

W-1: EMERGING TECHNOLOGIES WORKSHOP

TIME: SUNDAY 8:00 AM to 12:00 PM and 1:00 PM to 5:00 PM

ROOM:

WORKSHOP OBJECTIVE:

Incorporating innovations into bridge projects leads to more successful projects. The driving force behind many innovations is an inventor who develops a product that provides improved performance over conventional practice. This workshop describes resources available to assist owners in incorporating emerging technologies into their projects, and describes how a State DOT was successful in incorporating them into its bridge projects. Technical details and benefits of several prominent proprietary products will then be discussed. The workshop will end with an open discussion of next steps to further advance the incorporation of emerging technologies into bridge projects.

WORKSHOP SPEAKERS AND BIOS:

John Huyer, P.E., Contract Administration Engineer, FHWA Office of Infrastructure, John.Huyer@dot.gov

John received his B.S. in Civil Engineering from Colorado State University in 1984. His 31-year FHWA career includes both Federal Lands Highway and Federal aid experience; John has spent the past 11 years with the Contract Administration Team in Headquarters, devoting much of his time to Patented & Proprietary Products issues.

Wayne Frankhauser, Jr., P.E., Assistant Manager, Bridge Program, Maine DOT, Wayne.FrankhauserJr@maine.gov

Wayne is the Bridge Program Manager for the Maine Department of Transportation with over 20 years of experience in the design and construction of capital bridge projects. Wayne is a graduate of the University of Maine with a B.S. in Civil Engineering. He is currently chair of the AASHTO SCOBs Technical committee for FRP Composites and a member of the Technical Committee for Bridge Preservation.

Dale Peabody, P.E., Director of Transportation Research, Maine DOT, Dale.Peabody@maine.gov

Dale received his Civil Engineering B.S. degree from the University of Maine in 1983. Dale has been with the Maine DOT for 32 years beginning in the Bridge Program and is currently the Director of the Transportation Research Division. He is vice chair of the AASHTO Research Advisory Committee and a member of the TRB committee on Fiber Reinforced Polymers for Structures.

John R. Hillman, P.E., President & CEO, HCB, Inc., hillmanjr@hcbbridge.com

John is President of HCB, Inc. Honors for his development of Hillman Composite Beam (HCB®) include the 2010 NOVA Award, the 2013 Charles Pankow Award and the 2010 Engineering News Record – Award of Excellence. In 2013 he was recognized by the Obama White House as a “Transportation Champion of Change.”

Kenneth L. Sweeney, P.E., President & Chief Engineer, AIT Bridges, ken@aitbridges.com

Ken is President and Chief Engineer of AIT Bridges. He retired from the MaineDOT as Chief Engineer after serving 35 years. Ken served over 10 years as an active member of the AASHTO Standing Committee on Highways, the Standing Committee on Research, and was Chair of the AASHTO Technology Implementation Group.

Eugene Sobecki, National Sales Manager, Acrow Corporation of America, esobecki@acrowusa.com

Eugene received both his undergraduate and graduate degrees from Syracuse University. After a career in the piling industry, Mr Sobecki joined Acrow Bridge as the National Sales Manager in 2001 where he assembled a national sales team and coordinated a distribution network for all 50 states.

Matthew J. Macey, P.E., VP & Chief Structural Engineer, CDR Bridge Systems, Matt.Macey@cdrmaguire.com

Matthew is Vice President and Chief Structural Engineer for CDR Bridge Systems, LLC with over 20 years of experience in bridge and roadway transportation projects. He is a graduate of the University of Pittsburgh with a BS in Civil Engineering and Saint Vincent College with a BA in Mathematics/Engineering.

Kay Jimison, VP Business Development, SPS North America, jimison@ie-sps.com

Kay is the Vice President for SPS North America, a division of Intelligent Engineering, who developed the “Sandwich Plate System” technology. She offers 30 years of experience in the advancement, acceptance, and implementation of new technologies and innovations, working with local, state, and federal government for approvals, as well as, private and military applications.

WORKSHOP CONTENT

8:00 AM -8:15 AM

Welcome and Introduction to Workshop

Moderator – TBD

8:15 AM -9:00 AM

Resources Available to Assist in Incorporating Proprietary Products into ABC and Other Projects

John Huyer, P.E., Contract Administration Engineer, FHWA Office of Infrastructure

9:00 AM-9:45 AM

Maine DOT Perspective and Process for Incorporating Proprietary Products into Its Bridge Projects

Wayne Frankhauser, Jr., P.E., Assistant Manager, Bridge Program, Maine DOT

Dale Peabody, P.E., Director of Transportation Research, Maine DOT

9:45 AM-10:00 AM

Break

10:00 AM-10:45 AM

Hillman Composite Beam (HCB)

John R. Hillman, P.E., President & CEO, HCB, Inc.

10:45 AM-11:30 AM

Bridge-in-a-Backpack

Kenneth L. Sweeney, P.E., President & Chief Engineer, AIT Bridges

11:30 AM-1:00 PM

Lunch Break

1:00 PM -1:45 PM

Temporary Bridge Systems

Eugene Sobecki, National Sales Manager, Acrow Corporation of America

1:45 PM-2:30 PM

Folded Steel Plate Girder System

Matthew J. Macey, P.E., VP & Chief Structural Engineer, CDR Bridge Systems

2:30 PM-2:45 PM

Break

2:45 PM-3:30 PM

Open Discussion on Other Proprietary Products & Next Steps to More Effectively Incorporate Proprietary Products into Bridge Projects

Moderator

3:30 PM-5:00 PM

Adjourn

W-2: BRIDGE SYSTEM MOVES WORKSHOP

TIME: SUNDAY 8:00 AM to 12:00 PM

ROOM:

WORKSHOP OBJECTIVE:

Removing and installing entire spans is becoming an increasingly popular bridge replacement solution as bridge owners work to keep traffic moving while upgrading substandard bridges. Bridge moves with self-propelled modular transporters (SPMTs) and lateral slides using hydraulic jacks are the two most frequently used system move techniques. In this workshop, heavy move industry expert Sarens Group describe technical details of SPMT, lateral slide and alternative case studies they have engineered to minimize traffic impacts, reduce project cost and optimize construction cost.

WORKSHOP SPEAKERS AND BIOS:

Steven Sarens, Director Houston Operations, Sarens Group, steven.sarens@sarens.com

Over 15 years of experience in moving bridges around the Globe with the Sarens Group. Experience is ranging from initial design and conceptual phasing, budgeting, development of strategies and method statements up to detailed design and actual project execution.

Mattias Price, Manager Technical Solutions Group, Sarens Group,

mattias.price@sarens.com

Close to 10 years of experience in moving bridges around the Globe with the Sarens Group. Experience is ranging from initial design and conceptual phasing, development of strategies and method statements up to detailed engineering and actual project execution.

WORKSHOP CONTENT

8:00 AM -8:15 AM

Welcome and Introduction to Workshop

Moderator

8:15 AM -8:45 AM

ABC's of utilizing SPMT

Mattias Price, Director Houston Operations, Sarens Group

Steven Sarens, Manager Technical Solutions Group, Sarens Group

8:45 AM -9:15 AM

Case Studies – SPMT

Mattias Price, Director Houston Operations, Sarens Group

Steven Sarens, Manager Technical Solutions Group, Sarens Group

9:15 AM -9:45 AM

ABC's of utilizing Sliding systems

Mattias Price, Director Houston Operations, Sarens Group

Steven Sarens, Manager Technical Solutions Group, Sarens Group

9:45 AM-10:00 AM

Break

10:00 AM -10:30 AM

Case Studies – Sliding

Mattias Price, Director Houston Operations, Sarens Group

Steven Sarens, Manager Technical Solutions Group, Sarens Group

10:30 AM -11:00 AM

Introduction to alternative methods

Mattias Price, Director Houston Operations, Sarens Group

Steven Sarens, Manager Technical Solutions Group, Sarens Group

11:00 AM -11:30 AM

Case Studies – Alternative methods

Mattias Price, Director Houston Operations, Sarens Group

Steven Sarens, Manager Technical Solutions Group, Sarens Group

11:30 AM-12:00 PM

Adjourn

W-3: PROGRAMMATIC IMPLEMENTATION OF ABC IN STATE DOTs

(Note: This workshop has very limited seats available. These seats will be provided based on first come first reserved)

TIME: SUNDAY 8:00 AM to 12:00 PM and 1:00 PM to

5:00 PM

ROOM:

WORKSHOP OBJECTIVE:

Implementation of ABC is more effective when the decision to do so is made from a programmatic perspective. A number of State DOTs have put together an ABC program; established ABC guidelines, policies, and internal and external processes; and have adopted bridge standards and details to include a more prefabricated theme to meet the objectives of ABC. This workshop describes how these activities were accomplished in several DOTs, how it is working, challenges and opportunities for improvement, and the impacts of ABC to their bridge program in terms of efficiency, costs, and stakeholder feedback.

WORKSHOP INVITED WORKSHOP SPEAKERS:

Ben Beerman, P.E., Senior Structural Engineer, Federal Highway Administration, Benjamin.Beerman@dot.gov

Carmen Swanwick, P.E., Chief Structural Engineer, Utah DOT, cswanwick@utah.gov

Victoria Sheehan, P.E., MassDOT, victoria.sheehan@state.ma.us

Ahmad Abu-Hawash, P.E., Chief Structural Engineer, Iowa DOT, Ahmad.Abu-Hawash@dot.iowa.gov

Charles "Rick" Ellis, P.E., Bridge Division Head, Arkansas State Highway

and Transportation Department, Rick.Ellis@ahdtd.ar.gov

Dori Mellon, P.E., California DOT, dorie.mellon@dot.ca.gov

Mary Baker, P.E., Connecticut DOT, Mary.Baker@ct.gov

David Juntunen, P.E., Bridge Development Engineer, Michigan DOT, JuntunenD@michigan.gov

Mathew Royce, P.E., New York State DOT, mroyce@dot.state.ny.us

Wayne Symonds, P.E., Structures Program Manager, Vermont Agency of Transportation, Wayne.Symonds@state.vt.us

Bijan Khaleghi, Ph.D., P.E., Bridge Design Engineer, Washington State DOT, khalegb@wsdot.wa.gov

William Oliva, P.E., Structures Development Chief, Wisconsin DOT, William.Oliva@dot.wi.gov

W-4: LIGHTWEIGHT CONCRETE – A TOOL FOR ACCELERATED BRIDGE CONSTRUCTION

TIME: SUNDAY 8:00 AM to 12:00 PM

ROOM:

WORKSHOP OBJECTIVE:

To introduce owners, designers and contractors to the potential advantages of lightweight concrete (LWC) for accelerated bridge construction, including durability; to present examples of projects where lightweight concrete has been or could have been used; to equip designers with information needed for the practical implementation of lightweight concrete for ABC projects, including an introduction to the recent changes related to lightweight concrete in the AASHTO LRFD Bridge Design Specifications that simplify design and significantly improve the economy of lightweight concrete for some elements; and to introduce designers to the concepts of internal curing of conventional concrete mixtures by replacing a portion of the sand in a mixture with prewetted lightweight aggregate and the use of lightweight aggregate for geotechnical fill.

WORKSHOP SPEAKERS AND BIOS:

Reid W. Castrodale, President, Castrodale Engineering Consultants, Concord, NC. reid.castrodale@castrodaleengineering.com

Dr. Castrodale is a bridge designer and researcher who has been working in the lightweight aggregate industry for the last 11 years. As the Director of Engineering for the Expanded Shale, Clay and Slate Institute (ESCSI), he represented the lightweight aggregate industry at the FHWA EDC Regional Peer to Peer Exchanges on PBES.

Other presenters may be included from the lightweight aggregate (LWA) industry.

WORKSHOP CONTENT

While the reduction of density is an obvious advantage of lightweight concrete, especially where large prefabricated concrete elements are being used, there are other advantages including enhanced durability, which contribute to extending the service life of the structure and delaying further inconvenience to the traveling public when future repairs or replacement would be required. Basic information about lightweight concrete will be presented including the durability enhancements of lightweight concrete. Examples of bridge projects using lightweight concrete will be discussed, along with considerations for specifications, production and construction of projects using lightweight concrete.

The use of lightweight concrete to reduce the dead load of bridges for both handling of precast elements and the efficiency of long span elements is well understood. However, many engineers are not familiar with the details of how to use lightweight concrete in structural design. This workshop will give bridge designers information needed to understand structural design of lightweight concrete bridge elements, including an introduction to the recent changes related to lightweight concrete in the AASHTO LRFD Bridge Design Specifications that simplify design and significantly improve the economy of lightweight concrete for some elements.

Since concrete in ABC projects is often required to be put in service without conventional curing, internal curing using prewetted lightweight aggregate can provide curing from within to enhance the durability and long-term performance of such concrete. Lightweight aggregate can also be used to accelerate project delivery when approach fills must be constructed on soft soils where large settlements would be expected for conventional fill material. An introduction to these two concepts will be provided.

The topics included in the workshop are:

An introduction to structural lightweight aggregate and lightweight

concrete – Dr. Castrodale will present this introduction that will include discussion of durability of LWC, which is a common concern among designers considering use of LWC. Several project examples will be presented to demonstrate that LWC is not a new material and has been used successfully on transportation related projects for nearly 100 years. Not all projects will be ABC projects. Benefits that could have been realized if LWC had been used will be suggested for several projects.

Structural design using lightweight concrete – Dr. Castrodale will present an overview of structural design considerations for using lightweight concrete, including a discussion of material properties such as modulus of elasticity, creep and shrinkage. This will include a brief discussion of the recent changes in the AASHTO LRFD Bridge Design Specifications related to lightweight concrete. Issues related to specifying LWC will also be discussed.

Other applications of LWA – Dr. Castrodale will introduce the concept of internal curing for concrete using prewetted lightweight aggregate. This concept can be used to reduce cracking and improve durability of conventional concrete. The concept of using lightweight aggregate as a structural fill to accelerate construction of projects on soft soils or to accelerate repairs will also be discussed.

Workshop content will be tailored to provide adequate time to cover the material but also to allow for discussion during the presentations. A break is planned following the first presentation.

W-5: DESIGN CRITERIA AND CONNECTIONS FOR APPLICATION OF ABC IN SEISMIC REGIONS

TIME: SUNDAY 1:00 PM to 5:00 PM

ROOM:

WORKSHOP OBJECTIVE:

The objective of Accelerated Bridge Construction (ABC) in Seismic Regions workshop is to provide an opportunity for exchange of information and latest technology implementation in delivering ABC projects in seismic regions. Bridge substructure connections to superstructure and foundation are typically made at the beam-column and column-foundation interfaces to facilitate fabrication and transportation. In seismic regions, those interfaces represent locations of high moments, shears, and large inelastic cyclic strain reversals. Devising connections that can accommodate inelastic cyclic deformations and are readily constructible is focus of this workshop.

WORKSHOP SPEAKERS AND TITLE OF PRESENTATIONS

Atorod Azizinami, Professor of Civil Engineering, Florida International University, Director, ABC-UTC, aazizina@fiu.edu

Steel options for accelerated bridge construction in seismic regions

Dr. Azizinami is Professor, Chair and Director of ABC-UTC at FIU. He has carried out number of research studies in the earthquake engineering field in both bridge and building related topics. His current research studies include development of economical steel bridge systems suitable for seismic areas in conjunction with ABC. Dr. Azizinami was part of U.S. research team during U.S.-Japan cooperative work in earthquake engineering. He has published extensively and routinely gives keynote talks on bridge engineering topics in U.S. and abroad. He is registered professional engineer.

M. "Saiid" Saiidi, Professor, Department of Civil & Environmental Engineering, University of Nevada, Reno. Director, CATBI, Principal Investigator, ABC-UTC-Seismic, saiidi@unr.edu

Highlights of Recent and Current Bridge Earthquake Engineering at UNR- A few examples

Dr. Saiidi is a professor of the Civil and Environmental Engineering at the University of Nevada, Reno, and the Co-Director of ABC-UTC. He has over 35 years of experience in bridge earthquake engineering research and has published more than 470 technical papers and reports. He has conducted research with funding from the National Science Foundation, FHWA, NCHRP, USDOT, Caltrans, Nevada, and Washington State Departments of Transportation, among others. Many of his projects have focused on seismic response of prefabricated bridge components and systems. He has served as the subject matter expert on the AASHTO scan team on multi-hazard design of ABC connections.

Max Stephens, Dawn Lehman, Charles Roeder, Professor of Civil

Engineering, University of Washington, maxs3@uw.edu

Concrete Filled Steel Tube (CFT) Bridge Pier Connections for Accelerated Construction in Seismic Regions

John F. Stanton, Professor of Civil Engineering, University of Washington. stanton@u.washington.edu

"Build it Fast and Watch it Rock: an ABC System that Self-centers after a Severe Earthquake"

Dr. Stanton is a Professor of Civil Engineering at the University of Washington. His research interests include structural systems, particularly those involving prestressed concrete. He originated the concept of using unbonded post-tensioning to achieve re-centering in seismic-resistant structures. It was first used in concrete building frames, notably in the PRESS project, and more recently he has adapted the concept for use in bridges in the form of unbonded pre-tensioning in the columns. With his colleagues at the University of Washington, he has developed a range of connections for ABC in seismic regions that are both easy to build and seismically robust. Prior to joining academia, he spent seven years designing structures in England, France and Canada.

Bijan Khaleghi, State Bridge Design Engineer, Washington State Department of Transportation, and adjunct faculty at Saint Martin University, Bijan.Khaleghi@wsdot.wa.gov

Accelerated bridge construction implementation and case studies in seismic regions

Bijan Khaleghi is the State Bridge Design Engineer with the Washington State DOT, and an adjunct faculty at Saint Martin University. He received his Master and Doctor of Engineering degrees from the National Institute of Applied Sciences, Lyon, France. He is a member the AASHTO Technical Committees T-10 Concrete Bridges, T-11 Research, and T-20 Roadway Tunnels; member of the PCI, ASBI, TRB Bridge Committees, and NCHRP Project panels. He is a registered Civil and Structural Engineer.

WORKSHOP CONTENT

Seismic design of precast concrete bridges begins with a global analysis of the response of the structure to earthquake loadings and a detailed evaluation of connections between superstructure components, and connections between the superstructure and the supporting substructure. Ductile behavior is desirable under earthquake loadings for both the longitudinal and transverse directions of the bridge. The substructure must be made to either protect the superstructure from force effects due to ground motions through fusing or plastic hinging, or to transmit the inertial forces that act upon the bridge to the ground through a continuous load path. Ductility of prefabricated steel or concrete bridges can be achieved by proper detailing of pier diaphragm, cross frames, and joint reinforcement.

This workshop describes the development and implementation of prefabricated bridge bent systems suitable for accelerated bridge construction in high seismic zones. At the base of the bent, the column is connected to a spread footing using a socket connection, while at the top the column is joined to the cap beam using bars grouted in ducts.

Capacity-protected members such as bent caps, joints at top and bottom of column, and integral superstructure elements that are adjacent to the plastic hinge locations are designed to remain essentially elastic when the plastic hinge reaches its overstrength moment capacity. The superstructure is designed as a capacity protected member.

The prefabricated bridge bent systems are conceptually simple and can be constructed rapidly, and offers excellent seismic performance. Prefabricated bridge systems are economical and effective means for rapid bridge construction while maintaining quality and long-term performance.

W-6: STEEL BRIDGE DESIGN WORKSHOP

TIME: SUNDAY 8:00 AM to 12:00 PM

ROOM:

WORKSHOP OBJECTIVE:

To present up-to-date information for the design and construction of steel bridges using the latest design tools and technology and incorporating consideration for efficient, economical fabrication and construction.

WORKSHOP SPEAKERS:

Michael Culmo, P.E., CME Engineers, East Hartford, CT

Ronnie Medlock, P.E., High Steel Structures, Lancaster, PA

Robert Conner, Ph.D., Purdue University, West Lafayette, IN

Chris Garrell, P.E., National Steel Bridge Alliance, Philadelphia, PA

WORKSHOP OUTLINES

- The workshop will discuss assembly and erection of steel bridges for ABC projects. Case studies will be presented featuring items of interest to both the Engineer of Record and the Construction Engineer
- A discussion of innovations within the fabrication industry that impact the full range of activities which engage the steel fabricator; from communication with the project team to fabrication and coatings and all the way through final inspection.
- Following will be a preliminary report of research to define a set of design parameters within which a steel bridge comprised of 2 trapezoidal tubs can be analytically assessed regarding redundancy and fracture critical status.
- Finally, an array of 88 preliminary configurations for continuous steel plate girders in the span range of 150 to 300' will be presented. This is intended for use during Type Size & Location studies or when developing proposals for Design Build projects.

W-7: UHPC: MATERIAL PROPERTIES, PRODUCTION, APPLICATION AND WHAT YOU SHOULD KNOW WHEN USING UHPC

TIME: SUNDAY 8:00 AM to 12:00 PM and 1:00 PM to 5:00 PM

ROOM:

WORKSHOP OBJECTIVE:

The objective of this 8 hours long workshop is to provide detailed and essential information that bridge owners, designers and contractors' need to know when using or specifying the use of Ultra High Performance Concrete (UHPC). The workshop will provide the latest developments and information in the implementation of UHPC.

WORKSHOP SPEAKERS AND BIOS:

Paul White, P.E., P.Eng.

**Bridge Engineering Manager, UHPC/Ductal®
Lafarge North America**

Paul White manages the bridge engineering process with UHPC in bridge applications and other structural applications. Paul has over 30 years of bridge engineering experience with 29 years as a bridge designer in the northeast and Canada. He has been with Lafarge for about 18 months now.

Benjamin A. Graybeal, Ph.D., P.E.

**Structural Engineer, Office of Infrastructure Research
Federal Highway Administration (FHWA)**

Ben Graybeal leads the Bridge and Foundation Engineering Research team while also managing the Structural Concrete Research Program within the FHWA Office of Infrastructure Research. He serves as the principal investigator on a wide range of FHWA research efforts. He also acts as technical liaison to public and private sector partners at the local, state, national, and international levels who are conducting research within this topic area. He has been involved in fundamental engineering research, development of innovation applications, and forensic investigations of structural collapses. His expertise includes bridge engineering, structural concrete, concrete materials, and non-destructive evaluation. He holds

BSCE and MSCE degrees from Lehigh University, and a Ph.D. from the University of Maryland. He is an advocate for engaging new technologies, new materials, and enhanced processes to advance the state-of-the-practice in the bridge industry while ensuring safe, reliable, efficient, and resilient highway bridges and structures.

Atorod Azizinamini, Ph.D., P.E., Professor and Chair, Director ABC-UTC at FIU

Atorod Azizinamini is Director of Accelerated Bridge Construction University Transportation Center (ABC-UTC) and Chair and Professor in CEE Department at FIU. He is currently developing innovative application for use of UHPC in bridge design and construction. Among the research studies he is carrying out in the field of UHPC includes: development super durable bridge systems using UHPC, new connection detail for connecting pier cap beam to columns in ABC application in seismic and non-seismic areas, bond and development length using UHPC, behavior of columns made of UHPC and subjected to combined axial load and moment and development of innovative approaches for retrofitting existing bridges using UHPC. He is a registered professional engineer in Nebraska and Montana

WORKSHOP CONTENT

8:00 AM -8:30 AM

Introduction

Ben Graybeal, Structural Engineer, Office of Infrastructure Research, Federal Highway Administration (FHWA)

Paul White, P.E., P.Eng., Bridge Engineering Manager, UHPC/Ductal®, Lafarge North America

8:30 AM -9:00 AM

UHPC History

- Europe
- North America
- Testing and Publications
- Projects – what's been done so far?
- EDC/Innovations, 2014 ABC Conference
- Current: PBES/UHPC FHWA Initiative Program

9:00 AM-9:30 AM

UHPC and Design Specifications

This portion of the workshop will cover the latest development and future trends in design specifications addressing UHPC. This presentation will include covering ACI, AASHTO, PCI, and ASTM specifications.

9:30 AM-10:00 AM

Considering UHPC for a Project (Project Criteria, Why UHPC?)

Essential information you should know when specifying UHPC. Discussion will include, Owner Acceptance Criteria (Buy America, EDC, Funding and Grants), Design (Available Codes and Guides; Responsibilities; Risks; Track Record; Project Testing and Mock-up), Construction (Over 100 successfully completed projects in North America;)

9:45 AM-10:00 AM

Break

10:15 AM-10:30 AM

Engineers Role

Discussion

10:30 AM-11:00 AM

Bridge-in-a-Backpack

- Design Parameters (strength, development length, mix type)
- Typical Design Criteria and Concerns (Shrinkage, Bond, Set-time, Constructability)
- Contract Documents – Plans, Specifications (Performance, Prescriptive, Tigt)
- Discussion

11:00 AM-11:30 AM

Good Design Practice (Preliminary Design on- the-Right Track, Lessons Learned)

Design – Tools, Beams, Deck Systems, Joints, Joint layout, Mix Criteria,

Lessons Learned – Mix, Hot, Cold, Pumping, Cold joints, Form Failure and QA/QC

11:30 AM -12:00 PM

New Innovative Details/Applications with UHPC

12:00 PM -1:00 PM

Lunch Break

1:00 PM-1:30 PM

Construction

- Mix, Forms, Conditions, Batching, Casting, and Curing.
- Plan and Specification Development for Constructability.

1:30 PM-2:15 PM

Design Examples

Plans, Details, Layout, Specifications. Strategies for Successful Completion

2:15 PM-2:30 PM

Break

2:30 PM – 3:00 PM

State Experiences

NY DOT Experiences with UHPC highlighting example projects

3:00 PM – 4:00 PM

Designer’s Perspective

- Designer’s Experience with using UHPC- Case Study Number 1
- Designer’s Experience with using UHPC- Case Study Number 2

4:00 PM – 4:45 PM

Research

Latest Research Results in the development of new and innovative applications with UHPC in bridge design and construction.

4:45 PM – 5:00 PM

What the Future Holds

Looking at the crystal ball - Future of UHPC and Closing Remarks

received his B.S. Degree in Civil-Construction Engineering from the Polytechnic Institute in Tehran, Iran and his M.S. in Civil-Structural Engineering from Northeastern University in Boston.

Bruce E. Peterson, P.E., Senior Associate and Project Manager, Modjeski and Masters, bepeterson@modjeski.com

Bruce E. Peterson, P.E. is a Senior Associate and Project Manager with Modjeski and Masters, Inc. with 38 years of engineering experience in nearly every type of bridge. He received his B.S. and M.S. Degrees in Civil Engineering from The Pennsylvania State University and is a past Editor of the ASCE Journal of Bridge Engineering.

Reid W. Castrodale, Ph.D., P.E., President, Castrodale Engineering Consultants, PC, reid.castrodale@castrodaleengineering.com

Reid is a structural engineering consultant who provides services related to prestressed concrete and lightweight concrete. He has over 30 years of bridge-related experience in research, a bridge design firm, the Portland Cement Association, and the lightweight aggregate industry, and has been actively involved at PCI.

David Whitmore, P.E., President, Vector Corrosion Technologies, DavidW@Vector-Corrosion.com

David is President and Chief Innovation Officer for Vector Corrosion Technologies, which specializes in structural reinforced concrete restoration and corrosion protection. He is a registered Professional Engineer and Fellow of the American Concrete Institute and Canadian Society of Civil Engineers. David has been involved in research and development to repair and protect concrete structures for over 20 years.

WORKSHOP CONTENT

1:00 PM-1:15 PM

Welcome and Introduction to Workshop

Moderator - Jerry DiMaggio, P.E., Principal Engineer, Applied Research Associates, Inc.

1:15 PM-2:00 PM

Re-use of Substructures in Massachusetts ABC Projects

Maury Tayarani, P.E., Project Manager, Massachusetts Department of Transportation

2:00 PM-2:45 PM

Re-use of Substructure on Louisiana’s Huey P. Long Bridge Widening Project

Bruce E. Peterson, P.E., Senior Associate and Project Manager, Modjeski and Masters

2:45 PM – 3:00 PM

Break

3:00 PM – 3:45 PM

Case Studies: Use of Lightweight Concrete to Accommodate Substructure Re-use

Reid W. Castrodale, Ph.D., P.E., President, Castrodale Engineering Consultants, PC

3:45 PM – 4:30 PM

Case Studies: Use of Corrosion Protection Technologies to Accommodate Substructure Re-use

David Whitmore, P.E., President, Vector Corrosion Technologies

4:30 PM – 5:00 PM

Open Discussion on Research or Other Needs Related to the Re-use of Substructures on ABC Projects

Moderator - Jerry DiMaggio, P.E., Principal Engineer, Applied Research Associates, Inc.

5:00 PM –??

Adjourn

W-8: RE-USE OF SUBSTRUCTURES IN ABC PROJECTS

TIME: SUNDAY 1:00 PM to 5:00 PM

ROOM:

WORKSHOP OBJECTIVE:

Re-use of existing substructures is becoming an increasingly popular option as bridge owners work to address substandard bridges in their inventories. Eliminating the need to demolish existing substructures and construct new substructures saves time and money on bridge replacement projects. This workshop will describe how two States are re-using their bridge substructures. It will also describe two technologies – lightweight concrete and corrosion protection – that can assist in the re-use of substructures.

WORKSHOP SPEAKERS AND BIOS:

Jerry DiMaggio, P.E., Principal Engineer, Applied Research Associates, Inc., jdimaggio@ara.com

Jerry has 40 years of experience in engineering, construction, risk management, forensics, innovation deployment and alternative project delivery. He is manager and technical expert on projects including FHWA innovation deployment programs on Risk Management and Design-Build contracting. Jerry is a member of the Structures and Geotechnical Steering Committee for the California High Speed Rail Program and is assisting FRA on other risk management services.

Maury Tayarani, P.E., Project Manager, Massachusetts Department of Transportation, morteza.tayarani@state.ma.us

Maury is Project Manager for MassDOT’s Bridge Section responsible for District 3. Since joining the department in 1986 he has managed various innovative projects for the Accelerated Bridge Program. Maury has 38 years of engineering experience in both the public and private. He

W-9: ABC'S OF ABC- ESSENTIAL ABC ELEMENTS FOR BRIDGE PROFESSIONALS

TIME: SUNDAY 8:00 AM to 12:00 PM

ROOM:

WORKSHOP OBJECTIVE:

The workshop will introduce engineers, owners and contractors to the basics of ABC, introduced in a way that focuses on the key differences between ABC and conventional bridge design. The aim is to allow engineers familiar with traditional bridge design learn the key concepts of ABC in a few hours and advance the application of ABC to bridges.

WORKSHOP SPEAKER AND BIO:

Bala Sivakumar, Vice President, HNTB Corp. New York, NY.
bsivakumar@hntb.com

Mr. Sivakumar was co-principal investigator and project manager for the SHRP 2 R04 Project Innovative Solutions for Rapid Replacement of Bridges and the primary author of the SHRP2 ABC Toolkit. He has taught half-day and one-day ABC workshops to several DOTs and industry organizations. He is an expert practitioner of ABC and is currently involved in ABC designs in several states and leads HNTB's national ABC practice.

WORKSHOP OUTLINES

The workshop will introduce engineers, owners and contractors to the basics of ABC planning, design, contracting and construction. Participants will be introduced to the latest ABC technologies and their application to bridge renewal projects to minimize mobility impacts. Examples will be used to illustrate key differences between ABC vs conventional bridge design. Discussion will cover ABC schedules, contracting and project costs. The workshop will cover:

- Introduction to ABC
- Overview of ABC technologies
- Selection of ABC projects and ABC methods
- Foundation concepts for ABC
- Rapid demolition methods
- Full depth precast decks
- Design of prefabricated elements and systems (PBES)
- Connections for prefabricated elements
- Erection systems for prefabricated elements
- PBES Sample Design Examples
- Lateral slide design and construction concepts
- Bridge move with SPMTs
- ABC project examples
- ABC contracting provisions and delivery options
- ABC project costs

W-10: CONCRETE BRIDGE DESIGN WORKSHOP

TIME: SUNDAY 1:00 PM to 5:00 PM

ROOM:

WORKSHOP OBJECTIVE:

This series of talks will focus on key elements of precast, prestressed concrete bridge design and construction for ABC solutions. With more prefabrication, design and jobsite project personnel should take advantage of the flexibility that can be detailed into the elements as well as specific techniques used during the erection of precast elements. This workshop will provide the information on how to organize and lay out a jobsite for successful and safe erection of the structure.

WORKSHOP SPEAKER AND BIO:

Kevin Eisenbeis, P.E., S.E., Burns and McDonnell, Kansas City, MO.

Mr. Eisenbeis is the current Chairman of the PCI Committee on Bridges and the past chair of the Subcommittee on Adjacent Members.

Edwin McDougale, PE (retired), Ross Bryan Associates, Nashville, TN and e.Construct, Omaha, NE

Mr. McDougale is the past Chairman the Quality Assurance Council of PCI. He spent his entire 45+ year career working to improve plant and erection quality and educate precast/prestressed professionals involved in plant and erection operations.

William Nickas, PE, Managing Director, Transportation Systems for Precast/Prestressed Concrete Institute (PCI), Chicago, IL.

In addition to his director duties, William serves as the staff liaison to a variety of professional engineering committees including those focused on concrete applications with Bridges, Piles, Precast Pavements.

WORKSHOP OUTLINES

The course will begin with an in-depth look at the State of the Practice Report on Adjacent Box Beam Bridges. Adjacent box beam bridges are widely used in new bridge construction and have many advantages over other bridge types in speed and ease of construction, aesthetics, span-to-depth ratio, and cost. Although early construction practices may have led to serviceability issues, improved practices have made the box girder bridge a viable, cost-effective structural system.

A discussion on current practice, historical issues, lessons learned, and improved performance of box girder bridges is provided. Much of the information presented is based on responses to a survey of states and Canadian provinces and a review of current practices and publications. This information is relevant for Accelerated Bridge Construction, new bridge construction or superstructure replacement projects.

Two thirds of the workshop will focus on key concepts from established industry practices for the erection of precast, prestressed concrete structures. Participants will be briefed on many of the design and construction considerations necessary to successfully assemble engineered to order plant produced precast concrete. The two key documents used during the intense field auditor certification program are the PCI "Erector's Manual - Standards and Guidelines for the Erection of Precast Concrete Products - (MNL-127)" and the "Erection Safety for Precast and Prestressed Concrete" (MNL-132). These two documents are the primary source documents for the implementation of a quality assurance program for erectors and used to establish a level of quality that is recognized and respected by the many inspection officials in the construction industry. Participants will learn how to specify and address project preplanning, assigning responsibilities, geometry, tolerances, cranes, rigging, lifting inserts, tolerances, safety, and quality control inspections and recordkeeping. These three hours of material are selected from the 15 hours of curriculum that forms the PCI Certified Field Auditors training school. It will expose seminar participants to new tools for bridge engineers and contractors to improve ABC projects.

PCI will conclude with a brief look at the State-of-the-Art Reports on Curved Girders and Full Depth Precast Bridge Decks. Each participant will receive three reports and two manuals on how a balanced institute-based quality system contributes to the overall body of knowledge within the industry. It is with great pleasure that these speakers will share recent developments in precast concrete solutions that are becoming more common practice in transportation facility construction and renewal projects.