

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 (Pontis): <http://pontis.inspecttech.com/>

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

Upcoming AASHTOWare® Bridge User Group Meetings

Bridge Rating/Bridge Design User Group	Bridge Management User Group
July 31 – August 1, 2012	September 11-12, 2012
Location: Niagara Falls, NY	Location: New Orleans, LA
2012 AASHTOWare® Bridge Rating/Bridge Design User Group http://www.cvent.com/d/5cqpgp/1Q	

AASHTOWare® Bridge Development:

Contractor – Bridge Rating/Bridge Design	Contractor – Bridge Management
James A. Duray, P.E., Project Manager	Jeremy Shaffer, Project Manager
Michael Baker Jr., Inc. 100 Airside Drive Moon Township, PA 15108 Phone: 412-269-6410 E-mail: bridgeware@mbakercorp.com	Bentley Systems 810 River Avenue, Suite 300 Pittsburgh, PA 15212 Phone: 412-321-1550 E-mail: jeremy.shaffer@bentley.com

AASHTOWare® Bridge Task Force and Management Team

Judy Skeen	Project Manager, AASHTO
Tim Armbrrecht, IL	Task Force Chairman
Dean Teal, KS	Bridge Rating/Design Task Force
Bryan Silvis, VA	Bridge Rating/Design Task Force
Josh Sletten, UT	Bridge Rating/Design Task Force
Amjad Waheed, OH	Bridge Rating/Design Task Force
Tom Saad	Bridge Rating/Bridge Design Task Force, FHWA liaison
Mike Johnson, CA	Task Force Vice Chair
Mark Faulhaber, KY	Bridge Management Task Force
Ralph Phillips, CT	Bridge Management Task Force
Francois Ghanem, NY	Bridge Management Task Force
Wade Casey	Bridge Management Task Force, FHWA liaison

To subscribe to this newsletter, go to <http://aashto.bakerprojects.com/virtis/> or <http://pontis.inspecttech.com/> and follow the instructions for End User Mailing List.

Product Releases! New Features!

Releases for AASHTOWare® Bridge products will soon be delivered! Bridge Management 5.1.3 and 5.2.1 and Bridge Rating/ Bridge Design Release 6.4 include exciting new features. See the "Rebranding" article on page 2. Some of the improvements to look out for:



AASHTOWare® Bridge Management (formerly known as Pontis)

- Full support of AASHTO's new National Bridge Elements
- Inclusion of new Protective Systems and Defect Flags attachable to elements
- Support for Corridors and Bridge Groups
- Incorporation of multi-objective optimization analysis
- Advanced deterioration models
- Project and Needs programming to support business practices
- Easier data transfer abilities via XML option
- Speed and usability enhancements across the board
- Support for newer versions of Microsoft SQL and Oracle databases



AASHTOWare® Bridge Rating (formerly known as Virtis)

- 3D analysis for multi-girder superstructures
- Reinforced concrete box culvert rating
- Specification updates in the AASHTO LRFR engine to the LRFD 6th Edition
- Selection of MBE specification edition (2nd Edition 2011 interims)
- The ability to import and export system data
- Support for additional cross sections and graphics for trusses
- General Preferences – a convenient way to temporarily or permanently override specific settings for a bridge or group of bridges
- Reporting improvements
- 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)
- 3D analysis for multi-girder superstructures
- Reinforced concrete box culvert analysis and design
- Added 6th Edition to the selection of LRFD specification editions (now includes the 4th Edition 2008 Interims through the 6th Edition)
- Substructure drilled shaft analysis
- Numerous Task Force and User Group requested enhancements

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

Greetings from the AASHTOWare® Bridge Products Task Force! Every year, our group has interesting challenges to face, but with those challenges comes opportunity. This year's opportunities have given us a great deal to be excited about, because we know it benefits the agencies and their consultants – the users of the AASHTOWare® Bridge software and ultimately impacts the safety of our nation's bridges!

You will note the new logos and color scheme in this newsletter. It is part of a new re-branding initiative that involves all of AASHTOWare®. More information is located on page 2 of this newsletter.

As you may be aware, we initiated a project solicitation for Pontis 5.2 earlier this year. The response has been great so far, with 15 agencies committing to aid in the development of Pontis 5.2! We hope that those states still considering participating in the solicitation will let us know soon if they would like to be part of the development of the most comprehensive bridge management software to date! We have a goal of a spring 2013 release for Phase I (risk assessments, integrated utility functions and network corridors) for Pontis 5.2, with Phases II and III following in consecutive years.

We welcome Bentley Systems into the fold, following their acquisition of our Bridge Management software contractor, InspectTech. As the InspectTech team will remain in charge of project management of the Bridge Management product, we do

not anticipate any deviations from our goals or schedule for Bridge Management software development, and in fact, look forward to Bentley's support as a worldwide leader in engineering software.

Virtis/Opis version 6.3 was released on schedule in July 2011 and we're looking ahead to the 6.4 release in August of this year. Version 6.4 will include a number of exciting new enhancements, including the ability to model and analyze culverts and drilled shafts, as well as the ability to perform full 3D analysis for a number of bridge types.

We would like to welcome the latest members of the Task Force who joined us in the past year. Judy Skeen, recently retired from the Texas DOT, has joined us in the role of AASHTOWare® Bridge Project Manager. Ralph Phillips (Connecticut DOT) and Mark Faulhaber (Kentucky DOT) have also joined the Task Force as Bridge Management members. Amjad Waheed (Ohio DOT) has joined as a Bridge Rating/Bridge Design member. Finally, Bruce Johnson (Oregon DOT) has joined the Task Force as our new Special Committee on Joint Development liaison. To make room for these talented individuals, we unfortunately need to say goodbye to others, namely Scot Becker (Wisconsin DOT) and Dan Buhler (Manitoba ITD). We want to thank all these individuals and their agencies for donating their time to the AASHTOWare® Bridge products!

I would like to continue to encourage users to take advantage of the many opportunities to be more involved in the development of the AASHTOWare® Bridge products. As always, the most

important involvement is meeting stakeholder and customer needs, including attending the products' User Group Training meetings, which are announced on page 8 of 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 (TAGs), which allow users to test the products and offer input on the development of the products, as well as other technical issues that often aid the Task Force. Please consider donating some time that ultimately helps the product, as well as your agency's use of the product. Feel free to contact any member of the Task Force to see how you can participate!

As always, thank you for your continued support of the AASHTOWare® Bridge products and for the feedback you provide the Task Force!

-Tim Armbrecht, AASHTOWare Bridge Task Force Chairman

AASHTOWare® – Renamed. Redesigned. Rebranded.

Over the past year, AASHTO staff, the Special Committee on Joint Development, and the BRIDGEWare® Task Force has undertaken a major marketing initiative to increase awareness of the AASHTOWare® brand within and beyond the transportation sector. Many users familiar with AASHTOWare® are well-acquainted with the organization, but not everyone understands the full product scope of the AASHTOWare® product set. More importantly, we have found that individuals introduced to AASHTOWare® for the first time were lost in the mysterious maze of unrelated and unique names. The variety of logo designs for each software product further obscured the clarity of the full suite. The new naming convention favors plain English, in large measure because the number of products is so extensive that finding consistent, comprehensive names for each proved impossible.

While we are retaining AASHTOWare® as the master brand for the suite, we are pleased to announce the following new product brand identities:

- Trns•port has become AASHTOWare® Project
- Turbo Relocation is now AASHTOWare® Right of Way Relocation
- BRIDGEWare® has hardly changed at all to become AASHTOWare® Bridge
- DARWin-ME is now AASHTOWare® Pavement ME Design
- And SafetyAnalyst is now simply AASHTOWare® Safety Analysis

The new naming convention also allows each software product brand to grow without losing sight of the AASHTOWare® master brand.

COMING SOON

Software is already being changed to reflect the new brands. Documentation is in the works. We hope our user community supports the new branding structure as soon as they can. We expect the transition to be complete in eighteen months.

MASTER BRAND



SOFTWARE PRODUCTS



SOFTWARE BRAND



BrD/BrR Top User Group Balloted Enhancements

Ranking	Incident	Description	Product	Status
1	11054	Prestressed Design will ask for basic geometric and material parameters, iterate depth and strand pattern.	BrD	Deferred to future WP
2	10745	Provide Fatigue and Service limit state stress range reports.	BrD	Included in 6.4 Work Plan
3	10776	LRFR ratings - adjacent vehicles, a train of legal vehicles and other vehicles in adjacent lanes are required for spans over 200 ft.	BrR	Deferred to future WP
4	3267	Add the ability to copy strand patterns between spans.	Both	Included in 6.4 Work Plan
5	10240	Shear stud wizard enhancement for splice plate gaps	BrD	Included in 6.4 Work Plan
6	10279	Add user selection for beam type for distribution factors for prestress bulb - tee deck beams.	Both	Included in 6.4 Work Plan
7	9932	The number of decimal points shown for an input should either be increased by default.	Both	Deferred to future WP
8	10876	Enhancement request for System Factors	Both	Included in 6.4 Work Plan
9	10339	LRFD/LRFR live load distribution factors for Stringer, Floor Beam, Girder Systems.	Both	Deferred to future WP
10	8179	GFS/TFS - Provide a way to link a stringer member to another identical stringer member.	Both	Deferred to future WP
11	5987	Copy Columns	Both	Included in 6.4 Work Plan
12	8180	GFS/TFS - Provide a way to link a Floorbeam Member to another identical Floorbeam.	Both	Deferred to future WP
13	10945	Enhancement request for Condition Factors	Both	Included in 6.4 Work Plan

Strategic Direction Set

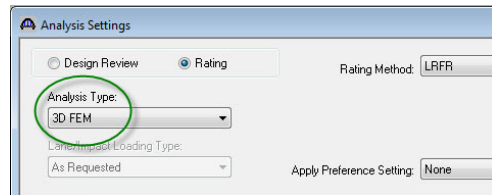
Each year, the Task Force reviews and defines strategic directions for the AASHTOWare® Bridge product suite. The long term plan for these products includes:

1. Supporting 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

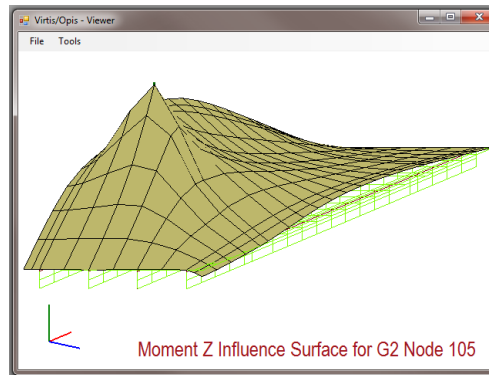
Planning that is underway for both the near and long term strives to meet these goals.

3D Analysis

A new feature in the 6.4 release is the ability to perform three-dimensional (3D) analysis of multi-girder superstructures (Girder System Superstructure Definitions). Development for this enhancement was preceded by 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.



For Girder System Superstructure Definitions comprised of a complete description of the superstructure the 3D analysis can be performed by selecting "3D FEM" as the Analysis Type in the Analysis Settings dialog. There is also a new tab 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. Included with this enhancement is a utility for graphically viewing finite element models and analysis results.

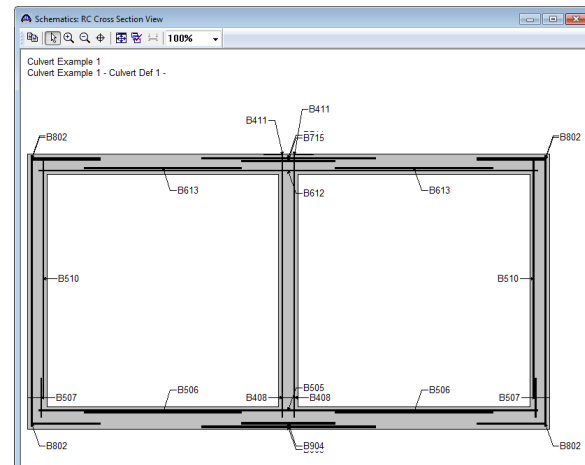
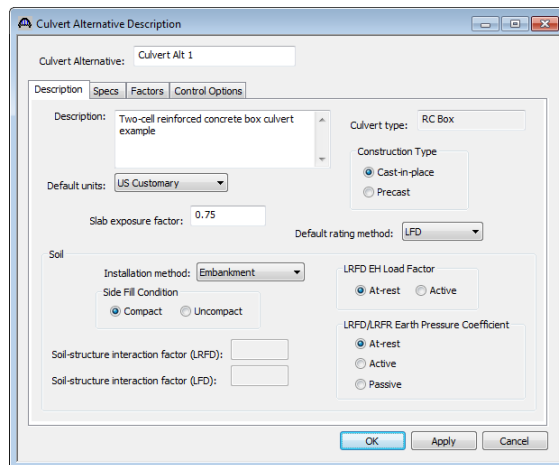
AASHTO Culvert Engine

The upcoming 6.4 release of AASHTOWare® Bridge Rating™ and AASHTOWare® Bridge Design™ will include support of culvert structures by the new AASHTO Culvert Engine. This new engine is capable of performing both rating (LFR and LRFR) and design (LRFD) of reinforced concrete box culverts.

The AASHTO Culvert Engine is based on the WisDOT LRFD Box Culvert program. During the review process in the planning phase of the development, the Task Force and TAG identified and included numerous and significant enhancements (see below) to the modeling and analytical capabilities of the engine.

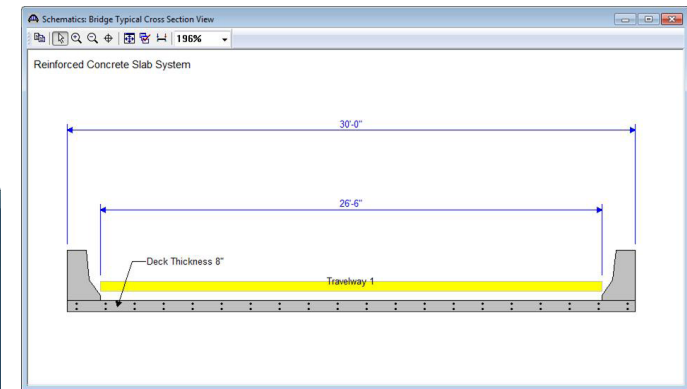
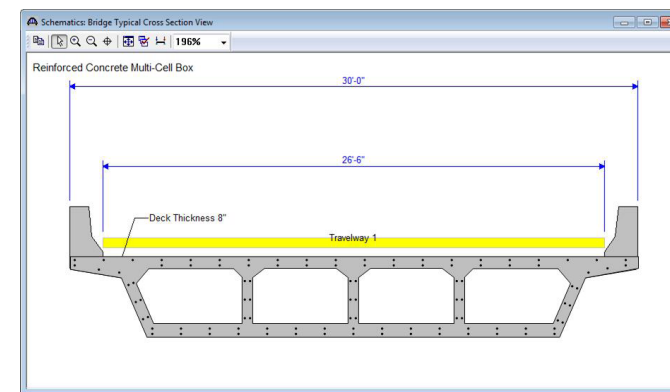
- Implement LFR capability
- Use up-to-date specification versions
- Apply Permit vehicle to Strength II limit state
- Allow lateral soil pressure applied to left and/or right side of culvert
- Option to ignore shear
- Option to exclude bottom slab in specification checking
- Allow sloped fill depth
- Provide selection of different bar types
- Allow fully developed reinforcement at start and end
- Allow moment release at bottom of wall
- Allow different dimensions of top and bottom haunches
- Allow design without haunches
- Option to enter user-defined points of interest

When released, the new culvert capability will allow agencies to enter culvert descriptions into the AASHTOWare® Bridge database, analyze and review detailed specification check results. Look forward to this anticipated feature being added to AASHTOWare® Bridge in the summer.



Concrete Superstructures

Work is beginning on implementing several new types of concrete superstructures in Bridge Rating and Bridge Design. Version 6.5 will contain the ability to describe and analyze reinforced concrete slab systems, reinforced concrete multi-cell boxes and post-tensioned multi-cell boxes.



For reinforced concrete slab systems, users will be able to define the entire out-out width of a reinforced concrete slab superstructure instead of just the girderline strip that can currently be analyzed. The entire bridge cross section will also be defined for multi-cell boxes. Schedule based reinforcement will be implemented for these new superstructure types. The structural analysis of these superstructures will consist of a line

girder analysis. LRFD design review and LRFR rating will be implemented for all of the new superstructure types and LFR rating will also be implemented for the reinforced concrete slab systems.

What is Pontis 5.1.2?

Pontis 5.1.2 is AASHTO's bridge inspection software tool, providing a means for agencies to inventory and inspect their structures following AASHTO's Guide Manual for Bridge Element Inspection, and meet National Bridge Inspection standards. The software expands upon the existing Pontis software architecture and incorporates and builds off of features included in previous versions. In addition to providing agencies with the tool to complete their National Bridge Element (NBE) inspections, this new version lays a foundation for the future 5.2 release. The software has been carefully developed under the guidance of State DOT representatives.



Pontis 5.1.2 improves the ability to collect inspection data including the new National Bridge Elements in both a standalone and web-based enterprise mode.

What can Pontis 5.1.2 do for me?

Agencies operating Pontis 5.1.2 can implement the AASHTO NBE and Bridge Management Elements (BME) and access new features and capabilities. This software's development is based on advancements in state-of-the-art technology, current agency best practices, and extensive user feedback. Pontis 5.1.2 provides the following:

- **Fully incorporates AASHTO's new National Bridge Elements**
In 2011, AASHTO adopted the Guide Manual for Bridge Element Inspection, which supports a new inspection approach built off of the previous AASHTO Guide for Commonly Recognized (CoRe) Structural Elements. Pontis 5.1.2 incorporates these new elements, allowing agencies to create a detailed NBE/BME based bridge inventory and inspection program. Also, agencies can migrate their existing CoRe elements with an easy-to-use, supplemental AASHTO Migration tool. The NBEs and BMEs provide an improved method for recording bridge condition information and will be the foundation for improved bridge management tools in Pontis 5.2 (described in more detail in a separate White Paper).
- **Easier data transfer capability**
Pontis 5.1.2 supports bridge inspection data transfers and imports. In addition to the standard Pontis Data Interface (PDI) text files, Pontis 5.1.2 now supports XML import and output of information. This new capability provides easier and more efficient integration of Pontis with other programs and transfer of data between field computers.
- **Speed and Usability Enhancements**
Numerous user-requested enhancements are provided in Pontis 5.1.2. Changes to improve the speed and performance of the software and a number of minor features and enhancements were made based on user feedback. These enhancements include better picture handling via a new multiple photo uploader, integration of element manual pages, and new layouts, fonts, and icons to improve element identification and data entry.

Prepares Inspection Data for Use by Pontis 5.2

Pontis 5.1.2 improves the utility of agencies' bridge inspection data and lays the groundwork for the next generation of AASHTO's Bridge Management Software requirements by ensuring data is in the correct format. Pontis 5.1.2 prepares agencies' inventory data for the multi-objective, risk assessment, trade-off analysis, and deterioration modeling tools in 5.2.

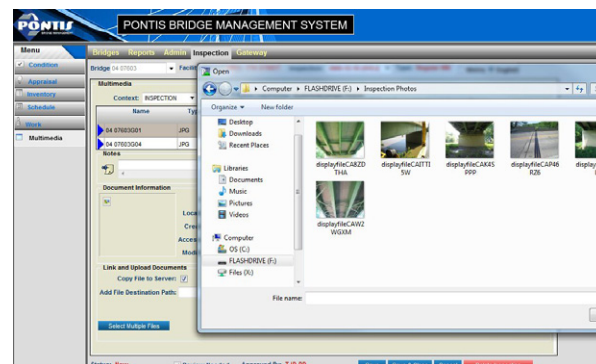
What are the Advantages of Pontis 5.1.2?

Pontis is fully supported and maintained by AASHTO. Its development and features are consistent with AASHTO guidelines and meet FHWA regulatory requirements. As with other AASHTOWare® products, Pontis is administered and overseen by a task force of State DOT representatives. Pontis 5.1.2 has undergone numerous enhancements that will provide distinct advantages to the users. Advantages of Pontis 5.1.2 include:

- Better representation of bridge conditions with National Bridge Elements
- Agency flexibility to meet specific needs with support for agency defined Bridge Management Elements
- Inclusion of new Protective Systems and Defect Flags that may be attached to individual elements
- Improved installation and updated user manuals
- Speed and performance improvements
- Improved customer support for technical and administrative questions



Pontis fully incorporates AASHTO's National Bridge Elements including Protective Systems and Defect Flags (above). New features such as the multiple photo uploader have been added (below).



How can I Implement Pontis 5.1.2?

Current Pontis licensees can request Pontis 5.1.2 via the Pontis Support Desk at the Pontis website shown below. New entities interested in obtaining or evaluating Pontis 5.1.2 can request a copy from AASHTO. For agencies currently running an earlier version of Pontis and wishing to upgrade, the following steps should be taken in regards to the software:

- Use the AASHTO migration tool to convert existing CoRe element data into NBE/BME data.
- Ensure that your agency database is in SQL or Oracle (Sybase no longer supported).
- Convert any legacy InfoMaker reports into Crystal Reports format.

AASHTO offers full support during the conversion process. Additionally, new and existing licensees that have advanced customization, on-site training, data migration services, and integration of Pontis with other agency systems can purchase and use AASHTO service units with the designated Pontis developer and support provider.

What is the Future Direction of Pontis?

Pontis is currently undergoing a major set of enhancements. The foundation and research for this particular effort has been established over the past several years. Pontis 5.1.2 represents the first phase of a vastly improved Pontis software suite as a prelude to Pontis 5.2 development efforts. This software will soon be referred to as the AASHTOWare® Bridge Management product. For the latest information and training videos please refer to the Pontis website at: <http://pontis.inspecttech.com/>

What is Pontis 5.2?

Pontis is a powerful Bridge Management Software tool that is used by over 44 State, Federal, local, and international agencies. The software has been developed over the past 20 years through extensive research and users' feedback. It originally started as an FHWA project to meet a critical national need, then was transferred to AASHTO to be part of AASHTOWare®'s cooperative software development efforts. Agencies utilize Pontis for a range of bridge asset needs: bridge inventory and inspection data storage, deterioration modeling, project planning, and network budget and performance analysis.



What can Pontis do for me?

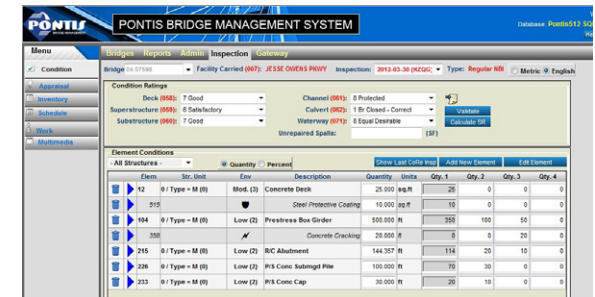
The next generation of Pontis, version 5.2 will be a significant advance in bridge management analytical software. Based on extensive user feedback, advancements in state of the art technology, and current agency best practices, Pontis 5.2 will:

- **Fully incorporate AASHTO's new National Bridge Elements**
In 2010 AASHTO adopted the Guide Manual for Bridge Element Inspection, which supports a new improved inspection approach building off of the previous Commonly Recognized Elements (CoRe). Pontis 5.2 will fully incorporate all management activities using this new AASHTO guide.
- **Easier to use and equipped with more features**
The user interface for Pontis will be significantly improved to allow for a simplified approach to managing the vast amount of data and utilizing new features present in the software. The simplified user interface will better support the wide range of users throughout an agency and their unique needs.
- **Better align with State DOT business practices**
Redesigned project programming module will incorporate user feedback and current agency best practices to allow for a more flexible approach for planning, organizing, and grouping needs at bridge, project, or program level.

What are the Advantages of Pontis 5.2?

Pontis is fully supported and maintained by AASHTO. Its development and features are coordinated with AASHTO guidelines and meets FHWA regulatory requirements. As with other AASHTOWare® products it is administered and overseen by a task force of State DOT representatives. Advantages include:

- Proven Element Level Approach
- Full support for Multi-Objective Optimization Analysis
- Advanced Deterioration Models
- Project and Needs Programming to support State DOT's unique business practices



Pontis fully incorporates AASHTO's National Bridge Elements including Protective Systems and Defect Flags.

What are the Main Features of Pontis 5.2?

Pontis 5.2 builds off of the successes and lessons learned in earlier versions to dramatically improve the software's features and usability for agencies. Some of the many new features that will be supported are:

- **Full Incorporation of Risks:** Agencies will be able to select from risks such as seismic, scour, and agency specific risks to develop risk matrices and related risk mitigation solutions and prioritize the risks against competing needs.
- **Enhanced Deterioration Models:** The use of new National Bridge Elements will enable significant improvements to current deterioration models in Pontis. A new approach based on realistic deterioration models will be incorporated. The development of the deterioration models will be simplified and easier to understand and adapt.
- **Life Cycle Cost Analysis:** LCCA is a powerful project evaluation tool that will be expanded and presented in an easy to understand manner. The new LCCA tools will allow the agency to fully understand the total costs associated with project level decisions they make. The project planning tool will allow agency planners to evaluate various project options on the fly with clear presentation of the life cycle costs associated with each alternative.
- **Project Planning:** The new project planning modules will allow for major enhancements and greater flexibility in planning projects. The software will allow for easy identification of bridge, project, or program needs and the calculation of associated relative benefits. The approach can support middle-out, top-down, or bottom-up models for creation of programs within an agency. Pontis 5.2 will have the ability to do corridor and group based planning and better incorporate maintenance and preservation recommendations.
- **Web Enabled:** The software will be fully web-enabled for secure anytime/most anywhere access.
- **Enhanced Reporting and Data Exchange:** Numerous features within the software will be made simpler to use and offer technology upgrades. This includes but is not limited to revamped reporting modules as well as the new ability to transfer data in XML format.

What is the Plan for Release?

The BRIDGEWare® Task Force has already conducted significant foundation work in the research and planning for Pontis 5.2. The software modules to incorporate the new AASHTO National Bridge Elements for bridge management will be released in phases. Each phase will build upon previous work and modules by adding new features. A brief summary of the anticipated phases is as follows:

- Phase I: Risk Assessments, integrated utility functions, and Network Corridors
- Phase II: Implementation of significantly improved deterioration models and Multi-Objective Analysis
- Phase III: Full completion including integrated project planning and all administrative features