

AASHTOWare Bridge Management (BrM) Task Force Meeting Minutes

April 7 - 8, 2015

Boston, MA

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General Information - Meeting of the Bridge Management Task Force

Participants:

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BrM Task Force	
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Beckie Curtis	Michigan DOT
Mark Faulhaber	Kentucky TC
Thomas Martin	Minnesota DOT
Bruce Novakovich	Oregon DOT
Derek Constable	FHWA Liaison
Todd Thompson	South Dakota DOT
BrDr Task Force	
Dean Teal	Kansas DOT
Jeff Olsen	Montana DOT
Amjad Waheed	Ohio DOT
BrM Contractor	
Jeremy Shaffer	Bentley Systems, Inc.
Josh Lang	Bentley Systems, Inc.
Rob Schultz	Bentley Systems, Inc.

Note takers:

Rob Schultz/Judy Skeen

0. Review Agenda and Assign Minutes Recorder

- The following discussion items were added to the agenda:
 - Status of Michigan Tech 3D Inspection Module activities - a recorded demonstration of the software (added to agenda item 12)
 - Element Manual discussion (added to agenda item 6)
 - Upcoming presentations for SCOBS, SEBPP and SCOM (added to agenda item 13)
 - Notice of Proposed FHWA Rulemaking
 - June Task Force meeting - Meeting length and possibility of inviting TRT/TAG members to attend
- Tunnel Element discussion will be held tomorrow afternoon w(with Bruce Johnson in attendance)



1. Prior Business

a. Review January Meeting Minutes

- The Jackson Hole, WY meeting minutes were approved with no changes.

b. Review Prior Action Items

- A half day meeting of the Testing TAG should potentially be scheduled following the next BrMUG meeting should be potentially extended by a half a day to review the deterioration modeling with the Testing TAG members since they will already be onsite.

c. BrMUG Status Updates

- There have been no changes since the February email blast that went out to the users.

2. Project Update

a. Budget and Schedule

- BrM 5.2.3 contract has been approved and work began in March.
- The FY16 MSE contract has been approved and will be sent to AASHTO management in mid-May to be signed and then sent to Bentley. The contract will not be effective until July 1.

b. Customer Support Statistics

Bentley has received feedback from customers related to calls and emails not returned and JIRA tickets not responded to. However, in researching the complaints, Bentley has not been able to find indications of missed calls or emails. The Task Force suggested sending a 'communications' email to the EUD when the software FY2016 license information is received from AASHTO. Bentley will continue to take customer support calls from anyone within a licensing agency; however, they will ensure the EUD is included in the communications chain.

c. Service Units

- BrM 5.2.1 SP3
 - This will be a release available to everyone and specifically for anyone who has a lot of element records tied to a bridge.
 - 5.2.1 SP3 properly stores and displays ampersands ("&") as ampersands. This is an issue that exists in all previous versions of the software.

d. License Revenue Report

- Jeremy Shaffer indicated that the Nevada DOT is considering licensing BrM in 2016.
- There's potential for Ohio and Washington to be on subscribing agencies next year. WSDOT recently acquired an evaluation copy of BrM.

3. FHWA Update

a. Regulatory and other Federal Actions

- National Bridge Inspection Standards: NPRM for NBIS drafted and under internal review. Tentative release for comment is October 2015 (last reported as June 2015). SNBI (coding guide) near final and T-18 has seen all sections that do not indicate content of NBIS NPRM. SNBI will be released for comment with NPRM or prior.
- National Tunnel Inspection Standards: NTIS final rule tentative release **June 2015** (last reported as May 2015). Approved by USDOT Secretary but still requires Office of Management and Budget Approval. NHI Tunnel

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Safety Inspection course, TOMIE Manual and the Specifications for the National Tunnel Inventory (coding guide) to be available with release of NTIS or earlier if get legal concurrence. Draft TOMIE Manual and coding guide are on FHWA website (note that these are outdated).

- Performance Measures Rulemaking: NPRM for bridges and pavement released January 5, 2015 with comments due **May 8, 2015** (extended from April 6, 2015).
- Asset Management Rulemaking: NPRM released February 20, 2015 with comments due **May 29, 2015** (extended from April 21, 2015). This establishes a process for development of State risk-based asset management plans in accordance with Section 1106 of MAP-21. It also establishes minimum standards for States to use in developing and operating highway bridge and pavement management systems. A second external webinar date will be announced.
- Proposed Bridge Classification System: Map 21 Section 111 requires the FHWA and States to classify the bridges according to serviceability, safety, and essentiality for public use, including the potential impacts to emergency evacuation routes and to regional and national freight and passenger mobility if the serviceability of the bridge is restricted or diminished and based on that classification, assign each a risk-based priority for systematic preventative maintenance, replacement, or rehabilitation. It does not say what it shall be used for however. FHWA will release for comment in the Federal Register the proposed classification system in 2015.
- Element-Level Data National Highway System Bridges: April 1 submittal date has passed. Data is being processed. No indication yet as to number of submissions. No significant issues self-reported by States.
- Element-Level Data non-NHS bridges: MAP-21 directed FHWA to conduct a study on benefits, cost-effectiveness, and feasibility of collecting element data for bridges not on the NHS and to submit a report to the House T&I and Senate E&PW Committees. To address this and assess the current status of element inspection off the NHS, we looked at data and information from the NBI, FHWA annual bridge inspection summary reports, a survey of the States, Counties and Federal agencies, and previous national surveys. A draft report is under review. We expect the report to be issued to Congress in 2015.
- NBI Coding Guide: New draft guide near complete with the expectation of it made available for public comment with the NBIS NPRM. T-18 has reviewed the draft excluding sections that indicate content of NBIS NPRM. 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. Items used to determine structural deficiency largely unchanged because of MAP-21 penalty provision that States with >10% NHS deck area classified as SD for three years in a row must allocate from their National Highway Performance Program funds an amount equal to 50% of their 2009 Highway Bridge Program funding level.

b. FHWA Training Delivery & Development

- Element-Level Bridge Inspection: FHWA Resource Center has completed 71 sessions. 3,036 participants to date.
- NHI Bridge Inspection Course Updates: Comprehensive course update to include 2013 AASHTO Manual for Bridge Element Inspection and post-tensioning systems expected in 2015. Minor refresher course updates have already been made to reflect the above. Abbreviated 1-week course for Professional Engineers in development with 2016 or earlier release.
- NHI Tunnel Inspection: This new course is 5 days long, was piloted in July and will be available when NTIS final rule is released. Refresher course next for development. FHWA likely to fund training for 2 State staff.

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- NHI Bridge Maintenance Course Update: This instructor lead training and reference manual are under major revision to update the material and delivery to current standard and practice. 4 and 4.5 day course. Manual will include many procedural steps and job-site checklists for different maintenance actions. Will also include free web-based training specific to steel coatings, movable bridges and masonry (2-3 hrs each). Tentatively will be piloted in summer 2015 and available 2016.
- NHI Bridge Management Fundamentals & Performance Based Management of Bridges: These two web-based courses are approximately 4 hours each. Pilots completed in March. Courses expected to be made publicly available in 2015.
 - 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. Some 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 via 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 course is in development and expected to be released about the time of the final rule for NHS bridge performance measures. The course will be 1-2 days long TBD. 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 plan regulation analysis, management system, investment strategy and finance plan requirements), and development of bridge programs in response to targets.

c. Other

- NCHRP 20-07 Task 378 Assessing Risk for Bridge Management: RFP released to short list March 27, 2015. Goal is development of a framework for inclusion in a BMS that assesses probability of occurrence and consequence to bridges and public.
- NCHRP 14-36 Proposed AASHTO Guide for Preservation Actions: RFP posted March 27, 2015. The objective of this research is to develop a bridge preservation guide for possible adoption by AASHTO. The proposed AASHTO guide shall be developed based on data to be collected from representative agencies. At the minimum, the guide shall 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 possible integration into a bridge management system.
- NCHRP Synthesis 20-05/Topic 46-15 Life Cycle Cost Analysis of Preservation and Replacement of Highway Assets: 2014 start. Objective is to develop an inventory of quantitative asset-level or project-level models for predicting the life cycle costs. 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 transportation agencies.

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4. Bug Policy

- Remove generic “brm” user account and include a write up for adding a dashboard view to your account.

5. Quarterly Status Report BrM 5.2.2

a. Beta Testing

- User education is pivotal. There have been many instances in which users have been repeatedly provided the necessary information; however, they not digesting the impact that the changes are going to have on their day-to-day operations.
- BRKEY discussion – BRKEY will only be retained on the BRIDGE table. This is similar to other columns that were part of other primary keys. All previously associated tables will retain the BRKEY column in their schema; however, the software will not maintain the relationship, nor the data. Agencies can manually maintain these old columns if needed within their agency.
 - Views will be provided to allow users to access data in a schema similar to the old schema.

b. Security Scans

- The Task Force discussed how to prevent potential release delays associated with changing security scans and rules on the agency side. KYTC advised that they have gone through similar issues with Bentley’s Superload, and the Superload resources have been contacted to hopefully set up proactive security scans on a re-occurring basis.

c. C++ Conversion

- The conversion causes issues.
 - A small rounding or conversion issue can potentially change the sufficiency rating by an entire point.
 - A user agency ran through the same type of scenario when they moved over to InspectTech. They continue to monitor the data coming over from InspectTech. Similar ‘rounding’ errors as seen with all quantity-based data – this will be expected with the Metric to English change over.
 - The Task Force wanted to know if there will be any cleanup necessary because of this conversion – Yes.
 - It was decided that these small discrepancies should not delay the release of 5.2.2, recognizing the potential problems.
- Current Status
 - What is in the coding guide is not necessarily the way that the Federal Submission calculates.
 - The majority of the conversion is complete. Bentley is actively testing.
 - The User Experience side has not been developed yet. Bentley expects to release this within the next month.
 - Bentley believes that this should not hold up the BrM 5.2.2 release; however, it is important for Florida.
 - Bentley is planning to have a pre-BETA release to Florida within the next week or so.
 - The conversion does not include anything with PDI. This will remain C++.
 - Beta 2 of 5.2.2 will include the C++ conversion items. The hope is to get Florida a beta within the next week or so.
 - All of the demo sites are being updated daily with these changes

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d. Copying Inspection Discussion

- The NBE export/submittal is always grabbing the elements.
- The NBI submittal is always grabbing the most recent inspection report.
- There is no change necessary. This is how the software exists today.
- Create a script that goes through all inspections and brings all of the elements forward.

6. BrM 5.2.3 – Deferred Ticket Review

- PONWEB-1209 – Creating Benefit Groups that makes sense
 - Planned for BrM 5.2.3 release
- PONWEB-1221 – Label for item 28 switch between 28A or 28B
 - Planned for BrM 5.2.2 release
- PONWEB-1214 – Core Elements – how to get them to display again
 - Database TAG liked the idea of a different file format – Excel with each table existing in its own worksheet
 - The Database TAG will have this as a discussion topic to decide on the desired outcome
- PONWEB-1300 – Rating Date uses date from when the structure was created
 - This field should be left blank by default.
 - Planned for BrM 5.2.2 release
- PONWEB-1305 – Be able to modify or un-share the predefined filters and layouts
 - A workaround will be implemented for 5.2.2 and a permanent solution will be implemented for BrM 5.2.3.
- PONWEB-1079 – UNC Pathways not working
 - Planned for BrM 5.2.3 release
- PONWEB-1083 – Action Definitions – Benefits – Costs – Defect(s) has wrong units
 - Planned for BrM 5.2.3 release

7. BrM 5.2.3 – Deterioration Modeling and FHWA Converter Logic

a. Deterioration Modeling and FHWA Converter Logic

- This has been an ongoing discussion with the Database TRT.
- The current converter logic for the FHWA has strict logic.
- When Bentley looked in agency databases, there was a surprising number of cases in which a small percentage was in CS4 which would mean that the deck rating would be a 4.
- FHWA has indicated that the convertor is not being mandated, but it is being made available to external parties with a disclaimer that you need to consider the way you're using it and the converter itself.
- A potential approach is that there would be 2 sets of rules:
 - FHWA strict rules
 - Custom Thresholds
- The Task Force indicated that there's another potential approach – coming up with deterioration for components and divorcing them from elements.
- All of the performance measures that most everyone has is NBI based.
- You may need individual models:
 - Deck
 - Super-structure
 - Sub-structure

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- Should there be an ability to weight independent elements and the ability to choose which elements roll into which components?
- Thresholds – Do we need them?
- The converter is not in BrM 5.2.2
- There is no NBI deterioration in BrM 5.2.2, NBI level deterioration will be in BrM 5.2.3
- For the network level – use a simple NBI
- A potential simplified approach:
 - Categorize bridges by type
 - Determine typical lifecycle for a bridge (rehabilitation, replacement)
 - Assign it an annual maintenance cost
 - Project into the future based on that information
- This can also be done on the element-level
- This will be important when targets for Good, Fair, and Poor are set
- Do it at the element and component level
- Agencies could choose to do NBI
- Agencies could choose to do an either/or – whatever gets there first
- One or the other would have triggered the project to happen.
- The end result was to stick with what we have since it makes sense, but add the threshold capability into the system as an optional configuration option.

b. LTBP Deterioration Modeling Approach

- Currently deterioration modeling focuses on elements and we've spoken about bringing components into it
- Components are more easily relatable
- The LTBP is looking at another approach to deterioration modeling by breaking elements up into segments and developing deterioration models based on data – non-destructive testing data (ex. Bridge deck – broken up into a 2'x2' grid. There's a data point for every one of these segments)
- This would eliminate any subjectivity from an inspector
- Deterioration will occur at a different rate
- A statistical computer program has been written to plot these data points and will attempt to apply a mathematical formula to them to see how the data fits. Many models will be compared against the data in an attempt to find the model that best matches the decay of these data points.
 - With 2 data points they saw a certain formula apply
 - With 3 data points a different formula applies
- Are each point of data being treated as independent variables? Yes.
- Are they looking at weather? Yes.
- Future Efforts:
 - A deck will have 6 sets of data
 - The data will be rolled up to comprise the deterioration of the deck element
 - There's potential to have deck deterioration models for each individual region
- There is a whitepaper that has been created, but cannot yet be distributed.
- Eventually there will be a dataset based on NDT for deterioration – whether this fits into BrM or not in the future is undetermined yet, but Bruce wanted to make the Task Force aware of this effort.

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8. BrM 5.2.3 – Benefit Groups White Paper and Potential Changes to the Software

- Overview of the way Benefit Groups behave in 5.2.2. This could potentially be deferred to June for the discussion of what should be included in 5.2.3.
 - Quantity relations
 - Parent/child relationship
 - An example of an action to benefit to deterioration (Have a sample se
 - Inspection → work candidates → define benefits → everything to get to bridge analysis to deterioration models to projects
- In this document, we should consider explaining why we're talking benefit groups in comparison to how they were done at Pontis. Discuss the change in protocol.

9. Tunnel Proposal

- Todd, Bruce, Judy, and Eric spoke with Jan Edwards about paying for this development by:
 - Potentially doing a solicitation to secure funding
 - FHWA funding a portion of the development effort
 - Using program development pool funding
- Jan and Bruce believe that this would get strong support for SCOJD
- There are two potential approaches:
 - Multi-Asset
 - Simple implementation of tunnel integration
- There is some expectation that users should be able to track their maintenance needs for Tunnels, potentially, broken down by element
- If the funding necessary is less than \$200k, then the program development pool could be used and be obtained rather quickly. If it's more than that, then funding will need to be sought.
- The Task Force decided to get started using funding from the program development pool and then a solicitation to obtain the additional funding
 - The program development pool could be used for Defining new asset types and the toggling of asset types
 - An additional \$100,000 could be solicited from additional agencies to complete the requested development
- Does Bentley have the capacity to develop this without impacting the BrM 5.2.3 timeline?
- There needs to be some level of support stateside to fund the ongoing maintenance of the tunnel structure
- A potential interim solution would be the creation of an Excel Spreadsheet template that enables users to input data in the time being until the tool is complete.
- It was mentioned that if the Database TAG may be resistant to allow focus on the BrM 5.2.3 released.
- The Task Force supports this, but will need additional funding from the states to support future maintenance

10. Ohio DOT Presentation

- The Ohio DOT webinar will be held on May 5
- Kentucky has a call with Ohio this week – Eric will sit in on that call and provide an update during the next Task Force call

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- Eric spoke with the Ohio DOT representative last week
- 1.5 hour set aside for the meeting
- 20-25 minutes walkthrough of the software
- Focus on:
 - Bridge List page (searches, bridge detailed view)
 - How BrM is used from an inspection standpoint
 - Element level data
 - Data management
 - Data sharing between other systems
 - 5.2.2 features
 - Multimedia page
 - Bridge Analysis/Deterioration Modeling
- Bridge tab
- Inspection tab
- Options
- The next Task Force Call is scheduled for 4/23. The call will be moved to 4/24 @ 11:30AM to accommodate scheduling conflicts.

11. BrM/InspectTech Web Services Sync and Support

- There's a one-way sync to InspectTech from BrM. Any agency can use the API
- The current API will exist in 5.2.2 and requires you to exist on the same server. – offline API
- The next version will allow you to communicate through the web.
- Typically if people want to interface with BrM they do it via database direct access

12. BrM Marketing (3D Modeling)

- SEBPP Presentation – Eric to provide feedback to the Task Force on how the presentation was received.
- SC OBS 2015
 - Eric will be giving a presentation to T-18.
 - Where we are in the series
 - Remove multi-objective analysis
 - Discuss the SP2 release
 - Add a slide for SP3 release
 - Keep 5.2.2 slides (deterioration modeling & project planning)
 - Cross Browser Compatibility
 - Keep Metrics
 - 5.2.3
 - Remove support tracking and reporting of FHWA's 23 Metrics
 - Add slide explaining how the culmination of this project will meet MAP-21 (Transportation Asset Management System email)
 - Add a slide explaining the tunnel inspection elements
 - Add October 2016 for identification of FHWA Rule Making
 - Todd and Judy will be giving presentations to T-19.

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- Workshop in Iowa on 3D Modeling
- July 18 – 23 SCOM presentation
- Michigan Tech's 3D inspection module – to be demoed tomorrow. This could potentially greatly improve the inspection process.

13. Review Action Items

14. Executive Session Discussion

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

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BrM Testing TAG

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