

Major Product Releases! New Features!

Releases for all BRIDGEware® products are planned soon! Pontis® 5.1 will be released this summer and Virtsis®/Opis® 6.1 will be released this fall, both with some exciting new features. Here are some of the things to look out for:



- ◇ First Web-based Version
 - ◇ New Look and Feel
 - ◇ Navigation and Field Level Security
 - ◇ Enhanced Reporting
 - ◇ Seamless Installation
- ◇ LRFR Analysis Engine for P/S and Reinforced Concrete
 - ◇ Truss Floorbeam LFD Analysis
 - ◇ 1979 AASHTO P/S Shear Code - LFD Rating
 - ◇ Steel Girder Fishbelly Web Profile
 - ◇ User-owned Truck Library
 - ◇ Superstructure Wizard
- ◇ LRFD P/S Superstructure Analysis and Specification Checking
 - ◇ Addition of LRFD Refined and Approximate P/S Loss Methods
 - ◇ Allow Pre-2005 Interim P/S Loss Calculations
 - ◇ Diaphragm and Shear Stirrup Wizards
 - ◇ Live Load Distribution Factor Wizard for P/S and R/C Superstructures

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

Pontis® 5.1 (July 2009)

Pontis® 5.1 is the first release of a web-based version of the software. Some of the new and enhanced features include:

- ◇ **First Web-based Version**
Pontis® 5.1 can be installed to access an agency database and viewed from Microsoft Internet Explorer on any computer.



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Message from the Chair BRIDGEware® Task Force Management Changes

It has been an incredibly busy time for the BRIDGEware® Task Force and Contractor with the upcoming releases of Pontis® 5.1 and Virtsis®/Opis® 6.1 and the ongoing design work for Pontis® 5.2. The amount of work that has been performed by volunteers from various transportation agencies is almost incomprehensible. The strength of AASHTOWare® is truly found in its members – thank you!

Thanks are especially due to the volunteers who have spent countless hours performing the acceptance testing of both Pontis® 5.1 and Virtsis®/Opis® 6.1. Without you, cooperative software development does not work. I cannot thank you enough for your effort and perseverance.

I wish it were not so, but it is true that “all good things must come to an end”. Todd Thompson has ended his BRIDGEware® Task Force tenure as of June 30, 2009. Todd has been very active with Pontis®, Virtsis® and Opis® for many years – to list everything he has done while on the Task Force would fill this entire newsletter. Let me simply say that all three of the BRIDGEware® products and the BRIDGEware® community as a whole are better because of his involvement.

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Pontis® 5.1 – continued from page 1

◇ New Look and Feel

The inspection module has been rearranged to make it easier for the user to view and access the data. Grouping of information on the screens is improved, and NBI items are color coded for easy identification. The bridge list has been improved, and a bridge preview has been added to allow quick review of bridge photos and a concise and readily available summary of information for Condition, Load Rating, Inventory, Schedule, etc.

◇ Navigation and Field Level Security

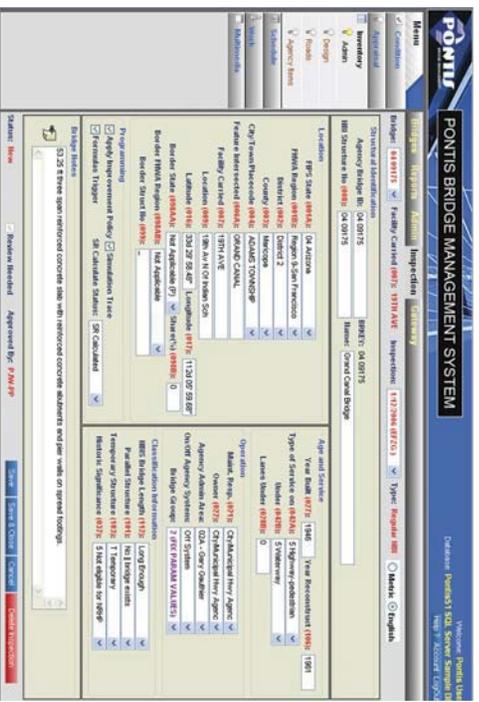
System administrators can quickly and easily modify user configurations for displaying the forms and text.

◇ Enhanced Reporting

Pontis® 5.1 has been enhanced to use Crystal Reports as the reporting tool.

◇ Seamless Installation

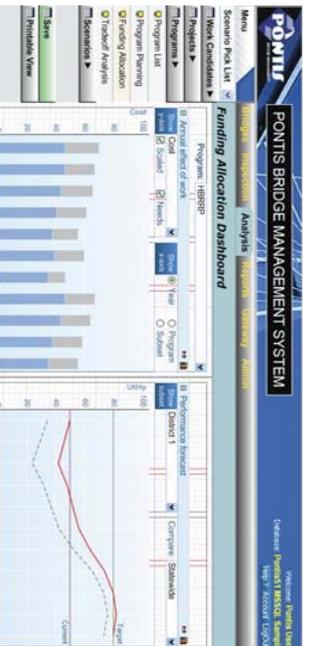
As a web-based system, the newest version of Pontis® can be deployed and updated seamlessly. Pontis® provides an alternate installation for agencies that prefer a desktop application.



Pontis® Future Releases

AASHTO's BRIDGEWARE® Task Force is nearing completion of the design documents for release 5.2 of Pontis®, its bridge management system software product. Pontis® 5.2 is a complete overhaul of the system which was first launched in 1989.

"When Pontis® was first designed, bridge management was brand new, and everyone was learning how to plan work using forecasting models for determining both proactive maintenance and improvement projects. We've learned a lot over the years, what works and what doesn't, and we are developing a more realistic product," said Dennis O'Shea, Vice Chair of the BRIDGEWARE® Task Force, who leads the Pontis® effort.



Pontis® 5.2 will maintain its flagship element inspection process, which was converted to an internet-based system in the 2009 release of Pontis® 5.1. It will also preserve many of the data closely related to the inspection process, such as inspector work candidates and Markovian deterioration models.

A goal of the new system is to ease the upgrade process while providing a better fit for today's bridge management paradigm. The workflow of the system has been revamped to improve the distribution of information to the right people at the right time.

Among the innovations in the new release will be:

- Breaking out project development as a distinct activity between maintenance planning and programming; giving much stronger support for designing preventive maintenance projects covering large groups of bridges.
- Making the development and use of the deterioration and cost models easier and more accurate, with less data entry and a better link to systems many agencies already have, such as maintenance management.
- Incorporating risk management to help agencies perform routine risk assessments that feed into project planning and programming.
- More powerful and flexible features to define bridge activities and tailor them to specific agencies, including more accurate improvement and replacement actions for bridges and culverts.
- Better use of graphics to help communicate the costs and benefits of a project.

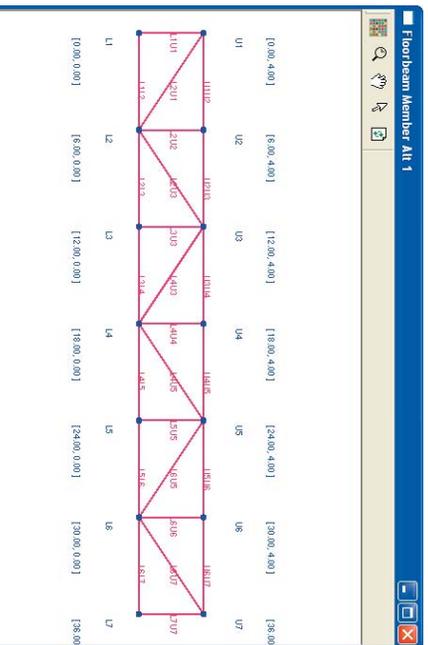
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Virtis® 6.1 (Fall 2009)

Virtis® 6.1 is currently in the beta testing phase and is scheduled for release this fall. This release includes the following enhancements:

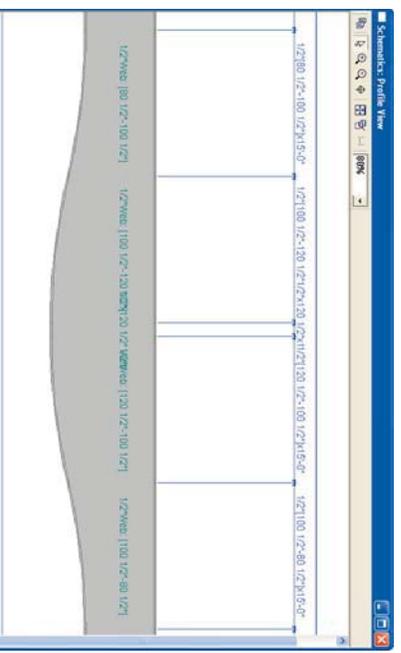
- ◇ **Virtis® LFRF Analysis Engine for P/S and Reinforced Concrete**
The ability to rate prestressed and reinforced concrete superstructures according to the LFRF specifications has been added to the Opis® LRFD superstructure analysis engine. This enhancement provides another LFRF analysis module in addition to BRASS for load rating prestressed and reinforced concrete superstructures.

- ◇ **Virtis® Truss Floorbeam LFD Analysis**
This enhancement adds the ability to analyze floorbeams consisting of truss members in a floor system bridge analysis. Previously, Virtis® only allowed for creating steel plate-girder, rolled, and built-up floorbeams for a floor-system structure definition. This enhancement allows a user to create truss floorbeams so they can be analyzed with LFD. An alternative method can not be specified for doing shear ratings. Thanks to Alabama DOT and New York DOT for providing funding and technical guidance for this enhancement.



- ◇ **1979 AASHTO P/S Shear Code - LFD Rating**
This enhancement allows the user to specify that the 1979 AASHTO P/S Shear Code should be used in the LFD rating.

- ◇ **Steel Girder Fishbelly Web Profile**
Users will be able to define a fishbelly profile (connected reverse curve depth variation) on steel plate girders. The curves can be reverse circular or reverse parabolic but both curves must be the same type (i.e. both circular or both parabolic).



- ◇ **User-owned Truck Library**
A user-owned vehicle library and additional access privileges were added. This enhancement allows users to describe their own vehicles in addition to the standard vehicles delivered with the system and the agency vehicles that can be added by the agency.

- ◇ **Superstructure Wizard**
This enhancement simplifies the existing Superstructure window by removing the requirement for entering span lengths. A wizard was added to assist users in creating Superstructures and Superstructure Alternatives and defining the relationships between superstructures, superstructure definitions and substructures (Opis®).

Virtis® Future Releases

The following new features are planned for upcoming releases:

- ◇ Analysis enhancements to trusses acting a main longitudinal members, and floorbeams
- ◇ Addition of new P/S concrete beam shapes to the library and to the AASHTO LRFD/LFRF engines
- ◇ Addition of a new R/C slab system structure definition
- ◇ Enhancements to add more structure types for LFRF
- ◇ Updates for AASHTO 2008 interim to the LRFD Specifications
- ◇ Add Crystal Reports to the report tool
- ◇ Enhanced export/import for system data

Opis® 6.1 (Fall 2009)

Opis® 6.1 is currently in the beta testing phase and is scheduled for release this fall. This release includes the following enhancements:

◇ LRFD P/S Superstructure Analysis and Specification Checking

The upcoming release of Opis® will include support for prestressed concrete superstructures by the AASHTO LRFD analysis module. The prestressed concrete module consists of the following major components:

- Export of Opis® data to create finite element models for analysis
- Export of dead loads to the finite element model
- Dead load analysis
- Computation of LRFD live load distribution factors
- Longitudinal live load analysis
- P/S loss calculations
- Capacities determined using the *AASHTO LRFD Bridge Design Specifications*, 4th Edition

Spec Check Detail for S.7.2 Flexural Resistance (Prestressed Concrete)

Header: AASHTO-PCI BR-72	Girder E' (ksi) = 5.50 (ksi)
Girder E' (C) = 6.50 (ksi)	Girder E' (C) = 4.00 (ksi)
Slab E' (C) = 4.00 (ksi)	
Effective Slab Thickness =	108.00 (in)
Rectangular Slab Thickness =	7.50 (in)
Haunch Thickness =	42.00 (in)
Haunch Thickness =	0.50 (in)
Beam Height =	72.00 (in)

AS = 5.73 (ksi²)
OS = 5.68 (ksi)

State	Load	K ₁ -E	M ₁	K ₂ -E	M ₂	R ₁ = M ₁ / M ₂	R ₂ = M ₂ / M ₁	MC/M ₁
STR-I	1, Dead	10089.20	4362.96	10089.20	2.33	1.15		1.15
	1, Desig	10089.20	4362.96	10089.20	1.31	2.33		2.33
STR-II	1, Dead	10089.20	4362.96	10089.20	2.33	1.87		1.87
	1, Desig	10089.20	4362.96	10089.20	2.97	2.97		2.97

◇ Allow LRFD Refined and Approximate P/S Loss Methods / Pre-2005 Interim P/S Loss Calculations

This enhancement added two options to Opis®. One option is to allow the user to select "AASHTO Refined" or "AASHTO Approximate" for the P/S loss computations. The other option allows the users to select the pre-2005 AASHTO refined method.

◇ **Diaphragm and Shear Stirrup Wizards**

The Diaphragm Wizard allows the user the option of inputting multiple diaphragm groups of equal spacing along a girder. The Shear Stirrup Wizard generates stirrups for prestressed concrete beams and reinforced concrete beams. The wizard allows for the input of multiple groups of stirrups with constant spacing along the length of a girder.

Diaphragm Wizard

Span	Length (ft)	Number of Equal Spaces
1	80.00	4
2	120.00	6
3	120.00	6
4	80.00	4

Diaphragm Spacing

- Enter number of equal spaces per span
- Enter equal spacing per span

Support diaphragm load: kip

Interior diaphragm load: kip

< Back Finish Cancel Help

◇ Live Load Distribution Factor Wizard

This enhancement added a new "Compute" button on the distribution factor dialog box for P/S and R/C superstructures.

Live Load Distribution Factor Wizard

Generating Stage 3 Model Span superstructure finite element model...
Computing composite bridge spans...
Creating finite element analysis...
Featuring finite element analysis...
FEA - Building model...
FEA - Creating nodes...
FEA - Creating elements...
FEA - Checking constraints...
FEA - Adding load cases...
Verifying finite element model...
Successful finite element analysis...
Computing LRFD live load distribution factors...
Finished computing LRFD live load distribution factors...
Analysis completed!

Support 2

Start distance: 130.00 (ft)
End distance: 130.00 (ft)

One Design Lane Loaded: MFR = 1.0/6 * 1.20 = 0.200 Lanes
or = 1.0/Number Beams * MFR = 4/6 * 0.65 = 0.433 Lanes

Two or More Design Lanes Loaded: MFR = 4/6 * 0.65 = 0.433 Lanes
or = Number Lanes/Number Beams * MFR = 1.0/6 * 1.20 = 0.200 Lanes

Compute deflection distribution factors
Girder: 2.5, 2.8, 2.3

Span	Lanes	1 Lane MFR	2 Lane MFR	3 Lane MFR	5 Lane MFR
1	4	1.20	0.85	0.65	0.65
2	6	1.20	0.85	0.65	0.65
3	6	1.20	0.85	0.65	0.65
4	4	1.20	0.85	0.65	0.65

One Design Lane Loaded: MFR = 1.0/6 * 1.20 = 0.200 Lanes
or = 1.0/Number Beams * MFR = 4/6 * 0.65 = 0.433 Lanes

Two or More Design Lanes Loaded: MFR = 4/6 * 0.65 = 0.433 Lanes
or = Number Lanes/Number Beams * MFR = 1.0/6 * 1.20 = 0.200 Lanes

Opis® Future Releases

The following new features are planned for upcoming releases:

- ◇ **Specification Checking for Steel Multi-girder Superstructure**
The new AASHTO LRFD specification checking engine will be enhanced to perform specification checking for steel multi-girder superstructures. The export module will be modified to compute dead load, live load and LRFD distribution factors for steel beams. The module will rely heavily on existing modules written for the substructure module and the non-standard gage (NSG) analysis module. The cross-section types to be supported are I-shapes comprised of rolled beams and welded plate girders.
- ◇ **LRFR Enhancements**
The new release will include LRFR capabilities for multi-girder steel superstructures in the spec-check module.
- ◇ **Addition of LRFR Rating of Piers**
This will include the cap, columns, footings and drilled shafts.

Virtis®/Opis® Strategic Plan

Product Functionality:

- Improve Opis® design capabilities to perform automated design functions for steel, reinforced concrete and prestressed concrete superstructures by providing more user-friendly design features.
- Continue the implementation of alternate analysis, design and rating engines.
- Provide user-requested enhancements to improve the existing usability of the product.

Technology:

- Joint development of an implementation plan with Pontis® for determining the best approach for migration of the BRIDGEWare® products to a new technical architecture.
- Increased use of the internet for data exchange, deployment of updates and dispatching of computational jobs.
- Improved management tools for the integrated database.

Project Websites

Project websites contain additional information about BRIDGEWare® 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.

<http://pontis.bakerprojects.com/>



<http://aashto.bakerprojects.com/Virtis/>



Pontis® Future Releases - continued from page 2

Tying this all together is a powerful new framework to combine multiple objectives for setting priorities and allocating money. The Task Force realizes that while it is important to minimize cost, there are other equally important reasons to do bridge maintenance. Public expectations regarding bridge condition, risk and mobility

must also be satisfied. Pontis® 5.2 is being designed to consider all of these objectives. "We want to incorporate network level objectives and give users realistic and achievable results," said Task Force member Scott Becker of the Wisconsin Department of Transportation.

Message from the Chair

BRIDGEwAre® Task Force Management Changes - continued from page 1

With every ending, there is also a new beginning. Beckie Curtis began her term as the newest Task Force member starting July 1, 2009 and will serve as a Virtis® representative. Beckie presently serves as the Load Rating Engineer for the Michigan DOT. She brings a wealth of experience with load rating in general and with LRFRR issues in particular. Please join me in welcoming Beckie to the Task Force.

Beginning on July 1, 2009, Dennis O'Shea assumed the position of BRIDGEwAre® Task Force Chair. Dennis has been steady, calm and unflappable in his prior role as Vice Chair and an enormous help to me. He is thoughtful, insightful and able to simultaneously understand both the big and little pictures. BRIDGEwAre® could not be in better hands.

It has been an honor to hold the position of BRIDGEwAre® Chair, and it has been my privilege to work so closely with a group whose members exemplify expertise, dedication and professionalism. The many personal and professional relationships that I have made through BRIDGEwAre® have been and continue to be a personal blessing. Thank you for allowing me to serve in that capacity.

- George H. Conner, AASHTO BRIDGEwAre® Chair

Strategic Direction Set

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

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

Upcoming BRIDGEwAre® User Group Meetings

VOBUG 2009 – Virtis®/Opis® User Group Conference

Location: Loew's Hotel
Denver, Colorado
Dates: August 4-5, 2009
Contact: Darren Kemna (Missouri DOT)
darren.kemna@modot.mo.gov
Web Site: <http://vobug.org/>

PUG 2009 – Pontis® User Group Conference

Location: Newport Beach Marriott Hotel & Spa
Newport Beach, California
Dates: September 23-24, 2009
Contact: James Fu (Hawaii DOT)
james.fu@hawaii.gov
Web Site: <http://pontisusergroup.org/>

Hope to see you there!

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AASHTO BRIDGEwAre® Task Force and Management Team

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Tim Armbrrecht	Virtis®/Opis® Task Force
George Colgrove	Virtis®/Opis® Task Force
Beckie Curtis	Virtis®/Opis® Task Force
Tom Saad	FHWA Liaison - Virtis®/Opis®
Scott Becker	Pontis® Task Force
Paul Jensen	Pontis® Task Force
Mike Johnson	Pontis® Task Force
Wade Casey	FHWA Liaison - Pontis®
Dan Buhler	SCOJD Liaison - BRIDGEwAre®
Doug Horton	T&AA Liaison - BRIDGEwAre®