

Redacted

AASHTOWare Bridge Management (BrM) Task Force Meeting Minutes

January 26 - 28, 2015

Jackson, WY

Contents

0. Review Agenda and Assign Minutes Recorder	2
1. Prior Business	2
a. Review October Meeting Minutes	2
b. Review Prior Action Items	2
c. BrMUG Status Updates.....	2
2. Project Update	3
a. Budget and Schedule	3
b. Customer Support Statistics.....	3
c. Service Units	3
d. License Revenue Report.....	4
e. SEBPP Virtual Demonstration.....	4
3. FHWA Update	4
4. Update on Mobile Inspection App per MoU.....	6
5. Benefits Group Whitepaper	6
6. FY16 Catalog Language for BrM.....	6
a. AASHTOWare Bridge Management Software.....	6
b. Bridge Components.....	6
7. Bug Policy	7
8. Montana DOT RFP for a Bridge Management Information System.....	7
9. Reporting	7
a. Eric Christie Email Communique to End Users.....	7
b. Quarterly Status Report.....	7
10. BrM 5.2.2 Onsite Testing TAG.....	7
11. Validation Modernization.....	7
12. Rule Making for Bridge Performance Measures and BrM.....	<u>78</u>
13. Rule Making for Tunnel Elements and BrM	8
14. BrM 5.2.3 – Enhancements to Deterioration Modeling.....	8
15. BrM 5.2.3 – Enhancements to Projects/Programs	<u>1213</u>
16. BrM 5.2.3 – Redesign of BrM User Interface and Enhanced Help System and Video Training	14
17. Review Action Items	<u>1415</u>
Attachment A: Listing of AASHTOWare Bridge Task Force, TAG and User Group Personnel.....	<u>1516</u>



Redacted

General Information - Meeting of the Bridge Management Task Force

Participants:

AASHTO	
Judy Skeen	Project Manager
BrM Task Force	
Eric Christie	Alabama DOT
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
TRT Members	
Paul Cooley	Caltrans
Craig Nazareth	Rhode Island DOT
Patty Fish	Idaho DOT
BrM Contractor	
Jeremy Shaffer	Bentley Systems, Inc.
Josh Lang	Bentley Systems, Inc.
Rob Schultz	Bentley Systems, Inc.
Rick Wagner	Bentley Systems, Inc.

Note takers:

Rob Schultz/Judy Skeen

0. Review Agenda and Assign Minutes Recorder

- Agenda – Need to continue the discussion from Website Content Audit/Webinar
- Rob Schultz and Judy Skeen to take notes

1. Prior Business

a. Review October Meeting Minutes

- Moving forward, make reviewing and approving prior Task Force Meeting minutes a reoccurring action item on the Bi-Weekly Task Force calls.

b. Review Prior Action Items

c. BrMUG Status Updates

Redacted

- Online help for version 5/Better documentation – The plan is to have the user manual updated using MadCap Flare for BrM 5.2.2. Release a fully reworked user manual for BrM 5.2.3.
- Better error handling – Bentley has spent the last couple of months making a concerted effort to address as many bugs and issues as possible. Most of Bentley’s testing is on a “less customized”.
- Bentley had to roll back the version of Crystal Reports to CR 2013 SP10 to have the ideal Crystal Reports environment. Other versions are generating connection issues.
 - CR 2013 is part of the BrM 5.2.1 SP2 install. This is a run-time upgrade. The run-time version is supplied by Bentley. The developer version is available to agencies, but not included with the install.
 - Beta Testing Agency Updates
 - BrM 5.2.1 SP2 64-Bit Release
 - The Enterprise version will primarily be 64-Bit with a 32-Bit variant available upon request. 64-Bit is necessary to alleviate memory limitations.
 - The Workstation version will be 32-Bit only since workstations are single user and will not encounter the issues that Enterprise versions are experiencing.
- Moving forward, whenever an email broadcast is sent out to the end users, the aashtowarebridge.com website will be updated with a blog post to ensure that users have another method of obtaining this information.

2. Project Update

a. Budget and Schedule

- BrM 5.2.2
 - Alpha Testing
 - Will be complete before the upcoming onsite testing in February.
 - Bentley has load tested the software.
 - Beta Testing
 - The onsite testing session in February will begin the Beta testing.
 - Planning on 4-6 months of Beta testing, but will have a more solid idea of duration about a month or two into testing.
- BrM 5.2.3 Work Plan
 - Approved on the last Task Force Conference Call.
 - Forwarded to the AASHTO peer review and then it will be forwarded to SCOJD for review.
 - AASHTO peer review indicated that there were too many tasks/budget listed as Time & Materials. A large majority of the tasks need to be moved into Fixed Price.
- FY16 MSE Work Plan
 - Approved by the Task Force on the last Task Force Conference Call.
 - Contract will be slated to begin on June 1.

b. Customer Support Statistics

- Customer support hours within the handout restart in July.
- Florida and Nebraska used a lot of customer support hours due to issues that were previously discussed – They are the only agencies in danger of overrunning the allotted hours.
- Bentley needs to continue to do the best that they can to decide what should be billed as customer support or service unit work.

c. Service Units

- The handout indicates that there is a surplus of unused Service Units. These funds sit in an AASHTO account.



Redacted

d. License Revenue Report

e. SEBPP Virtual Demonstration

- Eric sent out an email already asking to be able to participate. He has not received a response yet.
- The general goal of the presentation would not be for collection of data, but more so how BrM plays a part in bridge preservation and management. What do we have that can support those decision makings.

3. FHWA Update

• Regulatory Actions

- **National Bridge Inspection Standards:** NPRM for NBIS drafted and under internal review. Tentative release for comment is June 2015 (was December 2014 then March 2015).
- **National Tunnel Inspection Standards:** NTIS final rule tentative release is May 2015 (was January 2015 then March 2015). NHI Tunnel Safety Inspection course, TOMIE Manual and the Specifications for the National Tunnel Inventory (coding guide) in development and expected to be available with release of NTIS. Draft TOMIE Manual and coding guide are on FHWA website (changes can be expected to documents on web).
- **Performance Measures Rulemaking:** NPRM for bridges and pavement released January 5, 2015 with comments due by April 6, 2015.
- **Asset Management Rulemaking:** NPRM tentatively January 2015 (was December 2014). This will establish a process for development of State risk-based asset management plans in accordance with Section 1106 of MAP-21. Will define a process for developing plans that lead to a strategic program of projects that make progress toward achievement of the States' targets for asset condition and performance of the National Highway System and support the progress toward achievement of the national goals identified in 23 U.S.C. 150(b) (infrastructure goal is state of good repair which is to be further defined). 23 U.S.C 119(e) State Performance Management says an asset management plan shall include
 - (A) a summary listing of the pavement and bridge assets on the National Highway System in the State, including a description of the condition of those assets;
 - (B) asset management objectives and measures;
 - (C) performance gap identification;
 - (D) lifecycle cost and risk management analysis;
 - (E) a financial plan; and
 - (F) investment strategies.
- **Bridge Management System Requirements:** MAP-21 Section 144 requires the use of performance-based bridge management systems to assist States in making timely investments. Asset management rulemaking will also define the minimum standards for States to use in developing and operating highway bridge and pavement management systems required under 23 U.S.C. 150(3). Paraphrased, under the National Highway Performance Program, applicable to the NHS performance and asset management requirements, FHWA will establish minimum standards for States to use in developing and operating bridge and pavement management systems.
- **Element-Level Data National Highway System Bridges:** MAP-21 requires reporting element data October 1, 2014. Recent survey of FHWA Division Offices found that as of October 1, 34 states collecting NBE/BME data during inspections, 13 still collecting CoRe, 1 collecting by a non-AASHTO method, 1 not collecting element data (3 non-respondents). Most CoRe states plan to submit migrated data until their NBE/BME transition is complete.

Redacted

- **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 on the results of the study to the House T&I and Senate E&PW Committees. To assess the above including the status and impact of element inspection across the range of States and owners 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. Results are being compiled and analyzed and a report developed. We expect the report to be issued to Congress in 2015.
- **NBI Coding Guide:** New draft guide near complete with the expectation of making it available for public comment with the NBIS NPRM. AASHTO T-18 has been given the opportunity to review the draft. 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 structurally deficient 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.
- **FHWA Training Delivery & Development**
 - **Element-Level Bridge Inspection:** FHWA Resource Center 68 sessions completed, 3 scheduled, 1 requested. Note that sessions completed, scheduled and requested include repeat visits to some states. 3,036 participants to date. (December figures)
 - **NHI Bridge Inspection Course Updates:** Comprehensive course update to include 2013 AASHTO Manual for Bridge Element Inspection and post-tensioning systems due 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 Training:** 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.
 - **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 & NHI Performance Based Management of Bridges:** These web-based courses are approximately 4 hours each and ready for pilot. Course expected to be made publicly available in 2015.

Bridge Management Fundamentals is a general 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 general 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,

Redacted

and communicating the benefits of bridge management tools and performance based bridge management.

We are seeking 30 participants to pilot each course representing a cross-section of state agency, local agencies, planning organizations, consultants, academia, etc. It is requested that participants provide written feedback relative to the content and duration. An advantage for pilot participants is the opportunity to receive the course without paying the small WBT fee of \$50 for each course. The pilot will run from 2/23-3/23.

4. Update on Mobile Inspection App per MoU

- Presentation by Bentley showcasing the mobile technology developments that are being made revolving around Bridge Management and Inspection.

5. Benefits Group Whitepaper

- End users do not have a clear understanding of the direction of the Benefits groups.
- In Pontis 4.4, the user could define an action. When defining the action you also defined how the cost was calculated. Element-level cost was not implemented in 5.x for unknown reasons.
- Caltrans has their engineers make work recommendations. These are evaluated and placed in a project.
- It was suggested that there should be no system generated recommendations, but life cycle cost cannot be completed without system generated recommendations.
- A whitepaper needs to be created by Bentley to define the process as it exists currently:
 - Setup of benefit groups
 - Tie benefit groups to actions (system or inspector generated)
 - Inspector identified work candidates are tied to the quantity
 - System generated work candidates are applied to the total element quantity
- The BrM 5.2.3 release will need to address the application of 100% of a quantity to an element.

6. FY16 Catalog Language for BrM

a. AASHTOWare Bridge Management Software

b. Bridge Components

- Several edits to the Bridge Components document were discussed:
 - Page 7
 - Fix "analysis" typo.
 - Update to IE10
 - Update to "Google"
 - Remove Windows 8
 - Change to "Detailed Bridge Analysis View"
 - Change "development of core logic" language
 - Fix reference to NBI Guide on Page 8.
- Add language regarding "If available MAP21 Performance Measures for Bridges for BrM 5.2.3".

Redacted

7. Bug Policy

- A bug policy was put together for BrM to delineate between bugs & enhancements and the workflow that should be followed depending on type and criticality.

8. Montana DOT RFP for a Bridge Management Information System

- An initial kick-off conference call took place prior to this meeting.
- Bentley has a team that is putting the proposal together. The proposal will be submitted by Bentley on behalf of AASHTO.
- The project would start in April and finish in December.
- The primary focus of this project is on bridge inspection and not so much on management.
- There are a number of systems that they want to integrate together. Bentley is seeking more information to understand the points of integration.
- Most of the configuration will be handled by the InspectTech team within Bentley.

9. Reporting

a. Eric Christie Email Communique to End Users

- Bentley to revise the document based on the discussion at the meeting.
 - Provide a bulleted list of the features in BrM 5.2.1 and 5.2.2.
 - Update the "User Group Priorities" statuses.

b. Quarterly Status Report

- Bentley to revise the document based on the discussion at the meeting.

10. BrM 5.2.2 Onsite Testing TAG

- Bentley and members of the Testing TAG will be in Sunrise, Florida to test a Beta release of BrM 5.2.2 during the week of February 16.

11. Validation Modernization

- There are 2 validation components in BrM 5.2.1. SP2:
 - NBE – This is hardcoded
 - NBI Validation Checks – These are done through C++.
- Bentley suggests that the validation be rewritten by disposing of the old rules and creating a new user interface for it. However, there are currently a number of legacy actions that the logic behind them are unknown.
- The Task Force unanimously agreed that there are no concerns about creating a "Rules Engine Process" that would be the same for NBE and NBI, but be independently configurable.
 - The goal would be to get this in the BrM 5.2.2 release, but if not, it could be released as a Service Pack.
 - Paul Cooley indicated that it would be sufficient to release a framework outlining how the engine is going to work with the BrM 5.2.2 release so that users would be able to get a feel for how it will behave.

12. Rule Making for Bridge Performance Measures and BrM

- Due to the topic of the conversation, Derek Constable was not present for this topic.
- Targets are:
 - Based on:



Redacted

- Percent poor based on deck area
- Percent good on deck area
- Adjustable – reviewed every 2 years
- Reported to FHWA
- When these rules are available, they will need to be implemented in the BrM software.
 - This will become an out of the box dashboard within the software.
 - The performance measures are by percentage of deck area, but it would be good to view them in number of bridges.
 - There should be a way to set targets on percent good and poor. There is a fair measurement, but targets are not set for fair.

13. Rule Making for Tunnel Elements and BrM

- ETA on final rule making? – May 2015 is indicated on the website, but it appears that it may be later in the summer.
- The T-20 group believes that the full tunnel elements will be asked for within a couple of years (~April 2017). If that happens, states will need a place to record their data and report Tunnel Element Specifications soon.
- During the last T-20 meeting, BrM was considered as a potential place to house this information.
 - A formal letter should be sent to AASHTO to express interest in integrating this functionality. The Task Force should entertain soliciting AASHTO.
 - It was suggested that the original BrM 5.x solicitation be completed prior to submitting another solicitation to fulfill this request due to the schedule delays encountered with this solicitation.
 - Potentially ensure BrM's customers that the tunnel coding would not be developed until BrM 5.2.3 is in Alpha testing.
 - The T-20 group is interested in telling agencies whether or not BrM will house this information by the time the rule making is announced.
- Cost associated with this effort?
 - Is there potential to use capitalization funds?
 - How many states would be willing to help finance this?
- Could this be a separate module?
 - Long term implications could be positive if this approach was taken.
 - A nice integration here could make for a good business model for signs, walls, culverts, etc.

14. BrM 5.2.3 – Enhancements to Deterioration Modeling

- Protective Systems
 - In BrM 5.2.2, Agencies can define a formula for their protective systems.
 - Should agencies be able to remove a defect?
 - If the software we were to do multipath deterioration it would be beneficial, but the benefit until then is not there.
 - Should agencies be able to add a protective system to a benefit group?
 - This is important. There is a need to be able to add and remove protective systems.
 - Protective systems can be added, but will not be stacked.
 - Defects will not be able to be removed. Defects are not part of the Health Index or Life Cycle Cost.
 - Cost Scaling

- Not used in Pontis 4.4.
- There is a default cost for Work Recommendations (system generated).
 - The prices for these can be adjusted.
- There are not default costs for Work Candidates (inspector generated).
- The majority of the work done on a bridge is deck work. When we start getting into everything else it's all custom – needs specialized costs.
- There should be a checkbox inside the action that enables the user to “apply to the entire element” or “Fix what is in Condition State 2” or “Fix what is in Condition State 3”.
- For BrM 5.2.1, Bentley created a FDS for hierarchy-based actions, but the TRT took it and created parent-child actions. The implementation of the hierarchy was postponed and never implemented.
- When upgrading from an old version of Pontis, new actions start at ID 1,000. Any action with an ID below 1,000 is copied from the old database, including old flex actions. Converting/mapping would have been a time intensive endeavor.
- There needs to be 2 different tables – program costs and inspector costs.
 - Work Candidates entered by an inspector are entered for a specific item to a specific unit.
- There should be a Crystal Reports printout of actions and associated costs.
- How should actions be organized? As parent/children or hierarchically?
- Cost Index
 - Costs are fixed in BrM 5.x meaning that they do not adjust over time.
- Health Index Coefficient
 - Enable users to modify the coefficient value by condition state.
 - Include a button to enable users to restore defaults.
- Historical Values Reference
 - Look at historical data and come up with parameters for the deterioration modeling.
 - If an agency converts their old elements to 2013 the system will be able to use old elements.
 - This is currently being done on a per agency basis.
 - Paul Thompson has indicated that it is possible to use Pontis 4.4 and BrM 5.x data to do an analysis.
- Work Candidate Comparison
 - Should BrM have additional functionality on the Work Candidates page so that you can compare work candidates and make it clear that they're not being stacked, but instead being compared?
 - The first column should be checkboxes of actions so that users can select multiple.
- Defect Deterioration Modeling
 - Deterioration is currently linear - it all deteriorates the same way. This would require the creation of a new deterioration model. Paul Thompson has indicated that there is currently not enough data to do this.
 - At this time, the Task Force has agreed that there will be one path, but would still like to explore this path for certain defects.
 - Ex. Damage in Condition State 3 but the rest of the bridge is in Condition State 1
 - Checkbox within defect to indicate “Use this as a basis for deterioration”.
 - Go to the next lowest condition state to start deterioration...
- Defect Deterioration Modeling Whitepaper
 - When BrM integrated the Weibull model for deterioration an unintended consequence is that deterioration is delayed, but when it does occur it occurs faster. Paul Thompson believes that it better represents the actual deterioration of a bridge.
 - The Task Force needed to decide whether to go back to the drawing board or leave it as is: The decision was to leave it as is. If there's a desire to use only the Markovian model, a value of “1” for the shaping parameter can be entered.

Redacted

- Component (NBI) Modeling
 - Currently, FHWA does not have any expectation for element collection except that the data needs to be captured.
 - Bentley has an email out to Derek that they're waiting for a response for on the deterioration modeling. By using the convertor, elements appear to degrade far more quickly which is not realistic.
 - The model treats all elements in a condition state the same regardless of when it entered that condition state.
 - The Task Force discussed creating a deterioration model using 1→9 values in a step-like format (ex. from 8 to 7 to 6) with no partial (ex. 7.5) values.
 - There would be thresholds set at each level to slow the deterioration.
 - There was something like this in older versions of the software.
 - The original thought was that there would be 1 model based on element data. The convertor will be used to generate how that impacts your NBI grades. What we're proposing now is that you have the choice to continue down that path or use NBI data as is. There might be a scenario where you use both and see which one gives you a better answer.
 - Currently, the deterioration modeling does not track history.
 - Markov is time independent.
 - This model would not be Weibull or Markov.
 - Network-based (ex. 10% of your bridges will move to 5 within the next year)?
 - Craig Nazareth – We've been tracking this and we've found that bridges in component rating 8 or 9 drop drastically, and when they went to rating 5 not one inspector wanted to put it in 4 because an inspector did not want it to be Structurally Deficient. Once it went into a 4 it dropped drastically to 3 because it should have been there earlier.
 - According to this model a brand new concrete deck will be poor in 14 years.
 - Beckie Curtis forwarded her Excel spreadsheet that Michigan DOT uses to track their deterioration. Jeremy Shaffer suggested that we can look at this excel logic and perhaps import it into a Crystal Report structure. Oregon does something similar. This would be quicker than creating a page in BrM.
 - Eric C. – How do you incorporate the NBI ratings in addition to the component-level and using the convertor?
 - Beckie – We do not worry about individual bridges because we're only looking 2 years out. We look at the last 5 years and project from that. What I'd like to see BrM do is to look at the network level, bridges, or decks and calculate out the average time that a component spends in each condition rating and after the element-level analysis output content to see if the amount of time of the deterioration matches with the NBI condition. If it's off, average the two out → Educate the convertor.
 - The danger of using the averages is that if you do have a new bridge type it will not appear.
 - If a page within the software is created, the percentages used for the convertor must be editable and accompanied by a reset button to set it back to the default FHWA base.
 - Caltrans has developed their own convertor and Mike Johnson has expressed that he is willing to share it with the group at large.
 - According to Paul Cooley, they are taking the elements and calculating different health indexes. The health indexes are used to calculate all of the NBI ratings from that.
 - Michigan DOT believes that spatial recognition (3D Modeling) is necessary to better track this.
 - Beckie Curtis is going to talk to the TRT about the convertor to get their opinions on:
 - Component Level Deterioration

- Entry into CS4
 - Eaches
 - Component Level Deterioration
 - Same as above.
 - Maximum Protection Parameter
 - This is from the BrM 5.2.2 implementation – Applying multiple protective systems to the same element. The TRT never came to a conclusion on the implementation of this. It works well, but is tedious to setup.
 - It was agreed that this is sufficient.
 - Provide Utility values for NBEs only
 - This topic stemmed from Derek Constables' comment on the Deterioration Modeling FDS on July 29, 2014:
Under total utility the condition row represents more than the National Bridge Elements. Has consideration been given to also provide the utility values for the NBEs only (deck, super, sub or culvert) as this may enter into performance measures and goals?
 - The Task Force would like another column added to the Grouping that shows "Change in Utility". It would be nice if expand/collapse functionality was included to enable users to drill down. The default view would be "Condition"
- Life Cycle Cost Analysis Whitepaper
- Life Cycle Cost Workflow
 - The anticipation of the Task Force was for Bentley to provide more of a life cycle cost for a bridge instead of a workflow.
 - Beckie Curtis indicated that, for her, the key is to not only generate your considerations at the start of the life cycle, but the rules for starting projects in the future.
 - They're required to pursue 3 different alternatives
 - The way that deterioration model works there are not rules. Rules have definitions of when treatments are applied.
 - Caltrans model is over time and the treatments are listed in there, it gives you the total cost as you're going out. There's a whole NCHRP panel that Paul Cooley is on that tries to define these rules.
 - "What is the expectation of the product? Do we put all of the rules in there so that it generates it or do you pick the bridge and check off items, what year your work is? Which way are we trying to get to? You pick the bridge, you know the environment?"
 - Beckie Curtis has put together a document covering the whole cycle of how it works (inspection, funding, etc). I want to have Life Cycle as one of my utility functions for each bridge. If the program to deteriorate it that'd be great, but I'm concerned that cannot happen and that's why I think we need to have rules.
 - The software still needs to be a tool for the user to generate a detailed LCCA per bridge.
 - The software should also be able to come up with a generic LCCA at the network-level.
 - LCCA should not be part of Utility. Change in Utility is benefit. LCCA is the cost and we're evaluating it at Cost/Unit.
 - Actions do not have lifetimes. Rules do. In some instances, a cheaper overlay may be chosen because of the cost knowing that the next time it needed maintenance we were going to replace the entire deck.
 - There are project specific life cycle cost and program specific cost. The way that we're generating our needs are based on deterioration. You may not have confidence in those values, but that's what the system is telling you. Your costs need to be tied together with the deterioration. There probably is a place for some rules, but if you have too many your needs and conditions of the bridges in 10 years won't match the deterioration modeling.
 - Rules need to be implemented to indicate that "when this factor is met" this is how we work at it.
 - What if you say that "when you get to this level of deterioration you consider a project"?

- That's all future probability-based. You pick your bridges in 10 years based on their actual conditions in 10 years. You don't need to generate a project specific life cycle to determine your budget for today to get to a goal 10 years from now.
 - The overlay projects you pick today meet a certain condition threshold.
- LCCA on the bridge level is 2 parts:
 - A user goes in and says this is a project and this is a project. Analyze. Compare.
 - Another model is automated by rules (by bridge type, element, element type, etc.). It all depends on how sophisticated you want to get with your inventory and rule making.
 - Out of the box basic rules will need to be created for everyone to use.
- Bentley will invite all TRT members to the Project Management and Deterioration Modeling to discuss the action items.
- How do you get to an "auto project generator"?
 - In the mini-study they were suggesting minor maintenance, major maintenance, rehab, and replacement.
 - Beckie Curtis would like for the software to look at all of her bridges and show alternatives. She would like to:
 - Start with a bridge analysis group – Selecting bridges that I know are high-priority structures. Focusing on bridges first
 - Optimize by budget
 - Which bridges should I be looking at
 - Conflicts with other projects on that road
 - Project Setup
 - For each bridge, BrM would have to run through every scenario of performing each action:
 - Replace the Bridge
 - Replace the Deck
 - Preventative Maintenance
 - Painting
 - Assign a benefit to each of those. It'll look across all bridges and provide a utility increase for each applied action. Then you get a list of system candidates that ranks the bridges against one another.
 - Setup actions beforehand to cover many elements. Those actions will be evaluated whenever you look at the whole population of bridges.
 - Is this "program categories"?
 - What time period would it look at? 5-10 years?
 - Should there be the able to compare candidates of a bridge (multiple options) that are exclusive of each other?
 - Minnesota generates a ranking matrix for each bridge.
 - LCCA would be one of the performance measures that would be compared against.
 - Derek suggested that the ideal thing is to start with LCCA. Apply it at the front end and let the software come up with a group of candidates but you enter user rules (pontis had look ahead rules). In some instances, other factors may bump it out (ex. Money).

15. BrM 5.2.3 – Enhancements to Projects/Programs

- In BrM 5.2.3
 - Identification Numbers
 - Do not display funding source ID on the Projects tab.
 - Moving forward, GUIDs should be able to be made read-only or hidden.
 - Target Date for Funding Sources needs to be referred to as start date of Fiscal year in User Manual.

Redacted

- Date needs to be changed to "Fiscal Year" in the software.
- Implement a check so that the user is warned if there are multiple projects tied to a bridge.
- Program Analysis - NCHRP Report 590
 - Diminishing Marginal Returns (page 46-50)
 - Maintenance > Repair > Rehabilitation > Replacement
 - List A would be Total Utility
 - List B would be Structurally Deficient
 - Bentley - I think this meets goals by enabling other qualifiers to be in there (ex. Health Index over 40). Programs will be for a period of time.
 - Cost is based on the area of the deck that you're affecting.
 - Benefit is based on the whole bridge.
 - Performance measures do not appear to be beneficial at the element level – it is more at the bridge level.
 - Performance level will now be based on Deck Area.
- The term dashboard should be replaced with screens or views. The original view of the dashboards were to be project-specific. Does this need to be expanded beyond projects?
 - The goal would be for these screens to be dynamic "real-time" interactive elements.
 - Michigan's philosophy is "if this is something that we're routinely asked it should be on a dashboard".
 - Results Dashboard
 - Combination of work items, work candidates, recommendations, bridges.
 - BrM 5.2.2 addresses the 10 different use cases for how projects are created
 - By bridge
 - By Bridge Analysis Groups
 - By categories
 - Good, Fair, Poor, Delta over a Time Period
 - We need to come up with specific Use Cases for how users will use the software (ex. Overdue Inspections, Work Candidates that are not assigned to projects, what percentage in good/fair/poor, etc.)
 - Funding Allocation Dashboard
 - Funding by year (programmed projects) & total yearly cost
 - Total displaying over-commitment vs. under-commitment
 - Targets for a program and the projects that you're putting in there
 - The ability to take a project that is conceptual and then see the projects that are already slated for development. Status changes from "proposed" to "initiated".
 - Program Planning Dashboard
 - Ability to drill down by all project
 - Ability to drill down by region/district
 - Can currently drill down by program and then to project
 - Effect of that project to meet performance goals
 - Tradeoff Analysis Dashboard
 - Ability to look at performance measures as a whole
 - Set performance measures
 - Filter by Region/District
 - Utility Benefit screen for bridges gets moved up to the program-level.
 - Programs can exist in a sandbox environment and be compared against one another to understand which one gives you the best effect on your performance measures.
- Various Administrative Capabilities
 - The system needs to generate a list of potential projects if there was a surplus of future funds available for a variable time period.

16.BrM 5.2.3 – Redesign of BrM User Interface and Enhanced Help System and Video Training

- Redesign of User Interface
 - Does the issue with the Filters and Layouts need to be addressed in 5.2.2 or 5.2.3?
 - There are other states that have this issue, but we do not want to impact the schedule of 5.2.2 to get it out there.
 - Role based access of custom screens
 - Page Background - System configurable backgrounds to delineate between environments (production & test).
 - Filter and Layout TRT Recommendations
 - Limitations of the grid – We wanted to have multiple columns and freedom of editing columns. Users with dual monitors don't want to have to drilldown.
 - Within the layout, give the user the ability to add additional columns and enable side-scrolling.
 - Security on filters and layouts based on Groups - This is not as friendly as it should be.
 - From an inspector's perspective, are "these things" in the right order for a user? Not currently, they are grouped by what they apply to, but not by use.
 - This would have to be a different study between the different agencies. There's a pattern that you follow when you inspect a bridge so that you end up back where you started.
 - Let's come up with a common business model and have the developers Implement it.
 - The software is missing a workflow - once an inspection is created, who owns it?
 - Kentucky had to put custom triggers in because any inspector could pull up any bridge and do an inspection for it. Once the inspection is created, that inspector owns that inspection.
 - Lock Button - how do you lock inspections?
 - Consultants inspect the bridge. After the inspection they do their own review (30 days from inspection). After they are done, the inspection goes to a reviewer who reviews and approves. After the reviewer there is another person who reviews the inspection and approves it and locks it.
 - Inspectors go out and do the inspection, and then a person reviews it and approves it. I'd like to have it locked down after that's done. I have a whole separate rating section.
 - It seems as if the lock button needs to only lock the inspector fields. As part of this interface can we look at the functionality of the lock button? Setting it to fields, or setting it to roles, or...
 - It was suggested that the perfect time to address this would be when we actually redesign the interface.
- Enhanced Help System
 - MadCap Flare will be used to create the new help system for BrM 5.2.3. It will be released alongside the software.
 - BrM 5.2.2 will use MadCap Flare as well, however, the content will not be completely rewritten, only the new modules within the application will receive the level of detail that will appear in BrM 5.2.3.

17. Review Action Items

Redacted

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

AASHTOWare Bridge Task Force		
Thompson, Todd	South Dakota DOT, Chair	todd.thompson@state.sd.us
Skeen, Judy	AASHTOWare Project Manager	jskeen@ashto.org
Johnson, Bruce	SCOJD Liaison, Oregon DOT	bruce.v.johnson@odot.state.or.us
Ballou, Wally	T&AA Liaison, Kansas DOT	Ballou@ksdot.org
Bridge Design/Rating (BrDR) Members		
Dietsche, Joshua	BrR Wisconsin DOT	joshua.dietsche@dot.wi.gov
Olsen, Jeff	BrD, Montana DOT	jolsen@mt.gov
Saad, Tom	FHWA Liaison, FHWA Resource Center	Thomas.saad@dot.gov
Teal, Dean	BrD, Kansas DOT	teal@ksdot.org
Waheed, Amjad	BrR, Ohio DOT	awaheed@dot.state.oh.us
Bridge Management (BrM) Members		
Christie, Eric	BrM, Alabama DOT, Vice Chair	christiee@dot.state.al.us
Constable, Derek	FHWA Liaison, DC	derek.constable@dot.gov
Curtis, Beckie	BrM, Michigan DOT	CurtisR4@michigan.gov
Faulhaber, Mark	BrM, Kentucky Transp Cabinet	mark.faulhaber@ky.gov
Martin, Thomas	BrM, Minnesota DOT	Thomas.Martin@state.mn.us
Novakovich, Bruce	BrM, Oregon DOT	bruce.d.novakovich@odot.state.or.us
Michael Baker Jr., Inc.		
Duray, James A.	BrDR Contractor	jduray@mbakercorp.com
Lee, Herman	BrDR Contractor	hlee@mbakercorp.com
Bentley Systems, Inc.		
Shaffer, Jeremy	BrM Contractor	Jeremy.Shaffer@bentley.com
Lang, Josh	BrM Contractor	Josh.lang@bentley.com
Schultz, Rob	BrM Contractor	Rob.Schultz@bentley.com
Tiwary, Shelly	BrM Contractor	Shelly.tiwary@bentley.com
Wagner, Rick	BrM Contractor	Rick.wagner@bentley.com
BrDR Testing TAG		
Teal, Dean	Kansas DOT, TAG Chair	teal@ksdot.org
Olsen, Jeff	Montana DOT, Co-Chair	jolsen@mt.gov
Barnett, Nick	Illinois DOT	Nicholas.Barnett@illinois.gov
Befikadu, Elizabeth	AI Engineers	ebefikadu@aiengineers.com
Crudele, Brenda	New York State DOT	bcrudele@dot.state.ny.us
Dietsche, Joshua	Wisconsin DOT	joshua.dietsche@dot.wi.gov
Gillis, Matt	Connecticut DOT	Matthew.gillis@ct.gov
Hasan, Mac	Colorado DOT	Mahmood.hasan@state.co.us
Huang, George	CalTrans	George_huang@dot.ca.gov
Jones, Daniel	Alabama DOT	jonesdan@dot.state.al.us
Kappes, Bethany	Montana DOT	bkappes@mt.gov



Redacted

Kellogg, Wes	Oklahoma DOT	wkellogg@odot.org
Larkins, Christal	Michigan DOT	larkinsc@michigan.gov
Litchfield, Phillip	Illinois DOT	Phillip.Litchfield@Illinois.gov
Mallard, John	Virginia DOT	Jonathan.Mallard@vdot.virginia.gov
McMunn, Creightyn	Michigan DOT	mcmunnc@michigan.gov
Murgoitio, Shanon	Idaho DOT	Shanon.Murgoitio@itd.idaho.gov
Ruby, Jeff	Kansas DOT	JRuby@ksdot.org
Thompson, Todd	South Dakota DOT	todd.thompson@state.sd.us
Vinayagamoorthy, Vinacs	CalTrans	murugesu_vinayagamoorthy@dot.ca.gov
Waheed, Amjad	Ohio DOT	awaheed@dot.state.oh.us
Woldemichael, Berhanu	Alabama DOT	woldemichaelb@dot.state.al.us

BrDR Design Tool TAG (DTAG)

Olsen, Jeff	Montana DOT, Chair	jolsen@mt.gov
Teal, Dean	Kansas DOT, Co-Chair	teal@ksdot.org
Barnett, Nicholas	Illinois DOT	Nicholas.Barnett@illinois.gov
Befikadu, Elizabeth	AI Engineers	ebefikadu@aiengineers.com
Crudele, Brenda	New York State DOT	bcrudele@dot.state.ny.us
Ehrlich, Arielle	Minnesota DOT	arielle.ehrlich@state.mn.us
Hasan, M. Mac	Colorado DOT	Mahmood.hasan@state.co.us
Kappes, Bethany	Montana DOT	bkappes@mt.gov
Woldemichael, Berhanu	Alabama DOT	woldemichaelb@dot.state.al.us

BrDR Reports TAG (RTAG)

Waheed, Amjad	Ohio DOT, Chair	awaheed@dot.state.oh.us
Curtis, Beckie	Michigan DOT	CurtisR4@michigan.gov
D'Andrea, Arthur	Louisiana DOT	Arthur.D'Andrea@la.gov
Olsen, Jeff	Montana DOT	jolsen@mt.gov
Stark, Richard	New York State DOT	Richard.Stark@dot.ny.gov
Thompson, Todd	South Dakota DOT	todd.thompson@state.sd.us
Wang, Cindy	Ohio DOT	cindy.wang@dot.state.oh.us

BrDR User Group (RADBUG)

Crudele, Brenda	New York DOT, President (BrD)	bcrudele@dot.state.ny.us
Litchfield, Phillips	Illinois DOT, Vice President (BrR)	Phillip.Litchfield@Illinois.gov
Ruby, Jeff	Kansas DOT, Vice President (BrD)	JRuby@ksdot.org
Schroeder, David	Montana DOT, Secretary	daschroeder@mt.gov

BrM Testing TAG

Novakovich, Bruce	Oregon DOT, Chair	Bruce.D.Novakovich@odot.state.or.us
Emery, Ron	Maine DOT	Ronald.Emery@maine.gov
Fish, Patty	Idaho DOT	patty.fish@itd.idaho.gov
Laughlin, Chris	Florida DOT	Christopher.Laughlin@dot.state.fl.us
Lewis, Edward	Kansas DOT	edwardl@ksdot.org
Martin, Thomas	Minnesota DOT	Thomas.Martin@state.mn.us
Nazareth, Craig	Rhode Island DOT	cnazareth@dot.ri.gov



Redacted

O'Donnell, Larry D.	FHWA Resource Center	Larry.o'donnell@fhwa.dot.gov
Thompson, Todd	South Dakota DOT	Todd.thompson@state.sd.us
BrM Database/API TAG		
Martin, Thomas	Minnesota DOT, Chair	Thomas.Martin@state.mn.us
Barut, Joseph	Wisconsin DOT	Joseph.Barut@dot.wi.gov
Boyle, Zachary	Utah DOT	zboyle@utah.gov
Cooley, Paul	CalTrans	paul.cooley@dot.ca.gov
Cram, Ryan	Kentucky Transp. Cabinet	Ryan.cram@ky.gov
Emery, Ron	Maine DOT	Ronald.Emery@maine.gov
Evoy, Curt	Illinois DOT	Curt.Evoy@illinois.gov
Fish, Patty	Idaho DOT	Patty.Fish@itd.idaho.gov
Fuqua, David	Kentucky Transp. Cabinet	David.fugua@ky.gov
Laughlin, Christopher	Florida DOT	Christopher.Laughlin@dot.state.fl.us
Lewis, Edward	Kansas DOT	edwardl@ksdot.org
Nazareth, Craig	Rhode Island DOT	craig.nazareth@dot.ri.gov
Nelson, Mike	Florida DOT	Mike.Nelson@dot.state.fl.us
O'Donnell, Larry	FHWA	Larry.O'Donnell@dot.gov
Pino, Ken	New Mexico DOT	Ken.Pino@state.nm.us
Powelson, David	New Hampshire DOT	dpowelson@dot.state.nh.us
Soden, Derek	FHWA	Derek.soden@dot.gov
Papakroni, Vasil	Bentley Systems, Inc.	Vasil.Papakroni@Bentley.com
McBride, McKenzie	Bentley Systems, Inc.	McKenzie.Mcbride@bentley.com
Aldayuz, Jose	Michael Baker International	JAldayuz@mbakerintl.com
Johnson, Joshua	Michael Baker International	Joshua.Johnson@mbakerintl.com
BrM Deterioration Modeling TRT		
Aldemir-Bektas, Basak	Iowa DOT (Iowa State University)	basak@iastate.edu
Johnson, Mike	Oklahoma DOT	mjohnson2@odot.org
Kerr, Richard	Florida DOT	richard.kerr@dot.state.fl.us
McDaniel, Travis	Wisconsin DOT	Travis.McDaniel@dot.wi.gov
Nallapaneni, Prasad	Virginia DOT	prasad.nallapaneni@vdot.virginia.gov
Yarbrough, Tom	Texas DOT	tom.yarbrough@txdot.gov
Zinni, Ellen	New York State DOT	Ellen.Zinni@dot.ny.gov
BrM Inspection TAG (Sunset with the Release of 5.2.2)		
Christie, Eric	Alabama DOT, Chair	christiee@dot.state.al.us
Cooley, Paul	CalTrans	paul.cooley@dot.ca.gov
Fish, Patty	Idaho DOT	patty.fish@itd.idaho.gov
Kerr, Richard	Florida DOT	richard.kerr@dot.state.fl.us
Lewis, Edward	Kansas DOT	edwardl@ksdot.org
Martin, Thomas	Minnesota DOT	thomas.martin@state.mn.us
Nazareth, Craig	Rhode Island DOT	craig.nazareth@dot.ri.gov
Novakovich, Bruce	Oregon DOT	Bruce.D.Novakovich@odot.state.or.us
Thompson, Todd	South Dakota DOT	Todd.Thompson@state.sd.us
Pontis 5.2 TRT		



Redacted

Faulhaber, Mark	Kentucky Transp Cabinet, Chair	mark.faulhaber@ky.gov
Aldemir-Bektas, Basak	Iowa State University (Iowa DOT)	basak@iastate.edu
TBD	Wyoming DOT	TBD
Choate, Scott	Louisiana DOTD	Scott.Choate@LA.GOV
Christie, Eric	Alabama DOT	christiee@dot.state.al.us
Cooley, Paul	California DOT	Paul.cooley@dot.ca.gov
Curtis, Rebecca	Michigan DOT	CurtisR4@michigan.gov
Evoy, Curt	Illinois DOT	Curt.Evoy@illinois.gov
Gorley, Dan	Idaho DOT	Dan.Gorley@itd.idaho.gov
Johnson, Mike	Oklahoma DOT	mjohnson2@odot.org
Kerr, Richard	Florida DOT	richard.kerr@dot.state.fl.us
Lewis, Edward	Kansas DOT	EdwardL@ksdot.org
Martin, Thomas	Minnesota DOT	thomas.martin@state.mn.us
McDaniel, Travis	Wisconsin DOT	travis.mcdaniel@dot.wi.gov
Nallapaneni, Prasad	Virginia DOT	prasad.nallapaneni@vdot.virginia.gov
Nazareth, Craig	Rhode Island DOT	cnazareth@dot.ri.gov
Novakovich, Bruce	Oregon DOT	Bruce.D.Novakovich@odot.state.or.us
Riemer, Karen	Connecticut DOT	karen.riemer@ct.gov
Thompson, Todd	South Dakota DOT	todd.thompson@state.sd.us
Yarbrough, Tom	Texas DOT	Tom.yarbrough@txdot.gov
Zinni, Ellen	New York DOT	ezinni@dot.ny.gov

BrM User Group (BrMUG)

Choate, Scott	Louisiana DOTD, President	Scott.choate@la.gov
Coley, David	South Dakota DOT, Vice President	david.coley@state.sd.us
Boyle, Zachary	Utah DOT, Secretary	zboyle@utah.gov

BRASS Product Representative

Schaefer, Brenden	Wyoming DOT	Brenden.Schaefer@dot.state.wy.us
-------------------	-------------	----------------------------------