Resources Available through the ABC University Transportation Center (ABC-UTC)

by

Mary Lou Ralls, P.E., Ralls Newman, LLC

WSDOT 2015 ABC Workshop
Tumwater, WS
April 1, 2015



Presentation Outline

- Introduction to ABC-UTC
- ABC-UTC website
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 - Research Projects
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ABC-UTC

Award Announcement: September 2013

Consortium of Universities:

- Florida International University (FIU)
 - Atorod Azizinamini (lead)
- Iowa State University (ISU)
 - Brent Phares & Terry Wipf
- University of Nevada, Reno (UNR)
 - Saiid Saiidi



ABC-UTC Collaboration

- American Association of State Highway and Transportation Officials (AASHTO)
 Subcommittee on Bridges and Structures (SCOBS)
 - Technical Committee for Construction (T-4)
 - Technical Committee for Seismic Design (T-3)
- Transportation Research Board (TRB) ABC Subcommittee

 ABC

ABC-UTC Steering Committee

- Research
 - 11 ongoing projects, initiated in 2014
 - Will be considering additional projects for 2nd round funding in near future

Note: An advisory committee has been formed for each ongoing research project to monitor progress



- Education and Workforce Development
 - Increase ABC research assistantships for graduate students
 - Mentor undergraduate & graduate students in ABC
 - Develop undergrad ABC research intern program
 - Add ABC course content at university level
 - Develop online ABC courses
 - Develop K-12 educational modules



- Technology Transfer
 - Created dedicated website (www.abcutc.fiu.edu)
 - Continuing to post various content
 - Soon to post the FHWA projects database
 - Producing monthly 1-hour webinars



- Technology Transfer, cont'd.
 - Hosting 4-hour in-depth web trainings
 - 2014 & planning 2015
 - Hosting National ABC Conferences
 - 2014 & planning 2015
 - Presentations at national bridge meetings
 - "Highlights" report in 2015



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ABC Center Executive Board

- Atorod Azizinamini, Florida International University
- Mary Lou Ralls, Ralls Newman, LLC; Former State Bridge Engineer, Texas
- Kevin Thompson, AECOM; Former State Bridge Engineer, California
- Jugesh Kapur, Burns & McDonnell; Former State Bridge Engineer, Washington State
- Paul Liles, Former State Bridge Engineer, Georgia
- Ben Beerman, Federal Highway Administration

State Departments of Transportation and State Agencies

- Carmen Swanwick, AASHTO SCOBS T-4 Chair, Utah DOT
- Ahmad Abu-Hawash, Iowa DOT
- Nancy Daubenberger, Minnesota DOT
- Shoukry Elnahal, Delaware River & Bay Authority
- Bruce Johnson, Oregon DOT
- Bijan Khaleghi, Washington State DOT
- Elmer Marx, Alaska DOT&PF
- Tom Ostrom, California DOT.
- Robert Robertson, Florida DOT
- Monica Starnes, Transportation Research Board
- Wayne Symonds, Vermont Agency of Transportation
- Maury Tayarani, MassDOT

- Ben Beerman, Resource Center
- · Phil Yen, Office of Infrastructure



Industry Partners

- John Busel, American Composites Manufacturers Association (ACMA)
- Reid Castrodale, Lightweight concrete rep.
- Randy Cox, American Segmental Bridge Institute (ASBI)
- Mike Culmo, CME Associates, Inc.
- Jerry DiMaggio, Applied Research Associates, Inc.
- Bill Duguay, Associated General Contractors of America (AGC), rep.; J.D. Abrams, LP
- Mike Engestrom, Short Span Steel Bridge Alliance (SSSBA)
- Mal Kerley, NXL Construction Services, Inc.
- Danielle Kleinhans, National Concrete Bridge Council (NCBC), rep.
- Bill McEleney, National Steel Bridge Alliance (NSBA)
- William Nickas, Precast/Prestressed Concrete Institute (PCI)
- Eliza Partington, FIGG

Partner Universities

- Saiid Saiid, University of Nevada, Reno
- Brent Phares, Iowa State
- Ahmad Itani, University of Nevada, Reno
- Terry Wipf, Iowa State University

Florida International University Faculties

- Mohammad Hadi, Associate Professor
- Albert Gan, Professor
- Seung Jae Lee, Assistant Professor
- David Garber, Assistant Professor

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IOWA STATE UNIVERSITY



ABC Conference



2015 Accelerated Bridge Construction Conference

The 2015 National ABC

Conference, co-sponsored by State DOTs, the Federal Highway Administration and industry partners, will be held on December 7-8, 2015 in Miami, Florida. Attendees are expected from Department of Transportation engineers and other bridge professionals.

Read More.

April 16, 2015



Proprietary Products in ABC Projects

by John Huyer, P.E., Contract Administration Engineer, FHWA Office of Infrastructure; & Dale Peabody, P.E., Director of Transportation Research, Maine DOT

Incorporating innovations into bridge projects leads to more successful projects that meet the...

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The ABC-UTC has assembled an experienced, knowledgeable, and engaged group of bridge academics and engineers who collectively will provide the transportation industry with the tools needed to effectively and economically utilize the principles of ABC to enhance mobility, and safety and produce safe, environmentally friendly, long-lasting bridges.

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International Highway Technology Summit 2015 – Shanghai, China

April 23 - 25, 2015 2015 Structures Congress – Portland, OR

April 24, 2015

Call for Presentation Abstracts-Submission Deadline-2015 Western Bridge Engineers' Seminar - Reno, NV

June 5, 2015

Call for Paper Abstracts-Submission Deadline-2016 World Steel Bridge Symposium – Orlando, FL

June 8 - 11, 2015

32nd Annual International
Bridge Conference





2015 National Accelerated Bridge Construction Conference

The 2015 National Accelerated Bridge Construction Conference will be held on December 7 and 8, 2015, at the Hyatt Regency Hotel, in downtown Miami, Florida. The 2014 National Accelerated Bridge Construction Conference that was held in the same hotel, during Dec 4 and 5, 2014, was a great success. More than 750 attended the conference. Among attendees were more than 150 State Bridge Engineers, more than 40 FHWA bridge engineers and many consultants and bridge officials. Acting Administrator of FHWA, Mr. Gregory Nadeau

Reserve Now

A block of rooms is avail at special conference pr Submission Deadline: April 30, 2015 Select number of authors: 1 Please enter all author information (in order of author list): Student First Name: Last Name: Position: Organization: Address: City: State: Country: Zip Code: Email: Phone: Corresponding author Topic Area: V Do you prefer to present your work as a podium presentation or as a poster? (please note: the selection committee will make the final determination as to the format of your presentation) O Podium Poster No preference Paper Title:

Abstract (between 350 and 500 words):



2015 National Accelerated Bridge Construction Conference

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2015 National ABC

Conference Awards - Call for Nominations

Nominations due September 15, 2015

The 2015 National ABC Conference will be held December 6-8 in Miami, Florida. During the Conference, awards will again be given to best ABC projects in several categories and most influential person contributing to the cause and implementation of ABC. Submission details and official entry form templates for nominations can be downloaded by clicking the link shown below.

2015 NOMINATION DETAILS & OFFICIAL ENTRY FORM TEMPLATES

The pdf document at the above link provides the criteria and directions. The two Word documents are the official entry form templates for the two award nominations.

To be eligible, nominations must be submitted on the official entry form templates. All entries are due by 11:59 pm EST, September 15, 2015. Submissions received after that date will not be accepted.

Entries are to be submitted via email to <u>Atorod Azizinamini</u>. If you are not able to email your entry or need further clarification, contact Atorod Azizinamini at (402) 770-6210 for assistance. Winners will be announced at the 2015 National Accelerated Bridge Construction Conference.

Award Categories

- 1. Most Influential Person Contributing to the Cause and Implementation of ABC
- 2. Best ABC Project in the following categories:
 - a. Lateral Slide Technology
 - b. Self-Propelled Modular Transporters
 - c. Prefabricated Bridge Elements and Systems
 - d Emergency

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ABC Conference



2015 Accelerated Bridge Construction Conference

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Department of
Transportation engineers
and other bridge
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Monthly Webinar

Monthly Webinar Webinar Archives 2014 Conference



The ABC Center at FIU has offered free monthly webinars since March 2011. The ABC-UTC is continuing this series and maintaining an archive of the past events. The intended audience of these webinars includes engineers and other bridge professionals with content ranging from design issues to construction and contracting. These webinars attract an average of 4,000 participants each month.

The archive of past webinars is being transitioned to the new website. Click "Webinar Archives" on the left vertical menu to access past webinars transitioned to date.

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Delivery of Accelerated Bridge Construction WSDOT Workshop - Tumwater, WA

Location: Washington State Department of Department of Transportation, Bridge and Structures Office, Conference Room 1028, 7345 Linderson Way Southwest, Tumwater, Washington 98501

Workshop Description

This one-day Accelerated Bridge Construction (ABC) workshop is sponsored by the Washington State Department of Transportation. The workshop will provide an opportunity for exchange of the latest information and demonstrate technologies for delivering bridge construction projects in weeks, rather than months, for reducing congestion, improving safety and increasing the quality of highway bridges. See Agenda.

The Washington State DOT is interested in adopting new technologies and practices to deliver highway bridge construction projects that significantly reduce the impacts on the traveling public and generate cost savings. ABC technologies and Prefabricated Bridge Elements (PFBEs) are being used across the nation to reduce traffic congestion, increase work zone safety, and provide longer-lasting and more durable bridges with the focus on "Get in, get out, and stay out". The Washington State DOT is offering this workshop to showcase these innovative technologies to State, local agency, and industry transportation specialists and decision-makers. The goals are to increase utilization of these technologies, to reduce or eliminate work zone traffic delays and increase highway safety on new and replacement bridge projects. The workshop will provide information on the tools and techniques that are currently available for engineers and project planners to implement ABC and PFBE technologies, showcase successful

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WSDOT 2015 ABC Workshop

Bridge & Structures Office

7345 Linderson Way SW Tumwater WA Room 1028

Presentations



Panel Discussi



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2015 Structures Congress - Portland, OR

The Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE) is sponsoring the Structures Congress 2015 in Portland, Oregon, April 23-25, 2015 at the Oregon Convention Center.

Session 19: Accelerated Bridge Construction

Track: Bridge Research Topics

Date: Friday, April 24, 2015

Time: 3:30 - 5:00 pm

Moderator: Atorod Azizinamini

Accelerated Bridge Construction of Column to Pile-Shaft Connections in Moderate and High Seismic Zones – ABC-UTC/UNR

Extending Accelerated Bridge Construction Practices to Bridge Rehabilitation – ABC-UTC/ISU

Innovative Steel Bridge Systems for ABC Applications - ABC-UTC/FIU

Analysis and Monitoring of Southington I-84 Bridges during Accelerated Bridge Construction – Streere Engineering Inc.

Available Resources for Consultants to Utilize ABC - ABC-UTC

For additional information including registration: http://www.structurescongress.org/

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Compilation of all ABC research that is ongoing and completed

Background

In recent years there has been a significant push for more durable bridges that are less expensive and take less time to construct. These desires within the bridge community have led to numerous federal, state, and local agencies encouraging the use of accelerated bridge construction (ABC) practices. As with any new and emerging engineering topic, it is essential that measures be taken to prevent repetition of research and provide a source of information for various stakeholders.

Objective

Through the course of this project, a comprehensive database will be assembled that is both user friendly and easily navigable.

Scope

Through the course of this project, a comprehensive database will be assembled that is both user friendly and easily navigable. The database will incorporate published studies (gathered through a thorough review of available literature) and unpublished and ongoing studies (gathered through resources available through ABC-UTC and possibly a short survey of state departments of transportation).

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Research Projects

Projects at FIU

- Compilation of all ABO research that is ongoing and completed
- Compilation of ABC solutions
- Extending Application of Simple for Dead and Continuous for Live Load Steel Bridge System to ABC Applications in Seismic Regions- Phase I-Numerical Study
- Estimating total cost of bridge construction using ABC and conventional methods of construction
- Development of Manual

ABC-UTC Research Projects

- Florida International University (FIU)
 - Compilation of All ABC Research-Ongoing & Completed
 - Compilation of Available Short to Medium Span ABC Systems
 - Extending Application of Simple for Dead & Continuous for Live Load Steel Bridge System to ABC Applications in Seismic Regions - Phase I, Numerical Study
 - Estimating Total Cost of Bridge Construction using ABC and Conventional Methods of Construction
 - Development of Manual for Enhanced Service Life of ABC Projects



ABC-UTC Research Projects

- Iowa State University (ISU)
 - Development of Prefabricated Bridge Railings
 - Strength, Durability, and Application of Grouted Couplers for Integral Abutments in ABC Projects
 - Synthesis: Rapid Bridge Rehabilitation



ABC-UTC Research Projects

- University of Nevada at Reno (UNR)
 - Behavior and Design of Precast Bridge Cap Beams with Pocket Connections
 - Evaluation of Seismic Performance of Bridge Columns w/ Couplers and Development of Design Guidelines
 - Development and Seismic Evaluation of Pier Systems w/ Pocket Connections and Hollow PT/UHPC Columns



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Education and Workforce Development

All ABC-UTC partners have well-established education and workforce development programs that will be further strengthened through the ABC-UTC. FIU, ISU, and UNR each offer graduate degrees leading to M.S. and Ph.D. degrees in all traditional fields of civil engineering, including transportation engineering, structures engineering, and construction engineering.

Work is developing in the following areas and additional detail will be provided soon.

- Industry Mentoring and Internship.
- Undergraduate Research
- Course Content Modules
- K-12 Resources

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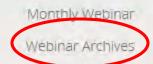
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One primary focus of the ABC-UTC is transfer of the latest accelerated bridge construction (ABC) knowledge to bridge owners and other bridge professionals. The ABC-UTC is continuing the free monthly webinars that the ABC Center at Florida International University first hosted in early 2011. Various ABC resources are available on the ABC-UTC website, including archives of past webinars and links to other ABC-related information and websites. Several topics featured in past monthly webinars are being expanded into in-depth webinars.

The ABC-UTC is hosting the National ABC Conference, and periodic newsletters will highlight ABC-UTC activities. The three universities in the ABC-UTC consortium build synergy with the combination of their individual ABC research expertise and experience providing the foundation for ABC advancements developed under the ABC-UTC research program. Those advancements will be shared through the technology transfer activities of the ABC-UTC.

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Thursday, March 26, 2015 (1:00 - 2:00 pm Eastern)

by Carmen Swanwick P.E., Chief Structural Engineer, Utah DOT, Cheryl Hersh Simmons P.E., Structures Design Manager, Utah DOT, Eric Wells, Area Manager, Granite Construction

Description: Utah is the first state in the U.S. to make ABC a common practice. Continuing its implementation of promising ABC technologies, UDOT recently completed its first project utilizing UHPC with full-depth precast concrete deck panels on a three-span continuous steel girder bridge. UHPC was used for the closure joints, haunch, and blockouts. The presentation will...

Read More

Thursday, February 19, 2015 (1:00 - 2:00 pm Eastern)

PBES for Local Systems - Iowa's Perspective, Experience, and Research

by Ahmad Abu-Hawash P.E., Chief Structural Engineer, Iowa DOT, Vanessa Goetz P.E., Secondary Road Research Engineer, Iowa DOT, Brent Phares Ph.D., P.E., Researcher, Iowa State University & ABC-UTC

Description: The lowa DOT, in partnership with lowa State University, has made ABC a practical alternative in their State. The lowa DOT / ISU partnership extends to counties in lowa, where significant ABC research has been undertaken. This presentation described various Prefabricated Bridge Elements and Systems that have been developed or are under development with lowa local systems...

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Related Links

Resources

The ABC-UTC is a resource center for ABC-related materials. Check the left menu for available information.

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Iowa DOT

Accelerated Bridge Construction

Innovative Bridge Research and Construction/Deployment (IBRC/IBRD) Program

Massachusetts DOT

Accelerated Bridge Program

LRFD Bridge Manual, Part III - Prefabricated Elements

Oregon DOT

Bridge Design & Drafting Manual, Section 3.24, ABC Guidelines

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State DOT Websites with ABC Content – currently listed on ABC-UTC Website (Resources)

lowa

Texas

Massachusetts

Utah

Oregon

Washington State



Texas DOT

ABC online standards include prestressed decked slab beams, prestressed slab beams, prestressed box beams, precast bent caps, and prestressed partial-depth deck panels

Utah DOT

"ABC is not separated anymore. It's just part of doing business." 2015 quote from Carmen Swanwick, Chief Structural Engineer, Utah DOT

Structures Design and Detailing Manual (SDDM), Chapter 20 - Accelerated Bridge Construction

The following include ABC items:

Drawings - Working Standards, Sample Sheets, Structures Design Drawings

Checklists

Templates - ABC Decision-Making Process (Note: See SDDM Ch. 20 for details)

Washington State DOT

Accelerated Bridge Construction Resources

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32nd Annual Inte Bridge Conference Pittsburgh, PA

July 12 - 15, 2015

11th Internationa Conference on Lo Roads - Pittsburg **Bridge Office**

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- WSDOT ABC Strategic Plan (draft)
- FHWA Seismic ABC Workshop Report
- ABC Seismic Connections TRB Research Proposal (Oct 15, 2008)
- Design of Precast Concrte Piers for Rapid Bridge Construction in Seismic Regions
- A Precast Concrete Bridge Bent Designed to Re-center after an Earthquake
- Rapidly Constructible Large-Bar Precast Bridge-Bent Seismic Connection (Final Report)
- Anchorage of Large-Diameter Reinforcing Bars Grouted into Ducts
- Design of Precast Concrete Piers for Rapid Bridge Construction in Seismic Regions
- . Fully Precast Bridge Bents for Use in Seismic Regions

Presentations

- Presentations from WSDOT ABC Workshop (September 30, 2008) (500 MB)
- Presentations from WSDOT-CalTrans TRB 2009 Seismic ABC Collaboration (612 MB)
- Lewis and Clark Bridge Deck Replacement
- · Rapid Replacement of the Hood Canal Bridge Approach Spans
- ABC Pooled Fund Meeting, March 2010
- HFL Testing Briefing, August 2010
- . A precast Concrete Bridge Bent for Seismic Regions: Achieving both Performance and Constructability
- · Unbonded pre-stressed connections
- Concrete Filled Steel Tubes for Bridge Foundations and Substructures

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SHRP2 Education Connection: Incorporating SHRP2 Solutions into Academia

The objective of the SHRP2 Education Connection is to increase awareness and understanding of SHRP2 products in academia by incorporating SHRP2 products into collegiate level lesson plans and curricula. To learn more about this initiative, see the SHRP2 Education Connection website. ABC-related products include:

- Innovative Bridge Designs for Rapid Renewal (R04)
- Managing Risk in Rapid Renewal Projects (R09)

Deadline for applications: April 9, 2015

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Tumwater, WA

April 19 - 23, 201

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For the latest information on SHRP2 implementation, see SHRP2 Solutions website.

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General Structures parent committee.

Implementation TRB ABC

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The Transportation Research Board (TRB) ABC Subcommittee functions under the TRB AFF10

Membership includes representation from the following TRB committees:-

- AFF10, General Structures
- AFF20, Steel Bridges AFF30, Concrete Bridges
- AFF50, Seismic Design and Performance of Bridges
- AFH40, Construction of Bridges and Structures
- AHD30. Structures Maintenance
- AHD35, Bridge Management

TRB ABC Subcommittee website; http://www.trbaff103.com/

- . Information posted from 2015 TRB Annual Meeting's ABC paper session, workshop, and
- You are invited to participate in the "rate the research topic ideas or RTI" that is posted under the "RTI" tab.
- You can download the National ABC Research spreadsheet under the "Research Projects" tab. The spreadsheet includes approximately 120 ABC related research projects related to ABC topics.

subcommittee meeting can be viewed by selecting "2015" from the "Annual Meetings" tab.

 To receive updates on the Subcommittee's activities, sign up as a "subcommittee friend" by filling out the form located under the "Registration" tab.

For more information, contact: Ran Rearman, TDR ARC Subcommittee Chair-

Delivery of Acce Bridge Construc

April 1, 2015

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WSDOT Worksh Tumwater, WA

April 19 - 23, 201 2015 AASHTO

and Structures Meeting - Sarat NY

Subcommittee of

April 21 - 23, 201 International Hi Technology Sun

Shanghai, China April 23 - 25, 201

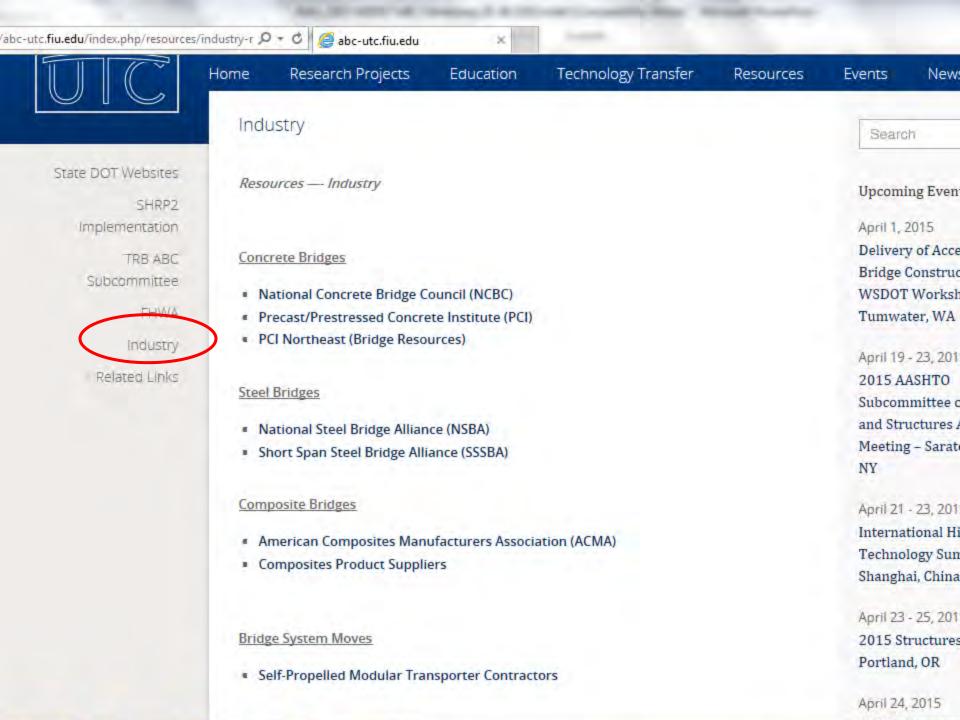
2015 Structures Portland, OR

April 24, 2015

Call for Presenta Abstracts-Subm Deadline-2015

Bridge Engineer - Reno, NV

Dono MII



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April 16, 2015



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International Highway Technology Summit 2015 – Shanghaí, China

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Delivery of Accelerated **Bridge Construction** WSDOT Workshop -Tumwater, WA

Sponsored by Washington State DOT

Event: Apr 19 - 23, 2015



2015 AASHTO Subcommittee on Bridges and Structures Annual Meeting -Saratoga Springs, NY

Sponsored by the American Association of State Highway and Transportation Officials (AASHTO)

Event: Apr 23 - 25, 2015



2015 Structures Congress - Portland, OR

Sponsored by ASCE/Structural Engineering Institute (SEI)

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Call for Presentation Abstracts-Submission Deadline-2015 Western Bridge Engineers' Seminar - Reno, NV



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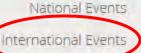
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International Events



Event: Apr 21 - 23, 2015



International Highway **Technology Summit** 2015 - Shanghai, China

Sponsored by CHTS, TRB & IRE

Event: Jun 23 - 25, 2015



16th European Bridge Conference & Exhibition - Edinburgh, Scotland

Sponsored by University of

Edinburgh and American Concrete Institute

Event: [nl 1 - 3, 2015



Multi-Span Large Bridges (MSLB) 2015 -Porto, Portugal

Sponsored by IABSE, FIB, IABMAS

Tumwater, WA

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November 25 - 26, 2015

7th Australian Small Bridges Conference - Melbourne, Australia

Sponsored by CommStrat Australia

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Sep 10, 2014



ConnDOT uses ABC Technique to Achieve Early Completion of Middleton Project

State of Connecticut, Gov. Malloy

ConnDOT completed the replacement of the Route 17 bridge over Long Hill Brook in Middletown ahead of schedule over the weekend.

Apr 4, 2014



Bridge Slide: An inside look at designing for Accelerated Bridge Construction

Infrastructure Quarterly

This article, which features a video "Inside Look" at designing for Accelerated Bridge Construction, discusses how ABC methods are being used for the first time in Oklahoma.

Apr 5, 2013



Oklahoma launches rapid bridge-building program

NewsOK, Michael McNutt

Parts of a new bridge will be built next to an existing twoway bridge over Cottonwood Creek in Creek County. The method is expected to reduce detours and lane restrictions from nine months to 21 days.

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International Highw **Technology Summit** Shanghai, China

April 23 - 25, 2015

January 16, 2013

Bridge work to close Rt. 106 and detour Easton traffic

Thank You

