

CONFERENCE PROGRAM



April 26 + 27, 2017

SHERATON MESA HOTEL
MESA, ARIZONA, USA

Conducted by

*Bridge Management Standing Committee
of the Transportation Research Board*

In Cooperation with

*Federal Highway Administration
U.S. Department of Transportation
and
AASHTOWare*

The Bridge Management Committee (AHD35) of the Transportation Research Board announces the 11th International Bridge and Structures Management Conference will be held at the Sheraton Mesa Hotel in Mesa, AZ April 26-27, 2017. This conference is sponsored by TRB Committees on Bridge Management (AHD35) in cooperation with the Federal Highway Administration and AASHTOWare. The 11th Conference will provide a 2-day program that focuses on the impacts of the new Federal Transportation Asset Management Rule and the proposed Federal Performance Measures. Four workshops are included that highlight the Federal rules, Implementation of AASHTOWare Bridge Management (BrM) software to help meet those rules and incorporate multi-objective analysis in bridge program planning, and to illustrate how to use the NCHRP Guide on Return on Investment from use of Management Systems. The Conference also highlights the advancement of asset management in Europe and South America.

The 10th International Bridge and Structure Management Conference was held at the Hyatt Regency in Buffalo, New York on October 20-22, 2008. This conference was sponsored by TRB Committees on Bridge Management (AHD35) and Structures Maintenance (AHD30) in cooperation with the Federal Highway Administration, New York State Department of Transportation, New York State Thruway Authority, New York State Bridge Authority, Multidisciplinary Center for Earthquake Engineering Research, and University at Buffalo: The State University of New York. The Proceedings from the 10th Conference were published as **Transportation Research E-Circular 128** in October 2008. The 10th Conference provided a 2-day program that focused on Bridge Management decision making, bridge program planning, and advancements in bridge assessment for use in Management Systems. The Conference also highlighted the advancement of asset management in Europe, South Arica, the Far East, and Canada.

The 9th conference was held in Orlando, Florida in 2003. Presentations from the 9th Conference were published as **Transportation Research E-Circular 049** in April 2003. This conference was sponsored by TRB Committee A3C17, Bridge Management Systems in cooperation with the Federal Highway Administration. The tenth conference provided a 2½ day program with presentations on future directions and challenges in structures management; design and implementation of bridge management systems; application of bridge management in transportation agencies; bridge preservation, maintenance and deterioration rates; application of prioritization and optimization routines; structural performance, monitoring and remaining life; bridge modeling and NBI translator; structure vulnerability and weigh-in-motion; bridge inspection; local, frequency and thermal imaging; bridge decks and stay cable; and, accelerated construction, fiber-reinforced polymers and corrosion evaluation. The conference was developed to aid bridge practitioners, managers and researchers in taking advantage of the characteristics of existing systems from around the world, and identifying new and anticipated enhancements.

ACCOMMODATIONS

A block of rooms has been reserved for this conference at the Sheraton Mesa Hotel with a Conference rate of \$110.00 plus applicable state and local tax. The hotel is located at 860 North Riverview, Mesa, AZ 85201. Reservations can be made online at <https://www.starwoodmeeting.com/events/start.action?id=160627777&key=10018667> or by calling the Hotel's Reservation Department at 480-664-1221. Indicate that you will be attending the 'International Bridge & Structures Management Conference' to get the special conference rate.

TRANSPORTATION

Ground transportation between the Phoenix Airport and Hotel is available by the Complimentary Hotel Shuttle Service (5:30 am to 11:00 pm) by calling 480-664-1221 or taxi services.

DRESS

Business casual

LINK TO PAPERS TO BE INCLUDED IN THE PROCEEDINGS

Many of the presenters have also prepared formal papers on their topic that will be included in a TRB Circular containing the Proceedings of the Conference. For your reference during the conference, the papers have been posted at the following web site:

<https://cm.wsu.edu/ehome/bridge-structures>

The presentations for Workshop 3 are also posted at that site for your reference.

ACKNOWLEDGMENTS

TRB LEADERSHIP

Neil J. Petersen, TRB Executive Director
James Bryant, TRB Staff Representative

PROGRAM COMMITTEE

Bruce Johnson (Chair), Sreenivas Alampalli, Basak Aldemir-Bektas, James Bryant, Eric Christie, Derek Constable, Harry Capers, Rade Hajdin, John Hooks, Ehsan Minaiee, and Paul D. Thompson

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SPONSOR RECOGNITION

We recognize Bentley Systems, Inc. for making a substantial contribution to the Conference.



VENDOR RECOGNITION

We recognize the following vendors for their support to the success and value of the Conference. Please visit their booths in the Vendor Area.



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Janet McLoughlin, Washington State University Conference Management

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WEDNESDAY, APRIL 26, 2017

7:00 am - 6:00 pm **Registration and Information**

7:00 am - 8:00 am **Continental Breakfast**

8:00 am - 9:30 am **Opening Plenary Session**..... CANYON D

Bruce Johnson, Oregon Department of Transportation, past Chair AHD35

Welcome

Shay Burrows, FHWA Structures Safety, Preservation & Management Team Leader

Keynote: "Implementation of TAMP and National Performance Measures"

Thor Anderson, Arizona DOT Multimodal Planning Division

Dave Benton, Arizona DOT Assistant State Bridge Engineer

Keynote: "European Approaches to Bridge Management: Practice and Research"

Rade Hajdin, Infrastructure Management Consultant, Zurich, Switzerland

9:30 am **Break**.....CANYON CEH

Track 1 | Session 1 **Implementation of BSM Programs and Processes** CANYON D

Moderator: *Bruce Johnson, Oregon Department of Transportation*

10:00 am **PennDOT Bridge Asset Management**

Lou Ruzzi, Penn DOT

10:30 am **AASHTOWare BrM | Welcome to Bridge Management (BrM): It's not Pontis Anymore**

Zac Boyle, Bentley Systems

11:00 am **Blatnik Bridge Management Study**

Perry Collins, Minnesota Department of Transportation

Keith Ramsey, WSP, Parsons Brinkerhoff

11:30 am

Bridge Structures Management for Public Private Partnerships in British Columbia (Canada): An Operators Perspective

Tim Aucott, Associated Engineering

Track 2 | Session 1 **Bridge Level Risk and Resilience** CANYON A

Moderator: *Rade Hajdin, Infrastructure Management Consultant, Zurich, Switzerland*

10:00 AM **Risk Assessment for Bridge Management Systems**

Paul D. Thompson, Consultant

10:30AM **Findings of the Domestic Scan on Bridge Scour Risk Management**

Rebecca Curtis, Michigan Department of Transportation

11:00 AM **Vulnerability: The Top Level Performance Indicator for Bridges Exposed to Flooding Hazards**

Nicola Tanasic, University of Belgrade

11:30 AM **Framework for Objective Risk Assessment in Bridge Management**

Paul D. Thompson, Consultant

Track 3 | Session 1 **Improving BSM Data, Models and Tools**AGUA FRIA

Moderator: *Shay Burrows, FHWA Office of Bridge & Structures*

- 10:00 am** **A Novel Cost-based Performance Index for Condition Assessment of Bridges: A Case Study for an Ohio Bridge**
Ehsan Fereshtehnejad, The Ohio State University
- 10:30 am** **Setting Targets for Federal Bridge Performance Measures in Oregon**
Bruce Johnson, Oregon Department of Transportation
- 11:00 am** **Modeling of Life Cycle Alternatives in the National Bridge Investment Analysis System**
William Robert, Spy Pond Partners
- 11:30 am** **Validating Common Collapse Conjectures in U.S. Bridges**
Cristopher Montalvo, New Mexico Institute of Mining and Technology
- 12 noon - 1:00 pm** **Lunch**.....CANYON FG

Track 1 | Session 2 **Implementation of BSM Programs and Processes** CANYON D

Moderator: *John Hooks, J M Hooks & Associates*

- 1:00 pm** **Determination of Asset Management Plan using BMS Analysis Tools**
Reed Ellis, Stantec
- 1:30 pm** **The Evolution of Structure Asset Management in Wisconsin**
Joshua Dietsche, WI DOT
- 2:00 pm** **AASHTOWare Bridge Management (BrM) – Multi-Criteria Bridge Management**
Josh Johnson, Bentley Systems
- 2:30 pm** **ADOT Bridge Management Challenges**
Pe-Shen Yang, Arizona Department Of Transportation

Track 2 | Session 2 **Workshop 1: FHWA Performance Based Asset Management Plans** CANYON A

Moderator: *Derek Constable, FHWA*

- 1:00 – 3:00 pm** **FHWA Perspective**
Steve Gaj, FHWA Office of Asset Management
Derek Constable, FHWA Office of Bridges and Structures
- Question and Answer Panel**

Track 3 | Session 2 **Innovative Technologies and Project Delivery**.....AGUA FRIA

Moderator: *Harry Capers, Arora and Associates, P.C.*

- 1:00 pm** **Chilean Management System for Singular Infrastructures Projects**
Matias A. Valenzuela, Chile Ministry of Public Works
- 1:30 pm** **Mitigating Grouted PT-Strand Corrosion on Bridges**
David Whitmore, Vector Corrosion Technologies Inc.
- 2:00 pm** **Innovations in Bridge Expansion Joints: New Repair Methods and Materials**
Irene Friedman, EMSEAL Joint Systems
- 2:30 pm** **Blending Science and Engineering: Laguna Creek Bridge Bank Protection**
Steven Olmsted, Arizona Department of Transportation
- 3:00 pm** **Break**.....CANYON CEH

Track 1 | Session 3 **Implementation of BSM Programs and Processes** CANYON D

Moderator: Ehsan Minaie, CDM Smith

- 3:30 pm** **Bridge Model Validation at Indiana DOT**
Gary Ruck, Deighton Associates Limited
- 4:00 pm** **AASHTOWare Bridge Management (BrM): Deterioration and Life Cycle Cost**
Josh Johnson, Bentley Systems
- 4:30 pm** **AASHTOWare Bridge Management (BrM): Conducting Trade-off Analyses**
Zac Boyle, Bentley Systems
- 5:00 pm** **Enabling the Future of Bridge Inspection Data Collection: The 3DBRIDGE Application**
Colin Brooks, Michigan Technological University - MTRI

Track 2 | Session 3 **Workshop 2: FHWA Performance Based Asset Management Plans** CANYON A

Moderator: Derek Constable, FHWA

- 3:30 – 5:30 pm** **State Perspective**
Rebecca Nix, Utah Department of Transportation
John Clark, Florida Department of Transportation

Question and Answer Panel

Track 3 | Session 3 **Bridge & Structures Management Practices** AGUA FRIA

Moderator: Paul Thompson, Consultant

- 3:30 pm** **Cross-Asset Prioritization: Oregon Bridge and Pavement Programs**
Bruce Johnson, Oregon Department of Transportation
- 4:00 pm** **Earthquake Preparedness and Response: Oklahoma DOT's Proactive Approach for Bridges**
Gregg Hostetler, Infrastructure Engineers, Inc.
- 4:30 pm** **TXDOT Bridge Management Practices**
Steve Austin, Texas Department of Transportation
- 5:00 pm** **Bridge Monitoring for Decision Making of the vertical lift bridge**
Erin Bell, University of New Hampshire
- 5:30 pm** **Adjourn for Wednesday**
- 6:00 - 8:00 pm** **Reception and Exhibitor Displays** CANYON FG

THURSDAY, APRIL 27, 2017

7:00 am - 4:30 pm **Registration and Information**

8:00 am - 3:00 pm **Technical Program**

Track 1 | Session 4 **Implementation of BSM Programs and Processes** CANYON D
Moderator: Bruce Johnson, Oregon Department of Transportation

- 8:00 am** **Implementation of the IDS System for Iowa DOT**
Scott Neubauer, Iowa Department of Transportation
- 8:30 am** **Management System for Natural Risk Disaster**
Matias A. Valenzuela, Chile Ministry of Public Works
- 9:00 am** **AASHTO Manual for Bridge Evaluation, Update to Chapter 3: Bridge Management Systems, A Practical Tour**
Dave Juntunen, Michigan Department of Transportation
- 9:30 am** **AgileAssets Bridge Network Planning Using AASHTO Element Data**
Scott Choate, AgileAssets, Inc

Track 2 | Session 4 **Workshop 3: Tools and Computer Applications** CANYON A
Moderator: Eric Christie, Alabama DOT

- 8:00 – 10:00 am** **Implementation of AASHTOWare Bridge Management (BrM) 5.2.3 to Meet Agency Policies and Objectives for Bridge Management while Addressing FHWA Rules**
Zach Bolye and Josh Johnson, Bentley Systems

Track 3 | Session 4 **Improving BSM Data, Models and Tools** AGUA FRIA
Moderator: Basak Aldemir-Bektas, Iowa State University

- 8:00 am** **Implementation of RSMS KUBA: Experience Report**
Rade Hajdin, Infrastructure Management Consultant, Zurich, Switzerland
- 8:30 am** **Bridge Condition Performance Groups: Mining National Bridge Element Data by Statistical Clustering**
Basak Bektas, Iowa State University
- 9:00 am** **Migration probability matrix for bridge element deterioration models**
Paul D. Thompson, Consultant
- 9:30 am** **Five Documentaries about California Bridges and Structure Management**
Greg Kaderabek, Intelligent Infrastructure Systems
- 10:00 am** **Break**.....CANYON CEH

Track 1 | Session 5 **Inspection and Assessment for BSM Decision Making** CANYON D

Moderator: Ben Witter, Bentley Systems, Inc.

- 10:30 am** **Development of Limit State Based SHM Thresholds for Efficient Reporting and Alerting**
Nathaniel C. Dubbs, Intelligent Infrastructure Systems
- 11:00 am** **MnDOT Inspection QA-QC Compliance Reviews**
David Hedeem, Minnesota, Department of Transportation
- 11:30 am** **A Robust Registration Algorithm for Performing Change Detection of Highway Bridges Using 3D Laser Scanning Data**
Vamsi Sai Kalasapudi, Arizona State University
- 12:00 pm** **A US State DOT Tour: Best Practices in New, Modernized Mobile Inspections**
Ben Witter, Bentley Systems, Inc.

Track 2 | Session 5 **Workshop 3 (con't): Tools and Computer Applications** Canyon A

Moderator: Eric Christie, Alabama DOT

- 10:30 – 12:00 am** **Implementation of AASHTOWare Bridge Management (BrM) 5.2.3 to Meet Agency Policies and Objectives for Bridge Management while Addressing FHWA Rules**
Zach Bolye and Josh Johnson, Bentley Systems

Track 3 | Session 5 **Improving BSM Data, Models and Tools**AGUA FRIA

Moderator: Larry O'Donnell, FHWA-RC-TST-Structures

- 10:30 am** **Replacing Montana's Outdated Bridge Management System**
Amanda Jackson, Montana Department of Transportation
- 11:00 am** **Exploring the U.S. Interstate Highway Bridge Maintenance Expenditure vs. Condition Tradeoff Relationship using Aggregate Data**
Seyed Ali Ghahari, Purdue University
- 11:30 am** **Optimal Retrofit Decision-Making for Bridge Systems Based on Multi-Hazard Lifecycle Cost Analysis**
Ehsan Fereshtehnejad, The Ohio State University
- 12:00** **Developing a Program to Rank New York City Bridges by Benefit Cost Ratio: Lessons Learned from New York City DOT**
Ed Hernandez, NYC Department of Transportation
- 12:30 pm** **Lunch**..... CANYON FG

Track 1 | Session 6 **Inspection and Assessment for BSM Decision Making** CANYON D

Moderator: Larry O'Donnell, FHWA-RC-TST-Structures

- 1:30 PM** **Efficient Bridge Deck Inspection and Assessment Framework Utilizing Image-based Non-destructive Evaluation Methods**
Shuhei Hiasa, University of Central Florida
- 2:00 PM** **Visual Inspections and KPIs: Bridging the Gap**
Rade Hajdin, Infrastructure Management Consultant, Zurich, Switzerland
- 2:30 PM** **3D Mobile Inspection of Bridges**
Hooman Parvardeh, Bridge Intelligence LLC
- 3:00 PM** **Inspection Mindset**
Rebecca Nix, Utah DOT

- 1:30 – 3:30 pm** **Overview of NCHRP 20-100 Project**
Bill Robert, SPP

- Return on Investment Framework\Calculation Guidance**
Chris Williges, HDR

- Spreadsheet Tool for Calculating ROI**
Bill Robert, SPP

- Case Studies in TAM Implementation**
Bill Robert, SPP

- Pilot of ROI Guidance: Improving Culvert Management at NHDOT**
Q&A/Discussion

- 3:30 pm** **Break**.....CANYON CEH

- 4:00 - 5:00 pm** **Conference Closing Session**..... CANYON D

- 4:00 PM** **Conference Highlights: “Putting Bridge Management Into Practice”**
Katie Zimmerman

- 4:30 PM** **Closing Keynote: “Where Do We Go From Here?”**
Shay Burrows, FHWA

- 4:55 PM** **Concluding Remarks**
Organizing Committee

- 5:00 PM** **Conference Adjourns**