

**Minutes Of The
AASHTOWare Bridge Management Task Force Meeting
April 24 – 25, 2018 Charleston, SC**

Table of Contents

General Information – Meeting of the Bridge Task Force	3
General Discussion.....	3
Agenda Item 00: Review Agenda / Assign Minutes Recorder.....	3
Agenda Item 01: Prior Business.....	3
1a. Review January Meeting Minutes (Handout CSC-1a).....	3
1b. Review January Meeting Summary Minutes (Handout CSC-1b).....	4
Agenda Item 02: Project Update	4
2a. Budget and Schedule (Handout CSC-2a)	4
2b. Customer Support Statistics (Handout CSC-2b).....	4
2c. Service Unit Status (Handout CSC-2c)	4
2d. License Revenue Report (Handout CSC-2d)	5
2e. Service Unit Report (Handout CSC-2e).....	5
Agenda Item 03: FHWA Report	5
Agenda Item 04: FY2019 Submission to SCOA.....	7
Agenda Item 05: BrM Version Numbering	7
Agenda Item 06: BrM 5.3.01	8
6a. Schedule and Scope.....	8
6b. Patches / Bug Policy / Expectation of Releases.....	9
Agenda Item 07: Tech Manual	9
7a. Schedule and Scope.....	9
Agenda Item 08: Future Enhancements	9
8a. PONWEB-3378	9
8b. Enhancements Proposed by the Virginia DOT	10
8c. Deferred FDSs	11
8d. Other Enhancements from Training	11
Agenda Item 09: RIPI Requests.....	12
9a. Development Regression Testing Tool.....	12
9b. Results Comparison Tool.....	13
Agenda Item 10: RFP Responses / Results	14
10a. Montana DOT	14
10b. Ohio DOT.....	14
Agenda Item 11: BrM TAG Activities	14
11a. Testing TAG	14
11b. Reports TAG.....	14
11c. Database TAG	14
Agenda Item 12: Marketing Activities	15
12a. 2018 NBPPC.....	15



REDACTED

12b. 12th National Conference on Transportation Asset Management 16

Agenda Item 13: Miscellaneous 16

13a. Work Plan and Cost Estimate..... 16

13b. Newsletter Update 17

13c. BrM JIRA Users (AI 2017-Br-013)..... 17

13d. Licensing Internationally (Handout CSC-13d)..... 17

Agenda Item 14: User Group..... 18

14a. 2018 BrMUG Meeting Agenda 18

14b. 2018 BrM End User Survey 18

14c. Updated BrM Product Brochure 18

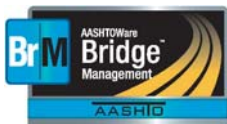
14d. BrMUG SWAG Suggestions 18

Agenda Item 15: Review Action Items..... 18

Agenda Item 16: Draft Quarterly Status Report 18

Agenda Item 17: Executive Session..... 19

Attachment A: Listing of Bridge Task Force, TRT, TAG and User Group Personnel..... 20



REDACTED

General Information – Meeting of the Bridge Task Force

Date: Wednesday, January 24, 2018

Participants:

AASHTO	Judy Tarwater	AASHTO	Project Manager
SCOA	Tim Armbrecht - absent	Illinois DOT	SCOA Liaison
T&AA	Will Holmes	Kentucky TC	T&AA Liaison
BrM Task Force	Eric Christie	Alabama DOT	Vice-Chair
	Derek Constable	FHWA	FHWA Liaison
	Beckie Curtis - phone	Michigan DOT	Bridge Management
	Mark Faulhaber	Kentucky TC	Bridge Management
	Craig Nazareth	Rhode Island DOT	Bridge Management
	Bruce Novakovich	Oregon DOT	Bridge Management
BrDR Task Force	Todd Thompson	South Dakota DOT	Chair
	Dean Teal	Kansas DOT	Bridge Design (BrD)
BrM Contractor	Josh Lang	Bentley	Bridge Management
	Josh Johnson	Bentley	Bridge Management
	Zac Boyle	Bentley	Bridge Management

General Discussion

Eric Christie convened the meeting at 8:00am. Judy Tarwater advised that although Grant Rodeheaver (SCOA) had planned to attend this meeting in Tim Armbrecht’s stead, Grant has accepted a position outside of the Washington DOT and has immediately stepped down from SCOA membership. He will therefore not be in attendance at this meeting.

Agenda Item 00: Review Agenda / Assign Minutes Recorder

Judy Tarwater and Craig Nazareth will take the meeting minutes. The agenda was reviewed and the following topics were added to the agenda.

- Under Agenda Item 2b - Discuss Bentley staffing and issues associated with the CTDOT request for hosting services
- Under Agenda Item 6b – Discuss bug fixes to be included in 5.3.01.
- Add Agenda Item 8c - Multi-Asset Parameter Table Enhancements (suggested by Paul Cooley)
- Add Agenda Item 8d – MultiMedia
- Under Agenda Item 12 – Discuss licensing options for Florida Counties, The Kercher Group, GADOT, Iowa State license to support IADOT
- Add Agenda Item 12c – Feedback from FHWA Northern States PEER Review

Agenda Item 01: Prior Business

1a. Review January Meeting Minutes (Handout CSC-1a)

Minutes from the January 24-25, 2018, Task Force meeting held in Tampa, FL were reviewed. Mark Faulhaber’s last name needs to be corrected in the first sentence under agenda item 00. With this change, the meeting minutes were approved.



REDACTED

1b. Review January Meeting Summary Minutes (Handout CSC-1b)

The Summary Minutes for the January Task Force Meeting in Tampa, FL were reviewed. Mark Faulhaber's last name needs to be corrected in the first sentence under agenda item 00. With this change, the summary meeting minutes were approved.

Agenda Item 02: Project Update

2a. Budget and Schedule (Handout CSC-2a)

Bentley presented the budget report for the FY18 MSE contract. All billings reported include invoices issued through 03/31/18. Most of the work to date under the MY18 MSE contract has been under TM1 (Project Management and Administrative Services) – 72%, TM2 (Customer Support) – 78%, TM3 (Maintenance Services) – 65%, TM4 (Meetings) – 59%, TM6 (Task Force Directed Tasks) – 48%. The overall budget spent to date – 63%.

2b. Customer Support Statistics (Handout CSC-2b)

Bentley presented an overview of the customer support hours by agency as of 03/31/18. Agencies with the highest support levels (over 50 hours) include Alaska, Illinois, Kentucky, Michigan, Oregon, Rhode Island, South Dakota, and Virginia. Agencies with over 25 hours in support hours include California, FHWA, Idaho, Mississippi, New Jersey, North Dakota, Oklahoma, Vermont, and Wyoming.

The Texas DOT reached out to Bentley to discuss potential BrM issues associated with the size of their inventory. Bentley was able to process their entire inventory in four hours. In addition to their large inventory, TxDOT also performs span by span inspections, thereby dramatically increasing their bridge inspection data store. TxDOT's concern was likely based on problems they are experiencing with using the InspecTech software to support their inspections.

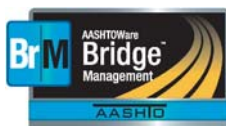
The Maryland Turnpike initiated an evaluation of BrM on 03/01/18. Bentley has provided a significant amount support for issues associated with their database. The turnpike's concerns have mainly centered on the fact that their evaluation is set for a period of 120 days; however, the software delivered to them does not have a hard-coded end date. The Task Force supports allowing them to continue their evaluation past the 120-day end date.

The Connecticut DOT requested a quote for hosting services from Bentley late last summer / early fall. Josh Lang advised that Bentley is starting to make some progress, and they are working on a path to support future requests. Internal Bentley approvals still need to be secured for the CTDOT Hosting Proposal; however, there is internal Bentley agreement on pricing. Corey Beyon will be the Bentley contact for this project going forward.

2c. Service Unit Status (Handout CSC-2c)

Bentley presented the service status report as of 04/16/18. In general, a majority of the service unit projects are on track. Five (5) projects, Colorado, Massachusetts, New Hampshire, City of Phoenix, and Texas have been placed on hold at the request of the agencies.

The Task Force has expressed some concerns that Bentley staff may be spreading themselves too thin with the large number of agency service unit projects underway.



REDACTED

Bentley advised that there are a number of open service unit projects that are completely stagnant. Bentley will reach out to the owners of the inactive service unit projects to determine whether or not their open service unit projects can be closed and the unused service units restored to their service unit accounts.

2d. License Revenue Report (Handout CSC-2d)

Judy Tarwater provided a summary of FY18 license activity (and revenue) as of 04/09/18.

License Type	Quantity
BrM Evaluation License	1
BrM Educational License	7
HAO Service Units	3
BrM Local/Small Agency License	2
Local/Small Agency Support	0
Service Units	80
BrM Super Site License	45
BrM Developer License	1

2e. Service Unit Report (Handout CSC-2e)

Judy Tarwater provided a summary of service unit activity as of 04/16/18.

Agenda Item 03: FHWA Report

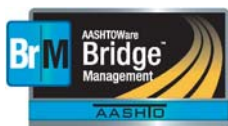
Doug Blades provided the following FHWA update.

FHWA STAFFING CHANGES:

No indication yet of next FHWA Administrator. Paul Trombino was approved by Senate Environment & Public Works Committee but backed out due to personal reasons before Senate approval. Brandye Hendrickson continues to serve as the Acting FHWA Administrator. Butch Waidelich, FHWA Executive Director, is retiring at the end of May.

LAWS, REGULATIONS, POLICY:

- National Bridge Inspection Standards update: Release for comment in Federal Register listed as 08/17/18 in USDOT March report on rulemakings. Needs to be reviewed by USDOT Secretary and White House Office of Management and Budget. Update will include among other things; (a) the methodology, training, & qualifications for inspectors and (b) the frequency of inspection with consideration of risk-based approach. May release an interim policy memo on risk based inspection frequency allowing up to 48 months frequency as allowed by current NBIS.
- Coding Guide update (Specifications for the National Bridge Inventory): Planned for release for comment with NBIS update.
- Border Bridge Memo: February 13, 2018 memo on border bridges and reporting them in the NBI. Intent was to provide clarification and ensure consistency with PM2 guidance.
- Asset Management Plans:
Key dates



REDACTED

AM Plan Rule	
Rule Release	10/24/16
Rule Effective	10/02/17
Initial Plan Submittal	04/30/18
Final Plan Submittal	06/30/19
Penalty Application	10/01/19

States can submit to FHWA Division at any time before 04/30 for review. Need to request that it be reviewed for certification. Division has 90 days to either certify, conditionally certify (minor deficiencies that can be addressed within additional 90 days), or deny certification. FHWA HQ held certification review guidance webinars with Divisions with goal of achieving national consistency. AM Plan Certification Guidelines form basis of consistency.

FHWA AM web page resources:

- Interim guidelines for risk management, financial planning, and life-cycle planning. Life-cycle planning guidance will be augmented to include separate guidance and examples for bridges and pavements. Current guidance is asset class generic.
- AM Plan Certification Guidelines that Divisions will use for review and certification. Originally released for comment in Federal Register.
- Q&As (60+)
- Performance Management (Measures & Targets):

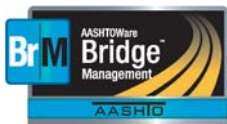
Key dates

Performance Measures Rule (Bridges & Pavement)	
Rule Release	01/18/17
First Performance Period	01/01/18-12/31/2021 (4 years)
• Establish Targets*	05/20/18
• Begin Period & Target Setting Report Date	10/01/18
• Mid Period Progress Report (& Adjustment) Date	10/01/20
• End of Period Report Date	10/01/22

*Establishing targets by May 20, 2018 is approximately 130 days before 10/01/18 targets reporting date to FHWA. This does not allow MPOs 180 days to accept targets or set own targets so States should be coordinating with MPOs in advance of May 20. May 20 date selected because MAP-21 said States had a year from rule effective date to establish targets.

OTHER ITEMS:

- Bridge Management Peer Exchanges:
 - Mid-America completed week of 10/16/17.
 - South completed week of 11/27/17.
 - North completed week of 02/26/18 in Hartford, CT.
 - West scheduled week of 04/23/18 in Salt Lake City, UT. (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming)



REDACTED

- Starting 2018, **National Bridge Inventory submissions** due March 15. We are starting to process data this week due to a server error on our end.
- Starting 2018, first complete **National Tunnel Inventory submissions** were due March 15. 40 States submitted data. Discovered an issue with the error check related ADT and ADTT, which is not a fatal error but we are working to address. A common error is related to the LRS Route ID, we are using HPMS data as the link. As such, NTI has moved to a format for LRS Route ID consistent with HPMS, whereas NBI is in an older format. This is creating conflicts in some States that are trying to use the older format from NBI. Eight Divisions piloting a draft NTI metrics review process to provide feedback on process. T-18 has been notified of the draft metrics (believe by email).
- Starting 2018, **definition of SD aligned with definition of poor, and SD deck area computation using approach roadway width for bridges with deck width, out-to-out coded 0000** (will begin with March 15, 2018 submittal). Will result in a change to the number and area of SD bridges. Also, no longer using terms FO and SR.
- **FHWA 2 Day BMS Workshop/Training in procurement stage.** Solicitation made through FHWA blanket purchase contract that includes multiple national firms who in turn may reach out to subcontractors to form a proposed team.

Agenda Item 04: FY2019 Submission to SCOA

Judy Tarwater reported that the recommended budget, license fees, FY2019 BrM MSE Work Plan and Contract, and FY2018 BrM 5.3.01 Project Work Plan and Contract were approved by the SCOA.

License Type	2018	2019
BrM Super Site	\$ 36,000	\$ 37,000
Asset Tier 1 (1000 bridges)	\$ 15,500	\$ 16,000
Asset Tier 2 (500 bridges)	\$ 10,300	\$ 10,600
Asset Tier 3 (250 bridges)	\$ 7,700	\$ 7,900
Enhanced Asset Tier Support	\$ 3,000	\$ 3,000

Agenda Item 05: BrM Version Numbering

The Task Force discussed BrM version numbering via a conference call with Jack Dartman. Jack offered the following insights.

- The software release numbering scheme is a good communication tool to explain to the licensees the level of change being delivered with the release.
- If the significance of the change is masked by using an inappropriate version number unintended problems may be encountered when the software is deployed. Downstream-systems may be impacted and a minor change in the release number may hide the fact from the appropriate personnel. In these cases the risk is to AASHTO since the ‘problem’ is viewed as a failing on the part of AASHTO.
- Regardless of the numbering scheme chosen, internal DOT issues cannot be resolved by delivering software with ‘masked’ product version numbers.
- Database changes, data model changes, technology stack changes, services, etc. are all considered major if they impact existing computations or report. Any database component that has a downstream consumer is major.
- BrM 5.3.01 will be deployed via web site v. web app.



REDACTED

The Task Force made the decision to rename 5.3.01 to 6.0.

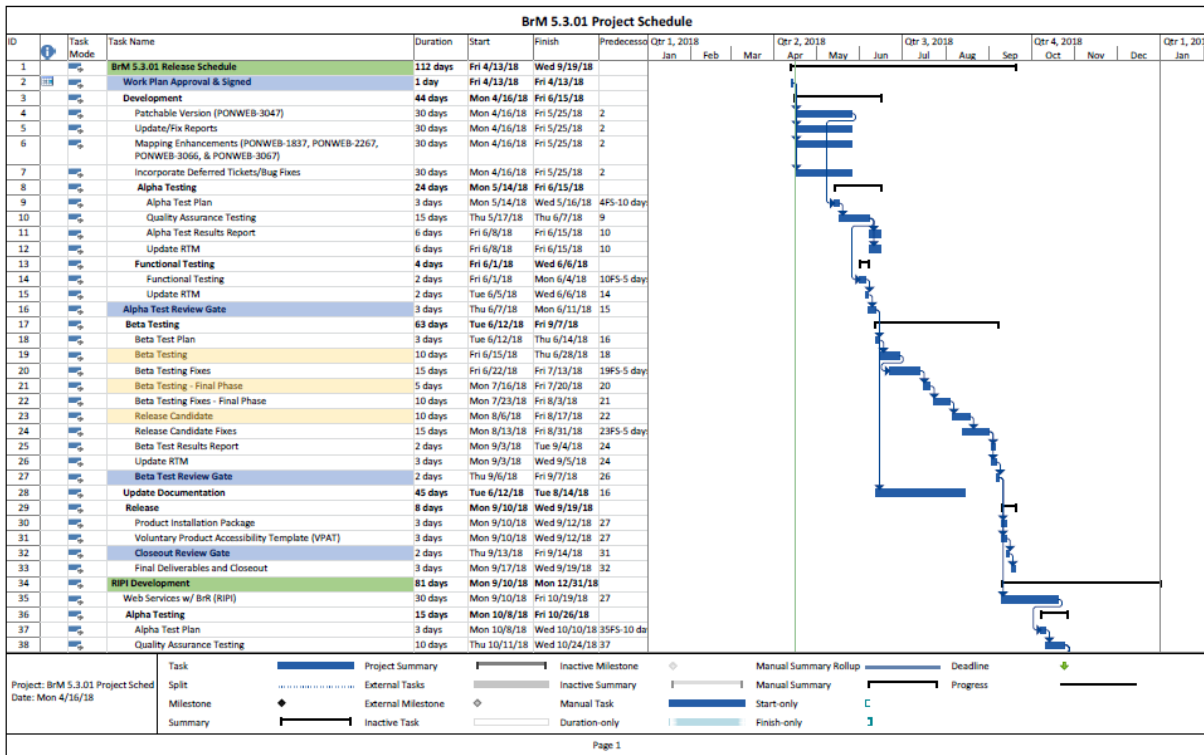
Agenda Item 06: BrM 5.3.01

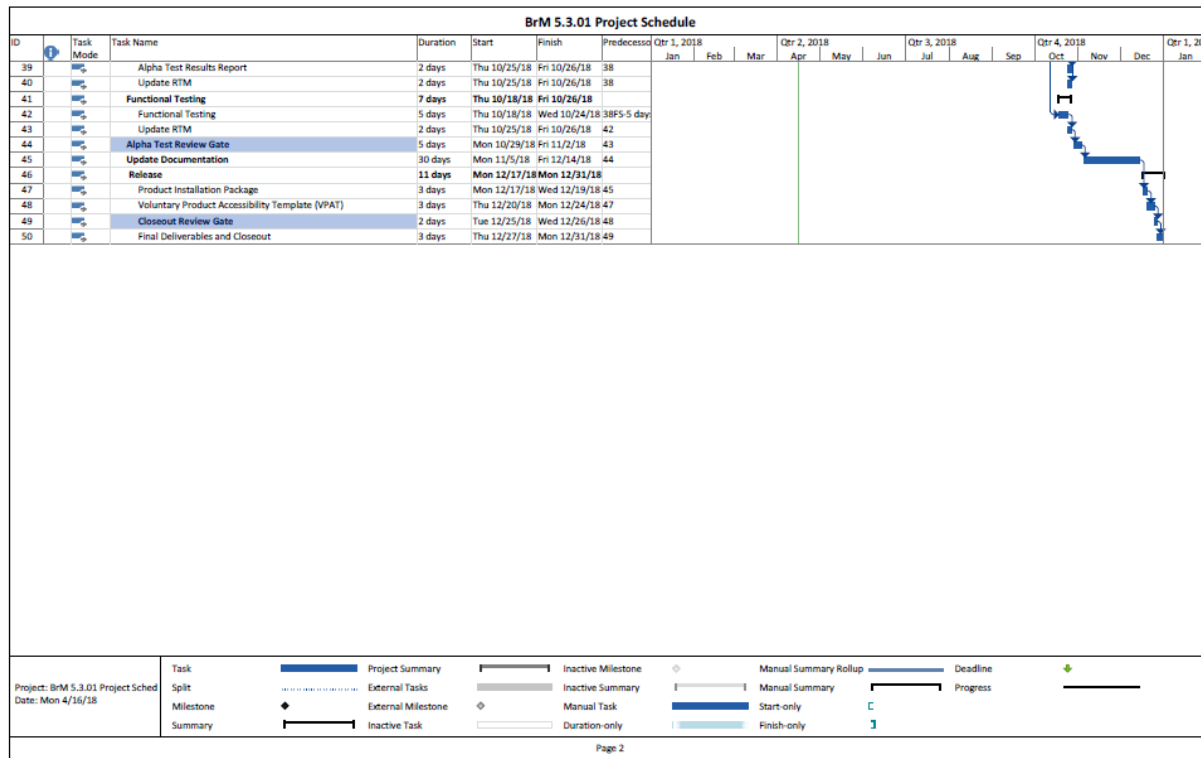
6a. Schedule and Scope

The 5.3.01 Project Contract (now 6.0) was executed on 04/11/18. Bentley presented the revised BrM 5.3.01 project schedule. With work beginning in mid-April, 5.3.01 will be delivered in mid-September prior to the BrMUG.

Fixes for bugs identified after 04/11/18 will not be included in release 5.3.01. Going forward, bug fixes will be deployed quarterly via patches to the 5.3.01 stable version. Every patch will be a culmination of all previous patches. New releases (with additional functionality) will be targeted for once a year.

Two definitions of ‘structurally deficient’ are included in BrM 5.3. The user community should be made aware that the current system doesn’t pull from the new field. BrM 5.3.01 will be modified to point to the correct/new 2018 field.





6b. Patches / Bug Policy / Expectation of Releases

The Task Force reviewed the current BrM Bug Policy.

The Task Force discussed timing for incorporating the latest version of Telerik into BrM and made the decision to include the latest release of Telerik in the development of 6.0. If major problems are encountered, Bentley will roll the Telerik version back to the version currently incorporated into 5.3.

Agenda Item 07: Tech Manual

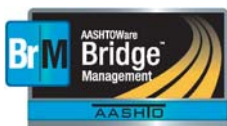
7a. Schedule and Scope

Bentley will forward a draft of the User Manual to the Task Force in mid-May for a one week comment period. Bentley will forward a draft of the Tech Manual to the Task Force and interested users in early June for a two week comment period. The documents will be delivered to the user community at the end of June or early July. These documents will be continually updated when new versions of the software are released.

Agenda Item 08: Future Enhancements

8a. PONWEB-3378

Users can select only one category for each element. This is a problem with slabs. On a slab bridge, the slab is both the deck and the superstructure; however, the one category per element limits the assignment to a single category. When the software calculates the NBI condition using the converter, either there will be no deck, or no superstructure for such a bridge. How does is the NBI rating calculated for the missing component? In addition, with the ability to use NBI components as a deterioration model, we know that our different deck and superstructure types deteriorate at different rates. It would be helpful to allow



REDACTED

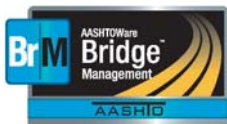
states to further define what/how the NBI components can be subdivided to link to deterioration. For instance, different deterioration rates for Painted steel, reinforced concrete and prestressed concrete would be helpful.

The Task Force discussed this ticket, PONWEB-3378 (submitted by Bruce Novakovich). At the conclusion of the discussion Bruce advised that he is no longer concerned about the current functionality (i.e. the concerns documented in the ticket) and will therefore close this ticket with no further action required.

8b. Enhancements Proposed by the Virginia DOT

The Task Force discussed several updates proposed by the Virginia DOT. Bentley forwarded the spreadsheet below to the Task Force for review and discussion.

No.	PONWEB	MODULE	TITLE	CHANGE DESCRIPTION	BENEFITS
1	3173 3172	NetworkPolicies NBI Conversion Profiles Other?	Use of Damage Index	- Use weighted condition states - $DI=K1xQ1+K2xQ2+K3xQ3+K4xQ4$	- Generalized - Fewer criteria needed - more accurate - reduced analysis time
2		Subdivisions	Subdividing by the Project Category Funding Levels	- Many states have funding limits on Bridge Crews, Maintenance and/or Capital Improvements '- Many states have resource limits for Bridge Crews, a certain industry or contract mechanism	- Most DOTs have a Maintenance Budget and a CIP Budget that they are constrained by ~ by Law and Legislature - Measure capacity of bridge crew Project Category work by funding 'Possible Groupings: Replacement, Rehabilitation, Preventative Maintenance (CBM/CM)
3		Performance Measure Utility NetworkPolicies	VDOT Modified Health Index	Ability to calculate VDOT Health Index and use in the Utility, PM and NP Modules	-States need flexibility to tailor per their DOT's needed
	3169	Performance Measures	- Flexibility in the Formulas for Performance Measures - Set different weights for each of the Performance Measure (similar to utility)		-States need flexibility to tailor per their DOT's needed
4	3167 3166	Performance Measures	PM Weighting	- User can give each Performance Measure a weight	- General (adaptable to all DOTs) - More accurate ~ selection
5	2511	Environments	Environments - Flexibility # 1	- Need more than four Environments - Each Element has Element specific Environment Factor	
	2511 2575	Environments	Environments - Flexibility # 2	- Go from 4 Environments to 10 Environments	



REDACTED

6	3165	Benefit	Benefit can Change Environment		- can model joint elimination
7	3171	Optimization	Optimization as of a certain Date		DATA MUST BE FIXED AS OF A CERTAIN DATE - Most states are required to complete State TAMP as of a certain date (Jan 1, July 1, or other fiscal year). - FHWA TAMP as of Jan 1.
8	2565 2575	Elements Defs	Coefficients for Condition State for Health Index	Can modify BrM HI for CS1 and CS4, and be confident of the results	

- **VDOT Enhancement 1 (Use of Damage Index)** – Discussion on this enhancement was tabled pending additional input from the Virginia DOT. Based on their understanding of this enhancement request, the Task Force believes this enhancement to be more of a VDOT customization rather than an enhancement that would be of benefit to the entire BrM user community. If VDOT wishes to proceed with adding this enhancement to the core BrM product, they should present the enhancement to the User Group to garner support from the user community.
- **VDOT Enhancement 2 (Subdividing by the Project Category Funding Levels)** – The Task Force agreed with VDOT that this enhancement would be a benefit to all the users and gave tentative approval to be integrated into the core product.
- **VDOT Enhancement 4 (PM Weighting)** – The Task Force believes buy-in from the user community would be required prior to proceeding with adding this enhancement to the core product.

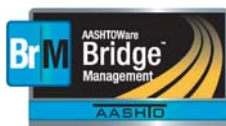
8c. Deferred FDSs

The Task Force discussed the deferred functional design specifications and made the decision to include those listed below with a completion date of June 2018 in the FDS discussions during the June 2018 Task Force meeting.

Function Design Specification	Completion Date
Import / Export	June 2018
Clearance	June 2018
QA/QC	No
Project Cost	No
Multi Media	June 2018
Track History	No
LCCA	June 2018
Enhanced functionality for Utility Values	June 2018
Tool Tips	June 2018

8d. Other Enhancements from Training

- **Element Benefit Group Usability Page to 6.0 + Patch**
Bentley has been working with a number of departments of transportation providing setup and configuration services. Included in a majority of the work performed is work on the setup of benefits



REDACTED

for each state. Through this process Bentley has come to the realization that changes/updates to the Benefits Page could be delivered to the end users to provide a more user friendly environment. In working through the various engagements with DOT installations, Bentley created a “new benefits page” for their use in providing user support. Bentley recommended to the Task Force that the revised Benefits Page (developed for use within the Bentley support team) be delivered to the end users via a post-BrM 6.0 patch. The Task Force concurred with this approach and asked Bentley to develop a cost estimate to incorporate the new Benefits Page into the BrM core product.

- **Usability Updates**

In conjunction with the discussion on the new Benefits Page, the Task Force made the decision that for “enhancements” such as the benefits page, where no new functionality is introduced, but an improvement to existing functionality to improve the workflow is delivered, the Task Force will communicate to the BrMUG that the Task Force is actively investigating opportunities for usability updates to be included each time a patch delivered.

Agenda Item 09: RIPI Requests

9a. Development Regression Testing Tool

Background

In addition to evaluating enhancements and other changes to the software included in releases, the Beta testers spend time evaluating the unanticipated impact of enhancements and other improvements have on other aspects of the software. Thus, the time required for Beta testing increases. This trend will continue as the software grows and becomes more complex. This increase in the time jeopardizes product delivery schedules and results in higher costs. A regression testing tool would reduce the time spent reviewing the effects of the program revisions.

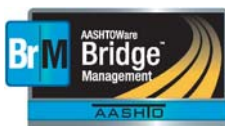
The regression testing tool will be specifically customized for the AASHTOWare Bridge Management (BrM) product and will be used by the development team during the development and alpha testing phases. The developers will use the tool to ensure software changes produce the desired effects and do not produce any undesired effects, enabling them to compare hundreds of changes in a timely manner.

The regression testing process, using the BrM-Customized Regression Testing Tool, will be as follows:

- Each developer will be responsible for performing regression testing during application unit testing as changes are made to the code.
- Each developer will execute appropriate test case(s) before and after code changes and subsequently run the regression tool to ensure the code changes had the desired effect.
- Each developer must determine if the results are as expected. If the results are unexpected, the developer must identify and resolve the problem if one exists.

In accordance with the procedure for securing SCOA approval for RIPI funding, the proposed Development Regression Tool RIPI project was submitted to T&AA for review and feedback. T&AA advised that they are supportive of the Bridge Products Task Force request for RIPI funding for the BrM contractor to institute an automated approach to regression testing and develop or adopt a tool to support regression testing. T&AA also advised that they would like to observe the following:

- Continuous and automated regression testing should, if possible, precede BrM’s continuous release implementation.
- Test Driven Development (TDD) is a best practice, and in many cases, the unit tests and test harness are part of the codebase. With continuous integration approaches the product cannot be compiled or



REDACTED

promoted to a test server until unit tests are successful. T&AA would be interested in knowing if unit testing also being performed on the BrM codebase.

- Regression testing tools may already be available to support BrM needs (such as tools like Selenium), which would accelerate development of a regression test suite.

The following Bentley responses to the T&AA observations will be included in the SCOA RIPI funding ballot.

- Continuous and automated regression testing should, if possible, precede BrM's continuous release implementation.

The desire for continuous and automated regression to be in place before continuous implementation is basically the original driver for this RIPI proposal. By having a more comprehensive automated test suite available, we are able to simplify the release process, while also drastically reducing/eliminating the risk of 'fixing one thing, and breaking another'

- Test Driven Development (TDD) is a best practice, and in many cases, the unit tests and test harness are part of the codebase. With continuous integration approaches the product cannot be compiled or promoted to a test server until unit tests are successful. T&AA would be interested in knowing if unit testing also being performed on the BrM codebase.

Due to the significant amount of legacy/heritage code, we will be some time away from truly being in a 100% TDD environment. However, the goal of this proposal is to spend the effort and cover a significant number of cases, and ensure that ALL check-ins pass the associated testing. This proposal will ultimately need to include both unit testing and more integration testing. Currently, within BrM, there are some unit testing that is a part of the packaging; however, due to the amount of legacy code, and not having a proper framework established, the coverage is disproportionately small.

- Regression testing tools may already be available to support BrM needs (such as tools like Selenium), which would accelerate development of a regression test suite.

We anticipate the testing tools to be falling under two umbrellas. The integration/'scenario' testing, which would be accomplished through testing tools available on the market (Selenium is currently the preferred solution based on our preliminary research), as well as unit testing which would be accomplished through NUnit. Our goal is to use any third party tools available to help accelerate and streamline the work into the future.

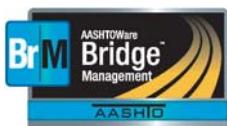
9b. Results Comparison Tool

Background

The results comparison tool will be specifically customized for the AASHTOWare Bridge Management (BrM) product. This tool will be used by the contractor, the Beta testing TAG, as well as the end users to:

- Test results from version A to version B prior to going into production
- Evaluate results of changing some variable (performance measure, cost, etc.)
- Calibrate and configure input parameters and validate results

In accordance with the procedure for securing SCOA approval for RIPI funding, the proposed Results Comparison Tool RIPI project was submitted to T&AA for review and feedback. T&AA advised that they supportive of the Bridge Products Task Force request for RIPI funding for the BrM contractor to develop a results comparison tool to validate result sets between product releases, between result sets when changing variables and parameters, as well as to assist in calibrating and configuring.



REDACTED

Using the aforementioned Bentley responses to the T&AA observations related to the Development Regression Tool, SCOA will be balloted for RIPI funding approval.

The contracting mechanism to support the development of the Development Regression Testing Tool and the Results Comparison Tool will be decided during the June Task Force meeting. Decisions on which enhancements from the FDSs to be presented during the June Task Force meeting will be included in future project work plan(s) will also be made during the June Task Force meeting.

Agenda Item 10: RFP Responses / Results

10a. Montana DOT

The BrM RFP Response to Montana was uploaded to the Montana Procurement Services website on 12/28/17. By letter of 02/21/18, the Montana Department of Administration, State Financial Services Division, State Procurement Bureau advised that the RFP evaluation had been completed for the Bridge Analytical Tool (BAT) and a contract had been tentatively awarded to Advitam, Inc. – Sixsense.

10b. Ohio DOT

The BrM RFP Response to Ohio was delivered to the Ohio DOT on 01/30/18. By letter of 03/01/18 the Ohio Department of Administrative Services advised that the ODOT Bridge Application RFP had been canceled.

Agenda Item 11: BrM TAG Activities

11a. Testing TAG

Bruce Novakovich advised that the members of the Testing TAG are continuing to meeting monthly.

11b. Reports TAG

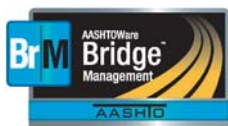
Bentley Curtis advised that the Reports TAG is on hold until they receive information from Bentley on when the BrM 5.3.01 reports will be available for their review.

11c. Database TAG

Craig Nazareth reported that the Database TAG continues to meet regularly. The Parameters Table will be revised to support multi-assets. Paul Cooley believes a view can be created to make the table transparent and will provide information on how the page should be set up. Paul wants to use the same parameters for multiple assets and therefore wishes to have the parameters stored separately from the asset types. To support this direction, Paul wishes to break up the Parameters Table into two tables. Paul has also discussed incorporating an alias for bridge owners. The Task Force is interested in understanding the benefits associated with moving forward with standardizing parameters.

The Task Force also discussed the idea of developing a long term strategy/plan for opening up all of BrM's functionality for use with multi-assets.

The Database TAG is also working on options to add an MPO Field to allow the user to easily group these structures. This field would be added to the Bridge Table.



Agenda Item 12: Marketing Activities12a. 2018 NBPPC

Judy Tarwater manned the AASHTOWare Bridge Booth at the 2018 NBPPC Conference. Updated BrD, BrR and BrM marketing brochures were available at the booth for attendees to pick up. The booth traffic was fairly heavy and included discussions with attendees from the following agencies who expressed an interest considering licensing BrM in the future: Georgia DOT, Nova Scotia DOT, and the Maryland DOT. Hillsborough County, Florida also expressed an interest in securing a copy of BrM to use the modeling and planning functions of the software that are currently not being used by the FLDOT. A representative from the Association of Counties in Ohio also advised that the Ohio counties are interested in licensing BrR under the Ohio DOTs BrR Unlimited license.

- Bentley has a webinar scheduled for the week of April 30 with Ben Loeser (Hillsborough County, FL) to discuss BrM licensing options and how their bridge data can be imported from the FLDOT BrM database.
- Eric has also discussed setting up a webinar for the Georgia DOT to discuss BrM features and functionality.

In addition, representatives from The Kercher Group expressed an interest in being able to obtain a BrM license for the purpose of learning the software such that they can provide BrM consulting services and support to bridge owners who license the software. David Juntunen, currently with the Michigan DOT, plans to join The Kercher Group to serve as a member of the team established to provide these services upon his retirement from the Michigan DOT at the end of April 2018.

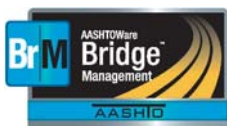
- The Task Force discussed possible options to allow organizations such as The Kercher Group to have access to the BrM software for the purpose of providing consultant support to the bridge community. The current licensing structure supports licensing only to bridge owner organizations and software developers (for the purpose of third party software development to support integration with BrM). Eric Christie directed The Kercher Group to document their request to allow the Task Force to move forward with making a decision on potential licensing options.

Three BrM-related presentations were included on the NBPPC agenda:

- Integrating Bridge Preservation into Your TAMP – Michigan DOT (David Juntunen) and Erin VanZee (Kentucky TC)
- Integrating Inspectors in Project Scoping - How the Utah DOT uses BrM results to compare with programming in the STIP (Rebecca Nix)
- Accurately Modeling of Costs to Illustrate the Benefits of Preservation Through LCCA – North Dakota DOT (Nancy Huether)

During the general opening and closing sessions the following items were discussed.

- Tom Everett (FHWA) advised that the FHWA will require a plan for how you will meet your targets; however, there will be no penalty for not making your targets.
- TSP2 has created a Bridge Products Database which they hope will be populated by all the state DOTs to document and share knowledge and support information exchange.
- The TSP2 Social Media Working Group has a LinkedIn presence (TSP2 – Bridge Preservation) and a Facebook Page. They encouraged everyone to connect (and like).
- The Bridge Management Systems Working Group (Dan Mueller) reported they are working on a vendor neutral approach to:
 - Share best practices



REDACTED

- Promote a domestic scan of best national practices
- Support industry involvement (but not from a sale pitch perspective)
- Industry Technology Demonstrations were held during the conference and were well received. They plan to continue to have these demonstrations during future conferences.
- The Maintenance Working Group reported that the AASHTO Subcommittee on Maintenance (SCOM) has been renamed the Committee on Maintenance. They wish to use the abbreviation MaC. It's unclear whether or not this will be their official moniker.

12b. 12th National Conference on Transportation Asset Management

The BrM Abstract was approved (Utilization of AASHTOWare BrM to Meet Agency Policy and Objectives for Bridge Management, for the Podium Session). Harjit Bal (New Jersey DOT) will present the presentation. The presentation needs to be completed and submitted by June 15, 2018. Sunday workshops have also been scheduled in conjunction with this conference. Derek Constable is assisting the workshop organizers who have reached out to the Indiana and North Carolina DOTs for inclusion in the workshops.

Agenda Item 13: Miscellaneous

13a. Work Plan and Cost Estimate

- Report Changes (Reports TAG Document) (AI 2017-BrM-074)**
- Update to Metrics Report (Handout CSC-13aii)**

Derek Constable reviewed the recent FHWA metric assessment report changes and identified two minor changes that affect the BrM reports.

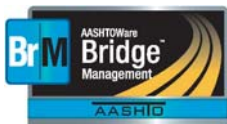
Metric 13 – Inspection Procedures Load Rating

Report 3a

- Change One:
 - Added another case which would not be identified as a deficiency;
 - If a bridge has an operating rating and inventory rating each coded the same value, this will not be identified as non-compliant if the operating load rating method is coded as engineering judgment. If Item 64 = Item 66 the bridge is not counted as a noncompliant if Item 63 = 0.
- Change Two:
 - Corrected an error in the logic as follows;
 - If a bridge has an operating rating and inventory rating each coded the same value, and a temporary bridge is present as indicated by item 41 and 103, then the bridge is not identified as non-compliant. Original logic incorrectly identified as non-compliant. If Item 64 = Item 66 and Item 41 = E and Item 103 = T, then the bridge is not identified as non-compliant.

Derek also directed the Task Force to the following documents for additional information.

- Previously provided PY15 metric assessment report logic (all metrics) – attached (NBIP PY15 MAR Functions)
- Current PY19 metric assessment report for Metric 13 with the Report 3A logic changes highlighted – attached (Metric 13 – Report 3)
- Item 63 Operating Rating Method and Item 65 Inventory Rating Method current coding specification (published by errata in 2012) <https://www.fhwa.dot.gov/bridge/errata.cfm>



REDACTED

13b. Newsletter Update

The Task Force identified the following topics for the 2018 Bridge Products Newsletter.

- Letter from the Vice Char – Eric Christie
- 6.0 (what will be delivered with the release) – Bentley (Josh Johnson)
- How BrM supports the TAMP – Bentley (Josh Johnson)
- Kentucky and Michigan presentations - Bentley
- Results Comparison Tool - Bentley
- Data transfer from BrDR to BrM via webservices - Bentley

Draft articles should be developed for review by mid-May and finalized by the end of May.

13c. BrM JIRA Users (AI 2017-Br-013)

Corey Beynon forwarded the current list of BrM JIRA users to Judy Tarwater. Judy reviewed the list and identified users who have left DOT employment. Judy also flagged Bentley users who are unfamiliar to her to have Bentley determine whether or not all of the active Bentley users are still members of the Bentley BrM team. Corey deleted all unneeded BrM JIRA accounts.

13d. Licensing Internationally (Handout CSC-13d)

The Task Force discussed recent interest in BrM from international entities and agreed the following adequately summarizes issues/actions that will need to be considered should these entities make the decision to move forward with trying to license the software.

CASE 1: Costa Rica Unidad de Puentes Programa de Ingeniería Estructural Laboratorio Nacional de Materiales y Modelos Estructurales (Pablo Barrantes, pablo.aguerobarrantes@ucr.ac.cr)

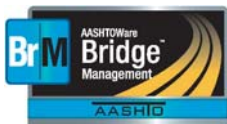
Issues/Actions to be Considered:

- The National organization could procure the Super Site license and allow the locals to access that software on the national server.
- The National organization provides support for the local entities.
- A maximum of 100 support hours will be specified.
- The National organization would be the Bentley POC for support.
- Support will be provided in English.
- Software will be deployed with a deactivation date coincident with the license expiration date (July 31 to build in a one month grace period)
- The agreement will stress the fact the software uses the English language and cannot be localized for variances such as dates, monetary values, etc.

CASE 2: Client in the Middle East (contacted through Paul Thompson -> Jeremy Shaffer) – Maximum of 50 bridges in the next couple of years (Dr. Sameh Zaghloul, szaghloul@itamss.com)

Issues/Actions to be Considered:

- The bridge owner could procure the Asset Tier 3 license (max of 250 bridges) \$7,900 + 1 service unit for initial setup (\$19,500 for the first year)



REDACTED

- 10 hours of support is delivered with the Asset Tier license. Additional support can be purchased (5 hours for \$3,000 – BrMUG paid attendance would not apply for a non-member agency)
- Support will be provided in English.
- Software will be deployed with a deactivation date coincident with the license expiration date (July 31 to build in a one month grace period)
- The agreement will stress the fact the software uses the English language and cannot be localized for variances such as dates, monetary values, etc.

Agenda Item 14: User Group

14a. 2018 BrMUG Meeting Agenda

The Task Force discussed the following possible topics for inclusion in the 2018 BrMUG Agenda.

- Opening / Welcome Remarks – Jeff Vigil
- Welcome to New Mexico – TBD
- AASHTOWare Bridge Task Force Update – Eric Christie
- Brief Overview of AASHTOWare / BrM User Survey Results – Judy Tarwater
- FHWA Update – Derek Constable
- BrM Version 6 / Patchable Version
- Visual Forms Editor
- Using BrM to develop the TAMP (KYTC, MIDOT, NJDOT)
- Setting up Element / NBI Deterioration Parameters
- Care and Feeding of the Optimizer
- Future Enhancements (to include ILDOT Customizations)

14b. 2018 BrM End User Survey

The 2018 BrM End User survey should be distributed to the BrM End User Designees by 08/01/18.

14c. Updated BrM Product Brochure

Judy Tarwater presented the updated BrM product brochure to the Task Force. Given the timing of this update, the licensing structure for both FY2018 and FY2019 were included on the brochure. The updated brochure also specifically addressed options for licensees to donate funding via service unit contributions to support enhancements to the core project.

14d. BrMUG SWAG Suggestions

The Task Force was asked to forward SWAG ideas to Judy Tarwater.

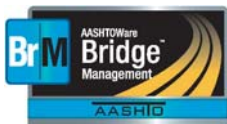
Agenda Item 15: Review Action Items

Judy Tarwater reviewed the action items recorded during the meeting.

Agenda Item 16: Draft Quarterly Status Report

Contents of the Next Quarterly Status Report:

- 5.3.01 has been renamed to 6.0.0
- 6.0.0 Overview Information – ensure the summary is correct (include the NBE import and delivery schedule: summer 2018)
- Pending Release of User and Tech Manuals



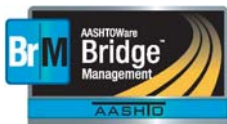
REDACTED

- BrM Training
- BrM Technical Advisory Groups (TAGs)
- Testing TAG
- Brief summary of the Annual QA process and a high level summary of the results of the FY2017 QA Review
- User Group Meeting Save the Date – Judy Tarwater

The Task Force discussed options for developing additional training videos using DOT service unit training activities as the foundation for the video (specifically, Forms Editor, Cross Sections, Crystal Reports)

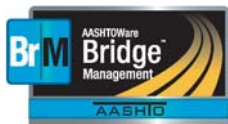
Agenda Item 17: Executive Session

The meeting adjourned at 4:30pm. The Executive Session was held on Tuesday afternoon.



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

<u>AASHTOWare Bridge Task Force</u>		
Thompson, Todd	South Dakota DOT, Chair	todd.thompson@state.sd.us
Tarwater, Judy	AASHTOWare Project Manager	jtwater@ashto.org
Armbrecht, Tim	SCOA Liaison, Illinois DOT	tim.arnbrecht@illinois.gov
Holmes, Will	T&AA Liaison, Kentucky DOT	Will.Holmes@ky.gov
<u>Bridge Design/Rating (BrDR) Members</u>		
Dietsche, Joshua	BrR Wisconsin DOT	joshua.dietsche@dot.wi.gov
Lu, Ping	BrR, Iowa DOT	ping.lu@iowadot.us
Olsen, Jeff	BrD, Montana DOT	jolsen@mt.gov
Saad, Tom	FHWA Liaison, FHWA Resource Center	Thomas.saad@dot.gov
Teal, Dean	BrD, Kansas DOT	dean.teal@ks.gov
<u>Bridge Management (BrM) Members</u>		
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
Nazareth, Craig	BrM, Rhode Island DOT	craig.nazareth@dot.ri.gov
Novakovich, Bruce	BrM, Oregon DOT	bruce.d.novakovich@odot.state.or.us
<u>Michael Baker International, Inc.</u>		
Duray, James A.	BrDR Contractor	jduray@mbakerintl.com
Lee, Herman	BrDR Contractor	hlee@mbakerintl.com
Trees, Geoff	BrDR Contractor	gtrees@mbakerintl.com
<u>Bentley Systems, Inc.</u>		
Shaffer, Jeremy	BrM Contractor	Jeremy.Shaffer@bentley.com
Lang, Josh	BrM Contractor	Josh.lang@bentley.com
Johnson, Josh	BrM Contractor	Joshua.Johnson@bentley.com
Beynon, Corey	BrM Contractor	Corey.Beynon@bentley.com
Boyle, Zac	BrM Contractor	Zac.Boyle@bentley.com
Meredith, Chris	BrM Contractor	Chris.Meredith@bentley.com
<u>BrDR Testing TAG</u>		
Teal, Dean	Kansas DOT, TAG Chair	dean.teal@ks.gov
Olsen, Jeff	Montana DOT, Co-Chair	jolsen@mt.gov
Befikadu, Elizabeth	AI Engineers	ebefikadu@aiengineers.com
Curtis, Beckie	Michigan DOT	Curtisr4@michigan.gov



REDACTED

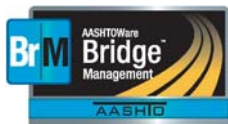
Dietsche, Joshua	Wisconsin DOT	joshua.dietsche@dot.wi.gov
Doerr, Gary	North Dakota DOT	gldoerr@nd.gov
Gao, Yihong	Minnesota DOT	Yihong.gao@state.mn.us
Hagos, Michael	Manitoba	Michael.hagos@gov.mb.ca
Huang, George	CalTrans	George_huang@dot.ca.gov
Jones, Daniel	Alabama DOT	jonesdan@dot.state.al.us
Kappes, Lenci	Montana DOT	lkappes@mt.gov
Litchfield, Phillip	Illinois DOT	Phillip.Litchfield@Illinois.gov
Lu, Ping	BrR, Iowa DOT	ping.lu@iowadot.us
McMunn, Creightyn	Michigan DOT	mcmunnc@michigan.gov
Vinayagamoorthy, Vinacs	CalTrans	murugesu_vinayagamoorthy@dot.ca.gov
Pence, Alex	Wisconsin DOT	Alex.pence@dot.wi.gov
Ruby, Jeff	Kansas DOT	Jeff.ruby@ks.gov
Silverstrim, Damian	AI Engineers	dsilverstrim@aiengineers.com
Stone, Crystal	Illinois DOT	Crystal.stone@illinois.gov
TBD	South Dakota DOT	
Tempinson, Don	Michigan DOT	TempinsonD@michigan.gov
Waheed, Amjad	Ohio DOT	Amjad.Waheed@dot.ohio.gov

BrDR Design Tool TAG (DTAG)

Olsen, Jeff	Montana DOT, Chair	jolsen@mt.gov
Teal, Dean	Kansas DOT, Co-Chair	dean.teal@ks.gov
Barnett, Nicholas	Illinois DOT	Nicholas.Barnett@illinois.gov
Befikadu, Elizabeth	AI Engineers	ebefikadu@aiengineers.com
Crudele, Brenda	New York State DOT	Brenda.Crudele@dot.ny.gov
Ehrlich, Arielle	Minnesota DOT	arielle.ehrlich@state.mn.us
Kemna, Aaron	Missouri DOT	Aaron.kemna@modot.mo.gov
Ruby, Jeff	Kansas DOT	jeff.ruby@ks.gov
Schroeder, David	Montana DOT	daschroeder@mt.gov
Wagner, Brad	Michigan DOT	wagnerb@michigan.gov
Woldemichael, Berhanu	Alabama DOT	woldemichaelb@dot.state.al.us

BrDR Reports TAG (RTAG)

Curtis, Beckie	Michigan DOT, Chair	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
Waheed, Amjad	Ohio DOT	Amjad.Waheed@dot.ohio.gov
Wang, Cindy	Ohio DOT	Cindy.wang@dot.ohio.gov

BrDR Modernization TAG

REDACTED

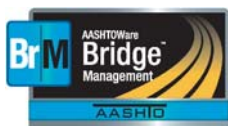
Armour, Jacob	Michigan DOT	Armourj1@michigan.gov
Coley, Dave	South Dakota DOT	David.coley@state.sd.us
Crudele, Brenda	New York State DOT	Brenda.crudele@dot.ny.gov
Debessay, Mengisteab	New York State DOT	Mengisteab.Debessay@dot.ny.gov
Fisher, Jeremy	Ohio DOT	jeremy.fisher@dot.ohio.gov
Gao, Yihong	Minnesota DOT	yihong.gao@state.mn.us
Jones, Daniel	Alabama DOT	jonesdan@dot.state.al.us
Litchfield, Phillip	Illinois DOT	Phillip.litchfield@illinois.gov
McMunn, Creightyn	Michigan DOT	mcmunnc@michigan.gov
Murgoitio, Shanon	Idaho TD	Shanon.murgoitio@itd.idaho.gov
Pence, Alex	Wisconsin DOT	Alex.pence@dot.wi.gov
Roberts, Devin	Montana DOT	deroberts@mt.gov
Ruby, Jeff	Kansas DOT	jeff.ruby@ks.gov
Spencer, Andrew	Kansas DOT	andrew.spencer@ks.gov
Stone, Crystal	Illinois DOT	Crystal.stone@illinois.gov
Wang, Cindy	Ohio DOT	Cindy.wang@dot.ohio.gov
Ward, David	Caltrans	Dave.ward@dot.ca.gov
Wellner, Patrick	South Dakota DOT	Patrick.Wellner@state.sd.us
Westerfield, Scott	Mississippi DOT	swesterfield@mdot.ms.gov
Withers, Richard	Mississippi DOT	rwithers@mdot.ms.gov
Woldemichael, Berhanu	Alabama DOT	woldemichaelb@dot.state.al.us

BrDR User Group (RADBUG)

Murgiotio, Shanon	Idaho DOT, President (BrR)	Shanon.Murgoitio@itd.idaho.gov
TBD	TBD, Vice-President (BrD)	
George Huang	CalTrans, Vice-President (BrR)	George_huang@dot.ca.gov
Schroeder, David	Montana DOT, Secretary	daschroeder@mt.gov

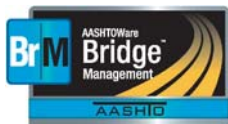
BrM Testing TAG

Novakovich, Bruce	Oregon DOT, Chair	Bruce.D.Novakovich@odot.state.or.us
Ahmad, Faheem	Delaware DOT	faheem.ahmad@state.de.us
Beran, Steve	Illinois DOT	Steve.beran@illinois.gov
Christie, Eric	Alabama DOT	christiee@dot.state.al.us
Cram, Ryan	Kentucky Transp. Cabinet	Ryan.cram@ky.gov
Curtis, Beckie	Michigan DOT	CurtisR4@michigan.gov
Fish, Patty	Idaho DOT	patty.fish@itd.idaho.gov
Irick, Jera	Utah DOT	jirick@utah.gov
Laughlin, Christopher	Florida DOT	Christopher.Laughlin@dot.state.fl.us
Murata, Kevin	Hawaii DOT	Kevin.A.Murata@hawaii.gov
Nazareth, Craig	Rhode Island DOT	craig.nazareth@dot.ri.gov
Nelson, Mike	Florida DOT	Mike.Nelson@dot.state.fl.us
O'Donnell, Larry D.	FHWA Resource Center	Larry.o'donnell@fhwa.dot.gov
Thompson, Todd	South Dakota DOT	Todd.thompson@state.sd.us



REDACTED

Tobey, Lance	CalTrans	Lance.tobey@dot.ca.gov
Willoughby, Rebekah	Nebraska DOR	rebekah.willoughby@nebraska.gov
<u>BrM Database TAG</u>		
Nazareth, Craig	Rhode Island DOT, Chair	craig.nazareth@dot.ri.gov
Barut, Joseph	Wisconsin DOT	Joseph.Barut@dot.wi.gov
Cooley, Paul	CalTrans	paul.cooley@dot.ca.gov
Coon, Amy	Kansas DOT	amy.coon@ks.gov
Cram, Ryan	Kentucky Transp. Cabinet	Ryan.cram@ky.gov
Evoy, Curt	Illinois DOT	Curt.Evoy@illinois.gov
Fish, Patty	Idaho DOT	Patty.Fish@itd.idaho.gov
Fuqua, David	Kentucky Transp. Cabinet	David.fuqua@ky.gov
Irick, Jera	Utah DOT	jirick@utah.gov
Lovato, Eric-Lee	New Mexico DOT	Eric-lee.lovato@state.nm.us
Novakovich, Bruce	Oregon DOT	bruce.d.novakovich@odot.state.or.us
Pineda, Tiffany	New Mexico DOT	Tiffany.pineda@state.nm.us
<u>BrM Database TAG – At Large Members</u>		
Marshall, Allen	Allen R. Marshall Consulting LLC	hexageniameister@gmail.com
<u>BrM Database TAG – FHWA Group</u>		
Soden, Derek	FHWA	Derek.soden@dot.gov
<u>BrM Multimedia TRT</u>		
Faulhaber, Mark	BrM, Kentucky Transp Cabinet, Chair	mark.faulhaber@ky.gov
Cooley, Paul	CalTrans	paul.cooley@dot.ca.gov
Coon, Amy	Kansas DOT	amy.coon@ks.gov
Fish, Patty	Idaho DOT	patty.fish@itd.idaho.gov
Murata, Kevin	Hawaii DOT	Kevin.A.Murata@hawaii.gov
Nazareth, Craig	Rhode Island DOT	craig.nazareth@dot.ri.gov
Schreiner, Carey	North Dakota DOT	cschreiner@nd.gov
<u>BrM Reports TAG</u>		
Curtis, Beckie	Michigan DOT	CurtisR4@michigan.gov
Amhad, Faheem	Delaware DOT	faheem.ahmad@state.de.us
Builta, Drake	Texas DOT	Drake.builta@txdot.gov
Deaver, Kevin	Wyoming DOT	kevin.deaver@wyo.gov
Fish, Patty	Idaho DOT	patty.fish@itd.idaho.gov
Irick, Jera	Utah DOT	jirick@utah.gov
Nazareth, Craig	Rhode Island DOT	craig.nazareth@dot.ri.gov
Rogers, Josh	Kentucky TC	Josh.Rogers@ky.gov



REDACTED

BrM User Group (BrMUG)		
Drake Bulta	Texas DOT, President	Drake.bulta@txdot.gov
Thompson, Richard	Virginia DOT, Vice President	Richard.Thompson@vdot.virginia.gov
Jeff Vigil	New Mexico DOT, Secretary	jeff.vigil@state.nm.us
BRASS Product Representative		
Schaefer, Brenden	Wyoming DOT	Brenden.Schaefer@dot.state.wy.us

