

2006 EXECUTIVE COMMITTEE

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2006 CHAIRMAN'S MESSAGE



Kenneth J. Wright, PE
HDR Engineering, Inc.
2006 IBC General Chairman

As this year's General Chairman, I am pleased to welcome you to the 2006 International Bridge Conference in Pittsburgh, the "City of Bridges". The theme for the 23rd meeting of what has become the world's premier bridge conference is "Advancing Bridge Technology Globally". We have a strong international program that I trust will be both stimulating and educational.

On behalf of the Executive Committee, I urge you and your colleagues to attend as many of the technical sessions as possible. The conference begins with a Keynote session on Monday morning. We are pleased to have as our keynote speakers Mr. Malcolm Kerley, the Chief Engineer for the Virginia Department of Transportation; Mr. King Gee, from the Federal Highway Administration; and Ms. Carolann Wicks, the Secretary of Transportation from our 2006 featured state, Delaware.

The Keynote session will be followed by our Annual Awards Luncheon. The format for the awards presentation will be similar to that which debuted at the 2005 conference, in which a PowerPoint presentation highlighting the various award winners will be repeated throughout the duration of the luncheon. Please see the complete listing of this year's winners later in this guide, and refer to the special conference magazine that highlights the 2006 award winners.

I invite you to take advantage of some of the fine opportunities available during the Conference. There are special interest sessions available in specific areas of interest. We have three half-day seminars that you will find informative: Seismic Engineering; Accelerated Bridge Construction; and an ACI-developed seminar on FRP. We have approximately 120 exhibitors that will present state of the art engineering services and products

that may be of use in your daily business. Please take the time to visit with the exhibitors to learn about new technologies that you can apply in your daily design work. We will again sponsor a Tuesday afternoon bus tour that will focus on the ongoing rehabilitation of two major river bridges in the Pittsburgh area – one a large deck truss and the other a steel deck arch structure.

The technical program this year is again very strong and diverse. We offer papers on design, rehabilitation, construction and research. We have a number of papers with a truly international flavor including several from China, which will be the featured country for the 2007 International Bridge Conference. There will be a Chinese delegation attending this year's conference to survey the conference and develop some ideas on what they will present about their country's transportation system in 2007. Please make the delegation feel welcome at the conference as they prepare the 2007 IBC, scheduled for June 3-6, 2007 at the Pittsburgh Hilton.

I would like to offer a sincere thanks to all the IBC Executive Committee members that have given generously of their time and talents over the past year planning this conference. Their dedication and insights have made my job as the General Chairman very easy. Please seek out the committee members during the conference and share your thoughts on what you like about the conference, or what we could improve in the future. We value your input as we plan future conferences.

I look forward to meeting you during the Conference!

Kenneth J. Wright, PE
2006 IBC General Chairman

IBC HISTORICAL PERSPECTIVE

John A. Roebling Medal

Award for lifetime achievement in bridge engineering

2006 Charles Seim, PE., F. ASCE

- 2005 Dr. John E. Breen, The University of Texas at Austin
- 2004 William C. Brown, Brown Beech & Associates Ltd.
- 2003 Hiroyuki Fujikawa, Honshu-Shikoku Bridge Authority
- 2002 Jackson Durkee, C.E., PE., Consulting Structural Engineer
- 2001 James E. Roberts, California Department of Transportation
- 2000 Eugene C. Figg, Jr., PE., Figg Engineering Group
- 1999 Abba G. Lichtenstein, PE., Dr. Eng., A.G. Lichtenstein
- 1998 Dr. Man-Chung Tang, PE., T.Y. Lin International
- 1997 Dr. Christian Menn, Swiss Federal Institute of Technology
- 1996 Frank D. Sears, Modjeski and Masters, Inc.
- 1995 Dr. John W. Fisher, Lehigh University
- 1994 Dr. Jean M. Muller, J. Muller International
- 1993 Arthur L. Elliott, Consultant/California DOT
- 1992 Frank L. Stahl, Ammann & Whitney
- 1991 Herbert Rothman, Weidinger Associates
- 1990 T.Y. Lin, T.Y. Lin International
- 1989 Blair Birdsall, Retired/Consultant to New York DOT
- 1988 Carl H. Gronquist, Steinman, Boynton, Gronquist & Birdsall

George S. Richardson Medal

Award for a single, recent, outstanding achievement

2006 Dr. Donald White, Dr. William Wright, Michael Grubb for LRFD Unified Design Specifications for Steel Deck Girder Bridges

- 2005 GEFYRA S.A., Greece for the Rion - Antirion Bridge
- 2004 California DOT for the Al Zampa Memorial Bridge
- 2003 HNTB for the Leonard P. Zakim Bunker Hill Bridge
- 2002 The British Columbia Ministry of Transportation for the Lions Gate Bridge, Vancouver, British Columbia
- 2001 Rede Ferroviaria Nacional EP, Portugal for the Tagus River Suspension Bridge Rail Addition Project
- 2000 Ray McCabe, HNTB Corporation for the Storrow Drive Bridge
- 1999 Gerard Sauvageot, J. Muller International for the Confederation Bridge, Northumberland Strait, Canada
- 1998 Honshu Shikoku Bridge Authority for the Akashi-Kaikyo Bridge
- 1997 Virginia DOT, Parsons Brinckerhoff and Tidewater Construction Corp. for the George P. Coleman Bridge, Yorktown, Virginia
- 1996 John M. Kulicki, Modjeski and Masters, Inc. for Development & Approval, LRFD Design Specifications
- 1995 Michel P. Virlogeux, Designer, Bertrand Deroubaix, Project Manager for the Normandy Bridge
- 1994 Figg Engineering and Eastern Federal Lands Highway Div., FHWA for the Natchez Trace Parkway Bridge, Tennessee
- 1993 Colorado DOT for the Hanging Lake Viaduct, Glenwood Canyon, Colorado
- 1992 Washington State DOT for the Lake Washington Floating Bridge

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

Gustav Lindenthal Medal

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

- 2006 South Carolina DOT for the Arthur Ravenel Jr. Bridge**
- 2005 Compagnie Eiffage du Viaduc de Millau, Millau, France for the Viaduct of Millau
- 2004 The Pennsylvania Turnpike Commission for Mingo Creek Viaduct, Pennsylvania
- 2003 Alexandre Chan, for the President JK Bridge, Brazil
- 2002 Figg Engineers, Linda Figg, for the Broadway Bridge, Daytona Beach, Florida
- 2001 Oresund Fixed Link Bridge Project, Henrik Christensen, for the Oresundskorsortiet, Denmark
- 2000 GGB Highway & Transportation District, Celia Kupersmith for the Golden Gate Bridge
- 1999 Hawaii Dept. of Transportation, Kazu Hayashida for Interstate H-3 Windward Viaduct

Eugene C. Figg Jr. Medal for Signature Bridges

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

- 2006 T.Y. Lin International for the Dagou Bridge, Tianjin, China**
- 2005 Turtle Bay Museums and Arboretum on the River, Redding, California, for the Sundial Bridge at Turtle Bay
- 2004 Shanghai Lu Pu Bridge Investment Development Co., Ltd. for the Lu Pu Bridge, China
- 2003 Buckland & Taylor, Ltd. for the Rama 8 Bridge, Bangkok, Thailand
- 2002 Jiangsu Provincial Department of Communications for the Jiangyin Bridge, China

Arthur G. Hayden Medal

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

- 2006 BAA Gatwick for the Gatwick Pier 6 Airbridge**
- 2005 City of Greenville, South Carolina, for the Liberty Bridge
- 2004 City of Winnipeg for the Esplanade Riel Pedestrian Bridge, Canada
- 2003 Schlaich Bergermann & Partner for the Duisburg Inner Harbor Footbridge, Germany

ATTENDEE INFORMATION

Meeting Information

All IBC functions are located in the Hilton Pittsburgh. Please check individual listings in the program for specific locations and times for all technical sessions, seminars and social functions. Any changes in the program schedule will be posted or announced.

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

Registration

The IBC registration is located in the Kings Garden area of the Hilton Pittsburgh. Registration hours are as follows:

Sunday:	5:30pm to 7:30pm
Monday:	7:00am to 6:00pm
Tuesday:	7:00am to 5:00pm
Wednesday:	7:00am to 1:30pm

Registration Lists

Registrations received prior to May 31 have been compiled in the IBC PRE-REGISTRATION LIST, and is distributed free to all registered attendees.

An addendum to the registration list will be available Wednesday morning of the conference and reflects those attendees who registered after June 1 or on-site during the conference.

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

Message Board

As a service to Conference registrants, a Message Board will be located in the Kings Garden area of the Hilton Pittsburgh. The board will be manned by registration staff on June 12, 13 & 14. Messages will be retained until the end of each day.

IBC Exhibition

One of the main attractions of the Conference is the IBC Exhibit Hall. As you stroll through over 120 exhibits, you will be able to explore the latest technologies, products and services the bridge industry has to offer.

The IBC Exhibit Hall is located in Ballroom 1, the Ballroom Foyer, Kings Garden and the Boardwalk. You will be able to view the exhibits during the following hours:

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

Badge Identification

Please wear your IBC name badge at all times during the conference. Not only is the badge your passport to all Conference activities, but it also lists several important local phone numbers on the back. ESWP has authorized monitors on staff to deny access to anyone not wearing the appropriate badge. As a safety consideration, we do suggest that you remove your badge when leaving the hotel property.

Hotel Information

Hilton Pittsburgh Gateway Center Pittsburgh, PA 15222 Tele: (412) 391-4600 Fax: (412) 471-4485	Renaissance Pittsburgh 107 Sixth Street Pittsburgh, PA 15222 Tele: (412) 562-1200 Fax: (412) 562-1644
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IBC Gift Items

Once again at this year's IBC, you will have the opportunity to purchase IBC Golf Shirts, Sweatshirts, and Hats. These items are high quality and feature the popular IBC logo. The Gift Item Table is located at the Preprint desk where you can make your purchases throughout the Conference until Wednesday at 2:00pm. Please be sure to stop by and see them before Wednesday.

Pre-prints

Pre-prints for all technical presentations are available at the Pre-Print area located in the Ballroom 1 Foyer. Pre-prints can be purchased for just \$2.00 per copy. Also, you can find copies of previous years' IBC Proceedings (for \$55 per volume). The Pre-Print Booth will be open:

Sunday:	5:30pm to 7:30pm
Monday:	9:00am to 6:00pm
Tuesday:	8:00am to 5:00pm
Wednesday:	8:00am to 1:30pm

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 23rd Annual International Bridge Conference will be available in late Summer 2006 and mailed to you at that time.

Coffee Stand

Complimentary coffee and breakfast breads are available throughout the Exhibit Hall hours in the Le Bateau Room.

ATTENDEE INFORMATION

Pittsburgh Recreational Highlights

The *Three Rivers Arts Festival* is an annual Pittsburgh tradition marking the beginning of the summer season. The Festival, is a showcase for every imaginable craft in the exhibit booths surrounding the Hilton Pittsburgh, Gateway Center and Point State Park. In addition to the artists market, a wide variety of ethnic foods can be found across the street from the main entrance to the Hilton. Live performances of music and dance are scheduled throughout the day and evening. A world of cultural activity is right outside your door.

Nights come alive in the *Cultural District*, home to five theaters within walking distance of hotels and the convention center. The Cultural District also affords a selection of up-scale and mid-range dining, from French to Italian, Tex Mex to Thai.

In the *Strip District*, the clubs are hot, the food is spicy, and dance floors pulse to the sounds of rock, blues, jazz and swing. Award-winning brewpubs serve up the finest lagers and ales, while classic Pittsburgh fare is featured at nearby diners. By day, the Strip is alive with street vendors and shoppers buying the freshest breads, pastries, cheeses, coffees and ethnic specialties.

Area Museums

Three hundred years of Pittsburgh history come alive at the *Senator John Heinz Pittsburgh Regional History Center* in the Strip District. Located in what was formerly the Chautauqua Lake Ice House, this museum offers a variety of exhibits that tell the story of the people who built and influenced Pittsburgh's evolution from industrial megaforce to a center for technology, medicine, robotics and tourism.

From downtown, a short walk across one of Pittsburgh's many bridges takes you to the *North Shore*, where visitors can experience the work of the pop art prince and Pittsburgh native Andy Warhol at *The Andy Warhol Museum*, the most comprehensive single-artist museum in the world. Another North Side "must see" is the *Carnegie Science Center*, an interactive amusement park for the mind, which features over 250 hands-on exhibits, including the largest science and sports exhibition in the world.

Please visit the *Greater Pittsburgh Convention & Visitors Bureau* information table located on the 2nd floor Mezzanine Level for more information regarding these attractions and many more.

IN MEMORIAM



JAMES DANIEL COOPER

Last year, the IBC lost a dear friend and ardent supporter when Jim Cooper passed away on Wednesday, November 23, 2005 at his home in Purcellville, VA.

Jim was born March 19, 1942 in San Francisco, CA to the late James and Zebulon Cooper. He is survived by his wife, Susan L. Cooper of Purcellville, VA, son James J. Cooper and wife Megan of Leesburg, VA, daughter Karen D. Campbell of Richmond, VA and several nieces and nephews.

Jim was a member of the American Society of Civil Engineers since 1965, and the Engineers' Society of Western Pennsylvania. He was a published author of "Earth Quake Line Research".

In addition to serving as the General Chairman of the 2002 International Bridge Conference, Jim was a long-time member of the IBC Executive Committee, and provided exceptional service to the IBC Student Awards Committee. It is out of respect for Jim and recognition of this service that we are proud to announce the "James D. Cooper Student Award" beginning in 2006.

We at the International Bridge Conference and the Engineers' Society of Western Pennsylvania were honored by his presence - both personally and professionally. Jim was a dedicated volunteer, a warm personality and an enthusiastic mentor. He will be deeply missed.

11AM-6PM Exhibit Set-up
5:30-7:30PM Registration / Preprint Open
5-10PM DINNER TOLLEY departs and returns to the Hilton front entrance continuously throughout the evening.

8AM-6PM Registration / Preprint Open
11AM-7PM Exhibit Hall Open

Opening Session

TIME: 8:30–11:00AM

Kenneth J. Wright, PE

*IBC General Chair
HDR Engineering, Inc.
Pittsburgh, Pennsylvania*

Michael G. Bock, PE, Esq.

*President
Engineers' Society of Western Pennsylvania
Schnader, Harrison, Segal & Lewis, LLP
Pittsburgh, PA*

Dan Onorato

*Chief Executive
Allegheny County, PA*

Malcolm T. Kerley, PE

*Chief Engineer
Virginia Department of Transportation
Richmond, VA*

King W. Gee, PE

*Associate Administrator for Infrastructure
Federal Highway Administration
Washington, DC*

Carolann Wicks

*Secretary of Transportation
State of Delaware*

Awards Lunch

11:15AM–12:45PM
BALLROOMS 3 & 4

John A. Roebling Medal

Awarded to: Charles Seim, PE, F.ASCE

George S. Richardson Medal

*Awarded to: Dr. Donald White,
Dr. William Wright and Michael Grubb*

Gustav Lindenthal Medal

*Awarded to: South Carolina DOT for the
Arthur Ravenel Jr. Bridge*

Eugene C. Figg Jr., Medal

*Awarded to: T.Y. Lin International for the
Dagu Bridge, Tianjin, China*

Arthur G. Hayden Medal

*Awarded to: BAA Gatwick for the
Gatwick Pier 6 Airbridge*

MONDAY, JUNE 12

Featured State: Delaware

1:30-5:00PM
BALLROOM 2

Session Chair: Dennis O'Shea, PE
Assistant Director, Design, Delaware DOT

Co-chair: Jiten K. Soneji, PE
Bridge Design Engineer, Delaware DOT

IBC 06-01

1:30PM **The Design Challenges for the First State**

Barry A. Benton, PE, and Jason N. Hastings, PE, *DelDOT, Dover, DE*

Delaware is a small state that is unique in many ways. This presentation will give an overview of general information about the state as well as address some of the specific design challenges that the state has faced in recent years in responding to emergency storm events.

IBC 06-02

1:55PM **The Proposed Crossing over Indian River Inlet**

Douglass A. Robb, PE, and David Duke, *DelDOT, Dover, DE*; W. Denney Pate, PE, *Figg Engineers, Tallahassee, FL*

Over the past 20 years, the Delaware Department of Transportation has been monitoring one of the most severe bridge scour conditions known to exist in the United States. Past and present plans for a new 1000-foot main span bridge over the Indian River Inlet and an update on current construction progress will be presented.

MONDAY, JUNE 12

IBC 06-03

2:20PM

Load Test Calibration of the Load Rating Analysis of the John E. Reilly Bridge (S.Market St.) Bridge.

Tony B. Temeles, PE, and Richard A. Martino, PE, *Modjeski and Masters, Inc.*, Moorestown, NJ; Dr. Michael J. Chajes, PhD, PE, *University of Delaware*, Newark, DE

The John E. Reilly (South Market Street) Bridge is a historic movable structure located in downtown Wilmington, DE. This presentation will provide an overview of the recent rehabilitation project while focusing on load testing results that were used to calibrate the bridge's live load ratings and avoid load posting of the structure.

IBC 06-04

2:45PM

Reconstruction of the Wilmington and Western Railroad Bridges

Nicholas G. Deros, PE, *URS Corporation*, Hunt Valley, MD

The Wilmington and Western Railroad sustained significant flood damage in September 2003, when runoff from torrential rains and resulting debris floating downstream destroyed six timber trestle bridges. With the help of FEMA and DelDOT, new bridges that would resist similar damage in the future were designed by URS and are currently under construction.

3:15–3:45PM BREAK

IBC 06-05

3:45PM

Modern Options for Aesthetic Treatments on Delaware Bridges

John Milius, PE, *DMJM Harris*, Philadelphia, PA

Delaware utilizes modern materials and construction techniques to integrate aesthetics into standard bridge elements. Specific techniques discussed include concrete form liner treatment, concrete rustication, concrete staining and coatings, cast and natural stone masonry and decorative lighting. Various case studies are presented, highlighted by the I-95 Brandywine Bridge and the historic North Market Street Bridge, both in Wilmington, Delaware. These case studies demonstrate added value to the bridges without compromising functionality and durability, while adding only minimal cost.

MONDAY, JUNE 12

IBC 06-06

4:10PM

Delaware's Center for Innovative Bridge Engineering: A University of Delaware-DeIDOT Partnership

Dr. Dennis R. Mertz, PhD, PE, *University of Delaware, Newark, DE*

The partnership between the University of Delaware Center for Innovative Bridge Engineering and the Delaware Department of Transportation provides DeIDOT with access to knowledge and people to address problems in the design, construction, evaluation, maintenance, and rehabilitation of bridges and related structures. The agency, in turn, provides students and faculty with the opportunity to conduct field research on actual bridges, offers internships to current students, and presents employment opportunities to graduates of the program.

IBC 06-07

4:35 PM

History of Composite Material Applications in Delaware

Dr. Michael J. Chajes, PhD, PE, *University of Delaware, Newark, DE*

Since the early 1990's, Delaware's Department of Transportation has utilized advanced composite materials for a variety of bridge applications. Significant research leading up to their implementation was conducted at the University of Delaware (UD). This paper reviews the research conducted at UD, and presents the existing FRP installations in Delaware.

MONDAY, JUNE 12

Proprietary Session

4:00–6:00PM

BALLROOMS 3 & 4

Session Chair: Eric S. Kline

KTA-Tator, Inc., Pittsburgh, PA

IBC 06-08

4:00PM

SPS Orthotropic Bridge Decks: A New Solution to an Old Problem

Steven Kennedy, Intelligent Engineering,
Ottawa, Ontario, Canada

An SPS plate is a composite sandwich fabricated with two steel plates bonded between an elastomer core. The elastomer prevents local buckling of the steel plates and allows the sandwich to develop the full strength of the steel in bending. The elastomer is fatigue insensitive and also acts as a dampener to reduce vibrations. The SPS plate acts as the deck plate and is fabricated into an orthotropic deck panel that can rapidly be bolted together in the field. The top plate necessitates a field welded joint between panels.

IBC 06-09

4:25PM

Non Destructive Testing of Suspender Ropes Using Magnetostriction

Michael Higgins, *Pure Technologies,*
Columbia, MD

Corrosion or fatigue damage is difficult to find in suspender ropes with standard visual inspection techniques. This paper summarizes a technique developed to non-destructively test the condition of small diameter ropes/cables (less than 5") to detect damage on the interior or exterior of the rope.

IBC 06-10

4:50PM

Implementation of the Electrochemical Fatigue Sensor

Brent Phares, *Material Technologies, Inc,*
Ankeny, IA; Marybeth Miceli, *Sam Schwartz, PLLC,*
New York, NY

A nondestructive evaluation technology, under development since the early 1990's, was recently packaged and released for widespread use for the detection of fatigue cracks in steel bridge members. This paper will present technical information on the system, summarize the need for the technology, and summarize a typical application.

MONDAY, JUNE 12

IBC 06-11

5:15PM

Positive Protection from Corrosion of Post-tensioning Anchorages on Bridges

Robert Gulyas, *Degussa Building Systems, Cleveland, OH*; Walter Hanford, *Degussa Building Systems, Daytona Beach, FL*

Post Tensioned (P-T) anchorages require prevention of corrosion to assure the durability of the terminus. This is a greater concern bridges designed with a 100 year service life. Specific examples of failures of the P-T anchorage has led the industry to seek out better systems for protection of this “lynch pin” of a P-T Bridge support system. Establishing 100% confidence in the anchorage system is paramount.

IBC 06-12

5:40PM

Innovative Two-Part FRP Decking System

Dan Richards, PhD, PE, *ZellComp, Inc., Durham, NC*; Lei Zhao, *University of Central Florida, Orlando, FL*

ZellComp’s patented, two-part FRP decking system offers a cost efficient superior design. Bottom sections are installed before top sections are attached, providing easier access during construction. The mechanically-fastened system requires no structural bonding. Details of the extensive fatigue and strength testing by the Florida DOT will also be described.

Welcome Reception

5-7:00PM

EXHIBIT HALL

Enjoy cocktails and appetizers throughout the entire Exhibit Hall. The Welcome Reception is a great way to renew old friendships and make new friends. Hosted by the IBC Exhibitors... be sure to visit the Exhibitors in Ballroom 1, Foyer, Kings Garden, Featured State Room and the Boardwalk.

TUESDAY, JUNE 13

Design, Part 1

8:30AM-NOON
BALL ROOM 2

Session Chair: Donald W. Herbert, PE
Penn DOT, Uniontown, PA

IBC 06-14

8:30AM

Horizontally Curved Steel Girder Bridges: A Comparison of AASHTO Design Specifications

Danielle Kleinhans, PhD, PE, *Modjeski and
Masters, Inc., Harrisburg, PA*; John Kulicki
and Wagdy Wassef, PhD, PE, *Modjeski and
Masters, Inc., Harrisburg, PA*

This presentation compares the three most recent curved girder design specifications; the 1993 Guide Specifications; the 2003 Guide Specifications; and the 2005 LRFD Interims. Differences and similarities between the shear and flexural design protocols are highlighted, and detailed information is provided for examples that expose these areas of interest.

IBC 06-15

8:55AM

Innovative Replacement of a Community Landmark - The Royal Park Bridge

James Phillips, *E.C. Driver & Associates,
Inc., Tampa, FL*; George Patton, *E.C.
Driver & Associates, Inc., Tampa, FL*

This paper presents successful implementation of innovative management and design to overcome complex challenges in replacement of the Royal Park Bridge in Palm Beach County, Florida. The project involved expedited replacement of a historic Florida DOT movable bridge that served as the key link between Palm Beach and mainland Florida. Engineering challenges included increased channel clearance requirements, limited soil foundation capacity, maintenance of traffic, and bridge aesthetics.

TUESDAY, JUNE 13

IBC 06-16

9:20AM Stretching Span Limits for Concrete Segmental Bridges

Paul Bott, *HDR Engineering, Inc, Bellevue, WA*; John Sherk, *HDR Engineering, Anchorage, AK*

This paper presents the history, factors and constraints that led to the selection of record setting span lengths for two concrete segmental bridges in Ketchikan, Alaska. Key factors include clearing the FAA Part 77 Airspace, maintaining safe passage of large cruise ships and avoiding placing foundations in very deep water.

IBC 06-13

9:45AM River Life Task Force West End Pedestrian Bridge Competition

Lisa Schroeder, *River Life Task Force, Pittsburgh, PA*

Why a Pedestrian Bridge at the West End? The view from the deck of the West End Bridge is one of the most spectacular urban vistas in the United States. The Bridge marks the confluence of the Monongahela, Allegheny, and Ohio Rivers and defines the westernmost boundary of Three Rivers Park—a grand, urban park under development along Pittsburgh’s riverfronts. Yet for all its beauty and symbolic importance, the West End Bridge presents a significant gap in Pittsburgh’s trail system, has limited accessibility for non-vehicular traffic and limited connectivity to the adjacent neighborhoods.

The Riverlife Task Force is a local community group that provides input on development projects around the river system in the Pittsburgh area with a focus on adding aesthetic value to these projects. Riverlife launched the West End Pedestrian Bridge Competition to seek solutions from engineers, designers and architects around the world that would improve pedestrian connectivity between the two ends of the West End Bridge by providing a signature structure that will compliment, rather than compete with, the existing West End Bridge. Of over 100 submissions, 6 finalists were chosen to develop detailed conceptual ideas for the pedestrian bridge. This presentation will provide an overview of the competition process. The selection criteria used to determine the chosen design team will be highlighted – including discussion of the relative importance of cost, functionality and aesthetics. Several of the bridge schemes proposed by the various design teams will also be shown in the presentation. The next steps expected in the process after selection of a design team will be discussed as well.

10:10-10:30 BREAK

IBC 06-17

10:30AM Hickory Street Bridge - A Unique Context Sensitive Approach

Terrence Tiberio, *Michael Baker, Jr., Inc.*, Moon Township, PA; Robert W. Bondi, *Michael Baker, Jr., Inc.*, Moon Township, PA

The Hickory Street Bridge refutes the misconception that bridge aesthetics must involve a high cost investment as well and preclude typical structures that can be easily rated. This bridge is an example of the possibilities of making a design truly sensitive to the context of its surroundings. With its unique features, this bridge was able to take the most common adjacent concrete box beam components and provide a spectacular focal point for the central business district in Warren, PA.

IBC 06-18

10:55AM Innovative Design of the Honey Creek Bridge

David Kirby, *HMB Professional Engineers*, New Albany, IN, Brian Stopper and Marvin Wolfe, *HMB Professional Engineers*, Frankfort, KY

This project is a replacement of a deck truss bridge constructed in 1927. Simple-span steel girders made continuous similar to precast concrete beams. The final design includes an integral pier cap and diaphragm that is not fracture critical and does not require post-tensioning in the field.

IBC 06-19

11:20AM Design-Build of Highway and Railway Movable Bridges in South Australia

Peter Roody and David Tuckman, *Hardesty & Hanover*, New York, NY

Port Adelaide is an important trade gateway for South Australia. The Port River Expressway Design-Build Project will add a new four-lane expressway link and a new rail freight line to better access this port facility. This paper will discuss the designs for a new 57.8m, four-lane, single-leaf highway bascule bridge and a new 61.4m, single-track dual-gauge, single-leaf rail bascule bridge. Both bascule bridges will provide a 30m navigation channel in the Port River. The estimated construction cost for both movable bridges is \$30 Million U.S. Dollars.

TUESDAY, JUNE 13

Load Testing

8:30AM–NOON
BALLROOMS 3 & 4

Session Chair: **Gerald Pitzer, PE**
GAI Consultants, Inc.

IBC 06-20

8:30AM **Test Research of Wind Load on Long Span Arch Bridge Section Models**
Yunfang Wu, Xinyong Li, Zhongyi Li and Liangliang Zhang, *Chongqing University, Chongqing, P.R. China*

A new combined bridge, its section model tests, and an effective nonlinear least-square identifying method of flutter derivatives are introduced in this paper. Based on the testing data, the galloping and flutter stabilities were analyzed. These results can supply reference to the wind resistant design of the homologous bridge.

IBC 06-21

8:55AM **Instrumentation System for Load Test on a Concrete Floating Bridge**
Varsha Singh and Tom Weinmann,
CTL Group, Skokie, IL

A full scale load test on the I-90 Homer Hadley floating bridge across Lake Washington in Seattle, WA was conducted to facilitate a structural feasibility study for the proposed light-rail transit. Eight heavily loaded flatbed trucks each carrying 148,000 pounds simulated the weight and movement of light-rail trains during the tests. About 60 sensors and a wireless data acquisition system were installed to measure bridge response under both static and dynamic load conditions for the full scale load test. The data from the tests will be used to confirm computer modeling of bridge response and modifications to the bridge to accommodate light rail transit in the future.

TUESDAY, JUNE 13

IBC 06-22

9:20AM

Fiber Optic Structural Health Monitoring of Fracture-Critical Bridges

Justin D. Doornink, Brent M. Phares and Terry Wipf, *Iowa State University, Ames, IA*

A fiber optic structural health monitoring system has been developed and deployed to detect the formation of fatigue cracks in fracture-critical bridges in Iowa. The system is trained with measured performance data and identifies deviations from the trained behavior as changes in structural performance.

IBC 06-23

9:45AM

The Importance of Rib Distortion at the Rib to Floorbeam Joint of Orthotropic Plated Decks

Wouter De Corte and Phillippe Van Bogaert, *Ghent University, Ghent, Belgium*

Orthotropic plated bridge decks are sensitive to fatigue damage at various locations. Among these the rib to floorbeam joint is the most challenging, since it is subject to a variety of load and distortion induced stresses. In this paper, a parametric study, verified by full scale testing, investigates this connection.

10:10-10:30 BREAK

IBC 06-24

10:30AM

Bridge Foundation Using Large Diameter Drilled Shaft in Thick Marine Deposits

Upendra L. Karna, D.En., PE, Arora and Associates, P.C., *Lawrenceville, NJ*

Eight feet diameter, 130-foot long drilled shafts were utilized for a bridge over Salem River having high tides and thick marine deposits. Multi layered O-cell and cross-hole sonic logging tests were performed. The design considerations, testing results and the installation experience of drilled shaft construction are discussed in this paper.

TUESDAY, JUNE 13

IBC 06-25

10:55AM

Field Testing and Fatigue Evaluation of the I-39 Northbound Bridge over the Wisconsin River

Hussam Mahmoud, *Lehigh University/ATLSS Research Center, Bethlehem, PA*; Robert Connor, *Purdue University/School of Civil Engineering, West Lafayette, IN*; Phil Fish, *Fish Inspection & Testing, LLC Middleton, WI*;

This paper will summarize the field study conducted to develop stress range histograms, which were used along with historical ADIT records to estimate the remaining life of fatigue prone details. A discussion on the recommended retrofit strategies for details with remaining fatigue life of 50 years or less will be included.

IBC 06-26

11:20AM

Long-Span Prestressed Concrete Bridges

M. Zoghi, *University of Dayton, Dayton, OH*; Dean Foster, *AFRL/MLBCM Wright-Patterson AFB, Dayton, OH*; Pat Plews, *Wollpert, LLP*; Jeff Schulz, *BDI, Inc.*;

The key to every successful rehabilitation/repair project is to identify the root cause and extent of deterioration. Accordingly, two severely deteriorated long-span bridges, located in Defiance, Ohio were thoroughly inspected visually and via full-scale field tests prior to repair and subsequently subjected to non-destructive load tests following repair. The repair method entailed post-tensioning method utilizing FRP composite strips via Stress Head System.

SPECIAL INTEREST SESSION

Coatings

8:00AM–NOON
BENEDUM ROOM - 1ST FLOOR

Moderated by: **SSPC**

The Society for Protective Coatings

- 8:00AM** Overview of SSPC-QP3 shop coating facility
Alex W. Lowery, Pittsburgh Coatings Corporation
- 8:30AM** Performance Evaluation of Bridge Overcoating Materials Using Electrochemical Impedance Spectroscopy
Seung-Kyoung Lee, Federal Highway Administration
- 9:00AM** Straining at a Gnat and Swallowing a Camel: Safety and Performance Issues with 2-part Urethane Finish Coats
Dr. Mike O'Donoghue, ICI Devco Coatings

10:00-10:15AM BREAK

- 10:15AM** Overview of Slip Co-Efficient and Creep Resistance
Dan Griffin, International Paint LLC
- 10:45AM** Single Coat of Paint for a Lifetime of Protection
Eric Kline and Bill Corbett, KTA-Tator
- 11:00AM** Steel Bridge Coatings Inspection Training Course
Mike Kline, SSPC: The Society for Protective Coatings
- 11:15AM** Open forum for questions

11:30 BREAK

1:00-3:30 Tour; **12:30 DEPARTURE**

SSPC will take attendees on a tour of the Pittsburgh Zoo & PPG Aquarium. One of the stops during the Zoo Tour will take attendees to the newly renovated Education/Administration Complex that was built mixing existing and new construction, using environmentally friendly coatings, improving air quality and where feasible, using recycled materials.

The shuttle to this event will leave from the Hilton Lobby at 12:30.

SPECIAL INTEREST SESSION

FRP Composites - Advancements in Bridge Construction

**9AM-NOON
DUQUESNE ROOM - 1ST FLOOR**

FRP composites used in new bridge construction and rehabilitation provide bridge engineers with innovative solutions for today's infrastructure problems. Composites benefits such as lightweight, high strength, and corrosion resistance contribute to easy transportation, offsite construction, modular assembly, rapid installation, and long-term durability. FRP composites are expanding into new applications that provide cost-effective solutions and value. Composites multiple strengths and wide ranging design possibilities will be illustrated through case histories showing that composites are cost-effective solutions for decks and structural rehabilitation in bridges. Session attendees will learn how to design and specify composites with examples from field applications, and learn of new products and applications, installation techniques, and research testing.

Traditional Design Approach for FRP Decks

Mark P. Henderson, PE, *LJB Inc.*

Strengthening of Concrete Bridges Using FRP Composites - A Global Perspective

David White, PE, *Sika Corporation*

Why Not Composite Decks - Financial, Market Perspective

Grant Godwin, *Martin Marietta Composites, Inc.*

Fabricated Modular GFRP Reinforcement for Accelerated Construction of Bridge Deck and Rail System

Fabio Matta, *University of Missouri-Rolla*

Chesapeake Bay Bridge: 20 Years of Concrete Pile Protection Using FRP Composites

Carl W. Scheffel PE, *Fox Industries Inc.*

Testing and Design of a New FRP Deck Design,

Dan Richards, PhD, PE, *Zellcomp, Inc.*

SPECIAL INTEREST SESSION

Bridge Inspection and Management Software

**8AM-NOON
LIBERTY ROOM - 1ST FLOOR**

InspectTech has worked with bridge owners and engineering firms in several states to develop a powerful and easy to use software package that benefits both inspectors and managers. We will be discussing experiences and observations on best practices for using computer technology in conducting inspections and managing bridge data.

Two sessions will be presented; the first will address problems and solutions for organizations performing inspections. The second covers challenges that bridge managers and owners face. A demonstration of relevant components of InspectTech's BridgeInspect™ software suite will be given in both sessions.

8:30-9:30AM: Bridge Inspection Software

Learn how inspectors are using computer software to improve report quality and achieve significant time savings in data collection and report generation. The software has been used on several thousand structures ranging from 3000' bridges to simple spans to culverts to mass transit supports.

9:30-10:00AM BREAK

10:00-11:00AM: Bridge Management Software

This presentation describes a popular new bridge management system that places all bridge information (pictures, sketches, inspection data, etc.) just a click away via a powerful web-accessible interface. Owners and managers can now easily generate standard and custom reports, search across all fields, automatically flag problem areas, and compare data and trends from past inspection years.

Marty Neaman, Michael Schellhase,
Jeremy Shaffer *from InspectTech, Pittsburgh, PA*

SEMINAR

Seminars at the International Bridge Conference® are intensive, four (4) hour, single-topic focused sessions. Each seminar requires a \$95/\$125 fee in addition to your Conference Registration. Please see the Registration personnel at the Registration desk to sign up. Seating for each Seminar is limited, so please register early. Professional Development Hours (PDHs) will be provided upon request.

FHWA Accelerated Bridge Construction Workshop

**8:00AM-NOON,
STERLING'S ROOM - 1ST FLOOR**

The highway community has been moving toward a new way of doing business as construction has intensified in recent years. This new way of doing business is 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 and replacement. Second, highway capacity has increased little during the last two decades, but traffic demand has grown tremendously. This has caused a high level 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.

This workshop will provide information on state of the art practices of Accelerated Bridge Construction Technology. Innovative prefabricated bridge technologies, innovative equipment, and innovative contracting strategies and techniques will be covered. This seminar will demonstrate how these innovations will achieve the goals of rapid onsite construction with minimized traffic disruption. Accelerated Bridge Construction provides the benefits of improved safety, improved constructability, improved durability, and competitive construction costs while allowing for completion ahead of schedule.

8:00AM **Welcome and Introduction**

8:15AM **Living in the Fast Lane, US Efforts on Accelerated Bridge Construction, By Vasant Mistry, FHWA Office of Bridge Technology**
Vasant Mistry, FHWA Office of Bridge Technology

SEMINAR

- 8:45AM** **Highways for Life and Innovative Bridge Research and Development Program**
Byron Nelson Lord, *FHWA*
- 9:15AM** **Decision-Making Framework for Effective Use of Prefabricated Bridge System**
Mary Lou Ralls, *Ralls Newman, LLC*
- 9:45AM** **Break**
- 10:15 – 10:45** **Complete Bridge Span Installation**
Bill Halsband, *Mammoet USA*
- 10:45AM** **Roll-in Replacement of NE 8th Street Bridge to Eliminate Traffic Impacts**
Larry Kyle, *HDR Engineering, Inc.*
- 11:15AM** **Launching of Tied Arch Bridge**
Michael Culmo, *CME Engineering*
- 11:45 – Noon** **Q & A, and Closing Remarks**

SEMINAR

Seismic Design and Retrofit of Bridges

1:00-5:00PM

STERLING'S ROOM-1ST FLOOR

Sponsored by MCEER, Multidisciplinary Center for Earthquake Engineering Research

The Multidisciplinary Center for Earthquake Engineering Research (MCEER) in Buffalo, NY has organized this workshop to address the needs of practicing engineers. While most engineers rely on the current AASHTO specification for bridge design guidance, recent research in the field of earthquake engineering indicates that better methods of design, analysis and detailing have yet to be embodied in the code. The lag in adopting new standards, coupled with the fact that many existing bridges were built to older codes, creates a need for this seminar.

Participating engineers can expect to be updated on what is considered state-of-the-art in new bridge design, seismic retrofitting, response modification, and geotechnical considerations. Dr. Roy Imbsen, Imbsen Associates, a TRC Company will share his progress in producing a consensus document for the LRFD Design of new bridges. AASHTO is expected to vote on its adoption as a guide specification spec in 2007. Dr. Phil Yen, FHWA will give an overview of FHWA's new Seismic Retrofitting Manual which greatly expands on the current 1995 edition, and moves toward a performance-based philosophy. Dr. Andrew Whittaker, University at Buffalo will explain the concepts of seismic isolation and touch on recent developments in response modification. Dr. Ken Fishman, McMahon and Mann Consulting Engineers, P.C will discuss geotechnical earthquake engineering issues including seismic design and analysis of bridge foundations, abutments and appurtenant earth retaining walls. The emphasis will be on simplified methods to estimate site response, the potential for liquefaction and seismic performance.

The team will emphasize the implications of adopting performance based design/retrofit objectives and the inherent need for deformation-based, rather than the traditional force-based, methods of analysis. Advantages and limitations of simplified methods will be described as well as alternative approaches involving more rigorous methods and corresponding requirements in terms of computational effort, site characterization, and soil modeling.

SEMINAR

**Development of new AASHTO
Guidelines for the Design of New
Bridges,**

Dr. Roy Imbsen, *Imbsen Associates*

FHWA's New Retrofitting Manual

Dr. Phil Yen, *Federal Highway
Administration*

Seismic Isolation of Bridges

Dr. Andrew Whittaker, *University at
Buffalo*

**Geotechnical Considerations for
Seismic Design and Retrofit**

Dr. Ken Fishman, *McMahon and Mann
Consulting Engineers, P.C.*

TUESDAY, JUNE 13

Design, Part 2

1:30-5:00PM
BALL ROOM 2

Session Chair: **Lisle E. Williams, PE, PLS**
DMJM Harris, Pittsburgh, PA

IBC 06-27

1:30PM **Design of the Bagley Avenue Pedestrian Bridge**

Eddie He and Paul Wisney, PE, *HTNB Corporation, Chicago, IL* ; Bill Lambdin, Ken Price, Roger Till, Michael Xin and Pamela Yuen, *Michigan DOT, Lansing, MI*

This paper presents an overview of the design of a signature cable stay pedestrian bridge over the I-75 and I-96 corridors in Detroit. The bridge has one plane of asymmetrical stay supported by an incline pylon offset from an irregular deck plan. This structure has created many ongoing engineering challenges during its design stage.

IBC 06-28

1:55PM **Innovative Design Solutions for Milwaukee's Marquette Interchange Bridges**

Patrick Cashin and Tony Shkurti, *HNTB Corporation, Milwaukee, WI*

The Marquette Interchange, located in the midst of Downtown Milwaukee, is currently being reconstructed to replace an obsolete interchange. Construction began in early 2005 and is on schedule for completion in December of 2008. The Interchange program cost is \$810 million and the structures account for over \$300 million. Nine high-level system ramps, curved steel box girder bridges, will become the focal point of the Interchange. The scope of the overall bridge construction will be presented with an emphasis on unique features.

IBC 06-29

2:20PM **Design of the I-64 / I-295 Interchange Ramp F Bridge**

Daniel G. Davis, PE and Kenneth V. Butler, *DMJM Harris, Glen Allen, VA*

The I-64/I-295 Interchange Ramp features steel integral straddle bents and curved steel plate girder design. The presentation will focus on the connection details for the girders to the straddle bent cap beam and a comparison of the results from the design and rating analyses performed using BSDI and DESCUS.

IBC 06-30

2:45PM Rational Design of Top Lateral Bracing
Sena Kumarasena, *HNTB, Wellesley, MA*;
Joey Breton, Gary Gardner and Micaela
Pilotto, *HNTB, Boston, MA*

While steel composite box girder bridges possess considerable torsional stiffness in their final completed stage, the absence of the deck slab during construction can make them vulnerable to large torsional deformations and instability during certain temporary stages. Providing for stability during initial construction as well as future re-decking is a key issue in the design and detailing of steel-composite box girder bridges. Top lateral bracing is the typical solution for providing necessary torsional stiffness, but there is no basis for establishing minimum design requirements or sizing of these top lateral bracing required for stability.

3:15-3:45PM BREAK

IBC 06-31

3:45PM The Influence of Web-Plumbness on Horizontally Curved Steel I-Girder Bridge Systems
Thomas Howell and Christopher J. Earls,
PhD, *University of Pittsburgh, Pittsburgh,
PA*; Brandon Chavel, *HDR Engineering,
Pittsburgh, PA*

The effects on horizontally-curved steel I-girder bridge performance of various degrees of web out-of-plumbness are discussed within the context of construction serviceability. Consequences in terms of flange tip stresses, deflections, and cross-frame forces are discussed for a typical bridge subject to differing degrees of out-of-plumbness. These effects are discussed with respect to current erection practices.

IBC 06-32

4:10PM Hungry Hollow Tied Arch
Ricardo Mantay, PE, *Teng & Associates, Inc.
St. Louis, MO*; John Hillman, PE, SE, *Teng
& Associates, Chicago, IL*; David Schnelle,
PE, SE, *City of Danville, Danville, IL*

The Hungry Hollow Bridge is a three span structure comprised of a 170 ft solid rib tied arch main span and two 46.5 ft approach spans on a 30 degree skew. The arch ribs are a parabolic shape with a rise to a span ratio of 1:5. I shaped tie-girders were utilized in order to avoid the torsional stiffness characteristics of closed box tie girders that typically result in fatigue problems in tied arch bridges.

TUESDAY, JUNE 13

IBC 06-33

4:35PM

Structural Form of the Route 52 Causeway Segmental Concrete Bridge

Wendy Gottshall, PE and Mike Sidanni, PE, *Michael Baker Jr., Inc., Princeton, NJ*; Dave Lambert, PE and Nat Kasbekar, PE, *New Jersey Department of Transportation, Princeton, NJ*

Route 52 Causeway Bridge spans two miles between Somers Point and Cape May in New Jersey. This paper demonstrates that both strict budgetary requirements and complex key design requirements can be met while maintaining a simple and repetitive structural form, allowing the bridge to safely and efficiently fulfill its intended function for future generations.

Bridge Bus Tour 1:00 – 5:00pm

We are pleased to once again offer the afternoon Bus Tour of unique Pittsburgh area bridges and specifically the Southern Beltway Transportation Project PA 60 to US 22, also known as the Findlay Connector, in Allegheny and Washington Counties. (www.sb6022.com/)

We will depart the Hilton Pittsburgh at 1PM and provide a brief tour of the Pittsburgh area bridges. Please wear proper footwear as you will be able to leave the Bus at the Findlay Connector. The Tour will conclude atop Mt. Washington. Additional fee is \$40. Pre-registration is required. Seating is limited.

TUESDAY, JUNE 13

Rating, Practice and Technology

1:30-5:00PM
BALL ROOM 3 & 4

Session Chair: **Matthew P. McTish**

McTish, Kunkle & Associates, Allentown, PA

IBC 06-34

1:30PM

New AASHTO Load Models For Load Rating & Posting

Bala Sivakumar, Lichtenstein Consulting Engineers, Paramus, NJ

The trucking industry has in recent years introduced specialized hauling trucks with closely-spaced multiple axles that make it possible for these short wheelbase trucks to carry the maximum load of up to 80,000 lbs and still meet the federal Bridge Formula. The current AASHTO legal loads selected at the time to closely match the Formula B do not represent these newer axle configurations. It is therefore considered likely that these specialized vehicles may be severely overstressing some non-posted bridges.

IBC 06-35

1:55PM

Arch Bridges Disease and Research on Reinforcing Technology

Liangliang Zhang, Chengqiag Liu and Yunfang Wu, Chongqing University, Chongqing, P.R. China

Lidian Bridge is a stone arch bridge built in 1979. By the research in which the bridge was detected, estimated and strengthened, we have put forward a strengthening technology and method which is credible, economical, reasonable and easy to construct. The technology can provide reference for homologous bridges.

TUESDAY, JUNE 13

IBC 06-36

2:20PM

A Comparative Study of Load Rating using AASHTO Load Factor (LFD) and Load and Resistance Factor Rating (LRFR)

Toorak Zokaie and Sri Kanneganti, *LEAP Software, Inc., Tampa, FL*

This paper compares the requirements of LFD, LRFR, and special Florida provisions. It provides a comprehensive comparison in rating factors for a number of pre-stressed girder bridges in various span configurations to provide an understanding of the level of differences that can be expected from using different specifications.

IBC 06-37

2:45PM

NEW DEVELOPMENTS WITH CORRUGATED WEBS

Roger Wildt, *RW Consulting Group, Bethlehem, PA*; Hans Spelten, *Spelten Consulting, Nettetal, Germany*

During the past two years the technology of producing a corrugated web girder has advanced. Prime among these is the capability of creating a continuous web from either long plate or coil and cambering the web. This paper will describe these advances and recent applications worldwide.

3:15-3:45PM BREAK

IBC 06-38

3:45PM

Success of the NCDOT Mobile Bridge Inspection Program

Mike Pritzlaff and Walt Tallman, *EDO Professional Services, Inc., Morrisville, NC*

The NCDOT Bridge Maintenance Unit has successfully implemented an enterprise mobile solution to streamline the inspection process, improve productivity and reduce costs. This paper presents the challenges, process improvements, integration results and feedback on the technology solution from the BMU management, state inspection team and private engineering firm perspective.

IBC 06-39

4:10PM

Design Construction and Field Validation of the Southview Bridge in Rolla, Missouri

Nestore Galati, *University of Missouri - Rolla, Rolla, MO*, Raffaello Fico, Antonio Nanny and Andrea Proto, *University of Naples Federico II, Naples, Italy*

A research project was undertaken to evaluate the use of post-tensioned FRP for bridge-deck construction. The type of structure selected for this project is a four-span continuous concrete slab having GFRP bars for top and bottom mats and CFRP reinforcement for internal post-tensioning of the bridge deck. This bridge is located in Rolla, Missouri. One lane of the bridge was already built using a conventional four-cell steel reinforced concrete box culvert. One lane and sidewalk needed to be added. This additional lane was constructed using FRP bars as internal reinforcement.

IBC 06-40

4:35PM

The State of Technology for Wire Rope and Strand Assemblies

Timothy Klein, *Wire Rope Corporation of America, Inc., St. Joseph, MO*; Jerry Clodfelter, *CBSI, Houston, TX*

Wire rope and strand fabrication procedures for socketed assemblies in use on pedestrian and vehicular bridges. Material strengths, corrosion inhibitors, fabrication and the properties available for wire rope, strand and sockets will be covered including the applicable tolerances for these items. Socket selection and assembly installation will also be covered.

WEDNESDAY, JUNE 14

Construction, Part 1

8:00AM-12:30PM
BALL ROOM 2

Session Chair: Louis J. Ruzzi, PE

*Pennsylvania Department of
Transportation, Bridgeville, PA*

IBC 06-41

8AM

Construction of the Pennsylvania Turnpike Susquehanna River Bridge Replacement

*Brian Ranck, Pennsylvania Turnpike
Commission, Harrisburg, PA; William J.
Rohleder, Jr., PE, SE, Figg Bridge Engineers,
Inc., Philadelphia, PA*

Construction is underway to replace the Pennsylvania Turnpike's longest bridge, crossing the Susquehanna River near Harrisburg, PA. The new crossing has dual superstructures consisting of precast segmental concrete box girders constructed by the span-by-span method. Bridge substructure units consist of cast-in-place reinforced concrete piers constructed on drilled shaft foundations.

IBC 06-42

8:25AM

In-Kind Replacement of the Historic Rainbow Arch Bridge

*Wade Frank, PE, Kadmas, Lee & Jackson,
Inc., Moorhead, Mn; Michael Marks,
Kadmas, Lee & Jackson, Inc., Fairfield, NJ*

This project will detail a bridge design not utilized for 60 years and will describe how this was reconciled with modern standards. This can provide a reference for projects that desire to maintain the aesthetic appeal and structural function of a historic bridge while meeting current safety standards.

SPECIAL INTEREST SESSION

9:00AM

Accelerated Bridge Construction - Accelerated Bridge Painting: A Perfect Design Option -Duquesne Room

Learn how fasttracking bridge projects involving paint operations can achieve productivity gains and money savings using three and two coat systems.

*Doni Riddle and Dee McNeill, The Sherwin
Williams Company*

WEDNESDAY, JUNE 14

IBC 06-43

8:50AM Erie Canal Crossing

John Christopher, PE, *Structural Engineering Concepts, Pittsburgh, PA*; Roger Roberts, PhD, *Geophysical Survey Systems, Inc., North Salem, NH*

The erection of the Prospect Street Bridge replacement in Rockport, NY exemplifies the need to consider how site limitations and design configurations affect the construction operations. Erection required the fully assembled 268-foot long, 600-ton structural steel bridge frame to be floated into place. The pontoons supported the bridge more than 30 feet above the water during the erection operations.

IBC 06-44

9:15AM Unique Specifications/Materials for the New Benicia Martinez Bridge

Hans Strandgaard, *CH2M HILL, Sacramento, CA*; Rich Foley, *CalTRANS, Sacramento, CA*

The \$500 Million Benicia-Martinez Bridge is a cast-in-place segmentally constructed concrete structure with many unique features including: high-strength / modulus lightweight concrete, pre-compressed bearings, super-flat steel box beams, mandatory deck grinding, health monitoring, difficult foundations, 150 year design life, hazardous soils and groundwater, pile load testing, mass concrete and precast footing forms.

IBC 06-45

9:40AM Varied Foundations for a Fast Track Bridge Replacement

Alec D. Smith, PhD, PE, *Haley & Aldrich, Inc., Boston, MA*; Garrett Hoffman, PE, *Figg Bridge Engineers, Exton, PA*; Nat Kasbekar, PA and Jack Mansfield, PE, *NJDOT, Trenton, NJ*; Edward Zamiskie, PE, *Haley & Aldrich, Inc., Parsippany, NJ*

The Victory Bridge Replacement was schedule driven. After a D/B contract was terminated, the new design team met an expedited schedule. The subsurface conditions below the new bridge, a high-level 4000 lf long structure, required the use of varying deep foundations and ground improvement to save time and money.

10:05-10:20AM BREAK

WEDNESDAY, JUNE 14

IBC 06-46

10:20AM The Design Of High Performance Steel Girders For New Bridge I-87NB Over I-287EB

Steven Smith, Philippe Bousader, and Walid Najjar, *Chas. H. Sells, Inc., Briarcliff Manor, NY*

The subject bridge is one of the longest single-span welded-plate girder bridges in the country. Special design techniques were used to accommodate the unique construction of this 82m long bridge with 3.1m deep girders fabricated from high performance steel (Grade 485W) and sharp skews of 65 and 61 degrees.

IBC 06-47

10:45AM Design and Construction of Hangzhou Bay Bridge

Beile Yin, *Hardesty & Hanover, LLP, New York, NY*; Zhong Da Lu, *Engineering Headquarters of Hangzhou Bay Bridge, Cixi, Zhejiang, P.R. China*

Since the ground breaking in 2003, this 36 km long sea crossing bridge has progressed significantly in construction. Consisting of two cable-stayed bridges for navigation and 500 non-navigable spans with each span length of 50 and 70m, this bridge has 32.2 km of its total length over water body, a longest sea crossing bridge in the world. The approach is made of two concrete boxes carrying 3-lanes each direction. Located in a typhoon prone area in the east coast of China, construction equipment and methods have to sustain possible storms. This paper will introduce our first experiences in the design, fabrication, and installation of the foundations and superstructure of this project.

WEDNESDAY, JUNE 14

IBC 06-48

11:10AM Structural Stainless Steel in Pedestrian and Short-Span Bridges

Nicole Kinsman, *International Molybdenum Association, Kuesnacht, Switzerland*

Stainless Steel has been used for structural components, such as box girders and beams, in several pedestrian bridges and in one short span bridge. Stainless steels allow designers to build visually appealing structures that provide exceptional durability, even in hostile environments. The corrosion resistance and clean appearance of stainless steels will help to reduce future maintenance costs. This paper reviews a combined road and pedestrian bridge in Menorea, Spain and pedestrian bridges in Sweden, Italy, and the UK.

IBC 06-49

11:35AM Pier Protection for Col. Patrick O'Rorke Bridge

John Schirmer, *Bergmann Associates, Rochester, NY*; C. Michael Cooper, *Bergmann Associates, Rochester, NY*

A robust pier protection system constructed of sacrificial steel, concrete, and timber elements supported by several foundation types was designed to protect the moveable bridge from vessel collision, which, if left unprotected, could cause significant damage to both structural and sensitive mechanical systems and disrupt both highway and river traffic.

WEDNESDAY, JUNE 14

Long Span Bridges

8:00AM-12:30PM

BALL ROOMS 3 & 4

Session Chair: **James D. Dwyer**

STV, Inc., Pittsburgh, PA

IBC 06-50

8AM

The Third Nanjing Yangtze River Crossing Bridge

Dennis Jang, Man-Chung Tang,
Lou Xue-Quan, Austin Pan, Dai Yong-
Ning and Chuck Seim, *T.Y. Lin
International, San Francisco, CA*

The paper addresses planning, financing, design and construction of the third longest cable-stayed bridge in the world. The authors will share their experiences working in an international/multi-national team environment and special technical challenges faced on the project.

IBC 06-51

8:25AM

The New Tacoma Narrows Suspension Bridge: A Look to Opening Day

Joseph Viola, PE, Karen Mielich, PE, and
Thomas Spoth, PE, *Parsons Corporation,
New York, NY*

Opening Day for the New Tacoma Narrows Bridge approaches. Deep-water caissons, concrete towers, and cable anchorages are complete. The main cables now span the Narrows, supporting superstructure segments. This presentation discusses the design and construction aspects of this 5,400 ft suspension bridge. The state of fabrication and erection is featured.

IBC 06-52

8:50AM

Foundation Analyses of New Tacoma Narrows Bridge

Gerard Buechel, Hollie Ellis and Monique
Nykamp, *Shannon & Wilson, Seattle, WA*;
Kimo Okamitsa, *Parsons, Gig Harbor, WA*

The new Tacoma Narrows Bridge, set to open in 2007, is the second suspension bridge to be built in the United States in the last 40 years. Each tower is located in about 150 feet of water and is surrounded by caissons consisting of 130 by 80 foot reinforced concrete cellular structures embedded 75 feet below the mudline into very dense glacial soils. The design of the caissons included performing finite difference analyses to evaluate lateral pressures on the caisson walls under seismic loading conditions.

WEDNESDAY, JUNE 14

IBC 06-53

9:15AM

The Troup Howell Bridge Replacement

Sam Anthony, *Erdman Anthony and Associates, Inc., Rochester, NY*; Stephen Percassi, *Erdman Anthony and Associates, Inc., New York, NY*

This case study describes a context sensitive bridge design. The subject structure carries 100,000 vehicles per day on Interstate 490 over the Genesee River and several city streets in Rochester, NY. The paper will illustrate how community involvement can positively contribute and describe the engineering challenges that were overcome.

IBC 06-54

9:40AM

The East 153rd Street Bridge - New York City's First Vehicular Cable Stayed Bridge

Alim Baycora, PE and Kenneth Butler, PE, *DMJM Harris, New York, NY*; Jeffrey Han, PE, *Daniel Frankfurt, PC, New York, NY*; Roly Parroco, PE, *NYCDOT, New York NY*

In 1992, NYCDOT demolished the original East 153rd Street Bridge that had spanned Metro-North's Mott Haven Yard since the 1800's. Since then, the surrounding area has seen a revitalization that has increased traffic volumes on the adjacent crossings at East 149th and 161st Streets, making the replacement of this bridge necessary. The existing site is conducive to the construction of a cable stayed bridge due to its accessibility, available staging area and the minimal MPT that would be required due to the absence of an existing structure. The design and construction present several distinctive issues.

10:05-10:20AM BREAK

IBC 06-55

10:20AM

Recent Major Bridge Projects in China

Qi-xian Tian and Kai-li Chen, *Bridge Science Research Institute, Ltd, Wuhan, Hubei, P.R. China*

Driven by a booming economy, big bridges have been mushrooming on its land and on the seas of China in the past 10 years. Many of these bridges have record-breaking spans or scales. The paper provides an overview on recent major bridge projects in China, and presents some detailed information for several key bridges.

MONDAY

Ballroom 2 (Mezzanine) *Ballrooms 3 & 4 (Mezzanine)* *Benedum Room (First Floor)* *Duquesne Room (First Floor)* *Sterlings Room (First Floor)*

8:30-11:00AM Opening Session

11:15AM-12:45PM BRIDGE AWARDS LUNCHEON Ballrooms 3 & 4 Ticket Required

1:30-5:00PM Featured State: Delaware

4:00-6:00PM Proprietary Session

5:00PM-7:00PM ATTENDEES COCKTAIL PARTY — HOSTED BY THE IBC EXHIBITORS Exhibit Hall

TUESDAY AM

Ballroom 2 (Mezzanine) *Ballrooms 3 & 4 (Mezzanine)* *Benedum Room (First Floor)* *Duquesne Room (First Floor)* *Sterlings Room (First Floor)*

7:00-8:00AM ATTENDEE'S CONTINENTAL BREAKFAST Exhibit Hall

8:30-NOON Design, Part 1 Load Testing Special Interest Session: Coatings (8:00AM-Noon) *Tour of Pittsburgh Zoo at 1:00PM* Special Interest Session: FRP Composites (8AM-Noon) Seminar: Accelerated Bridge Construction (8AM-Noon)

Special Interest Session: (*Liberty Room*): Inspection & Mgmt. (8AM-NOON)

TUESDAY PM

Ballroom 2 (Mezzanine) *Ballrooms 3 & 4 (Mezzanine)* *Benedum Room (First Floor)* *Duquesne Room (First Floor)* *Sterlings Room (First Floor)*

NOON-1:00PM LUNCH BREAK **PITTSBURGH BRIDGE TOUR (departs 1:00PM)** **Advance Ticket Purchase Required**

1:30-5:00PM **Design, Part 2** **Rating, Practice & Technology** **Seminar: Seismic Design and Retrofit (1:00-5:00PM)**

WEDNESDAY

Ballroom 2 (Mezzanine) *Ballrooms 3 & 4 (Mezzanine)* *Benedum Room (First Floor)* *Duquesne Room (First Floor)* *Sterlings Room (First Floor)*

8:00AM-12:30PM **Construction, Part 1** **Long Span Bridges** **Seminar: FRP Composite Repair (8AM-Noon)**

12:30-1:30PM **ATTENDEE'S BUFFET LUNCHEON** **Exhibit Hall**

1:30-3:45PM **Construction, Part 2** **Rehabilitation**

WEDNESDAY, JUNE 14

IBC 06-56

10:45AM Design of Canada Line Extradosed Transit Bridge

Andrew Griezic and Don Bergman,
Buckland & Taylor Ltd., North Vancouver, BC

A 562m long precast segmental box girder bridge, with a 180m extradosed main span, 139m side spans and 52m transition spans was designed for the longest span on a 19km long light rail transit line, and will be the fist extradosed transit bridge in North America.

IBC 06-57

11:10AM Innovative Design and Key Technology Research of Sutong Bridge

Xigang Zhang, Lin Xu, Minshan Pei, and Hong Yuan, *China Highway Planning & Design Institute Consultants, Inc., Beijing, P.R.China*

This paper tells about the main information of the Sutong Yangtze River crossing project, including technical criteria, characteristics and challenges, brief of overall design, key technical research and innovative design. Main bridge of Sutong Project, a 1088 m mid span cable-stayed bridge, is the largest of this type under construction in the world.

IBC 06-58

11:35AM Curved Steel Box Girders Answer the Challenge at Raccoon Creek

Brad Robson, *Palmer Engineering, Winchester, KY*

A four-lane expressway slices through rugged hillsides and crosses more than 200 feet above Raccoon Creek. The curved alignment combined with the 380-foot long spans made steel box girders the ideal choice. To facilitate the complex bridge erection, temporary “angel wing” supports were used as an economical solution to the challenge.

SEMINAR

Seminars at the International Bridge Conference® are intensive, four (4) hour, single-topic focused sessions. Each seminar requires a \$95/\$125 fee in addition to your Conference Registration. Please see the Registration personnel at the Registration desk to sign up. Seating for each Seminar is limited, so please register early. Professional Development Hours (PDHs) will be provided upon request.

FRP Composite Materials for Repair of Reinforced Concrete Structures

**8 AM–NOON
STERLING'S ROOM -1ST FLOOR**

An American Concrete Institute Educational Seminar

This intensive seminar introduces the use and practical application of fiber reinforced polymer (FRP) materials for the repair and retrofit of reinforced concrete structural systems.

Developed by ACI Committee 440, this seminar introduces participants to the nature of reinforced concrete structural repairs using FRP composite systems. The strengthening systems and their physical and mechanical properties will be reviewed following the ACI publication 440.2R-02 *Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures*. The seminar covers the following:

- substrate preparation and FRP application including installation methods and quality control issues.
- design principles for flexural, shear and axial strengthening applications including limits to strengthening
- detailing of repair methods to mitigate debonding and to develop splices

The seminar is illustrated throughout with case studies demonstrating the use of FRP repair systems.

The seminar is intended for engineers, designers, contractors, owners, and building officials. Participants will receive information on the specification, design, and construction of FRP repair systems as well as a copy of the ACI 440.2R-02 (a \$79.50 value).

The seminar presenter will be Mr. William J. Gold, member and former co-chair of the ACI 440 subcommittee that prepared the 440.2R-02 document.

This seminar was developed by ACI and is presented with their permission.

WEDNESDAY, JUNE 14

Construction, Part 2

1:30-3:45PM
BALL ROOM 2

Session Chair: Victor E. Bertolino, PE
SAI Consulting Engineers, Pittsburgh, PA

IBC 06-59

1:30PM **Design and Construction of a Curved
Precast Concrete Spliced U Girder
Bridge**

*Gregg Reese, Summit Engineering Group,
Inc., Littleton, CO*

The paper will discuss the design, fabrication and construction of a horizontally curved precast concrete bridge in Denver, Colorado. The bridge has spans up to 200' and is longitudinally spliced and post tensioned. The project had numerous design and construction challenges and difficult site conditions.

IBC 06-60

1:55PM **Construction Stage and Service
Analysis of a Segmental Concrete Arch
Bridge Supported by Cables During
Construction**

*Daniel Baxter, Michael Baker Jr. Inc.,
Cleveland, OH; Toader Balan, Michael
Baker Jr, Inc., Moon Township, PA*

This paper describes the post-tensioning layout, arch moment magnification method, and cable length control techniques used for the design of the Fulton Road Bridge segmental concrete arches. Cables will support several of the arch spans during construction to avoid disturbing the historic stone arch bridge and railroad below the structure.

WEDNESDAY, JUNE 14

IBC 06-61

2:20PM

A History of Solid Stainless Steel Rebar, The Past, The Present, and the Future

Raymond Schnell, *Talley Metals Technology, Inc., Hartsville, SC*; John Magee, *Carpenter Technology Corp., Reading, PA*

In 1937, Mexico constructed a bridge using 304 stainless rebar. Seventy years later, this bridge is still used daily. DOT's throughout America need bridges that will last over 100 years! Stainless steel rebar has a proven record, when used in applications, where the damaging effects of corrosion, weather and seismic conditions are critical, and where strength and ductility are of extreme concern.

IBC 06-62

2:45PM

Design and Lessons Learned from the Construction of a Soldier Pile and Tied-back Wall

Ray Henney, PE and Ahmad Ahmadi, *SAI Consulting Engineers, Pittsburgh, PA*

The Etna Interchange, S.R. 0028, is located along the north shore of the Allegheny River in Allegheny County, Pennsylvania. It consists of a north and south bound two-lane roadway and is a major artery to and from downtown Pittsburgh. As part of the improvement of this corridor, a lane was added to the Southbound portion of this road. The existing roadway is built on fill embankment with a slope of approximately 1v to 1.5h. The roadway was widened as much as 24 feet. Approximately 1400 feet of soldier pile wall with tie-backs and concrete cast-in-place lagging, constructed bottom-up, was built to accommodate this widening. This wall was as high as 35 feet in some locations.

IBC 06-63

3:10PM

Emergency Scour Repairs on the Tuolumne River Bridge

Hans Strandgaard, *CH2M HILL, Sacramento, CA*

The Tuolumne River Bridge, a 7-span 40-year-old structure, is scour critical and qualifies for seismic replacement. CH2MHILL designed a temporary scour repair project utilizing precast concrete tetrahedrons banded together and anchored with duck-bill anchors and stainless steel cabling. This was the first such application in California for bridge pier scour protection.

WEDNESDAY, JUNE 14

Rehabilitation

1:30-3:45PM

BALL ROOMS 3 & 4

Session Chair: Thomas G. Leech, PE, SE

Gannett Fleming, Inc., Pittsburgh, PA

IBC 06-64

1:30PM

The New Seismic Retrofitting Manual For US Highway Bridges

Phillip Yen and John O'Fallon, *FHWA, McLean, VA*; Jerry O'Connor, *MCEER, Buffalo, NY*

Federal Highway Administration recently completed a comprehensive study to revise the existing Seismic Retrofitting Manual for Highway Bridges, published in 1995. This paper will present the main revisions of this newly being published manual for bridges. While retaining the basic format of the retrofitting process: screening, evaluation and retrofitting, the major changes have been made in this revision include current advances in earthquake engineering, field experience with retrofitting highway bridges, and the performance of bridges in recent earthquakes in California and elsewhere.

IBC 06-65

1:55PM

King's Covered Bridge Restoration

Samer Petro, *Gannett Fleming, Inc., Morgantown, WV*

This paper presents the rehabilitation design of the King's covered bridge over Laurel Creek in Somerset County, PA. This covered bridge spans about 120 feet and was built, ca. 1845. The preservation techniques included bulk epoxy adhesives and Glass Fiber Reinforced Polymer (GFRP) rebars and plates to restore and strengthen chord and vertical truss members.

WEDNESDAY, JUNE 14

IBC 06-66

2:20PM

Innovative Design Concepts used to Widen the Notoriously Congested Route 139, 14th Street Viaduct

Manuj Ray and Stewart Willis, *DMJM HARRIS, Iselin, NJ*

The overall purpose of the project was to seismically retrofit, repair and redeck both the 12th and 14th Street Viaducts while maintaining traffic at all times. Both viaducts, notoriously congested, are located in Hudson County, New Jersey and carry upwards of 50,000 vehicles per day from Jersey City and New York City to points west. Building a new parallel bridge just north of the existing 14th Street Viaduct was essential to avoid extremely costly traffic delays, since the viaduct is located immediately west of the Holland Tunnel approach to New York City.

IBC 06-67

2:45PM

Rehabilitation & Relocation of the Belgium Bridge

Thomas Siwula and Tom Horth, *C&S Engineers, Inc., Syracuse, NY*; Kurt Bower, *NYSDOT, Syracuse, NY*

A two lane, 310' long truss bridge on a principal arterial in Belgium, NY was replaced with a five lane bridge. The truss was dismantled, shop rehabilitated, and re-erected on a rural road in Plainville, NY replacing a one lane historic truss. The presentation covers alternatives investigated, erection processes, shop rehabilitation, quality, and cost.

IBC 06-68

3:10PM

SEISMIC PERFORMANCE OF MULTISIMPLE-SPAN SKEW BRIDGES RETROFITTED WITH LINK SLABS

Alp Caner and Gizem Sevgili, *Middle East Technical University, Ankara, Turkey*

Investigation of more than 100 highway bridges reveal that multi-simple span skew bridges are widely used in Turkey. This paper focuses on evaluating the seismic behavior of multi-simple span skew bridges retro fitted with link slabs. Link slabs provide continuity at deck level by eliminating expansion joints.

EXHIBITORS

Acrow Corporation of America Booth: 84

Contact: Eugene Sobecki
Phone: 201-933-0450
Fax: 201-933-3961
E-Mail: esobecki@acrowusa.com

Acrow is an industry leader in the design and manufacture of prefabricated modular steel bridges. Acrow's principal business is the engineering, manufacturing, and supply of Acrow Panel Bridges. We have been in business for over 50 years. Acrow is based in North America with representation in 35 countries. Visit <http://www.acrowusa.com>

American Bridge Manufacturing Booth: 23

Contact: Darko R. Jurkovic, PE
Phone: 412-631-3000
Fax: 412-631-4001
E-Mail: djurkovic@americanbridge.net

American Bridge Manufacturing is a major supplier of fabricated structural steel and steel grid deck to the new bridge and bridge rehabilitation markets. Rapid delivery requirements are facilitated with in-house detailing capability and on-site painting. Recently fabricated new steel bridge structures include a variety of truss, arch, girder and beam bridges. Customers are served from plants located in Pennsylvania and Oregon.

American Composites Manufacturers Association Booth: 97 & 98

Contact: John P. Busel, Director, Composites
Growth Initiative
Phone: 914-961-8007
Fax: 914-961-8004
E-Mail: jbusel@acmanet.org

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

EXHIBITORS

American Galvanizers Association Booth: 33

Contact: John Krzywicki
Phone: 720-554-0900
Fax: 720-554-0909
E-Mail: marketing@galvanizeit.org

Serving the needs of specifiers, architects, engineers, contractors, and fabricators throughout North America since 1935, the American Galvanizers Association (AGA) provides information on the most innovative applications and state-of-the-art technological developments in hot-dip galvanizing for corrosion protection. Created to educate and train in the specification and use of hot-dip galvanized steel, the AGA maintains a large technical library, distributes numerous industry publications, offers free educational seminars, and provides toll-free technical support to the specifying community.

Applied Foundation Testing Booth: 96

Contact: Lea Smart
Phone: 904-284-1337
Fax: 904-284-1339
E-Mail: lsmart@testpile.com

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Bar Splice Products, Inc. Booth: 18

Contact: Gary R. Foster
Phone: 937-275-8700
Fax: 937-275-9566
E-Mail: gary@barsplice.com

Manufacturer of mechanical splices for rebar.

Barnhart Crane & Rigging Booth: 202

Contact: Will Smith
Phone: 251-654-0541
Fax: 251-654-0547
E-Mail: wsmith@barnhartcrane.com

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Beeche Systems Corp. Booth: 45

Contact: Jerry Dolly
Phone: 518-381-6000
Fax: 518-381-4613
E-Mail: quikdeck@beeche.com

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BendTec, Inc. Booth: 12

Contact: Wendy Anderson
Phone: 218-722-0205
Fax: 218-722-6598
E-Mail: wendy@bendtec.com

BendTec is a leader in bending and fabricating for projects involving curved architectural and structural members. AISC-Certified for Simple Steel Bridges, Major Steel Bridges and Sophisticated Paint Endorsements, and Fracture Critical Endorsements. Products include parabolic arches, long radius bends, light/power poles, signs and bridge arches. 1-800-BendTec (236-3832), www.bendtec.com

BID-WELL Booth: 102

Contact: Jeff Thress
Phone: 605-987-2603
Fax: 605-987-2605
E-Mail: jthress@bid-well.com

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Bridge design & engineering magazine Booth: 71

Contact: Lisa Bentley
Phone: +44 (0)20 7973 6698
Fax: +44 (0)20 7973 4797
E-Mail: l.bentley@hgluck.com

EXHIBITORS

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

Bridges Magazine **Booth: 15**

Contact: Jessica Harper
Phone: 816-254-8735
Fax: 816-254-2128
E-Mail: jharper@mercormedia.com

A new name, a new look and a whole new market reach! We have redesigned the former Bridge Builder magazine to better reflect the informational needs of the decision makers in the important bridge marketplace, while tripling our market reach!

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Bridon **Booth: 93**

Contact: Barrie Mordue
Phone: 01302 344 010
Fax: 01302 360 006
E-Mail: bridges@bridon.com

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Burgess & Niple, Inc. **Booth: 57**

Contact: Karen Anderson
Phone: 614-459-2050
Fax: 614-451-1385
E-Mail: kanderson@burnip.com

EXHIBITORS

Burgess & Niple's 50 bridge engineers perform new design, rehabilitation, plan review, load rating and inspection. In the last 5 years, we've designed 200 bridges and inspected over 3,000 bridges. Our national inspection expertise covers 22 states and 40 bridges with main spans of more than 500 feet.

Campbell Scientific, Inc. Booth: 105

Contact: Ken Stevens
Phone: 435-753-2342
Fax: 435-750-9540
E-Mail: kstevens@campbellsci.com
Campbell Scientific, Inc. manufactures data acquisition systems for bridge monitoring and testing. Proven on many of the world's premier bridges, our rugged, stand-alone, DC powered instrumentation features multiple telemetry options, low power use, non-volatile data storage, rainflow histograms, real-time FFTs, and rugged reliability even in harsh, remote environments.

Cargill - SafeLane Booth: 13

Contact: Bob Persichetti
Phone: 717-676-1238
Fax: 717-755-3336
E-Mail: bob_persichetti@cargill.com
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Carolina Stalite Company Booth: 67

Contact: Ken S. Harmon
Phone: 704-637-1515
Fax: 704-642-1572
E-Mail: kharmon@stalite.com
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CBSI **Booth: 107 & 108**

Contact: Jerry V. Clodfelter
Phone: 713-675-1180
Fax: 713-675-1140
E-Mail: jvclodfelter@cbsii.com

CBSI is the definitive resource for engineering matters relating to cable-supported structures. In addition to consulting services, CBSI personnel design, contract for, storehouse, and supply both custom and standard bridge strands, ropes and related structural sockets, casting and forgings. We are driven by a determination to provide each client with the finest products and services available today. We know the excellence of our work is our most important asset.

Ceratech, Inc. **Booth: 4**

Contact: Leo Kahl
Phone: 703-894-1130
Fax: 703-894-1068
E-Mail: leo.kahl@ceratechinc.com

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Chaparral Steel **Booth: 79**

Contact: Scott Whitaker
Phone: 219-531-2404
Fax: 219-464-0160
E-Mail: sswhitaker@comcast.net

Chaparral produces a complete line of steel H-piles and hot-rolled sheet piling (PZ22/27/35/40, PZC13, PZC18 and PS27.5/31) at our structural mills in Texas and Virginia. Sheet piling is available in ASTM A328, A572-GR 50 & 60, A588, and A690. Wide flange shapes up to 36 in. deep are available from our Virginia mill. Complete product information may be obtained at www.txi.com

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ChemCo Systems Booth: 10

Contact: John Bors
Phone: 650-261-3790
Fax: 650-261-3799
E-Mail: bors@chemcosystems.com
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Computers & Structures, Inc. Booth: 50

Contact: Syed Hasanain, Executive Vice President
Phone: 510-845-2177
Fax: 510-845-4096
E-Mail: info@csiberkeley.com
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CONTECH Bridge Solutions, Inc. Booth: 59

Contact: Timothy J. Beach, PE, SE
Phone: 937-254-2233
Fax: 937-254-8365
E-Mail: tbeach@con-span.com
CONTECH Bridge Solutions, Inc. is a patented modular precast system for total set-in place construction of bridges, culverts, underground structures and environmentally acceptable alternatives for underground containment. The arch-box units offer clear spans from 12 ft. to 48 ft. with variable rise. The system includes optional precast wingwalls, headwalls and footings.

Concrete Reinforcing Steel Institute (CRSI) Booth: 60

Contact: John M. Prentice
Phone: 847-517-1200
Fax: 847-517-1206
E-Mail: transportation@crsi.org

Conduit Constructors Booth: 113

Contact: Burns Conrad
Phone: 704-598-5684
Fax: 704-598-5683
E-Mail: bconrad@conduitconstructors.com

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We are the under bridge piping construction experts. Our markets include electrical, telcom, sewer, gas, water, and deck drainage piping. Supportive services are: design, engineering, repairs, material fabricating, and under bridge equipment rentals with supporting traffic control services. Visit www.conduitconstructors.com.

Con-Serv, Inc. Booth: 69

Contact: Thomas E. Erdner
Phone: 412-777-2151
Fax: 412-778-4430
E-Mail: thomas.erdner@bayerbms.com
Bayer MaterialScience LLC manufactures enabling raw materials for high performance polyurethane coatings and thick film spray elastomer coatings that provide rugged corrosion protection for bridges all over the world. Bayer MaterialScience is a member of the worldwide Bayer Group, which has major business interests in the healthcare, life sciences and chemicals industries.

Consolidated Systems Inc. Booth: 49

Contact: Jonathan Causey
Phone: 803-251-5034
Fax: 803-744-6287
E-Mail: jonathan.causey@csisteel.com
With 50 years of service to the construction industry, the Csi - Metal Dek Group™ designs and manufactures various Bridge Dek™ profiles that can accommodate design spans ranging from 18" to over 13'. Csi offers permanent forming systems that can be utilized in both non-aggressive and extremely aggressive environments. Csi sales, engineering, and project management personnel work collectively to provide Engineered Solutions™ for its customers. Web site: www.csisteel.com

Corrpro Companies, Inc. Booth: 16

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Phone: 330-723-5082
Fax: 330-722-7606
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Corrpro offers complete cathodic protection and coating services to protect your structures, whether steel or concrete, from corrosion.

CSC/EEM/Royston Booth: 81

Contact: John Tortorete
Phone: 412-828-1500
Fax: 412-828-4826
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Contact: Adrian Ciolko
Phone: 800-522-2285, x3054
Fax: 847-965-6541
E-Mail: aciolko@CTLGroup.com

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D.S. Brown Company, The Booth: 83

Contact: Bob Rose
Phone: 732-451-0070
Fax: 732-262-4443
E-Mail: brose@dsbrown.com

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D'Appolonia Booth: 29

Contact: Dave Leitze
Phone: 412-856-9440
Fax: 412-856-9535
E-Mail: dcleitze@dappolonia.com

EXHIBITORS

D'Appolonia provides civil, geotechnical and environmental engineering analysis and design services for infrastructure and transportation systems. The firm's areas of specialization include foundations, earth retention and excavation support structures, slope stabilization, ground improvement, subsidence mitigation, dewatering, instrumentation, geophysical reconnaissance and LRFD training for highway bridge substructures.

DeAngelo Brothers, Inc. **Booth: 47**

Contact: Fred Grant
Phone: 570-459-5800
Fax: 570-459-5500
E-Mail: fgrant@dbiservices.com

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Manufacturer and Distributor of the FlexAble Bridge Joint System, mastic deck repair products in black or gray, waterproofing membranes and crack and joint sealants.

DIS, Inc. **Booth: 1**

Contact: Konrad Eriksen
Phone: 775-359-3333
Fax: 775-359-3985
E-Mail: keriksen@dis-inc.com

DIS, Inc is a leader in Base Isolation and has provided isolators for over 210 bridges and buildings throughout the world. Notable Bridge Projects include Woodrow Wilson, JFK Light Rail, Golden Gate, Coronado, Richmond San Rafael and the I40 Bridge in Memphis. For more information visit www.dis-inc.com.

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DMJM Harris Booth: 38

Contact: Norma E. Rowley
Phone: 412-395-8888
Fax: 412-395-8897
E-Mail: norma.rowley@dmjmharris.com

DMJM Harris is a full-service engineering firm with offices in Pittsburgh, Philadelphia, Horsham and Harrisburg, PA, as well as in 25 other states. DMJM Harris offers professional services in Highway Design, Structural Engineering, NBIS and Structural Inspection, Traffic Studies and Engineering, Planning, ITS Design, Electrified Railroad Design, Mass Transit Systems Design, Program Management, Construction Management and Construction Inspection.

DMJM Harris is one of 14 operating companies of AECOM, and is responsible for AECOM's ranking as the #1 firm in Transportation on ENR's current list of the Top 500 Design Firms. AECOM is also ranked #1 by ENR among "Pure" Designers in the engineering industry.

Dow Corning / SSI Booth: 11

Contact: Marvin Ollar
Phone: 918-587-5567
Fax: 918-582-7510
E-Mail: mc.ollar@ssicm.com

Dow Corning / SSI manufactures and supplies silicone joint sealants, the 'XJS' Expansion Joint System and repair products for bridges, highways, airports and parking structures.

Dynamic Surface Applications Booth: 103

Contact: Ed Shrimp
Phone: 570-546-6041
Fax: 570-546-2415
E-Mail: eshrimp@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.

Dyson Corporation, The Booth: 109

Contact: Shannan Galeazzo
Phone: 440-946-3500
Fax: 440-352-2700
E-Mail: sgaleazzo@dysoncorp.com

EXHIBITORS

Domestic manufacturer of Fasteners and Forgings in both standard and custom configurations. Size range from .75" (M20) thru 8" (M200). Foundation Anchor Rod Systems: ASTM-A615 & ASTM-A722 tie rods with all accessories. Tower and Blade Bolting Assemblies: Bolts, Screws, Bosses, Studs, Nuts & washers to ASTM and DIN Specifications.

Earthquake Protection Systems, Inc. Booth: 43

Contact: Dr. Anoop Mokha
Phone: 707-644-5993
Fax: 707-644-5995
E-Mail: eps@earthquakeprotection.com
Earthquake Protection Systems

(www.earthquakeprotection.com) is one of the world's leading manufacturers of seismic isolation bearings. We offer complete seismic isolation services, including bearing design, structural design support, testing, and installation support. Our highly qualified and experienced engineers can provide bearings that have performance and economic benefits for your project.

Enerpac Booth: 200 & 201

Contact: Paul hohensee
Phone: 262-781-6600
Fax: 262-783-9562
E-Mail: paul.hohensee@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.

Engineering Methods, Inc. Booth: 115

Contact: Jerry McFeeters
Phone: 513-563-0400
Fax: 513-563-0422
E-Mail: jerrymcfeeters@engmeth.com

Since 1976, Engineering Methods has provided Finite Element Analysis solutions to hundreds of companies. We represent ANSYC/CivilFEM, the most advanced, comprehensive and reputable analysis and design software package available for bridge, geotechnical, reinforced concrete and other Civil Engineering projects. We can meet all your Civil Engineering structural needs inter/nationally.

EXHIBITORS

ERICO Booth: 35

Contact: Lou Colarusso
Phone: 440-248-0100
Fax: 440-248-0723
E-Mail: www.erico.com

ERICO® was incorporated in Cleveland, Ohio USA in 1903 and, over the past century, has established a reputation for providing engineering excellence and innovative product solutions. ERICO manufactures LENTON® mechanical rebar splices, the most widely used mechanical rebar splices in the world today.

ERICO® Inc. Call 1-800-248-2677 or visit erico.com

Eriksson Technologies, Inc. Booth: 54

Contact: Sarah Carleton
Phone: 813-989-3317
Fax: 813-989-0617
E-Mail: scarleton@eriktech.com

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

Figg Engineering Group Booth: 02

Contact: Cheryl Maze
Phone: 850-224-7400
Fax: 850-224-5428
E-Mail: cmaze@figgbridge.com

The Figg Team is exclusively focused on the design, construction engineering and inspection of major bridges across America to create landmarks and enhance the communities in which the bridges are located. Figg-designed bridges have been honored with more than 225 awards for aesthetics, innovation and efficiency.

Fort Miller Company, Inc., The Booth: 44

Contact: Peter J. Smith
Phone: 518-695-5000

EXHIBITORS

Fax: 518-695-4970
E-Mail: psmith@fmgroup.com

The Fort Miller Co., Inc., a Northeastern United States Based precast concrete company, manufactures a broad spectrum of precast concrete products for the transportation industry. This includes such bridge related products as precast concrete box culverts, both three and four sided, bridge deck panels, pier caps, parapets, piers and segmental box girders. It also includes concrete and steel composite products such as Precast Concrete Steel Composite Superstructure Units (formerly Inverset) and light-weight bolt-down Effideck units.

FreeSpan Systems, Inc. Booth: 112

Contact: Michael Swalling
Phone: 907-272-3461
Fax: 907-274-6002
E-Mail: msawalling@swalling.com
FreeSpan Systems, Inc. provides design/build services for construction of ultra long span light duty bridges throughout North America.

Geotechnics, Inc. Booth: 22

Contact: Randy O'Rourke
Phone: 412-823-7600
Fax: 412-823-8999
E-Mail: rorourke@geotechnics.net
Geotechnics is an independent accredited laboratory that is nationally recognized for providing high quality geotechnical and geosynthetic testing services. Geotechnics has been accredited by The Geosynthetics Accreditation Institute-Laboratory Accreditation Program (GAI-LAP). The American Association of State Highway and Transportation Officials (AASHTO) and The United States Army Corps of Engineers (COE). Geotechnics has operations in Pittsburgh, Pennsylvania and Raleigh, North Carolina.

Gerdau Ameristeel Booth: 111

Contact: Andrew Marquardt
Phone: 888-637-9950

EXHIBITORS

Fax: 865-637-9991
E-Mail: amarquardt@gerdauameristeel.com
Major steel producer in the United States. Also major fabricator and coating operations for concrete reinforcing steel in North America.

Greenman-Pedersen, Inc./SG Pinney Instrument Sales, Inc. Booth: 58

Contact: Pat Marazzi
Phone: 772-337-3080
Fax: 772-337-0294
E-Mail: pmarazzi@sgpinney.com
Greenman-Pedersen, Inc. is a top national engineering/architectural design and construction firm involved on major projects throughout the US and overseas since 1966. Provides many multi-discipline services to the building, industrial/commercial, transportation, telecommunications, and power/energy industries. SGP Instrument Sales, Inc., specializes in corrosion instruments including air monitoring equipment and our new line of Safety, GPS equipment and software.

H2L2 Architects / Planners Booth: 116

Contact: Carol Picard
Phone: 212-688-9800, ext. 20
Fax: 212-688-9899
E-Mail: cpicard@h2L2.com
H2L2 - 99 Years of Infrastructure. Since the design of the Benjamin Franklin Bridge in the early 1900's by our founder Paul Phillipe Cret, H2L2 ARCHITECTS/PLANNERS, LLP has provided architectural design services for a comprehensive range of infrastructure and public works projects including signature spans, river crossings, highway, pedestrian, and railroad bridges.

Harcon Corporation Booth: 87

Contact: Harry Stoltzfus
Phone: 717-687-9294
Fax: 717-687-9296
E-Mail: harry@harconcorp.com
Harcon Corporation provides bridge access equipment and rigging services to consultants performing bridge inspections and contractors performing bridge maintenance. Our focus is on eliminating lane closures. Since 1988 we've provided our services on thousands of structures all over the eastern half of the United States

Hardesty & Hanover, LLP Booth: 78

Contact: John G. Zuccerella

EXHIBITORS

Phone: 212-944-1150
Fax: 212-391-0297
E-Mail: jzuccerella@hardesty-hanover.com
Hardesty & Hanover, founded in 1887 by noted designer, Dr. J.A.I. Waddell, is one of the nation's most respected, privately owned consulting engineering firms. With over 117 years of experience in the field of bridge engineering, H&H has been responsible for the planning, designing, and engineering of numerous bridges, highways and expressways throughout the nation.

Hatch Mott MacDonald **Booth: 92**

Contact: Tom Jaworski
Phone: 973-912-7512
Fax: 973-379-8970
E-Mail: thomas.jaworski@hatchmott.com
Hatch Mott MacDonald is an award winning full service consulting engineering firm offering public and private clients multi-disciplined expertise and comprehensive capabilities in planning, environmental assessments, studies and analysis, design, architecture, procurement, construction engineering and inspection, project, program and construction management and facility maintenance and operations in the fields of bridges, highways, rail/transit, tunnels, aviation/airports, water conveyance, wastewater/cso, environmental, gas pipelines, building and utilities.

With roots that date back more than 100 years and a world-wide pool of nearly 10,000 employees to draw from, Hatch Mott MacDonald has earned a reputation for technical excellence, innovation and client responsiveness on some of the most prominent and challenging projects. Visit our web site at www.hatchmott.com.

Hilman Rollers **Booth: 32**

Contact: Jeff Hill
Phone: 732-462-6277

EXHIBITORS

Fax: 732-462-6355
E-Mail: sales@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.

Houston Structures Booth: 48

Contact: Mike Ulven
Phone: 503-651-3174
Fax: 503-651-1176
E-Mail: mikeu@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.

InspectTech Booth: 42

Contact: Jeremy Shaffer
Phone: 412-681-1521
Fax: 412-682-3068
E-Mail: shaffer@inspecttech.com

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.

Interlocking Deck Systems International Booth: 64

Contact: Chris Davis
Phone: 412-682-3041
Fax: 412-682-3560

EXHIBITORS

E-Mail: cdavis@idsi.org

IDSi is dedicated to the design and manufacturing of open and concrete-filled Steel Grid deck systems and structural components for new bridge construction and bridge rehabilitation projects. IDSi offers traditional welded decking systems, as well as the latest in weldless technology. Additionally, IDSi provides in-plant precision machining, steel fabrication, and heavy stamping die fabrication capabilities for general industry.

IVS Hydrodemolition Services **Booth: 91**

Contact: Ron Ferdig
Phone: 724-335-2829
Fax: 724-335-4756
E-Mail: ron.ferdig@ivsgroup.com

Providing the best hydrodemolition services in the nation.

Jarret Structures, Inc. **Booth: 95**

Contact: Jim Hatch
Phone: 413-637-9795
Fax: 413-637-1121
E-Mail: jim@jarretstructures.com

Jarret has been making energy absorbing devices for the protection of structures for over twenty years. With the 2005 acquisition of the seismic business of Enidine Structures, including its E-Structures subsidiary, Jarret is continuing all civil engineering and seismic activities globally under the name JARRET STRUCTURES. More information can be found at www.jarretstructures.com and www.e-structures.com.

KTA-Tator, Inc. **Booth: 61**

Contact: Eric Kline
Phone: 412-788-1300
Fax: 412-788-1306
E-Mail: info@kta.com

KTA-Tator, Inc. along with Proceq USA, Inc. will feature the latest instrumentation for the non-destructive testing of concrete structures. This equipment will also be demonstrated in a half-day Special Interest Session on Tuesday afternoon titled "Non-Destructive Testing of Aged Concrete." KTA-Tator, Inc. is a full-service con-

EXHIBITORS

sulting engineering firm specializing in protective coatings, lead paint abatement services, and welding inspection. Proceq USA, Inc. manufactures the highest quality testing instruments for the metal and concrete industries.

L.B. Foster **Booth: 73**

Contact: Mike Riley
Phone: 412-928-3452
Fax: 412-928-3514
E-Mail: mriley@lbfosterco.com

L.B. Foster manufactures, fabricates, and distributes products to serve the nation's surface transportation infrastructure. The company provides a full line of new and used rail, trackwork, and accessories to railroads, mines and industry; it supplies bridge decking, expansion joints, mechanically stabilized earth wall systems, precast concrete products and other products for highway construction and repair; and pipe coatings for natural gas pipelines and utilities.

LARSA with STAAD.Pro **Booth: 72**

Contact: Ali Karakaplan
Phone: 212-736-4326
Fax: 631-206-3610
E-Mail: ali@larsausa.com

LARSA's flagship product, LARSA 2000/4th Dimension, brings two decades of experience in the structural analysis of bridges and structures to the new millennium. Based on a rock-solid, truly 3D, nonlinear analysis engine, LARSA 2000/4D boasts staged construction analysis, tendons, influence-based live load analysis, time-dependent materials, dynamic analyses for earthquake analysis, and a completely new user interface with a lean learning curve. LARSA is located in New York and is partnered with Research Engineers (STAAD) offices world-wide to provide unbeatable support services.

LEAP Software, Inc. **Booth: 65**

Contact: Lee Tanase
Phone: 813-985-9170
Fax: 813-980-3642
E-Mail: lee.tanase@leapsoft.com

LEAP Software is the Nation's leading developer of bridge analysis and design software solutions. Our new LEAP Bridge Suite with Integrated Bridge Software

EXHIBITORS

Technology eliminates repetitive data entry, reduces errors, and allows users to retrieve bridge components as often as needed.

LEAP Bridge is available in many configurations including precast/prestressed concrete beam, precast spliced/post-tensioned girders, and CIP concrete post-tensioned box girders or slabs.

Lehigh University - ATLSS Research Center Booth: 30

Contact: R.P. Alpage
Phone: 610-758-6107
Fax: 610-758-5902
E-Mail: rpa2@lehigh.edu

The Lehigh University ATLSS Research Center has extensive experience in laboratory and field instrumentation, testing, and fatigue and strength evaluation of bridges.

Lichtenstein Consulting Engineers, Inc. Booth: 86

Contact: Frank Danberg
Phone: 215-752-2206
Fax: 215-752-1539
E-Mail: fdanberg@lce.us

Lichtenstein Consulting Engineers (LCE) is a transportation engineering firm that is headquartered in Paramus, NJ and provides design services from ten regional offices on the East Coast. LCE specializes in bridges. Specifically, the firm's services include design of new bridges and roadways; rehabilitation of historic bridges; bridge inspections; evaluations and load ratings of highway, railroad, and movable bridges; cultural resource investigations including historic bridge surveys; and construction support engineering.

LUSAS Bridge Analysis Software Booth: 82

Contact: Terry Cakebread
Phone: 44 (0) 20 8541 1999
Fax: 44 (0) 20 8549 9399
E-Mail: terry.cakebread@lusas.com

LUSAS develops, supports and markets LUSAS Bridge - finite element software for the analysis, design and assessment of all types of bridge structures. Used on major structures worldwide, LUSAS Bridge solves all types of

EXHIBITORS

linear and nonlinear stress, dynamics, composite, fatigue, buckling, thermal, or soil structure interaction analysis problem.

McClain & Co., Inc. **Booth: 55**

Contact: Valerie Ellington-Mills
Phone: 540-423-1110
Fax: 540-423-1066
E-Mail: vmills@mcclainandcompany.com
Underbridge Access Equipment Rentals, Truck Mounted Aerial Platforms & Certified Traffic Control. Over 30 units including A-75's, UB-60's, Mark IV Snoopers, UB-50's, BM-50, BM-47, variety of 40' Platform & Bucket Snoopers, UB-30 rail-mounting unit, small & large Moog Platforms ranging 24' - 70'. Hi-Reach & Bucket Trucks 27-90'. Certified Operators, innovative audio/visual system for added safety, ANSI certified units.

MDX Software **Booth: 68**

Contact: Chris Douty
Phone: 573-446-3221
Fax: 573-446-3278
E-Mail: support@mdxsoftware.com
Developer of curved and straight steel bridge design and rating software for AASHTO ASD, LFD, and LRFD.

Michael Baker Jr., Inc. **Booth: 63**

Contact: Jeffrey J. Campbell
Phone: 412-269-7948
Fax: 412-375-3998
E-Mail: jcampbell@mbakercorp.com
At Baker, we take pride in designing and maintaining bridges both large and small. Our broadbased experience allows us to offer diverse services from design and design management of bridges, to bridge inspection and training, to developing specialty software. From steel to concrete, from cable-stayed to truss - Baker knows bridges.

MMFX Steel Corporation of America **Booth: 99 & 100**

Contact: Salem Faza
Phone: 949-476-7600
Fax: 949-474-1130

EXHIBITORS

E-Mail: salem.faza@mmfxsteel.com
MMFX Technologies continues to invent world-changing breakthroughs in materials sciences. The technology that makes MMFX steel five times as corrosion resistant and up to three times as strong as conventional steel is today's reality. MMFX steel products are used in bridges, highways, parking structures, and residential and commercial real estate projects.

Moffatt & Nichol **Booth: 88**

Contact: John Menge, Vice President
Phone: 562-590-6500
Fax: 562-590-6512
E-Mail: Jmenge@moffatnichol.com
Moffatt & Nichol's structural capabilities encompass all aspects of highway and railroad bridge design including planning, inspections, widening, rehabilitation and final design of new structures. Specialty capabilities include navigation crossings, deep marine foundations, vessel collision analysis, pier protection systems, scour analysis, seismic analysis and retrofit, and security assessments.

Monotube Pile Corporation **Booth: 27**

Contact: Scott Udelhoven
Phone: 330-454-6111
Fax: 330-454-1572
E-Mail: monotube@raex.com
End-driven longitudinally fluted steel shell for friction bearing applications available in a variety of diameters and tapers with engineering support for your project needs.

National Steel Bridge Alliance **Booth: 26**

Contact: Conn Abnee
Phone: 606-724-2347
Fax: 606-724-2504
E-Mail: abnee@nsbaweb.org
The National Steel Bridge Alliance is organized and dedicated to better serve our customers and members with state-of-the-art design and construction of steel bridges. We are a unified industry organization of businesses and agencies interested in the development, promotion and construction of cost effective steel bridges.

Non-Destructive Testing Group **Booth: 56**

EXHIBITORS

Contact: Mike Forbes
Phone: 616-891-3570
Fax: 616-891-3565
E-Mail: mforbes@ndtg.net

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

Palmer Engineering **Booth: 53**

Contact: Jim Galt
Phone: 859-744-1218
Fax: 859-744-1266
E-Mail: palmer@palmernet.com

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

Paxton-Mitchell Company **Booth: 21**

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

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

Pennoni Associates Inc. **Booth: 09**

Contact: John Bogue, PE
Phone: 215-345-4591
Fax: 215-345-7853
E-Mail: jbogue@pennoni.com

Pennoni Associates Inc., an ENR top 150 Engineering firm, provides transportation engineering, bridge inspection and design, marine and underwater engineering, materials testing, construction inspection, civil engineering, water/wastewater engineering, building systems, structural engineering, geotechnical engineering, surveying and site design/landscape architecture services. Pennoni employs more than 600 personnel in 17 domes-

EXHIBITORS

tic offices.

Peoples Republic of China Booth 203-205

The Peoples Republic of China will be the “Featured Country” at the 2007 International Bridge Conference. You may view a sample of the bridge programs- currently underway and recently completed- at the 2006 IBC.

Power Team Booth: 6

Contact: Beth Waelti
Phone: 815-873-3720
Fax: 815-873-3391
E-Mail: beth.waelti@fluidpower.spx.com

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

Precast / Prestressed Concrete Institute (PCI) Booth: 17

Contact: John S. Dick
Phone: 312-360-3205
Fax: 312-786-0353
E-Mail: j.dick@pcinst.com

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

Prestressed Concrete Association of Pennsylvania Booth: 14

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

The Prestressed Concrete Association of Pennsylvania is a non-profit industry organization of prestressed concrete bridge beam manufacturers approved by the Pennsylvania

EXHIBITORS

Department of Transportation as a material source and located in the Commonwealth of Pennsylvania.

Q.B. Associates, Inc. **Booth: 28**

Contact: Neil Brown
Phone: 207-743-8885
Fax: 207-743-0598
E-Mail: neil@spg-antirock.com

Antirock has been protecting bridge decks world wide since 1976 with it's first installation still in place 29 years later. The bond created between the bridge deck and Antirock is unsurpassed by any waterproofing product in use today.

R.J. Watson, Inc. **Booth: 40 & 41**

Contact: Marc D. Stafford
Phone: 716-691-3301
Fax: 716-691-3305
E-Mail: mstafford@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.

RADCON Formula #7 **Booth: 39**

Contact: Edward L Byrne
Phone: 612 9362 3511
Fax: 612 9362 3244
E-Mail: sales@radcrete.com.au

Radcrete Pacific is global distributor for RADCON #7 - an advanced biochemical technology that waterproofs concrete for life by penetrating concrete and creating a gel within cracks, pores, and capillaries - sealing cracks

EXHIBITORS

to 0.08" and resealing hairline cracks 0.012" that develop after treatment.

This US-invention, with a proven 30-year track record, suits new and existing structures.

Rampart Hydro Services **Booth: 106**

Contact: Beth W. Newbold
Phone: 412-262-4511
Fax: 412-262-1556
E-Mail: bnewbold@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, The **Booth: 19**

Contact: Alicia Olson
Phone: 703-821-1175
Fax: 703-821-1815
E-Mail: info@reinforcedearth.com
The Reinforced Earth Company is a world leader in the design and supply of proprietary retaining wall system and earth-related technologies. Recognized as the supplier to some of our nation's largest highway construction projects, working as a subcontractor/material supplier on Department of Transportation and privately owned projects, we perform all duties associated with our jobs from sales, marketing, engineering, design, supply and construction assistance.

RJD Industries, Inc. **Booth: 76**

Contact: Randall Decker
Phone: 949-582-0191
Fax: 949-582-0995
E-Mail: r-decker@pacbell.net
Manufacturer of products that avoid corrosion in concrete: SuperTie, fiberglass formtie systems; SpliceSeal,

EXHIBITORS

concrete reinforcement protection system; and FiberDowel, corrosion proof joint restraint system.

Roads & Bridges Magazine **Booth: 36**

Contact: Rick Schwer
Phone: 847-391-1048
Fax: 847-390-0408
E-Mail: rschwer@sgcmail.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.

Ropelink, Inc. **Booth: 5**

Contact: Hamid Vossoughi
Phone: 212-295-2122
Fax: 212-295-2121
E-Mail: hvossoughi@ropelink.com

Specialty access, inspection, maintenance and repair of structures at high and difficult access locations.

Salit Specialty Rebar **Booth: 52**

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

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

SAS Suite LLC **Booth: 51**

Contact: Lubin Gao
Phone: 443-280-3155
Fax: 703-644-9360
E-Mail: lgao@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

EXHIBITORS

expertise to customers, SAS Suite ensures that every solution meets specific requirements. www.sassuite.com

Seismic Energy Products, L.P. Booth: 85

Contact: Steve Bowman
Phone: 903-675-8571
Fax: 903-677-4980
E-Mail: steve.bowman@sepbearings.com
Nation's largest manufacturer of seismic isolation bridge bearings, elastomeric bridge bearings, and Fluorogold® Teflon® slide bearings.

Sherwin-Williams Company Booth: 66

Contact: Terri Lassa
Phone: 216-566-1580
Fax: 216-566-1832
E-Mail: terri.k.lassa@sherwin.com
Developing the smartest industrial and marine coatings takes a lot of experience. Delivering them as complete, unique solutions in your industry takes even more. At Sherwin-Williams, we've worked hard to become the leader. We're more than a coatings manufacturer. We're a strategic source helping you stay on top of your industry.

SIKA Corporation Booth: 07

Contact: David White, PE
Phone: 201-933-8800
Fax: 201-933-6225
E-Mail: white.dave@sika-corp.com
Sika Corporation Construction Products Division, Lyndhurst NJ, is a technology leader with over 90 years of experience in concrete materials and restoration technology. Sika's product line includes concrete admixtures, sealants, adhesives, total corrosion management products, specialty mortars, epoxy resins, structural strengthening systems, grouts, anchoring adhesives, overlays, and protective coatings. Full Service sales and technical offices support customers nationwide. Visit the Sika Corporation Construction Products Division website at www.sikaconstruction.com.

Silica Fume Association Booth: 114

Contact: Tony Kojundic
Phone: 412-299-7229
Fax: 412-299-7238
E-Mail: tony@silicafume.org

EXHIBITORS

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

Sofis Company, Inc. **Booth: 20**

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

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

SSPC **Booth: 31**

Contact: Lorena Walker
Phone: 412-281-2331, ext. 215
Fax: 412-281-9993
E-Mail: walker@sspc.org

Founded in 1950, SSPC is the only non-profit association focused entirely on the protection and preservation of concrete, steel and other industrial and marine structures and surfaces through the use of high-performance coatings. SSPC is the leading source of information on surface preparation, coating selection, coating application, environmental regulations, and health and safety issues that affect the protective coatings industry. SSPC's many industry-specific products and services include standards development, technical publications, training courses, certification programs, conferences, an expanding range of online resources, and more. Learn more about SSPC at <http://www.sspc.org>

Stirling Lloyd Products, Inc. **Booth: 03**

Contact: Simon Greensted
Phone: 860-666-5008

EXHIBITORS

Fax: 860-666-5106
E-Mail: northamerica@stirlinglloyd.com
'Eliminator' is the world's most widely-specified sprayed bridge deck waterproofing system, for highways with asphalt overlay and railroads without protection board. Over 75 million square feet and 5,000 bridges have been protected worldwide, installed and operating in every climatic condition. Very high performance anti-skid systems and polymer concrete overlays are also offered.

Structal Bridges Booth: 46

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

Structal-bridges is the most important bridge fabricator in Canada. We are known for the quality of our products and the reliability of our service. Structal has been specialized in the design and the fabrication of various types of bridges. Whether they are road, logging or railway, our team will make sure that the products we deliver meet your standards and expectations.

For more information, visit our website :
www.structalbridges.ws

Structural Integrity Systems, LLC Booth: 25

Contact: Monica Svaty
Phone: 316-744-9746
Fax: 316-744-8284
E-Mail: sislic@southwind.net

SISllc applies patented wireless, sensor, and computer technologies to help engineers determine how a structure is reacting to its dynamic loading. Projects have ranged from an arena to a laminated glass deck cable stayed pedestrian bridge to a filled concrete arch to a rolling lift bascule railroad bridge.

T.Y. Lin International Booth: 90

Contact: Michael Fitzpatrick
Phone: 415-291-3767
Fax: 415-433-0807
E-Mail: mfitzpatrick@tylin.com

T.Y. Lin International (TYLI) is the world leader in the design of major bridges and transportation infrastructure projects. Our firm is recognized for award-winning, innovative, cost-effective, and constructible designs around

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the world. TYLI offers clients a full spectrum of consulting services from site analysis and conceptual design to the development of final plans, specifications, and cost estimates. We offer complete inspection services, structural investigations, feasibility and constructability reviews, value engineering studies, and engineering for the rehabilitation, repair, and seismic retrofit of existing structures.

Tamms Industries **Booth: 62**

Contact: Steve Scarpinato
Phone: 800-862-2667
Fax: 815-522-2323
E-Mail: sscarp@tamms.com

Tamms is a leading manufacturer of polymer concrete bridge deck overlays. Flexolith overlays have been in service for over 30 years. The Flexolith Polymer Concrete System combines a strong, flexible epoxy polymer binder with a special grade aggregate providing high fracture and polish resistance.

Termarust Technologies **Booth: 89**

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

Termarust Technologies manufactures cost effective, high performance anti-corrosive coatings for steel/metal structures. The Termarust® RAVCS® High Ratio Calcium Sulfonate system stops the corrosion process specifically in crevice corroded and pack rust joints and connections and is ideal for flexible steel structures like bridges, towers, cables, high mast light poles, etc.

TNO DIANA North America **Booth: 8**

Contact: Waseem DeKalbab
Phone: 734-779-4850
Fax: 734-779-4858
E-Mail: waseem@usdiana.com

TNO DIANA and MIDAS IT have entered into a strategic alliance. Both companies have successful histories of developing Finite Element Analysis (FEA) software.

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

MIDAS/Civil Ver 7 incorporates Forward Stage large displacement analysis for cable stay bridges, which can concurrently include post-tensioning segmental spans in comprehensive construction stages. Analysis of post-tensioning segmental bridges, which reflect creep, shrinkage and all tension losses, has become even easier to use. Nonlinear fiber models and bridge rating capabilities are also added. Graphic user interface has been completely renewed to provide even easier interface.

Transpo Industries Inc. **Booth: 101**

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

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

TRC Imbsen **Booth: 34**

Contact: Terry Maechler
Phone: 916-366-0632
Fax: 916-366-1501
E-Mail: terrym@imbsen.com
IMBSEN & Associates, Inc., A TRC Company, provides

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

USL / Geocel Holdings Corporation **Booth: 206**

Contact: John Bencsics
Phone: 574-264-0645
Fax: 574-266-6954
E-Mail: jbencsics@geocelworldwide.com
With over twenty years of experience, Universal Sealants (USL) offers complete solutions for bridge deck protection. USL is one of the world's leading specialists in the manufacture, supply and installation of bridge expansion joints and waterproofing membranes. USL is able to undertake contracts worldwide.

Vector Corrosion Technologies **Booth: 94**

Contact: Chris Ball
Phone: 204-489-6300 Canada / 813-830-7566
USA
Fax: 204-489-6033 Canada / 813-830-7565
USA
E-Mail: info@vector-corrosion.com
Vector Corrosion Technologies specializes in products and services for extending the life of concrete structures experiencing corrosion of the reinforcing steel. Vector's expertise includes corrosion investigation, and design and installation of corrosion mitigation systems such as embedded galvanic anodes, electrochemical chloride extraction, and both galvanic and impressed-current cathodic protection.

Watson Bowman Acme Corp. **Booth: 75**

Contact: Debra Steiger
Phone: 716-691-7566 x210
Fax: 716-691-9239

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E-Mail: debbie.steiger@degussa.com
Watson Bowman Acme Corp. is an ISO9001:2000 certified company and industry leader in developing, manufacturing and delivering expansion control and specialty products to the transportation market. Products include Fabricated Expansion Control Systems, Armorless Expansion Control Systems, Seismic Expansion Control Systems, Specialty Metal Fabrication. Visit: www.wbacorp.com, or call: 800-677-4WBA

Westfall Company, Inc. Booth: 24

Contact: Garland R. Westfall
Phone: 636-343-5855
Fax: 636-343-6956
E-Mail: www.westfallcompany.com
Fiberglass drain systems and other corrosion resistant products for elevated highways, bridge approaches and bridges. Come see new solutions for age-old problems. Website: www.westfallcompany.com/bridgedrain.html.

Wheeling Corrugating Company Booth: 74

Contact: Mike Benson
Phone: 304-234-2326
Fax: 304-234-2378
E-Mail: bensonmw@wpsc.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, LLP Booth: 104

Contact: Walter P. Miller
Phone: 443-224-1536
Fax: 443-224-1836
E-Mail: wmiller@wrallp.com
WR&A, a multi-discipline top ENR 200 engineering firm, serves federal, state, and local governments throughout the Mid-Atlantic region. The firm's engineers create innovative, cost-effective, award winning bridge designs and provide bridge inspection, structural evaluation and analysis services. WR&A is headquartered in Baltimore, Maryland with offices in Delaware, Pennsylvania, and Virginia. Web site: www.wrallp.com

Williams Form Engineering Corp. Booth: 37

Contact: Mark Williams
Phone: 616-365-9220
Fax: 616-365-2668
E-Mail: mwilliams@williamsform.com

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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.

Wire Rope Corp. of America, Inc. **Booth: 110**

Contact: Richard Humiston
Phone: 908-577-1477
Fax: 802-824-9605
E-Mail: richard.humiston@wrca.com

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

Wirerope Works, Inc. **Booth: 70**

Contact: Bill Austin
Phone: 570-327-4206
Fax: 570-327-4274
E-Mail: w.austin@wireropeworks.com

WW, manufacturer of Bethlehem Wire Rope is one of the largest and most experienced maker of rope and strand in the America's. Our world class engineering staff can assist you in resolving your problems. When you think of rope and strand think Wirerope Works.