



Product Releases! New Features!

Releases for AASHTOWare Bridge products will soon be delivered! Bridge Management 5.2.1 and Bridge Rating/ Bridge Design Release 6.5 include exciting new features. Some of the improvements to look out for:



AASHTOWare Bridge® Management (formerly known as Pontis)

- Ability to create, edit, and manage network corridors;
- Ability to implement work accomplishments;
- Initial Bridge Analysis Dashboard creation (further functionality added in later phases of 5.2);
- Utility Function Admin page – allows users to control the inputs (criteria, scaling, and weight) for their network wide utility functions;
- Bridge Utility Detail page which displays how the overall utility of a bridge was calculated;
- Ability to edit scaling function using an interactive graph, chart or equation line;
- Google Mapping application which allows users to export filter results into an interactive map, as well as click and drag coordinates of the bridge.
- Key updates to BrM security;



AASHTOWare Bridge® Rating (formerly known as Virtis)

- Rating for curved multi-girder steel superstructures.
- Reinforced concrete slab system rating
- Specification updates in the AASHTO LRFR engine for the MBE 2nd Edition, 2013 Interim
- The ability to override the computed capacity at a location
- LRFR for non-standard gage analysis
- Rating of corrugated metal decks – Phase 2
- Rating for concrete multi-celled boxes (P/T and R/C) (for 6.5.1)
- Numerous Task Force and User Group requested enhancements



AASHTOWare Bridge® Design (formerly known as Opis)

- Bridge Design Superstructure follows the same release schedule as Bridge Rating and shares much of the same functionality, though focused on Load and Resistance Factor Design (LRFD)
- Design review for curved multi-girder steel superstructures
- Reinforced concrete slab system analysis and design review
- Specification updates in the AASHTO LRFD engine for the LRFD 6th Edition, 2013 Interim. (now includes the 4th Edition 2008 Interims through the 6th Edition, 2013 Interims)
- New weld features:
 - Design or design review of flange to web welds
 - Fatigue analysis of welded connections
- Numerous Task Force and User Group requested enhancements

See the following pages for more information and a 'sneak peak' at some of these features!

A Letter from the Chairman

Greetings from the AASHTOWare Bridge Task Force! As you may have noticed, the rebranding effort is complete. Gone are the names of BRIDGEWare, Virtis, Opis and Pontis, and in their places we have AASHTOWare Bridge Rating, Bridge Design and Bridge Management. We believe this will make our software easier to identify with their respective functionality as we continue to provide high-quality software to the member agencies.

I am excited to announce that last year's project solicitation for Bridge Management 5.2 was very successful with 23 agencies committing to support this important development effort to the tune of \$4,884,580! While we are currently a little short of our project goal of \$5,000,000, we are diligently moving forward with the development of 5.2. We greatly appreciate the vote of confidence and direction given to us by the participating agencies and encourage those agencies who have not yet committed to the project to consider being part of this important and timely initiative. The Technical Review Team is in full swing and contributing significantly to the product. We anticipate the Phase I release (action level utility functions, bridge analysis groups and Google mapping) of the three phase 5.2 project will

be available this fall. Deliverables for Phases II (deterioration model and bridge/project level analysis and tracking) and III (network level analysis) are scheduled to be available in 2014 and 2015, respectively.

Bridge Design/Rating version 6.4 was successfully released in the fall of last year, and we look forward to the release of 6.5 this year. Version 6.5.0, scheduled to be released in July, will include a number of exciting new enhancements, including the ability to model and analyze steel curved girder structures and reinforced concrete slab systems. Version 6.5.1, scheduled to be released in October, will include the ability to model and analyze reinforced concrete and post-tensioned box beam structures.

I would like to welcome the newest members of the Bridge Task Force who joined us in the past year. Eric Christie (Alabama DOT) and Bruce Novakovich (Oregon DOT) joined the Task Force as Bridge Management members, replacing Francois Ghanem (NYSDOT) and Ralph Phillips (Connecticut DOT). Todd Thompson (South Dakota DOT) and Jeff Olsen (Montana DOT) also joined the Task Force as Bridge Design/Rating members,

replacing Joshua Sletten (Utah DOT) and Bryan Silvis (Virginia DOT). I want to thank all the great individuals rotating off the Task Force and their agencies for their outstanding work and dedication through the donation of their expertise and their time to AASHTOWare Bridge!

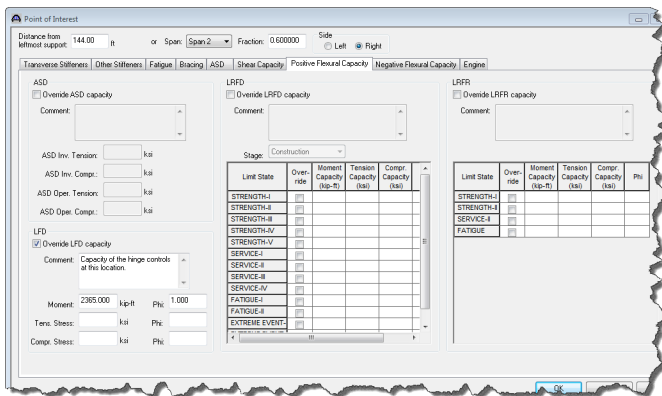
I encourage users to take advantage of the many opportunities to be more involved in AASHTOWare Bridge. As always, the most important involvement is attending the products' User Group Training meetings, which are announced elsewhere in this newsletter. These meetings are great opportunities for training on the latest features, offering input in the direction of the products and to interact with other state agencies. Help is always needed on the products' Technical Advisory Groups (TAG), which allow users to test the products and offer input on the development of the

products, as well as other technical issues that aid the Task Force. Please consider donating your time and expertise to support the Bridge products, and ultimately your agency's use of the products. Feel free to contact any member of the Task Force to see how you can participate!

The Task Force is grateful for your continued support of AASHTOWare Bridge, as it encourages us to continue to work hard to provide software to member agencies and their consultants, making their jobs easier, and ultimately benefitting the traveling public.

Tim Armbrecht
AASHTOWare Bridge Chairman

BrDR – Capacity Override Enhancement



Version 6.5.0 of BrDR contains a new feature to allow users to override the computed capacity at a location. This feature allows users to model the capacity for locations that cannot be completely described in BrDR such as the capacity of a hinge. This override capacity is available for all of the AASHTO engines.

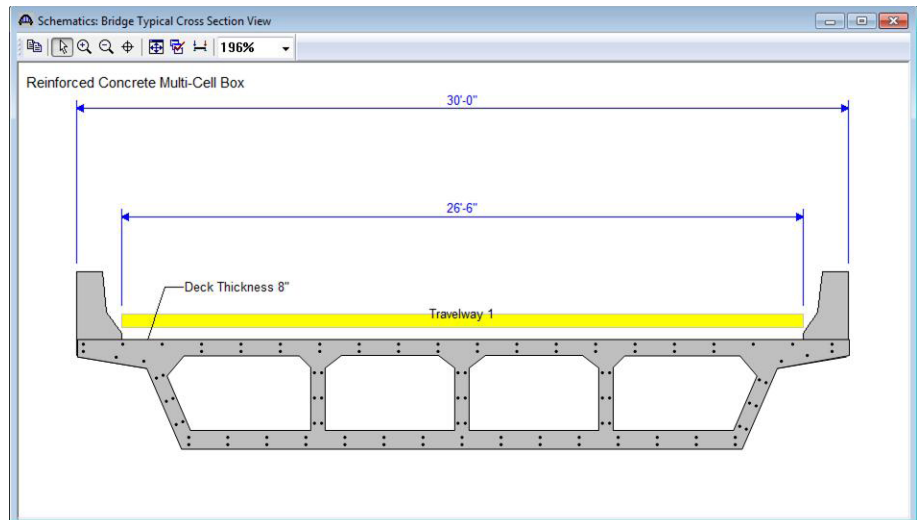
BrDR – R/C Multi-Cell Boxes

This enhancement provides the capability of describing, analyzing and rating, using the AASHTO LRFR specification, post-tensioned and reinforced concrete multi-cell box beam superstructures. User interface and database design are underway.

Features include:

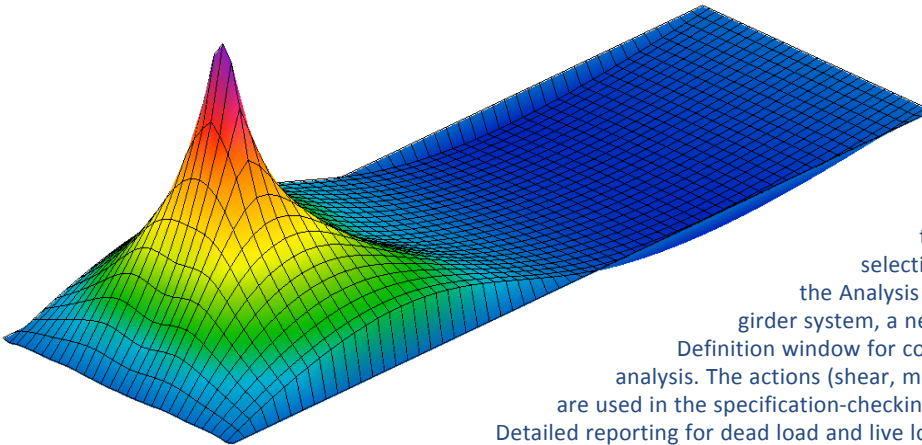
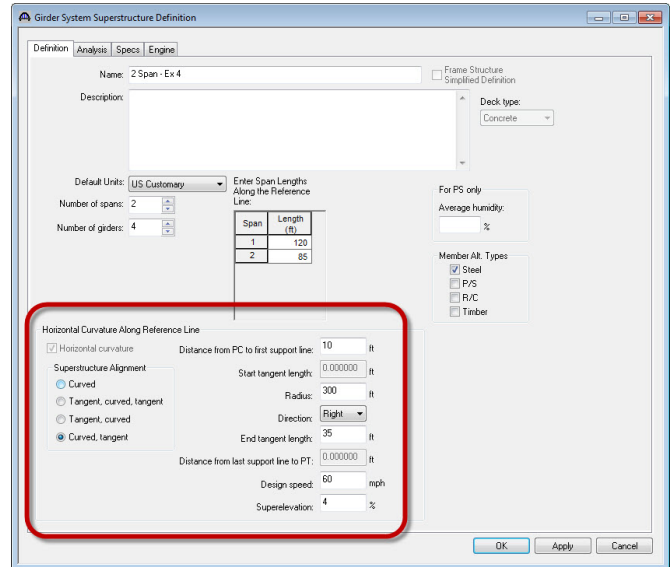
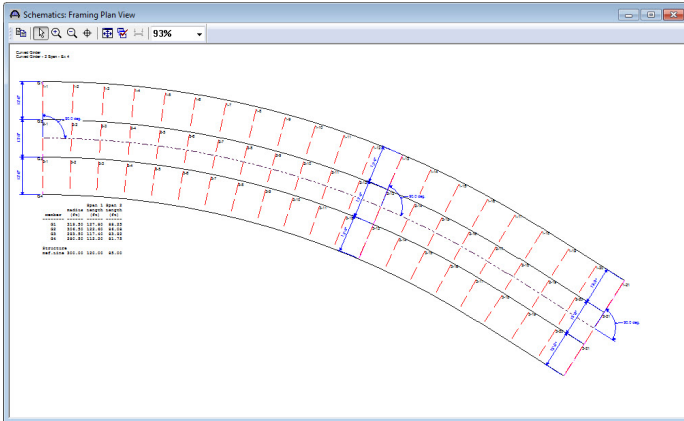
- Schedule based reinforcement with automatic development length calculations.
- Both linear and parabolic tendon profiles will be supported for the post-tensioned boxes.
- The structural analysis of these superstructures will consist of a line girder analysis.

These new superstructure types will be available in the 6.5.1 release this fall.



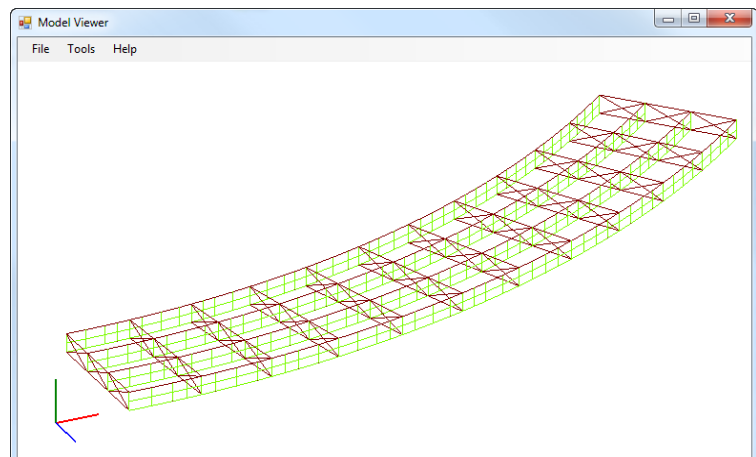
BrDR - 3D Curved Girder Analysis

The release of version 6.5 of BrDR provides users with enhanced 3D modeling capabilities that will enable them to define, analyze and rate 3D steel curved girder structures. As with the development of the 3D straight girder system, this enhancement utilized an investigative study to identify the current practices for refined analysis. This study involved a small group of researchers and practitioners and focused on identifying the best modeling and loading techniques for 3D analysis. A review of several popular software packages was also performed.



The Girder System Superstructure Definition has been enhanced to allow the user to define horizontal curvature along a reference line for steel multi-girder superstructures. Once a complete description of the superstructure has been provided, the 3D analysis can be performed by selecting "3D FEM" as the Analysis Type in the Analysis Settings dialog. As with the 3D straight girder system, a new tab is provided on the Superstructure Definition window for controlling the model generation for the 3D analysis. The actions (shear, moment, etc.) resulting from the 3D analysis are used in the specification-checking module in place of the girder-line actions. Detailed reporting for dead load and live load is available. The utilities for generating

diaphragms (diaphragm wizard), viewing the structure framing plan, and for graphically viewing the finite element model have been enhanced to include features for the curved structure.



BrD / BrR Top User Group Balloted Enhancements

| Ranking | Incident | Description | Product | Status |
|---------|----------|---|---------|------------------------------|
| 1 | 9932 | Display all entered decimal points | Both | Included in 6.5 release |
| 2 | 11153 | Rate steel girders as simple for dead and continuous for live | BrR | Included in 6.6 Work Plan |
| 3 | 11562 | Allow top flange lateral support at point locations | Both | Included in 6.5 release |
| 4 | 9641 | Cancel analysis event | Both | Included in 6.5 release |
| 5 | 2569 | Linking analysis error to user interface | Both | Deferred to future Work Plan |
| 6 | 10691 | Weld design | BrD | Included in 6.5 release |
| 7 | 10813 | Shear Stirrup Wizard enhancements | Both | Included in 6.5 release |
| 8 | 11563 | Copy bracing from one bay to multiple bays | Both | Included in 6.5 release |
| 9 | 6586 | Bridge Explorer customization | Both | Deferred to future Work Plan |
| 10 | 11533 | Copy user-defined materials and beam shapes to library | Both | Included in 6.5 release |

BrDR - New Report TAG

The AASHTOWare Task Force (TF) has approved the formation of a Report Technical Advisory Group (RTAG) to enhance & improve the reports in the Br Design and Rating (BrDR) programs.

The members of the newly formed RTAG are Arthur D’Andrea (LADOT), Beckie Curtis (MDOT), Cindy Wang (OHDOT), Jeff Olsen (MTDOT), Paul Campisi (NYSDOT), Todd Thompson (SDDOT) and Amjad Waheed (OHDOT). The RTAG had their first meeting in Pittsburgh, PA on May 10, 2013. Michael Baker Jr., Inc., the developer of BrDR, also attended the meeting and provided a demonstration of the various reports currently available in the BrDR to the RTAG members. The RTAG discussed several BrDR report enhancement options including those requested as enhancements by the user community.

The RTAG will finalize their recommendations and present them to the TF during 2013. If the RTAG recommendations are approved by the TF, the report enhancements would be included in the work plan for next year subject to the contractor estimates and the availability of funds. In order to improve the reporting capabilities of BrDR, the RTAG is open to suggestions from the user community. Your suggestions can be forwarded to Amjad Waheed (Phone: 614-752-9972) at awaheed@dot.state.oh.us. The RTAG will also be making a presentation during the August, 2013, AASHTOWare Bridge® User Group Meeting in Virginia Beach, Virginia.

Bridge Management Aids MAP-21 Implementation

Many agencies are grappling with the new bridge inspection and risk based asset management requirements included within the Moving Ahead For Progress in the 21st Century (MAP-21) legislation. The AASHTOWare Bridge Task Force has been evaluating the new requirements closely to determine how best to support the needs of the states through cooperative software development.

There are some unknowns included in MAP-21 such as which bridge performance measures will be used and a formal definition of the minimum requirements for a risk-based bridge management system. However, many of the requirements that impact bridge managers are known.

For instance, we know that bridge element inspection information will be collected by the FHWA on National Highway System (NHS) bridges starting in April 2015. We know that AASHTO will be voting on an updated version of the bridge element inspection manual in June of 2013 that, if approved, will be used by the FHWA for this element inspection reporting in the National Bridge Inventory (NBI). We know that states must begin to evaluate and capture bridge specific vulnerabilities in order to feed their risk-based asset management system. We know that the distinction between NHS and non-NHS bridges has important funding implications under MAP-21.

The Task Force now knows enough to begin the work necessary to establish work plans that will result in software that satisfies key requirements necessary for the states to implement the new transportation act. Historically, we have been proactive in trying to stay abreast of changes that impact bridge management.



Let's take a look at the timing of key activities related to MAP-21 and AASHTOWare Bridge Management past and planned deliverables.

| Key Regulatory Milestones | Timing | Key AASHTO Deliverables |
|--|--------------|--|
| MAP-21 Enacted | October 2012 | |
| | April 2013 | Bridge Management 5.1.3 with element migration support, risk framework and support for National Bridge Elements is released. |
| | June 2013 | AASHTO to vote on revised Bridge Element Inspection Manual |
| | Nov 2013 | Bridge Management 5.2.1 planned release with current needs prioritization including risks. Element manual changes if approved. Google mapping to facilitate proper NHS definition and support of element submission to the NBI*. |
| Agencies begin to collect element inspection info on the NHS | Oct. 2014 | |
| | Fall 2014 | Bridge Management 5.2.2 planned release with bridge level economic analysis including risk and new deterioration models |
| FHWA establishes bridge performance measure(s) | Spring 2015 | |
| States risk based asset management plans must be complete | Oct. 2015 | |
| | Fall 2015 | Bridge Management 5.2.3 with full modeling and network level decision making |

* Depending on FHWA release of format

By working closely with key AASHTO technical committees, FHWA, and State representatives, the AASHTOWare Bridge Task Force is able to plan software changes in advance of the requirement deadlines to provide a product that is ready to comply with the evolving needs of the States.

Mike Johnson
AASHTOWare Bridge Task Force

AASHTOWare Bridge Management 5.2 Software Update:

In April 2013, the 5.1.3 software was released to the user community providing a tool for agencies to migrate from the AASHTO Commonly Recognized Elements (CoRE) to the National Bridge Elements (NBEs). The 5.1.3 release provided a number of features and fixes which improved the software's usability and responsiveness, as well as addressed critical issues that existed in the previous versions of the 5.X software. This release was an important step in the software's progression and has built a solid foundation for agencies to begin the migration process and use the National Bridge Elements if they choose. At the same time 5.1.3 was being developed and tested, significant effort was spent in the planning and design of the 5.2 software, specifically Phase I of this effort. Much consideration was given to agency identified needs, and a large influence on the work underway is attributed to the Technical Review Teams (TRT) which has provided insight and support to the development team at critical steps. The Task Force and Bentley have been working closely to define future plans that will be incorporated into the product and the relevant time frame.

Bentley is currently hard at work developing the first release of this software, version 5.2.1, which will contain multi-objective analysis, utility functions, as well as other related components to kick start the bridge management portion available in BrM. These features will provide the building blocks for future development and management tools to come in later release versions and supply the logic agencies have been awaiting. Additionally, 5.2.1 will contain other functionality that users can take advantage of such as a Google Mapping, Technical Advisory Group prioritized bug fixes and some other additions. Bentley plans on demonstrating the 5.2.1 software at the User Group meeting in September and providing an alpha version within that timeframe as well.

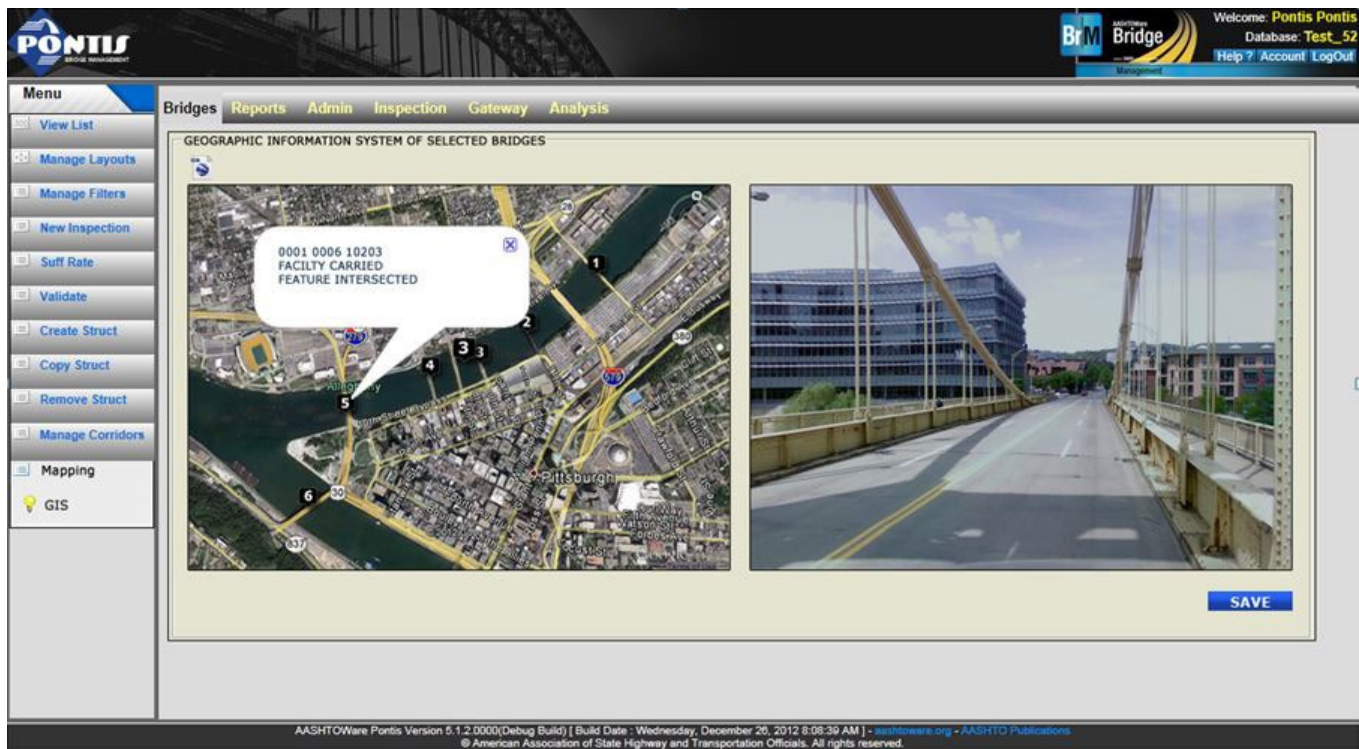
The Task Force is fully committed to increasing awareness and communication with the user group in regards to 5.2 development and schedule. Please refer to our website and product updates sent by the Task Force for updates on the schedule and the software's progression.

Google Mapping in BrM:

One aspect of responsible bridge management is knowing precisely the exact location of your bridges and being able to find them quickly. Some agencies struggle with maintaining accurate GPS coordinates or updating bridge coordinates in an easy or timely manner. At the direction of the Task Force, Bentley has included a Google Mapping component into the BrM software which will be available in the release of 5.2.1 to help in this process and has enhanced many of the capabilities of BrM 5.2, including the ability to export filter results into an interactive map. The new GIS page will plot selected bridges on a Google Map and automatically zoom in/out to fit all bridges. Users will then be able to manipulate the map to show the results as they wish (.e.g. satellite view, street view, etc.).

The Google Map component will bring a unique level of detail into the software. The mapping component will contain the following functionality / additions:

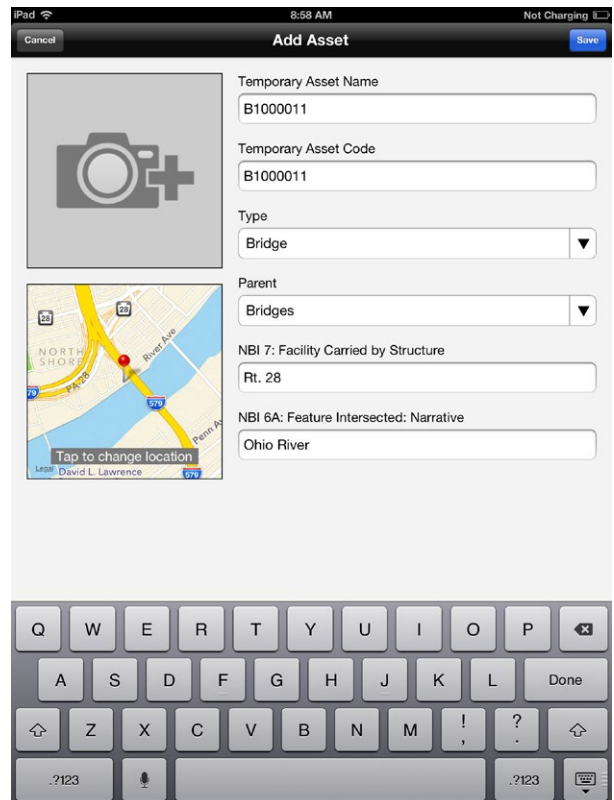
- New grid export option for Keyhole Markup Language exporting to external GIS systems
- Task on the main bridge screen to open Google Maps GIS page using the selected bridges
- Fixed fields will be displayed when a bridge is selected in the map
- New fields within BrM to store GPS coordinates as standard DD.DDDDD format (un-official), while retaining the existing DDMSS.SS format
- Allowing users to drag plotted points and update the associated GPS coordinate for the bridge by clicking save. Users will then retain the option of allowing these updated coordinates to be reflected in the official FHWA GPS coordinate fields via a synchronizing process



New Opportunities Available – iPad Apps and Hosting Options:

One of the many benefits resulting from the AASHTO/Bentley agreement is the new opportunities at the DOTs’ fingertips. States interested in implementing new and exciting add-ons to expand their bridge inspection and management systems can purchase specialized service units available at the beginning of FY14. These Hosting/Add-On service units are intended to allow BrM licensees to supplement their existing systems with hosting services and/or advanced inspection modules that plug into the BrM software and provide added functionality. One example includes the new Bentley InspectTech Collector Mobile iPad application that allows agencies to collect inspection data, take photos at the bridge site, and transport the information or photos into the BrM database.

Hosting and maintaining BrM on secure servers is an excellent way to reduce installation times, streamline upgrade procedures, improve general maintenance activities, and have the BrM Contractors assist with other challenges faced by IT staffs. Interested agencies should contact Jeremy Shaffer (Jeremy.Shaffer@bentley.com) with Bentley Systems, Inc. or Judy Skeen (JSkeen@AASHTO.org) of AASHTO for more information.



Strategic Direction Set

Each year, the Task Force reviews and defines strategic directions for the AASHTOWare Bridge Products suite. The long term plan for these products includes:

- 1. Supporting bridge and asset management
- 2. Enhancing decision support capabilities
- 3. Support agency business processes for design and preserving the bridge inventory
- 4. Preserving and expanding the license base
- 5. Enhancing usability
- 6. Supporting other related business processes
- 7. Strengthening product integration
- 8. Developing product technical architectures
- 9. Improving the software development process
- 10. Facilitating third-party development

Planning that is underway for both the near and long term strives to meet these goals.

Project Websites

Project websites contain additional information about AASHTOWare Bridge® products including access to technical support, general information, helpful links to other websites including the customer support centers and access to an end user mailing list. The mailing list provides end users an opportunity to be e-mailed product news.

AASHTOWare® Bridge Management: <http://aashtowarebridge.com/>

AASHTOWare® Bridge Rating and Design: <http://aashto.bakerprojects.com/virtis>

Upcoming AASHTOWare Bridge® User Group Meetings

Bridge Design and Rating User Group

August 6–7, 2013

Location: Virginia Beach, VA

Bridge Management User Group

September 17-18, 2013

Location: Portland, OR

Contractors for AASHTO Bridge Products

Bridge Design and Rating Product

Michael Baker Jr., Inc.

100 Airside Drive

Moon Township, Pennsylvania 15108

Contact: James A. Duray, Project Manager

Phone: 412-269-6410

Email: bridgeware@mbakercorp.com

Bridge Management Product

Bentley Systems, Inc.

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AASHTOWare Bridge® Task Force and Management Team

| | |
|-------------------------------------|---------------------------------------|
| Tim Armbrecht – Illinois DOT | Bridge Products Task Force Chairman |
| Mike Johnson – Caltrans | Vice-Chairman/Task Force member - BrM |
| Mark Faulhaber – KY Transp. Cabinet | Task Force member - BrM |
| Bruce Novakovich – Oregon DOT | Task Force member - BrM |
| Eric Christie – Alabama DOT | Task Force member - BrM |
| Wade Casey | Task Force FHWA Liaison - BrM |
| Dean Teal – Kansas DOT | Task Force member - BrDR |
| Bryan Silvis – Virginia DOT | Task Force member – BrDR |
| Todd Thompson – S. Dakota DOT | Task Force member – BrDR |
| Amjad Waheed - Ohio DOT | Task Force member – BrDR |
| Tom Saad | Task Force FHWA liaison - BrDR |
| Judy Skeen | Project Manager, AASHTO |

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