprehensive Bridge Management System as a tool in allocating resources to the inspection, maintenance, rehabilitation and replacement of bridges. These systems typically accept, store, update and report data on the physical and operating characteristics of bridge structures in the DOT’s inventory. Most systems pay little to no attention to the existing coating systems on steel bridge structures. Providing the key link between the two traditional disciplines of coatings specialists and bridge safety inspectors is a necessary task to fill this gap in data reporting. Better data reporting will provide the opportunity for the state to cost-effectively repair the protective coatings prior to requiring complete replacement, thus extending the life and protection of the steel substrate. This paper describes work performed with multiple state and local DOTs to develop paint coding guides that fit the specific needs of these clients’ Bridge Management Systems. The programs discussed reduce the subjectivity in the evaluation process, and provide a coatings management tool.

• 2:30-2:45pm Break
• 2:45-3:15pm Steve Feldman, PPG, The Use Of Polysiloxane Technologies (Coatings) To Reduce And Minimize The Cost’s Associated With Maintaining The Anti-Corrosive Coating System On Bridges
• 3:15-3:45pm Cynthia L. O’Malley, KTA-Tator, Inc., Benefits Of An Accurate Assessment Prior To Overcoating.
• 3:45-4:15pm Ronald F. Rauch, P.E., New York City DOT, From the Chemistry in the Can to the Chemistry on the Project (Follow up to the IBC 2007 Presentation)
**Workshop 10: Steel Railroad Bridge Load Rating Workshop (W-10)**

**Time:** 8:00 AM-5:00 PM  
**Room:** 403  
**Presenter:** AREMA

The Session is a comprehensive program detailing methods and procedures suggested by AREMA for rating a steel railroad bridge. The AREMA Normal and Maximum Ratings are explained. Existing documentation required, such as bridge plans and inspection reports are discussed. Bridge inspection for the purpose of rating the bridge is presented. The rating loads specified by AREMA are explained in detail. The calculation of remaining fatigue life and the incorporation of fatigue into the bridge rating are presented. Examples. The seminar provides 6.25 Professional Development Hours and Certificates of completion will be provided at the end of the seminar. Advanced registration is required.

**Instructors:**
- Stephen M. Dick, P.E., S.E., Ph.D., Wilson Railway Inc.  
- Daniel A. Doty, P.E., STV/ Ralph Whitehead Associates  
- Steven P. Lorek, P.E., HDR Engineering, Inc., Cincinnati, OH  
- Willis S. White, P.E. (Lead Instructor), STV/Ralph Whitehead Associates, Inc., Chairman of Subcommittee 1 (Design and Loadings), AREMA Committee 15 (Steel Structures)

**Workshop 11: Foundation Drilling Workshop (W-11)**

**Time:** 8:00 AM-5:00 PM  
**Room:** 405  
**Presenter:** ADSC

The International Association of Foundation Drilling will provide a full day session highlighting the current practice of micropile, drilled shaft, and earth retention construction for bridge projects. Topics of interest will be presented by industry leaders and will focus on state of the art equipment, innovative design and construction methodology, and quality control/quality assurance practices being used in bridge foundation construction.

**Workshop Chair:** Daniel D. Uranowski, P.E., Brayman Construction  
8:00–9:45am Session I - ADSC General and Technical Committee Presentations Session; Moderator: Daniel D. Uranowski, P.E., Brayman Construction Corporation  
- S. Scot Litke, ADSC, ADSC: The International Association of Foundation Drilling, and the Industry It Represents  
- Allen Cadden, Schnabel Engineering, Micropile Design and Construction, A State of the Industry  
- Jim Cahill, Case Foundation Company, Drilled Shaft Design and Construction  
- Tom Richards, Nicholson Construction Company, Anchored Earth Retention Design and Construction  
10:00–11:45am Session II - Micropile Design and Construction; Moderator: Allen Cadden, Schnabel Engineering  
- Tom Tuozzolo/Scott Stonecheck, P.E., Moretrench, State Route 718 – State Street Bridge Micropile Foundations  
- Jesus Gomez, Ph.D., Schnabel Engineering, New Jersey Turnpike  

June 2-4, 2008, Pittsburgh, PA USA
Bridge Repairs with Micropiles

- Matthew J. Niermann, P.E., Schnabel Foundation Company, Micropiles for North Avenue Bridge, Chicago, IL
- John Szturo/Wayne Duryee, HNTB, Design and Construction of Micropiles for the Highway Interchange over Abandoned Lead and Zinc Mines Route 249/171 Joplin, Missouri

1:15–3:00pm Session III - Drilled Shaft Design and Construction; Moderator: Jim Cahill, Case Foundation Company

- Bret Rowan, Malcolm Drilling Co., Case Study of Large Diameter Shafts with Caving Material and Rock Sockets
- Greg Peitz, Brayman Construction Corporation, Drilled Shafts for Susquehanna River Bridge, Harrisburg, PA
- Eric Risberg, Case Foundation Company, Drilled Shafts for I-35 Bridge Replacement, Minneapolis, MN
- William Maher, McKinney Drilling Company, U.S. Grant Bridge, Portsmouth OH

3:15–5:00pm Session IV - Anchored Earth Retention for Bridge Projects; Moderator: Kyle Camper, P.E., Hayward Baker

- Scott Dodds, Brayman Construction Corporation, Utilizing Nail Walls to Support Existing Bridge Abutments
- Jerold Bishop, Geotechnical Design Systems, Inc., Phased Shoring Using Hollow Bars
- Kyle Camper, P.E., Hayward Baker, Anchored Bridge Abutments, Milwaukee, WI;
- Spark Johnson, P.E., Northwest Cascade, Inc. Geotechnical Construction Work for the Lake Whatcom Boulevard High Bridge #115 Replacement, Bellingham, WA

LUNCHEON INFORMATION

TIME: 12:00 noon - 1:30 PM
ROOM: The Westin Hotel, Allegheny Grand Ballroom – Third Floor

Bridge Information Modeling (BrIM): An Innovative New Approach to Bridge Project Delivery

The Westin is just a convenient stroll across the skywalk that connects to the David L. Lawrence Convention Center.

Open to all registered IBC attendees, and Free of charge! First come, first served!
Design/Build of I35W Bridge Replacement
Kevin Western, P.E., Minnesota DOT, Bridge Division, Oakdale, MN; Christopher Burgess, P.E., S.E., FIGG, Denver, CO
Locating a major Interstate bridge, accommodating ten lanes of traffic, with future transit potential, in the heart of any major city, is challenging. In the case of the I-35 bridge, there are also extremely compressed design and construction schedules, the emotional considerations of the public and including appropriate aesthetic elements.

Steel-Composite Design of Railway Arch Bridge Improves Constructability & Efficiency
Sena Kumarasena, HNTB Corporation, Boston, MA
The paper will discuss the design and constructability aspects of a 372-m (1220-ft) long railroad bridge in a remote location in Katra, India. The proposed bridge has a 265-m (870-ft) arch span over the 200-m (650-ft) deep gorge and is designed to carry a two track rail road being built as a part of a large scale railway expansion project. The remote mountainous project location is inaccessible and temporary access roads that meander along the mountain slopes are being built for the transportation of construction equipment and material. The design-build team proposed a steel-composite design for the arch rib to improve the constructability and efficiency.

Context Sensitive Aesthetic Treatments for the Farm Lane Underpass Project
Jeremy Hedden, Bergmann Associates, Lansing, MI; Neal Billetdeaux, Smith Group JJR, LLC, Ann Arbor, MI
The Farm Lane Road Underpass project provided an opportunity to investigate a Context Sensitive Solution process in the design of the rail grade-separations (rail over roadway). The project included extensive involvement with University groups (aesthetics, environmental, water resources, engineering & maintenance, and others) in addition to county, railroad and private utility coordination.

IT-Streamlined Processes for Accelerating Bridge Delivery
Stuart Chen, University at Buffalo, State University of New York, Buffalo, NY; Arun Shirole, Arora and Associates, Robbinsdale, MN
It is being increasingly recognized that the current U.S. practice of information transfer during the bridge planning/design/fabrication/construction/operation/maintenance processes involve repeated manual transcription of data that is error-prone, time consuming approvals (e.g. of shop drawings), and a lack of standardized formats that hinder electronic information transfer. It is also being recognized that without such standards, electronic information exchange is cumbersome at best, and often not possible. This paper presents current research to address this challenge under FHWA sponsorship.
to develop a program to explore the promise of parametric 3-D bridge information modeling (BrIM) as a technology that will enable acceleration of the bridge design and delivery, as well as enhance life-cycle management.

COFFEE BREAK  10:10-10:30 AM

IBC 08-13 .................................................. 10:30 AM

Alteration of CSX Transportation Bridge over the Mobile River, Hurricane, AL
Mostafa Kamal Elnahal, U.S. Coast Guard, Bridge Administration Office, Washington, DC
The presentation will address various design and construction challenges facing the on-going alteration of CSX Transportation Bridge over the Mobile River in Hurricane, Alabama including the search for the most economical scheme. Also, it will address the Coast Guard Program of Bridge Alteration that benefits several states and railroad companies.

IBC 08-14 .................................................. 10:55 AM

Design and Construction Engineering for the Replacement of Ramp TE
Martin Kendall, Jacobs Edwards and Kelcey, New York, NY
Ramp TE over the Cross Bronx Expressway is a tightly curved ten span concrete box girder bridge that is to be replaced with a five span twin steel tub girder bridge. The bridge is founded in a park and a demolition / construction scheme was developed to accommodate all of these factors.

IBC 08-15 .................................................. 11:20 AM

Empowered Public Participation in the Design of the Turtle Creek Viaduct
Frederick Gottemoeller, P.E., AIA, Bridgescape, LLC, Colombia, MD; James Long, Ph.D., Olszak Management Consulting, Inc., Pittsburgh, PA; Frank Kempf, P.E., Pennsylvania Turnpike Commission
The viaduct runs through the center of an historic industrial town, Turtle Creek, Pennsylvania. The viaduct’s builder, the Pennsylvania Turnpike Commission, empowered a community Design Advisory Team (DAT) to make basic design decisions. The DAT’s decisions reduced the viaduct’s impact on the town and enhanced the center’s redevelopment potential.

SESSION:
INSPECTION/ANALYSIS, PART 1

Time:  8:30 AM – 12:00 noon
Room:  301/302
Chair:  Jeffrey J. Campbell, P.E., Michael Baker Jr. Corp., Moon Township, PA

IBC 08-16 .................................................. 8:30 AM

3D Capture of Bridges Using Laser Technology
Jim Harvey, Waterways Ireland, Enniskillen, Northern Ireland; Brian Devlin, CEI Collins Engineers Ltd, Dublin, Ireland; Duncan Lees, Plowman Craven Associates, Hertfordshire, United Kingdom
Waterways Ireland implemented a programme to provide a more accurate bridge inventory of which 3D laser scanning was an integral
part. This paper provides an overview of the laser scanning of 342 bridges as part of the programme implementation for the development of 3D CAD models representing each structure.

IBC 08-17 ................................................................. 8:55 AM

Initial Data Analysis of a Structural Health Monitoring System for Carbon Fiber Composite Strands in a Cable Stayed Bridge
Keith Berube, Roberto Lopez-Anido, Ph.D., P.E., Vincent Caccese, Ph.D., P.E., University of Maine, Orono, ME

The Penobscot Narrows cable stayed bridge design implemented in Prospect, Maine presented an opportunity to install Carbon Fiber Composite Cable (CFCC) strands as a test case. Since the long-term response of the CFCC strands was of vital concern, a structural monitoring system was incorporated during the cable installation. A brief description of the instrumentation used and an analysis of the data recorded to date are presented in this paper.

IBC 08-18 ................................................................. 9:20 AM

Load Testing, Analysis and Structural Health Monitoring for Evaluating the Load Capacity of Aged RC Bridges
John Prader, Drexel University, Philadelphia, PA; Franklin Moon, Drexel University, Philadelphia, PA

The State of West Virginia has a large population of aged reinforced concrete bridges that lack documentation. These bridges are now being subjected to larger loads than their original designers intended. This paper is intended to provide an overview of the techniques and methods which were used to quantify the load capacity of two undocumented bridges.

IBC 08-19 .................................................................. 9:45 AM

Simplified Head-On Dynamic Barge Collision Analysis for Bridge Design
Michael Davidson, and Gary Consolazio, University of Florida, Gainesville, FL

A design-oriented means of conducting dynamic barge-bridge collision analysis is presented, validated using full-scale experimental data, and demonstrated using two bridges in the state of Florida. The impact analysis technique is shown to capture pier response phenomena, with respect to pier column internal forces, not found in static analysis results.

COFFEE BREAK 10:10-10:30 AM

IBC 08-20 ................................................................. 10:30 AM

Bridge Evaluation through Advanced Analysis and Nondestructive Field Measurements/Monitoring
Ed Zhou, URS Corporation, Gaithersburg, MD

This paper addresses advanced methods and technologies for bridge structural problems and concerns identified by regular inspections or other means. The methods include in-depth finite element analysis, field testing/measurements using strain/displacement transducers, structural health monitoring using a collection of advanced sensors, and combinations of them.
Instrumentation and Load Test of the Huey P. Long Bridge
Thomas Weinmann, Danielle Kleinhaus, Varsha Singh, CTLGroup, Skokie, IL
This paper describes the truss monitoring program for the widening of the Huey P. Long Bridge in New Orleans, consisting of a 900-ct. sensor array utilizing both static and dynamic systems, measurement of existing eyebar forces through vibration methods and load testing to calibrate the monitoring systems.

New Jersey Turnpike Authority Next Generation Bridge Inspection Program
The New Jersey Turnpike Authority is one of the nation’s largest toll-road systems and operates both the New Jersey Turnpike and the Garden State Parkway. In the past these two major roadways operated as separate entities and had developed different bridge inspection programs for the nearly 1,000 combined structures (over 20’ in length). Organizing all of this information into paper and computer formats for the various stakeholders has proven to be a difficult challenge. The New Jersey Turnpike Authority has just embarked on a program to standardize the format of the reports. This is being accomplished by implementing a new computerized inspection and inspection management program that is capable of handling the wide variety of structure types, various consultants, and output needs. This presentation will examine a brief history of the Turnpike and Parkway and their respective bridge inventories and inspection programs.

An Owner’s Perspective on Implementing an Accelerated Bridge Construction Program
Stan Burns, Utah Department of Transportation, Salt Lake City, UT; Carmen E. L. Swanwick, HDR Engineering, Inc., Salt Lake City, UT
The Utah Department of Transportation has successfully implemented prefabricated bridge systems and accelerated bridge construction on ten projects utilizing different elements and technologies from full-depth prefabricated precast concrete deck panels, prefabricated precast concrete bent caps, total superstructure systems, self propelled modular transport practice, to temporary bridge use. This article discusses the organizational lessons learned from implementing Accelerated Bridge Construction.
IBC 08-24 .......................................................... 8:55 AM
Accelerated Replacement of the 4500 South Bridge over I-215 in Salt Lake City, UT using SPMT’s
Michael Arens, Michael Baker Jr., Inc., Salt Lake City, UT; Boyd Wheeler, Utah Department of Transportation, Salt Lake City, UT
The 4500 South Bridge over I-215 in Salt Lake City, UT required replacement due to structural deficiencies. The Utah Department of Transportation (UDOT) required Accelerated Bridge Construction (ABC) techniques to minimize traffic impacts, improve work zone safety, and move forward the use of ABC for future projects. UDOT, Michael Baker Jr., Inc, and the Contractor evaluated several bridge types and ABC options, and decided on the use of Self Propelled Modular Transporters (SPMT’s) to move the bridge superstructure into place.

IBC 08-25 .......................................................... 9:20 AM
Accelerated Bridge Construction Using Precast Piers
Eric Yermack, Arora and Associates, P.C., Lawrenceville, NJ
The Route 70 over Manasquan River project utilized a unique precast pier solution to construct a replacement bridge. The precast system consisted of architectural, HPC pier columns, caps and cofferdams with post-tensioning. The method of construction satisfied environmental requirements and produced a signature bridge over 700 days ahead of schedule.

IBC 08-26 .......................................................... 9:45 AM
Accelerated Bridge Re-decking of Bridges on the George Washington Memorial Parkway
Gary Jakovich, P.E., Eastern Federal Lands Highway Division, Sterling, VA; W. Jay Rohleder, Jr., P.E., S.E., FIGG, Exton, PA
Successful use of prefabricated panels achieved accelerated bridge re-decking on the heavily traveled (40,000 ADT) George Washington Memorial Parkway. This innovative application of segmental bridge construction methods was implemented on three bridges and developed to keep traffic moving while installing high-strength low maintenance new bridge decks.

COFFEE BREAK 10:10-10:30 AM

IBC 08-27 .......................................................... 10:30 AM
Rapid Replacement of the Hood Canal Bridge Approach Spans
Joseph Merth, PE, Washington State Department of Transportation, Olympia, WA
To minimize traffic impacts the Washington State Department of Transportation developed an innovative method to replace the Hood Canal Floating Bridge Approaches in two weekend closures. The single-span 154’ west approach was replaced in 51 hours, and the five-span 605’ east approach was replaced in 49 hours.

IBC 08-28 .......................................................... 10:55 AM
Rapid Replacement of the Island Park Drive Overpass
Michel Vachon, McCormick Rankin Corporation, Ottawa, ON; Quazi Islam, Ministry of Transportation Ontario, Kingston, ON
The Island Park Drive Overpass carrying over 150,000 vehicles/day on Highway 417 in Ottawa, Ontario, Canada is at the end of its lifespan. It was decided to replace it using rapid replacement techniques with an overnight highway closure. The replacement was successfully completed in August 2007 in 17 hours.
Hyper Design /Hyper Build ~ It Can Work
Thomas Anella, P.E., Rama Krishnagiri, P.E., PB, Princeton, NJ;
Manu Patel, P.E., New Jersey Department of Transportation, Trenton, NJ

NJDOT's I-280 Stickel Bridge Rehabilitation is a Hyper-Design/Hyper Build Project. The 32-month original design schedule was reduced to 15 months and the 3-year staged construction cut to 21 months. The project is a success as the aggressive schedule is being met, due to all parties working together in perfect harmony to reopen all lanes with minimal disruption.

Workshop 12: FRP Composites in Bridge Construction (W-12)

Time: 9:00 AM-12:00 noon
Room: 306
Presenter: ACMA

FRP composites used in new bridge construction and rehabilitation provide bridge engineers with innovative solutions to today's infrastructure problems. Composites advantages such as lightweight, high strength, and corrosion resistance contribute to easy transportation, offsite construction, modular assembly, rapid installation, and long-term durability that provide cost-effective solutions and value to the bridge owner. Attendees will learn the state of the practice in using composites including applications on installation and inspection of bridge decks, advancements in rehabilitation, and new field installations of cable stays and girders.

Program includes:
• David White, P.E., Sika Corporation, Repair Techniques Utilizing FRP Composites for Concrete Bridges;
• William J. Rohleder, Jr., P.E., S.E., Figg Bridge Engineers, Inc. Successful Carbon Fiber Strand Application in Cable Stay Bridge;
• Mark Henderson, P.E., LJB, Inc., A Bridge Inspectors Approach to FRP Composites;
• Dan Richards, Ph.D., P.E., ZellComp, Inc., Weather Extremes No Obstacle to the Vermont Installation of a Mechanically Fastened FRP Deck;
• Pete Emrich, Molded Fiber Glass Companies, Composite Beams Molded by Resin Infusion

ASSOCIATED PENNSYLVANIA CONSTRUCTORS’ BRIDGE COMMITTEE MEETING

Time: 9:00 AM-12:00 noon
Room: 315

The Associated Pennsylvania Constructors’ Bridge Committee meets quarterly in Harrisburg with Penn DOT to discuss Pennsylvania’s bridge concerns in detail. This proactive group includes representatives from bridge building contractors and design firms working for the Department. Our June ’08 discussion venue will be in Pittsburgh in conjunction with the IBC. We open the meeting to all attendees to demonstrate our approach to problem solving. Continuing dialogue is absolutely necessary.
TUESDAY, JUNE 3

SPMT DEMONSTRATIONS

Time: 9:00 AM - 4:00 PM; Hourly demonstrations
Room: Exhibit Hall D
Presenter: FHWA

Join other 2008 IBC participants at a demonstration of the latest for ultra-rapid bridge construction: self-propelled modular transporters (SPMTs). SPMTs offer maximum speed and flexibility for accelerated bridge construction. They can reduce onsite construction time to just minutes or hours. Come see these amazing machines move forward, sideways, diagonally, in a circle, and spin about a point! Throughout the day on Tuesday, June 3, 15-minute demonstrations will be held hourly on the hour from 9:00 a.m. - 4:00 p.m. (except 12:00 noon) in Exhibit Hall D. Come see these amazing machines move forward, sideways, diagonally, in a circle, and spin about a point! Demonstrations courtesy Mammoet (www.mammoet.com) and Barnhart (www.barnhartcrane.com).

Workshop 13: Bridge Failures: Investigation, Design, Research, and Construction Perspectives; A Panel Discussion (W-13)

Time: 1:00-5:00 PM
Room: 404

In light of recent notable bridge failures, this session has been organized to highlight some of the lessons learned from past failures. Prominent engineering professionals will offer their perspectives covering case studies of failures, design considerations against failure, and infrastructure rehabilitation. Following the presentations, the speakers will be available for audience questions and moderator-guided discussion.

• Coordinator and Moderator: Danielle D. Kleinhans, Ph.D., P.E., CTLGroup
• W. Gene Corley, Ph.D., S.E., P.E., CTLGroup, Solving the Mystery of Collapse of an Unloaded Bridge
• Walter J. Gatti, Tensor Engineering Company, Bridge Failures During Construction
• John M. Kulicki, Ph.D., P.E., Modjeski and Masters, Inc., Bridge Failures and Design Specifications
• Dennis R. Mertz, Ph.D., P.E., University of Delaware, The Inherent Safety of the AASHTO Specifications: Design and Rating
• Gérard Desgagné, ing., M.Sc., Ministère des Transports du Québec, Bridge Collapse in Laval, Quebec: Technical Causes and Lessons Learned

BUS BRIDGE TOUR

Time: 1:00 to 5:00 PM
Location: Meet at outdoor curbside East Lobby / DLCC

Pittsburgh is the city of bridges, and the IBC is pleased to once again offer our tour of unique area bridges. The tour this year includes stops at the Boulevard of the Allies Bridge over Forbes Avenue in Oakland and the new bridge being built to carry the Pennsylvania Turnpike over the Allegheny River in Harmar. These two structures are scheduled to be under construction in 2008. The tour will finish with a ride on the Monongahela Incline to Mount Washington for a breathtaking view of the City. This guided tour departs from the Convention Center at 1 p.m. An additional fee of $40 is required.

June 2-4, 2008, Pittsburgh, PA USA
In today’s large project civil construction environment, a serious situation exists, in that there are frequently more project opportunities than there are qualified contractors to pursue them. While this will not last forever, owners and engineers must look closely at the requirements they place on proposers for major civil/bridge projects, if they want to receive competent and responsible proposals. This is especially true for projects being procured using the design-build approach.

Recently, several major projects have gone begging for competition, with the result being that the owner either received no response to the RFP, or there was only one competitor and the pricing was well over budget. Another recent problem is that because there are so few qualified teams even responding to the initial Request for Qualifications (RFQ), less qualified teams are being included on the “short list”. This has resulted in contract awards to teams who have submitted unreasonably low price proposals, with the owners receiving a lower quality end product.

These major design-build projects require the investment of significant resources to prepare a competitive proposal, and the stipends typically offered cover about 25% of the actual proposal costs. Therefore, contractors are becoming more selective as to where they commit their bidding resources. The best qualified contractors will walk away from bidding opportunities if they feel, a) the contract terms are too onerous, b) the scope is not clear and open to too much interpretation, or c) the evaluation and award criteria do not provide an “even playing field”. They want the type of competition that allows the project to be won on innovation, not mistakes or misinterpretation – truly the “best value.”

The panel assembled to address these issues includes senior representatives of three of the major national civil/bridge contractors, and a major surety representative. They will address the contractual, design and scheduling issues that create an environment for providing a best value, competitive proposal – and will give the owner a high quality final product, within budget and on or ahead of schedule. Major topics to be addressed will include: Fair and reasonable RFQ process, Appropriate design levels for the RFP, Technical “traps” to avoid, Reasonable Risk Sharing, Work restrictions that affect cost and schedule, Reasonable contract terms and conditions, including: Insurance and Bonding Considerations, Standard of Care, Liability of the Parties, Hazardous Materials, and Differing Site Conditions.

Moderator:
• G. M. (Pat) Stricklin, GMS Consulting, Inc.

Presenters:
• Patrick Flaherty, Fluor Corporation
• Robert H. Luffy, American Bridge Company
• Ralph Salamie, Kiewit Pacific Structures District
• Brian Reynolds, Zurich North America
Workshop 14: American Galvanizers Association (W-14)

Time: 1:00–5:00 PM  
Room: 306  
Presenter: American Galvanizers Association

1:00–3:00 pm - 2-Hour Galvanize It! Workshop for AIA/NCEES Credit  
Presented by The 2-hour Galvanize It! seminar educates architects, engineers, and other specifiers on the design and integration of corrosion protection into his/her project. Attendees of this course will receive a certificate and two CEU/PDH credits. The seminar will explore:

• Corrosion theory  
• Hot-dip galvanizing (HDG) process  
• Design & fabrication of steel products for HDG  
• Specifications & Inspection  
• Duplex systems – painting over galvanizing  
• Cost analysis  
• Project applications of HDG

3:00–4:00pm - Comparative Life-Cycle Cost of Hot-Dip Galvanizing and Paint Systems. Using job specific data provided by the attendees, such as overall size, structural steel mix, site environment conditions, surface preparation type (blast, hand/power), application type (spray, brush), and design service life, the session will use web-based software to automatically calculate the initial and life-cycle costs for hot-dip galvanizing and a variety of paint systems (1 coat, 2 coat, 3 coat, epoxy, urethane, zinc-rich, etc.) for a hypothetical project. The calculations are based on material, labor, and application costs derived from recent galvanizing and paint industry surveys and standard financial equations for net future value and net present value will be used to calculate the life-cycle cost. Attendees will learn what specific variables affect durability and overall project cost of corrosion protection systems.  
Presenter: Philip G. Rahrig, American Galvanizers Association

4:00–5:00pm, 1-Hour Galvanize It! Workshop for AIA/NCEES Credit  
The 1-hour Galvanize It! seminar educates architects, engineers, and other specifiers on the design and integration of corrosion protection into his/her project. Attendees of this course will receive a certificate and one CEU/PDH credit. The seminar will explore:

• Hot-dip galvanizing (HDG) process  
• Design & fabrication of steel products for HDG  
• Specifications & Inspection  
• Duplex systems – painting over galvanizing  
• Cost analysis  
• Project applications of HDG  

Presenters:
• Melissa Lindsley, American Galvanizers Association  
• Philip G. Rahrig, American Galvanizers Association
The Security Assessment of Cable Assemblies In Structures
Timothy W. Klein, P.E., WireCo World Group, Kansas City, MO
The paper identifies the vulnerability of cable assemblies and their response under extreme heat conditions. The paper describes new practices being developed to increase the security and functionality of cable assemblies. High performance materials have shown to increase the functional operating temperature without affecting the mechanical properties.

Locked Coil Cables and Their End Connections - Product Potentials and Application of Design Codes
Martin Bechtold, Bridon International GmbH, Gelsenkirchen, Germany; Barrie Mordue, Bridon International Ltd., Doncaster, United Kingdom
Locked coil cables are tension components suited to use on architectural pedestrian and cycle bridges. The galvanising with Zn95Al15 performs three times better compared to zinc without the disadvantages of the much thicker class C galvanising. The design standard ASCE 1996 which is currently under revision will include locked coil cables and Zn95Al15.

Significant Improvement of the lift-off method based on ultrasonic testing
Gilles Hovhanessian, Advitam, Velizy, France
Measuring the tension of prestressing bars and bolts is often critical for bridge owners. The UPUS is a cost-effective process bringing significant improvement over the traditional lift-off method especially by improving the accuracy and reducing the risk of deformation or rupture. This paper will present the method and its applications in NDT.

Ultra-Weatherable Fluoropolymer Coatings for Bridges
Winn Darden, AGC Chemicals Americas, Simi Valley, CA; Takashi Takayanagi, AGC Chemicals, Tokyo, Japan
Fluoropolymer resins have been used to make ultra-weatherable top coats for steel and concrete bridges. Coating life can exceed 60 years.
SafeLane Overlay Performance Testing
Wilfrid Nixon, Asset Insight Technologies, Iowa City, IA; Bob Persichetti, Cargill SafeLane, York, PA
This paper reports two winters (2005-2006 and 2006-2007) of results on the performance of the SafeLane overlay on 26 different highway structures (20 bridges) around the United States. The study examines the safety and operational benefits of the overlay. In particular, the safety benefits were significant.

One-Coat Paint System That Encapsulates Lead-Based Paint and Eliminates Sandblasting
J.E. Pritchett, Superior Products International II, Inc., Shawnee, KS; Sandra Hubbert, Superior Products International DOT Group, Charleston, SC
Encapsulation of lead-based paint and existing rust with minimum surface preparation and no regulated sandblasting can save millions at a time when transportation budgets are being reduced. Allocating monies toward as many bridges as possible is the key to addressing “at risk” inventories that fall outside the established priority rankings.
Settlement of Bridge Approach Embankments
Suresh Gutta, Ph.D., P.E., Sebastian Lobo-Guerrero, Ph.D., Neil Styler, Ph.D., P.E., American Geotechnical and Environmental Services, Inc., Canonsburg, PA; Neal W. Fannin, P.E., PennDOT, District 2.0

Settlement of bridge approach embankments may cause ‘bump’ at the bridge ends, due to settlement of the embankment and/or settlement of foundation soils. Comparison of measured and predicted settlements and time rate of consolidation of the foundation soils at eighteen bridge abutments constructed within the new I-99 corridor were considered.

Underpinning Pile Foundations of Adjacent Continuous Multi-Level Curved Steel Box Girder Structures
Matt Pierce, DMJM Harris, Pittsburgh, PA; Firooz Panah, DMJM Harris, Boston, MA

Construction of an LRT system in Pittsburgh, PA requires foundation underpinning of two adjacent multi-span steel structures. This paper details underpinning topics related to alternatives investigation, viaduct foundation load development, unique underpinning design approach, complex construction sequencing and tolerances, viaduct instrumentation and monitoring and current construction status.

Metal Straps as Soil Reinforcement on Full Height Abutments
Wendy Haugeto, Mike Yang, Arjuna Ranasinghe, Michael Baker Jr., Inc., Princeton, NJ

The first application of metal soil straps to support the complete lateral load on a thirty (30) foot high Full Height Abutment was constructed in Mercer County, New Jersey on the Alexander Road Bridge. Through a case study of this bridge, this paper demonstrates the advantages of using metal straps to support the lateral load over a more conventional system that uses piles for this purpose.

Engineering Use of Low-Strength Concrete In Highway Construction
Y Frank Chen, Penn State Harrisburg, Middletown, PA; Tom Imholte, Tom Rowader, Dan Hacker, Dawood Engineering, Enola, PA

This paper presents an acceptable engineering practice as related to the use of unreinforced Class C concrete in highway construction. The important issues including stability checks, thermal cracking, concrete mixture, and cost are discussed. Another objective of this paper is to address the concern on the use of low-strength material.
James D. Cooper Student Award Winner

**Simplified Nonlinear Numerical Analysis Method for Integral Abutment Bridges**

*WooSeok Kim, The Pennsylvania State University, University Park, PA*

Due to the significant inelastic and hysteretic behavior of integral abutment bridges (IABs), long-term behavior typically presents the worst case for design. This paper presents simplified numerical modeling methodologies under thermal and time-dependent loads, and soil-structure interaction based on field monitoring of IABs on the I-99 corridor. The proposed numerical model provides accurate, long-term prediction of IAB behavior and response.

**LONG SPAN BRIDGES**

**Time:** 1:30 – 5:00 PM  
**Room:** 301/302  
**Chair:** Herbert M. Mandel, P.E., GAI Consultants, Inc., Homestead, PA

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**Colorado’s Longest Span Crosses 28 Rail Lines**

*Dean Sandoval, Karen Rowe, Colorado Department of Transportation, Pueblo, CO; Steve Fultz, PE, Figg, Denver, CO*

The $27 million Fourth Street Bridge passes through Pueblo and provides clear spans over the Union Pacific Railroad (23 rails), Burlington Northern Santa Fe Railroad (5 rails) and the Arkansas River. The 1137 long twin, cast-in-place post-tensioned segmental box girders are being built from above in balanced cantilever with form travelers.

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**Design of Long Span Bridges to Resist Progressive Collapse**

*Theodore Zoli, HNTB Corporation, New York, NY*

Long span bridges have not been designed to resist progressive collapse explicitly; many long span bridge forms, due to reasons of structural efficiency, are intrinsically non-redundant, i.e. they incorporate elements whose localized failure would precipitate collapse. There are also long span bridge forms that are susceptible to progressive collapse due to the loss of a series of adjacent members as a result of a single loading event. In either case, this class of structures may be termed to have single point vulnerability. Herein, aspects of long span bridge design as they relate to single point vulnerability and progressive collapse are discussed together with some suggestions for potential improvements in design strategies.

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**Experience from the Global Analysis of Sutong and Stonecutter’s bridge**

*Dorian Janjic, TDV GmbH Graz / Bentley systems, Incorporated, Graz, Styria, Austria*

The challenges in design for long-span bridges - either stay cable or suspension bridges with high pylons and slender deck section - are related to optimising the stressing sequence of the cables, geometrically non-linear behaviour of the structure, simulation of erection procedure, and to dynamic problems such as wind-induced...
vibrations. The Stonecutter’s Bridge in Hong Kong is the first designed stayed cable bridge to span more than 1000m (1018m, currently under the construction) and the Sutong Bridge in China (1088m, closed in summer 2007) is the first build stayed cable bridge breaking this limit. For both bridges the RM software package has been used for global analysis, by consultants Ove-Arup (Hong Kong) and HPDI (Beijing).

**Design of Florida Avenue Bridge over the Inner Harbor Canal**

Eric Nelson and Dan Davis, DMJM Harris, Glen Allen, VA

The Florida Avenue Bridge project in New Orleans, Louisiana includes a five-span high-level bridge over the Inner Harbor Canal with a 470-foot center span. Paper will discuss design aspects of both the cast-in-place segmental concrete box girder and steel plate girder alternatives for the main span unit.

**Replacement of the William R. Bennett Floating Bridge**

Darryl Matson, Eduardo Pradilla, Karsten Veng, Buckland & Taylor Ltd., North Vancouver, BC

The William R. Bennett Bridge, a floating bridge across the Okanagan Lake in Canada, will replace the existing aging Okanagan Lake Bridge. The unique nature of this structure presented numerous challenges that were resolved with innovative thinking and close coordination between the design and construction teams.

**The Missouri River Pedestrian Bridge, Omaha, NE, USA - State of the Art Cable-Stayed Pedestrian Bridge**

Christian Brown, HNTB, Omaha, NE; Hans Hutton, HNTB, Kansas City, MO; Ted Zoli, HNTB, New York, NY

The new Missouri River Pedestrian Bridge is destined to become a landmark for the surrounding community. The design concept is monumental in scale and daring in concept. The main portion of the bridge spans the Missouri River and consists of a one-of-a-kind horizontally curved cable-stayed structure including a 506-foot main span and two 253-foot back spans. The superstructure is supported by single pylons near each bank that rise 200-feet above the water surface. Two planes of cables suspend the superstructure from the pylons. Due to the extreme flexibility of this bridge, many innovative solutions needed to be employed to address both wind and pedestrian induced vibrations.

**Aerodynamic Design of Baling River Bridge**

Liu Gao, China Highway Planning and Design Institute (HPDI) Consultants, Inc., Beijing, P.R. China

Baling River Bridge is designed as an expressway link across the Baling River gorge in Guizhou Province, forming a part of National Highway from Shanghai to Ruili, which is one of “the Five Longitudinal, Seven Transverse” national trunk highways in “National Highway Development Plan” (1999~2020) promulgated by the Ministry of Communications of China. The aerodynamic design of Baling River Bridge was based on comprehensive wind engineering studies involving the conduct of wind tunnel tests using terrain field model covering the terrain within 9 km radius of the bridge, rigid section models for the bridge.
TUESDAY, JUNE 3
CONSTRUCTION

Time: 1:30 – 5:00 PM
Room: 406

IBC 08-51 ........................................................................... 1:30 PM

Erection Engineering Considerations for Horizontally Curved Steel I-Girder Bridges
Shawn Tunstall, PE, Brandon Chavel, PE, Matt Bunner, PE, Jason Fuller, PE, HDR Engineering, Inc., Pittsburgh, PA

The erection of horizontally curved steel I-girder bridges can be complex. This paper will highlight aspects of curved steel I-girder bridge erection that should be considered by the design engineer and constructor’s engineer in the development of the steel erection plans, so as to provide for a successful bridge construction project.

IBC 08-52 ........................................................................... 1:55 PM

Erection of the Twin-Box Steel Deck for Stonecutters Bridge
Michael Tapley, Maunsell AECOM, Shatin, Hong Kong; Brian West, Maeda - Hitachi - Yokogawa - Hsin Chong JV, Kowloon, Hong Kong

With a main span of 1018m, Stonecutters Bridge is a landmark cable stayed bridge across the entrance to the Hong Kong container terminals. The twin-box steel girder deck is one of the first of its kind, requiring innovative methods of analysis and erection techniques during construction.

IBC 08-53 ........................................................................... 2:20 PM

Incremental Launching of Final Composite Bridge Deck
Ladislav Sasek, Mott MacDonald Prague, Prague, Czech Republic; Radim Cap, Metrostav a.s., Prague, Czech Republic

Launching of final composite bridge deck has all advantages of launching method such as erection speed, lower costs and high quality of the bridge. Further innovation for composite bridges is the position of sliding bearings and the sliding trace structure. We decided to launch the structure supported on the concrete slab (bottom Surface) next to the beam web. The concrete slab at this location is connected to the steel flange by means of studs and the beam web acts as a very rigid stiffener.

IBC 08-54 ........................................................................... 2:45 PM

Rapid Set Bridge Deck Overlays on the SR 376 Parkway in Pittsburgh, PA
Edward Liberati, P.E., HTNE Hydrodemolition Services / Modified Concrete Suppliers, Hilliard, OH

Presentation will include a detailed discussion and power point of the fast track weekend bridge deck repairs of the Parkway Bridges in Pittsburgh, PA. 21 bridge decks were repaired with Latex Modified Concrete Overlays in just 14 weekends. By utilizing innovative construction techniques and rapid set materials, work was able to be performed with minimal disruption to the 125,000 vpd which use the parkway. The existing bridge decks will now be preserved for another 25 years.

COFFEE BREAK 3:10-3:30 PM
IBC 08-55 ................................................................. 3:30 PM
Design and Construction of the Providence River Bridge  
Patricia Steere, P.E., Yihui Wu, Maguire Group Inc., Providence, RI

The design and construction of the 400-foot arch span of the Providence River Bridge was recently completed in Providence, RI. This span is a three-ribbed steel network arch design with a ten degree skew. The advantage of a network arch cable arrangement over an arch bridge with vertical cables is that it reduces the superstructure weight but still maintains adequate stiffness. The advantages are discussed, as well as the study that was used to determine the cable arrangement, the effect of the skew on the design, the method used to provide internal redundancy to the tie chord, and other design considerations.

IBC 08-56 ................................................................. 3:55 PM
The Construction of Si Du River Suspension Bridge  
Yinbo Liu, H & J International, PC, Collegeville, PA; Chongxu Wang, Road & Bridge Southern China, Zhongshan, China; Yuancheng Peng, CCSHCC, Second Highway Consultants Co. Ltd, Wuhan, China

The paper presents the key aspects of the construction of a 1222 meter long suspension bridge over Si Du river in the deep mountainous area in central China. The bridge spans over a 550 meter deep valley, which is the highest suspension bridge in the world. The challenges facing the construction include: limited working area, complicated geological conditions, restricted transportation access to the site, special wind gust conditions, and restricted access for superstructure installation.

IBC 08-57 ................................................................. 4:20 PM
Replacement of a Rare Hanover Skewed Bascule - the Hamilton Avenue Bridge  
Keith Griesing, P.E., Hardesty & Hanover, LLP, New York, NY

The rarely seen hanover skew bascule, also known as a knee-girder bascule bridge, is a unique and complex movable structure. The replacement of the skewed Hamilton Avenue Bridge with a new, fully operational span in sixty-four days created a one-of-a-kind project that challenged the owner, designers and constructor.

25TH ANNIVERSARY CELEBRATION
Time: 5:00-7:00 PM  
Room: Heinz History Center - a short walk from the DLCC

Join us on Tuesday, June 3 from 5:00-7:00 PM for cocktails and hors d’oeuvres to celebrate this very special 25th Anniversary Celebration. To allow all IBC attendees to enjoy a “Taste of Pittsburgh” the celebration will be held at the Senator John Heinz Regional History Center in the Strip District - a short walk from the Convention Center. (Limited transit shuttle will be available for those requiring transportation.) The walls and displays of the History Center tell the marvelous story of the Western Pennsylvania Region, and the menu will feature many items and favorites that come from this region.
**DESIGN, PART 2**

**Time:** 8:00 AM – 12:30 PM  
**Room:** 304/305  
**Chair:** Matthew P. McTish, P.E., McTish, Kunkel & Associates, Allentown, PA

### IBC 08-58

**Updating the HL-93 LRFD Bridge Design Live Load Using Recent Traffic Data**

Bala Sivakumar, *HNTB Corporation, New York, NY*; Michel Ghosn, *City College of New York, New York, NY*

LRFD HL-93 loading, calibrated using 1975 truck data from Ontario may not represent present U.S traffic loadings in many jurisdictions. Trucks have become much heavier and truck configurations have become more complex. Although the quality and quantity of traffic data has improved in recent years, it has not been used to update the bridge design loads. The objective of NCHRP Project 12-76, that will be completed in February 2008, is to develop and demonstrate the application of protocols for collecting and processing traffic data to calibrate national bridge live-load models for LRFD bridge design.

### IBC 08-59

**Link Slab Continuity Detail on Long-Span Bridges**


Many existing and new steel and concrete bridges with simply supported girders where the deck is made continuous over the supports have shown cracking of the deck and often complete separation at the point of continuity. The paper details several continuity options for simple span bridges used in both steel and concrete bridges and provides suggestions to improve them.

### IBC 08-60

**An Innovative Approach to Improve Economy and Constructability of Steel Plate Girder Bridges**

Richard Lawrie, Lubin Gao, *Lawrie and Associates, Alexandria, VA*

The paper’s objective is to investigate the structural behavior of an innovative system and explore its benefits. Staging the deck pours and post-tensioning the deck in the negative moment regions can provide a more durable deck. Also, sections of the steel plate girders can be reduced, providing significant cost savings.

### IBC 08-61

**Fast Track Design of Two Rail Bridges for the Farm Lane Underpass Project**


The Farm Lane Road Underpass project on the campus of Michigan State University provided an opportunity to incorporate innovative contracting solutions with streamlined railroad and utility coordination to save construction time, reduce client costs, and offer significant reductions to the impacts on pedestrian and vehicular traffic on campus from the daily train delays.

### IBC 08-62

**Fast Track Design of Two Rail Bridges for the Farm Lane Underpass Project**


The Farm Lane Road Underpass project on the campus of Michigan State University provided an opportunity to incorporate innovative contracting solutions with streamlined railroad and utility coordination to save construction time, reduce client costs, and offer significant reductions to the impacts on pedestrian and vehicular traffic on campus from the daily train delays.
3d Visualization in Bridge Construction Planning
Michael Mundy, R.A., HNTB, Kansas City, MO
This paper describes how 3D Visualization may be used to ensure contentment by all parties involved or affected by the bridge construction project, including examples of fixed, moveable, railroad, pedestrian and transit bridges. 3D Visualization encourages mutual understanding by builders, designers and the general public.

COFFEE BREAK 10:00-10:25 AM

IBC 08-63 .............................................................. 10:25 AM
Finite Element Models for Curved Hollow Tubular Flange Girders
Richard Sause, Jun Dong, Lehigh University, Bethlehem, PA
Curved hollow tubular flange girders (CHTFGs) are innovative I-shaped steel girders with rectangular tube-shaped flanges designed for curved highway bridges. A finite element (FE) parametric study of CHTFGs is presented. The results suggest that CHTFG systems perform better than similar-sized conventional curved I-girgers during transport, erection, and deck placement.

IBC 08-64 .............................................................. 10:50 AM
Fatigue Behavior of Orthotropic Steel Decks - A Full-Scale Fatigue Test Under Running Wheel Loading
Xiaohua H. Cheng, New Jersey Department of Transportation, Trenton, NJ; Jun Murakoshi, Public Works Research Institute, Tsukuba, Japan
Most fatigue tests on orthotropic decks were conducted under fixed-point cyclic loading, focusing on a specific welded detail instead of all. To simulate truck wheel loads randomly passing on a deck, a unique wheel load testing machine was used on a full-scale specimen. This paper presents test results that would be helpful for design and inspection.

IBC 08-65 .............................................................. 11:15 AM
Wind Design of Suspension Bridges
Dorian Janjic, Tdv GmbH / Bentley Systems, Incorporated, Graz, Styria, Austria
Sophisticated computer-aided dynamic wind analyses is becoming more and more important in bridge engineering. Especially suspension bridges are very susceptible for wind-induced vibrations because of their extraordinary slenderness. This paper presents novel solution for computer aided wind design of suspension bridges.

IBC 08-66 .............................................................. 11:40 AM
Buckling Analysis Using Finite Elements
Terry Cakebread, LUSAS, New York, NY; Julian Moses, LUSAS, Surrey, UK
Increasingly designers are being asked to check for stability of structures during erection as well as thereafter. This presentation will show how to carry out linear and nonlinear buckling analysis on any bridge type, the ease of carrying this out, the techniques available and the key things to check for when modelling such effects.
Investigation and Retrofitting of Web Cracking in US 202 Bridge in Montgomery County, PA
Sougata Roy, Ph.D., Ben T. Yen, R.S. Deo Alapat, Carl Bowman, ATLSS Center, Lehigh University, Bethlehem, PA; Jian Jin, Jacobs Edwards and Kelcey, West Chester, PA; James P. Van Dien, HDR, King of Prussia, PA; Henry Berman, PennDOT, King of Prussia, PA

Cracking in the web of main girder at the intersection with the floor beam connection plate, bearing stiffener and the bracket shelf plate for adjacent simple span in the north bound span of US 202 Bridge in Montgomery County, PA was investigated and a retrofitting strategy was developed. The “smiley” shaped crack originated from the web gap or cope in the transverse bearing stiffener near the termination of the bearing stiffener/floor beam connection plate-to-web weld above the bracket shelf plate and completely fractured the girder web towards the end. Towards the span, the crack growth was arrested in the web. The crack was unique in the sense that it had developed in a normally compression region of the structural component.

Fatigue and Fracture Performance of Heat-Straightened Steel Bridge Girders
Michael Urban, HNTB Corporation, Philadelphia, PA; Robert Connor, Purdue University, West Lafayette, IN

This paper presents research conducted on the fatigue and fracture performance of damaged steel bridge girders. It will cover the laboratory testing, evaluation and inspection procedures before and after the repair, and recommended guidelines to be used in conjunction with the current state of practice.

Seismic Reinforcement Project for Large Scale Bridges in Istanbul
Sabri Tekin, Seref Akin, KGM General Directorate of Highways, Ankara, Turkey

This project contains seismic reinforcement of large scale bridges in Istanbul such as First Bosphorus Bridge, Fatih Sultan Mehmet Bridge, New Golden Horn Bridge, etc. against a major prospective earthquake which would affect Istanbul and nearby regions.

Thurston Avenue Bridge: New York’s 1st Induction Bent Tubular Arch
Susan Matzat, P.E., LaBella Associates, PC, Rochester, NY; Bob Meierhoff, BendTec, Inc., Duluth, MN

The addition of induction bent tubular shaped arches tied to two existing arches allows this “gateway” bridge on the Cornell University campus to uniquely meet capacity and aesthetic requirements. This “first of its kind” design and fabrication process has helped preserve and embolden steel arch bridge structures.
Rehabilitation of a 115-year old Truss Bridge
Harold Plott, P.E., Pamela Mann, HSMM AECOM, Roanoke, VA; Luke Pugh, City of Roanoke, Roanoke, VA

The presentation will provide details on inspection, design and construction for the rehabilitated bridge crossing the Norfolk and Western rail lines, built in the early 1890’s. The structure consists of a 100-foot steel Warren truss main span with built-up steel through-girder approach spans which were dismantled and delivered to an off-site fabricator for repairs, strengthening and painting.

COFFEE BREAK 10:00-10:25 AM

Lightweight Fill Accelerates Critical Bridge Replacement Schedule
James Weaver, Haley & Aldrich, Inc., South Portland, ME; Wayne Chadbourne, Haley & Aldrich, Inc., Portland, ME

5,000 cy of EPS geofoam was used to construct approach embankments for the replacement of a critical bridge in Maine. The geofoam embankments were designed to reduce ground surface settlement and lateral loading on existing deteriorated bridge abutments. The use of geofoam also shortened the project construction schedule by 1.5 years.

Design and Construction of the ASR Mitigation System for the New Jersey Abutment of Bayonne Bridge.
Wagdy Wassef, Modjeski and Masters, Inc., Mechanicsburg, PA; Stewart Sloan, Port Authority of New York and New Jersey, Newark, NJ

The main span steel arch of Bayonne Bridge, 1675 ft. long, is supported on massive concrete abutments. Test results identified Alkali Silica Reaction (ASR) as the cause of the abutment cracking. This paper describes the studies, the design and construction of the ASR mitigation system for the abutment.

FDR Drive Rehabilitation and Outboard Detour Roadway
Neil Porto, HDR|Daniel Frankfurt, New York, NY

This paper summarizes the rehabilitation of the tri-level Franklin Delano Roosevelt Drive between East 54th Street to East 63rd Street on Manhattan’s East Side. The $104M rehabilitation included the following: Replacement of the deteriorated Southbound Viaduct; Rehabilitation of the Roof Structure; Rehabilitation of the at-grade Northbound FDR Drive; An outboard Detour Roadway constructed in the East River for Maintenance and Protection of Traffic.

Rehabilitation of the 42nd Street Bridge over AMTRAK and Norfolk Southern
Christopher Menna, City of Philadelphia, Streets Dept., Bridge Section, Philadelphia, PA

The project involved the rehabilitation of a unique steel arch bridge in West Philadelphia. The structure was approaching the end of its life and had a history of numerous ruck collisions. Innovative rehabilitation schemes were devised to satisfy historic preservation criteria and to restore the structure’s place in the neighborhood.
## INSPECTION ANALYSIS PART 2

**Time:** 8:00 AM – 12:30 PM  
**Room:** 406  
**Chair:** Lisle E. Williams, P.E., PLS, T.W. Consultants, Inc., Pittsburgh, PA

### IBC 08-76

**History and Inspection of New York City’s Oldest Standing Bridge**  
Christopher Mele, Baker Engineering NY, Inc., Elmsford, NY; Ellen Macnow, New York City Department of Parks and Recreation, Flushing, NY

The history and inspection of the High Bridge, which is the oldest standing bridge in New York City. This unique inspection required historical research not typical for a bridge inspection, and a wide array of inspection techniques developed specifically for this bridge. This paper describes both the history and inspection of this structure.

### IBC 08-77

**Lessons Learned from Non-Destructive Testing of Suspender Ropes**  
Michael Higgins, P.E., Pure Technologies, Columbia, MD

This paper summarizes the results of non-destructive testing of suspender ropes obtained from seven major highway bridges. The non-destructive testing was able to test the free length of small diameter cables to detect and quantify corrosion damage. The paper reviews the findings and documents areas of corrosion damage and the extent of damage.

### IBC 08-78

**Field Monitoring and Instrumentation of Star City Bridge, West Virginia**  
Samir Shoukry, Mourad Y. Riad, Gergis W. William, West Virginia University, Morgantown, WV; Jimmy Wriston, West Virginia Division of Highways, Charleston, WV

The Star City Bridge in West Virginia is heavily instrumented with over 750 sensors of various natures that record time histories of key-performance parameters in the superstructure. The focus of this study is to provide real life set of data that would demonstrate the real-life behavior of long-span light-weight continuous bridge decks since early age of construction.

### IBC 08-79

**Innovative Techniques for Suspension Bridge Cable Evaluation and Monitoring**  
Dyab Khazem, Parsons, New York, NY; Raimondo Betti, Columbia University, New York, NY

This paper discusses the objective of this unprecedented research which is intended to develop, integrate and deploy health monitoring technologies for detecting corrosion damage and monitor the internal environment of suspension cables for corrosion activities by direct and indirect sensing methods.
Evaluation & Rehabilitation of the Deer Isle Suspension Bridge
Evan Lowell, P.E., TranSystems | Lichtenstein, Natick, MA

The Deer Isle Bridge is the only roadway connecting Deer Isle, ME to the mainland. This slender bridge has received numerous improvements to stiffen the superstructure, as it has experienced several episodes of undulating and swaying in the coastal winds. TranSystems / Lichtenstein designed a deck replacement to increase the bridge’s load capacity, maintain its aerodynamic performance, and be constructed with minimal interruption to traffic.

Meeting the Needs for the Next 30 Years: DC Metro’s New Structure Inspection Processes and System
Clay Bunting, Washington Metropolitan Area Transit Authority, Alexandria, VA; Jeremy Shaffer, InspectTech, Pittsburgh, PA

The Washington Metropolitan Area Transit Authority “DC Metro” maintains a large network of bridge and aerial structures. To help meet the current and future challenges Metro has adopted a new software inspection and management system. An overview of the metro system and the implementation of the new software will be covered.

Comparison of New Advances in Underwater Bridge Inspection Technology
Bradley Syler, Daniel G. Stromburg, Collins Engineers, Inc., Chicago, IL

Inspection of bridge elements below water and the streambed surrounding these elements is essential for ensuring public safety and promoting long-term serviceability of bridges over water. Although technology has been used to supplement underwater bridge inspections for many years, new advancements in underwater technology have resulted in new and improved inspection, support and documentation methods.

Long Term Structural Health Monitoring System of a Continuous Steel Girder Bridge
Varsha Singh, Thomas Weinmann, CTL Group, Skokie, IL

CTL Group developed and installed an instrumentation system for Sikessky Bridge in a joint effort with ConnDOT and University of Connecticut for long term performance monitoring. The system consists of 48 sensors and remotely triggered data collection system to measure maximum girder strains, global vibrations, piers tilt and expansion joint movement.

Optical Fibre Extensometers for Concrete Structure Instrumentation
Gilles Hovhanessian and Bernard Basile, Advitam, Velizy, France; Sylvie Delepine-Lesoille, Dominique Richon, LCPC, Paris, France

The LCPC recently developed with its partners a composite-made “wave-shaped sensor” body that enables optimal bonding between optical fiber and concrete. The presentation will focus on the design/realization of optical fiber extensometers for concrete structure instrumentation, including the system’s validation during the monitoring of concrete slab deformation in France.
Workshop 15: FHWA Accelerated Bridge Construction/ Highways for Life (W-15)

Moderator: Michael Culmo, CME Associates

This workshop will provide information on the state of the art practices of the Accelerated Bridge Construction Technology, including information on how by using innovative prefabricated bridge technologies and innovative equipment and contracting we can achieve our goals of rapid onsite construction with minimized traffic disruption, improved safety and constructibility, and improved durability, and at competitive construction costs and ahead of schedule. The workshop will include presentations on accelerated bridge construction techniques, equipment and details. Details of the new FHWA Manual entitled “Connection Details for Prefabricated Bridge Elements and Systems” will be presented.

<table>
<thead>
<tr>
<th>TIME</th>
<th>PRESENTER</th>
<th>TITLE</th>
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<tbody>
<tr>
<td>8:00</td>
<td>Vasant Mistry and Byron Lord, FHWA</td>
<td>Opening Remarks</td>
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<tr>
<td>8:15</td>
<td>Vasant Mistry, FHWA</td>
<td>National Perspective on ABC</td>
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<tr>
<td>8:45</td>
<td>Byron Nelson Lord, FHWA</td>
<td>Changing How We Build Bridges in America</td>
</tr>
<tr>
<td>9:15</td>
<td>Mary Lou Rails, Rails Newman, LLC</td>
<td>Update on Cost Effectiveness of Prefabricated Bridges</td>
</tr>
<tr>
<td>10:00</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>10:30</td>
<td>Michael Culmo, CME Associates</td>
<td>Connection Details Manual for Prefabricated Bridge Elements and Systems</td>
</tr>
<tr>
<td>11:00</td>
<td>Michael Culmo, CME Associates</td>
<td>Schematic Design of an Accelerated Bridge Project</td>
</tr>
<tr>
<td>12:00</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td>1:00</td>
<td>Ray Wolfe, California DOT</td>
<td>Connection Details for Prefabricated Bridge Elements and Systems for Seismic Forces</td>
</tr>
<tr>
<td>1:30</td>
<td>Daniel Page, Utah DOT</td>
<td>Utah DOT Transition to ABC as Standard Practice</td>
</tr>
<tr>
<td>2:00</td>
<td>Matt Swenty, Virginia Tech</td>
<td>Research Update on Full-Depth Precast Concrete Deck Panels</td>
</tr>
<tr>
<td>2:30</td>
<td>Richard Nickel, Carolina Bridge Co.</td>
<td>Replace Seven Bridges in Forty-five Days – Case Study</td>
</tr>
<tr>
<td>3:00</td>
<td>Coffee Break</td>
<td></td>
</tr>
<tr>
<td>3:30</td>
<td>William Duguay, J.D. Abrams, L.P.</td>
<td>Contractor’s Perspective on ABC</td>
</tr>
<tr>
<td>4:00</td>
<td>Loet Schartman, Mammoet USA</td>
<td>SPMT Subcontractor’s Perspective on ABC</td>
</tr>
<tr>
<td>4:20</td>
<td>Will Smith, Barnhart Crane &amp; Rigging</td>
<td>SPMT Subcontractor’s Perspective on ABC</td>
</tr>
<tr>
<td>4:40</td>
<td>Steven Sarens, Sarens Group</td>
<td>SPMT Subcontractor’s Perspective on ABC</td>
</tr>
</tbody>
</table>
## SCHEDULE AT A GLANCE

### Sunday, June 1, 2008
- 1:00-6:00 PM: Exhibit Hall Set-Up-Ball Room & 3rd Floor Foyer
- 6:00-8:00 PM: Conference Registration Desk Open-3rd Floor Foyer
- 6:00-10:00 PM: PCEF/SCEF Committee Meeting-Room 316

### Monday, June 2, 2008
- 7:00 AM-7:00 PM: Conference Registration Desk Open-3rd Floor Foyer
- 8:00 AM-5:00 PM: NHI Course: LRFD Steel-Room 311
- 8:30 AM-12 noon: Keynote Session-Room 301/305
- 11:00 AM-7:00 PM: Exhibit Hall Hours-Ball Room & 3rd Floor Foyer, with Evening Reception from 5:00-7:00pm
- 12 noon-1:30 PM: IBC Awards Luncheon-Westin Convention Center Hotel Ball Room
- 1:30-5:00 PM: Featured Agency Session “FHWA”-Rooms 301-305
- 1:00-4:00 PM: W1: Bridge Programs Forum-Room 306/307, W2: SHRP 2 Renewal Research Projects-Room 310
- 1:00-5:00 PM: W3: NSBA Steel Bridge Design Handbook-Room 402; W4: Bridge Construction Workshop-Room 406; W5: TRB Steel Bridge Safety-Room 405; W6: AASHTO TIG SPMTs-Room 406; W7: FHWA Heat Straightening-Room 401; W8: Structural Foundations-Room 403
- 5:00-7:00 PM: Exhibit Hall Reception-Ball Room & 3rd Floor Foyer
- 5:00-10:00 PM: AASHTO TG 13-Room 310
- 6:00-10:00 PM: AASHTO TG 8-Room 311; AASHTO TG 1-Room 315; PCEF/SCEF-Room 316

### Tuesday, June 3, 2008
- 7:00 AM-7:00 PM: Conference Registration Desk Open-3rd Floor Foyer
- 8:00 AM-12 noon: Strut & Tie Seminar-Room 402; W9: SSPC Coating Workshop-Room 307; AASHTO TG 2&5-Room 310
### Tuesday, June 3, 2008 (continued)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM-5:00 PM</td>
<td>NHI Course: LRFD Steel-Room 311; NHI Course: LRFD Concrete-Room 401; W-10: Steel Railroad Bridge Load Rating Workshop-Room 403; W11: Foundation Drilling Workshop-Room 405</td>
</tr>
<tr>
<td>8:30 AM-12 noon</td>
<td>Technical Sessions: Design Part 1-Room 304/305; Inspection/Analysis Part 1-Room 301-302; ABC Construction-Room 406</td>
</tr>
<tr>
<td>9:00 AM-12 noon</td>
<td>APC Bridge Committee Meeting (Room 315), W-12: FRP Composites Workshop (Room 306)</td>
</tr>
<tr>
<td>9:00 AM-4:00 PM</td>
<td>SPMT Demonstration -hourly demos from 9:00 AM until 4:00 PM, except noon-Exhibit Hall D; Heat Straightening Demonstration, hourly demos-Curbside outdoors</td>
</tr>
<tr>
<td>11:00 AM-5:00 PM</td>
<td>Exhibit Hall Hours-Ball Room &amp; 3rd Floor Foyer</td>
</tr>
<tr>
<td>1:00-5:00 PM</td>
<td>IBC Bridge Tour (meet Curbside), Seminar: Best Proposal &amp; Project-Room 402; W13: Bridge Failures Panel Discussion-Room 404; W14: American Galvanizers Workshop-Room 306; AASHTO TG 4-Room 310</td>
</tr>
<tr>
<td>1:30-5:00 PM</td>
<td>Technical Sessions: GeoTechnical-Room 304/305; Long Span-Room 301/302; Construction-Room 406; Proprietary Session-Room 303</td>
</tr>
<tr>
<td>5:00-7:00 PM</td>
<td>IBC Anniversary Cocktail Party at the Heinz History Center</td>
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### Wednesday, June 4, 2008

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 AM-5:00 PM</td>
<td>Conference Registration Desk Open-3rd Floor Foyer</td>
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<tr>
<td>8:00 AM-5:00 PM</td>
<td>NHI Course: LRFD Concrete-Room 401; W15: FHWA /HFL Workshop-Room 307</td>
</tr>
<tr>
<td>8:00 AM-12 noon</td>
<td>W16: Western PA Transportation Forum Workshop-Room 306; Seminar: Integral Abutments-Room 402; Technical Sessions: Design: Part 2-Room 304/305; Rehabilitation: Part 1-Room 301/302; Inspection/Analysis: Part 2-Room 406</td>
</tr>
<tr>
<td>8:00 AM-1:30 PM</td>
<td>Exhibit Hall Hours, with lunch-Ball Room &amp; 3rd Floor Foyer</td>
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<tr>
<td>8:00 AM-3:00 PM</td>
<td>W17: PennDOT Case Studies-Room 303</td>
</tr>
<tr>
<td>1:00-5:00 PM</td>
<td>TRB AFF10 (2) Committee Meeting-Room 315; AASHTO Full Committee-Room 316</td>
</tr>
<tr>
<td>1:30-3:45 PM</td>
<td>Technical Sessions: Historic-Room 304/305, Rehabilitation: Part 2-Room 301/302, Seismic-Room 406</td>
</tr>
</tbody>
</table>
**Workshop 16: Western PA Transportation Research Forum (W-16)**

**Time:** 8:00 AM - 12:00 noon  
**Room:** 306

Hosted by the University of Pittsburgh Department of Civil and Environmental Engineering, and moderated by Dr. Kent A. Harries and Dr. Melissa Bilec, University of Pittsburgh. The forum highlights both research-in-progress and recently completed bridge and transportation research funded by PennDOT and NCHRP. The forum is focused on technology transfer and is of interest to DOT engineers, consultants and practitioners. Forum attendees will receive a CD consisting of the presented papers. The forum is open to all IBC attendees.

<table>
<thead>
<tr>
<th>TIME</th>
<th>PRESENTER</th>
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<tbody>
<tr>
<td>8:20</td>
<td>Michael Bonini, PennDOT</td>
<td>Overview of PennDOT Research Program</td>
</tr>
<tr>
<td>8:40</td>
<td>Ronald Neufeld, Jason Monnell, Kent Pu, Matthew McCutcheon, PITT; Donald Spaeder, Kent Cockley, GAI Consultants; Thomas Gray, TerraTech Consultants; Robert Hedin, Hedin Environmental,</td>
<td>Jonathan Run Acid Rock Discharge Mitigation Strategies &amp; Implementation Activities</td>
</tr>
<tr>
<td>9:00</td>
<td>Amy Landis, Melissa Bilec, Joe Marriott, Scott Shrake, William Collinge, PITT</td>
<td>Biodiesel Fuel Feasibility Study</td>
</tr>
<tr>
<td>9:20</td>
<td>Rania Asbahan, Julie Vandenbossche, PITT</td>
<td>Effects of Environmental Loads on Slab Curvature</td>
</tr>
<tr>
<td>9:40</td>
<td>J-S Lin, Luis Vallejo, Maria Jaime, PITT</td>
<td>Rational Approach for Rock Slope Design</td>
</tr>
<tr>
<td>10:00</td>
<td>BREAK</td>
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<tr>
<td>10:20</td>
<td>Kent Harries, Jarret Kasan, John Aktas, PITT</td>
<td>Repair Methods for Prestressed Concrete Girder Bridges</td>
</tr>
<tr>
<td>10:40</td>
<td>Kent Harries, Amir Sohtani, PITT</td>
<td>Application of High-Strength Reinforcing Steel in Bridge Design</td>
</tr>
<tr>
<td>11:00</td>
<td>Brandon Chavel, HDR; Kent Harries: PITT</td>
<td>Construction and Detailing of Horizontally Curved Steel I-girder Bridges</td>
</tr>
<tr>
<td>11:20</td>
<td>Piervincenzo Rizzo, Jennifer Kacin, Venu Annamdas, Jerry Bruck, PITT</td>
<td>Sensing Technology for Damage Assessment of Sign Supports and Cantilever Poles</td>
</tr>
<tr>
<td>11:40</td>
<td>Kent Harries, PITT; James Garrett, Irving Oppenheim: CMU; Dennis Mertz, University of Delaware</td>
<td>Future Directions in Bridge Engineering Research</td>
</tr>
</tbody>
</table>
The intent of this session is to present construction lessons learned that will help designers to improve future designs. Each case study will consist of a presentation and Q/A period, and will involve the owner, designer and contractor. Some topics include emergency superstructure replacement (I-880, CALTRANS), Curved Girder Erection, Flood Emergency Rehab/Replacement, Context Sensitive Solutions, Staged Construction (Penn DOT) and the North Shore Connector (Port Authority of Allegheny County).

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<thead>
<tr>
<th>TIME</th>
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<tbody>
<tr>
<td>8:00am</td>
<td>1</td>
<td>CALTRANS - MacArthur Maze Tanker Fire/ Bridge Collapse</td>
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<tr>
<td>9:00am</td>
<td>2</td>
<td>PennDOT District 6-0 - I-95</td>
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<tr>
<td>9:30am</td>
<td>3</td>
<td>PennDOT District 8-0 - Dillerville Road Over Amtrak Accelerated Bridge Construction</td>
</tr>
<tr>
<td>10:00am</td>
<td>4</td>
<td>PennDOT District 2-0 - Bradford Bypass/ Pile Foundation Design/ 1/2 Width Construction</td>
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<tr>
<td>10:30am</td>
<td>5</td>
<td>PennDOT District 9-0 - Million Dollar Bridge Phased Construction</td>
</tr>
<tr>
<td>11:00am</td>
<td>6</td>
<td>PennDOT District 10-0 - East Brady Bridge community Involvement/ Environmental Issues</td>
</tr>
<tr>
<td>11:30am</td>
<td></td>
<td>Lunch</td>
</tr>
<tr>
<td>1:00pm</td>
<td>7</td>
<td>PennDOT District 12-0 – Emergency Design Build</td>
</tr>
<tr>
<td>1:30pm</td>
<td>8</td>
<td>Port Authority Transit - North Shore Connector Light Rail Transit</td>
</tr>
<tr>
<td>2:00pm</td>
<td>9</td>
<td>PennDot District 11-0 - Curved Girder Erection Over I-79</td>
</tr>
</tbody>
</table>

1. **MacArthur Maze Tanker Fire/ Bridge Collapse, Barton Newton, California State Bridge Maintenance Engineer**

   In the early morning hours of Sunday, April 29, 2007, a tanker truck hauling 8,600 gallons of gasoline overturned, burst into flames and severed a critical link in the transportation network of the San Francisco Bay Area.

   As the fire raged on the MacArthur Maze interchange near Oakland where Interstate Highways 80, 580 and 880 intersect, the California Department of Transportation (Caltrans) responded to protect the public and to assess the damage, re-route traffic and initiate an accelerated repair and reconstruction plan.

   Like previous disasters such as the 1989 Loma Prieta and 1994 Northridge earthquakes, this tanker truck fire and subsequent bridge collapse tested Caltrans’ emergency readiness and ability to respond to a major disruption of the Golden State’s transportation system.

   Caltrans delivered, reopening one of the damaged connector ramps (the East Bay Viaduct) in eight days and rebuilding nearly...
200-feet of the bridge (Distribution Structure) that collapsed in less than one month. This presentation will provide an overview of the response and recovery efforts employed by Caltrans by identifying the amount and severity of the bridge damage, initiating repairs and restoring traffic service as quickly as possible.

2. I-95, Craig J Beissel, PennDOT Bridge Quality Assurance Division
   This presentation will talk about the events causing the failure and closure of I-95, the repair scheme, coordination and timeframe to begin and complete the repair, the coordination between all involved parties, repairs to other nearby piers and follow-up inspections.

3. Dillerville Road Over Amtrak Accelerated Bridge Construction, Harivadan Parikh, PennDOT; Greg Burkhart, J.D. Eckman, Inc.
   The Concept was accelerated bridge construction using prefabricated system for the substructure and P/S box beams and removal of the existing superstructure using Gantry system.

4. Bradford Bypass, Section C09 – Pile Foundation Design and Detailing for Skewed Bridges Built with Half-Width Construction, George Prestash, P.E. District Bridge Engineer, Engineering District 2-0.
   This presentation discusses the issues that may arise when designing, detailing, and constructing pile foundations for substructure units that are skewed and built with half width construction. This discussion will focus on the basic considerations for determining the typical section of the superstructure to accommodate construction phasing and temporary shoring, tips for laying out a constructible pile pattern, considerations to avoid interferences of battered piles, and strategies for implementing pile pattern modifications during construction. Additional presentation by Ben Allis, DMJM Harris

5. Million Dollar Bridge Phased Construction, Ralph DeStefano, PennDOT District 9-0 Bridge Engineer
   The Million Dollar Bridge is a 5-span viaduct carrying US 220 over the Juniata River, Norfolk Southern mainline tracks and SR 1010 on the eastern edge of Huntingdon Borough, Huntingdon County. The viaduct consists of a 4-span unit over the river and railroad tracks, while a simply-supported single-span unit spans SR 1010. The support skew angles vary from 55 degrees to 39 degrees. The structure was built in 1948 and carries approximately 10,200 vehicles daily. The existing width is 37'-0" curb-to-curb and 44'-7½" out-to-out, which includes 3'-9" wide sidewalks on each side.
   Virtually no work has been performed on the bridge since its original construction. Consequently, major repairs to the structure were needed. Design work on rehabilitating the structure began in 1995. However, with input from the local community seeking expansion of the 3-lane corridor to 5-lanes, the project became delayed due to funding and environmental constraints. With the condition of the bridge reaching a critical point – either rehabilitate or else loose the bridge altogether – and with the added realization that funds were not available to widen the corridor, the decision was made to undertake a $1,000,000 major rehabilitation effort. Due to high traffic volumes and the lack of any acceptable detour route, two lanes of traffic had to be maintained during daylight hours. Controlling one lane of traffic through the work zone in the remaining hours with temporary traffic signals and working at night was permitted. This construction scheme results in third-
width construction and very tight work areas for the contractor. The project is scheduled to be completed in Fall 2009.

6. East Brady Bridge community Involvement/ Environmental Issues, James Andrews, PennDOT

The project was the replacement of an existing four span through truss with a new structure on a new alignment. The project is located in Brady’s Bend Township, Armstrong County and East Brady Borough, Clarion County and carries SR 68 across the Allegheny River.

Due to the project’s impact on the local community, the Department utilized a Community Advisory Committee (CAC) to assist in the development of a preferred alignment and selection of context sensitive items to be incorporated into the project. In addition, there were several T&E species located in this section of the river that required extensive coordination by the Design Team.

The construction of the project involved some techniques not used in the District before, such as a cooling system placed in the tremie concrete for the piers; constant coordination with environmental agencies due to T&E species; and issues with bridge demolition.

The project was let for construction in 2006 and completed in 2007. KCI Technologies, Inc. of Mechanicsburg, PA was the Design Consultant, and Brayman Construction, Inc. of Saxonburg, PA was the general contractor. The project cost was approximately $16 million.

7. Emergency Design Build - This session will bring together the design and construction experiences of the Design Build Projects in District 12-0. Two contractors and their designer will discuss their perspectives of the Emergency Design Build Projects built in District 12-0.

• Troy Pritts, PennDOT District 12-0 Design Project Manager,
• Dave Fasiczka, PennDOT District 12-0 Structure Control Engineer

Additional presentations will be made by:
• Mark Blum, Vice President, Mingo Creek Construction; S.R. 0019 - B10 project.
• Eric Meyer, P.E., Structures Manager, Whitman, Requardt and Associates, LLP; the Consultant Designers of the Contractors.


This session focuses on the verification testing and construction of the Drilled Shafts used in the underpinning of the SR-65 Bridge for the North Shore Connector Tunnel construction. O-cell testing and Cross-hole-sonic logging were performed for these shafts. Design and detailing considerations will be examined in contrast with the field construction of the test shafts and the production shafts.

9. Curved Girder Erection Over 1-79, Louis Ruzzi, P.E., PennDOT District 11-0 Bridge Engineer. This session will bring together experiences from design, fabrication and construction to identify best practices for the erection of horizontally curved girders. A case study for the design, fabrication and erection of the SR 0079 Section A23 (Missing Ramps) project will be presented. The case study consists of a seven
span bridge (Ramp G) that included two separate units (one-three spans and one-four spans).

Additional Presentations will be made by the following individuals:

- David A Frey, P.E., Michael Baker Jr., Inc., – Design concerns for development of conceptual erection documents for curved steel girders
- Thomas Wandzilak, P.E., High Steel Structures, - Fabrication of horizontally curved steel girders
- James Au, P.E., Balfour Beatty Construction – Erection of curved girders with limited project access.

**SEMINAR: INTEGRAL ABUTMENTS**

**Time:** 8:00 AM-12:00 noon  
**Room:** 402

This seminar will focus on proper detailing for integral abutment bridges and how they can best be utilized. It will also cover full-scale test results from several bridges to demonstrate the functionality of these structures.

**Moderator:**  
Bryan J. Spangler, P.E., Senior Technical Advisor, Michael Baker Jr., Inc.

**Presenters:**  
- Harry L. White, P.E., New York Department of Transportation;  
- William C. Koller, P.E., Pennsylvania Department of Transportation;  
- Jeffrey Volz, P.E., Pennsylvania State University  
- Vasant Mistry, P.E., Federal Highway Administration.

**TRANSPORTATION RESEARCH BOARD (TRB) COMMITTEE AFF10 (2) BRIDGE AESTHETICS MID-YEAR MEETING**

**TIME:** 1:00-5:00 PM  
**ROOM:** 315

Moderator: Joe Showers, CH2MHill

The group whose function is, “To educate the profession on how to improve the appearance of bridges and other structures during design, construction and operation” will hold its mid year meeting to continue its work including discussion of the development of the, “Bridge Aesthetics Sourcebook” and Website (www.bridgeaesthetics.org). Speakers and topics are yet to be determined. All are welcome to attend.
WEDNESDAY, JUNE 4

HISTORIC

Time: 1:30 – 3:45 PM
Room: 304/305
Chair: James Dwyer, STV, Inc., Pittsburgh, PA

IBC 08-85 ................................................................. 1:30 PM

Rehabilitation of the Haverhill-Bath Covered Bridge - Construction Phase

Sean James, Hoyle, Tanner & Associates, Inc., Manchester, NH

The Haverhill-Bath Covered Bridge, the second oldest covered bridge in the US, is undergoing a much needed rehabilitation. This paper will focus on the construction of the project, including bidding such specialized work, funding vehicles, temporary shoring and unique construction challenges faced by the design team and contractor.

IBC 08-86 ................................................................. 1:55 PM

London Bridge Did Not Fall Down But Some Bridges Do - Part 2

Charles Seim, Consulting Bridge Engineer, El Cerrito, CA

This Part 2 to, “Did London Bridge Fall Down?” (presented during the 2007 IBC), continues the discussion of bridges that collapsed and bridges that failed to meet a level of performance or someone’s expectation. The paper will also present examples, not to place blame, but to learn how and why events controlled by well meaning professional can quickly go wrong.

IBC 08-87 ................................................................. 2:20 PM

Climbing Inspection and Analysis of Historic Long-Span Truss

C. Michael Cooper, P.E., David A. Thurnherr, P.E., Jeremy C. Miles, PE, Bergman Associates, Rochester, NY; Peter Melewski, PE, Bergmann Associates, Albany, NY; Elias Boumis, McLaren Engineering Group, West Nyack, NY

The 6,768-foot long Poughkeepsie-Highland Railroad Bridge is proposed for re-use as an iconic State Park that will be the world’s longest pedestrian bridge. An in-depth structural inspection consisting of industrial rope access climbing techniques and diving formed the basis of a subsequent structural analysis, including 3D modeling of the seven cantilevered deck truss spans over the Hudson River.

IBC 08-88 ................................................................. 2:45 PM

Rehabilitation of the 19th Century King’s Covered Bridge

Samer Petro, Gannett Fleming, Morgantown, WV

This paper describes the construction of the rehabilitation of the King’s covered bridge. Our approach involved extending the arches to bear directly on the stone abutments; and using traditional 19th century timber joinery methods such as joggle joints to replace deteriorated members. In addition, epoxy adhesives and Glass Fiber Reinforced Polymer (GFRP) rebars and plates were used as splices and joints. The rehabilitation methods and techniques are conducted in accordance with the Secretary of the Interior Standards for Historic Preservation. Rehabilitation is underway and expected to be completed by December 2007.
Stay Cables of the Luling Bridge are to be Replaced
Armin B. Mehrabi, Ph.D., P.E., Bridge Engineering Solutions, Lewiston, NY

The Hale Boggs Bridge in Luling, Louisiana opened to traffic on October 5, 1983. At the time, it was the first cable-stayed crossing over the Mississippi River and had the largest navigation channel span of its kind in the western hemisphere. This paper summarizes an ongoing evaluation and cable replacement design program initiated by the Louisiana Department of Transportation and Development (LADOTD) to address deficiencies reported for the stay cables.

**REHABILITATION, PART 2**

**Time:** 1:30 – 3:45 PM  
**Room:** 301/302  
**Chair:** Matthew A. Bunner, P.E., HDR, Inc., Pittsburgh, PA

**IBC 08-90**  
A Model to Measure Performance of Concrete Bridges Strengthened with FRP-Composite Structural Systems  
Kenneth C. Crawford, Directorate of Civil Engineering, DOD - Air Force, Edwards AFB, CA,

FRP (fiber reinforced polymer) structural systems provide a means for economical and rapid repair of concrete bridges but long-term FRP durability and bridge performance are an open question. This paper presents a model to inspect and test FRP system durability, assess deterioration factors, and measure performance of the FRP-strengthened bridges.

**IBC 08-91**  
Crack Repairs to a Fracture-Critical Cross-Girder on the I-476 Bridge over the Schuylkill River  
John Milius, P.E., DMJM Harris / AECOM, Philadelphia, PA; Ian Hodgson, P.E., S.E., The ATLSS Center, Lehigh University, Bethlehem, PA

Cracks were recently discovered in the web of a fracture-critical cross-girder on the I-476 Bridge over the Schuylkill River 12 miles west of Philadelphia. The cracks resulted from out-of-plane distortion of the web at the base of a connection plate. This paper illustrates the cause of the cracking, outlines the objectives of a field testing and retrofit design program, and presents the results of retrofit repairs and post-repair monitoring program.

**IBC 08-92**  
Details of the Re-profiling on a Major Bridge Between the US and Mexico: Reynosa Bridge  
Robert Gulyas, BASF

This presentation shows the importance of proper techniques for overlaying a bridge deck under existing traffic conditions to provide a permanent rapid repair overlay—not for durability reasons—but for profile and deflection control. This system used a Rapid Hardening Repair material and a special type of epoxy bonding agent to complete the project in adverse high temperatures night time conditions. The initial repairs did not perform as expected—so there are some very good lessons to be learned from this major project.
Rehabilitation of the Historic Elm Street Truss Bridge Using an Innovative Disassembly Construction Technique
Michael Marks, P.E., EIC Group LLC, Fairfield, NJ; Michael Seelman, PE, Ferreira Construction Company Inc, Branchburg, NJ; Scott Patterson, P.E., Acrow Corporation of America, Parsippany, NJ

This historic lenticular truss was rehabilitated by completely dismantling and then re-assembling utilizing an Acrow prefabricated bridge to temporarily support the structure during construction. Load was transferred to the Acrow by jacking hangers attached to the truss verticals. Load testing confirmed the r-assembled truss was carrying load as predicted.

Design of the Suspender Rope Replacement at the Twin Arches Carrying I-87 over the Mohawk River, Albany, NY
Ramesh Panchalan, Ph.D., Michael Mangione, P.E., Chas. H. Sells, Inc., Briarcliff Manor, NY

After 47 years of service, the suspender strands that support the Thaddeus Kosciusko Twin Arch Bridges carrying Interstate i-87 (North Bound and South Bound) between the towns of Colonie in Albany County and Halfmoon in Saratoga County required replacement. The arches with the suspender strands support the built up floor beams, rolled stringer sections and a reinforced deck. This paper will briefly discuss the material and detail alternatives that were evaluated for replacing the suspender strands and connection assemblies including various alternatives to temporarily support the floorbeam ends during strand replacement. The paper will also briefly discuss the strand replacement procedure, design criteria, construction staging, strand replacement sequencing, maintenance and protection of traffic and maintenance measures recommended to prevent future corrosion of the suspender strands.

An Overview of Current State of the Practice for Seismic Design & Retrofit of Bridges
W. Phil Yen, FHWA, Turner Fairbank Highway Research Center, McLean, VA; Jerome O’Connor, MCEER, University at Buffalo, Buffalo, NY

There have been many recent changes in the field of earthquake engineering for highway bridges as a result of lessons learned from past events, funded research, and the development of new performance driven design philosophy based on consensus of best practice here and abroad. This paper will summarize current state of the practice for bridge design and retrofit. Particular attention will be given to the applied research that MCEER’s team has conducted for Federal Highway Administration over the past five years that has contributed to these changes. Topics addressed will include performance based design, loss estimation and system analysis of the highway network, seismic retrofitting of bridges and other highway structures, seismic isolation and other innovative technologies, liquefaction, soil remediation, etc.
WEDNESDAY, JUNE 4

IBC 08-96 ............................................................. 1:55 PM
Seismic Designs of I-195 Relocation Bridges, Providence, RI
Yihui Wu, Ph.D., P.E., The Louis Berger Group, Needham, MA; Patricia Steere, P.E., Maguire Group Inc., Providence, RI
16 new bridges were designed to replace the existing Rhode Island I-195 interchange, which includes steel network arch bridge, steel box girder curved spans, steel I girder curved span, pre-cast concrete span and rigid frame cast in place concrete spans supported on drilled shaft, driven pile and shallow foundations. Seismic design of these bridges for 2500 year return period earthquake, construction conflict and solution, and non-linear analysis are presented in this paper.

IBC 08-97 ............................................................. 2:20 PM
Long Span Bridge Maintenance Program
Gilles Hovhanessian, Advitam, Velizy, France; Aris Vlamis-Stathopoulos, GEYFRA, Halandri, Greece
Most European bridges are built and operated by private companies within 30 to 70 year concession contracts. Comprehensive inspection & maintenance manual are put in place for every infrastructure to be operated by Vinci group. The paper will describe typical content of the manual and describe one particular application.

IBC 08-98 ............................................................. 2:45 PM
Seismic Design of Partially Concrete-Filled Steel Box Bridge Piers
Iraj Mamaghani, University of North Dakota, Grand Forks, ND
The use of concrete-filled steel sections in structures generally leads to a more efficient and economic system for resisting seismic forces, because of their excellent seismic-resisting characteristics such as high ductility, improved strength and energy absorption capacity. This paper deals with the seismic design of partially concrete-filled steel box bridge piers. The seismic design concepts and some important characteristic parameters of thin-walled steel box bridge piers are presented. The main ideas underlying partially concrete-filled steel box columns are explained. A seismic design and an evaluation procedure accounting for the effects of residual stresses are presented.

IBC 08-99 ............................................................. 3:10 PM
An Assessment of Damage to Peru’s Highway System After the M8.0 Pisco Earthquake
Jerome S. O’Connor, MCEER, University at Buffalo, Buffalo, NY; Lucero Mesa, South Carolina DOT, Columbia, SC; Monique A. Nykamp, P.E., Shannon & Wilson, Inc., Seattle, WA
The presentation will show how AASHTO designed structures fared and how the road system performed during this unusually long period earthquake. It will show details that worked well and others that failed. It will illustrate why geotechnical considerations are paramount, and the value of considering multiple hazards when designing and retrofitting bridges.
ACMA BOOTH: 1 & 2

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ACMA is the world’s largest composites trade association and hosts the largest composites conference in North America. The ACMA Transportation Structures Council serves to inform and educate practitioners on FRP composites used in civil engineering/construction applications. Manufacturers products on display include structural profiles, bridge decks, pedestrian bridges, rebar, piling, and concrete repair/strengthening systems. More information at www.acmanet.org.

ACROW CORPORATION BOOTH: 715 & 717

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ADVITAM, INC. BOOTH: 617

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AGC CHEMICALS BOOTH: 722

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EXHIBITS

American Iron and Steel Institute

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**BRIDGE DESIGN & ENGINEERING MAGAZINE**

**BOOTH: 600**

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The leading magazine for the international bridge industry. Every issue of Bd&e looks at the latest news, projects reports, interviews and technical & application features from around the world. Bd&e is essential reading for anyone who finances, plans, designs, builds, maintains, operates, or owns bridges.

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**BOOTH: 19**

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**BRIDGE LOVERS PORTAL**

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**BOOTH: 114**

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**BOOTH: 7**

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Fax: 937-254-8365
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CONTECH Bridge Solutions offers a comprehensive line of vehicular and pedestrian bridge products to suit any application need. A variety of plate, precast and truss products include CONTECH Structural Plate, CON/SPAN Bridge System, the BEBO Arch System, Steadfast Bridges and Continental Bridge. More than 65,000 structures are installed worldwide.

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Fax: 613-342-0609
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Website: www.dappolonia.com

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DAWOOD ENGINEERING

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BOOTH: 210

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June 2-4, 2008, Pittsburgh, PA USA
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ERIKSSON TECHNOLOGIES, INC.

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Eriksson Technologies develops, markets, and supports bridge design software for the AASHTO LRFD and AASHTO Standard Specifications. Eriksson also offers technical training, engineering consulting services, and technical publications, and is the underwriter and maintainer of LRFD.com.

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BOOTH:  516

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Website:  www.fortmiller.com

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BOOTH:  402

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Geotechnics is an independent accredited laboratory that is nationally recognized for providing high quality geotechnical and geosynthetic testing services. Geotechnics has been accredited by The American Association of State Highway and Transportation Officials (AASHTO), The United States Army Corps of Engineers (COE) and The Geosynthetics Accreditation Institute-Laboratory Accreditation Program (GAI-LAP). Geotechnics also provides Dynamic Pile Testing with a Pile Driving Analyzer® (PDA) to quickly and confidently assess the capacity and integrity of driven piles. Geotechnics currently has operations in Pittsburgh, Pennsylvania and Raleigh, North Carolina.

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BOOTH:  602

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H2L2  BOOTH:  116

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**BOOTH: 405**

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BOOTH: 619

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BOOTH: 19A

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BOOTH: 16

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KTA-TATOR, INC.  BOOTH:  20
Contact: Scott Rice  
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Website: www.kta.com  
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LEHIGH UNIVERSITY - ATLSS RESEARCH CENTER

BOOTH: 207

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**BOOTH: 106**

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**MATERIAL TECHNOLOGIES**  
**BOOTH: 31**

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Phone: 310-208-5589  
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**BOOTH: 300**

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**BOOTH: 3**

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E-Mail: ericm@mcironworks.com
Website: www.mcironworks.com

Michelman-Cancelliere Iron Works, Inc. founded in 1992 is a structural steel fabrication and painting firm located in Bath, PA. near Bethlehem. Our location is strategically positioned at a major business hub on the Eastern Seaboard. Michelman-Cancelliere Iron Works provides their steel services for new and existing bridges and new and existing buildings.

MOFFATT & NICHOL  BOOTH: 10

Contact: Michael Harris
Phone: 804-320-1996
Fax: 804-560-0959
E-Mail: mharris@moffatnichol.com
Web: www.moffatnichol.com

Moffatt & Nichol's structural capabilities encompass all aspects of highway and railroad bridge design including planning, inspections, widening, rehabilitation and final design of new structures. Specialty capabilities include navigation crossings, deep marine foundations, vessel collision analysis, pier protection systems, scour analysis, seismic analysis and retrofit, and security assessments.

MONOTUBE PILE CORPORATION  BOOTH: 103

Contact: Scott Udelhoven
Phone: 330-454-6111
Fax: 330-454-1572
E-Mail: monotube@raex.com
Website: www.monotube.com

End-driven longitudinally fluted steel shell for friction bearing applications available in a variety of diameters and tapers with engineering support for your project needs.

MORETRENCH AMERICAN CORPORATION  BOOTH: 107

Contact: Scott Stonecheck
Phone: 412-793-9303
Fax: 412-793-9313
E-Mail: sstonecheck@mtac.com
Website: www.moretrench.com

Moretrench specializes in construction dewatering; ground/water treatment; ground freezing; hydraulic barriers; earth retention systems; soil and rock stabilization; foundation support; specialized concrete construction; grouting; tiebacks; micropiles; soil nailing; and
underpinning. These services are available through full service offices in New Jersey, Florida, New York, Massachusetts, Pennsylvania, Delaware and Washington DC.

NATIONAL STEEL BRIDGE ALLIANCE  BOOTH: 611
Contact:  Jody Lovsness  
Phone:  402-758-9099  
Fax:  402-778-9499  
E-Mail:  lovness@nsbaweb.org  
Website:  www.steelbridges.org  
The National Steel Bridge Alliance is organized and dedicated to better serve our customers and members with state-of-the-art design and construction of steel bridges. We are a unified industry organization of businesses and agencies interested in the development, promotion and construction of cost effective steel bridges.

NDT CORPORATION  BOOTH: 618
Contact:  Paul Fisk  
Phone:  508-754-0417  
Fax:  508-754-0418  
E-Mail:  paul.fisk@ndtcorporation.com  
Website:  www.ndtcorporation.com  
NDT Corporation provides nondestructive and geophysical testing services for civil engineering projects. Our experience includes over 400 projects throughout the United States and Caribbean. Geophysical methods are used to characterize soil and bedrock conditions for bridge scour, seismic retrofit and other foundation studies. Nondestructive testing methods are used to determine the condition of bridge decks, piers and abutments as well as assessing post tensioning ducts for grout voids.

NON-DESTRUCTIVE TESTING GROUP  BOOTH: 509
Contact:  Michael Forbes  
Phone:  616-891-3570  
Fax:  616-891-3565  
E-Mail:  mforbes@ndtg.net  
Website:  www.ndtg.net  
Non Destructive Testing Group provides bridge fabrication inspections for steel and concrete prestressed bridges, NDT inspections on existing bridges, and bridge paint inspections. NDTG has developed and performs a complete sign structure inspection program. NDT’s mechanical laboratory provides weld procedure qualifications, bridge bearing pad testing, and numerous other testing services.

NORTHEAST WORK AND SAFETY BOATS  BOOTH: 36
Contact:  Jack Casey  
E-Mail:  safetycasey@aol.com  
Phone:  860-930-9897  
Web:  www.safetyboats.com  
Our firm services include rescue, inspection, and work boats as well as work platforms (barges). We have over nine years of experience working on many large federally funded bridge inspection, construction and rehabilitation projects throughout the northeast. Our boats vary in size and are designed specifically to maximize performance on diverse waterways. All vessels are outfitted with the required safety equipment and certified personnel.
EXHIBITS

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Phone: 305-776-7689
Web: www.nrsas.com

NX INFRASTRUCTURE
Contact: Seth Fischer
E-Mail: seth.fischer@nxinfrastructure.com
Phone: 847-606-3441
Web: www.nxinfrastructure.com
NX Infrastructure, providers of the most advanced stainless steel clad rebar with a carbon steel core for corrosion resistant infrastructure projects.

OLSON ENGINEERING, INC.
Contact: Larry Olson
Phone: 303-423-1212
Fax: 303-423-6071
E-Mail: cathys@olsonengineering.com
Website: www.olsonengineering.com
Olson Engineering, Inc. has provided state of the art non-destructive testing and evaluation services since 1985. Our continuous involvement in the NDT industry has enabled us to offer our clients the full range of testing techniques in order to assess the internal condition of existing structures and roadways.

OSMOS-USA
Contact: John F. Graham, Jr.
Phone: 412-835-0325
Fax: 412-835-1413
E-Mail: gcigraham@aol.com
Website: Infrastructure Asset Management

OUTOKUMPU STAINLESS
Contact: Elisabeth Torsner
Phone: 765-529-0120
E-Mail: Elisabeth.torsner@outokumpu.com
Web: www.outokumpu.com/stainless/na
Outokumpu is an international stainless steel company with a vision to be the undisputed number one in stainless. Our plate, pipe, coil, and bar (including reinforcement bar) stainless products — particularly in duplex stainless — are becoming the materials of choice for pedestrian, road, and highway bridge construction. Duplex grades of stainless are ideal for road and bridge construction because it combines many of the beneficial properties of ferritic and austenitic steels, offering high strength and high resistance to stress corrosion cracking along with very good resistance to uniform corrosion. Outokumpu stainless is featured in the world's tallest bridge (the Stonecutters Bridge), currently under construction in Hong Kong and in the Padre Arrupe Bridge, which leads pedestrians over the Nervion River to Bilbao, Spain’s famous Frank Gehry-designed Guggenheim Museum.
**EXHIBITS**

**PALLMER ENGINEERING**

Contact: Randall Palmer  
Phone: 859-744-1218  
Fax: 859-744-1266  
E-Mail: rpalmer@palmernet.com  
Website: www.palmernet.com  

Palmer Engineering has served the public for over thirty years in the areas of highway and bridge design, surveying, land development, and environmental services.

**PAXTON-MITCHELL COMPANY**

Contact: Mark A. Pfeffer  
Phone: 402-345-6767 x128  
Fax: 402-345-6772  
E-Mail: mpfeffer@paxton-mitchell.com  
Website: www.paxton-mitchell.com  

Manufacturer of the Snooper® Bridge Inspection and Maintenance Crane. Snooper®, the most widely used bridge inspection crane in the world, is capable of under bridge reaches from 30’ to 60’ and available in basket, platform, or combination configurations.

**PENNONI ASSOCIATES INC.**

Contact: Jennifer Laning  
Phone: 302-655-4451 x3629  
Fax: 302-654-2895  
E-Mail: jlaning@pennoni.com  
Website: www.pennoni.com  

Pennoni Associates is a multi-disciplined consulting engineering firm with 21 offices throughout the eastern United States. Pennoni, ranked as a best place to work in PA and NJ, offers services in Transportation, Underwater Inspection, Civil/Municipal, Environmental, Inspection and Testing, Surveying, Site Design and Landscape Architecture, MEP, Geotechnical and Structural Engineering.

**PHOENIX NATIONAL LABORATORIES, INC.**

Contact: Alexander Zuran, III  
Phone: 602-431-8887  
Fax: 602-431-8889  
E-Mail: alexiii@pnltest.com  
Website: www.pnltest.com  

Phoenix National Laboratories is an independent third party lab specializing in the testing of elastomeric bridge bearings. We test to the latest AASHTO and State specifications including Standard Specifications, LRFD, and M251. All test results are reviewed and stamped by a registered Professional Engineer.

**PHYSICAL ACOUSTICS CORP.**

Contact: Richard Gostautas  
E-Mail: sales@pac.ndt.com  
Phone: 609-716-4000  
Fax: 609-716-4179  
Web: www.pacndt.com  

Physical Acoustics Corporation (PAC) designs and manufactures acoustic emission sensors and acoustic emission measurement instruments under a quality program which is certified to ISO-9001 standards. Acoustic emission research is offered at the advanced basic level, with the company currently active on several commercial industrial and government applied research contracts. PAC’s REACT
division is collaborating with universities and industry for advancing AE sensor technology. Our acoustic emission training and personnel certification program is respected worldwide.

**PICKERING, CORTS & SUMMerson, INC.**  **BOOTH: 705**

- **Contact:** John C. Wilhelm, PE
- **Phone:** 609-737-2033
- **Fax:** 609-737-7306
- **E-Mail:** jwilhelm@pcs-inc.biz
- **Website:** www.pcs-inc.biz

One of the region’s leading engineering firms, Pickering Corts & Summerson, Inc. provides comprehensive engineering services from our headquarters in Newtown, PA, and three regional offices in West Trenton, NJ; Plymouth Meeting, PA; and Center Valley, PA. Thriving on a 90-year tradition of excellence, PCS maintains award-winning practices in Civil Engineering, Municipal Engineering, Landscape Architecture, Transportation Design, Land Surveying, Bridge Inspection, and Underwater Bridge Inspection. A recognized leader in bridge design and inspection, PC&S has inspected thousands of bridges in New Jersey and Pennsylvania, including many of the largest, most complex structures in the region. PC&S underwater inspection teams include professional, commercially-certified, divers and employ cutting-edge underwater imaging equipment.

**PIERESearch**  **BOOTH: 123**

- **Contact:** Stan Agee
- **E-Mail:** stanagee@pieresearch.com
- **Phone:** 817-265-0980
- **Fax:** 817-275-2335
- **Web:** www.pieresearch.com

Rieresearch manufacturers concrete pier accessories, Centraligner pier sleds, Hijacker pier bolsters, Snapaligner pier wheels, and Bar Boosters, whose sole purpose is to keep a reinforcing steel cage centered and off of the floor of the drilled shaft.

**PORTLAND CEMENT ASSOCIATION**  **BOOTH: 304**

- **Contact:** Dave Bilow
- **Phone:** 847-972-9100
- **Fax:** 847-972-9101
- **E-Mail:** sbhide@cement.org
- **Website:** www.cement.org

Where cement and concrete are concerned, so is the Portland Cement Association: in manufacturing, in raising the quality of construction, in improving our product and its uses, in contributing to a better environment. In practice, this mandate means well-rounded programs of market development, education, research, technical services, and government affairs on behalf of PCA members-cement companies in the United States and Canada.
POWER TEAM

Contact: Rick Swansbro
Phone: 815-873-3720
Fax: 815-873-3391
E-Mail: rick.swansbro@fluidpower.spx.com
Website: www.powerteam.com

POWER TEAM is a world leader in hydraulic special service tools and equipment for global construction markets. We manufacture precision quality high-pressure hydraulic products including pumps, jacking cylinders/rams, post tension jacks, and valves. Products are sold through a worldwide network of stocking industrial distributors.

PRECAST / PRESTRESSED CONCRETE INSTITUTE (PCI)

Contact: John Dick
Phone: 312-786-0300
Fax: 312-786-0353
E-Mail: j.dick@pci.org
Website: www.pci.org

PCI is a unique association of producers, suppliers and professionals. It is dedicated to fostering greater understanding of the design and use of precast and prestressed concrete. It also encourages and recognizes excellence in the manufacture and use of these materials. Our professional members guide the Institute’s efforts in product innovation, new technology adaptation, design methods development, training and quality assurance.

PRESTRESSED CONCRETE ASSOCIATION OF PENNSYLVANIA

Contact: Heinrich O. Bonstedt
Phone: 610-395-2338
Fax: 610-395-8478
E-Mail: bonstedt@pcap.org
Website: www.pcap.org

The Prestressed Concrete Association of Pennsylvania is a non-profit industry organization of prestressed concrete bridge beam manufacturers approved by the Pennsylvania Department of Transportation as a material source and located in the Commonwealth of Pennsylvania.

PROTO MANUFACTURING, INC.

Contact: Michael Brauss
Phone: 313-887-9583
Fax: 734-485-5732
E-Mail: proto@protoxr.com
Website: www.protoxr.com

Proto Manufacturing provides both measurement services and equipment for measured dead load stress and load path in bridges and structures. Proto’s leading edge x-ray diffraction (XRD) technology is portable, cost effective and provided the necessary data for making informed decisions about the health of bridges and structures.
PURE TECHNOLOGIES

Contact: Michael Higgins
Phone: 443-766-7873
Fax: 443-766-7877
E-Mail: mike.higgins@soundprint.com
Website: www.soundprint.com

Pure Technologies is a consulting company that focuses on non-destructive testing, structural monitoring, and evaluation of highway bridges. They specialize in structural monitoring and evaluation of cable supported bridges. In addition, they utilize the SoundPrint and CableScan non-destructive services to provide information on the condition structural cables.

Q.B. ASSOCIATES, INC.

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Phone: 207-743-8885
Fax: 207-743-0598
E-Mail: neil@spg-antirock.com
Website: www.spg-antirock.com

Antirock has been protecting bridge decks world wide since 1976 with it’s first installation still in place 30 years later. The bond created between the bridge deck and Antirock is unsurpassed by any waterproofing product in use today.

R.J. WATSON, INC.

Contact: Marc Stafford
Phone: 716-691-3301
Fax: 716-691-3305
E-Mail: mstafford@rjwatson.com
Website: www.rjwatson.com

R.J. Watson, Inc. specializes in the design manufacture and testing of high load multirotational bearings, seismic isolation devices, joint sealing systems, waterproofing membranes and high strength fiber composite materials used to strengthen and rehabilitate structural members such as columns, beams, walls, piles, girders and slabs. In addition, R.J. Watson is now involved in the design and supply of FRP bridge deck and girder systems.

RAMPART HYDRO SERVICES

Contact: Beth Newbold
Phone: 412-262-4511
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E-Mail: bnewbold@rampart-hydro.com
Website: www.rampart-hydro.com

Rampart is the world leader in ultra-high pressure (UHP) Hydrodemolition and HydroCleaning. Ultra high pressure Hydrodemolition uses less water; is environmentally friendly, provides a superior bond; and is fast and cost effective. Rampart has used Hydrodemolition on bridge surfaces and substructures, dams, tunnels, and parking garages. Rampart now offers complete vacuum cleanup of the water and debris creating Dry Hydrodemolition. We look forward to helping you with your demanding projects.
EXHIBITS

REINFORCED EARTH COMPANY, THE

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E-Mail: aolson@reinforcedearth.com
Website: www.reinforcedearth.com

The Reinforced Earth Company is a world leader in the design and supply of proprietary retaining wall system and earth-related technologies. Recognized as the supplier to some of our nation’s largest highway construction projects, working as a subcontractor/material supplier on Department of Transportation and privately owned projects, we perform all duties associated with our jobs from sales, marketing, engineering, design, supply and construction assistance.

RJD INDUSTRIES, INC.

Contact: Randall Decker
Phone: 949-582-0191
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E-Mail: r-decker@pacbell.net
Website: www.rjindustries.com

Manufacturer of products that avoid corrosion in concrete: SuperTie, fiberglass formtie systems; SpliceSeal, concrete reinforcement protection system; and FiberDowel, corrosion proof joint restraint system.

ROADS & BRIDGES MAGAZINE

Contact: Rick Schwer
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Website: www.roadsbridges.com

As the leading monthly trade publication for the transportation construction market, Roads & Bridges Magazine reaches over 60,000 engineers, contractors, DOT and other public officials (local, county, state & federal). Our readers design, build and maintain the roads, highways, bridges, and viaducts across the US and Canada.

ROCTEST, LTD

Contact: Jean Archaubault
Phone: 450-465-1113
Fax: 450-465-1938
E-Mail: jarchaubault@roctest.com
Website: www.roctest.com

Roctest/Smartec designs and manufactures a complete line of fiber-optic and vibrating wire instruments, as well as data acquisition systems essential in assessing the stability and potential risks of failure of bridges. Services also include installation, training, maintenance, and system integration.

ROLAND KULLA

Contact: Roland Kulla
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E-Mail: kulla@ameritech.net
Website: www.rolandkulla.com

CHECK!Roland Kulla is a full time, professional artist who uses bridges as his primary subject matter. In the past ten years he has completed more than 100 large scale paintings of bridges in Chicago, New York City, Boston and Pittsburgh. He also does pencil drawings, woodcut prints, and lithographs.
SALIT SPECIALTY REBAR

**BOOTH: 306**

Contact: Kevin Cornell  
Phone: 716-299-1990  
Fax: 716-299-1993  
E-Mail: kcornell@stainlessrebar.com  
Website: www.stainlessrebar.com

Salit Specialty Rebar (SSR) is North America’s stainless rebar specialist. At SSR we offer shipping across North America, fabricated rebar, dedicated equipment, on time delivery, cut to length, and shrink wrapped to avoid contamination. SSR offers all sizes in both metric and Imperial from our vast inventory.

SAS SUITE, LLC

**BOOTH: 118**

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Website: www.sassuite.com

SAS Suite is a progressive company dedicated to delivering software solutions to bridge engineers. Its flagship SNAPBridge™ Suite is a powerful and easy-to-use software for analysis and design of bridges. Bringing cutting-edge software technology and extensive bridge design expertise to customers, SAS Suite ensures that every solution meets specific requirements.

SCOUGAL RUBBER, CORP.

**BOOTH: 719**

Contact: Rob Anderson  
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E-Mail: roba@scougalrubber.com  
Website: www.scougalrubber.com

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

SEISMIC ENERGY PRODUCTS, L.P.

**BOOTH: 211**

Contact: Steve Bowman  
Phone: 903-677-4318  
Fax: 903-677-3993  
E-Mail: steve.bowman@sepbearings.com  
Website: www.sepbearings.com

Nation’s largest manufacturer of seismic isolation bridge bearings, elastomeric bridge bearings, and Fluorogold® Teflon® slide bearings.

SHERWIN-WILLIAMS COMPANY

**BOOTH: 510**

Contact: Customer Service  
Phone: 800-524-5979  
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E-Mail: sherwin@ultlead.com  
Web: www.sherwin-williams.com/im

Sherwin-Williams Industrial and Marine Coatings group serves North America with a broad line of high-performance coatings, comprehensive technical service and the industry’s largest distribution system. We can assist in product specification, corrosion control and development of maintenance programs that can add years to the service lives of bridge and highway applications.
SIKA CORPORATION  
BOOTH: 4
Contact:  David White  
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E-Mail:  white.dave@sika-corp.com  
Website:  www.sikaconstruction.com.

Sika Corporation Construction Products Division, Lyndhurst NJ, is a technology leader with over 90 years of experience in concrete materials and restoration technology. Sika’s product line includes concrete admixtures, sealants, adhesives, total corrosion management products, specialty mortars, epoxy resins, structural strengthening systems, grouts, anchoring adhesives, overlays, and protective coatings. Full Service sales and technical offices support customers nationwide.

SILICA FUME ASSOCIATION  
BOOTH: 307
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Website: www.silicafume.org

The Silica Fume Association, through a cooperative agreement with the FHWA, provides high-performance concrete technology transfer to transportation departments and the design community.

SOFIS COMPANY, INC.  
BOOTH: 415
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Website: www.sofiscompany.com

Sofis Co., Inc. has been a DOT prequalified General Contractor for over 45 years. We have earned a reputation for knowledge and respectability specializing in Bridge Repair, Inspection and Support Services. Supplying top of the line Snoopers, Cable Rigging, Traffic Control and all related services; with an exemplary safety record.

SOUND FIGHTER SYSTEMS, LLC  
BOOTH: 217
Contact:  Patrick Harrison  
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Fax:  318-865-7373  
E-Mail:  mstacy@soundfighter.com  
Website: www.soundfighter.com

Sound Fighter® Systems (SFS) has been designing, engineering and manufacturing highly-effective absorptive sound walls since 1973 making us the oldest established manufacturer of absorptive noise barrier wall systems in America. Our LSE Wall System has been the go-to noise abatement tool of DOT’s, Acoustic Engineers & Consultants, Developers, Architects, Oil & Gas Companies and Contractors around the world in countless different applications.

SPI DOT GROUP  
BOOTH: 104
Contact:  Sandra Hubbert  
Phone:  843-554-6496  
Fax:  843-554-6498  
E-Mail:  johnbgrey@aol.com  
Website: www.spicoatings.com

SPI introduces Rust Grip, a one-coat paint system designed to be applied directly over existing, firmly bonded, lead based paint or rust.
Since the greatest expense in the coating process comes from surface preparation and the containment and disposal of that residue, Rust Grip will reduce overall project costs.

**SPICE SLEEVE NORTH AMERICA, INC.** | **BOOTH: 305**
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**Contact:** Stan Kunoki  
**Phone:** 949-861-8393  
**Fax:** 949-861-8419  
**E-Mail:** ssnask@msn.com  
**Website:** www.splicesleeve.com

Splice Sleeve North America markets the NMB Splice-Sleeve System, a grouted coupler for rebar used primarily to connect precast concrete elements like bridge piers and abutments, sound walls and retaining walls. Couplers exceed the requirements of AC-318 and AASHTO for type 2 performance. Also rated 18-KSI in NCHRP 10-35 fatigue test.

**SSI** | **BOOTH: 218**
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**Contact:** Scott Fowler  
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**Fax:** 918-586-4910  
**E-Mail:** scott.fowler@ssicm.com  
**Website:** www.ssicm.com

Serving the companies that have been building America since 1969. SSI offers contractors and owners innovative products for new and remedial construction.

**STIRLING LLOYD PRODUCTS, INC.** | **BOOTH: 514**
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**Contact:** Simon Greensted  
**Phone:** 860-666-5008  
**Fax:** 860-666-5106  
**E-Mail:** northamerica@stirlinglloyd.com  
**Website:** www.stirlinglloyd.com

‘Eliminator’ is the world’s most widely-specified sprayed bridge deck waterproofing system, for highways with asphalt overlay and railroads without protection board. Over 75 million square feet and 5,000 bridges have been protected worldwide, installed and operating in every climatic condition. Very high performance anti-skid systems and polymer concrete overlays are also offered.

**STRAINSTALL UK, LTD** | **BOOTH: 623**
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**Contact:** Matthew Anderson  
**Phone:** 44-1761-414939  
**Fax:** 44-1761-416655  
**E-Mail:** m.anderson@strainstall.com  
**Website:** www.strainstall.com

Using state-of-the-art instrumentation and monitoring techniques, our systems provide critical data about problem structures. Information delivered includes comprehensive static or dynamic load test data, in-situ live and dead load stresses, and structural health. We also apply CrackFirst, a fatigue sensor for welded joints that provides advanced warning of the rate at which design life is being consumed.

**STRAND 7 PTY, LTD** | **BOOTH: 18A**
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**Contact:** Anne Delvaux  
**Phone:** 252-504-2282  
**E-Mail:** anne@beaufort-analysis.com  
**Website:** www.strand7.com

Strand7’s fully-integrated visual environment - combined with a suite of powerful solvers - gives you unparalleled functionality in a...
single application. Construct models, run analyses and investigate results simultaneously using a seamless interface.

**STRUCTAL BRIDGES**  
**BOOTH: 718**

- **Contact:** Dominique Tetreault  
- **Phone:** 418-683-2561  
- **Fax:** 418-688-8512  
- **E-Mail:** dominique.tetreault@canam.ws  
- **Web:** www.structalbridges.ws

Structal-Bridges is the Canadian leading manufacturer of steel bridges, structural bearings and expansion joints for the highway, railway and forestry industries. With an annual production capacity of 52,000 tons, Structal-Bridges is recognized for the quality of its products and the reliability of its service.

**STRUCTURAL INTEGRITY SYSTEMS, LLC**  
**BOOTH: 507**

- **Contact:** Monica Svaty  
- **Phone:** 316-634-1396  
- **Fax:** 316-631-2295  
- **E-Mail:** sisllc@southwind.net  
- **Website:** www.structuralintegritysys.com

Structural Integrity Systems, LLC (SIS) provides patented electronic wireless sensor solutions for In-situ bridge evaluation. SIS has the ability to provide NBIS reports and complete bridge engineering solutions for rehabilitation at a significant cost savings.

**T - WALL RETAINING WALL SYSTEM**  
**BOOTH: 404**

- **Contact:** John Dallain  
- **Phone:** 703-913-7858  
- **Fax:** 703-913-7859  
- **E-Mail:** info@neelco.com  
- **Website:** www.neelco.com

The Neel Company provides complete engineering support to owners, consultants and contractors for the T-Wall Retaining Wall System. The DOT approved design, comprising of units with a monolithic precast reinforced concrete face and perpendicular stem, is backfilled with a select fill and no additional soil reinforcements. Also available to meet railroad loading. Contact The Neel Company directly for pricing or design assistance.

**TERMARUST TECHNOLOGIES**  
**BOOTH: 310**

- **Contact:** Wayne A. Senick  
- **Phone:** 888-279-5497  
- **Fax:** 514-354-2799  
- **E-Mail:** wsenick@termarust.com  
- **Website:** www.termarust.com

Termarust Technologies manufactures cost effective, high performance anti-corrosive coatings for steel/metal structures. The Termarust® RAVCS® High Ratio Calcium Sulfonate system stops the corrosion process specifically in crevice corroded and pack rust joints and connections and is ideal for flexible steel structures like bridges, towers, cables, high mast light poles, etc.
The QuikDeck™ Platform System can provide the solution to reduce labor costs and enhance access for bridge construction, rehabilitation and maintenance. QuikDeck™ can significantly reduce man-hours and overall project costs. Safety is our number one goal. All QuikDeck™ components are designed to meet or exceed OSHA safety regulations.

TNO DIANA NORTH AMERICA

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Website: www.midas-diana.com

TNO DIANA and MIDAS IT have entered into a strategic alliance. Both companies have successful histories of developing Finite Element Analysis (FEA) software. Many structures around the world have been analyzed and designed using their products. In the alliance, TNO Diana and MIDAS IT are cooperating in technical areas based on the strengths of both companies. Extending the technologies of each company will result in new advanced analysis programs. The state of the art Pre- and Post- processor, MIDAS/FX+ will be integrated with DIANA. TNO DIANA will also become the distributor of co-developed products and MIDAS bridge design and geotechnical engineering products in Europe and the US.

TRANSPO INDUSTRIES INC.

Contact: John Karlson
Phone: 914-636-1000
Fax: 914-636-1282
E-Mail: jkarlson@transpo.com
Website: www.transpo.com

Transpo manufactures Polymer Concrete for repairing and preserving concrete structures and HMWM for sealing cracked concrete. Our Thin (1/8”-1/2”) Polymer Concrete Overlay Systems have been used on Concrete, Steel and FRP bridge decks throughout the US and Canada. Transpo’s Castek Division precasts Polymer Concrete Safety Barrier Panels that are available in Jersey and F shapes, Flat single slope, and custom designs for bridge railing stay-in-place forms.

TRANSYSTEMS

Contact: Melissa Bertoli
Phone: 212-244-1600
E-Mail: mabertoli@transystems.com
Web: www.transystems.com

TranSystems is comprised of more than 1,100 professionals in 36 offices throughout the U.S. Professionals who are committed to providing clients in all modes of transportation architecture, engineering, planning, real estate, security, and management consulting services. TranSystems believes no industry impacts the quality of everyday life, and the success of business, more than transportation. The way we see it, bridges, highways, ships, warehouses, hangars, and ports are
more than concrete and steel. We envision them as a living entity; a vast circulatory system designed not only to be utilized, but also to inspire and energize the people it serves.

TRC  
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CHECK!! TRC provides engineering services in support of the transportation and bridge industries with proven excellence in federal, state and local agency projects. Another service TRC provides is the selling, supporting and maintaining of multiple engineering design programs through IMBSEN Software Systems.

TRICON PRECAST, LTD.  
Contact: Robert May  
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TRINITY HIGHWAY PRODUCTS, LLC  
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Web: www.highwayguardrail.com

Trinity Highway Products, LLC., headquartered in Dallas, Texas, is a leading manufacturer of highway guardrail, highway guardrail end treatments, temporary and permanent crash cushions, truck-mounted attenuators, and cable barrier systems. Offering a full line of standard and proprietary products, Trinity Highway Products is a recognized innovator of highway safety products. Trinity Highway Products manufactures products that have been tested, approved, and accepted as meeting established federal and state safety guidelines.

UNITEX  
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Phone: 947-747-2907  
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E-Mail: steve@unitex.chemicals.com  
Website: www.unitex.chemicals.com

CHECK!!! Unitex creates and manufactures products for the repair and protection of concrete, including epoxies, epoxy machine grouts, low modulus repair mortars, injection epoxies, and NSF - certified and Green - Spec listed products. Unitex also provides onsite technical support and product application training.
VECTOR CORROSION TECHNOLOGIES  BOOTH: 117

Contact: Chris Ball
Phone: 813-830-7566
Fax: 813-830-7565
E-Mail: chrisb@vector-corrosion.com
Website: www.vector-corrosion.com

Vector offers a portfolio of solutions for concrete corrosion repair and protection. Innovative solutions include electrochemical chloride extraction, cathodic protection, and an array of galvanic protection systems, including embedded galvanic anodes, galvanic jackets, and activated arc-spray zinc metalizing. Vector also provides evaluation, repair and mitigation services for post-tension corrosion and temperature resistant composite strengthening systems.

VIATHOR, INC.  BOOTH: 208

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Website: www.viathor.com

Viathor, Inc. is dedicated to the development of top quality, user friendly, bridge design and analysis software. Our flagship software, Vbent, is a fully interactive, all-in-one bridge substructure program for designing pier caps, columns and footings in integral (monolithic) and non-integral piers.

VSL  BOOTH: 508

Contact: Bonnie Pilkington
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Website: www.vsl.net

A leader in innovative technology and proven systems for post-tensioned structures, VSL is regarded worldwide as a multi-disciplined bridge partner. VSL’s team of highly trained bridge specialists provide contractors and engineers with design support, construction systems and services for new and existing segmental, cast-in-place and stay cable bridges.

W.J. CASTLE ASSOCIATES  BOOTH: 35

Contact: William J. Castle
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Web: www.wjcastlegroup.com

The Castle Group is a unique organization that allows you to draw upon the expertise of a world-class marine engineering firm with the practical know-how of an experienced marine contractor. The Castle Group consists of three companies which offer unparalleled innovation, execution, cost-effectiveness and timeliness. Simply stated, we can analyze problematic marine structures, design appropriate repairs, and then perform the repairs ourselves without having to subcontract any of the work. Additionally, we provide custom designed bridges to private owners as well as state and local governments - from the design phase through installation.
WATSON BOWMAN ACME CORP.  BOOTH:  610

Contact:  Debbie Steiger  
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Website:  www.wbacorp.com

Watson Bowman Acme Corp., a BASF Construction Chemical Business, is an ISO9001:2000 certified company and industry leader in developing, manufacturing and delivering expansion control systems and specialty products to the transportation market.

* Armored Joint Systems  
* Armorless Joint Systems  
* Joint Seals  
* Segmental Joint Systems  
* Joint Header and Spall Repair

WESTFALL COMPANY, INC.  BOOTH:  315

Contact:  Garland R. Westfall  
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WHEELING CORRUGATING COMPANY  BOOTH:  400

Contact:  Michael Benson  
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E-Mail:  bensonmw@wpsc.com  
Website:  www.wheelingcorrugating.com

Wheeling Corrugating Company specializes in permanent metal bridge deck forms. Form depths range from 2 inches through 4.5 inches accommodating girder spacings up to 15'-0".

WILLIAMS FORM ENGINEERING  BOOTH:  309

Contact:  Ryan Williams  
Phone:  616-822-1851  
Fax:  616-822-1890  
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Website:  www.williamsform.com

Williams Form Engineering Corporation has been offering high capacity Ground Anchors, Concrete Anchors, Post Tensioning Systems, and Concrete Forming Hardware to the construction industry for over 80 years.
EXHIBITS

WIRECO WORLD GROUP  BOOTH: 317
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Wire Rope Corporation of America, Inc., the largest wire rope manufacturer in North America, leads in the production of structural bridge rope and strand. Our reputation for quality and service is unmatched. Each aspect of our engineering, manufacturing and fabrication process is monitored and controlled to assure the highest quality.

WIREROPE WORKS, INC.  BOOTH: 503
Contact: Bill Austin
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E-Mail: w.austin@wireropeworks.com
Website: www.wireropeworks.com

We have a full (GP) General Purpose product line including spin resistant crane ropes. We are also capable of producing the largest diameter strand in the country, as well as having the longest prestretching track.

ZPMC / BUSCH INDUSTRIES  BOOTH: 100
Contact: John H. Busch
Phone: 616-957-3737
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Web: www.zpmc.com

The Shanghai Zhenhua Port Machinery Company, ZPMC, is one of the world’s largest and most respected crane manufacturer and steel fabricator. ZPMC has established itself as a world class fabricator on large scale projects such as the San Francisco Oakland Bay Bridge, the Incheon Bridge and the Donghai Bridge.