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Chairman's Message

Welcome to the 2009 International Bridge Conference®. Despite the tough economic times, the Executive Committee of the International Bridge Conference® and the Engineers' Society of Western Pennsylvania (ESWP) have been working hard to improve on its very successful 25th Anniversary conference. A special thanks to our Co-Sponsors and Financial Sponsors who help to promote and support the Conference. We have listened to you, our customers, and made changes to the conference based on the feedback from our post-conference survey. We are proud to announce the changes to the exhibit area, the new workshops, training offerings and demonstrations. Also, we continue to reach out to our contracting partners to make this conference one in which they can share their valuable experiences with bridge designers for the good of the transportation industry. We hope that these changes along with our traditional program meet your needs on both an individual and company level.



Our program for this year includes:

- Keynote Session: Our Keynote Session will include nationally known leaders including U.S. Congressman Representative James L. Oberstar, Chairman of the Committee on Transportation and Infrastructure; M. Myint Lwin, P.E., Director of Office of Bridge Technology, FHWA; Pennsylvania DOT Secretary and AASHTO President Allen D. Biehler, P.E.; Malcolm T. Kerley, P.E., Virginia DOT's Chief Engineer and Chairman of the AASHTO Subcommittee on Bridges and Structures; and Daniel L. Dorgan, Minnesota DOT Director, Office of Bridges and Structures.
- Technical Program: The Technical Program continues to build on its success from last year by offering over 100 technical presentations. The sessions topics include:
 - Design
 - Bridge Evaluation
 - Context Sensitive Design
 - Bridge Monitoring
 - Bridge Management
 - Design/Build
 - Construction
 - Long Span Bridges
 - Bridge Rehabilitation
 - Accelerated Bridge Construction

You can find all of the information on the IBC Technical sessions, including a brief abstract of each paper, listed in order by date.

- Pennsylvania Department of Transportation: As the featured agency for this year, the IBC Executive Committee sought to invite a DOT that has been a leader on numerous transportation issues over the years. This year is no different for PennDOT, as they have embarked on one the most aggressive bridge programs in the country with their Accelerated Bridge Program (ABP). In addition to the ABP, the Department will have a number of speakers on a variety of bridge topics including bridge problems/solutions, bridge fabrication QA/QC, 100 year life for bridges, historic bridges and bridge inspection to name a few.
- Exhibit Hall: We are expecting over 175 exhibitors this year as we have moved the Trade Show into Hall B of the David L. Lawrence Convention Center which offers refreshing natural daylight. Attendees are welcomed to take advantage of the industry's knowledge of products, equipment and design experience by visiting this area. We welcome all the exhibitors who have participated in the past and the many new exhibitors for this year.

- This year, the IBC will offer more than 15 workshops on a variety of topics. A full schedule of these workshops can be found on Pages 18-21 of this brochure. We will again offer Workshops, Papers and Exhibits that will be special interest to members of the Contractor Industry. Three workshops in particular are "must see" events for Contractors.
- Also, new for this year is a "Welcome New Attendee" reception meant especially for our first time registrants, on Monday afternoon.

Thank you considering IBC in your training and travel plans for this year. The Executive Committee for IBC and ESWP is continuing to strive to make IBC the "World of Bridges in the City of Bridges" and your *one-stop-shop* for the bridge industry.

2009 International Bridge Conference® General Chair
District Bridge Engineer
Pennsylvania Department of Transportation-District 11-0

Welcome to the 26th Annual International Bridge Conference®

Please read the following general information to learn about many of the new features of the IBC! With our return to the David L. Lawrence Convention Center (DLLCC), we have the opportunity to offer many new and exciting elements to the Conference, and improvements from the 2008 IBC. As always, Conference personnel (found at the Registration Desk) and IBC Executive Committee Members (look for their ribbons!) can be a valuable source of information!

Registration Desk

The Conference Registration Desk is located in HALL B of the DLLCC, in the Ballroom Foyer. The hours are:

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

Registration

Full Registration includes admission to the Keynote Session, Featured Agency Session, daily Technical Sessions, Workshops, IBC Exhibit Hall, Exhibitors Party, and the Monday and Wednesday Exhibit Hall Buffet Luncheon. The Bridge Awards Luncheon (Monday) is included, however seating is strictly limited to the first 300 requests; you must select the luncheon on the registration form to receive a ticket. One-Day Registration includes the Technical Sessions, Special Interest Sessions, IBC Exhibit Hall and corresponding exhibit function for that day only.

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

Remember: Seminars, Tours and Conference Proceedings require an additional registration fee. Please see the Registration Form for details.

All refund requests must be received in writing. No refunds after June 12. If you don't cancel and don't attend, you will be charged the full registration fee.

Badge Identification

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

Meeting Information

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

Conference Registration Desk.

Cell Phones and Pagers

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

Attendee Registration Lists

Conference registrations received prior to May 22 have been compiled in the "IBC PRE-REGISTRATION LIST - PART 1 of 2", and is distributed free to all registered attendees in your registration packets.

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 22 or on-site during the conference.

An electronic copy, produced in MS Excel, of the entire Attendee Registration List is available for purchase. The cost is \$25, and the list will be e-mailed to you following the conference.

Message Board

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

2009 IBC Bridge Tour

Tuesday, June 16; 1—5:00pm: 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 Rankin Bridge over the Monongahela River and the new bridge being built to carry the Pennsylvania Turnpike over the Allegheny River in Harmar (a signed waiver and release will be required to enter the construction area). These two structures will be under construction in 2009. Time permitting, the tour may finish with a ride on the Monongahela Incline to Mount Washington for a breathtaking view of the City. This guided tour departs from the DLLCC at 1:00pm. An additional fee of \$40 is required.

IBC Exhibit Hall

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. We also present several "Mini-Theatre" presentations at various times throughout the conference, where you can learn even more about many of the exhibitors. Additionally, don't forget to participate in our popular "Exhibit Hall Bingo" game for your chance to receive cash prizes, simply by visiting the exhibitors on your bingo card. All registered attendees will have a bingo card in their registration packet.

The IBC Exhibit Hall is located in HALL B of the DLLCC. 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: 8:00am 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

Enjoy the luxury and convenience of the IBC Headquarters Hotel, the Westin Convention Center Hotel. The Westin is Pittsburgh's newest and most elegant hotel. Linked to the DLLCC via Skybridge, or by an easy outdoor walk across Penn Avenue, the Westin is conveniently located to the IBC Headquarters. Hotel reservations can be made by contacting the Westin Convention Center Hotel directly at 412-281-3700.

Westin Convention Center Hotel
1000 Penn Avenue
Pittsburgh, Pennsylvania 15222
412-281-3700

Pre-Prints and IBC Merchandise

Pre-prints for all technical presentations are available at the Pre-Print area located just outside of the Exhibit Hall on the 2nd level Concourse of the DLLCC. Pre-prints can be purchased for just \$3.00 per copy.

New for this year: purchase a 1 GB flash drive that contains all available pre-prints in .PDF format for only \$30.00

Also, you can find copies of previous years' IBC Proceedings (for \$55 per volume).

The 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, and Hats. These items are high quality and feature the popular IBC logo. The Gift Item Table is located near the Pre-print desk on Concourse B, just outside of Hall B, 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 26th Annual International Bridge Conference® will be available on CD in late Summer 2009 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. In addition, a coffee kiosk will offer beverages for purchase at various times during the conference. The Kiosk will be located outside of Hall B.

First-Timers Reception

Open to all first-time attendees! Please join members of the IBC Executive Committee for a "meet & greet" and learn more about the many ways to benefit from the IBC. The First-Timers Reception takes place on Monday, June 15th at 5:00pm outside Room 323. This reception will help you to better understand all that IBC offers! Also, the IBC Executive Committee is interested in what you are looking for by attending the IBC. Enjoy this great opportunity to meet new friends at the First-Timers Reception before visiting the Exhibitor

Hall Reception in Hall B, which takes place from 5:00-7:00 PM.

PDH's

Earn Professional Development Hours (PDHs) by attending the IBC!

The Engineers' Society of Western Pennsylvania (ESWP), sponsor of the IBC, has been recognized as a Continuing Education Provider by the Florida Board of Professional Engineers, as well as many other state licensing boards. As such, your attendance at the IBC may qualify for continuing education credits.

To obtain verification of attendance at the IBC from the ESWP, you must request a PDH Confirmation Letter. Official confirmation from the IBC Offices regarding each attendee's eligibility for PDHs will be mailed after the Conference. If you require a Confirmation Letter, please check mark the "PDH Letter Requested" box on the Registration Form. Please note that some sessions will require you to register individually

Parking

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

Americans With Disabilities Act

The International Bridge Conference and ESWP support the Americans with Disabilities Act (ADA), which prohibits discrimination against, and promotes public accessibility for those with disabilities. We ask those requiring specific equipment or services as an attendee to contact the ESWP Conference Department at 412-261-0710, ext. 11 and advise us of any such requirements in advance.

Spouse & Guest Program

While you are attending one of the technical functions of the conference, your spouse will be able to enjoy one of the many attractions of the Pittsburgh area. This new feature of the conference will begin with a "Get Acquainted" Continental Breakfast on Monday June 15 at 8:30am, with a Guest Speaker from VisitPittsburgh - Pittsburgh's Convention & Visitors Bureau. Further, each day of the conference will feature an optional tour open to all conference attendees and their spouses & guests. Activities being planned for the 2009 Spouses program include a unique and informative tour of Pittsburgh aboard "Just Ducky" tours (Monday, 6/15), a day at the Heinz History Center (Tuesday, 6/16) and a private group tour of PNC Park, home of the Pittsburgh Pirates MLB baseball club (Wednesday 6/17). Please mark your selections on the Conference registration form. If you have questions about the events planned for the Spouses program, please stop by the IBC registration Desk. Registration for the Spouse's Program is \$75 and includes a ticket to the Get Acquainted Breakfast, and admittance to 2 Exhibit Hall buffet lunches and for the Monday evening Exhibit hall reception. Registrations for the daily tour events are priced individually, and subject to minimum attendance.

Looking Ahead!

Interested in presenting a paper, workshop, seminar or mini-theatre presentation at a future IBC? The IBC Call For Papers will open immediately following the 2009 Conference, and everyone is welcomed to submit an idea for presentation. Visit www.eswp.com/bridge for more details.

IBC Executive Committee

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M. Myint Lwin, P.E., S.E.
Federal Highway Administration

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Pennsylvania Dept. of Transportation

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Co-Sponsors

American Association of State Highway and Transportation Officials (AASHTO)
www.transportation.org

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

American Road & Transportation Builders Association (ARTBA)
www.artba.org

American Society of Highway Engineers (ASHE)
www.highwayengineers.org

Associated Pennsylvania Constructors (APC)
www.paconstructors.org

Association of Diving Contractors International (ADCI)
www.adc-int.org

Pennsylvania Department of Transportation (PENNDOT)
www.dot.state.pa.us

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

Transportation Research Board (TRB)
www.trb.org

Prestressed Concrete Association of Pennsylvania (PCAP)
www.pcap.org

Federal Highway Administration (FHWA)
www.fhwa.dot.gov

Society for Protective Coatings (SSPC)
www.sspc.org

Carnegie Mellon University — Department of Civil Engineering
www.ce.cmu.edu

University of Pittsburgh — Department of Civil and Environmental Engineering
www.engr.pitt.edu/civil

Media Partners

bridge design & engineering Magazine

Bridges Magazine

Coatings Pro Magazine

The Journal of Protective Coatings and Linings (JPCL) and Paintsquare.com
(JPCL is the voice of SSPC: The Society for Protective Coatings)

Roads & Bridges Magazine

MONDAY'S SCHEDULE AT A GLANCE

TIME	EVENT	ROOM
8:30 AM-Noon	Keynote Session	301-305
8:30 AM	Spouse's Breakfast	309
11:30 AM-1:00 PM	IBC Bridge Awards Luncheon	Ball Room B
11:00 AM-7:00 PM	Exhibit Hall Open	Hall B
11:30 AM-1:00 PM	Exhibit Hall Lunch Buffet	Hall B
1:00-5:00 PM	W-1: Lightweight Concrete	329
1:00-5:00 PM	W-2: Maximizing Foundation Design	330
1:30-5:00 PM	Featured Agency Session	301-305
2:00-6:00 PM	Mini-Theatre Presentations	Hall B
5:00 PM	First Timers Reception	323
5:00-7:00 PM	Exhibit Hall Reception	Hall B

KEYNOTE SESSION

TIME: 8:30 AM-12:00 NOON

ROOM: 301-305

CHAIR: Louis J. Ruzzi, P.E., District Bridge Engineer, Pennsylvania
Department of Transportation-District 11-0, Bridgeville, PA**The Honorable James L. Oberstar**
Congressman Minnesota 8th District

Jim Oberstar was born Sept. 10, 1934, to a working-class family on Minnesota's Iron Range. He was elected to Congress in 1974 and immediately secured a seat on the transportation committee and started building his reputation as one of the nation's leading experts on transportation issues. Chairing key subcommittees on oversight and aviation, Jim spearheaded major reforms in transportation safety, especially in the aviation sector.



Jim has also been a strong advocate for creating a diverse intermodal transportation system that incorporates new state of the art technologies. His work has been recognized groups like the American Society of Civil Engineers which has named him as an honorary member.

He was elected chairman of the Transportation and Infrastructure Committee when Democrats took back the majority 2006, becoming the first Member of Congress who has served as both the administrator and the chairman of a full congressional committee. In the first two years of under Jim's leadership, the committee had 93 bills in its jurisdiction reach passage by the full House of Representatives and go on to become law.

On August 1, 2007, the I-35W bridge collapsed in Minneapolis. Within hours Jim had authored a bill to rebuild the bridge. Forty-eight hours later, the legislation had cleared both the House and Senate and had been signed into law, and \$255 million of assistance was on its way to Minnesota.

Jim is now looking to the future. The Transportation Committee is currently working on the next surface transportation bill to maintain and expand the nation's vast transportation system. As drivers cope with rising gas costs and congestion, Jim will work to ensure that we invest in our country's vital infrastructure while at the same time tackling energy challenges head-on.

M. Myint Lwin, P.E., S.E.
Director, Office of Bridge Technology (HIBT)
Federal Highway Administration

Myint Lwin is the Director of the Office of Bridge Technology with the Federal Highway Administration (FHWA). As Director of the Office of Bridge Technology, his responsibilities include: providing national guidance in the design and construction of major and unusual bridges and tunnels; developing national bridge program and engineering policies; initiating system and process improvements to continually improve the quality and safety of bridges and structures; and providing technical and program direction for the Highway Bridge Replacement and Rehabilitation Program.

Prior to his appointment in Washington, D.C., Mr. Lwin was the Structural Design Engineer at the FHWA Resource Center in San Francisco. Before joining FHWA in January 2000, he was the State Bridge and Structures Engineer, Office of Bridges and Structures,



Washington State Department of Transportation.

Mr. Lwin received his BSCE from the University of Rangoon, Burma, and his MSCE degree from the University of Washington, Seattle. He is a registered Professional Engineer in Civil and Structural Engineering.

The Honorable Allen D. Biehler, P.E.

Secretary, Pennsylvania Department of Transportation, Harrisburg, PA

Nominated by Gov. Edward G. Rendell, Allen D. Biehler, P.E., was confirmed by the State Senate as Pennsylvania's Transportation Secretary in February 2003.

Secretary Biehler is responsible for an organization of about 12,000 employees with an annual budget in excess of \$5 billion. PennDOT owns and operates the nation's fifth largest state-owned highway system and administers one of the nation's largest grant programs for mass transit, rail freight and aviation. PennDOT also processes 30 million driver and vehicle customer service transactions each year, and operates the 12 Pennsylvania Welcome Centers which greeted over three-million visitors in 2002.

Before taking the lead at PennDOT, Secretary Biehler amassed 34 years experience in transportation engineering, planning, construction administration and public transportation management.

Malcolm T. Kerley, P.E.

Chief Engineer, Virginia Department of Transportation, AASHTO

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).

Mark Bagnard

*Chief, Investigations Division
National Transportation Safety Board
Office of Highway Safety*

Mark Bagnard has been an investigator with the National Transportation Safety Board since 1997. During his tenure at the NTSB, Mr. Bagnard has worked for the Office of Highway Safety where he is currently assigned as the Chief of the Investigations Division. Prior to that assignment, Mr. Bagnard worked in a variety of investigative disciplines, but primarily served as a highway investigator and technical reconstructionist. Some of his more noteworthy accomplishments were performing as



the Investigator-in-Charge on the I-90 Tunnel collapse in Boston, MA and the I-35W Bridge collapse in Minneapolis, MN. Mr. Bagnard's background is in Criminal Justice and before coming to the NTSB he had gained 15 years of accident investigation experience through his service as a law enforcement officer. During that time, he spent 11 years as an accident investigator and as an instructor teaching accident investigation and reconstruction courses at area police academies.

Daniel L. Dorgan

State Bridge Engineer, Minnesota Department of Transportation—Bridge Office

Dan Dorgan is the State Bridge Engineer for the Minnesota Department of Transportation and has over 30 years experience in bridge design and management. He began his career with the Minnesota DOT in 1975 and has held various positions as a bridge designer, administrator for bridge consultant contracts, and manager in the Metropolitan District of Minnesota DOT. In addition to a Bachelors of Civil Engineering, he also holds a Masters Degree in Business Administration from the University of Minnesota.



IBC BRIDGE AWARDS LUNCHEON

TIME: Monday, June 15; 11:30am–1:00pm
ROOM: Ball Room B
HOST: Carl Angeloff, P.E., Bayer MaterialScience, Pittsburgh, PA

ESWP, in association with bridge design and engineering (bd&e) Magazine, Roads and Bridges Magazine, Bayer MaterialScience LLC, and the International Bridge Conference®, presents the 22nd Annual IBC Bridge Awards Luncheon, sponsored by Sherwin Williams. The International Bridge Conference® 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. Tickets are required to attend this event, as seating is limited to 300 registrants! Honorees will be recognized in the following categories:

John A. Roebling Medal

The John A. Roebling Medal recognizes an individual for lifetime achievement in bridge engineering. We are pleased to recognize Harold R. Sandberg as, P.E., S.E. the 2009 recipient. As the first employee and Chairman Emeritus of Alfred Benesch & Company, Mr. Sandberg is well known in the engineering community. His many contributions to

the industry have garnered numerous prestigious awards. As an honorary member of ACI he was given the Henry Crown Award in 2005 and the Alfred E. Lindau Award in 2006. As a strong advocate of redundancy, he presented papers at meetings of the IBC. In 1982 he testified before the House Congressional Sub-Committee regarding failures in public structures. At 89, Mr. Sandberg continues to be active in several professional committees.

George S. Richardson Medal

The George S. Richardson Medal, presented for a single, recent outstanding achievement in bridge engineering, is presented to recognize the I35W Bridge over the Mississippi Bridge in Minneapolis, Minnesota. After the Aug. 1, 2007 collapse, the new segmental girder structure was designed, constructed, and opened to traffic at 5:00am on Sept. 18, 2008. The award celebrates the accomplishments of the government, contractors and consultants who were focused on delivering a complex project within extremely tight time constraints.

Gustav Lindentahl Medal

The Gustav Lindentahl Medal, awarded for an outstanding structure that is also aesthetically and environmentally pleasing, will be presented to recognize the Woodrow Wilson Bridge, south of Washington D.C. linking Virginia and Maryland. The fixed span and bascule bridge features an aesthetic appearance and integrated state of the art environmental measures to preserve underwater vegetation and protect fish during foundation installation.

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 Sanhao Bridge over the Hunhe River in the Northeastern city of Shenyang, China. This artistic bridge expresses a new structural form that will give identity and distinction to the connecting communities.

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 Seattle's Museum of Flight Pedestrian Bridge. This bridge, sculptured to represent the wisps of an airplane's contrails, provides a visually interesting invitation to the Museum of Flight.

James C. Cooper Student Award

The James D. Cooper Student Award recognizes undergraduate and 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 2009 award will be presented to Michael Loy of Oregon Episcopal High School for his paper entitled Developing a Novel pH Buffer Methodology to Inhibit Concrete Corrosion. The awards committee judged this paper to be superior all other undergraduate student and graduate student entrees, quite an accomplishment for a high school senior.

FEATURED AGENCY SESSION

TIME: 1:30–5:00 PM
ROOM: 301-305
CHAIR: Tom Macioce, P.E., Chief Bridge Engineer, Pennsylvania Department of Transportation, Harrisburg, PA

Learn more about the bridge program of the Pennsylvania Department of Transportation, with sessions and speakers that include:

- Bridge Problems and Solutions - Craig Beissel, P.E.
- Research on NDE P/S Beams - Dr. Clay Naito, Ph.D., Lehigh University
- Bridge Fabrication & QA/QC - Bob Horwhat, P.E. & Joe Bracken III, P.E.
- Historic Bridges in Pennsylvania - Kara Russell
- Accelerated Bridge Program - Hal Rogers, P.E.
- The Evolution of Bridge Inspection - Lance Savant, P.E.
- Pennsylvania Bridge Risk Assessment Strategy - Tom Macioce, P.E. & Tony McCloskey, P.E.
- 100 Year Bridge Summit - Kristin Langer, P.E.



(W-1) 1:00–5:00 PM**Lightweight Concrete for Bridges**

Room: 329

Presented by: Expanded Shale Clay and Slate Institute (ESCSI)

The objective of this workshop is to introduce designers and owners to the properties and applications of lightweight concrete (LWC) for bridges. Construction applications where LWC has been used include long-span bridges, bridges in seismic regions and/or on sites with poor foundation materials, and accelerated construction projects with precast concrete elements. Design and construction issues and the enhanced durability of LWC will be presented with a practical emphasis. Internal curing which can be achieved when prewetted lightweight aggregate replaces normal-weight aggregate in concrete mixtures will also be discussed. Reports will be given on several recent projects that have utilized lightweight concrete. A concrete supplier will provide perspectives on using lightweight concrete and current research will be summarized.

How attendees could benefit:

The outcome of the workshop will be that attendees will have information and examples of applications that will allow them to confidently implement the benefits of using LWC in bridges.

(W-2) 1:00–5:00 PM**Maximizing Bridge Foundation Design Using Full Scale Load Testing**

Room: 330

Presented by: Loadtest, Inc.

The workshop will guide attendees through the fundamental characteristics of modern geotechnical engineering design and analysis. Recognized industry leaders in deep foundation testing will share detailed techniques for improving the design of deep foundations with reference to the applicability of codes and specifications.

Real world construction experience and knowledge will illuminate the importance of construction techniques for improving deep foundation performance with particular reference to the relationship to end-bearing and shear will also be presented.

The importance of time and creep characteristics when assessing deep foundation test results. Again, the workshop will utilize applications based on both research and development in the construction industry and will provide useful insights for practicing engineers and contractors.

Applying full scale testing at the pre-design stage of bridge foundation design. How this valuable information is incorporated into LRFD and the costs associated with this strategy will be discussed.

These issues and topics will have broad appeal to any geotechnical, structural or bridge engineer involved in specifying, analyzing, designing or constructing deep foundations. Any engineer or student pursuing a post-graduate program would also benefit from the Program.

How attendees could benefit:

- Learn practical methods to economize bridge foundation design
- Understand how many of the largest bridges in the world utilize full scale testing to save time and money
- Engage with industry leaders that have conducted over 2,000 full scale load

tests worldwide

- Understanding how to mitigate risk when designing bridge foundations.

First-Timers Reception

Open to all first-time attendees! Please join members of the IBC Executive Committee for a “meet & greet” and learn more about the many ways to benefit from the IBC. The First-Timers Reception takes place on Monday, June 15th at 5:00pm outside Room 323. With so many offerings presented during the Conference, this reception will help you to better understand everything that is available for you! Also, the IBC Executive Committee is interested in what you are looking for by attending the IBC. Enjoy this great opportunity to meet new friends at the First-Timers Reception before visiting the Exhibitor Hall Reception in Hall B, which takes place from 5:00-7:00 PM.

Mini-Theatre Presentations

Room: Hall B

One of the new offerings available in the new expanded Exhibit Hall are our new Mini Theatres. Mini Theatres are informal presentations given by vendors in the Exhibit Hall to provide an extended opportunity and learn more about the products and services offered by Exhibitors. No pre-registration is required, and attendance is included in your registration fee.

M1-2 2:00 PM

Presenter: Strucal - Bridges

Location: Theatre 1

Topic: New Orthotropic deck for fast bridge rehabilitation

Mr. Richard Vincent, Vice President, Research presents Strucal-Bridges' solution for fast bridge rehabilitation: a new orthotropic deck significantly lighter than concrete bridge deck. This innovative orthotropic deck is ideal for increasing the capacity of existing bridges and raising payload limitations without having to replace or modify the main girders, piers or abutments.

M2-2 2:00 PM

Presenter: Vector Corrosion Technologies

Location: Theatre 2

Topic: Cable Break Detection For Post Tensioned and Prestressed Cables

For many years a nondestructive method for the location of breaks in Post-tensioned (especially grouted cables) and prestressed cables has been desired. The cables may be deteriorating due to several causes, poor grouting, water infiltration, or poor construction practices. Because of these issues, corrosion of wire or strand fractures can happen abruptly with no external signs of damage. The Post Tech Cable Break Detection System is a non destructive method of evaluating these grouted post tension cables.

M1-3 3:00 PM

Presenter: BASF Construction Chemicals, LLC

Location: Theatre 1

Topic: Degadeck Crack Sealer Plus by BASF Building Systems

Degadeck Crack Sealer Plus is a rapid curing methacrylate resin that is very low in viscosity and surface tension. Gravity fed, it penetrates, repairs and seals concrete cracks in bridge deck applications. It fully cures in one hour with minimal requirement of labor and equipment. It is solvent free.

M2-3 3:00 PM

Presenter: Soprema, Inc.

Location: Theatre 2

Topic: AntiRock -Bridge & Deck Waterproofing

AntiRock is an asphalt based product modified with SBS rubber and reinforced with non-woven polyester. The bond created between the deck and AntiRock is unsurpassed by any waterproofing product. As an asphalt based membrane, the installation of a heated asphalt road surface to the AntiRock creates a bond that eliminates shove even on extreme slopes.

M1-4 4:00 PM

Presenter: Greenman-Pedersen, Inc.

Location: Theatre 1

Topic: GPI Bridge Services

Greenman-Pedersen, Inc. is a top national engineering and construction firm. Our transportation infrastructure services focus on Bridge Design, all facets of Construction Inspection, specialty Corrosion and Coatings Services, and Coatings Instrument Sales. GPI's team of engineers, construction inspectors, coatings consultants, coating inspectors, scientists and technicians provide professional results for your bridge and heavy highway projects.

M2-4 4:00 PM

Presenter: Olson Engineering

Location: Theatre 2

Topic: Sonic and Radar Imaging for Bridge Conditions, Displacements in Load Tests and Vibrations

Short case histories will be presented to illustrate the following sonic and radar imaging applications for concrete and steel bridges:

- Imaging of void/honeycomb in a concrete bridge column with ultrasonic tomography
- Detection of voided PT ducts with impact echo scanning
- Evaluation of concrete defects in drilled shafts with crosshole sonic tomography
- Mapping of post-tensioning and reinforcing with 3-D ground penetrating radar
- Measurement of displacements to 0.0004" for rapid load tests with interferometric radar
- Measurement of vibrations from 0-100 Hz and modal analyses with interferometric radar

M1-5 5:00 PM

Presenter: Bentley Systems, Incorporated

Location: Theatre 1

Topic: Bentley Bridge Information Modeling

BrIM provides an evolving framework for bridge information transfer and collaboration that enables a readily available, integrated, highly sophisticated suite of software products for the entire bridge lifecycle — from planning through design through construction through operation and maintenance. Come learn how Bentley will provide an interoperable, data-managed bridge solution to address the challenges of new and aging bridges, delivering a sustainable, long-lasting infrastructure.

M1-6 6:00 PM

Presenter: Bentley Systems, Incorporated

Location: Theatre 1

Topic: Bentley Rebar

Come to see an overview of Bentley Rebar automated reinforced concrete detailing capabilities. Rebar offers a comprehensive set of tools that allow the detailer to automate the placement and calculation of rebar quantities. User customization tools within the software provide accommodation for different design codes, bar shapes and bar chart presentations. Complemented with Bentley MicroStation, plans production processes are streamlined and efficient.

M2-6 6:00 PM

Presenter: Skala, Inc.

Location: Theatre 2

Topic: Postcards from The Edge: A photographic tour with a Rope Access Bridge Inspection Team (RABIT).

TUESDAY'S SCHEDULE AT A GLANCE

TIME	EVENT	ROOM
8:00-10:05 AM	Design, Part 1 Session	301-302
8:00-10:05 AM	Design-Build Session	304-305
8:00-10:30 AM	Bridge Evaluation Session	406
8:00 AM-Noon	W-3: Bridge Aesthetics	327
8:00 AM-Noon	W-4: FHWA ABC	328
8:00 AM-Noon	W-13: SSPC Coatings	326
8:30 AM-Noon	W-5: Management Practices	329
8:30 AM-Noon	W-6: Detailing for Bridges	330
8:30 AM-Noon	Confined Soil Walls Seminar	See Ticket
8:30 AM-Noon	Highway Tunnel Inspection Seminar	See Ticket
10:30 AM-Noon	Railroad Bridges Plenary Session	301-305
11:00 AM-5:00 PM	Exhibit Hall Open	Hall B
11:00 AM-5:00 PM	Mini-Theatre Presentations	Hall B
1:00-5:00 PM	IBC Bridge Tour	Curbside
1:00-5:00 PM	W-7 Seismic ABC	326
1:30-5:00 PM	Construction Session	301-302
1:30-5:00 PM	Context Sensitive Design Session	304-305
1:30-5:00 PM	Long Span Bridges Sessions	406
1:30-5:00 PM	W-8: Bridge Owner Program Forum	327
1:30-5:00 PM	W-9: Drilled Foundations	328
1:30-5:00 PM	W-10: High Tech Underwater Inspection	329
1:30-5:00 PM	W-11: State Highway Agency Forum	330

DESIGN, PART 1

Time: 8:00-10:05 AM

Room: 301/302

Chair: Gerald Pitzer, P.E., GAI Consultants, Inc., Homestead, PA

09-01 8:00 AM**Centner Bridges the Gap Between Steel Structural Design and Digital Fabrication**
Sigrid Adriaenssens, CEE, Princeton University, Princeton, NJ

The Centner pedestrian bridge at Verviers, Belgium is the first design and artifact that successfully exploits the possibilities of linking equivalent steel plate stiffness method to digital steel plate cutting techniques. The webs serving as handrail, are assembled of 10 different type of steel plates with a laser cut aperture pattern. The analytical verification method consists of replacing the laser cut steel plate with a full steel plate with equivalent stiffness and applying the usual EuroCode3 design rules for slender webs.

For construction purposes, the numeric FE model is translated into a digital graphic model that serves as input for the steel laser cutter. Once the aperture pattern is cut in the steel plates, all plates are welded together and finishes applied in the contractor's workshop. The bridge is transported as one piece and installed overnight on site.

09-02 8:25 AM**Avenues Walk Flyover - Severe Curvature on a Single Span Bridge**

Samuel Spear, GAI Consultants, Homestead, PA

At 218' long and having a centerline radius of 300 feet, the Avenues Walk Flyover is one of the longest and most highly curved single span girder bridge structures in the world. The lack of available approach roadway area resulted in a very aggressive roadway and bridge alignment. This paper will focus on unique design features, comparative computer modeling, and product delivery methods. Elements that will be addressed in the paper include varying end skews, non-uniform girder spacing, non-uniform girder web depth, lower lateral bracing in the outermost girder bay, uplift resistant bearings, a cast in place concrete counterweight, and a deck pour staged to improve construction stability.

09-03 8:50 AM**Design of a Four-Span Steel Bridge With Challenging Site Conditions, Numerous Geometric Constraints, Geotechnical Concerns, and Three Abutments**

James Andrews, P.E., Pennsylvania DOT, Indiana, PA; Ahmad K. Ahmadi, Ph.D., P.E., and Keith Michael, P.E., SAI Consulting Engineers, Inc. Pittsburgh, PA

This paper will discuss the design of a four-span continuous multi-girder bridge on 8% grade, built between a rock cliff face on one side and a steep slope on the other side. The bridge crosses a railroad at a very sharp skew with limited vertical and horizontal clearances. The bridge is on a curved alignment and has a "T-Span" framing into it to support a local road that intersects with the main road on the bridge. A conventional 2-D analysis was performed for the initial design and camber of the "kinked" girders, and a 3-D model was developed to verify the results.

"One sided" cantilever pier caps supported by drilled shafts support a five-span, prestressed concrete box beam bridge that supports a portion of the approach

roadway to the bridge where the roadway overhangs the steep hillside. A retaining wall was placed behind the pier columns, cast integral with the pier columns, and anchored into the hillside to provide additional support.

09-04 9:15 AM**Dynamic Amplifications in Bridge Pier Design Forces Under Barge-Bridge Collision Loading**

Michael Davidson and Gary Consolazio, University of Florida, Gainesville, FL

Bridges spanning navigable waterways in the U.S. are currently designed using the AASHTO static force approach to determine bridge pier structural demand due to vessel collision. However, findings from recent full scale experimental impact tests have revealed that significant mass-related inertial forces can develop in impacted piers due to the effect of the overlying superstructure. Based in part on these findings, a dynamic (time history) analysis technique has been developed that utilizes vessel force deformation relationships and predicts both impact-load time-histories and member design forces. Additionally, new vessel force deformation curves have been developed for use in determining the impact forces associated with barge collision events. In the present paper, dynamic analysis is combined with the newly developed vessel crush curves to investigate bridge dynamic amplification phenomena during barge collisions.

09-05 9:40 AM**Maple-Oregon Double Leaf Rolling Lift Bascule Bridge**

Todd Ude and Ken Smorynski, Teng & Associates, Inc., Chicago, IL

The city of Sturgeon Bay in Door County, Wisconsin has developed along both sides of the narrow bay. Wisconsin DOT has recently completed a second bridge crossing in the downtown, improving traffic safety and capacity between the halves of the city. The new Maple-Oregon bridge accommodates marine traffic with a double-leaf rolling-lift bascule span. Each leaf rolls back on a horizontal track as it rotates to the open position. The design features steel bascule girders and framing and a solid lightweight cast-in-place concrete deck. Each leaf is balanced via concrete counterweight, and operated by two electric 60 horsepower AC variable speed motors with flux vector drives. This paper will provide an overview of the design and describe some of the solutions adopted for details specific to rolling lift bascules.

DESIGN-BUILD SESSION

Time: 8:00-10:05 AM

Room: 304/305

Chair: William Rohleder Jr, P.E., S.E., FIGG Bridge Engineers, West Chester, PA

09-06 8:00 AM**I-35W: "Soaring over the Mississippi River in Eleven Months"**

Alan Phipps, P.E., S.E., FIGG, Tallahassee, FL; Kevin Western, P.E., Minnesota DOT, Oakdale, MN

The I-35W Bridge is a modern concrete bridge for the future, designed and built in 11 months (3 months ahead of schedule) while incorporating a progressive design of new technology and materials. The Minnesota DOT, created a vision for quality, safety and innovation that was achieved through close coordination among the

Design/Build Team members for this 10-lane Interstate Bridge over the Mississippi River that features an elegant design, sustainable materials, and “smart bridge” technology.

09-07 8:25 AM

The Christopher S. Bond Cable-Stayed Bridge

Patrick Cassity, Parsons, Chicago, IL

The \$232 million kclCON Design-Build Project includes a landmark bridge over the Missouri River and reconstruction of over four miles of Interstate-29/35 in Kansas City, Missouri. The asymmetrical composite steel and concrete cable-stayed bridge has a main span of 550' with side span of 451.5' and a striking, diamond-shaped pylon rising 300' above the water to create a gateway experience for the Kansas City community. The bridge over water is enhanced by a flexible kinetic lighting solution.

09-08 8:50 AM

Design of the Indian River Inlet Cable Stayed Bridge

Kenneth Butler, AECOM, Glen Allen, VA; Douglass Robb, DelDOT, Rehoboth Beach, DE

The Indian River Inlet Bridge Replacement Design/Build Project in Delaware will carry SR1 Coastal Highway across the inlet. The main span unit includes a concrete cable-stayed bridge with a 950' main span and 400' back spans with two pylons founded on prestressed piles. The superstructure is supported by two vertical planes of stay cables anchored in the pylons and along post-tensioned edge girders. The bridge is built on falsework over land and in cantilever with a traveling form over the Inlet.

09-09 9:15 AM

Designing Downslope Bridges along the Sea-to-Sky Highway for the 2010 Olympics

Schaun Valdovinos, Hatch Mott MacDonald, Vancouver, BC, Canada

Construction of a \$500M upgrade to British Columbia's picturesque Sea-to-Sky Highway is being widened in preparation for the 2010 Winter Olympics. Innovative solutions were developed for new highway bridge foundations to address steep, unpredictable mountain terrain including an angled column to avoid bearing on fractured rock at a high cliff. The Design/Build contract allowed bridges with prestressed concrete I-girders, and precast concrete deck panels on steel edge beams to progress in design concurrently with site excavation activities.

09-10 9:40 AM

Design/Build Collaboration: Contractor, Engineer & Steel Fabricator

Daniel Rogers, RETTEW Associates, Inc, Lancaster, PA; Tom Wandzilak, High Steel Structures, Inc., Lancaster, PA

For construction of the Kriebel Road Bridge over the Pennsylvania Turnpike, the Design/Build Team provided a 148.5' simple span, composite steel plate girder bridge that was completed within a tight 12 month project schedule. Through early coordination efforts, the team identified critical fabrication considerations and expedited design with early key decisions for plate sizes, diaphragm members, types of connections and stiffener locations. These early project decisions contributed to successfully completing the bridge construction on schedule.

COFFEE BREAK 10:05

BRIDGE EVALUATION

Time: 8:00-10:30 AM

Room: 406

Chair: Jeffrey Campbell, P.E., Michael Baker Jr., Inc., Moon Township, PA

09-11 8:00 AM

Emergency Gusset Plate Repair under Live Load

Michael Malloy, GussetFix LLC, Avon, OH

The Ohio Dept. of Transportation called for the emergency inspection of two major truss bridges resulting in the emergency repair of two major bridges, the Main Ave bridge and the Innerbelt bridge. Due the difficulty in providing temporary supports, a technique was developed to replace two truss chords without disconnecting the existing connections. The presentation will detail the repair method, discuss test results, and show a brief video of the installation.

09-12 8:25 AM

The Smith Street Bridge: Rehabilitation of a Cantilever Deck Truss

C. Michael Cooper, Bergmann Associates, Rochester, NY; Thomas Hack, City of Rochester, NY

Originally designed by the Phoenix Bridge Company and constructed in 1931, the Smith Street Bridge presented several unique challenges, including difficult erection procedures for structural steel repairs and increased scrutiny subsequent to the I-35W disaster. This presentation will discuss the unique engineering and construction challenges for this major truss structure that spans the Genesee River Gorge in Rochester, NY.

09-13 8:50 AM

McKinley Bridge Reconstruction

Anne Zweibel, Hardesty & Hanover, LLP, Okemos, MI; Tiffany Brase, Illinois DOT, Collinsville, IL

The McKinley Bridge, a 5,798-ft structure spanning the Mississippi River between St. Louis, MO and Venice, IL, was built in 1910. Design challenges included a site contaminated with hazardous and radioactive wastes; retaining the historic appearance of the main spans; limited right-of-way; erection of 185-ft to 215-ft curved approach spans; and the last-minute addition of the bicycle/pedestrian lane. Design challenges and solutions will be discussed illustrated with construction photos.

09-14 9:15 AM

Rehabilitation of the Ramsdell Road Bridge

Matthew Low and Edward Weingartner, Hoyle, Tanner & Associates, Inc., Manchester, NH

The Ramsdell Road Bridge is a historic Warren Through-Truss constructed in 1937. Rehabilitation innovations including bare exodermic deck with lightweight aggregate concrete and replacement of key structural members were required to increase the live load capacity. This presentation will demonstrate how historic preservation and modern transportation needs can simultaneously be met and will highlight the design and construction phases of the project.

09-15 9:40 AM**Three-Dimensional Analysis and Load Rating of the Cleveland Innerbelt Deck Truss Bridge**

Daniel Baxter and Jeff Broadwater, Michael Baker Jr. Inc., Cleveland, OH;
Dr. Toader Balan, Fynite Solutions, LLC, Moon Township, PA

The Cleveland Innerbelt Bridge is a 2,721 ft nine-span curved variable-depth deck truss that carries over 100,000 vehicles per day. A 3-D model was created to capture the effects of structure curvature, the wide main truss spacing and to determine accurate load distribution. This presentation will focus on the structural analysis methods that were utilized to load rate the structure.

09-16 10:05 AM**Developing a Novel pH Buffer Methodology to Inhibit Corrosion of Steel Reinforcement in Concrete**

Michael Loy, Student Paper Award Winner, Portland, OR

Concrete deterioration costs billions per year in repair, replacement and environmental impact. The major cause of deterioration is rebar corrosion occurring when concrete pH is reduced by high acidic attack or when chloride ions penetrate concrete. Previous mitigation strategies have focused on creating additional layers, sealants and coatings to inhibit corrosion. Results of this study support an efficient, cost effective, non-toxic buffer methodology to extend concrete service life, improve durability and promote a sustainable environment.

Workshop 3 8:00 AM-12 NOON**Bridge Aesthetics—Practical Ideas for Short and Medium Span Bridges**

Room: 327

Presented by: TRB General Structures Committee (AFF10)

This workshop will be presented by members of TRB's AFF10(2) Subcommittee on Bridge Aesthetics. The objective will be to educate members of the bridge community about the approach to aesthetic bridge design that is presented in the recently completed draft, first edition of TRB's "Bridge Aesthetics Sourcebook - Practical Ideas for Short and Medium Span Bridges".

There will be a series of presentations based on the Sourcebook content. Special emphasis will be provided on Design Guidelines and Bridge Lighting. A guided tour of the Subcommittee's companion web site will show what resources are available to designers. There will also be presentations about how Historic Considerations should be taken into account and how Bridge Context can affect both the design of a bridge and the use of the space in which it is located.

The workshop will then provide participants with a practical bridge design exercise that will allow them to actually employ the ideas and design concepts presented earlier in the workshop.

How attendees could benefit:

Workshop attendees will gain a practical knowledge of how to approach aesthetic bridge design for short and medium span bridges. They will also be presented with thought provoking ideas about bridge aesthetics and context and gain an understanding of issues that are of concern throughout the practice of bridge design. The panel of presenters will be on hand to answer questions related to aesthetic bridge design and bridge context.

Workshop 4 8:00 AM-12 NOON**FHWA Accelerated Bridge Construction Workshop**

Room: 328

Presented by: Federal Highway Administration (FHWA)

The highway community has been moving toward a new way of doing business as construction has intensified in recent years in an attempt to confront a two-fold problem. First, our highway infrastructure is aging. Much of it was built in the 1950s and 1960s and is in need of rehabilitation or replacement. Second, although highway capacity has increased little during the last two decades, traffic demand has grown tremendously, causing high levels of congestion. Large construction projects designed to improve worn-out and outdated roads and bridges compound traffic problems during lengthy construction periods. Today's motorists want high quality, longer-lasting highways and bridges, but they want any construction-related activity completed as quickly as possible.

The workshop objective will be to present concepts of Accelerated Bridge Construction (ABC) technology and provide solutions to the above mentioned issues using ABC technology.

How attendees could benefit:

This workshop will provide information on the state of the art practices of Accelerated Bridge Construction Technology, including information on how, by using innovative prefabricated bridge technologies and innovative equipment and contracting strategies rather than conventional techniques, we can achieve our goals of rapid onsite construction with minimized traffic disruption, improved safety and constructability, and improved durability, and at competitive construction costs and ahead of schedule.

Workshop 13 8:00 AM-12 NOON**Society for Protective Coatings (SSPC) Coatings Session**

Room: 326

Presented by Society for Protective Coatings (SSPC)

This workshop will present:

- High Build Aliphatic Moisture Cure Urethanes, the Next Generation
 - A Tolerant Solvent-Free Epoxy System Applied Over Hydroblasting: The Way To Enjoy Cost Effective Protective Performance And Environmental Friendliness In Steel Bridge Painting
 - OSHA: What's On the Horizon
 - Corrosion Engineering Initiative
 - Environmentally Friendly Graffiti Resistant Coatings — Waterborne Polyurethane Coatings for Bridge Structures That Actually Work
 - Federal Infrastructure Spending Stimulated Recovery in Lake County, Ohio
- SSPC will have the above presentations in the morning followed by lunch, then an afternoon tour of Pittsburgh's Heinz Field, home of the Pittsburgh Steelers.

Workshop 5 8:30 AM–12:00 NOON**Bridge Management Workshop—Sharing Bridge Management Practices: A Presentation & Panel Discussion**

Room: 329

Presented by: Wade Casey — FHWA & AASHTO Member States

Federal, state, and local governments are under increasing pressure to balance their budgets and, at the same time, respond to public demands for quality services. Along with the need to invest in America's future, this leaves transportation agencies with the task of trying to manage current transportation systems as cost-effectively as possible to meet evolving, as well as backlog needs. The use of existing or new transportation management systems provides a framework for cost effective decision making that emphasizes enhanced service at reduced public and private life-cycle cost. The primary outcome of transportation management systems is improved system performance and safety while collecting, analyzing, and integrating the data necessary to calculate, forecast, and display selected performance indicators, and identify critical performance gaps to make investment decisions and tradeoffs. The Bridge Management Workshop will engage state department of transportation (DOT) bridge management practitioners from selected states across the country under the theme of "Sharing Bridge Management Strategies." Bridge management is essential in order to maximize scarce resources and maximize service life and a bridge management system is an effective tool in allocating limited resources to bridge related activities. How various states use the information from a bridge management system in the decision making process will be discussed.

Workshop 6 8:30 AM–12 NOON**Contractor's Forum**

Room: 330

Presented by: John McCaskie, Association of General Contractors (AGC)

Participate! Bridge Contractors Talking to Bridge Contractors, and to Owners and Designers (so that we better understand). Topics to be presented will include:

- Rehabilitation
- Demolition
- Contractor Liabilities
- New Frontiers
- and, bring your own topic!

As market needs change, contractors venture differing kinds of work related to bridge construction, maintenance and rehabilitation. Share with others your problems and concerns and how you handle them. Come to realize that we all share the same challenges and it is not necessarily a lonely battle.

SEMINARS

IBC Seminars are intensive, four-hour, single-topic focused sessions. Each seminar requires an additional fee of \$125. Seating for each Seminar is limited and Pre-Registration is required. To attend an IBC Seminar, please inquire at the Conference Registration Desk to ensure your registration. Professional Development Hours (PDHs) are provided upon request and verification.

SEMINAR: STATE OF THE ART CONFINED SOIL WALLS AND ABUTMENT, AND VARIATIONS OF SOIL NAILING TECHNOLOGIES

TIME: 8:30 AM–12:00 NOON

PRESENTERS: Michael Adams, Senior Researcher, FHWA Turner Fairbank Highway Research Center, McLean, Virginia; Robert Barrett, TerraTask, LLC; Colby Barrett,

Part One — History and Introduction (One hour)

The first half workshop presents a summary of 40 years of geotechnical research in retaining walls, bridge abutments, open bottom box culverts, reinforced soils, landslides and rockfall. This research was performed by Colorado DOT, the U.S. Forest Service, the Federal Highway Administration and several agencies and universities. Expenditures on this research effort exceeded 25 million dollars and the major conclusion presented here is that smaller, lighter inclusions in granular soil produce stronger composite behavior than do heavier, stiffer elements on wider spacing. Full scale demonstrations show that variations in spacing of the inclusions approaches exponential factors in some cases.

Several new tools, methods and techniques will be presented that are not as yet in standard practice. Earthquake Wings (a new and better way to build abutments in seismic regions) will be presented. Scour prevention methods will be introduced. The presentation concludes with recent constructions with the Soil Nail Launcher, including Launched Nails, Launched Micropiles and Launched Scour Micropiles. Super Nail concepts will also be discussed.

Part Two — Design Methods for Geosynthetically Confined Soil Walls, Abutments, Piers, Box Culverts, Soil Nails and Micropiles. (Two Hours)

This session presents analytical methods for designing state of the art composites. Examples of field constructions and including cost estimating will be presented. This session will also discuss the reasons for failures in MSE constructions.

At the end of the seminar, the participants will be able to:

- Gain awareness of geotechnical research into composite soil behavior
- Utilize analytical methods for designing various structures and foundation types using geosynthetically confined soil
- Increase their knowledge base of state-of-the-art construction methods and techniques

SEMINAR: HIGHWAY TUNNEL INSPECTION, MAINTENANCE AND OPERATION SEMINAR

TIME: 8:30 AM–12:00 NOON

PRESENTER: Jesus Rohena, FHWA, Washington, DC

This seminar will focus on the sharing of the best practices for inspection, maintenance, and operation of Highway Tunnels. Topics to be covered include:

- Design, Construction, Inspection, Maintenance and Operation
- Fire Safety Modeling — Consultant
- Highway Tunnel Inspection, Maintenance and Operation - PennDOT
- Structural, Mechanical, Electrical
- Ventilation
- Appurtenances
- At the end of the seminar the participants will be able to:
- Understand the principles of good practices in inspection, maintenance and operation
- Establish contacts and reference sources
- Develop sound and effective programs for tunnels

Target Audience: Federal, state and local highway agency engineers, and consultants in materials, design, construction, inspection, maintenance and operation of tunnels.

RAILROAD PLENARY SESSION

Time: 10:30 AM–12:00 NOON
 Room: 301-305
 Chair: James D. Dwyer,
 Consultant, Pittsburgh, PA

The IBC Committee, recognizing the importance of the North American railroads to both our economy and security, will conduct a special plenary session devoted to presentations on railroad bridges.

Discussion will consist of current practices related to railroad bridges, rules and regulations applicable to rail bridges, research and specification requirements, bridge management and inspection programs and funding. Speakers include:

Steve A. Millsap, P.E. Assistant Vice President—Structures - BNSF Railway

John F. Unsworth, P.Eng.

Manager, Structures Planning and Design - Canadian Pacific Railway

Gordon A. Davids, P.E.

Chief Engineer - Structures Federal Railroad Administration, Office of Safety

Workshop 7 1:00–5:00 PM**Seismic Accelerated Bridge Construction**

Room: 326

Presented by: TRB Structures Section

The intent of this workshop is to introduce attendees to the application of Accelerated Bridge Construction (ABC) methods in regions of moderate to high seismicity. The ever-increasing demands placed on transportation networks across the nation, coupled with an aging infrastructure, has led to the need to rapidly replace, widen, and build new highway infrastructure including bridges. The Federal Highway Administration has been actively promoting the advantages of ABC including reductions in traffic disruptions and traveler delays, improved work zone safety, and reduced on-site environmental impacts. However, ABC methods utilized elsewhere may not be suitable in regions of moderate to high seismicity. In particular, connection details tying together prefabricated elements must be capable of resisting seismic loads and must ensure ductile response of bridge systems.

In this workshop, case studies of construction projects, seismic ABC connection details in use or under development, research results, and criteria for selecting the use of ABC methods in regions of moderate to high seismicity will be presented.

This workshop is co-sponsored by the Transportation Research Board General Structures Committee (AFF10) and the Seismic Design and Performance of Bridges Committee (AFF50).

How attendees could benefit:

Attendees will gain an improved understanding of the issues associated with the use of ABC methods in regions of moderate to high seismicity, and can apply this information to current or future projects under development.

Workshop 8 1:30–5:00 PM**Bridge Owner Program Forum**

Room: 327

Presented by: Ronnie Medlock, High-Steel Structures

At the Bridge Owner Construction Forum, invited Owners from across the region will describe their upcoming bridge programs.

Important details program details will be provided, including:

- Latest information about response to a stimulus package (actual or anticipated, depending upon the state of the package)
- Bridges programmed for letting during the next few years
- Major projects scheduled for letting in the next 3 to 10 years
- Upcoming projects of interest to the large and medium sized contractors and fabricators
- Other details about 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. Scheduled to present: Barry Benton, Delaware DOT; Robert J. Healy, Maryland State Highway Administration; Hal Rogers, Pennsylvania DOT; James L. Stump, Pennsylvania Turnpike Commission; TBD, Utah Department of Transportation; Ronaldo T. (Nick) Nicholson, Virginia DOT

How attendees could benefit:

Attendees will benefit by learning about future owner bridge design needs, upcoming projects, upcoming letting information, and general bridge program information.

Workshop 9 1:30–5:00 PM**Foundation Drilling Workshop**

Room: 328

Presented by: The International Association of Foundation Drilling (ADSC)

This workshop will provide the latest design, specification, construction, and confirmation testing practices being implemented in the highway industry. Topics of interest will be presented by leading experts in the design and construction of drilled foundations and anchored earth retention. We will also provide examples of completed projects and how innovative design and construction methods were utilized to solve challenging project requirements, while also achieving high standards of quality control.

How attendees could benefit:

Attendees will learn current practice for design of drilled foundations and earth retention systems, and will see examples of successfully constructed projects incorporating state of the art equipment and construction methods. Special attention will be placed on providing innovative solutions to challenging foundation applications.

Workshop 10 1:30–5:00 PM**High Tech Underwater Bridge Inspection Techniques**

Room: 329

Presented by: Marion Hill Associates, Inc. (MHA)

High-tech scanning equipment has expanded the capabilities of underwater inspection of bridge piers beyond conventional diving techniques and standard methods. Sonar (acoustic) imaging provides details of structural components and scour around a pier in very poor to zero underwater visibility. The equipment has built-in measur-

ing capabilities that permits accurate delineation of a scour area and calculates the volume of material that may be needed to correct a potentially hazardous deficiency and is used in conjunction with a trained hard-hat diver equipped with an underwater color recording DVD camera mounted on his or her's helmet allows for a very detailed and through inspection of a bridge pier. There is also an added degree of diver safety because their image shows up on the monitor in relationship to the bridge pier and underwater hazards to be avoided.

MHA plans to provide a demonstration of our specialized equipment including our M/V LIFTBOAT that lifts completely out of the water providing a very stable command center for MHA hard-hat divers and sophisticated sector scanning sonar. Sonar and underwater color camera images will be transmitted to the patio of the Convention Center. This will provide an ideal vantage point for audience participants to view the command center next to a railroad bridge pier sending back detailed images of a diver doing an inspection being guided to specific locations using sector scanning sonar. The audience can ask specific questions and have the divers respond to inquiries.

Workshop 11 1:30–5:00 PM

State Highway Agency Forum: State of the Practice; Bridge Load Rating and Posting: FHWA & AASHTO Member States Panel Discussion and Roundtable

Room: 330

Presented by: Thomas Saad, FHWA

A select group of State Highway Agencies will provide current and recommended practices for bridge load evaluation to ensure bridge safety, to post highway bridges for state legal loads, and to provide oversight to allow for the safe operation of the increasing requests for annual and special permits for overweight vehicles.

Due to the recent adoption of the AASHTO Manual for Bridge Evaluation which provides provisions for implementing Load and Resistance Factor Rating (LRFR), and the transition by State DOTs to full implementation of the LRFD Specifications, many State DOTs are modernizing their bridge evaluation programs to take advantage of the benefits of LRFR for rating new and existing highway bridges. These States are also taking a closer look at their current practices to ensure quality of their inventory of existing Load Factor and/or Allowable Stress Ratings.

To ensure the highest level of safety for the public traveling on our nation's highway bridges, it is vital for State DOTs to have comprehensive practices in place to perform load evaluations of design, legal and permit vehicles and to provide the most accurate load capacity information from which to manage the vehicular traffic on each bridge. It is vital for bridge engineers to understand the best practices for load rating and to apply them accurately to properly inform owners how to post and permit for the ever increasing numbers of heavy loads on the highway network.

CONSTRUCTION

Time: 1:30-5:00 PM

Room: 301/302

Chair: Calvin Boring, Trumbull Corporation, Greensburg, PA

09-17 1:30 PM

Post Tsunami Bridge Reconstruction in Indonesia

Robert Magliola, Parsons, Downers Grove, IL

The December 26, 2004 Indian Ocean tsunami devastated the northwest coast of the island of Sumatra in Indonesia. More than 230,000 persons lost their lives and 90 bridges were damaged and destroyed along the Banda Aceh to Meulaboh Road. The paper describes how replacement bridge types: steel truss, spliced precast I-beam and cast-in-place box culverts, were selected based on local construction means and methods, material availability, site accessibility, economy and how these bridges are being constructed in remote locations with little aid of heavy equipment.

09-18 1:55 PM

Improved Link for Safety and Security

Kirti Pancholi, U.S. Coast Guard, Washington, DC

The replacement of the Florida Avenue Bridge was a combined Highway/Railroad Bridge Project under the Truman-Hobbs Act. The bridge, at the junction of Mississippi River Gulf Outlet, Inner Harbor Navigation Canal and Industrial Canal, was relocated a 150 feet south of the old bridge. The benefit for its relocation is better security and provides safer navigation for 18 million tons of crude oil, coal and ore. The partnership between U. S. Coast Guard, New Orleans Port, Railroad Companies, Consultant, and Contractor in resolving challenges is a good guide for other current and future Highway/Railroad moveable bridge projects.

09-19 2:20 PM

Innovative Widening Truss Erection of the Huey P. Long Bridge

John Brestin, HNTB Corporation, Kansas City, MO; Keith Jacobson, Massman Construction Company, Kansas City, MO

The Huey P. Long Bridge crosses the Mississippi River in New Orleans, Louisiana built in 1935. It is a 1840-foot three-span continuous cantilever truss bridge with an adjacent 530-foot simple span truss. This paper focuses on the erection of the river units widening trusses and address the analysis of the temporary stability frame used to brace the trusses during the lifts. The span by span erection method, utilizes temporary stabilizing frames that span between the bottom chords of the proposed widening trusses and have stabilizing towers to brace the compression chord of the truss while lifting.

09-20 2:45 PM

Wind Loads on Steel Box Girders during Construction Using Computational Fluid Dynamic Analysis

Glenn Myers, PBS&J, Fort Lauderdale, FL; Ali Ghalib, PBS&J, Atlanta, GA

Constructability requirements for steel bridges are defined in the AASHTO Guide Specifications for Horizontally Curved Steel Girder Highway Bridges and the AASHTO LRFD Bridge Design Specifications and are intended to define conditions encountered during construction. Loads are easy to determine during the constructability analysis. Wind loads need to be considered for the different climatologic and topographic

factors that occur during construction. Drag coefficients to be utilized are not readily available. Computational Fluid Dynamic (CFD) modeling was performed to develop horizontal drag and vertical lift coefficients. This paper discusses the analysis of the wind loading on the skeletal frame and criteria utilized for the constructability plans for the Interstate 4 / Lee Roy Selmon Expressway Interchange.

COFFEE BREAK 3:10

09-21 3:30 PM

Design and Construction Aspects of Post-tensioned Concrete Incremental Launching Bridge

Teddy Theryo, PB Americas, Inc., Tampa, FL; Paul Towell, PB Americas, Inc., Minneapolis MN

The first modern prestressed concrete incrementally launched bridge was constructed in Europe in the early 1960's. Since then, many post-tensioned incrementally launched bridges have been built around the world, except in the North America. The authors will focus on the essential design and construction aspects for this type of bridge construction instead of focusing on a particular bridge. Construction method topics will include the launching nose, jacks, temporary supports, sliding bearings, friction bearings and side guides. Design topics will include the advantages and disadvantages, tendon layout, cross-section, loading, construction staging, serviceability limit state, ultimate limit state and detailing.

09-22 3:55 PM

I-76 Allegheny River Bridge Pennsylvania's First Long Span Cast-In-Place Concrete Segmental Bridge

Garrett Hoffman, P.E., FIGG, Exton, PA; Gary Graham, P.E., Pennsylvania Turnpike Commission, Harrisburg, PA

Walsh Construction is building Pennsylvania's first long span concrete segmental bridges, which were designed by FIGG. The twin 2,350' structures are being constructed over roads, rail lines, the river and 14-Mile Island, an environmentally-sensitive state park. The 532' main span crosses the Allegheny River. The bridge is being constructed on an adjacent alignment just south of the existing bridge with cast-in-place balanced cantilever construction utilizing form travelers. Work includes completion reconstruction of the toll plaza, expansion of acceleration and deceleration lanes and smaller bridges for local traffic and golf cart traffic that cross the Turnpike mainline.

09-23 4:20 PM

Construction of the Pomeroy Mason Cable Stayed Bridge

Jorge Suarez, Michael Baker Jr., Inc, Moon Township, PA; Don Tillis, Ohio Department of Transportation, Marietta, OH

The Pomeroy Mason Bridge is a concrete cast-in-place cable stayed bridge structure, which replaces an existing through steel truss structure on U.S. Route 33 over the Ohio River in Meigs County, Ohio. This new bridge will provide a link between two cities: Pomeroy, Ohio and Mason, West Virginia. Baker provided ODOT District 10 with Construction Support Services which include: construction inspection and documentation, cable-stayed bridge expertise, problem solving, falsework design, schedule monitoring, submittal reviews, and project closeout. This paper will discuss the challenges successfully overcome through the teamwork of ODOT, contractor, and construction managers, including flooding, a slope stability issue, falsework, form traveler design and fabrication.

CONTEXT SENSITIVE DESIGN

Time: 1:30-5:00 PM

Room: 304/305

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

09-24 1:30 PM

Boulevard of the Allies Bridge over Forbes Avenue

Cheryl Moon-Sirianni, PennDOT District 11, Bridgeville, PA; Robert Pintar, Wilbur Smith Associates, Pittsburgh, PA

PennDOT, District 11-0 designed the reconstruction of the intersection of the Boulevard of the Allies with Forbes Avenue in the Oakland neighborhood of the City of Pittsburgh, a world renowned center for art, cultural, educational, and health care institutions. The project included a bridge replacement as well as other operational and safety improvements. The District teamed with the Oakland Task Force to develop context sensitive designs. This collaboration helped to transform the design of a transportation project into the design of a landmark structure that was woven into the Oakland community fabric.

09-25 1:55 PM

Towards Green Bridges

Scott Snelling, Hardesty & Hanover LLP, New York, NY

The goal of green design includes reducing greenhouse gas emissions, pollution emissions, waste, and the use of non-renewable resources to sustainable levels. While there is no existing standard for the green design of bridges or transportation infrastructure, bridge professionals need not wait for this void to be filled. Green design strategies based on ten overarching principles are well established and can be applied to projects immediately.

09-26 2:20 PM

Design and Performance of Riveted Bridge Connections

William Vermes, Euthenics, Middleburg Heights, OH

From the late 1800s to 1960, riveted construction was the predominant connection method of both steel bridge fabrication and erection. Now, nearly a half-century since the end of the accepted use of rivets, many American engineers, unfamiliar with riveted design, look at rivets with suspicion and as an inferior connection. However, review of past riveted construction practices, recent research and current field observations of riveted steel bridges shows that riveted connections are in fact an enduring and legitimate means of steel bridge construction.

09-27 2:45 PM

Replacement of Historic Tied Through Arch Bridge

Daniel Rogers, RETTEW Associates, Inc, Lancaster, PA; Quentin Rissler, Larson Design Group, Williamsport, PA

The existing 58' simple span tied through arch bridge over Big Chickies Creek in Lancaster County, Pennsylvania was designed in 1916 by prominent Lancaster County engineer Frank H. Shaw. The bridge, which was one of only two left of its kind in Lancaster had extensive concrete deterioration that necessitated replacement. The County of Lancaster contracted to design the replacement structure with specific instructions to develop a context sensitive design that reflected the distinctive architectural and historical features of the National Register eligible bridge.

COFFEE BREAK 3:10**09-28 3:30 PM****Urban Planning and the Design of Bridges; a case study**

Thomas Piotrowski, H2L2 Architects/Planners, New York, NY; Bruce Chamberlin, H2L2 Architects/Planners, Philadelphia, PA

In 2000 NYDOT contracted to provide design services for the phased redevelopment of 5 miles of Interstate 490 in Rochester New York. The scope included development and implementation of a comprehensive plan for the renovation of the corridor. The major elements were the renovation of the existing highway overpasses and a new signature bridge over the Genesee River. The redesigned overpasses and the new replacement bridge were designed to enhance these experiences and views as well as opportunities to significantly improve the aesthetics of the impacted areas and the City.

09-29 3:55 PM**Total Integration of Architecture, Engineering and Construction Realities**

Michael Fitzpatrick, TY Lin International, San Francisco, CA; Jim Grube, Hennepin County, Medina, MN

The new Lowry Avenue Bridge will replace the existing steel truss structure over the Mississippi River north of downtown Minneapolis. A plan for a replacement of the 50 year old bridge required the backing of the community. In order to gain stakeholder concurrence on the design the owner, Hennepin County, created a rigorous Public Involvement Plan. To satisfy the needs of the local communities who had been vocal about the aesthetics of the replacement structure, requesting to retain some of the character of the existing structure.

09-30 4:20 PM**Cable Stayed Bridges in City Centres**

Pekka Pulkkinen and Erik Eriksson, WSP Finland Ltd, Oulu, Finland

In Finland two cable stayed bridges will be built in the city centres of Helsinki and Tampere. The bridges are under construction. Both of them are results of bridge competition arranged by the cities. Demanding architectural and environmental requirements were set in the competition. Special value was given to compatibility of the bridge to centre buildings and city landscape. Scale of bridge compared to adjacent buildings was critical issue in both cases. Illumination of structures was considered to be very important.

LONG SPAN BRIDGES

Time: 1:30-5:00 PM

Room: 406

Chair: Carl Angeloff, P.E., Bayer MaterialScience, LLC, Pittsburgh, PA

09-31 1:30 PM**Construction of the Kanawha River Bridge: A Record Segmental Span**

Santiago Rodriguez, T.Y. Lin International, Alexandria, VA; Ahmed N.K. Mongi, W.V.D.O.T. - Division of Highways, Charleston, WV

A new long span segmental box girder bridge crossing the Kanawha River is currently under construction as part of the widening of Interstate 64 between the cities of Dunbar and South Charleston in Kanawha County, West Virginia. The eight-span

Kanawha River Bridge has a 760-foot main span; the longest concrete box girder span in the United States, which is scheduled to be closed in early 2009. The structure has a total length of 2,975 feet, including 460 and 540-foot side spans and five additional approach spans ranging from 144 to 295 ft.

This paper describes the project procurement using alternative bidding for steel and concrete designs, the design modifications proposed by the Contractor for construction, and the bridge construction process using balanced cantilever construction with cast-in-place segments.

09-32 1:55 PM**Crossing the Han River**

Radu Dragan, Ammann & Whitney, New York, NY

Ammann & Whitney was retained to complete a feasibility study and engineering design for this new bridge. The design aimed at producing a unique, signature quality structure, visually and aesthetically reminiscent of the Vietnamese culture.

The selected option consists of a five span Main Bridge, of which the center three are tied arches integral with their corresponding piers. The piers are shaped to suggest a continuity of the arches, in an effort to give the impression of a Dragon intersected by the bridge deck.

The superstructure is supported by a single-rib arch, centrally located within the roadway median, continuous over the three interior spans.

09-33 2:20 PM**Performance Based Design of Long-Span Cable Stayed Bridge Towers**

Alp Caner, METU, Ankara, Turkey; Cenar Ozkay, Yuksek Project, Ankara, Turkey

Over the last twenty years, there is a considerable increase in design and construction of cable-stayed bridges. The seismic requirements of the standard bridge specifications do not typically apply to the analysis and design of long-span cable stayed bridges. The focus of this study can be divided into two phases as (1) to investigate the common characteristics of existing long-span cable stayed bridges by developing a database and (2) to determine the seismic performance of a typical cable-stayed bridge with most common characteristics determined from the statistical database evaluation. In this research, variations in cable and tower forces will be documented based on a force and displacement based design approach.

09-34 2:45 PM**Study on Flutter Control Measures of Long Span Bridge with Truss Girder Based on CFD Model**

Gao LIU, and Tiancheng LIU, Bridge Technology Research Center, China Highway Planning and Design Institute Consultants CO., Ltd., Beijing, P.R. China

The concept of aerodynamic control measures for long span bridges is to change the air flow around the girder by modifying the girder's shape and adding small attachments. Wind tunnel testing is the most popular method to verify flutter stability of long span bridges. In this paper, an effective CFD model is established to simulate the air flow around the truss girders, based on Navier-Stokes equations, and comparing with the wind tunnel test. This study has demonstrated that central slotting and winglets are especially convenient and effective to restrain the flutter of long span bridges.

COFFEE BREAK 3:10**09-35 3:30 PM****Study on Structural System of Sutong Bridge**

Liji Huang, CCCC Highway Consultants Co., Ltd, China, Beijing, China; Xigang Zhang, Minshan Pei, Liji Huang, China

Sutong Bridge, whose layout is $(100 + 100 + 300) + 1088 + (300 + 100 + 100)$ m marks the largest span of cable-stayed bridges in the world. The complex natural condition at the bridge site and the strict requirements for resistance of wind and seismic action make it crucial to choose a favorable structural system to assure the function and safety of the bridge. After detail analysis is carried out for viscous damper and hydraulic buffer, super liquid viscous damper with additional lock-ups is designed for the first application in bridge engineering.

09-36 3:55 PM**A New Landmark Bridge to Da Nang City, Vietnam**

Esko Jarvenpaa, and Atte Mikkonen, WSP Finland Ltd, Oulu, Finland; Esko Leppaluoto, WSP Finland Ltd, Helsinki, Finland

Da Nang is a city of one million inhabitants in central Vietnam and one of the fastest developing areas in Vietnam. The City announced an international design competition in 2007.

The winning proposal will result a new landmark for the city. There will be a 6-lane cable-stayed concrete bridge with backward inclined tower. The bridge will be 730 metres long and the tip of the tower, will be at 140 metres above the surface of the river. The length of the main span is 230m and the effective width of the bridge is 33,5m, suspended with stay-cables in the middle line of the bridge.

The construction will begin in the end of 2008 and the bridge will be ready for commissioning in 2011, at an estimated cost of \$100M USD.

09-37 4:20 PM**Structural Hardening for Cable Elements of Cable Supported Bridges**

Nathan Sauer, PE, VSL, Hanover, MD

The necessity of ensuring transportation structures are protected from threats on all levels is an ongoing concern for all those involved in the construction, operation and maintenance of these structures. Cable-supported bridges can be particularly vulnerable to a variety of threats, but with the proper analysis of these threats and the execution of a thorough planning process, these structures can be effectively protected. This presentation will examine the details involved with each step of this process.

Mini-Theatre Presentations

Room: Hall B

One of the new offerings available in the new expanded Exhibit Hall are our new Mini Theatres. Mini Theatres are informal presentations given by vendors in the Exhibit Hall to provide an extended opportunity to learn more about the products and services offered by Exhibitors. No pre-registration is required, and attendance is included in your registration fee.

T1-11 11:00 AM

Presenter: BASF Construction Chemicals, LLC

Location: Theatre 1

Topic: Degadeck Crack Sealer Plus by BASF Building Systems

Degadeck Crack Sealer Plus is a rapid curing methacrylate resin that is very low in viscosity and surface tension. Gravity fed, it penetrates, repairs and seals concrete cracks in bridge deck applications. It fully cures in one hour with minimal requirement of labor and equipment. It is solvent free.

T2-11 11:00 AM

Presenter: Soprema, Inc.

Location: Theatre 2

Topic: AntiRock -Bridge & Deck Waterproofing

AntiRock is an asphalt based product modified with SBS rubber and reinforced with non-woven polyester. The bond created between the deck and AntiRock is unsurpassed by any waterproofing product. As an asphalt based membrane, the installation of a heated asphalt road surface to the AntiRock creates a bond that eliminates shove even on extreme slopes.

T1-12 12:00 PM

Presenter: Barnhart Crane & Rigging

Location: Theatre 1

Topic: Barnhart - Minds Over Matter

The most successful bridge projects integrate the construction and design process to satisfy the owner's highest expectations. Barnhart has engineered and executed some of the industry's most innovative solutions to complex heavy lift, heavy haul challenges. Spend a few minutes to see how early involvement in the design process provides you with a vast toolbox to facilitate and optimize the critical path to the success of your owner's project.

T2-12 12:00 PM

Presenter: Bentley Systems, Incorporated

Location: Theatre 2

Topic: Bentley RM Bridge

RM Bridge is a comprehensive structural engineering, design and analysis system, employed worldwide for large, complex bridges. It can handle segmented, cable-stayed, suspension bridges, and long crossings. RM offers linear and nonlinear analysis. 4D modeling of the bridge over time in the 4th dimension (time) to enable problem solving for construction sequencing, rolling stock analysis, and seismic and weather events, including wind dynamics. This demonstration will provide an overview of the many capabilities.

T1-1 1:00 PM

Presenter: Structal - Bridges

Location: Theatre 1

Topic: New Orthotropic Deck for Fast Bridge Rehabilitation

Mr. Richard Vincent, Vice President, Research presents Structal-Bridges' solution for fast bridge rehabilitation: a new orthotropic deck significantly lighter than concrete bridge deck. This innovative orthotropic deck is ideal for increasing the capacity of existing bridges and raising payload limitations without having to replace or modify the main girders, piers or abutments.

T2-1..... 1:00 PM**Presenter:** U.S. Bridge**Location:** Theatre 2**Topic:** Advantages and Versatility of Steel Bridges

A detailed presentation on the benefits of simple span rural highway steel truss, short span beam and pedestrian bridges, complete with photographs of recent installations, an explanation of the structural components and principles of bridge construction and a description of the process used to rehab historic through trusses.

T1-2..... 2:00 PM**Presenter:** LUSAS**Location:** Theatre 1**Topic:** Linear and Nonlinear Buckling Analysis using Finite Elements

The importance of carrying out buckling analysis of steel plated 'I' sections or tub girders for load rating, or for checking of stability during erection is well known. This presentation illustrates the techniques available and the ease with which this can be carried out using LUSAS Bridge analysis software.

T2-2..... 2:00 PM**Presenter:** Northrop Grumman and MATECH Corp.**Location:** Theatre 2**Topic:** Sensor Information Systems for Bridges, Featuring the Electrochemical Fatigue Sensor System

Northrop Grumman and MATECH are working together on the new Sensor Information Systems (SIS) program for bridges. SIS integrates inspection systems with other sensor systems to monitor various aspects of infrastructure management. Presentation features the Electrochemical Fatigue Sensor (EFS) System and its use in prioritizing fatigue crack repairs and verifying retrofits real-time on steel bridges. Background and case studies are presented.

T1-3..... 3:00 PM**Presenter:** Bright Bridge Construction, Inc.**Location:** Theatre 1**Topic:** Bridge Erection Technology for Huge Pre-casted Concrete Box Beam

Modern and smart methods of pre-casting, transporting or launching complete concrete box beam up to 900 ton for highway or high-speed railway projects. Solutions of cantilever or continuous bridge which is over 1600 ton per span. Creative reference of working jobsites spreading in developing area will be shown.

T2-3..... 3:00 PM**Presenter:** R.J. Lee Group, Inc.**Location:** Theatre 2**Topic:** Science Based Decision Making Strategies for Concrete Bridges

Historically decisions regarding concrete bridges have relied on standard specifications. However, today advanced materials characterization tools and computer models offer the opportunity for science based decisions regarding design and repair scenarios. This presentation will discuss how these new tools can be used to prioritize decisions for maximum cost efficiency.

T1-4..... 4:00 PM**Presenter:** Bentley Systems, Incorporated**Location:** Theatre 1**Topic:** Bentley LEAP Bridge

LEAP Bridge V8i is the revolutionary bridge engineering tool which integrates all aspects of concrete bridges including geometry, substructure and superstructure analysis, design and load rating in one powerful application. Come and preview the latest release featuring deck slab design in CONSPAN, integrated abutment design and user defined load combinations in RCPIER, T-beam bridges in CONBOX and integrated ground modeling.

WEDNESDAY'S SCHEDULE AT A GLANCE

TIME	EVENT	ROOM
8:00 AM-12:30 PM	Bridge Monitoring Session	301-302
8:00 AM-12:30 PM	Design, Part 2 Session	304-305
8:00 AM-12:30 PM	Rehab, Part 1 Session	406
8:00 AM-1:30 PM	Exhibit Hall Open	Hall B
8:00 AM-4:30 PM	W-12: FHWA Long Term Performance	326
8:00 AM-Noon	W-14: W' PA Transportation Forum	327
8:30-11:30 AM	W-15: FRP Composites	328
8:30 AM-Noon	W-16: Construction Best Practices	329
8:30 AM-Noon	Gusset Plate Seminar	See Ticket
10:00 AM-Noon	W-17: PennDOT Maintenance Topics	330
11:30 AM-1:00 PM	Exhibit Hall Luncheon	Hall B
1:30-3:45 PM	Bridge Management Session	301-302
1:30-3:45 PM	ABC Session	304-305
1:30-3:45 PM	Rehab, Part 2 Session	406

BRIDGE MONITORING

Time: 8:00-12:30 PM
 Room: 301/302
 Chair: James Garrett, Ph.D., Carnegie Mellon University, Pittsburgh, PA

09-38 8:00 AM**Monitoring System Behavior during Earthquake**

Vincent Morisseau and Benoit Kroely, Advitam, Velizy, France

European concession contracts commonly last over periods ranging from 20 to 70 years. Gefyra worked with Advitam to build methodologies and system to optimize structural inspection & the maintenance process, and includes a structural health monitoring system designed to monitor all critical elements of the bridge in order to detect abnormal behavior. It provides in particular automatic traffic management in case of earthquakes and high winds. On July 2008, a 7.3 earthquake occurred just a few miles away from the bridge, and the system recorded numerous data from the sensors. This paper will share the design and setup of the system and present the results accumulated by the system over the past 4 years.

09-39 8:25 AM**Fracture Critical Alaska Bridge Inspections Using Rope Access Techniques**

Brian Leshko, HDR Engineering, Inc., Pittsburgh, PA

For the Alaska Department of Transportation and Public Facilities, HDR performed hands-on inspection of each fracture critical member, fatigue prone detail and other identified items on 36 transfer bridges, located throughout the State of Alaska. HDR developed interior and exterior access plans that enabled inspection of the bridges at "an arm's length distance" commensurate with the requirements for fracture critical inspections. Access and inspection plans were developed with a priority placed on the safety of inspectors while minimizing impacts to the traveling public. This paper describes the planning, coordination, logistics and overall process of conducting rope access and confined space entry field inspections of dual fracture critical steel box girder bridges located throughout Alaska.

09-40 8:50 AM**Multi-Level Bridge Deck Evaluation Using Combined NDT Methods**

Kenneth Maser, Infrasense, Arlington, MA

The work described in this paper draws upon the results of a condition survey program carried out on 88 overlaid bridge decks in Wisconsin's southwest region over a two-year period. The purpose of this program was to identify decks that required rehabilitation, and to quantify the scope of the rehab work. The paper shows how the results of the IR and GPR methods were integrated to exploit the strengths and minimize the limitations of each method, so that the combination yielded more information than was available using each method separately. The paper describes the equipment used, the field data collected, the analysis methods employed, and the integration of results obtained from the different types of surveys.

09-41 9:15 AM**A Holistic Approach to Structural Health Monitoring**

Donald Shaw, Osmos USA, White Oak, PA; James Garrett, Ph.D., Carnegie Mellon University, Pittsburgh PA

Structural Health Monitoring has been increasingly discussed for a decade. Largely because of limitations in available monitoring devices, the vast majority of that discussion has followed the traditional reductionist philosophy that to understand the whole it is necessary to understand each part. This paper discusses a new approach that uses fewer sensors designed to evaluate structures by monitoring the performance resulting from component interactions. Preserving societal infrastructure functionality warrants a more performance-oriented SHM approach than the component-deterioration oriented approach currently used for management of bridge systems. This paper makes a case for a holistic methodology that is rooted in such successful approaches as health care and condition-based maintenance strategies for mechanical equipment.

09-42 9:40 AM**Fracture Damage Assessment and Monitoring - Cable Stayed Bridge Superstructure Tie Down Anchorages**

Adrian Ciolko, CTLGroup, Skokie, IL; Joshua Derechin, Michael Baker Jr. Inc, Charleston, WV

CTLGroup and Michael Baker Jr. engineers assisted the West Virginia DOT in evaluating and monitoring the causes and consequences of Abutment No. 2 Tie Down anchorage fractures at the Veterans Memorial Cable Stayed Bridge across the Ohio River. Cracks had been discovered in several of the 20, 2 1/2-inch diameter threaded anchor bolts encompassing the 2 anchorage arrays during periodic bridge inspections by Michael Baker. This cracking prompted the need for progressively more frequent emergency-basis bolt repairs. The structural evaluation and monitoring program served as the basis for development of design criteria for the subsequent construction of permanent tie down anchorage structural repairs. The paper describes the structural evaluation program that incorporated determination of the load distribution in the bolts, the monitoring of strain fluctuation in all 20 bolts and the cable stayed superstructure linkage, a fracture analysis of broken bolts using metallographic analysis techniques was performed, and the scheduling of structural repairs.

COFFEE BREAK 10:05**09-43 10:30 AM****Monitoring the 352 Meter Long Monaco Floating Pier**

Hovhanessian Gilles and Benoit Kroely, Advitam, Velizy, France

Again limits have been pushed further with the realization of the key element of the extension of the Condamine port at Monaco, a 352 m long and 163 000 tons semi-floating pier. The highly pre-stressed reinforcement concrete structure with a design life of 100 years is attached to the main land abutment with a very complex and 770 tons steel ball-joint system while the other end of the pier it is secured with two sets of fixed anchor chains to the seabed. This exceptional project is a mix of building techniques, mechanical engineering, and offshore works: it includes several world records and, particularly, the spectacular connection of the ball joint system. In this paper we will review the structural health monitoring system that is installed for this extraordinary structure.

09-44 10:55 AM**Load Testing of Bridges at Logan International Airport**

Evan Lowell, Transystems Corporation, Boston, MA

Analytical load ratings were calculated for several bridges at Boston-Logan International Airport. These calculations determined that several members rated below the required capacity for legal load types and special airport vehicles. This paper describes the load testing process conducted, which consisted of the following tasks: Review of existing load rating calculations (which had been performed by others); Development of a load test procedure; Determination of target loads, and selection of incrementally increasing test loads to meet these targets; Calculation of analytical strain and deflection values under the test loads; Performance of the load testing over a span of 4 consecutive nights through a combination of partial and full roadway closures; Comparison of the analytical strain and deflection values with the actual field measured strain and deflection values; and, Development of load rating recommendations based on these comparisons.

09-45 11:20 AM**Overview of 40 Bridge Structural Health Monitoring Projects**

Daniele Inaudi, SMARTEC SA, Manno, TI, Switzerland; Rene Deblois, Rctest Ltd, Saint-Lambert, QC, Canada

In the last 15 years, Structural Health Monitoring has become a useful and increasingly widely used tool for the construction, management and lifetime extension of bridges and other civil structures. This paper is an overview of more than 40 bridge monitoring projects carried out over the last 15 years in 13 different countries and using advanced sensing systems including fiber optics, GPS and corrosion sensing. In particular we concentrate on the analysis of the different types of bridges that were monitored, their situation (new construction, existing structure, refurbishment) and the main purpose of the installed monitoring system. Two main categories emerge from this analysis: new bridges with innovative aspects or particular relevance and existing bridges with known deficiencies.

09-46 11:45 AM**Integrated Monitoring System of Bridges**

Comisu Cristian-Comisu, Faculty of Civil Engineering, Iasi, Romania

The main scope of the research is to develop an integrated monitoring system for durability assessment of existing and new concrete bridges. The system must interface and integrate the actual practice mainly based on visual inspections and combines the response of a number of different reliable sensors, installed on the structure to monitor the progress of damage, with enhanced realistic deterioration models. The system and the sensors were developed to cover the parameters for the most important deterioration mechanisms: corrosion of reinforcement in bridges, carbonation of concrete, freeze-thaw cycles, alkali-silica reaction and mechanical damage, as well as the changes in the structures behavior and safety: static deformation, strains; crack widths and vibrations.

DESIGN, PART 2

Time: 8:00-12:30 PM

Room: 304/305

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

09-47 8:00 AM**Cable-Stayed Bridge across the Odra River, Czech Republic**

Jiri Strasky, Ph.D., P.E., Consulting Engineer, Greenbrae, CA

Strasky, Husty and Partners, Brno, Czech Republic, designed a new cable-stayed bridge carrying Freeway D47 over the Odra River near Ostrava on twin bridges 589 m long. The 105 m main span is supported by a 47 m single pylon. The paper will describe the architectural and structural solution; discuss results of the static and dynamic analysis; and describe the construction.

09-48 8:25 AM**Innovative Use of PC/PS Concrete for Light Rail Grade Separation**

Thomas Barnard and Ahmad Abdel-Karim, DMJM Harris, Sacramento, CA

This project grade separates the Sacramento Regional Transit light rail (LRT) tracks and South Watt Avenue, near its intersection with Folsom Boulevard in Sacramento, CA. The chosen structure type, which was driven by geometric constraints, minimizes construction time and associated impacts to the various modes of traffic converging within the project limits. The modes include vehicular, light rail transit, heavy freight rail, and pedestrian and bicycle users.

09-49 8:50 AM**Design Development and Construction of I-5 Gateway Pedestrian Bridge**

Gary Rayer, OBEC Consulting Engineers, Eugene, OR; Jiri Strasky, Consulting Engineer, Greenbrae, CA

As a part of a major highway interchange improvement project at Beltline Highway and Interstate 5 in Eugene, Oregon, an innovative cable-stayed pedestrian bridge was constructed primarily using precast concrete structural elements. These precast elements are combined to allow rapid construction over the busy interstate freeway, provide extremely good stability during construction, and eliminate forming for the composite cast-in-place topping slab.

09-50 9:15 AM**Utah's First Concrete Segmental Bridge - Over the Colorado River**

Steve Fultz, P.E., FIGG, Denver, CO; Fred Doehring, Utah DOT, Salt Lake City, UT

US-191 provides the main access to Arches National Park, Canyonlands National Park, Dead Horse State Park, and the Sand Flats Recreation Area. Minimizing construction and long term impacts to this unique environment, traffic, and recreational users were key components of the successful bridge solution. The twin 37'-10" wide, 1022' long structures will be built from above with form travelers to minimize impacts to the river and sensitive environmental / recreational areas below.

09-51 9:40 AM**Road Bridge over the River Sil - Unique Design Simulations**

Peter Barrett, CAE Associates, Middlebury, CT; Jorge Perez Armino, A.T.P. Ingeniere, S.L., Leon, Province of Leon, Spain

The "Road bridge over the River Sil" is a conventional composite bridge coupled

with an arc suspension design. The load interaction between the conventional bridge and the arc section. A detailed nonlinear analysis was selected to provide accurate force and moment calculations on all members throughout the construction process and bridge life. This paper addresses the functionality of modeling this unique hybrid bridge design using commercially available software for sophisticated analyses.

COFFEE BREAK 10:05

09-52 10:30 AM

Impact of Construction Methods on Curved Post-Tensioned Concrete Box Girder Bridges

Bo Hu and Dongzhou Huang, PBS&J, Tampa, FL

Post-tensioned curved concrete box girder bridges provide a versatile solution for highway projects with economic, geometrical and aesthetic constraints. This paper will investigate the structural behavior of post-tensioned curved concrete box girder bridges erected with the balanced cantilever construction method, as well as the post-tensioning design method for accomplishing a reasonable force condition under design loads. The research results are instructive and could be used in bridge design.

09-53 10:55 AM

Effect of Skew Angles on a Simply-supported Curved Steel Plate Girder Bridge

Jimin Huang, HDR Engineering Inc., Tampa, FL

This paper presents results of a parametric study investigating the effects of different bridge skew angles on the load demands on the bridge and the impact on the designs of steel plate girders and the substructures. Five different skew angles were evaluated. The findings reported in this paper will help bridge engineers to select appropriate skew angles for the design of simply-supported steel plate-girder bridges with sharply curved alignments.

09-54 11:20 AM

Design of Rail Transit Bridges Using the AASHTO LRFD Code

Jeffery Wetmore, AECOM Transportation, St. Paul, MN

Conversion of Washington Avenue Bridge between St. Paul, and Minneapolis, Minnesota to accommodate the light rail transit provided the impetus for examining rail transit bridge design criteria. Designers often use the AREMA Manual for guidance, because the steel rails on a transit system appear more similar to freight railroad bridges than to highway bridges. The Track Design Handbook for Light Rail Transit states that the AASHTO code is more applicable LRT aerial structures than AREMA.

09-55 11:45 AM

The Evolution of Pre-Cast Segmental Bridge Construction in the State of Florida

Timothy Barry, P.E., Reynolds Smith and Hills Construction Services, Inc, Rockledge, FL

The Florida Department of Transportation (FDOT) has made sweeping changes in the design and construction practices for precast segmental bridges. These changes involve improvements in design guidelines, material requirements, specifications, and construction practices. They also incorporate new technologies still under development. A better, more viable product is being produced because of these changes. Successful implementation of these new procedures and technologies are a positive step in the evolution of the segmental bridge industry.

BRIDGE REHABILITATION 1

Time: 8:00-12:30 PM

Room: 406

Chair: Richard Connors, P.E., PMP, Municipality of Murrysville, Murrysville, PA

09-56 8:00 AM

Birmingham Bridge Rocker Bearing Failure & Retrofit

Louis Ruzzi, P.E., PENNDOT District 11-0, Bridgeville, PA and Patrick Gaynor HDR, Pittsburgh, PA,

The Authors will discuss the rocker bearing failure and PENNDOT's response including the first actions, forensics investigation and subsequent repairs/retrofit and lessons learned. The talk will include the initial discovery of the problem and closure of the bridge on February 8, 2008 and the efforts required to stabilize the bridge during the first weekend. We will explain the most likely cause of the rocker bearing failure, the repair/retrofit options, and discuss the actual repairs/retrofits.

09-57 8:25 AM

Design of Stay Cable Replacement for the Luling Bridge

Armin Mehrabi, Bridge Engineering Solutions, PC, Lewiston, NY

The Louisiana Department of Transportation and Development has decided to replace all stay cables of the Luling Bridge to address their deficiencies. The extent of damages to cables, decision making process, and design requirements and concepts were discussed in an earlier paper (IBC08-89). Since then, a comprehensive design for cable replacement has been developed and soon the construction work will begin. This paper summarizes the completed analysis, design work, and the extraordinary construction sequence.

09-58 8:50 AM

Chesapeake City Canal Bridge Back to Its Fatigue Safe State

Ahmad Faqiri, Pennoni Associates, Inc., Wilmington, DE

The Bridge is a two-lane steel structure carrying U.S. Route 213 over the Chesapeake and Delaware Canal. Owned and maintained by the U.S. Army Corps of Engineers the bridge is nearly a mile long, with its main tied-arch structure spanning 540 feet. A comprehensive approach consisting of testing, analysis, design and construction consultation was the key to an effective bridge repair that made the floorbeam connection angles of the arch span of the bridge fatigue safe indefinitely.

09-59 9:15 AM

Optimization of Isolation Bearing Parameters for Effective Mitigation of Seismic Risk for Bridges

Murat Dideli, and Memduh Karalar, Middle East Technical University, Ankara, Turkey

Seismic isolation of bridges is a design methodology based on limiting the magnitude of the seismic forces transferred to the substructures. The performance of seismic isolated bridges is measured by the maximum isolator force and displacement (MIF and MID). The MIF represents the magnitude of the seismic force transferred to the substructures and has a remarkable effect on the design of the substructures. For a given ground motion, smaller isolator force and displacement will produce a more economical bridge design.

09-60 9:40 AM**Externally Bonded FRP Composites for the Rehabilitation of Reinforced Concrete T-beam Structures**

An Chen, West Virginia University, Department of Civil and Environmental Engineering, Morgantown, WV; Jeffrey Levan, P.E., Pennsylvania DOT, Engineering District 3-0, Montoursville, PA

This paper presents a synthesis of findings to utilize externally bonded FRP composites to rehabilitate reinforced concrete T-beam bridges. Selecting candidate bridges for suitability of repair is based on current NCHRP studies. The FRP repair system design is based on current ACI 440.2R-02 design guidelines. Results from the rehabilitated bridge and supporting testing will be used to develop draft PennDOT design standards and construction specifications and to apply "lessons learned" to future tee-beam rehabilitation projects.

COFFEE BREAK 10:05**09-61 10:30 AM****Rehabilitation Challenges of the Route 35 Bridge Over Manasquan River**

Thomas Fisher and Rama Krishnagiri, PB Americas, Inc., Princeton, NJ

The NJ Route 35 Bridge over Manasquan River is a major link to two shore resorts. The 60 year old, 1080-foot, four lane, nine-span double-leaf bascule viaduct was rehabilitated to provide 25 years more of useful life. The major concerns of the motoring public, businesses and marina owners, timing restrictions, and the mandate to maintain all four lanes throughout construction posed a tremendous challenge in choosing appropriate design, materials and methods, sequencing and meeting the construction schedule economically.

09-62 10:55 AM**Exodermic Deck Repairs on the Kingston-Rhinecliff Bridge**

William Moreau, New York State Bridge Authority, Highland, NY

The reinforced concrete deck of the Kingston-Rhinecliff Bridge (KRB) was replaced with modular exodermic deck panels during a three year project between 2000 and 2002. The KRB is a 5200 foot long deck truss with approach spans of 1400 feet on each end. In 2003 cracking of the exodermic deck was identified on the approach girder spans. Strain gauging and computer modeling identified shortcomings in the design and a retrofit to the deck was designed and implemented.

09-63 11:20 AM**Managing Fatigue Cracks In Steel Tub-Girder Webs at Interior, Cross-Bracing Connections**

Henry Fix, AECOM, Horsham, PA; Michael Chajes, University of Delaware, Newark, DE

The Newport Viaduct is a twin, 19-span viaduct, which is over 2000 feet long, consisting of different simple-span and continuous-span units. The cross-section is a variety of 2, 3 and 4 steel tub-girder configurations. The bridge is 30 years old and has a current ADT of over 67,000 vehicles/day. Over 700 fatigue cracks were discovered during a recent routine safety inspection throughout the length of the viaduct. This paper will explain the crack management program that was developed for the Delaware DOT for the future management of the bridge.

Sunday, June 14, 2009

1:00-6:00 PM Exhibit Hall Set-Up Hall B

5:00-7:00 PM Conference Registration Desk Open Hall B

Monday, June 15, 2009

7:00 AM-7:00 PM Conference Registration Desk Open Hall B

8:00 AM-10:00 PM AASHTO/NSBA Co-Meeting Room 325

8:30 AM-12 Noon Keynote Session Room 301-305

11:00 AM-7:00 PM Exhibit Hall Hours Hall B

11:30 AM-1:00 PM IBC Awards Luncheon Ball Room B

11:30 AM-1:00 PM Exhibit Hall Luncheon Buffet - Open to all Attendees Hall B

1:30-5:00 PM Featured Agency Session "PennDOT" Room 301-305

1:00-5:00 PM W1: Lightweight Concrete for Bridges Room 329

1:00-5:00 PM W2: Maximizing Bridge Foundation Design Using Full Scale Load Testing Room 330

2:00-6:00 PM Mini-Theatre Presentations (various times) Hall B

5:00-7:00 PM Exhibit Hall Reception Hall B

Tuesday, June 16, 2009

7:00 AM-5:00 PM	Conference Registration Desk Open	Hall B
8:00-10:05 AM	Design, Part 1 Session.....	Room 301-302
8:00-10:05 AM	Design-Build Session	Room 304-305
8:00-10:30 AM	Bridge Evaluation Session	Room 406
8:00 AM-12 Noon	W-3: Bridge Aesthetics.....	Room 327
8:00 AM-12 Noon	W-4: FHWA ABC	Room 328
8:00 AM-12 Noon	W-13: SSPC Coatings.....	Room 326
8:00 AM-4:00 PM	TRB Co-Meeting	Room 323
8:00 AM-10:00 PM	AASHTO/NSBA Co-Meeting	Room 325
8:30 AM-12 Noon	W-5 Management Practices.....	Room 329
8:30 AM-12 Noon	W-6 Detailing for Bridges	Room 330
8:30 AM-12 Noon	Confined Soil Walls Seminar	Refer to Ticket
8:30 AM-12 Noon	Highway Tunnel Inspection Seminar.....	Refer to Ticket
10:30 AM-12 Noon	Railroad Plenary Session.....	Room 301-305
11:00 AM-5:00 PM	Exhibit Hall Open	Hall B
11:00 AM-5:00 PM	Mini Theatre Presentations (various times).....	Hall B

Tuesday, June 16, 2009 (continued)

1:00-5:00 PM	IBC Bridge Tour	Curbside
1:00-5:00 PM	W-7: Seismic ABC.....	Room 326
1:30-5:00 PM	Construction Session	Room 301-302
1:30-5:30 PM	Context Sensitive Design Session.....	Room 304-305
1:30-5:00 PM	Long Span Bridges Session.....	Room 406
1:30-5:00 PM	W-8: Bridge Owner Program Forum	Room 327
1:30-5:00 PM	W-9: Drilled Foundation	Room 328
1:30-5:00 PM	W-10: High Tech Underwater Inspection.....	Room 329
1:30-5:00 PM	W-11 State Highway Agency Forum.....	Room 330

Wednesday, June 17, 2009

7:00 AM-1:30 PM	Registration Desk Open.....	Hall B
8:00 AM-12:30 PM	Bridge Monitoring Session.....	Room 301-302
8:00 AM-12:30 PM	Design, Part 2 Session.....	Room 304-305
8:00 AM-12:30 PM	Rehab, Part 1 Session.....	Room 406
8:00 AM-4:30 PM	W-12: FHWA Long Term Performance.....	Room 326
8:00 AM-1:30 PM	Exhibit Hall Open.....	Hall B
8:00 AM-12 Noon	W-14: W' PA Transportation Forum.....	Room 327
8:30 - 11:30 AM	W-15: FRP Composites.....	Room 328
8:30 AM-12 Noon	W-16: Construction Best Practices.....	Room 329
8:30 AM-12 Noon	Gussett Plate Seminar.....	See Ticket
10:00 AM-12 Noon	W-17: PennDOT Maintenance Topics.....	Room 330
11:30 AM-1:00 PM	Exhibit Hall Luncheon.....	Hall B
1:30-3:45 PM	Bridge Management Session.....	Room 301-302
1:30-3:45 PM	ABC Session.....	Room 304-305
1:30-3:45 PM	Rehab, Part 2 Session.....	Room 406

09-64 11:45 AM

Applying Suspension Bridge Suspender Rope Replacement Techniques to the Suspenders of a Through Arch Bridge (Northway Twin Arch Bridges over the Mohawk River, Albany, NY)

Blaise Blabac, P.E., Modjeski and Masters, Inc., Poughkeepsie, NY

The contractor for this project, Piasecki Steel Construction, proposed an alternate method for the replacement of the 168 suspenders for these twin through-arch bridges which utilized a proven technique previously applied to suspension bridges. This concept, developed in collaboration with Modjeski and Masters, saved the bridge owner (New York State DOT) a total of approximately \$5 million by eliminating the complex jacking system and traffic control requirements shown on the Contract Plans.

Workshop 12 8:00 AM–4:30 PM**The FHWA Long Term Bridge Performance Program**

Room: 326

Presented by: FHWA - Highway R&D Services

The objectives of this workshop are: to describe the FHWA's Long Term Bridge Performance Program (LTBPP) and present the scope of the program activities to members of the bridge community; to seek input from workshop attendees on potential improvements to the program; and to encourage development of complementary R&D programs by public transportation agencies, university researchers and the inspection/NDE industry.

The LTBPP is an ambitious 20-year research effort to study the long term performance of highway bridges. The objectives of the LTBPP are to collect, document, and make available high-quality quantitative performance data on a representative sample of bridges nationwide. The availability of the collected data is expected to result in greater knowledge of bridge performance and degradation.

Specifically, it is anticipated that the LTBPP will provide a better understanding of bridge deterioration focusing on its numerous causes including corrosion, fatigue, environment and loads. The program will also collect information regarding the effectiveness of current maintenance and improvement strategies, and on the operational performance of bridges, focusing on congestion, delay and accidents.

The LTBPP is expected to provide information and data that will engender substantial improvements in bridge inspection programs, nondestructive testing technology, bridge design practices, bridge materials, bridge maintenance, preservation & rehabilitation practices and bridge management policies and practices at the local, state and federal levels.

How attendees could benefit:

The attendees will learn the scope, scale and details of the 20-year LTBPP. All aspects of the program will be presented including bridge performance issues, data priorities, bridge sampling techniques, pilot study, and inspection/monitoring protocols. They will be apprised of opportunities for parallel and/or complementary research and development projects.

Workshop 13rescheduled to Tuesday 8 :00 AM**Society for Protective Coatings (SSPC) Coatings Session****Workshop 14 8:00 AM–12 NOON****Western Pennsylvania Transportation Research Forum**

Room: 327

Presented by: Dr. Kent A. Harries and Dr. Melissa Bilec, The University of Pittsburgh Department of Civil and Environmental Engineering, Pittsburgh, PA

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.

SEMINARS

IBC Seminars are intensive, four-hour, single-topic focused sessions. Each seminar requires an additional fee of \$125. Seating for each Seminar is limited and Pre-Registration is required. To attend an IBC Seminar, please inquire at the Conference Registration Desk to ensure your registration. Professional Development Hours (PDHs) are provided upon request and verification.

SEMINAR: LOAD RATING OF GUSSET PLATES OF CONNECTIONS OF STEEL TRUSS BRIDGES

Wednesday, June 17; 8:30 AM–12 NOON

Moderator: M. Myint Lwin, P.E., S.E., FHWA

This seminar will focus on two goals:

- To provide bridge engineers with the fundamental knowledge to use the recent FHWA guidance to load rate gusset plates in accordance with the AASHTO LRFR and LFR methods
- Lessons learned by State and Consultant Bridge Engineers in addressing the impact of the evaluation requirements for existing truss bridges.
- Topics includes:
- NTSB Recommendations, FHWA Technical Advisories and FHWA Guidance on Load Rating of Gusset Plates of Steel Truss Bridges using LRFR and LFR —
- New York DOT's Perspective in Using LRFR in the Load Rating of Gusset Plates -
- PennDOT's Perspective in Using LFR in the Load Rating of Gusset Plates -
- Using Finite Element Analysis in Load Rating of Gusset Plates -
- Application of Software in the Load Rating of Gusset Plates -
- Open Discussion
- At the end of the seminar, the participants will be able to:
- Understand the background behind the FHWA Guidance and the detailed steps involved in load rating by the LRFR and LFR methods
- Gain a good knowledge on how load ratings are done by State and Consultant Bridge Engineers
- Develop sound and effective programs for insuring structural adequacy of bolted and riveted gusset connections in steel truss bridges in compliance with NBIS.

Target Audience: Federal, state and local highway agency engineers, managers and their consultants in design, construction, inspection and load rating of steel truss bridges.

Workshop 15 8:30–11:30 AM**FRP Composites for Bridges: Setting New Standards in Rapid Construction & Repair**

Room: 328

Presented by: American Composites Manufacturers Association (ACMA)

FRP composite technology for use in bridge engineering offers solutions that range from routine repairs to innovative designs for complex installations. This workshop will explore new repair techniques that significantly improve existing transportation structures; ground-breaking bridge applications made possible by using FRP composites; and implementation of recent codes and standards by AASHTO and ACI that make specifying FRP composites easier. The objective of this course is to equip the bridge design engineer with a tool kit of FRP composite design possibilities that can offer cost-effective solutions for decks and structural rehabilitation in bridges.

Key features of composites multiple strengths and wide-ranging design possibilities will be illustrated using current installations as a benchmark to future applications. We will also discuss specifying composites when preparing a bid contract, including initial cost considerations and how to capture lower overall costs due to benefits inherent to FRP composites, such as easier transportation, rapid installation, and life cycle cost advantages over traditional materials. New designs, including superstructures, decks, and repairs on bridge structures, will be also highlighted.

This workshop will be equally beneficial for those professionals who are just exploring the use of FRP composites in bridge applications for the first time and those with more composites experience that are interested in specification, design or repair of transportation structures.

How attendees could benefit:

Session attendees will learn how to design and specify composites with recently approved codes and standards from ACI and AASHTO. In addition, new products and installation techniques will be demonstrated using case histories of field applications that focus on accelerated construction and longer life cycles.

Workshop 16 8:30 AM–12 NOON**Bridge Construction Best Practices for Engineers**

Room: 329

Presented by: Michael D. Flowers, American Bridge/Fluor Enterprises, JV; Walter J. Gatti, Tensor Engineering; Brian Fenters, Rampart Hydrodemolition Services

Part 1: An update on the construction of the New San Francisco-Oakland Bay Self Anchored Suspension Bridge, including an overview of the complex design of the bridge, i.e., the self anchored design and how that drives any number of unique construction challenges and approaches. Also included; a status report on where the project stands in the overall construction process and a look ahead to the expected progress in the next year. The project bid in March 2006 and is scheduled to complete in 2013.

Part 2: Presentation concerning standardization of Design drawing information, the use of 3D models to approval fabrication drawings and animation of complex assemblies.

Part 3: A demonstration of how states throughout the U.S. are using hydro-demolition for their bridge rehabilitation projects and how they can learn from each others' methods. One of the items we would like to highlight, since PennDOT is the

Featured State, is that they have recently begun using hydrodemolition for rehabilitation projects other than for LMC overlays, i.e. barrier retrofit and box beam deck replacement. Further, we will examine typical issues related to the hydrodemolition process that engineers typically inquire about; speed of process, water runoff, water treatment, and cleanup of the spoils.

How attendees could benefit:

- Better understanding of the process
- Develop a comfort level to try other DOT's methods
- Equip engineers with additional rehabilitation tools
- Potential for DOT's to try a case study using different types of surface preps

Workshop 17 10:00 AM–12 NOON**PennDOT Bridge Maintenance Topics**

Room: 330

Presented by: PennDOT

This session will discuss philosophies and provide examples of bridge preservation work, maintenance repair examples for PennDOT bridges in Western Pennsylvania area. The attendee will be see how PennDOT deals with some of its routine, everyday bridge problems in a cost effective manner

- Louis J. Ruzzi, P.E., District 11-0, Bridge Preservation Philosophy
- Jason Zang, P.E., District 11-0, Bridge Maintenance Contract History/Project Examples
- William Koller, P.E., District 1-0, Bridge Updates in NorthWest, PA
- Matt Pierce, P.E., AECOM, SR 79 35M-Bridge Preservation Project/Roadway Reconstruction in District 11-0

BRIDGE MANAGEMENT/EVALUATION

Time: 1:30-3:45 PM

Room: 301/302

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

09-65 1:30 PM**Bridge Information Modeling (BIM) and Advanced Measuring Methods Case Laser Scanning In Renovation Design**

Antti Karjalainen, WSP Finland Ltd, OULU, Finland; Kirsi Hanninen, WSP Finland Ltd, Helsinki, Finland

New 3-D CAD design tools and measurement methods have been developed and tested in the several bridge construction projects in Finland during 2004-2008. A research project was carried out with the aim to determine the possibilities to measure and to control the 3-D geometry of bridges by laser scanning. The aim of this study was:

1. to produce a point cloud of the bridge,
2. create a 3-D model of the bridge, and
3. determine best practices for the further treatment of 3D-data for re-construction project.

3-D laser scanning is currently providing accurate source information for bridge designs, as well as bridge rehabilitation projects.

09-66 1:55 PM**Cost Effectiveness of Stainless Steel-Clad Reinforcing Bars and Other Corrosion Mitigation Strategies in Bridge Decks**

John Lawler and Paul Krauss, Wiss, Janney, Elstner Assoc., Northbrook, IL

Chloride-induced corrosion of traditional carbon steel reinforcing bars (black bars) is a primary cause of deterioration of concrete structures, especially bridge decks. A service life model has been applied to predict the performance of corrosion mitigation alternatives, including the use of microcomposite alloy reinforcing steel, epoxy-coated reinforcing steel, solid stainless reinforcing steel, stainless clad reinforcing steel, and high performance concrete (HPC), in a bridge deck setting. This paper will present results of the service life modeling, as well as life cycle cost analyses

09-67 2:00 PM**Load Rating Bridge Substructure Units**

Robert W. Bondi and Richard M. Schoedel, Michael Baker Jr., Inc., Moon, PA

Multi-column bents, piers, and other similar substructures should be load rated if they show signs of distress such as structural cracking, excessive concrete spalling, excessive reinforcing steel corrosion, reinforcing bars not engaged by concrete, show signs of movement, or exhibit other distress. This paper will present a case study where the strut and tie method was used to effectively load rate substructure units. The strut and tie method generally uses lower effective concrete strengths and lower resistance factors than traditional analysis methods and therefore, will not necessarily predict higher member capacities in all cases. However, the strut-and-tie model may be beneficial where deficient shear reinforcement is compensated by the reserve capacity in the flexural reinforcement or vice versa and in cases with concentrated loads close to supports.

09-68 2:45 PM**Comparison of Coating System Service Life Based on Type of Primer, Number of Coats, and Surface Preparation Method**

Jayson Helsel, KTA-Tator, Inc., Pittsburgh, PA

This paper provides an objective review of the service life of field-applied high performance industrial coating systems considering the type of primer, number of coats and method of surface preparation. The differences in primer type addresses coating systems with zinc rich versus non-zinc rich coatings. The number of coats in a coating system focuses on the performance of two versus three coat systems. Additionally, the review looks at how the method of surface preparation affects longevity of the coating system. Included in the review are comparisons of installation and life cycle costs based on a suggested maintenance painting sequence.

09-69 3:10 PM**Proposed National Tunnel Inspection Standards**

Jesus Rohena, FHWA, Washington, DC

There are approximately more than 300 highway tunnels in the USA. The majority of these tunnels are more than 50 years old. Recent events in some tunnels like the CA/T in Boston, MA and also the Hanging lakes in CO have made tunnel inspections a priority for tunnel owners. After the fatal incident in Boston, the National Transportation Safety Board, recommended to FHWA to develop a National Tunnel Inspection Standards. This paper will present the status of ongoing FHWA activities to address the NTSB recommendation.

09-70 3:35 PM**Data Fusion of Bridge Inspection Data using Learning Algorithm**

Amin Hammad and Behzad M. Darbani, Concordia Institute for Information Systems Engineering, Concordia University, Montreal, QC, Canada

Evaluation of bridge conditions is done by periodical visual inspection or Nondestructive Testing (NDT) methods. Interpreting inspection data from different sources combined with bridge properties, and inferring a condition rating can be difficult. This paper presents a method for dealing with inspection data, when various visual, destructive and nondestructive inspection methods are used. A learning algorithm is used to fuse inspection data and link it to other bridge properties including traffic volumes, bridge type and age. The algorithm probabilistically evaluates bridge condition ratings based on available data. The proposed method is applied on set of real inspection data from Alberta Transportation, Canada to automatically evaluate bridges.

ACCELERATED BRIDGE CONSTRUCTION

Time: 1:30-3:45 PM

Room: 304/305

Chair: Lisle E. Williams, P.E., PLS, Consultant, Coraopolis, PA

09-71 1:30 PM**A Precast Bridge System for Rapid Construction Applications**

Bruce Campbell, Parsons, Southfield, MI; Martin Furrer, Parsons, Chicago, IL

Rapid bridge construction techniques are being used more frequently to limit the impacts to users of the transportation systems and improve durability. The paper will present the detailing of the design for rapid bridge construction technologies to meet the unique needs of the state of Michigan and the capabilities of local fabricators and will highlight construction lessons learned in the field and their application to future designs.

09-72 1:55 PM**Road over I-84; Piecing it Together**

Michael Arens, Michael Baker Jr., Inc., Salt Lake City, UT

The Riverdale Road over I-84 Bridge in Riverdale, UT required replacement in conjunction with roadway widening and upgrading the interchange from a diamond to a SPUI. Riverdale Road is a high density retail area. In order to reduce the construction impact to the area, the Utah Department of Transportation (UDOT) implemented Accelerated Bridge Construction (ABC). Several innovative solutions were implemented including multiple prefabricated elements and non-composite concrete deck panels.

09-73 2:20 PM**Design/Build of Bridge for Interstate Storage & Pipeline**

William Castle, W.J. Castle, PE & Associates, P.C., Hainesport, NJ

The new NJ Transit Rail System bridge was prefabricated in two 8' wide sections and designed for HS-25 loading. Each abutment foundation was constructed of a steel cap beam supported by Chance Helical Piles attached with specialized brackets. The bridge sections were set into place and assembled within two hours while the metal deck pans, reinforcing steel, and concrete deck were placed in one working day. The entire construction portion of the project was completed within sixty days for a total cost of \$270,000.

09-74 2:45 PM**Accelerated Bridge Construction Approach Keeps Tappan Zee Bridge Open**

Mohammad Shams and Kenneth Standig, HDR, New York, NY

The 53-year-old Tappan Zee Bridge is a 3-mile long crossing of the Hudson River, located 13 miles north of New York City. Under the current \$147 million project, the concrete deck of the outer four lanes of the bridge will be replaced for a length of about 2.5 miles using a prefabricated superstructure system to minimize traffic disruption for the 140,000 vehicles that cross the bridge daily.

09-75 3:10 PM**Move the Bridge with Post-Tensioning Devices**

Jimin Huang, HDR Engineering Inc., Tampa, FL

Large construction equipment, such as big cranes, launching trusses, and Self-Propelled Modular Transports (SPMT) have been used to move structural components or entire superstructures from off site locations to their final positions. However, this equipment is generally very expensive and sometimes difficult to find and operate. This paper investigates the use of simple and easy-to-use post-tensioning devices to move bridge superstructures in certain situations that can easily push or pull a structure into its final position.

BRIDGE REHABILITATION 2

Time: 1:30-3:45 PM

Room: 406

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

09-76 1:30 PM**Structural Analysis of the Pulp Mill Covered Bridge**

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

The focus of this paper will be the analysis and rehabilitative design for this unique covered bridge in Vermont. A 3-D computer model of the bridge was utilized for the structural analysis, which took into consideration the complicated load sharing interaction of the bridge's four arches and three trusses based on their unique geometrical rigidities and stiffness. The Pulp Mill Covered Bridge is one of six remaining double-barrel covered bridges in the country and design is ongoing for its rehabilitation.

09-77 1:55 PM**Emergency Pier Repairs to the Kinney Truss Railroad Bridge, Colchester, New York**

Michael Marks, EIC Group LLC, Fairfield, NJ

The Kinney Truss Bridge constructed in 1890, owned by the NY Department of Environmental Conservation and Second Bruno Corporation carries an access road across the Beaver Kill in Colchester, Delaware County, NY. This presentation will discuss the emergency inspection and rapid rehabilitation design and construction of this historic structure.

09-78 2:20 PM**Carnegie Interchange Rock Buttress Remediation**

Dan Martt and Gene Lipovich, American Geotechnical & Environmental Services, Inc., Canonsburg, PA

During the initial construction in 1968 of Interstate 79 at the proposed Carnegie Interchange west of Pittsburgh, it was discovered that the piers on the north side of Robinson Run had moved laterally 6 to 8 inches, although remaining essentially plumb. This presentation will describe the remediation measures used to stabilize the slopes and maintain the structural integrity of the overpass bridges.

09-79 2:45 PM**Rehabilitation of the 31st Street Bridge**

Donald Marburger and Sean Hart, P.E., Baker Engineers, Moon Township, PA;
Jeffrey Clatty, Pennsylvania Department of Transportation, Bridgeville, PA

The 31st Street Bridge is a 28-span steel structure comprised of 25 two-girder, floorbeam, stringer spans and 3 arch spans. This paper will discuss the main rehabilitation items focusing on unique elements such as the plating of the steel arches, context sensitive design issues including the re-use of the existing iron pedestrian railings, new aluminum pedestrian railings to mimic the re-configured existing iron railings, use of the Cal-trans type roadway barrier, and replacement of 4 spans and one steel bent.

09-80 3:10 PM**Rehabilitation of Route 50 Drawbridge Ocean City, MD**

Patrick O'Neill and Scott Reynolds, Hardesty & Hanover, LLP, Annapolis, MD

The Ocean City Drawbridge on Route 50, experiences approximately 4000 openings a year and carries an ADT of 24,000. The original structure was built in the 1940's with the movable span consisting of a dual leaf bascule bridge comprised of a girder, floorbeam, stringer system with an open grid steel deck supported by purlins. This paper presents how an integral relationship between the designer and contractor can render an effective solution to critical defects in a short period of time with minimal impact to the public.

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The 2009 IBC Exhibit Hall has moved to larger space in the David L. Lawrence Convention Center, in HALL B. We can now accommodate even more displays than ever before—heavy equipment, active displays and super-sized exhibits and our brand new Mini-Theatres. With more space than ever to accommodate additional features, the IBC Exhibit Hall is the place to be. In addition to more than 175 Exhibits, the Featured Agency, PennDOT, is prominently featured in the center of the Exhibit Hall, along with numerous enhancements for your enjoyment. The Mini-Theatres provide Exhibitors with an opportunity to step out from their Exhibit booth and present additional information about their products & services—a separate schedule of presentations can be found alongside the listing of all other presentations.

The Exhibit Hall is open:

- Monday: 11:00 AM - 7:00 PM, featuring lunch (11:30 AM-1:30 PM) and reception (5-7 PM)
- Tuesday: 11:00 AM - 5:00 PM, concession lunch sales available
- Wednesday: 8:00 AM - 1:30 PM, featuring lunch (11:30 AM-1:00 PM)

Coffee breaks, when scheduled, will be located throughout HALL B.

Thanks to all of our returning Exhibitors, and to our new Exhibitors, too! The following is an alphabetical listing of all Exhibitors as of June 1, 2009.

A.D. Marble & Company.....Booth: 304

Contact: Tiffani Armstead
Phone: 484-533-2500
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Website: www.admarble.com

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Acrow Corporation of AmericaBooths: 311/313

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Phone: 201-310-9034
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AECOMBooth: 427

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AI Engineers Inc.Booth: 305

Contact: Shanila Aslam
Phone: 860-635-7740
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E-mail: SASLAM@aiengineers.com
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American Composites Manufacturers Association.....Booths: 702/704

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American Shotcrete AssociationBooth: 114

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Website: www.Shotcrete.org

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AST/Adhesive Systems Technology Corp.....Booth: 107

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Beaufort / Strand7 PTY LtdBooth: 507

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Bentley SystemsBooths: 703/705

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Bridge design & engineering magazineBooth: 607

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Bridge Grid Flooring Manufacturers AssociationBooth: 710

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Bridon InternationalBooth: 112

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CAE Associates Inc.....Booth: 213

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Campbell Scientific, Inc.Booth: 315

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Cargill - SafeLaneBooth: 813

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 Fax: 570-546-2415
 E-mail: mstachowicz@dsa-ltd.com
 Website: www.dsa-ltd.com

Dynamic Surface Applications, Ltd (DSA) is the manufacturer of the Thorma-Joint® asphaltic plug joint system and the installer of a variety of maintenance and safety products including Thorma-Joint and the Imprint® surfacing system.

E.T. Techtonics Inc.Booth: 814

Contact: Eric Johansen
 Phone: 215-925-8237
 Fax: 215-592-7620
 E-mail: etteric@aol.com
 Website: www.ettechtonics.com

E.T. Techtonics, Inc., located in Philadelphia, PA, specializes in the design and construction of lightweight maintenance-free fiberglass pedestrian bridges. Started in 1987, the company was in the research and development phase from 1987-1993 to develop the bridge system. To date it has sold over 500 fiberglass bridges worldwide.

Earthquake Protection Systems, Inc.Booth: 817

Contact: Anoop Mokha
 Phone: 707-644-5993
 Fax: 707-644-5995
 E-mail: anoop@earthquakeprotection.com
 Website: www.earthquakeprotection.com

Earthquake Protection Systems is the world's leading manufacturer of seismic isolation bearings. Our Friction Pendulum bearings are used in the world's largest and most critical seismic isolation applications. The new Triple Pendulum bearing provides the best seismic performance available in seismic isolation at a lower installed cost.

EnerpacBooth: 735

Contact: Patrick Gengler
 Phone: 414-247-5333
 Fax: 262-781-1028
 E-mail: patrick.gengler@enerpac.com
 Website: www.enerpac.com

Enerpac, the global leader in high force hydraulic solutions, is exhibiting integrated systems for bridge building and rehabilitation. Whether you are constructing a signature bridge across a deep valley or lifting a national landmark for seismic retrofit, we will supply the high-force hydraulic solutions you need. Enerpac's broad line of standard and customized products offers the benefits of safety and efficiency to applications where high forces are required to get the job done.

Epoxy Interest Group of CRSIBooth: 400

Contact: David McDonald, Managing Director
 Phone: 847-517-1200
 Fax: 847-517-1206
 E-mail: info@epoxyinterestgroup.org
 Website: www.epoxyinterestgroup.org

Established in 2007, The Epoxy Interest Group (EIG) was formed to promote the use and advance the quality of epoxy-coated reinforcing steel. A special interest group of the Concrete Reinforcing Steel Institute, the EIG produces materials to promote, educate and support the use of epoxy-coated rebar in concrete construction.

Erdman Anthony.....Booth: 829

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 Phone: 412-494-0505
 Fax: 412-494-0707
 E-mail: zimmovanb@erdmananthony.com
 Website: www.erdmananthony.com

Erdman Anthony has provided bridge engineering for more than 50 years to major transportation agencies throughout the eastern United States. We offer a full range of services, including structural design, highway design, H&H design, and railroad coordination. Overall, our core businesses include transportation, civil, facilities, geospatial, and construction services.

Eriksson Technologies, Inc.Booth: 301

Contact: Roy Eriksson
 Phone: 813-989-3317
 Fax: 813-989-0617
 E-mail: eriksson@LRFD.com
 Website: www.lrfd.com

Eriksson Technologies, Inc. develops and supports prestressed concrete and bridge engineering software; conducts technical training; and provides engineering support services for precast fabricators, including shop drawing preparation.

Euclid Chemical Company, The.....Booth: 818

Contact: Steve Scarpinato
 Phone: 800-862-2667
 Fax: 815-522-2323
 E-mail: sscarpinato@euclidchemical.com
 Website: www.euclidchemical.com

The Euclid Chemical Company is a leading manufacturer of polymer bridge deck overlay systems, epoxy adhesives and coatings, concrete and masonry admixtures, curving and sealing compounds, cementitious and epoxy grouts, joint fillers and sealants, as well as a complete line of concrete repair and restoration materials. These products are available world wide.

FHWA Long-Term Bridge Performance ProgramBooth: 727

Contact: Krystal Smith
 Phone: 732-451-7198
 E-mail: smithkr@rci.rutgers.edu
 Website: www.fhrc.gov/ltbp/index.htm

In the United States, the stewardship and management of more than 590,000 bridges are ongoing planning, operational, maintenance, and economic challenges faced by Federal, State, and local transportation agencies.

To help overcome these challenges and foster the next generation of bridge and bridge management systems, in April 2008, the Federal Highway Administration's (FHWA's) Office of Infrastructure Research and Development launched the Long Term Bridge Performance (LTBP) Program, a major new strategic initiative designated as a flagship research project. The LTBP program is intended to be a 20-year undertaking, with the global objective of collecting scientific quality data from the Nation's highway bridges, as critical node-points of the highway transportation network. The data and information collected in this program will provide a more detailed and timely picture of bridge health, improve knowledge of bridge performance, and ultimately promote the safety, mobility, longevity, and reliability of the Nation's highway transportation assets.

Funding for the program was included in legislation for surface transportation enacted by the U.S. Congress in 2005: the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

Figg Engineering Group.....Booth: 734

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FIGG specializes in bridge design and construction engineering and management. Celebrating over 30 years of Creating Bridges as Art® for our customers with more than 300 awards for innovation, economy and aesthetics. Our focus on bridges allows us to create landmarks that incorporate function, sustainable design and beauty to enhance the quality of life for communities across America

FRACO USA Inc.Booth: 227

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 E-mail: jacques.laine@fraco.com
 Website: www.fraco.com

Established in 1991, Fraco is one of the early pioneers in the North American mast climbing industry. Those years of experience have led Fraco to develop a high level of flexible quality products and an expertise that exceeds our clients expectations throughout the marketplace. Constant innovation and close customer relationships have cemented Fraco's reputation as a leader in the North American mast climbing industry. Our manufacturing presence in other international markets expands this footprint to a global level.

Freyssinet, Inc.Booth: 418

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Freyssinet offers value added products and services to the civil engineering industry including: Multi-Strand and Thread Bar Post-tensioning Systems, Stay Cable Systems, Suspension Bridge Cables and Hangers, Expansion Joints, Bearings, Structural Dampers & Seismic Devices, Structural Repair/Strengthening, Barrier Cables, Monitoring Systems & Services, Heavy Lifting / Moving

Fyfe Company LLCBooth: 302

Contact: Julio Sanchez
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 E-mail: julio@fyfeco.com
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Fynite Solutions & Clark Testing Group.....Booth: 402

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 E-mail: sreagan@clarklabsllc.com
 Website: www.clarktestinggroup.com

Clark Testing Services has been in the Powertrain testing business for over 50 years. Over that time CTS has tested products ranging from small components such as starters and air motors to transmissions and axles in excess of 2000 horsepower.

G.W.Y., Inc.....Booth: 811

Contact: Gene Mitchell
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 Website: www.gwyinc.com

G.W.Y., Inc. is North America's largest supplier of both Tone and Makita structural bolt installation tools. G.W.Y. has a full line of electric wrenches and hand wrenches for all installation methods (Calibrated Wrench, DTI, TC Bolts & Turn of Nut.) G.W.Y. sells, rents, services and carries

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Greenman-Pedersen, Inc./Instrument Sales, Inc.Booth: 700

Contact: Pat Marazzi
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 Website: www.sgpinstrumentsales.com

Greenman-Pedersen, Inc. is a top national engineering/architectural design and construction firm involved on major projects throughout the U.S. and overseas since 1966. Provides many multi-discipline services to various industries. Instrument Sales, Inc. a GPI Company specializes in corrosion instruments and other equipment plus safety equipment. Underwater Engineering Services a GPI Company specializes in power plant maintenance and marine construction. Acquired in 2006 CCC&L a (new) GPI Company specializes in expert witness testimony, coating conditions survey, including a full service laboratory.

Greenstone Inc. of DelawareBooth: 205

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Greenstone Inc. is a GREEN building material company, manufacturing and distributing green products for the building and construction industry. Greenstone will be exhibiting MagneLine, a multi-purpose polymer cement mortar used for seismic retrofit of bridge piers and decks. MagneLine can also be used for concrete repair and as anti-corrosion coating.

Harcon CorporationBooth: 534

Contact: Harry Stoltzfus
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Harcon Corporation provides Bucket Boats, Bridge Trackers and rigging services on bridge inspection and repair projects. Since 1988, we've eliminated the need for lane closures and track time on thousands of structures nationwide.

Hardesty & Hanover, LLPBooth: 701

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 Website: www.hardesty-hanover.com

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Hayward Baker Inc.....Booth: 231

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 Website: haywardbaker.com

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High Steel Structures, Inc.Booth: 206

Contact: Steven Bussanmas
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 Fax: 717-399-4102
 E-mail: sbussanmas@high.net
 Website: www.highsteel.com

High Steel Structures has been delivering quality to its customers for over 75 years. Founded in 1931, High Steel is one of the largest fabricators of bridge structural steel in the United States, with more than one million tons of bridge steel fabricated over the past 20 years.

Hill & Smith Inc.Booths: 215/217

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 E-mail: gary.lallo@hillandsmith.com
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Manufacturer of permanent and portable steel barriers

Hilman RollersBooth: 413

Contact: Jeff Hill
 Phone: 732-462-6277
 Fax: 732-462-6355
 E-mail: sales@hilmanrollers.com
 Website: www.hilmanrollers.com

Hilman Rollers are an essential component for bridge construction projects. Whether used in the casting yard, built into segment launching equipment, moving entire bridge spans, or placing large castings - whatever the heavy load moving task - Hilman Rollers are the right tool to get the job done quickly, efficiently, and safely.

HNTB Corporation.....Booth: 827

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HNTB was founded in 1914 with a strong focus on long-span and complex bridge inspection, design and rehabilitation. Today, more than 3,600 employees and 63 design offices nationwide continue this proud tradition as we provide comprehensive engineering, architecture and planning services to clients throughout the United States.

Houston StructuresBooth: 207

Contact: Mike Ulven
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 Website: www.ulvencompanies.com

Houston Structures Incorporated is a supplier of specialty forged, cast, machined and fabricated structural support products for the infrastructure industry. Located in Oregon, Houston Structures products supplied include open and closed wire rope and strand sockets, wire rope and strand assemblies, open and closed bridge sockets, anchor sockets, turnbuckles, and specialized cable castings and forgings.

HRV Conformance Verification Associates, Inc.....Booth: 505

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 Website: www.hrvinc.com

HRV provides a comprehensive range of services worldwide in materials and construction inspection, including steel, concrete, coatings, mechanical, and electrical. Serving the public and private sector, HRV is a leader in quality assurance, engineering consulting and expediting for the bridge/highway, water/wastewater, power, pressure vessel and commercial construction markets.

Hydro-Technologies, Inc.....Booth: 222

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 E-mail: eliberati@hughesgrp.com
 Website: www.hydro-technologies.com

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InspectTech.....Booth: 535

Contact: Jeremy Shaffer, Ph.D.
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InspectTech provides easy to use software solutions that streamline the inspection process from onsite to back-office. The BridgeInspectT software suite can be quickly customized for each client and offers significant time-savings to inspectors and managers. The bridge inventory and management software includes cost estimates, GIS interface, full searching, custom reports, maintenance, and scheduling modules. The standalone inspection software significantly enhances the inspection process through customized forms with pick lists, coding manuals, and digital picture integration. InspectTech works with governments, private owners, and engineering consulting companies to meet their specific software needs.

Insulfoam LLC.....Booth: 330

Contact: Nico Suttmoller
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 Fax: 253-383-7100
 E-mail: jjackson@insulfoam.com
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Jancy Engineering, Inc.Booth: 424

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Jancy Engineering Inc., founded in 1957, is the market leader in the design, manufacture and sales of portable magnetic based drill presses, "Slugger" annular cutters, portable metal cutting circular saws, and the marketing of associated metal working equipment. "Slugger" is the most recognized brand, worldwide, of annular cutters and drills.

Klaas Coatings (NA) LLC.....Booth: 828

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Klaas Coatings is the market leader in Silicone Resin coating system for construction in Australia. Our products deliver the longest possible re-paint interval which saves costs over the long term.

KTA-Tator, Inc.....Booth: 718

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 E-mail: srice@kta.com
 Website: www.kta.com

KTA-Tator, Inc. (KTA) is a consulting engineering firm founded in 1949. KTA provides coating consulting and construction inspection services, steel fabrication inspection services, laboratory testing and coating failure analysis, and distributes inspection and monitoring equipment. An independent and unbiased philosophy has permitted KTA to provide expert professional services to its clients for 60 years.

LARSA Inc.....Booth: 714

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Lehigh University - ATLSS Research CenterBooth: 428

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The Center for Advanced Technology for Large Structural Systems (ATLSS) was established in 1986, and is Lehigh's internationally respected center for engineering research and education addressing the civil and marine infrastructure for Pennsylvania and the nation. This mission includes Pennsylvania's bridge and highway structures, and the contributions of research, education and technology transfer to enhancing their design and performance. ATLSS has extensive experience in laboratory and field instrumentation, testing, and fatigue and strength evaluation of bridges.

Loadtest, Inc.....Booth: 711

Contact: John Hayes
 Phone: 352-378-3717
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 E-mail: john@loadtest.com
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Maguire Group Inc.....Booth: 725

Contact: Louis D. Rocchini, P.E.
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 Website: www.maguiregroup.com

Maguire Group was founded in 1938 and has grown to become one of the nation's leading architectural, engineering and planning firms. With over 200 professionals and support staff located throughout the Northeast/Mid-Atlantic and Florida, Maguire provides a full complement of services. Maguire's transportation solutions provide immediate benefits and flexibility to handle tomorrow's transportation growth and innovations. Maguire is proud of its reputation that is a clear manifestation of the quality of our work, the experience and expertise of our staff, the creativity of our transportation solutions, and our responsiveness to clients needs. Our responsiveness, innovation, and creativity is demonstrated in our NASTO award winning Providence River Bridge, as well as the multitude of projects we have undertaken throughout the years.

Marion Hill Associates, Inc.....Booth: 713

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Marion Hill Associates, Inc. (MHA) specializes in commercial diving, and marine construction projects. MHA has worked throughout the United States since 1980 and has been involved extensively in the cooperative effort of divers, construction teams, and aquatic biologists providing quality service and performance in this highly specialized field. The MHA team routinely handles unique problems that are encountered in the underwater construction environment.

MATECH CorpBooth: 328

Contact: Marybeth Miceli
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MATECH Corp develops metal fatigue measurement & monitoring technologies. MATECH's "Electrochemical Fatigue Sensor" (EFS) System helps owners more effectively 1. prioritize repairs to crack which are actively growing; 2. determine whether growing cracks exist on their bridges; and 3. verify the efficacy of repairs and retrofits, immediately and prior to widespread implementation.

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MDX SoftwareBooth: 506

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

Michael Baker Jr., Inc.....Booth: 419

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 E-mail: jcampbell@mbakercorp.com
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Bridges are complex components of our transportation infrastructure. The planning, design, construction and maintenance of these integral structures require experience, innovative approaches, and reliable project delivery--all aspects of Baker's value-based bridge services. Baker--Creating value by delivering innovative and sustainable solutions for infrastructure and the environment.

Michelman - Cancelliere Iron WorksBooth: 736

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MISTRAS Group, Inc.....Booth: 322

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MISTRAS Software & Systems 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. Their RC&A division is collaborating with universities and industry for advancing AE sensor technology.

Monotube Pile CorporationBooth: 605

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National Steel Bridge Alliance.....Booth: 415

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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 CorporationBooth: 312

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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 ServicesBooth: 724

Contact: Mike Forbes
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 E-mail: mforbes@ndtg.net
 Website: www.nondestructivetesting.com

Non Destructive Testing Services provides bridge fabrication inspections for steel and concrete prestressed bridges, NDT inspections on existing bridges, and bridge paint inspections. NDTs has developed and performs a complete sign structure inspection program. NDTs's mechanical laboratory provides weld procedure qualifications, bridge bearing pad testing, and numerous other testing services.

North American Galvanizing Co.....Booth: 324

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The Company's galvanizing and coating operations are composed of ten facilities located in Colorado, Kentucky, Missouri, Ohio, Oklahoma, Tennessee and Texas. In addition, the Company is constructing a new hot dip galvanizing plant in Benwood, West Virginia which is expected to be operational in late April, 2009.

NX Infrastructure.....Booth: 219

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NX Infrastructure manufactures NX-SCR™, a carbon steel core rebar product clad with a stainless steel outer layer, and NX-SCD™, a stainless clad dowel bar. Both products possess corrosion resistance equivalent to solid stainless steel and Grade 60 equivalent mechanical properties. They offer the lowest life cycle cost in the industry.

Olson Engineering, Inc.Booth: 214

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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-USABooth: 602

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OSMOS USA is a Structural Health Monitoring Company for bridges, buildings, dams, towers, Railroads, etc. We provide continuous readings on your monitor using a web-base system at the site. We also provide warning and then alarms so that observation need only be done when an event takes place.

Palmer EngineeringBooth: 417

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Palmer Engineering is a full service engineering design and consulting firm with offices in seven states. Palmer specializes in challenging transportation projects featuring highway and bridge design, inspection, and related services. We are committed to the needs of our clients; let us utilize 39 years of experience to design your engineering solution.

Pennoni Associates Inc.....Booth: 211

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Pennoni Associates is a multi-disciplined consulting engineering firm with 20 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.

Pickering, Corts & Summerson, Inc.Booth: 604

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PiereseachBooth: 822

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 E-mail: stanagee@piereseach.com
 Website: www.piereseach.com

Piereseach manufactures concrete pier accessories, Centraligner pier sleds, Hijacker pier bolsters, Quick-Lock 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.

Polyset Company.....Booth: 816

Contact: Benny Ziotnick
 Phone: 518-664-6000
 E-mail: benz@polyset.com
 Website: www.polyset.com

Polyset Company is a technology driven materials company with a philosophy of designing the resin system around the need. To establish a product system which will maximize performance

within the cost parameter of the project.

Polyset is a market leader within the product areas of focus. A leader in urethane adhesive systems and corrosion resistant primers for many years. Additionally, we are the technology leader in cationic chemistry. Much of our new product development is based on new proprietary advanced materials, catalysts, and associated formulations that deliver unsurpassed functionality. In these endeavors we focus on wafer level manufacturing and interconnect assembly incorporating both electronic and optical packaging material. Additionally, we have developed novel 100% solid coating formulations for the coil coating industry that allows for the elimination of solvent based coating. Polyset provides contract manufacturing services of resins, prepolymers, adhesives, and related components for diverse companies including Fortune Fifty corporations.

Portland Cement AssociationBooth: 728

Contact: Susan N. Lane
Phone: 202-408-9494
Fax: 202-408-0877
E-mail: slane@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.....Booth: 306

Contact: Rick Swansbro
Phone: 815-873-3868
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.

Prestressed Concrete Association of PennsylvaniaBooth: 716

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.

Pro-Bel Group of Companies.....Booth: 235

Contact: Gerry Lachapelle
Phone: 800-461-0575
Fax: 905-427-2545
E-mail: gerry@pro-bel.ca
Website: www.pro-bel.ca

Pro-Bel Group of Companies and Sky Man International Supply Both Standard, custom and engineered solution for any rigging requirements for bridge work. Permanent installation of gantrys, horizontal and vertical cable restraint, harness, lanyards, safety audits and training can also be offered.

Proto Manufacturing, Inc.Booth: 819

Contact: Michael Brauss
Phone: 313-965-2900
Fax: 519-737-1692
E-mail: pparent@protoxd.com
Website: www.protoxd.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.

Quikrete Companies, The.....Booth: 116

Contact: Dennis Bittner
Phone: 404-634-9100
Fax: 404-841-0289
E-mail: dbittner@quikrete.com
Website: www.quikrete.com

The QUIKRETE® Companies are the largest manufacturers of packaged concrete in the United States and an innovative leader in the heavy highway industry. With more than 88 manufacturing facilities in the United States, Canada, Puerto Rico and South America, The QUIKRETE Companies have unsurpassed product distribution and depth.

R.J. Watson, Inc.Booth: 401

Contact: Marc D. Stafford
Phone: 716-691-3301
Fax: 716-691-3305
E-mail: mdstafford@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.....Booth: 425

Contact: Beth W. Newbold
Phone: 412-262-4511
Fax: 412-262-6188
E-mail: sales@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.

Reinforced Earth Company, TheBooth: 416

Contact: Alicia Olson
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Fax: 703-821-1815
E-mail: info@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 Depart-

ment of Transportation and privately owned projects, we perform all duties associated with our jobs from sales, marketing, engineering, design, supply and construction assistance.

Remote Access TechnologyBooth: 729

Contact: Michel Okoh
Phone: 902-488-4405
E-mail: Michel@rat.ca
Website: www.rat.ca

Remote Access Technology is North America's premier (Rope Access) Inspection, Maintenance and Repair Service Contractor. Also known as RAT, Remote Access Technology has been servicing the Transportation (Bridge) sector for over 14 years and has been involved in various bridge rehabilitation and mega construction projects such as the iconic Confederation Bridge located in PEI Canada. The true benefits of Rope Access are realized when the cost to access the bridge is disproportionate to the inspection or repairs. Our integrated mechanism for difficult access and service delivery serves to reduce downtime, mitigate critical path work & provide asset integrity management solutions where it makes good business sense. Through the utilization of composite teams made up of multi-discipline IRATA & SPRAT certified technicians, we can achieve more with less. For more information about our services visit us at: <http://www.rat.ca/services/transportation/>

Richard Goettle, IncBooth: 830

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E-mail: goettlerj@aol.com or rpagone@goettle.com
Website: www.goettle.com

Design/Build specialty deep foundation and retaining wall contractor, specializing in various cofferdams, shoring systems, and deep foundation designs for bridges, power plants, and buildings.

Roads & Bridges MagazineBooth: 314

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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, LTDBooth: 730

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E-mail: jarchambault@roctest.com
Website: www.roctest.com

Roctest designs, manufactures and markets sensors and high-precision measuring instruments for the civil engineering market and applications in the energy, healthcare and process control industries. We are recognized for our leading-edge technology, the quality of our technical expertise and our product development capabilities for challenging and demanding environments.

Salit Specialty RebarBooth: 824

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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, LLCBooth: 329

Contact: Lubin Gao
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E-mail: lgao@sassuite.com
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: 203

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: 712

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

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SensrBooth: 303

Contact: Chris Kavars
Phone: 563-245-3750
Fax: 760-418-9414
E-mail: ck@sensr.com
Website: www.sensr.com

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Sherwin-Williams.....Booth: 310

Contact: Customer Service
 Phone: 800-524-5979
 Fax: 440-826-1989
 E-mail: sherwin@ultlead.com
 Website: www.sherwin-williams.com/protective

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Shotblast, Inc.Booth: 741

Contact: Tom Rupnicki
 Phone: 610-494-1330
 Fax: 610-494-1870
 E-mail: tom@shotblastinc.com
 Website: www.shotblastinc.com

Shotblast, Inc. provides the following concrete preparation services: Shotblasting, Scarifying, Diamond Grinding. Shotblasting provides superior adhesion for concrete and polymer overlays on bridge deck surfaces.

SIKA Corporation.....Booth: 603

Contact: David White, P.E.
 Phone: 201-933-8800 ext. 6678
 Fax: 201-933-6225
 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, protective coatings and industrial flooring.

Silica Fume Association.....Booth: 434

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 Phone: 412-299-7229
 Fax: 412-299-7238
 E-mail: tony@silicafume.org
 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.

SimuliaBooth: 204

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 Website: www.simulia.com

SIMULIA is the Dassault Systèmes brand that delivers an extensive portfolio of Realistic Simulation solutions including the Abaqus product suite. By building on established technology, respected quality, and superior customer service, SIMULIA makes realistic simulation an integral business practice that improves product performance, reduces physical prototypes, and drives innovation.

Sisgeo SRLBooth: 118

Contact: Mauro Quieti
 Phone: 39 02 95764130
 Fax: 39 02 95762011
 E-mail: info@sisgeo.com
 Website: www.sisgeo.com

Sisgeo is one of the world leader for manufacturing geotechnical with a complete range of instruments for geotechnical, structural and environmental monitoring.

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Sisgeo provides technical assistance for instrument installation and maintenance.

Skala, Inc.Booth: 113

Contact: Todd Kearns
 Phone: 775-747-2244
 Fax: 775-996-7128
 E-mail: mail@teamskala.com
 Website: www.skilagroup.com

Skala specializes in bridge inspection and maintenance using rope access throughout North America. Rope access capabilities allow Skala's FHWA-certified bridge inspectors to work on structures otherwise inaccessible or too expensive to reach using other means.

Snap-TiteBooth: 230

Contact: Bruce Larson
 Phone: 800 233 1305
 Fax: 866 580 8991
 E-mail: brucel@isco-pipe.com
 Website: www.culvert-rehab.com

The Snap-Tite Lining System is ideal for failing metal and concrete culverts. Today there's an economical, no-dig solution with field-tested benefits, proving that rehabilitation is a better solution with the Snap-Tite Culvert Lining System.

Sofis Company, Inc.Booth: 601

Contact: William J. Sofis, Jr.
 Phone: 724-378-2670
 Fax: 724-378-3719
 E-mail: wsofis@sofiscompany.com
 Website: www.sofiscompany.com

Sofis Company, Inc. has been a General Contractor for 50 years. We are DOT prequalified. 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.

Soprema In.....Booth: 317

Contact: Rick Allen
 Phone: (814) 449-8801
 Website: www.spg-antirock.com

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Sound Fighter Systems, LL.....Booth: 331

Contact: Matt Harding
 Phone: 412-279-1540
 Fax: 318-865-7373
 E-mail: mharding@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.

Specialty Diving, Inc.....Booth: 436

Contact: Marshall Whitmer
 Phone: 985-542-8770
 Fax: 985-345-7602
 E-mail: marshallmdw@aol.com
 Website: www.sdiver.com

Specialty Diving offers expertise in the inland and offshore commercial diving industry. Services include: inspections, maintenance and repairs, with a complete range of underwater and topside services.

Splice Sleeve North America, Inc.....Booth: 719

Contact: Stan Kuniki
 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 ACI-318 and AASHTO for type 2 performance. Also rated 18-KSI in NCHRP 10-35, a 5 Million cycle fatigue test.

SSI/Dow Corning.....Booth: 218

Contact: Scott Fowler
 Phone: 918-587-5567
 Fax: 918-586-4910
 E-mail: scott.fowler@ssicm.com
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Stagnito MediaBooth: 326

Contact: Ned Bardic
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 E-mail: nbardic@stagnitomedia.com
 Website: www.stagnitomedia.com

Stagnito Media, the nation's leading resource for civil and structural engineers, has recently launched REBUILDING AMERICA'S INFRASTRUCTURE — a magazine and website dedicated to engineering for bridges and roads. Stagnito Media publishes CE NEWS, and STRUCTURAL ENGINEER magazines, and encompasses an integrated media platform including events, electronic media and custom media.

Stirling Lloyd Products, Inc.....Booth: 706

Contact: Simon Greensted
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 Fax: 860-666-5106
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Structal Bridges.....Booth: 437

Contact: Dominique Tetreault
 Phone: 418-683-2561
 Fax: 418-688-8512
 E-mail: dominique.tetreault@canam.ws
 Website: 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, LLCBooth: 412

Contact: Monica Svaty
 Phone: 316-634-1396
 Fax: 316-631-2995
 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.

Suzhou Dafang Construction Vehicle.....Booth: 202

Contact: Lan Mond
 Phone: 212-845-9500
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 Website: www.szdf.com

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T - Wall Retaining Wall SystemBooth: 101

Contact: John Dallain
 Phone: 703-913-7858
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 E-mail: info@neelco.com
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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.

TY. Lin International.....Booth: 815

Contact: Connie McKibben-Bea
 Phone: 619.957.1670
 E-mail: Connie.bea@tylin.com
 Website: www.tylin.com

TY. Lin International is a globally-recognized, full-service infrastructure consulting firm that has been delivering superior solutions for more than 50 years. With a practice that is proudly rooted in the design of bridges, TYLI is ranked one of the top ten bridge design firms by Engineering News-Record.

TEREX.....Booths: 103/105

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 Fax: 409-491-2417
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Termarust Technologies.....Booth: 707

Contact: Wayne Senick
 Phone: 888-279-5497
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 E-mail: wsenick@termarust.com
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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.

Thyssenkrupp Safway, Inc.Booths: 318/319

Contact: Jerry Dolly
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 Fax: 518-381-4613
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 Website: www.safway.com

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TNO DIANA North AmericaBooth: 108

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 Website: www.midas-diana.com

Partners TNO DIANA and MIDAS IT seek to provide the engineering community with Finite Element Analysis tools to tackle any civil engineering problem. MIDAS CIVIL is a bridge specific design and analysis tool that is used around the world for bridges great and small. The System combines General Purpose Structural Analysis Features and Civil Engineering specific Structural Analysis Capabilities. It includes RC, Steel, PSC Bridge Design, Suspension and Cable-Stayed Bridge Analysis and other useful Civil Structure Analysis features such as Construction Stage

Analysis including Creep and Shrinkage, Pushover Analysis, Nonlinear Time History Analysis and Heat of Hydration analysis

Transpo Industries Inc.Booth: 406

Contact: John B. Karlson
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 Fax: 914-636-1282
 E-mail: jkarlson@transpo.com
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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.

TRC.....Booth: 323

Contact: Terry Maechler
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 E-mail: tmaechler@trcsolutions.com
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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 maintenance of multiple engineering design and analysis programs.

Trinity Highway Products, LLCBooth: 121

Contact: Gwendolyn Samuels
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 E-mail: gwen.samuels@trin.net
 Website: 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.

U.S. Bridge InternationalBooth: 225

Contact: Ian Howard
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 Fax: 740-439-7349
 E-mail: ianhoward@usbridge.com
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Unitex.....Booth: 503

Contact: Steve Raleigh

Phone: 947-747-2907

Fax: 609-207-6757

E-mail: sbpny@aol.com

Website: www.unitex.chemicals.com

Unitex creates and manufactures products for the repair and protection of concrete bridges. We have developed systems for: bridge deck overlays, epoxy machine grouting, low modulus epoxy repair mortars, injection epoxies, and NSF - certified and Green - Spec listed products. Unitex also provides onsite technical support and product application training.

Universal Scaffold Systems/Universal Mfg Corp.Booth: 429

Contact: Mike Bredl

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Fax: 724-452-0576

E-mail: mbredl@universalscaffold.com

Website: www.universalscaffold.com

Universal is a full line manufacturer and distributor of steel scaffolding, shoring and custom fabricated access equipment - Specializing in stair access units to the bridge industry with complete engineering and CAD layout services. Stair units can be erected on location or erected remotely and craned into position. Sales, rental and scaffold erection services are available.

Vector Corrosion TechnologiesBooth: 216

Contact: Chris Ball

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E-mail: chrisb@vector-corrosion.com

Website: www.vector-corrosion.com

Vector Corrosion Technologies provides award winning products and services for concrete corrosion protection. Our innovative solutions include: chloride extraction, ICCP, and an array of galvanic protection systems (embedded galvanic anodes, galvanic jackets and activated arc spray zinc metallizing). Vector also provides corrosion evaluation and mitigation of post-tension corrosion.

Viathor, Inc.....Booth: 430

Contact: Clark Verkler

Phone: 916-987-0246

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E-mail: vinfo@viathor.com

Website: www.viathor.com

Viathor, Inc. is dedicated to the development of top quality, user friendly, bridge design and analysis software. Our substructure program, VBent, is a fully interactive design tool for pier caps, columns and footings in integral (monolithic) and non-integral (drop-cap) piers. Our new superstructure tool, VBridge, integrates with VBent and designs reinforced or cast-in-place post-tensioned concrete bridges, and computes live load for any bridge configuration and support type.

W.J. Castle AssociatesBooth: 831

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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.

WavesinSolids LLC.....Booth: 226

Contact: Thom Hay

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Website: www.wins-ndt.com

WavesinSolids LLC, offers traditional nondestructive testing and advanced long range ultrasound and acoustic emission inspection products and services for the railroad, petrochemical, oil and natural gas, defense, aerospace, power generation and marine industries. Our field technicians provide professional Nondestructive Testing Services and follow-up technical reports that are clearly written and easy-to-interpret. Our engineers and scientists are actively engaged at the highest level of Research and Development to ensure that our clients receive tomorrow's technology today.

Westfall Company, Inc.....Booth: 606

Contact: Garland R. Westfall

Phone: 636-938-3113

Fax: 636-938-3120

E-mail: gwestfall@westfallcompany.com

Website: www.westfallcompany.com

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Wheeling Corrugating CompanyBooth: 410

Contact: Mike Benson

Phone: 304-234-2326

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E-mail: bensonmw@wheelingcorrugating.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".

Whitman, Requardt & Associates, LLPBooth: 738

Contact: Eric Meyer

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Established in 1915, Whitman, Requardt and Associates, LLP, a multi-disciplinary engineering, architectural, and planning firm, successfully serves both private and public sectors throughout the Mid-Atlantic. With a wide range of expertise readily available, the WR&A team confidently faces the most difficult design challenges. Offering a full spectrum of engineering, architectural, and planning services, WR&A has been recognized and awarded for creative solutions, innovative designs, and engineering excellence.

Williams Form EngineeringBooth: 223

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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.

WireCo World Group.....Booth: 300

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WireRope Works, Inc.Booth: 435

Contact: Bill Austin
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 E-mail: w.austin@wireropeworks.com
 Website: www.wireropeworks.com

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WSP SellsBooth: 823

Contact: Michael Mangione
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ZPMC / Busch IndustriesBooth: 731

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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.