

# AASHTOWare Bridge Management (BrM) Task Force Meeting Minutes

## April 11 - 14, 2016

### Lake Tahoe, NV

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# General Information - Meeting of the Bridge Management Task Force

## Participants:

AASHTO	
Judy Skeen	AASHTOWare Bridge Project Manager
Jan Edwards	AASHTOWare Program Director
BrM Task Force	
Eric Christie	Alabama Department of Transportation
Beckie Curtis	Michigan Department of Transportation
Mark Faulhaber	Kentucky Transportation Cabinet
Thomas Martin	Minnesota Department of Transportation
Bruce Novakovich	Oregon Department of Transportation
Todd Thompson	South Dakota Department of Transportation
BrM Contractor	
Jeremy Shaffer	Bentley Systems, Inc.
Josh Lang	Bentley Systems, Inc.
Josh Johnson	Bentley Systems, Inc.
Zac Boyle	Bentley Systems, Inc.
Vasil Papakroni	Bentley Systems, Inc.
Guests	
Tim Armbrecht	Illinois Department of Transportation / SCOBS T-18 Committee
Scot Becker	Wisconsin Department of Transportation / SCOBS T-19 Committee

## 1. Review Agenda and Assign Minutes Recorder

- Josh Johnson and Judy Skeen will record meeting minutes
- The following agenda items were added:
  - New Agenda Item 2d: Incorporation of Michigan 3D Inspection into BrM
  - New Agenda Item 5b: SCOBS Presentation
  - New Agenda Item 5c: Newsletter Articles
- Agenda Item 12 was removed from the agenda. The T&AA report, provided by Wally Ballou, was presented during the Joint meeting.

## 2. Prior Business

### a. Review January Meeting Minutes

- The New Orleans, LA meeting minutes were approved with no changes.



**b. Review January Meeting Summary Minutes**

- The New Orleans, LA summary meeting minutes were approved with no changes.

**c. Review Prior Action Items**

**d. Michigan DOT 3D Inspection – Opportunity to incorporate the functionality into BrM**

The Task Force Vice Chair provided the Task Force with an overview of the discussions between the Task Force, Michigan DOT, AASHTO, and Michigan Tech University.

- The Task Force will need to determine how many states would be interested in taking advantage of the 3D inspection functionality. (possibly include a question on level of interest in the 2016 BrMUG survey)
- There is a benefit of charging for the 3D inspection functionality from the beginning as it will be difficult to charge for the functionality once the 'product' is initially provided free of charge.
- A follow-up conference call will be scheduled to discuss potential contractual options to support the incorporation of the MIDOT 3D Mobile Inspection software into BrM.

### 3. Project Update

**a. Budget and Schedule**

- Bentley presented budget reports for the FY16 MSE and the BrM 5.2.3 Project. All billings reported include invoices issued through 03/31/16.
- Funding under TM2 (Customer Support) is insufficient to cover the remainder of the fiscal year. The Task Force directed Bentley to move funding from TM9 (Inclusion of Proposed New FHWA NBI Coding Guide and Tunnel Inspection Standards) to TM2 (Customer Support) to cover the anticipated shortfall.
- On the 5.2.3 Project, the Task Force advised that they are not concerned with running over in TM subtasks as long as the overall TM task remains within budget.

**b. Customer Support Statistics**

- Bentley presented an overview of the customer support hours by agency for FY2016.
- Agencies with the highest support levels include Alabama, Delaware, Florida, Idaho, Illinois, Kansas, New Hampshire, Oregon, Utah, Virginia, and Wyoming.

**c. Service Unit Status**

- Bentley presented the service status report as of 4/11/16.
- In general, a majority of the service unit projects are on track.
- The Monthly Service Unit Status Report should be submitted each month with the service unit invoices.
- The Project Manager will continue to work with Bentley to keep the service unit status up to date on a monthly basis.
- The Task Force discussed and approved the Kentucky TC Notice to Proceed for service unit work to support the upgrade, customization, training and support of BrM 5.2.2. Mark Faulhaber will present their vision to the Multimedia TAG to discuss opportunities to incorporate the KYTC enhancement into the core product.

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- The Task Force is interested in incorporating more of the agency specific customizations into the core project. Actions need to be taken to look for opportunities to bridge the gap between the core product development and agency service unit project development.

### d. License Revenue Report

- Bentley presented a summary of license fee and service unit activity as of 1/20/16.

## 4. FHWA Update

The FHWA liaison provided an update on FHWA activities.

**FHWA STAFFING CHANGES:** - Phil Yen, Seismic Engineer, retired.

### **REGULATORY AND OTHER FEDERAL ACTIONS:**

- **National Bridge Inspection Standards:** Tentative release of NPRM for the NBIS update is **Fall 2016**. This provides an opportunity for public comment. Updated SNBI (coding guide) will be released for public comment either with NPRM or in advance.
- **National Tunnel Inspection Standards:** Plan to complete full NTI XML submittal format and error checker this summer after which will be able to accept state NTI submittals.
- **Asset Management Rulemaking:** NPRM closed May 29, 2015. Final Rule tentative release **September 2016**. Keep in mind that if language in NPRM stands, you will need to submit an asset management plan within 12 months of the final rule effective date.
- **Performance Measures Rulemaking:** NPRM for bridges and pavement closed May 8, 2015. Final Rule tentative release **September 2016**. Rule works in concert with Asset Management Plan Rule. If language in NPRM stands, measures and targets will need selected by States within 12 months of the final rule effective date.
- **NBI Coding Guide:** New draft guide near complete with the expectation of making it available for public comment with the NBIS NPRM or in advance of NPRM. T-18 reviewed an earlier version with some changes occurring since to address internal comment. Significant changes include: consistency with NBIS NPRM, XML file format, and multiple new items to assist in data driven risk-based oversight, ex. substructure material and design type, scour POA, seismic vulnerability, load rating date, posting date, posting loads, complex feature inspection and frequency type, railing, bearing, joint condition ratings, etc.
- **Bridge Inspector's Reference Manual:** Manual update to revise element inspection sections is ongoing. App for Android and IOS in development. Both should be available this summer.

### **FHWA TRAINING DELIVERY & DEVELOPMENT:**

- **Element-Level Bridge Inspection:** FHWA Resource Center has completed 83 sessions with about 3,700 participants. Requests continue with future sessions scheduled.
- **NHI Bridge Inspection Course:** A comprehensive course update will be available in **2016**. It will incorporate criteria from the 2013 AASHTO Manual for Bridge Element Inspection and will include current information on post-tensioning systems. Minor refresher course updates have already been made to reflect the above.
- **NHI Tunnel Inspection:** Refresher course is in development tentatively available in **2017**. Will satisfy NTIS requirement for 18 hour refresher training at 5 year frequency.
- **NHI Bridge Preservation Web-Based Courses:** Three courses released in June 2015, \$50 each.
  - 130106A Bridge Preservation Fundamentals (5 hours) - Defines preservation work activities and categories, explains benefits of preservation and how to transition from a reactive to proactive

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program, and provides information on cost-effective deck, superstructure, substructure and culvert activities.

- 130106B Establishing a Bridge Preservation Program (4 hours) - Provides a framework for a program including identifying objectives, goals and performance measures, conducting needs assessments developing a program strategy and prioritizing activities. Discusses logistics of data collection, data management, budgeting and resource allocation, work plan development, implementation and monitoring.
- 130106C Communication Strategies for Bridge Preservation (3 hours) - Discusses strategies to gain and maintain support for a program including identifying agency champions, target customers and stakeholders, conducting market research and communicating needs and benefits to stakeholders and the public.
- **NHI Bridge Maintenance Course Update:** This 4 day instructor lead training and reference manual are under major revision to bring up to current standard and practice. Manual will include more procedural steps and job-site checklists for different maintenance actions. Will also include web-based training specific to steel coatings, movable bridges and masonry (2-3 hours each). Pilot scheduled for April with tentative release **summer 2016**.
- **NHI Bridge Management Fundamentals & Performance Based Management of Bridges:** These two new web-based courses were made available in 2015. They are approximately 4 hours each.
  - Bridge Management Fundamentals is a high level course that presents bridge management concepts with respect to its benefits, the organizational structure and components of a bridge management approach, the analytic aspects of a BMS including types of data input, computational models and output, considerations when selecting a BMS tool, steps to implementing a BMS, and effectively using a BMS and its output. Agency perspectives are also presented.
  - Performance Based Management of Bridges is a high level course that presents how bridge management tools assist with performance management, the use of performance measures, assessment of cost-effectiveness using life cycle cost analysis and benefit cost analysis concepts, the assessment of risk, and communicating the benefits of bridge management tools and performance based bridge management. The course does not address proposed regulatory requirements on performance measures.
- **NHI Transportation Performance Management for Bridges:** This 1 day course is in expected to be released when the final rule for NHS bridge performance measures and asset management plan rules are released. It will address MAP-21 and regulatory requirements for performance measure target setting and reporting. It will present information on bridge performance data, performance measures, FHWA NHS performance measures, the process of target setting (which will have its basis in the asset management analysis, incl. use of BMS, and selected asset management investment strategy ), and development of bridge programs in response to selected targets.

### **OTHER:**

- **Bridge Preservation Expert Task Group:** National meeting held in March. Updated the strategic plan and developed a 2016-2018 work plan. 4 strategic objectives (1) Provide guidance on effective bridge preservation strategies, (2) develop and disseminate educational materials on bridge preservation, (3) promote bridge preservation as a component of asset and performance management, (4) foster a collaborative environment that encourages research and innovation. Some associated activities that have a direct connection with bridge management systems include developing a formalized analytic approach/decision-making process for preservation activities - NCHRP 14-36 implementation (objective

1), collect agency business/policy rules for selecting bridge preservation decisions (objective 3), integration of preservation into BMS (objective 3).

- **Conferences**

- **11<sup>th</sup> International Bridge & Structure Management Conference: Planned for 04/17** at TBD location. Organized by TRB Bridge Management Committee chaired by Bruce Johnson. Tentative co-sponsors include AASHTOWare, TRB, FHWA.
- **11<sup>th</sup> National Conference on Transportation Asset Management: July 10-12, 2016.** Minneapolis, MN. Sponsored by TRB.
- **NDE/NDT for Highways and Bridges: Structural Materials Technology Conference:** Aug 29 - Sept 1, 2016. Portland, Oregon. Sponsored by American Society for Non-Destructive Testing.

- **NCHRP projects:**

- **NCHRP Report 668 – Framework for a National Database System for Maintenance Actions on Highway Bridges.** Published 2010.
- **NCHRP Report 742 Communicating the Value of Preservation: A Playbook.** Published 2012. A guide that addresses formulating an effective strategy for communicating the importance of highway maintenance and preservation, criteria and methods for evaluating the effectiveness of a communication strategy, and adjusting and ensuring its effectiveness.
- **NCHRP Report 806 Cross-Asset Resource Allocation and the Impact on System Performance:** Provides a framework and tool for allocating resources among asset classes. The optimization uses a multi-objective analysis approach with utility functions to define benefits. Uses information and prioritization from applicable management systems however the process is not dynamic as it lacks communication with the different systems beyond using the initial priorities data. Therefore, if initial asset priorities are not selected because are not found to be optimum in the cross asset optimization, the tool is unable to include and analyze less than optimum solutions and incorporate LCC implications for each asset type. Published 05/15. Can also refer to 2012 NCHRP Report 736 Resource Allocation Logic to Meet Highway Asset Preservation.
- **NCHRP Report 816 Guide for Preservation of Highway Tunnel Systems.** Published October 2015.
- **NCHRP 08-36 Development of Transportation Asset Management Plan Templates:** Will result in development of a guidebook on preparing an asset management plan and electronic templates for use by agencies to assist them with the preparation of the plans required by MAP-21. Both the guidebook and templates will supplement the AASHTO Transportation Asset Management Guide: A Focus on Implementation, *Chapter 4*, Transportation Asset Management Plan. Tentative completion 06/15.
- **NCHRP Synthesis 20-05/Topic 46-15 Life Cycle Cost Analysis of Preservation and Replacement of Highway Assets:** Objective is to develop an inventory of quantitative asset-level or project-level models for predicting LCC It will synthesize literature including methods for estimating agency, user, and non-user costs, for selecting a discount rate, and for quantitatively modeling the uncertainty of costs. It will also gather literature on deterioration and effectiveness of actions, and information on existing LCCA tools in use by agencies. 2014 start.

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- **NCHRP 20-07 Task 378 Assessing Risk for Bridge Management:** The objective is to develop a framework for inclusion in a BMS that assesses probability of occurrence and consequence to bridges and public. PI selected 06/15. Western Management & Consulting assisted by Paul Thompson and Countermeasures Assessment and Security.
- **NCHRP 14-36 Proposed AASHTO Guide for Bridge Preservation Actions:** The objective is to develop a bridge preservation guide for possible adoption by AASHTO. The guide will include: (1) a catalog of bridge element preservation actions and (2) the criteria and selection methodology of bridge preservation actions with associated costs and benefits for use in life-cycle cost analysis and in a BMS. PI selected 06/15. George Hearn.
- **NCHRP 20-07/Task 380 – Update of the AASHTO Maintenance Manual for Roadways and Bridges.** In progress.
- **NCHRP 12-104 Guidelines to Improve the Quality of Element-Level Bridge Inspection Data:** The objective is to develop guidelines to improve the quality of element data collection. Guidelines should include recommendations to: (1) improve consistency in data collection and (2) establish accuracy levels for element conditions and defect quantities to support BMS deterioration forecasting and evaluation. PI selected 08/15. Glenn Washer. Tentative completion 11/17.
- **NCHRP 24-46 Development of an Implementation Manual for Geotechnical Asset Management for Transportation Agencies:** Responses to RFP received early 2016.

## 5. BrM Communication

### a. Quarterly Status Report

- 5.2.3 Schedule
  - Initial pre-beta testing was completed by the Task Force in April
  - Additional onsite beta testing by the TAG will be held in May
  - Additional Task Force testing in June
  - Up to date schedule information is available online (Bentley to post and communicate information on the link in the quarterly status report)
- Tunnels
  - Mockups are being reviewed by the TAG
  - DOTs can still contribute to the tunnel effort
- 5.2.2 Release 2
  - Information on what is included

The Task Force Vice-Chair will continue to send the communique from his email account and Judy will continue to post the update on the [aashtoware.org](http://aashtoware.org) website.

### b. SCOBS

Once we receive direction from the SCOBS T-18 chair, a T-18 presentation will be developed, using the SEBPP BrM Presentation as a starting point.

### c. Newsletter Articles

- Vice-Chairperson article
- Update product new features / 5.2.2 Release 2 details





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- Network and preservation policies / lifecycle cost analysis
- New dashboards
- Information on performance measures

Newsletter articles need to be completed by 05/13/16.

## 6. BrM 5.2.2 – Bug Fixes / Release 2

- Bentley walked through the bugs that have appeared with the inspection schedule.
- The Task Force agreed that these bugs need to be addressed prior to the BrM 5.2.3 release.
- Notification for this release should be separate from the quarterly status meeting.
- The latest PONWEB issues were reviewed to determine which issues will be fixed and included in BrM 5.2.2 release 2

## 7. BrM 5.2.3 – Testing TAG Discussions

- An additional DOT advised that they were interested in participating Beta testing. They have been provided with information on how to participate; however, the Task Force has not heard back from them.
- It was decided that the testing structure should have the testing TAG test everything except the scenario explorer and planning and programming modules and then test those modules later in the week.
- The schedule for 5.2.3 was established as follows:
  - Beta 1 Testing with full inclusion of what was discovered during this meeting as well as the Scenario explorer will be conducted the week of May 9.
  - Beta 2 Testing will be conducted the following week on a demo site (around May 18). The cut-off for Beta 2 Testing will be June 3.
  - Final Beta testing will be conducted during the June Task Force meeting.
  - RC1 Testing will be conducted the following week (around June 22). The states will test this in their own environment. July 22 is the cutoff for RC1 Testing.
  - RC2 Testing will be conducted the following week (around July 27). The cutoff for this final testing is August 17.
  - The goal for the final release is the following week, the week of August 24.

## 8. BrM 5.2.3 – ALDOT Customizations

- The Task Force reviewed the ALDOT customizations and agreed these should be incorporated into the core product.
- Under Reports, ALDOT added a new 'Edit Check' task to allow bridges to be run by bridge category.

## 9. BrM 5.2.3 Wind-Down

### a. FDS Approval

- The FDS is continuing to be refined during Beta testing



## b. User Manual Discussion

- The Task Force discussed adding an explanation of what the fields mean, represent, how are they used (calculations), what are they used for, etc.
- The Task Force suggested that a list of obsolete or 'unknown' fields be generated and presented to the Database TAG and the user group.
- The Task Force suggested that there be an all-inclusive list containing all the fields (similar to the description of the data dictionary) included in the user manual. The NBI fields could simply reference the NBI coding guide.

## 10. Tunnels

- The Task Force agreed that the ability to have structure units should be included. Bentley was tasked with developing mockups and time and cost estimates to include structure units.
- The Task Force agreed with the Database TAG recommendation to avoid using XML to generate new fields in the database and keep the functionality as it currently exists for bridges.
- The Task Force agreed that the ability to track inspections similar to what is currently done with bridges should be included. Bentley was tasked with developing mockups and time and cost estimates to include a 'create inspection page'.
- Items suggested to be included in the 'create inspection page' are:
  - a. Team Lead
    - i. Other Inspectors
  - b. Inspection Type
    - i. Routine
    - ii. In-Depth
    - iii. Damage
    - iv. Special
    - v. Mechanical
    - vi. Electrical
    - vii. Emergency Systems
    - viii. Other
  - c. Status
    - i. Scheduled Date
    - ii. Performed Date
  - d. Frequency
  - e. Notes

## 11. Beyond 5.2.3 -> BrM 2017 / 6.0?

### a. BrM Naming Convention

The Task Force discussed naming conventions for BrM releases following the release of 5.2.3. No decision was made.

## b. Future BrM Enhancements / Functionality

- The FY2017 MSE focuses strictly on maintenance and support, No enhancements are included in this work plan.
- 5.2.3 will be released by the end of this calendar year and the associated new development will be essentially completed in the next few months.
- What are the expectations for the product following the release of 5.2.3?
  - Users will likely request a 'clean up' release to fix all bugs
  - BrM updates will continue to be released on an annual basis
  - Bentley development staff advised that information from the Task Force is needed on what level of additional development might be requested.
  - Bentley presented the following list of potential enhancements for Task Force discussion and consideration
- The Task Force is interested in pursuing high priority enhancements identified by the User Group.
  - The users want patches rather than re-installs. - The Task Force understands that patches are wanted for full release versions (i.e. BrM 5.2.2). The Task Force will investigate using patches when possible in future minor updates to the software.
  - Upgrade script should perform all checks, then all installs. Like a checking pre-script. - The Task Force is in favor of this enhancement. Note, one caveat is that this is a precheck to catch common errors, not all errors will be caught.
  - Reports need to be stored where they won't be wiped out in a reinstall. - The Task Force understands this need, the contractor is currently investigating the best way for this to be implemented. This would be included after BrM 5.2.3.
  - Importing / Exporting Customized Forms - The Task Force understands the benefit of this enhancement. Bentley is currently investigating the best way for this to be implemented. The implementation schedule for this item is still yet to be determined.
  - Upgrade scripts need to keep user customized data. (User table, registered reports, flex\_actions, Paramtrs ...) - The Task Force understands the value of this enhancement. Bentley will be investigating a level of effort for this. One option would be using a 'soft delete' and/or marking things as not active. This would be an enhancement for after BrM 5.2.3.
  - Multimedia Interface – The Multimedia TRT is currently developing a requirements document for this.
  - Clearance Tab – A standard page for recording over-clearances, along with a crystal report to accompany the data. This functionality was highly rated by the users at the last BrMUG.
  - Cross Section Tab – In addition to the Clearance Tab, a page to record the changing cross sections of a stream from inspection to inspection was requested at the last BrMUG.
  - Scheduled Reports – Alabama's approach to scheduled reports and calculations was very popular at the last BrMUG, and Bentley has fielded several requests for similar configurations. A standard page with a user interface could be developed.
  - 3D Inspection Module – The Task Force has mentioned that they intend to incorporate the 3D inspection module used by Michigan DOT.

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**12. Review Action Items**

**13. Executive Session Discussion**



## Attachment A: Listing of AASHTOWare Bridge Task Force, TAG and User Group Personnel

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