

# AASHTOWare Bridge Management (BrM) Task Force Meeting Minutes

## November 4 - 5, 2015

### St. Petersburg, FL

#### Contents

General Information - Meeting of the Bridge Management Task Force .....	3
0. Review Agenda and Assign Minutes Recorder .....	3
1. Prior Business .....	4
a. Review September Meeting Minutes.....	4
b. Review September Meeting Summary Minutes.....	4
c. Review Prior Action Items .....	4
2. Project Update.....	4
a. Budget and Schedule.....	4
b. Customer Support Statistics.....	4
c. Service Unit Status.....	4
d. License Revenue Report.....	4
3. FHWA Update .....	4
4. Quarterly Status Report.....	7
5. BrM 5.2.2 .....	7
a. Production Release .....	7
b. Visual Studio Primer .....	8
c. BRKEY Maintenance.....	8
d. User Feedback.....	8
6. BrM Beta Testing.....	8
a. Discussion.....	8
b. Plan for Improvement.....	8
7. BrMUG Debriefing.....	8
a. Software release Naming Conventions.....	8
b. BrMUG Conclave Issues / Task Force Response Strategy.....	8
c. BrMUG Survey Results .....	9
d. BrM Survey Results Spreadsheet.....	9
8. BrM 5.2.3 – Deferred Ticket Review.....	9
9. BrM 5.2.3 – Scenario Explorer FDS.....	9
10. BrM 5.2.3 – User Manual Discussion / Expectations.....	9
11. BrM 5.2.3 – User Interface Discussion .....	9
12. Tunnels.....	9
a. Framework for COWs – Clearance, X-Sections, etc. (Coalition Of the Willing).....	9



**Redacted**

- b. Tunnel Conference Call / Request for BrM Service Unit Donations ..... 9
- 13. BrM Licensing Fees / AASHTO Catalog Entry..... 10
  - a. BrM Site Licenses ..... 10
  - b. BrM Asset Tier Licenses ..... 10
- 14. Miscellaneous..... 10
  - a. Reports TAG..... 10
  - b. Request for the BRM Deterioration Model Functional Design Specification ..... 10
  - c. Element Numbers – “Should” vs. “Shall” Verbiage ..... 11
- 15. Review Action Items ..... 11
- 16. Executive Session Discussion ..... 11
- Attachment A: Listing of AASHTOWare Bridge Task Force, TAG and User Group Personnel..... 12



Redacted

## General Information - Meeting of the Bridge Management Task Force

### Participants:

AASHTO	
Judy Skeen	AASHTOWare Bridge Project Manager
Tony Bianchi	AASHTOWare Associate Program Director
SCOJD/T&AA Liaisons	
Bruce Johnson (SCOJD)	Oregon Department of Transportation
Wally Ballou (T&AA)	Kansas Department of Transportation
BrM Task Force	
Eric Christie	Alabama Department of Transportation
Derek Constable	FHWA
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 Guests	
Tim Armbrecht	Illinois Department of Transportation
Andrew DeVault	Florida Department of Transportation
BrDR Task Force	
Joshua Dietsche	Wisconsin Department of Transportation
Jeff Olsen	Montana Department of Transportation
Dean Teal	Kansas Department of Transportation
Amjad Waheed	Ohio Department of Transportation
BrM Contractor	
Jeremy Shaffer	Bentley Systems, Inc.
Josh Lang	Bentley Systems, Inc.
Corey Beynon	Bentley Systems, Inc.

### Note taker:

Corey Beynon and Judy Skeen

## 0. Review Agenda and Assign Minutes Recorder

- Corey Beynon and Judy Skeen will record meeting minutes
- The following agenda items were added:



## Redacted

- New Agenda Item 14c: T-18 Issues – Element Numbers and ‘Should’ vs. ‘Shall’ verbiage.
- New Agenda Item 14b: Request for access to the BrM Deterioration Module from Glen Washer (University of Missouri) working on research on improving the quality of element level inspection.
- Under agenda item 9: Discuss the T-18 recommendation to base the Deterioration Model on something other than the Health Index.

## 1. Prior Business

### a. Review September Meeting Minutes

- The Park City, UT meeting minutes were approved with no changes.

### b. Review September Meeting Summary Minutes

- The Park City, UT meeting minutes were approved with no changes.

### c. Review Prior Action Items

## 2. Project Update

### a. Budget and Schedule

- Bentley presented budget reports for the FY16 MSE, BrM 5.2.2 Project and the BrM 5.2.3 Project.
- On the 5.2.3 Project, TM1A is currently over budget due to the fact that this budget item has become a ‘catch all’ budget for deterioration modeling enhancements. However, Bentley is confident that the budget within TM1\* will effectively support the remaining deterioration modeling tasks.
- The only remaining funds left in the 5.2.2 budget is the final Fixed Price production delivery task.

### b. Customer Support Statistics

- Bentley presented an overview of the customer support hours by agency for FY2016.
- Considerable customer support hours have been expended for one particular DOT.
- Bentley noted an error in the customer support hours for another DOT.

### c. Service Unit Status

- In general, a majority of the service unit projects are on track. Those service unit projects on hold are due to the wait in getting 5.2.2 into production.
- With the recent release of 5.2.2, Bentley will begin staging service unit projects to get them re-started.

### d. License Revenue Report

- Bentley presented a summary of service unit activity as of 10/29/15.
- A separate HAO Service Unit report will be provided for future reports.

## 3. FHWA Update

Derek Constable provided the following report.

### **FHWA Staffing Changes:**

#### **Recent changes in Office of Bridges & Structures:**

- Samantha Lubkin new Nat’l Bridge and Tunnel Inventory Engineer (Ann Shemaka retired). Formerly with Federal Lands bridge inspection section.
- John Theil new NBIS/NTIS Engineer (Gary Moss retired). Formerly NE Bridge Safety Engineer.
- Dennis O’Shea new NE Bridge Safety Engineer. Formerly MD and DE Division Bridge Engineer.
- Raj Ailaney new Bridge Preservation Engineer. Formerly Special Projects Bridge Engineer with FHWA HQ.

### Legislative Actions:

The current highway bill MAP-21 was enacted in 10/12 and expired 09/14. Surface transportation programs have been operating under extension bills that continue current funding levels. The current extension expires Nov 20, 2015. In June the Senate approved a 6 year reauthorization Bill (however it lacks a finance plan). It contains many of the elements included in the FHWA proposed GROW AMERICA Act including an increase in funding levels. The House T&I committee has developed its own 6 year Bill that increases funding about 2% per year.

### Regulatory and other Federal Actions:

- **National Bridge Inspection Standards:** Tentative release of NPRM for the NBIS update is in 2016. Was October 2015. 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:** Submittal of preliminary data for each tunnel is due on December 11. This is inventory data that does not require field assessment. Multiple preliminary data submittals have been received. FHWA will be able to accept full submittals in early 2016.
- **Asset Management Rulemaking:** NPRM closed May 29, 2015. Comments received from 55 parties. Final Rule expected in 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. Comments received from 126 parties. Final Rule expected in 2016. Rule works in concert with Asset Management Plan Rule. If language in NPRM stands, measures and targets will need to be selected by States within 12 months of the final rule effective date.
- **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 Transportation & Infrastructure and Senate Environment & Public Works Committees. We used 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. 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. 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.

### FHWA Training Delivery & Development:

- **Element-Level Bridge Inspection:** FHWA Resource Center has completed 80 sessions with 3,574 participants. Requests continue with 4 future sessions scheduled.
- **NHI Bridge Inspection Course Updates:** 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:** This new 5 day long course is now available. Limited availability through end of this year. Refresher course is in development and will be tentatively available in 2017. FHWA has been funding attendance of 2 State staff at regional training sessions scheduled through end of this year.
- **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 program, and provides information on cost-effective deck, superstructure, substructure and culvert activities.

## Redacted

- 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 hrs each). Tentatively available in 2016. Can submit names of maintenance personnel with interest in piloting and providing comments on web modules.
- **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 development and expected to be released when the final rule for NHS bridge performance measures is 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 has a team preparing guidance on what constitutes State of Good Repair – what a program that has this as its objective may include and potential measures or indexes that can be used as indicators. Lead by Barton Newton of Parsons Brinckerhoff (formerly CalTrans). State of Good Repair is the national goal for infrastructure as stated in MAP-21. Asset management plans and performance measures should be developed with this goal in mind. FHWA asset management definition has historically included this language as the asset management objective. Additionally, George Hearn has developed some ideas for preservation performance measures.
- 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 for NHS bridges. At the minimum, the 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 in August. Glenn Washer. Tentative completion 11/17.
- 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 in June. 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 proposed guide shall be developed based on data

## Redacted

collected from representative agencies. At the minimum, 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 possible integration into a BMS. Principal investigator selected in June. George Hearn.

- NCHRP 20-07/Task 380 – Update of the AASHTO Maintenance Manual for Roadways and Bridges. In progress.
- 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 June 2015.
- 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 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 agencies. 2014 start.
- NCHRP Report 816 Guide for Preservation of Highway Tunnel Systems. Published October 2015.
- 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 May 2015. Can also refer to 2012 NCHRP Report 736 Resource Allocation Logic to Meet Highway Asset Preservation.
- NCHRP Report 742 Communicating the Value of Preservation: A Playbook. Published 2012. It is 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 668 – Framework for a National Database System for Maintenance Actions on Highway Bridges. Published 2010.

## 4. Quarterly Status Report

The following topics will be included in the next version of the Quarterly Status Report:

- 5.2.2 Release information
- 5.2.3 Update / Status
- Multi Media Update
- Reports TAG Update
- Tunnel Update
- User Group Resolutions
- Information on the GUID White Paper
- Decisions on BRKEY

## 5. BrM 5.2.2

### a. Production Release

- The BrM Task Force Vice Chairman forwarded the 5.2.2 production release to end user designees via email on 11/02/15.
- Bentley is the process of compiling the Production Review Review Gate for submission to the Task Force.



## Redacted

- The BrM Task Force PM will develop and forward the 5.2.2 Warranty Letter to Bentley in the next week.

### b. Visual Studio Primer

- TAG.

### c. BRKEY Maintenance

- BrM users continue to express their desire for the BRKEYs to remain available. The Task Force discussed possible options to continue to make the BRKEY available. Bentley will provide a framework trigger for users with the understanding each agency will be responsible for the creation and maintenance of these within their database.

### d. User Feedback

## 6. BrM Beta Testing

### a. Discussion

Bentley presented a chart summarizing 5.2.2 beta testing TAG tickets and time frames for beta version releases.

- Ticket submission surges were realized each time the testing TAG members were either on site or 'poked' with the introduction of the release candidates.
- 90% of the tickets submitted identified issues that were in older versions of the software.

### b. Plan for Improvement

- It was suggested that, for future testing activities a test script, i.e. the 'Golden Child' example be provided to the beta testers.
- We need to find a "sweet spot" for the beta testing effort to ensure beta testing and issue reporting are performed in a concentrated and timely manner. BrM beta testing should begin around April 15 (after the FHWA submission) with release candidate 1 on May 15 and release candidate 2 on June 15.
- BrM test releases are difficult to get installed and up and running in the DOT environment in a timely manner.
- It was suggested that the onsite testing be increased from three to four days and that a second onsite beta testing session be scheduled.
- Consider adding two extra days to the April Task Force meeting in Lake Tahoe for the Task Force to begin Beta 1 testing. Beta TAG testing would then begin the testing of Beta 2 in early May.

## 7. BrMUG Debriefing

### a. Software release Naming Conventions

- BrM will no longer use the 'Service Pack (SP)' naming conventions for software deliveries
- The three (3) categories of software release names that will be used going forward are
  - Full Release
  - Patch
  - Update
- If Bentley believes a release should be handled via a patch in lieu of a full install, the Task Force is in favor of proceeding with a patch instead of a full install. This is consistent with what the users are requesting. The Task Force would like to see software patches vs. the delivery of complete reinstalls.

### b. BrMUG Conclave Issues / Task Force Response Strategy

- The Task Force wants to see where we are with 5.2.3 before making decision on which user conclave requested enhancements should be considered for inclusion in release 5.2.3.





## Redacted

- c. BrMUG Survey Results
- d. BrM Survey Results Spreadsheet

## 8. BrM 5.2.3 – Deferred Ticket Review

- Bentley presented an updated list of issues that are not planned to be included in 5.2.3.
- The PDI area (written in C++) is a high risk area of the BrM code.

## 9. BrM 5.2.3 – Scenario Explorer FDS

- **Scenario Explorer** - Bentley is still working with the TRT on the Scenario Explorer Functional Design Specification.
- **Executive Dashboard** - Bentley is working with the TRT to define the specific components of the Executive Dashboard. At a high level, the dashboard should communicate needs / performance levels at the strategic level (i.e. MAP-21 goals). The dashboard will display the agency's current status v the goal established by the agency.
  - MAP-21 Goal
  - TAMP Goal
  - Percent and Condition by Year (NHS)
- **Deterioration Based on the Health Index**
  - Good / Fair / Poor is a FHWA mandate (with prescribed values but not with prescribed targets). Agencies determine their targets.
  - Agencies have requested the tool provide recommendations on how the deterioration state should specifically be addressed. The Health Index doesn't provide sufficient information on what actions are recommended. The Task Force discussed adding an option to allow BrM users to view their data by NBI element rating.

## 10. BrM 5.2.3 – User Manual Discussion / Expectations

- The Task Force expects that all contents of the user interface are fully explained.
- The Technical Manual will be the API Documentation.
- The FAQs will remain on the website. The Technical Manual should contain links to the FAQs.
- The "Golden Child" overview information should be documented in an accompanying 'user training' manual.

## 11. BrM 5.2.3 – User Interface Discussion

## 12. Tunnels

- a. **Framework for COWs – Clearance, X-Sections, etc. (Coalition Of the Willing)**
  - Work in this area could be accomplished in parallel with 5.2.3 development.
  - The development of these enhancements would be funded via DOT service unit work. (Conclave issues 8 and 12). Three states have expressed an interest in pursuing these enhancements.
  - Work cannot be initiated until the \$200,000 RIPI-funded Multiple Asset Framework has been completed (estimated in the January 2016 time frame).
  
- b. **Tunnel Conference Call / Request for BrM Service Unit Donations**

Bentley's lead developer discussed their approach to including tunnel elements in BrM. The goal is to allow users to create their own asset types. Data would be stored in a column / table structure rather than a physical structure within the database.

## Redacted

- Oregon and Pennsylvania are leading the BrM Tunnel initiative.
- To date, three states have committed to donate one service unit each (Oregon, New York and Wyoming).
- Responses are requested by the end of November. At that point, the Tunnel TAG will be formed.
- The Task Force discussed the licensing strategy for the tunnel element 'module' and decided that, for the
- The SCOJD liaison advised that the FHWA (Joey Hartmann) forwarded a letter to the DOTs last week to provide a clearer definition of tunnels. Bruce forwarded this communique to the Task Force members.
- Bruce Novakovich will serve as the BrM Task Force liaison to lead the Tunnel TAG.
- **FHWA Tunnel Reporting Time Table:**
  - 12/2015 - Initial tunnel submission (using BrM Task Force supplied spreadsheet)
  - 10/2016 - Start tunnel inspections
  - 03/2018 – Tunnel element reporting to FHWA

## 13. BrM Licensing Fees / AASHTO Catalog Entry

### a. BrM Site Licenses

The Task Force discussed the BrM licensing history and the need to increase licensing fees going forward.

- BrM license fees have not been increased in over ten (10) years.
- The Task Force decided to increase the FY2017 licensing fees from \$30,000 to \$35,000 with a percentage increase each year going forward.
- The tunnel module, when available, will be provided to all BrM licensees at no additional charge. Further enhancements to the tunnel module will be funded via service unit contributions and/or via an additional tunnel fee (if requested by the tunnel-owner states).

### b. BrM Asset Tier Licenses

- Asset Tier licenses require the software to be hosted by Bentley. There is insufficient support incorporated into the lower fee license fee structure to support users in their own environment.
- Local agencies are requesting asset tier licenses set up in their own environment, which is not an option under this license.
- Additional verbiage will be added to the Asset Tier license language "Annual Fee + Hosted Services Fees".
- Asset Tier 3 (250 bridges for \$5,000) will be increased to \$7,500 in the FY2017 catalog.
- First time Asset Tier Licensees will be required to purchase a service unit or to pay a one-time set-up fee to support their set up requirements.

## 14. Miscellaneous

### a. Reports TAG

The Task Force discussed the Charter for the Reports TAG

- Review existing reports to determine which reports should be removed from the system
- For the existing BrM reports that need to remain in the software, determine whether or not changes or fixes need to be made to support the report's integrity
- Identify reports existing in individual DOTs that should be incorporated into the BrM core product
- Identify reports that need to be created from scratch

### b. Request for the BRM Deterioration Model Functional Design Specification

Glenn Washer (University of Missouri) has requested access to the BrM Deterioration Module to support his NCHRP 12-104 research project on improving the quality of element level inspection.

## Redacted

- The Task Force discussed the possibility of providing Mr. Washer with the Deterioration Whitepaper (Weibull vs. Markhov) or possibly the deterioration presentation from the 2016 BrMUG.

### c. Element Numbers – “Should” vs. “Shall” Verbiage

- T-18 has asked whether or not the change in verbiage will affect BrM.

## 15. Review Action Items

## 16. Executive Session Discussion

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

<b><u>AASHTOWare Bridge Task Force</u></b>		
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
<b><u>Bridge Design/Rating (BrDR) Members</u></b>		
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	Amjad.Waheed@dot.ohio.gov
<b><u>Bridge Management (BrM) Members</u></b>		
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
<b><u>Michael Baker Jr., Inc.</u></b>		
Duray, James A.	BrDR Contractor	jduray@mbakercorp.com
Lee, Herman	BrDR Contractor	hlee@mbakercorp.com
<b><u>Bentley Systems, Inc.</u></b>		
Shaffer, Jeremy	BrM Contractor	Jeremy.Shaffer@bentley.com
Lang, Josh	BrM Contractor	Josh.lang@bentley.com
Beynon, Corey	BrM Contractor	Corey.Beynon@bentley.com
Wagner, Rick	BrM Contractor	Rick.wagner@bentley.com
<b><u>BrDR Testing TAG</u></b>		
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	ALA Engineers	ebefikadu@alaenr.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
Gorton, Richard	New York State DOT	Richard.gorton@dot.ny.gov
Hasan, Mac	Colorado DOT	Mahmood.hasan@state.co.us
Huang, George	CalTrans	George_huang@dot.ca.gov

**Redacted**

Jones, Daniel	Alabama DOT	jonesdan@dot.state.al.us
Kappes, Bethany	Montana DOT	bkappes@mt.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
Oramasionwu, Geoffrey	Manitoba	Geoffrey.oramasionwu@gov.mb.ca
Ruby, Jeff	Kansas DOT	JRuby@ksdot.org
Schroeder, David	Montana DOT	daschroeder@mt.gov
Stark, Richard	New York State DOT	Richard.stark@dot.ny.gov
Thompson, Todd	South Dakota DOT	todd.thompson@state.sd.us
Vinayagamoorthy, Vinacs	CalTrans	murugesu_vinayagamoorthy@dot.ca.gov
Waheed, Amjad	Ohio DOT	Amjad.Waheed@dot.ohio.gov
Woldemichael, Berhanu	Alabama DOT	woldemichaelb@dot.state.al.us
Yalda, Daniel	Michigan DOT	yaldad@michigan.gov

**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
Ruby, Jeff	Kansas DOT	JRuby@ksdot.org
Schroeder, David	Montana DOT	daschroeder@mt.gov
Woldemichael, Berhanu	Alabama DOT	woldemichaelb@dot.state.al.us

**BrDR Reports TAG (RTAG)**

Waheed, Amjad	Ohio DOT, Chair	Amjad.Waheed@dot.ohio.gov
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)**

Litchfield, Phillips	Illinois DOT, President (BrR)	Phillip.Litchfield@Illinois.gov
Ruby, Jeff	Kansas DOT, Vice President (BrD)	JRuby@ksdot.org
Murgiotio, Shanon	Idaho DOT, Vice President (BrR)	Shanon.Murgoitio@itd.idaho.gov
Schroeder, David	Montana DOT, Secretary	daschroeder@mt.gov

**BrM Testing TAG**

**Redacted**

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
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.	<a href="mailto:Vasil.Papakroni@Bentley.com">Vasil.Papakroni@Bentley.com</a>
McBride, McKenzie	Bentley Systems, Inc.	<a href="mailto:McKenzie.Mcbride@bentley.com">McKenzie.Mcbride@bentley.com</a>
Aldayuz, Jose	Michael Baker International	<a href="mailto:JAldayuz@mbakerintl.com">JAldayuz@mbakerintl.com</a>
Johnson, Joshua	Michael Baker International	<a href="mailto:Joshua.Johnson@mbakerintl.com">Joshua.Johnson@mbakerintl.com</a>

**BrM Deterioration Modeling TRT**

Aldemir-Bektas, Basak	Iowa DOT (Iowa State University)	<a href="mailto:basak@iastate.edu">basak@iastate.edu</a>
Johnson, Mike	Oklahoma DOT	<a href="mailto:mjohnson2@odot.org">mjohnson2@odot.org</a>
Kerr, Richard	Florida DOT	<a href="mailto:richard.kerr@dot.state.fl.us">richard.kerr@dot.state.fl.us</a>
McDaniel, Travis	Wisconsin DOT	<a href="mailto:Travis.McDaniel@dot.wi.gov">Travis.McDaniel@dot.wi.gov</a>
Nallapaneni, Prasad	Virginia DOT	<a href="mailto:prasad.nallapaneni@vdot.virginia.gov">prasad.nallapaneni@vdot.virginia.gov</a>
Yarbrough, Tom	Texas DOT	<a href="mailto:tom.yarbrough@txdot.gov">tom.yarbrough@txdot.gov</a>
Zinni, Ellen	New York State DOT	<a href="mailto:Ellen.Zinni@dot.ny.gov">Ellen.Zinni@dot.ny.gov</a>

**BrM Inspection TAG (Sunset with the Release of 5.2.2)**

Christie, Eric	Alabama DOT, Chair	<a href="mailto:christiee@dot.state.al.us">christiee@dot.state.al.us</a>
Cooley, Paul	CalTrans	<a href="mailto:paul.cooley@dot.ca.gov">paul.cooley@dot.ca.gov</a>
Fish, Patty	Idaho DOT	<a href="mailto:patty.fish@itd.idaho.gov">patty.fish@itd.idaho.gov</a>



**Redacted**

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
<b><u>Pontis 5.2 TRT</u></b>		
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
<b><u>BrM User Group (BrMUG)</u></b>		
Coley, David	South Dakota DOT, President	david.coley@state.sd.us
Boyle, Zachary	Utah DOT, Vice President	zboyle@utah.gov
Yarbrough, Tom	Texas DOT, Secretary	Tom.yarbrough@txdot.gov
<b><u>BRASS Product Representative</u></b>		
Schaefer, Brenden	Wyoming DOT	Brenden.Schaefer@dot.state.wy.us