

CONFERENCE PROGRAM

11th International Bridge and Structure Management Conference



**Sheraton Mesa Hotel
Mesa, Arizona**

April 25-27, 2017

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 on-line at <https://www.starwoodmeeting.com/events/start.action?id=1606277777&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/451102/>

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

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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

Committee on Bridge Management, AHD35

Basak Aldemir-Bektas, chair, Bruce Johnson, past chair, Sreenivas Alampalli, Ting Bao, Scot Becker, Erin Bell, Harry Capers, Jr., Derek Constable, Reed Ellis, John Fussell, Knut Grefstad, Rade Hajdin, Arne H. Henriksen, John Hooks, Stuart Hudson, Mike Johnson, Samuel Labi, Haotian Liu, Ehsan Miniaie, George Morcoux, Josh Sletten, Arunprakash M. Shirolé (emeritus), Pingbo Tang, Junliang Tao, Paul D. Thompson, Peter Vanderzee, Ben Witter and Bojidar S. Yanev

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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The Twenty-One Tech Company, Inc.

Conference Planning

Janet McLoughlin, Washington State University Extension Office Conference Planning Unit

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Program

Transportation Research Board – FHWA - AASHTOWare
11th International Bridge and Structure Management Conference
Sheraton Mesa Hotel • Mesa, Arizona • April 26-27, 2017

Wednesday, April 26, 2017

7:00 a.m. - 6:00 p.m. Registration and Information

7:00 a.m. - 8:00 a.m. Continental Breakfast

8:00 am to 9:30 am **Opening Plenary Session**

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 Asset Management Lead

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**

Track 1 – Session 1 Implementation of BSM Programs and Processes

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

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

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

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 p.m. **Lunch**

Track 1 - Session 2 Implementation of BSM Programs and Processes

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 – FHWA Perspective

Moderator: Derek Constable, FHWA

- 1:00 – 3:00 pm *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

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**

Track 1 - Session 3 Implementation of BSM Programs and Processes

Moderator: Ehsan Minaie, CDM Smith

- 3:30 pm Bridge Model Validation at Indiana DOT
Gary Ruck, Vector Corrosion Technologies Inc.
- 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 Bridge Performance Based Asset Management Plans – State Perspective

Moderator: Derek Constable, FHWA

- 3:30 – 5:30 pm
Rebecca Nix, Utah Department of Transportation
John Clark, Florida Department of Transportation
Question and Answer Panel

Track 3 - Session 3 Bridge & Structures Management Practices

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**

Thursday, April 27, 2017

Technical Program, 8:00 AM to 3:00 PM

7:00 a.m. - 4:30 p.m. Registration and Information

Track 1 - Session 4 Implementation of BSM Programs and Processes

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

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

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

Track 1 - Session 5 Inspection and Assessment for BSM Decision Making

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 am 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

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

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

Track 1 - Session 6 Inspection and Assessment for BSM Decision Making

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

Track 2 - Session 6 Workshop #4 –Return on Investment for TAM – Spy Pond Partners, HDR and NHDOT

Moderator: Bill Robert, Spy Pond Partners

- 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

4:00 – 5:00 pm Conference Closing, Plenary Session

- 4:00 PM "Putting Bridge Management Into Practice" - Conference Highlights
Katie Zimmerman
- 4:30 PM Where Do We Go From Here?
Shay Burrows, FHWA
- 4:55 PM Concluding Remarks by Organizing Committee
- 5:00 PM Conference Adjourns