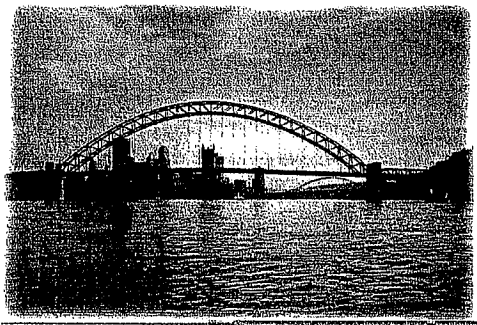
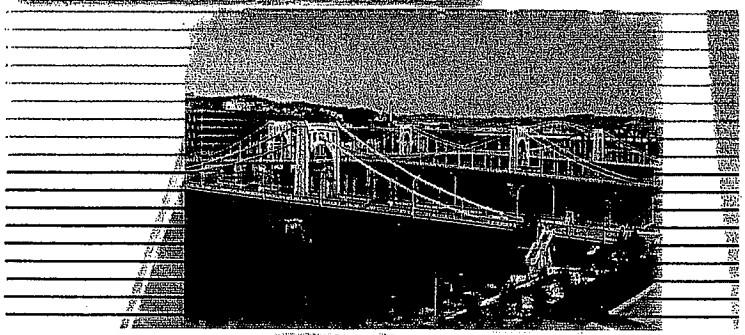
INTERNATIONAL BRIDGE CONFERENCE®



TWENTIETH ANNIVERSARY



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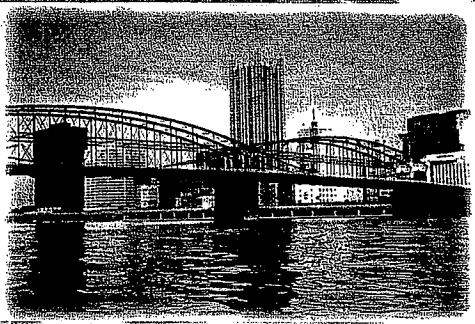
PENNSYLVANIA, USA



JUNE 9, 10, &11

2003

A NEW UNDERSTANDING OF BRIDGE BEHAVIOR

www.eswp.com/bridge.html

TABLE OF CONTENTS

Attendee Information 4-6
Bridge Awards Luncheon 7
Executive Committee 1
Exhibit Hall Map ..... Inside Back Cover
Exhibitors Directory 44-72
Featured State Session: South Carolina 8-10
IBC Bridge Awards: Historical Perspective 3-4
Keynote Session 7
Pittsburgh Bridge Tour 17
Schedule at a Glance 36-37
Sunday Night Activities 6
Seminars
- Fatigue & Fracture Design of Steel Structures 22
- LRFD Steel Bridge Design Example 39
- LRFD Substructure & Foundation Design Programs 29

Special Interest Sessions
- Automated Anti-Icing 19/28
- Bridge Suite 18
- Cast-in-Place Bridge Slabs 27
- Curved and Skew Composite Bridge Decks 21
- Engineering Concrete Improvemtents 20
- FRP Composites Technology 38
- Protecting Assets, Part 1 19
- Protecting Assets, Part 2 27

Technical Sessions
- Advanced Materials 25-26
- Construction 30-32
- Design, Part 1 13-14
- Design, Part 2 23-24
- Instrumentation 15-17
- Long Span & Cable Stay 33-35
- Proprietary 11-12
- Rehabilitiation & Strengthening 40-41
- Segmental & Moveable 42-43

EXHIBITORS 2003

WHEELING CORRUGATING COMPANY — BOOTH: 72

Contact: Mike Benson
Phone: 304-234-2326
Fax: 304-234-2378
Email: 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".

WILLIAMS FORM ENGINEERING CORP — BOOTH: 31

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

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

WILLIAMSPORT WIREROPE WORKS — BOOTH: 107

Contact: Rick Perry
Phone: 570-327-4202
Fax: 570-327-4274
Email: rperry@wwwrope.com

WWW, manufacturer of Bethlehem Wire Rope is 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 Williamsport Wirerope Works.

EXECUTIVE COMMITTEE

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Bener Amado, PE
South Carolina Department of Transportation/Bridge Design
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Bayer Polymers
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Enrico T. Bruschi, PE
DMJM+HARRIS, Inc.
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Pennsylvania Turnpike Commission

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Graham Consulting Inc.

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Pennsylvania Department of Transportation

Donald Killmeyer, Jr., PE
County of Allegheny, Department of Public Works
20th Anniversary Chair

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KTA-Tator, Inc.
Keynote & Special Interest Session Chair

Thomas Leech, PE
Gannett Fleming, Inc.
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Herbert M. Mandel, PE
GAI Consultants, Inc.

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Reidar Bjorhovde, PhD
The Bjorhovde Group

Steven Fenves, PhD
NIST

Arthur W. Hedgren, Jr., PhD, PE
Consultant

EXHIBITORS 2003

TAMMS INDUSTRIES — BOOTH: 62

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

Tamms Industries is the leading bridge overlay manufacturer/supplier. A complete line of DOT approved patching, sealing and protective coatings products is available.

TERMARUST TECHNOLOGIES — BOOTH: 89

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

Termarust Technologies manufactures high performance anti-corrosive coatings for steel/metal structures. We warranty our field proven performance. Our innovative technology completely stops crevice corrosion and pack rust in joints and connections on structures. Termarust Technologies provides a cost-effective system for overcoating existing steel/metal structures by minimizing the need to completely remove tightly adhered existing paint and rust.

THORTEX AMERICA — BOOTH: 103

Contact: Bill Yohe
Phone: 610-831-0222
Fax: 610-831-1910
Email: info@thortex.com

Thortex America Inc. is the exclusive provider of Poly-Nox™ Acrylic Elastomeric Specialty Coatings for the most demanding and rigorous maintenance issues associated with bridges and structural steel structures. Our high performance, high build coatings are formulated to meet and satisfy every challenge. Poly-Nox protects today's infrastructure for tomorrows world.

TRANSPO INDUSTRIES INC. — BOOTH: 100

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

Transpo manufactures Polymer Concrete for repairing concrete structures and HMWM for sealing cracked concrete. Our Thin Polymer Concrete Overlay Systems have been used on Concrete, Steel and FRP bridge decks throughout the US. Transpo's Castek Division precasts Polymer Concrete Safety Barrier Panels that are available in Jersey and F shapes, Flat single slope, and custom designs.

IBC HISTORICAL PERSPECTIVE

John A. Roebling Medal Winners

Award for lifetime achievement in bridge engineering

2003 Hiroyuki Fujikawa, Honshu-Shikoku Bridge Authority
2002 Jackson Durkee, C.E., P.E.
2001 James E. Roberts, California Department of Transportation
2000 Eugene C. Figg, Jr., P.E., Figg Engineering Group
1999 Abba G. Lichtenstein, P.E., Dr. Eng.
1998 Dr. Man-Chung Tang, P.E., 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/Retired from California DOT
1992 Frank L. Stahl, Ammann & Whitney
1991 Herbert Rothman, Weidlinger 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 & Bridsall

George S. Richardson Medal Winners

Award for a single, recent, outstanding achievement

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. Virloguex, 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

EXHIBITORS 2003

SEISMIC ENERGY PRODUCTS, L.P. — BOOTH: 83

Contact: Steve Bowman
Phone: 903-675-8571
Fax: 903-677-4980
Email: 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: 101

Contact: Margie Prokay
Phone: 216-566-3306
Fax: 216-566-2775
Email: mjprokay@sherwin.com

At Sherwin-Williams, we are always working hard to create innovative technology for our customers because we know it translates into costs savings for you. The new Express Tech™ family of products has been developed to do just that. Express Tech is a complete line of products for the bridge fabricator and field applicator markets.

SIKA CORPORATION — BOOTH: 7

Contact: David White, PE
Phone: 201-933-8800
Fax: 201-933-6225
Email: white.dave@sika-corp.com

Sika Corporation is a worldwide leader in the construction industry specializing in systems for concrete repair, protection and structural strengthening. Sika offers products such as carbon and glass fiber fabrics and plates for external reinforcement, epoxies, concrete admixtures, corrosion inhibitors, repair mortars, grouts, sealants, adhesives, coatings, and segmental bridge adhesives.

SOFIS COMPANY, INC. — BOOTH: 20

Contact: William J. Sofis, Jr.
Phone: 724-378-2670
Fax: 724-378-3719
Email: wsofis@sgi.net

Sofis Co., Inc. has been a DOT prequalified General Contractor for over 44 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.

ATTENDEE INFORMATION

Registration Lists

Registrations received prior to May 31 have been compiled in the IBC PRE-REGISTRATION LIST. This popular service provides attendees with additional networking opportunities.

An addendum to the registration list will be available Wednesday morning. This list 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 on Wednesday.

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 from 8:00am - 5:00pm on June 9, 10 & 11. Messages will be retained until the end of each day.

IBC Exhibition

One of the main attractions of the Conference is the IBC EXPO. As you stroll through over 100 exhibits, you will be able to explore the latest technologies, products and services the bridge industry has to offer.

The IBC EXPO is located in Ballroom 1, the Ballroom Foyer, Kings Garden and our newest area — Boardwalk. You will be able to view the exhibits during the following hours:

Monday, June 9	11:00am - 8:00pm
Tuesday, June 10	7:00am - 5:00pm
Wednesday, June 11	7:00am - 1:30pm

Badge Identification

Please wear your IBC name badge at all times. 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.

Hotel Information

Hilton Pittsburgh
Gateway Center
Pittsburgh, PA 15222
Telephone: (412) 391-4600
Business Center fax: (412) 471-4485

Renaissance Pittsburgh
107 Sixth Street
Pittsburgh, PA 15222
Telephone: (412) 562-1200
Fax: (412) 562-1644

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 up until Wednesday at 2:00pm. New this year we are pleased to offer images and posters of the bridges of Pittsburgh. Please be sure to stop by and see them before Wednesday.

EXHIBITORS 2003

RESEARCH ENGINEERS INTERNATIONAL — BOOTH: 84

Contact: Araceli Bigham
Phone: 714-974-2500
Fax: 714-974-4771
Email: araceli@ca.reiusa.com

Research Engineers International introduces the next generation of REI's flagship product, STAAD.Pro 2003, the most popular structural engineering software product for 3D model generation, analysis and design. It has an intuitive, user-friendly GUI, visualization tools, powerful analysis and design facilities and seamless integration to several other modeling and design software products. Our software products have over 120,000 users in 85 countries. Software products include STAAD.Pro 2003, STAAD.etc4.0, STAAD.beava, Sectionwizard, Layout, ADLPipe, and autoCivil.plus.

RJD INDUSTRIES, INC. — BOOTH: 74

Contact: Randall Decker
Phone: 949-582-0191
Fax: 949-582-0995
Email: r-decker@pacbell.net

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

ROADS & BRIDGES MAGAZINE — BOOTH: 36

Contact: Jerry Burns
Phone: 847-391-1048
Fax: 847-390-0408
Email: jburns@sgcmail.com

As the leading monthly trade publication for the transportation construction market, Roads & Bridges Magazine reaches over 65,000 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.

ROYSTON LABORATORIES DIVISION CHASE CORPORATION — BOOTH: 12

Contact: John Tortorete
Phone: 412-828-1500
Fax: 412-828-4826
Email: jtortorete@chasecorp.com

Since 1940 Royston Laboratories has been a leader in the development, testing and manufacturing of bridge deck waterproofing systems. Their product line offers proven solutions to the problems related to bridge deck waterproofing and the limitations of current asphalt mix designs to survive under the weight and flow of today's traffic.

SUNDAY JUNE 8

11AM-6PM EXHIBIT SET-UP
1PM-5PM BRIDGE TOUR
5:30PM-7:30PM REGISTRATION / PREPRINT OPEN
5PM-10PM DINNER TOLLEY STOPS AT HILTON FRONT ENTRANCE

MONDAY JUNE 9

8AM-6PM REGISTRATION / PREPRINT OPEN
11AM-8PM EXHIBIT HALL OPEN

KEYNOTE SESSION

Session Chair: Robert F. Wellner PE
Figg Engineering Group, Bethlehem, PA

8:30-11:00AM BALLROOM 2

Elizabeth S. Mabry
Executive Director, South Carolina Department of Transportation, Columbia, SC

David Dyer
Cleveland Bridge, United Kingdom

Peter Ruane
President, American Road and Transportation Builders Association, Washington, DC

Paul A. Yarossi
Chief Executive Officer, HNTB Companies, New York, NY

BRIDGE AWARDS LUNCHEON

11:15AM-12:45 BALLROOM 3&4

Gustav Lindenthal Award
Accepting: Alexandre Chan, *Architect*, for the President JK Bridge, Brazil

Eugene C. Figg Jr. Award
Accepting: Don Berman, *Buckland & Taylor*, on behalf of the Bangkok Metropolitan Administration for the Rama 8 Bridge

Arthur G. Hayden Medal
Accepting: Michael Stein, *Schlaich Bergermann und Partner*, for the Duisburg Inner Harbor Footbridge, Germany

George S. Richardson Award
Accepting: *HNTB*, for the Leonard P. Zakim Bunker Hill Bridge, Boston, MA

John A. Roebling Award
Accepting: Hiroyuki Fujikawa, *President, Honshu-Shikoku Bridge Authority*

PITTSBURGH RIGGING COMPANY — BOOTH: 28

Contact: Dean R. Peryea
Phone: 724-899-3060
Fax: 724-899-2676
Email: deanp@atc-pa.com

For over fifteen years, Pittsburgh Rigging Company has provided access and support services for bridge inspection and repairs through out of the US and Canada. We provide the finest equipment, highly trained personnel and have an excellent safety record.

POLY-CARB, INC. — BOOTH: 207

Contact: Dan Patacca
Phone: 440-248-1223
Fax: 440-248-1513
Email: dan@poly-carb.com

Manufacturer of: Hybridized Copolymer 1/4" - 3/8" overlay system designed to provide a flexible, yet strong waterproofing and deslicking system for highway bridge decks; concrete sealers and coatings; epoxy grouts; polyureas and box beam waterproofing membranes.

PRECAST / PRESTRESSED CONCRETE INSTITUTE (PCI) — BOOTH: 17

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

A dynamic association devoted to promoting the applications of precast concrete. At the booth, staff is available to discuss issues and answer questions. Free literature is displayed.

PRESTRESSED CONCRETE ASSOCIATION OF PENNSYLVANIA — BOOTH: 14

Contact: Heinrich O. Bonstedt
Phone: 610-395-2338
Fax: 610-395-5974
Email: 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 Department of Transportation as a material source and located in the Commonwealth of Pennsylvania.

Featured State Session Continued

high level fixed span bridge over the Atlantic Intra-Coastal Waterway, seismic design and details, vessel impact, and maintenance of vehicle and vessel traffic.

2:45-3:15PM — COFFEE BREAK

3:15PM

SCDOT Experimenting with FHWA-IBRC Program

IBC-03-04

Bener Amado, PE, South Carolina Dept. of Transportation, Columbia, SC

The Innovative Bridge Research and Construction (IBRC) Program by FHWA is intended to demonstrate the application of innovative material technology in the construction of bridges. South Carolina DOT has several projects under this program and successfully built 2 of them using IBRC funding.

3:30PM

SCDOT Seismic Design Specifications for Highway Bridges

IBC-03-05

Lucero Mesa, SCDOT, Columbia, SC, *and Roy Imbsen,* Imbsen & Associates, Inc, Sacramento, CA

South Carolina Department of Transportation has recently developed a new specification for the seismic design of highway bridges. Their goal was to develop a new specification that incorporated the most recent technology available to bridge engineers and could be readily incorporated into design. The specification is performance based using displacement demands and displacement capacities.

4:00PM

Western Corridor

IBC-03-06

Judy Thomason, LPA, Columbia, SC *and Hope Roark,* Fluor Corporation, Greenville, SC

The Western Corridor (SC 183/276) was originally conceived in June 1988 and consists of the widening of SC Route 183 from near SC 253 to near SC Route 123 from a four-lane section to a seven-lane section. Also included in the construction are a 145' bridge over the Reedy River and a 1050' bridge over the Norfolk Southern/CSX Railroad Yard. The contract was awarded to Sloan Construction Company of Duncan, South Carolina for $25,967,462.87.

MMFX STEEL CORPORATION OF AMERICA — BOOTH: 48

Contact: Tim Knaus
Phone: 704-752-9155
Fax: 704-752-9077
Email: tim.knaus@mmfxsteel.com

MMFX Steel Corporation of America produces highly corrosion resistant and cost effective steel products that exhibit many superior mechanical properties to that of conventional carbon steel. MMFX currently produces #3 thru #11 reinforcing steel and pavement dowel materials with other products in development. MMFX looks forward to helping rebuild America's infrastructure with longer life cycle materials. Please visit us at www.mmfxsteel.com to learn more about our cutting edge technology.

MONOTUBE PILE CORPORATION — BOOTH: 27

Contact: Scott Udelhoven
Phone: 330-454-6111
Fax: 330-454-1572
Email: 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: Jody Norton
Phone: 763-591-9099
Fax: 769-591-9499
Email: norton@nsbaweb.org

The National Steel Bridge Alliance (NSBA) is organized as a unified voice for the steel bridge industry. The NSBA maintains a committed focus on assisting its membership with their bridge design needs and technical information associated with steel bridge construction.

NON-DESTRUCTIVE TESTING GROUP — BOOTH: 56

Contact: Mike Forbes
Phone: 616-891-3570
Fax: 616-891-3565
Email: ndtg@iserv.net

Non Destructive Testing Group provides Bridge Fabrication inspections for steel and Prestressed Bridges, existing bridge maintenance NDT inspections for evaluations/recomendations and bridge paint inspections.

PROPRIETARY SESSION

Session Chair: Eric Kline
KTA-Tator, Inc., Pittsburgh, PA

4:00-6:00PM BALLROOM 3 & 4

4:00PM

The Use of FRP Structural Components For Bridges

IBC-03-09

Ronald J. Watson, R. J. Watson, Inc., Amherst, NY *and* *Glen P. Barefoot,* STRONGWELL, Bristol, VA

Fiber Reinforced Polymer (FRP) structural members are now being used on bridges due to their lightweight, high strength, corrosion resistant, non-conductive, durable and cost effective features. Several highway bridges have incorporated FRP bridge components such as decks and girders.

4:20PM

Pack Rust Can be a Serious Structural Problem

IBC-03-10

Craig A. Ballinger, PE, Termarust Technologies, Vienna, VA *and Wayne A. Senick,* Termarust Technologies, Anjou Montreal, Quebec, Canada

This talk will present information on the widespread existence and potential severity of crevice corrosion and pack rust on steel bridges and structures. Such corrosion, in "inaccessible places", that can reduce the load capacity and structural stability of structures that contain built-up members, splices and connections — can be stopped.

4:40PM

Thin Bonded Bridge Overlay System Based on Reactive Methacrylate Resins

IBC-03-11

Dr. Michael Olbrich, Röhm GmbH & Company KG, Hanau-Wolfgang, Germany

A thin polymer overlay system based on methacrylate resins is introduced. This system has been developed primarily for pedestrian and vehicular traffic on orthotropic steel decks. The multi-component methacrylate system reaches full mechanical strength in one hour allowing installation or maintenance work in a minimal timeframe. Examples from the European market are highlighted.

MAB PAINTS-INDUSTRIAL COATINGS DIVISION — **BOOTH: 202**

Contact: Jim Sheridan
Phone: 732-251-1312
Fax: 732-251-9385
Email: jsheridan@mabpaints.com

MAB PAINTS manufactures a full line of industrial coatings for the DOT market. MAB PAINTS features a NEPCOAT certified organic zinc rich epoxy primer, high solids intermediate coat epoxy, high solids urethane finish coat. MAB PAINTS also manufactures ANTI-GRAFFITI and DTM coatings plus MAB PAINTS distributes RUST-OLEUM, NOXYDE.

MAMMOET — **BOOTH: 205**

Contact: Bill Halsband
Phone: 519 740 0550
Fax: 519 740 3531
Email: bill.halsband@mammoet.com

Mammoet, a member of the Van Seumeren Group, is a worldwide specialist in heavy and complex lifting and transportation projects. The company operates worldwide with over 40 locations in 32 countries. Mammoet specializes in rapid bridge removal, installation or replacements.

MARKET DEVELOPMENT ALLIANCE OF THE FRP COMPOSITE INDUSTRY — **BOOTH: 96 & 97**

Contact: John P. Busel
Phone: 914-381-3572
Fax: 914-381-1253
Email: jbusel@mdacomposites.org

MDA is a specialized non-profit trade organization representing the FRP composites industry with products for civil engineering applications. Products on display include bridge decks, pedestrian bridges, rebar, fender pile, and concrete repair/strengthening systems. The FRP composites Product Guide for bridge applications is available at www.MDAcomposites.org.

MARTIN MARIETTA COMPOSITES — **BOOTH: 90**

Contact: Greg Solomon
Phone: 919-882-2306
Fax: 919-882-2301
Email: greg.solomon@martinmarietta.com

Martin Marietta Composites, a subsidiary of Martin Marietta Materials, produces a line of fiber-reinforced polymer bridge decks called DuraSpan™. Infrastructure, construction and transportation applications are the main focus of the company.

7AM-5PM	REGISTRATION / PREPRINT OPEN
7AM-5PM	EXHIBIT HALL OPEN
7AM-8AM	CONTINENTAL BREAKFAST IN EXHIBIT HALL

DESIGN, PART 1

Session Chair: Gerald Pitzer, PE
GAI Consultants, Inc., Monroeville, PA

8:30AM-NOON — **BALLROOM 2**

8:30AM

Design of the Pearl Harbor Memorial Bridge an Extradosed Prestressed Bridge

IBC-03-14

Steven L. Stroh, URS Corporation, Tampa, FL; *Joseph E. Chilstrom,* Federal Highway Adminstration, Glastonbury, CT *and William R. Stark,* Connecticut Department of Transportation, Newington, CT

This paper describes an innovative extradosed pre-stressed design for the Pearl Harbor Memorial Bridge in New Haven, Connecticut. This bridge utilizes stay cables that are visually similar to a cable-stayed bridge but with a relatively low tower and stiff girder. Structurally the behavior is similar to an external post-tensioned bridge.

8:55AM

Cross-Frame and Diaphragm Behavior for Steel Bridge Girders with Skewed Supports

IBC-03-15

Dr. Todd A. Helwig and Dr. Liqun Wang, University of Houston, Houston, TX

The behavior of cross-frame and diaphragms are not well-understood. Cross-frame spacing limits have been removed from the LRFD Specification, primarily because fatigue cracks often appear near the braces. Computational and laboratory investigations were conducted on stability design requirements and behavior of the braces. Design expressions and recommended details are presented.

9:20AM

Use of Florida U-beam, The Goldenrod Road Bridge

IBC-03-16

Donald L. Hammack, PE, Bowyer-Singleton & Associates, Inc., Orlando, FL

Precast concrete U-Beams, 145-feet long and 8-feet wide, help speed traffic to Florida's busiest airport, Orlando International Airport. The Goldenrod Road Extension and BeeLine Expressway interchange is the first vehicular bridge built in the state using Florida U-Beams. Design, transportation and construction issues associated with the massive beams are discussed in this paper.

KTA-TATOR, INC. — BOOTH: 61

Contact: Eric Kline
Phone: 412-788-1300
Fax: 412-788-1306
Email: ekline@kta.com

KTA-Tator, Inc. is a full-service consulting engineering firm specializing in protective coatings, lead paint abatement services, and welding inspection. KTA has extensive experience with dozens of transportation agencies throughout the entire United States. Services include field and shop inspection (surface preparation, coatings application, welding), hazardous paint management services, laboratory testing, failure analysis, expert witness services, training, specification preparation/review, project management, project planning, and support services.

L.B. FOSTER — BOOTH: 71

Contact: David C. Seybert
Phone: 412 928 3425
Fax: 412 928 7891
Email: dseybert@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.

LAFARGE ROAD MARKING — BOOTH: 211

Contact: Ed Shrimp
Phone: 570-546-6041
Fax: 570-546-2415
Email: eshrimp@lafargeroadmarking.com

Lafarge Road Marking manufactures and distributes the Thorma-Joint® asphaltic plug joint system as well as a full line of highway marking materials and equipment. Our Contracting division installs the Thorma-Joint Asphaltic Plug Joint system, Imprint™ Synthetic surfaces, and the Fibrescreed™ Deep Repair System for concrete and asphalt.

INSTRUMENTATION, RATING & FAILURE INVESTIGATION

Session Chair: Donald W. Herbert, PE
Pennsylvania Department of Transportation, Uniontown, PA

8:30AM-NOON BALLROOM 3 & 4

8:30AM

Aerodynamic Characteristics of Plate Girder Bridges
IBC-03-21

Jiming Xie, Jan Dale and Peter A. Irwin, Rowan Williams Davies & Irwin, Inc., Guelph, Ontario, Canada

This paper discusses the characteristics of wind-induced response associated with plate girder decks of cable-stay bridges, specifically on two main issues: aerodynamic stability and wind loading. The main interest is focused on the sensitivity of structural details on the wind response. Data on the aerodynamic characteristics can be used as useful reference for the preliminary design of plate girder bridges. However, uncertainties involved in the empirical estimation, especially for the aerodynamic stability, are emphasized in the paper.

8:55AM

Field Testing of Steel Trapezoidal Box Girder Bridge
IBC-03-22

Dr. Reagan Herman and Dr. Todd Helwig, University of Houston, Houston, TX

This paper outlines a field investigation of a curved steel box girder with skewed supports. The girders and bracing members were instrumented prior to erection and were monitored during all phases of construction and subsequent live load tests. The paper provides an overview of the project and presents key results.

9:20AM

Load Rating Masonry Arch Bridges
IBC-03-23

Thomas A. French, PE, Robert H. Durfee, PE, and Jeffrey J. Long, Hoyle, Tanner & Associates, Manchester, NH

This paper presents an analysis procedure that may be used to load rate masonry bridges and determine their live load capacity. Dry stone masonry, mortared stone masonry and mortared brick masonry bridges constructed between 1886 and 1898 were load rated using these procedures and the varying results are presented.

HATCH MOTT MACDONALD — BOOTH: 210

Contact: Tom Jaworski
Phone: 973-912-7512
Fax: 973-379-8970
Email: 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.

HAYES, SEAY, MATTERN & MATTERN, INC. — BOOTH: 52

Contact: Steve Chapin
Phone: 540-857-3201
Fax: 540-857-3296
Email: schapin@hsmm.com

Hayes, Seay, Mattern & Mattern is a multi-disciplined engineering and architectural firm with over 50 years of experience in providing services to the Transportation Industry. With a staff of over 400, HSMM provides inspection, design, and construction engineering for highway and railroad bridge projects.

HIGH STEEL STRUCTURES, INC. — BOOTH: 25

Contact: Lisa Fulginiti
Phone: 717-399-5375
Fax: 717-399-4102
Email: lfulginiti@high.net

High Steel Structures fabricates structural steel for bridges and major building projects, is a steel erector, provides crane rentals and specialized oversized/overweight hauling.

Instrumentation, Rating & Failure Investigation Continued

11:20AM

Distortional Fatigue Cracking is the Culprit in the Mystery of the McNally Bridge Stringer Cracking

IBC-03-27

Michael F. Hebor, PE, and James P. Van Dien, PE, HDR Engineering, Pittsburgh, PA; *William Werts, PE, and William Replogle, PE,* Pennsylvania Department of Transportation, Hollidaysburg, PA

The McNally Bridge had many years of service without any significant fatigue cracks until a short rehabilitation project was completed. Why? The examination of the McNally Bridge provides excellent insight into distortional fatigue, mechanisms that cause it, and how simple analyses were used to help solve this mystery.

1PM-5PM — **BRIDGE TOUR**

For the past several years, our Tuesday Bridge Tour has been a sell-out event at the IBC. Due to popular demand, we are pleased once again to offer the tour of unique Pittsburgh area bridges and ongoing construction projects. The tour will be hosted by the Port Authority of Allegheny County.

All ticket holders should be at the front of the Hilton no later than 12:45pm. After 12:45pm, individuals from the waiting list will be placed on the tour.

The tour requires an additional fee of $ 40 per person. Please see the registration personnel at the registration desk to sign up.

EXODERMIC BRIDGE DECK, INC. — BOOTH: 64

Contact: Rob Bettigole
Phone: 860-435-0300
Fax: 860-435-4868
Email: r.bettigole@exodermic.com

An Exodermic™ bridge deck is a lightweight, panelized deck system, comprised of a reinforced concrete slab composite with an unfilled steel grid. Overall depths are typically 6" to 10". This efficient deck design permits significant weight savings compared to a standard reinforced concrete deck while providing the same or better strength/stiffness. The concrete component can be precast or cast-in-place. The modular nature of the deck permits rapid erection, even during very short (overnight) work periods. EBDI is an information source for Exodermic design.

FIGG ENGINEERING GROUP — BOOTH: 2

Contact: Linda Figg, President/CEO
Phone: 850-224-7400
Fax: 850-224-7414
Email: lfigg@figgbridge.com

Bridge specialists committed to creating works of art that blend engineering expertise and aesthetic sensivity for our customers.

THE FORT MILLER COMPANY, INC. — BOOTH: 44

Contact: Peter J. Smith
Phone: 518-695-5000
Fax: 518-695-4970
Email: 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, segmental box girders, approach slabs, Inverset, and Effideck units. We also manufacture three types of precast concrete retaining walls which may be used for bridge abutments and wingwalls.

FREESPAN SYSTEMS, INC. — BOOTH: 108

Contact: Michael Swalling
Phone: 907-272-3461
Fax: 907-274-6002
Email:

FreeSpan Systems, Inc. provides design/build services for construction of ultra long span light duty bridges throughout North America.

Special Interest Sessions Continued

PROTECTING ASSETS AND MAKING THEM MORE DURABLE

8:00AM-NOON | BENEDUM: FIRST FLOOR

Three Coat Paint System Complexities
Jeffrey Schmucker, Carboline Company, St. Louis, MO

One Coat Paint System
Bob Kogler, Federal Highway Administration, McLean, VA

VDOT's Award Winning Uses of Galvanized Steel
Sandy Compton, Industrial Galvanizers, Petersburg, VA

Painting Weathering Steel
Gary Tinklenberg, Corrosion Control Consultants & Labs, Kentwood, MI

Painting New Steel Bridges: What It Really Costs
Bernie Appleman, KTA-Tator, Inc., Pittsburgh, PA

DESIGN AND SELECTION OF AUTOMATED ANTI-ICING SYSTEMS

Presented By: Boschung America

9:30-11:30AM | STERLINGS 1: FIRST FLOOR

Session Overview:
Anti-icing systems are becoming more popular with a variety of system types and anti-icing chemicals available. This educational seminar will examine:

- Definition of automated Anti-Icing
- Defining the various unsafe (weather related) conditions that may occur on bridges
- Cost justification of automated anti-icing systems
- Types of systems available on the market today:
  –Sensors
  –Hardware
  –Software
- Types of Chemicals available for use in anti-icing
- Checklist for selecting an anti-icing system

This topic will be presented again at 1:30 PM.

DMJM+HARRIS, INC. — BOOTH: 38

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

DMJM+HARRIS is a full-service engineering firm with four offices serving Pennsylvania - in Pittsburgh, Philadelphia, Horsham, and Harrisburg - and additional offices in 23 other states. DMJM+HARRIS, with a combined staff of 250 in Pennsylvania, offers professional services in Highway Design, Structural Engineering, NBIS and Structural Inspections, Traffic Studies and Engineering, Planning, ITS Design, Electrified Railroad Design, Mass Transit Systems Design, Program Management, Construction Management, and Construction Inspection. The firm has developed transportation projects of all sizes and types for PENNDOT, Port Authority of Allegheny County, the Pennsylvania Turnpike Commission, the Delaware River Port Authority, local governments and other agencies.

DOW CORNING / SSI — BOOTH: 11

Contact: Frank Chiles PE
Phone: 918-587-5567
Fax: 918-582-7510
Email: frankchiles@ssicm.com

X.J.S. Expansion Joint System, a revolutionary new concept in expansion joint construction, combining a polymer nosing and rapid-curing high movement silicone for joint sealing.

DUNKIRK SPECIALTY STEEL — BOOTH: 47

Contact: Gary Zaffalon
Phone: 716-366-1000 x323
Fax: 716-366-0478
Email: sales@dunkirkspecialtysteel.com

Dunkirk Specialty Steel produces Stainless & Specialty Steel Bar, Wire, Rod & Rebar Products including: Stainless Steel Rebar - Dowel Bar - Wire (Tie, Strand & Spiral) & Bar (Round, Hexagon, Square & Flat). Stainless Steel Rebar Grades include Types: 316LN, Duplex 2205, 304L, XM-29 (Alloy 240) & XM-19.

DYWIDAG-SYSTEMS INTERNATIONAL — BOOTH: 1

Contact: Mark Milici
Phone: 973-276-9222
Fax: 973-276-9292
Email: mark.milici@dsiamerica.com

DSI will be exhibiting our range of Bar and Multi-Strand Posttensioning Systems together with information on Stay Cables.

Special Interest Sessions Continued

SIMPLIFYING THE REFINED ANALYSIS OF CURVED AND SKEW COMPOSITE BRIDGE DECKS

Session Chair: Barry E Skinner
President,
Bestech Systems LLC, New York, NY

9:45-10:45AM FORBES ROOM - FIRST FLOOR
11AM-NOON FORBES ROOM - FIRST FLOOR

Session Overview:
Modeling bridge decks with significant curvature and skew can be a complex process, requiring a rational analysis of the entire structure, and consideration of warping torsion effects. A most effective way to model curved or skewed steel composite decks is to treat the deck-slab as a set of plate finite elements, the two flanges of the beam as beam elements, and the web of the beam as another set of plate finite elements. The problem is that until now this has been an awkward modeling process, and deriving loading patterns and extracting results even more cumbersome. In this session we launch a new set of features in SAM that makes the modeling, the live load generation, and the extraction of results extremely easy.

Using simple graphical tools the following process will be carried out:

- A steel composite beam with sections varying along its length will be defined
- A curved bridge deck will be laid out
- The previously defined beam will be associated with the longitudinal curved girders. At the same time SAM will automatically create the beam and finite elements referred to above, as well as creating "composite members" which will permit load optimization and easy results extraction
- Intermediate cross frames will be added
- Influence surfaces for moment, shear and reaction will be generated, thus enabling automatic live load optimization.
- The structure will be analyzed, and envelopes of moment and shear will be produced automatically.
- The results for the "composite members" will be extracted for use in the design of the steel composite beam.

No special knowledge of the finite element analysis technique is required (in fact the process is very nearly as easy as line-beam analysis), thus bringing this kind of analysis within reach of very many more bridge engineers.

CONSOLIDATED SYSTEMS — **BOOTH: 35**

Contact: Steve May
Phone: 901 969 3055
Fax: 901-375-9357
Email: steve.may@csisteel.com

Stay-in-place metal bridge deck.

CONSTRUCTION TECHNOLOGY LABORATORIES, INC — **BOOTH: 78**

Contact: Adrian Ciolko
Phone: 800-522-2285, x3054
Fax: 847-965-6541
Email: aciolko@CTLGroup.com

Construction Technology Laboratories, Inc., specializes in structural/architectural engineering, consulting, and materials technology. We have extensive experience in inspection, instrumentation, evaluation, testing, and retrofit of all types of bridge structures. We solve structural behavior, construction, and materials problems via laboratory testing and analysis, structural system development, and construction/structural forensic techniques.

CONTECH CONSTRUCTION PRODUCTS, INC — **BOOTH: 76**

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CORRPRO COMPANIES, INC — **BOOTH: 16**

Contact: Clem Firlotte, PE
Phone: 330-723-5082
Fax: 330-722-7606
Email: cfirlotte@corrpro.com

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DESIGN, PART 2

Session Chair: Herb Mandel, PE
GAI Consultants, Monroeville, PA

1:30-5:00PM — **BALLROOM 2**

1:30PM

Innovative Bridge Network for Toronto's Pearson International Airport

IBC-03-29

Ken Bontius, P.Eng., Hatch Mott MacDonald Ltd., Mississauga, Ontario, Canada *and Hari Jagasia, P.Eng.,* Greater Toronto Airports Groundside Association, Mississauga, Ontario, Canada

A vital component of the airport development is a completely elevated roadway system that provides a clear connection to all terminal buildings, parking garages and adjoining highways. The bridges are multi-level with complex geometry, including sharp curves, significantly skewed supports and irregular spans. This paper highlights the unique design features and construction methodology.

1:55PM

Dynamic Properties of Stay Cables on the New Charles River Bridge

IBC-03-30

Harold Bosch, Federal Highway Administration, McLean, VA *and Rui Michael Guterres,* Lendis Corporation, McLean, VA

Full scale studies were conducted to establish dynamic properties and bridge cable response on the new Charles River Cable-Stayed Bridge in Boston. Experiments performed to determine dynamic properties of the stay cables are described. Experiments were phased to coincide with implementation of different mitigation details. Results and analysis are presented.

2:20PM

Design of I-95 Viaduct to the Philadelphia International Airport

IBC-03-31

Bijan Pashanamaei, DMJM+HARRIS, Inc., Philadelphia, PA *and Joseph Capella,* Pennsylvania Department of Transportation, King of Prussia, PA

The paper will discuss the unusual challenges encountered in the design of this 1440-foot-long viaduct which provides the direct link from I-95 to Philadelphia International Airport. The structure is currently the longest and tightest radii curved bridge in PA. Key challenges encountered were resolving the high uplift problem at one corner of bridge, siesmic design in difficult subsurface condition, erection procedures and complex deck geometry.

EXHIBITORS 2003

CAPITAL SERVICES — BOOTH: 4

Contact: Carla Krzykowski
Phone: 518-344-7777
Fax: 518-346-1110
Email: carlak@capitalservicesny.com

Manufacturer - Expansion joints, elastomerics, waterproofing, concrete repair materials. MetaZeal® systems for bridges, marine & corrosive environments. Also, EVAZOTE, Pro-Flex®, ProCrete™, Easy-1 Injection & Control Joint Systems. Visit our webpage at www.capitalservicesny.com

CAROLINA STALITE COMPANY — BOOTH: 66

Contact: Ken Harmon
Phone: 704-637-1515 or (800) 898-3772
Fax: 704-642-1572
Email: kharmon@stalite.com

Producers of rotary kiln expanded slate aggregate for lightweight structural concrete and geotechnical fill. This low absorption, high performance aggregate has been used in projects across the US, Canada and Europe.

CBSI — BOOTH: 106

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

Manufacture/supply of cables/castings/forgings for all types of cable structures, to include cable bridges - Design/consulting/engineering of bridges - Fields installation/tensioning cable assemblies - Maintenance/repair of older bridges - Inspections - Special design - engineering - Project review/drawings of preliminary projects.

CHEMCO SYSTEMS — BOOTH: 10

Contact: John Bors
Phone: 800-757-6773
Fax: 650-261-3799
Email: bors@chemcosystems.com

Epoxy Asphalt by ChemCo Systems has a 35-year history as a bridge deck surfacing. Most common applications are: 1) as thin overlays (3/4 to 2 inch thickness) for a lightweight wear course and 2) as a paving surface for orthotropic steel decks where toughness and elastic composite behavior are critical.

TUESDAY JUNE 10

ADVANCED MATERIALS & THEIR BEHAVIOR

Session Chair: James D. Cooper, PE
Purcellville, VA

1:30-5:00PM — BALLROOM 3 & 4

1:30PM

Assessment of In-Service Cable Stayed Bridges — Lessons From the Field

IBC-03-35

Amin B. Mehrabi, PhD, PE and Niket M. Telang, PE, Construction Technology Laboratories, Inc., Skokie, IL

Information gathered from evaluation of the strength and reliability of stay-cable systems for nearly 25 long-span bridges worldwide and instrumentation, health monitoring, and inspection of more than 8 cable-stayed bridges in the US and abroad have helped towards formation of a unified approach for health monitoring and problem solving of these aesthetic structures. In this paper, the authors present a synopsis of typical problems discovered during inspection, assessment, and evaluation of many cable-stayed bridges around the nation.

1:55PM

Overview of Recent Developments in the Grouting of Post-tensioned Tendons

IBC-03-36

Thomas A. DeHaven, PE, Figg Bridge Inspection, Saint Paul, MN

Recent developments have caused an emphasis on the quality of the grouting of post-tensioning tendons in concrete segmental bridges. Discussion will include the problems and concerns, along with improvements and enhancements that have resulted. The current status of grouted post-tensioning tendons, along with recommended specifications; details; and materials will be presented.

2:20PM

Evaluation of New Loss Equations for Design of Post-tensioned Concrete Bridges

IBC-03-37

David A. Tomley, PE, and Lee D. Tanase, LEAP Software, Inc., Tampa, FL *and Toorak Zokaie, PE, PhD,* LEAP Software, Inc., Sacramento, CA

NCHRP project 18-07 has resulted in new methods and equations for calculation of loss of prestress for high strength concrete. This paper will study the effect of these equations on spliced girder bridges with post-tensioning by comparing its results with accurate time-dependent analyses.

EXHIBITORS 2003

BAR SPLICE PRODUCTS INC — BOOTH: 18

Contact: Gary R. Foster
Phone: 937-427-6466
Fax: 937-427-6470
Email: www.barsplice.com

Manufacturer of mechanical splices for rebar.

BENTLEY SYSTEMS, INCORPORATED — BOOTH: 104

Contact: Jackie Cissell
Phone: 256-536-2822
Fax: 256-536-9791
Email: jackie.cissell@bentley.com

Bentley is a global provider of collaborative software solutions for creating, managing and sharing architectural, engineering and construction (AEC) content. Bentley offers engineering software based on MicroStation®: GEOPAK® Rebar, concrete detailing/scheduling, GEOPAK Bridge, object-oriented 3D bridge design and Bentley® InRoads Bridge, geometric bridge modeling. Bentley also provides a range of professional services. 1-800-BENTLEY. www.bentley.com

BESTECH SYSTEMS LLC — BOOTH: 77

Contact: Chris Austin
Phone: 1-800-347-4171
Fax: 212-295-2121
Email: IBC@LRFDsoftware.com

SAM is a uniquely integrated suite of software for the design and analysis of bridges. Analysis capabilities range from line beams to finite elements including live load optimisation. AASHTO LRFD design capabilities cover concrete sections, precast girders and composite girders. Please visit us at Booth #77 for your free copy.

BRIDGE BUILDER MAGAZINE — BOOTH: 15

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

Bridge Builder serves bridge designers, engineers, and contractors, as well as county, state, and federal departments of transportation. Each issue focuses on new construction, repair, inspection, and maintenance. From small, prefabricated bridges to the largest vehicular bridges on the nation's roadways, the magazine covers the full range of bridge equipment, components, and services.

Special Interest Sessions

PROTECTING ASSETS AND MAKING THEM MORE DURABLE

1:00-5:00PM — BENEDUM ROOM, FIRST FLOOR

Rapid Urethanes
Gary Gardner, Sherwin Williams Co.

Painting Concrete Bridges
Thomas Gibbons, GPI Greenman-Pedersen, Inc., Babylon, NY

Rapid Deployment — What Connecticut is Learning
Brian Castler, Connecticut DOT

Thermal Spray: Putting It All Together
Lou Lyras, Corcon, Inc., Lowellville, OH

Nepcoat Overcoat Study
Dave Kuniega, Pennsylvania DOT

CAST-IN-PLACE POST-TENSIONED CONCRETE BRIDGE SLABS

Session Chair: James E. Barnhart
Ohio Ready Mixed Concrete Association, Columbus, OH

1:00-5:00PM — BOARD ROOM, FIRST FLOOR

This session features a forum in which four speakers will provide attendees with an introduction and overview to cast-in-place, post-tensioned concrete bridge slabs. Presentation topics with focus on: construction issues, bid pricing and cost comparisons with conventional reinforced concrete slabs, advantages and benefits, analysis and design aspects, and span to depth ratios.

EXHIBITORS 2003

ACI / PENNSYLVANIA CONCRETE PROMOTION COUNCIL — BOOTH: 95

Contact: James I. Turici, Jr.
Phone: 800-942-8078
Fax: 724-535-3259
Email: jturici@cemexusa.com

American Concrete Institute: highlights include membership; publications; concrete testing; finishing classes; and certification. Concrete Pomotion Council of Pittsburgh: highlights include current flowable fill; rapid repairs; and underwater placement technologies.

ACROW CORPORATION OF AMERICA — BOOTH: 82

Contact: Eugene Sobecki
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Email: 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
Phone: 412-631-3000
Fax: 412-631-4001
Email: 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. Our in-house detailing capability and on-site paint facility allows us to be extremely responsive to rapid delivery requirements. Recently fabricated new steel bridge structures include a variety of truss, arch, girder and beam bridges.

AMERICAN CRANE & EQUIPTMENT CORPORATION — BOOTH: 9

Contact: David Schaeffer
Phone: 610-385-6061
Fax: 610-385-3191
Email: dschaeffer@americancrane.com

Design and manufacture of bridge maintenance travelers. Full range of electric overhead traveling crane and wire rope hoists. Field services including installation, troubleshooting, repair, and maintenance. Engineering and consulting service.

TUESDAY JUNE 10

Seminar

Seminars at the International Bridge Conference® are intensive, four (4) hour, single-topic focused sessions. Each seminar requires an additional fee of $95. Please see the Registration personnel at the Registration desk to sign up. Seating for each Seminar is limited. Professional Development Hours (PDHs) will be provided upon request.

LRFD SUBSTRUCTURE & FOUNDATION DESIGN PROGRAMS

Instructors: **Ralph DeStefano, PE, Pennsylvania Department of Transportation**

Tim Osterkamp, PE, Quincy Engineering, Sacramento, CA

John Buchheit, PE, Gannett Fleming, Inc., Harrisburg, PA

Dr. Mark Williams, PE, Bridge Software Institute, University of Florida

1:00-5:00PM — **STERLINGS 2 & 3, FIRST FLOOR**

The primary intent of the seminar is to highlight the significant aspects of the AASHTO LRFD Specification as it pertains to the design of piers. The seminar will be split between discussion of the FB-PIER program by the Bridge Software Institute at the University of Florida and the PAPIER computer program by the Pennsylvania Department of Transportation. In addition to an overview of the general program philosophy and pier modeling, the presentation of FB-PIER will emphasize soil-foundation-structure interaction and AASHTO LRFD load combinations for the various limit states. A preview of future work on the program will also be discussed.

Topics of particular emphasis related to the PAPIER computer program include: load combinations, transverse live load distribution, temperature and shrinkage load transfer from superstructure to substructure, moment magnification (simplified and refined), strut-and-tie modeling, and shear provisions. In addition to the above, a general overview of the program's features and limitations will be discussed as well as input requirements. Output results for the cap, column and footings of a typical multi-column pier bent will also be reviewed.

SEGMENTAL & MOVEABLE BRIDGES

Session Chair: Richard Connors, PE, PMP
Northwest Engineering Inc.,
Tidioute, PA

1:30-3:45PM | BALLROOM 3 & 4

1:30PM

The Design of a Record Segmental Span: The Kanawha River Bridge

IBC-03-65

Santiago Rodriguez, PE, SE, T. Y. Lin International, Alexandria, VA

A new concrete box girder bridge with a total length of 2,975 feet and a 760-foot main span will span the Kanawha River near South Charleston, West Virginia. This structure will be built by balanced cantilever using form travelers and cast-in-place segments. The bridge will have expansion joints at the abutments only.

1:55PM

Design Challenges/Solutions of the Wakota Bridges Project

IBC-03-66

Richard M. Johnson, PE, HNTB Corporation, Minneapolis, MN

The Wakota Bridges are two parallel, 1,900-foot long, segmental concrete box girder bridges that will carry I-494 over the Mississippi River. Design considerations included accommodating a deck that is 50% wider at the abutments than in the center, large diameter steel shell pipe piles and adapting conventional post-tensioning best practices to suit Minnesota's cold weather.

2:20PM

Rehabilitation of the McArdle Double Leaf Rolling Lift Bridge

IBC-03-67

Andrew C. Coates and Paul M. Skelton, PE, Hardesty & Hanover, LLP, New York, NY

Rehabilitation design included replacing the cracked segmental girder flange angles, reinforcing the track girder flange angles, jacking to realign the leaves, replacing the segmental and track castings, replacing the rack and pinions and a complete new electrical drive and control system.

WEDNESDAY
JUNE 11

Construction Continued

9:15AM

Re-decking The M. Harvey Taylor Bridge: Innovative Deck System Keeps Traffic Flowing

IBC-03-45

Roger B. Stanley, PE, MSCE, DMJM+HARRIS, INC., Philadelphia, PA

Traffic impacts were minimized during deck replacement of a 4220-foot highway bridge crossing the Susquehanna River by utilizing a modular concrete filled steel grid deck system. Overnight and weekend replacement methods assured the availability of existing travel lanes during daily peak traffic periods.

9:40AM

Norfolk Southern Railroad Truss Bridge Over I-76 Design and Construction

IBC-03-46

Bharatkumar V. Patel, Gannett Fleming, Inc., Audubon, PA

This paper summarizes the preliminary engineering study, final design, and construction of a two-equal-span, 480-foot-long, truss bridge to replace the existing single-span, Norfolk Southern Railroad Through-Girder Bridge over Interstate Route I-76.

10:00-10:30AM | COFFEE BREAK

10:30AM

Use of Temporary Through Girders for Staged Construction of a Railroad Bridge

IBC-03-47

James E. Maccariella, Jr., PhD., PE, and Shashi B. Shah, PE, Urban Engineers, Inc., Pennsauken, NJ

An innovative design and detailed staging plans were developed for the superstructure replacement of a two-span, skewed (13 degrees), three-track, through girder railroad bridge over AMTRAK. It allowed one track to remain operational and provided adequate staging.

10:55AM

Issues to Consider for Complex Retrofit Projects

IBC-03-48

Ron Crockett, PE, American Bridge, Pittsburgh, PA; *Michael J. Abrahams, PE,* Parsons Brinckerhoff, Quade & Douglas, Inc., New York, NY; *and Peter Whitlock, PE,* Parsons Corporation, Chicago, IL

Using examples to illustrate specific common problems during major bridge retrofit projects, the authors will share lessons learned and suggest ways that future owners, owners' engineers and contractors can minimize surprises and problems.

REHABILITATION & STRENGTHENING

Session Chair: R. Scott Christie, PE
Pennsylvania Dept. of Transportation, Harrisburg, PA

1:30-3:45PM | BALLROOM 2

1:30PM

Rehabilitation Design of the Fort Pitt Bridge

IBC-03-60

John E. Cravotta, PE, and Anthony P. Ream, HDR Engineering, Inc., Pittsburgh, PA

The focal point of Fort Pitt Bridge Rehabilitation project is a 750-foot steel tied-arch structure with a 24-foot deep truss tie member. The bridge carries a total of eight lanes of traffic on an upper and lower deck. This paper will provide insight into challenges faced during the rehabilitation design.

1:55PM

Rehabilitation and Strengthening of Existing Bridge Foundations: Case Studies

IBC-03-61

Jian Huang and G. Alan Klevens, Lichtenstein Consulting Engineers, Fort Lauderdale, FL

Case 1 is the bridge carrying US 70 over Lake Hamilton, Arkansas. The deteriorated pier foundations are being strengthened with micropiles. Case 2 is the Bridge of Lions carrying SR AIA over the Matanzas River, Florida. The bascule piers are to be strengthened to resist ship impact loads and scour.

2:20PM

Rehabilitation of the Historic North Market Street Bridge: A Case Study

IBC-03-62

Neil Shemo, PE, DMJM & HARRIS, Inc., Harrisburg, PA *and Gerard Mulderrig, PE,* Delaware Department of Transportation, Dover, DE

This paper presents a case study of the first major rehabilitation of the historic North Market Street Bridge; an unusual double cantilever structure including structural upgrades and restoration of unique architectural elements.

WEDNESDAY
JUNE 11

LONG SPAN & CABLE STAY

Session Chair: Carl Angeloff, PE
Bayer Polymers, Pittsburgh, PA

8AM-12:30PM | BALLROOM 3 & 4

8:00AM

Hoover Dam Bypass — Type Study and Preliminary Engineering for the Colorado River Bridge

IBC-03-51

Bonnie Klamerus, PE, FHWA Central Federal Lands Highway Div., Lakewood, CO; *David Goodyear, PE, SE,* T.Y. Lin International, Olympia, WA; *and Robert Turton, PE, SE,* HDR Engineering, Inc., Phoenix, AZ

The Hoover Dam Bypass will relocate through-traffic off the dam and on to a new high-speed, four-lane roadway. The selected alignment carries the roadway 1/4-mile downstream of the dam requiring a 2,000-foot-long bridge across an 800-foot-deep gorge. This paper will discuss the structure type selection process.

8:25AM

Aerodynamic Analysis and Wind Design for the Cooper River Bridges Replacement

IBC-03-52

Stoyan Trayanoff Stoyanoff, Peter A. Irwin, and Derek Kelley, Rowan Williams Davies & Irwin Inc. (RWDI), Quebec, Canada; *Michael J. Abrahams and John A. Bryson,* Parsons Brinckerhoff, Quade and Douglas, New York, NY

Wind studies for the Cooper River Bridge (cable-stayed) included wind climate analysis, sectional model and full aeroelastic model testing, and theoretical analyses. Sectional model tests for the bridge deck were performed at scale 1:80, considering various fairing configurations. Stability of the completed bridge and wind loads were verified using a full 1:250 aeroelastic model.

8:50AM

Seismic Design of the Cooper River Bridges Replacement Main Span Unit

IBC-03-53

John A. Bryson, Michael J. Abrahams, Jaw-Nan Wang, Parsons Brinckerhoff, Quade & Douglas, Inc., New York, NY; *and Hassan Sedarat,* SC Solutions, Inc., Sunnyvale, CA

Upon completion, the Cooper River Bridge will be the longest cable-stayed bridge in North America, with a main span of 1546 feet and a cable-supported length of 3296 feet. Seismic design of the main span unit utilized response spectrum analysis, pushover analysis and full inelastic nonlinear time history analysis, including spatial variation time histories.

Special Interest Sessions

FRP COMPOSITES TECHNOLOGY ADVANCEMENTS IN BRIDGE CONSTRUCTION

Session Chair: **John P. Busel**
Executive Director, Market Development
Alliance of the FRP Composites Industry, Harrison, NY

8AM-NOON **BENEDUM ROOM, FIRST FLOOR**

Innovation is the cornerstone of FRP composites technology with its versatility well established in most commercial markets. For bridge applications, FRP composites are being successfully used in the rehabilitation of existing and total replacement of bridge structures by combining the inherent strengths of the material system with solid engineering practice. This session will spotlight techniques for the design of bridge structures, proposed specification guidelines, and case histories of noteworthy FRP bridge applications and installations worldwide.

Worldwide Bridge Installations Using FRP Composites
John P. Busel, Market Development Alliance of the FRP Composites Industry

FRP Rebar in Transportation Structures Update 2003
Doug Gremel, Hughes Brothers, Inc.

Techniques for Design of FRP Decks: Bridge Engineer's Perspective
Mark Henderson, PE, LJB, Inc.

The Boyer Bridge: A Case Study
Christopher J. Earls, PhD, University of Pittsburgh

Proposed AASHTO Design Specification for FRP Pedestrian Bridges
Eric Johansen, PE, E.T. Techtonics, Inc.

Composite Strengthening: State of the Art
David White, PE, Sika Corporation

Advancements in Composite Fender Systems
Alan Potts, Seward, a division of Trelleborg Engineered Products, Inc.

Howell's Mill Bridge: A Case Study
David Dietz, PhD, PE, Palmer Engineering

Design and Installation of a Hybrid FRP Concrete Bridge Deck
Michael Yeats, Eng., Diversified Composites, Inc.

WEDNESDAY JUNE 11

Long Span & Cable Stay Continued

10:55AM

US 20 Over the Mississippi: Tied Arch Technology for the 21st Century
IBC-03-57
Patrick Cassity and Dan Burroughs, PE, Parsons, Chicago, IL; *Norman McDonald, PE,* Iowa Dept. of Transportation, Ames, IA; *and Ken Serzan, PE,* Parsons, New York, NY

The New Julien Dubuque bridge will carry eastbound US 20 over the Mississippi River between Dubuque, IA and East Dubuque, IL. The total bridge length is 5,635 ft. which includes a tied arch span of 845 ft. The estimated construction cost for the entire project is $160 million.

11:20AM

Victory Bridge Replacement Design
IBC-03-58
José M. Rodriguez, PE, Figg Bridge Engineers, Inc., Tallahassee, FL

Route #35 Victory Bridge over the Raritan River is a vital link between Perth Amboy and Sayreville in northern New Jersey. The existing bridge is a low-level swing bridge that was constructed in 1927. The bridge will be replaced with a 440' main span precast concrete segmental bridge.

11:45AM

Paper Mill Road Bridge
IBC-03-59
Gary R. Miller, PE, Johnson, Mirmiran & Thompson, Sparks, MD; *and Finn Hubbard, PE,* Wisconsin Dept. of Transportation Bureau of Structures, Madison, WI

The Paper Mill Road Bridge is a 670 foot long structure with a 495 foot steel box through arch span, the longest in Maryland. The bridge spans a reservoir and avoids impacts to archeological remains while paralleling a historic arch bridge. Challenging site conditions necessitated unique design and construction solutions.

12:30-1:30PM **ATTENDEES BUFFET IN THE EXHIBIT HALL HOSTED BY THE IBC EXHIBITORS**