



AASHTOWare Bridge Management Update

Todd Thompson, PE – SD DOT
Chair, AASHTOWare Bridge Task Force
Presented to the BTWG - SCOM
Des Moines, Iowa
July 22, 2015



AASHTOWare Basics



- Development started in the early 1990s under FHWA guidance
- Result of millions invested by States and FHWA
- Cooperative effort of over 40 state/local/federal transportation departments
- Licensed by US DOTs
- Software “owned” by members of AASHTO
- Supports AASHTO specifications, AASHTO element level inspection and management

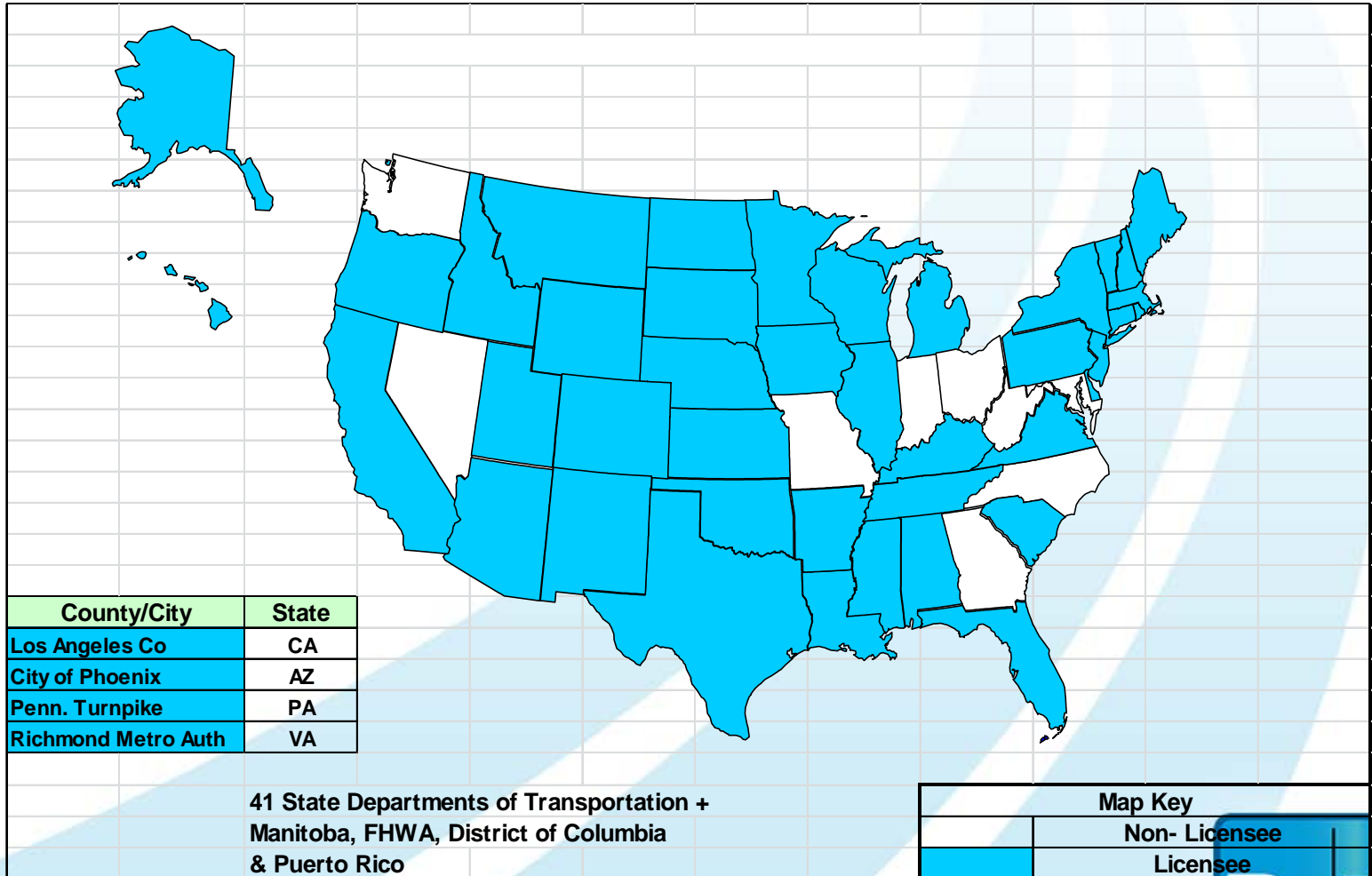


AASHTOWare Bridge Management

- Utilized by 44 DOTs plus local and international agencies
- BrM/Pontis 5.2 is funded by a voluntary participation from more than 20 state DOTs, under DOT guidance and expertise
- Tools that are easier to use and understand:
 - Planning
 - Deterioration
 - Risk
 - Multi-objective analysis
 - Lifecycle costs
 - Project models
 - Dashboards
 - Corridor planning



FY2015 Licensees



AASHTOWare Bridge Task Force

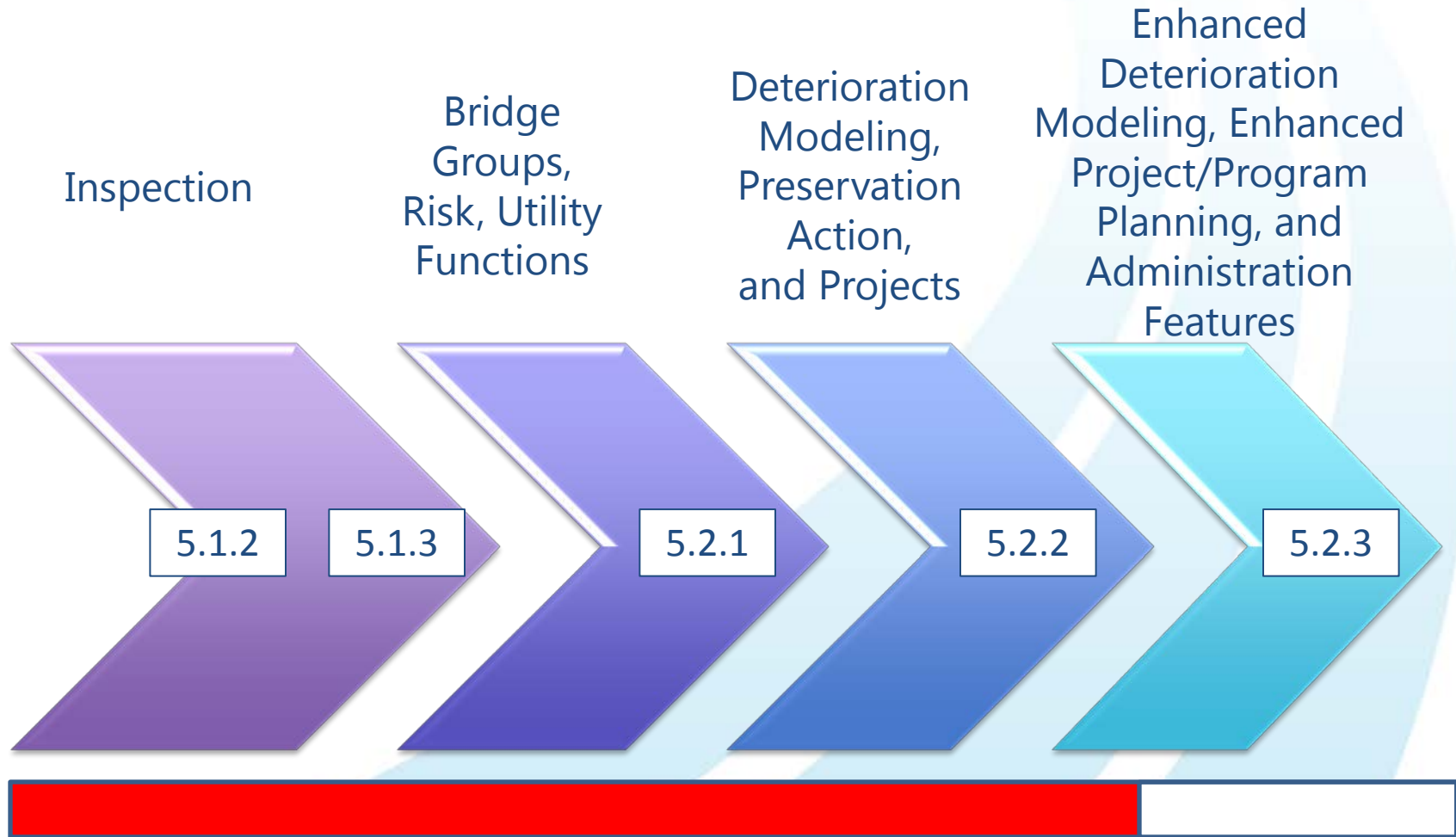
Chair	Todd Thompson	South Dakota
Vice Chair	Eric Christie	Alabama
Member – BrM	Bruce Novakovich	Oregon
Member – BrM	<i>Thomas Martin (new)</i>	Minnesota
Member – BrM	Mark Faulhaber	Kentucky
Member – BrM	<i>Beckie Curtis (new)</i>	Michigan
FHWA Liaison – BrM	<i>Derek Constable (new)</i>	FHWA
Member – BrR	<i>Joshua Dietsche (new)</i>	Wisconsin
Member – BrD	Jeff Olsen	Montana
Member – BrD	Dean Teal	Kansas
Member – BrR	Amjad Waheed	Ohio
FHWA Liaison – BrDR	Tom Saad	FHWA

Bridge Management 5.2 Stages

- Development on 5.2 is rapidly moving forward with coordinated efforts between the Task Force, TRT, and Contractor
- Phased releases
 - Version 5.1.2/5.1.3 (Mar 2012 / May 2013)
 - New inspection and inventory functionality, integration with mapping
 - Version 5.2.1 (Feb 2014)
 - Core program framework, risk assessments, integrated utility functions, network corridors
 - Version 5.2.2 (Planned Summer-2015)
 - Implementation of new deterioration models and multi-objective analysis
 - Version 5.2.3 (Planned 2016)
 - Enhancements to Deterioration Modeling
 - Integrated project and program planning
 - All administrative features



Bridge Management 5.2 Stages



MAP-21

Upon final delivery of the AASHTOWare Bridge Management 5.x software, the software will fulfill all MAP-21 requirements:

1. Collecting, processing, storing, and updating inventory and condition data for all NHS bridge and pavement assets;
Currently supported for bridges.
2. Forecasting deterioration for all NHS bridge and pavement assets;
In BrM 5.2.3 we will have full implementation for all NHS bridges.
3. Determining the life-cycle benefit-cost analysis of alternative strategies (including a no action decision) for managing the condition of all NHS bridge and pavement assets;
Currently partially supported in BrM 5.2.2 for bridges, and will be fully supported in BrM 5.2.3.



MAP-21 (Cont'd)

4. Identifying short- and long-term budget needs for managing the condition of all NHS bridge and pavement assets;

Will be fully supported in BrM 5.2.3.

5. Determining the optimal strategies for identifying potential projects for managing pavements and bridges; and

Will be supported in BrM 5.2.3 for bridges.

6. Recommending programs and implementation schedules to manage the condition of all Interstate highway pavements, non-Interstate NHS highway pavements, and NHS bridge assets within policy and budget constraints.

Will be supported in BrM 5.2.3 for bridges.

Bridge Management 5.2.1

- Released in Spring 2014
- Key Features
 - Google Mapping Functions
 - Utility Functions
 - Needs Prioritization
 - Support For 2013 Element Inspection Manual
 - Cross-Browser Support
 - Key User Requests



Bridge Management 5.2.1 SP2

- Released in January 2015
- Key Features
 - FHWA Bridge Element submission and validation checks
 - Upgrade to the latest version of Crystal Reports (2013)
 - Enterprise version of SP2 has been upgraded to be 64 bit compatible
 - Specific TAG identified upgrades, enhancements, and stabilizations to the product



Bridge Management 5.2.1 SP3

- Released in April 2015
- Key Features
 - Addresses a page load issue encountered by users with a significant amount of element records tied to a single bridge.
 - Stores and displays ampersands ("&") as ampersands. This was not done previously in all prior versions of the software.



Bridge Management 5.2.2

- Currently in Beta
- Planned Release in Summer 2015
- Key Features
 - Deterioration Modeling including Weibull shaping parameters and protection factors for protective elements
 - Project Planning and Analysis Module
 - Conversion of the database from Metric to U.S. Customary units
 - New Inspection Process to better handle inspection dates and data for the NBI submittal
 - Application Programming Interface (API)
 - Database GUID conversion



Deterioration Modeling

- An agency is able to see the direct impact of performing work on an asset, and how it will impact the bridge currently, as well as years into the future
- Also able to see the *direct impact of performing work at a later point in time*. This aids an agency in the decision to determine when the optimized time would be to perform the selected work.

Deterioration Modeling and Multi Objective Analysis (Example)

Work Candidates Existing for the Selected Bridge

Work Candidate	Utility	Utility Change	Cost	Benefit / Cost (\$)	Cost (\$)/ Benefit	Action Year
Do Nothing	49.92					0
04 0759-NIMO-041614-27F109E126 - Approach Railing-Repair	50.5	0.58	\$2,000.00	.29	\$3	0

Page size: 10
 2 items in 1 pages

Effects on Each Utility Criterion

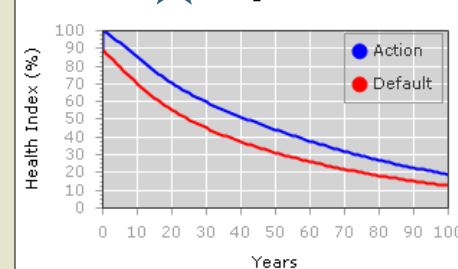
Category name	Before WC	After WC
Total Utility	49.92	50.5
Condition	58.32	59.73
Deck	5	5
Superstructure	81	81
Substructure	91	91
Scour	58	58
Element ratings	63.35	100
(12) Reinforced Concrete Deck	70.95	100
(331) Reinforced Concrete Bridge Railing	63.85	100
(510) Wearing Surfaces	55.26	100
Risk	53.81	53.81
Accident	53.81	53.81
Mobility	34.2	34.2
Percent of truck detoured.	34.2	34.2

Effects on Each Element

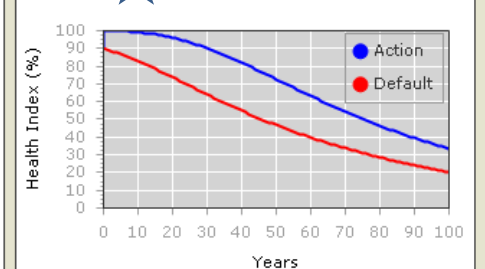
Element	Str. Unit	Env.	Condition	Effect
> (12) Re Concrete Deck	0	Low (2)	<div><div></div></div>	<div><div></div></div>
<input checked="" type="checkbox"/> (331) Re Conc Bridge Railing	0	Low (2)	<div><div></div></div>	<div><div></div></div>
(510) Wearing Surfaces	0		<div><div></div></div>	<div><div></div></div>

Deterioration

Bridge



Element: 331



Deterioration Modeling and Multi Objective Analysis (Example)

Work Candidates Existing for the Selected Bridge

Work Candidate	Utility	Utility Change	Cost	Benefit / Cost (\$k)	Cost (\$k) / Benefit	Action Year
Do Nothing	49.44					0
04 0759-NIMO-041614-27F109E126 - Approach Railing-Repair	50.5	1.06	\$2,000.00	.53	\$2	20

Page size: 10 2 items in 1 pages

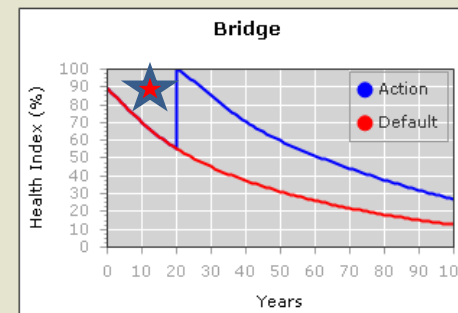
Effects on Each Utility Criterion

Category name	Before WC	After WC
Total Utility	49.44	50.5
Condition	57.16	59.73
Deck	5	5
Superstructure	81	81
Substructure	91	91
Scour	58	58
Element ratings	33.13	99.91
(12) Reinforced Concrete Deck	41.39	99.72
(331) Reinforced Concrete Bridge Railing	47.56	100
(510) Wearing Surfaces	10.44	100
Risk	53.81	53.81
Accident	53.81	53.81
Mobility	34.2	34.2
Percent of truck detoured.	34.2	34.2

Effects on Each Element

Element	Str. Unit	Env.	Condition	Effect
> (12) Re Concrete Deck	0	Low (2)		
> (331) Re Conc Bridge Railing	0	Low (2)		
> (510) Wearing Surfaces	0			

Deterioration



Project Planning Preservation Actions

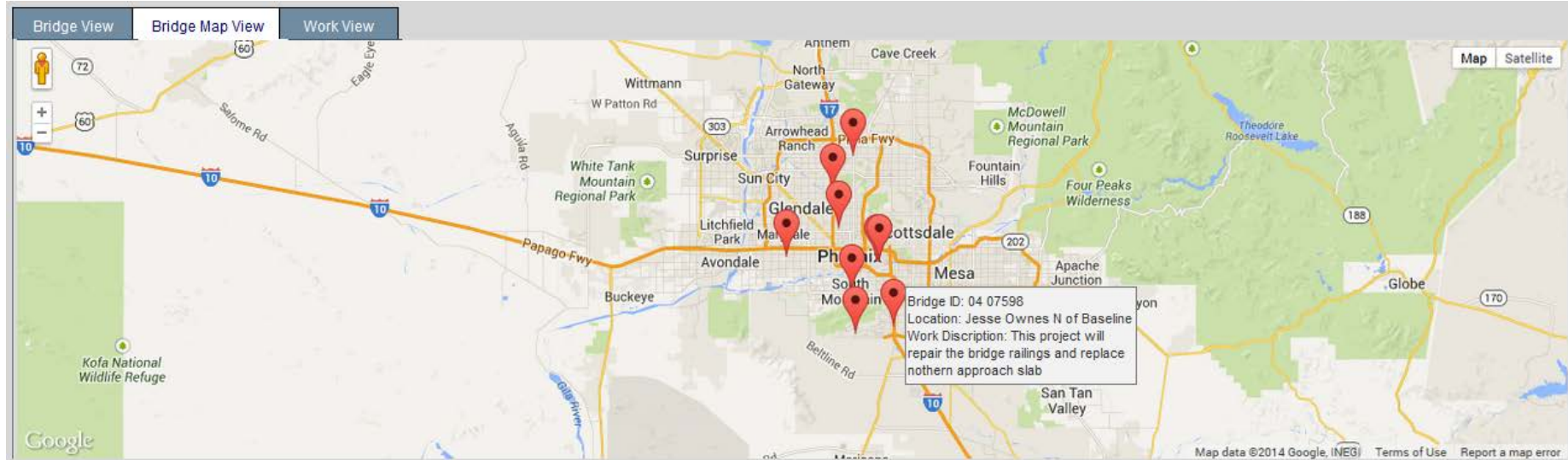
- Ability to create and view projects
- Define projects by grouping together work items and bridges
- Determine cost and effectiveness of projects and the end result of performing the selected work on the selected bridges
- Dashboards to view higher level numbers and effects, while also being able to drill down to specific results and details



Project Details – Bridge View

Bridge View		Bridge Map View		Work View				
	Bridge ID	Location	District	County	Facility	Precise Lon	Precise Lat	
▼	04 07598	Jesse Owens N Of Baseline	02	013	JESSE OWENS PKWY	-112.0689604	33.3797993	
	Action	Work Candidate	Base Utility	Utility	Utility Change	Estimated Cost	Benefit / Cost (\$k)	Cost (\$k) / Benefit
	Misc-Paint ID	04 07896-NMIV-045678	50.34	52.42	2.08	\$9,842,148.00	0.0002	\$4,732
	Joints-Rehabilitate	04 07896-NMIV-045678	50.34	52.39	2.05	\$3,002.00	0.6829	\$1
	Bridge-Replacement	04 07896-NMIV-045678	50.34	50.95	0.61	\$91,914.00	0.0066	\$151
	Paint-General	System Generated	50.34	51.48	1.14	\$196,200.00	0.0058	\$172
	Bearings-Replace	04 07896-NMIV-045678	50.34	51.48	1.14	\$196,200.00	0.0058	\$172
	Deck-Resurface	04 07896-NMIV-045678	50.34	51.48	1.14	\$16,800.00	0.0679	\$15
	Deck-Seal	04 07896-NMIV-045678	50.34	51.48	1.14	\$96,300.00	0.0118	\$84
	Approach Railing	System Generated	50.34	51.48	1.14	\$1,693,800.00	0.0007	\$1,486
	Approach Slab-Repair	System Generated	50.34	51.48	1.14	\$139,500.00	0.0082	\$122
	Channel-Repair Washouts/Erosion	04 07896-NMIV-045678	50.34	51.48	1.14	\$169,200.00	0.0067	\$148
>	04 07603	7TH ST S OF GREENWAY PKWY	02	013	7TH STREET	-112.0654944	33.637033	
>	04 07878	DESERT FOOT AT FRYE RD	02	013	DESERT FOOTHILLS	-112.0608444	33.2981246	
>	04 07935	INT ELIOT RD & 48TH ST	02	013	ELLIOT ROAD & 48TH	-111.973357844922	33.3123077041172	
>	04 08003	0.5 mi N of Buckeye Rd	02	013	75th Ave	-112.2210993	33.4456691	
>	04 08508	.4 MI N OF DUNLAP RD	02	013	25TH AVENUE	-112.1122222	33.5711104	
>	04 08511	1.5 MILE EAST OF 24TH ST	02	013	CENTER FLYOVER	-112.0108333	33.4366663	
>	04 08529	SKY HARBOR AIRPORT TERM 3	02	013	PARKING ENT&EXITS	-112.0069444	33.4361107	
>	04 08530	SKY HARBOR AIRPORT TERM 3	02	013	PARKING ENT&EXIT	-112.0069444	33.4349996	
>	04 09175	19th Av N Of Indian Sch	02	013	19TH AVE	-112.0999107	33.4995774	
◀ ◁ 1 2 3 4 5 6 ▶ ▷ Page size: 10								56 items in 6 pages


Project Details – Map View



Bridge Needs

Action	Work Candidate	Base Utility	Utility	Utility Change	Estimated Cost	Benefit / Cost (\$k)	Cost (\$k) / Benefit
Misc-Paint ID	04 07896-NMIV-045678	50.34	52.42	2.08	\$9,842,148.00	0.0002	\$4,732
Joints-Rehabilitate	04 07896-NMIV-045678	50.34	52.39	2.05	\$3,002.00	0.6829	\$1
Bridge-Replacement	04 07896-NMIV-045678	50.34	50.95	0.61	\$91,914.00	0.0066	\$151
Paint-General	System Generated	50.34	51.48	1.14	\$196,200.00	0.0058	\$172
Bearings-Replace	04 07896-NMIV-045678	50.34	51.48	1.14	\$196,200.00	0.0058	\$172
Deck-Resurface	04 07896-NMIV-045678	50.34	51.48	1.14	\$16,800.00	0.0679	\$15
Deck-Seal	04 07896-NMIV-045678	50.34	51.48	1.14	\$96,300.00	0.0118	\$84
Approach Railing	System Generated	50.34	51.48	1.14	\$1,693,800.00	0.0007	\$1,486
Approach Slab-Repair	System Generated	50.34	51.48	1.14	\$139,500.00	0.0082	\$122
Channel-Repair Washouts/Erosion	04 07896-NMIV-045678	50.34	51.48	1.14	\$169,200.00	0.0067	\$148

Main Project Screen



Welcome: Pontis User
 Database: BrM521 SQL Server
 Sample DB
[Help ?](#) [Account](#) [LogOut](#)

Menu

- View List
- Select All
- Unselect All
- Select Page
- Unselect Page
- Just Selected
- Apply Grid Settings
- Reset Grid Settings
- Printable View
- Manage Layouts
- Manage Filters
- Edit Project
- Create Project
- Upload Project
- Combine Projects
- Delete Project
- Manage Programs
- Manage Funding

Filter: BrM - None
Layout: Default
Jump to Project:

Project Name	Project ID	Category	Cost (\$k)	Utility Change	Benefit / Cost (\$k)	Cost (\$k) / Benefit Funding	Year	Status	Description
<input type="checkbox"/> Rehab 1-25 Bridges	1234-2234 -21	Rehabilitation	150.5	60	.025	4.23	Federal	2014	Approved
<input type="checkbox"/> County Bridge Painting	2235-5234 -19	Paint	15.0	55	.08	2.65		2016	Under Review
<input type="checkbox"/> Clark St. Bridge Replace	3234-2234 -55	Replacement	200.3	100	.10	5.22	State	2015	Proposed
<input type="checkbox"/> District 12 Joints	7344-7234 -08	Joint Seals	20.2	48	.10	2.51		2018	Proposed
<input checked="" type="checkbox"/> US 79 Deck Paving	5234-5234 -51	Deck Work	55.6	57	.10	3.22	Program X	2017	Approved
<input type="checkbox"/> Cobb County Vegetation	3452-2234 -21	Crew Work	13.2	56	.08	2.64		2015	Under Review
<input type="checkbox"/> Replace 12345	3234-3345 -55	Replacement	160.7	100	.025	3.56	Maintenance	2014	Proposed
<input type="checkbox"/> Replace 12345	7344-7234 -08	Replacement	160.7	100	.025	3.56		2014	Proposed
<input type="checkbox"/> Replace 12345	3234-2234 -55	Replacement	160.7	100	.025	3.56	State Budget	2014	Proposed
<input type="checkbox"/> Replace 12345	7344-7234 -08	Replacement	160.7	100	.025	3.56		2014	Proposed

11 Projects, 1 selected

Bridge View
Bridge Map View
Work View

Bridge ID	Location	District	County	Facility	Precise Lon	Precise Lat																																																																																								
04 07598	Jesse Owens N Of Baseline	02	013	JESSE OWENS PKWY	-112.0689604	33.3797993																																																																																								
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Action</th> <th>Work Candidate</th> <th>Base Utility</th> <th>Utility</th> <th>Utility Change</th> <th>Estimated Cost</th> <th>Benefit / Cost (\$k)</th> <th>Cost (\$k) / Benefit</th> </tr> </thead> <tbody> <tr><td>Misc-Paint ID</td><td>04 07896-NMNV-045678</td><td>50.34</td><td>52.42</td><td>2.08</td><td>\$9,842,148.00</td><td>0.0002</td><td>\$4,732</td></tr> <tr><td>Joints-Rehabilitate</td><td>04 07896-NMNV-045678</td><td>50.34</td><td>52.39</td><td>2.05</td><td>\$3,002.00</td><td>0.6829</td><td>\$1</td></tr> <tr><td>Bridge-Replacement</td><td>04 07896-NMNV-045678</td><td>50.34</td><td>50.95</td><td>0.61</td><td>\$91,914.00</td><td>0.0066</td><td>\$151</td></tr> <tr><td>Paint-General</td><td>System Generated</td><td>50.34</td><td>51.48</td><td>1.14</td><td>\$196,200.00</td><td>0.0058</td><td>\$172</td></tr> <tr><td>Bearings-Replace</td><td>04 07896-NMNV-045678</td><td>50.34</td><td>51.48</td><td>1.14</td><td>\$196,200.00</td><td>0.0058</td><td>\$172</td></tr> <tr><td>Deck-Resurface</td><td>04 07896-NMNV-045678</td><td>50.34</td><td>51.48</td><td>1.14</td><td>\$16,800.00</td><td>0.0679</td><td>\$15</td></tr> <tr><td>Deck-Seal</td><td>04 07896-NMNV-045678</td><td>50.34</td><td>51.48</td><td>1.14</td><td>\$96,300.00</td><td>0.0118</td><td>\$84</td></tr> <tr><td>Approach Railing</td><td>System Generated</td><td>50.34</td><td>51.48</td><td>1.14</td><td>\$1,693,800.00</td><td>0.0007</td><td>\$1,486</td></tr> <tr><td>Approach Slab-Repair</td><td>System Generated</td><td>50.34</td><td>51.48</td><td>1.14</td><td>\$139,500.00</td><td>0.0082</td><td>\$122</td></tr> <tr><td>Channel-Repair Washouts/Erosion</td><td>04 07896-NMNV-045678</td><td>50.34</td><td>51.48</td><td>1.14</td><td>\$169,200.00</td><td>0.0067</td><td>\$148</td></tr> </tbody> </table>							Action	Work Candidate	Base Utility	Utility	Utility Change	Estimated Cost	Benefit / Cost (\$k)	Cost (\$k) / Benefit	Misc-Paint ID	04 07896-NMNV-045678	50.34	52.42	2.08	\$9,842,148.00	0.0002	\$4,732	Joints-Rehabilitate	04 07896-NMNV-045678	50.34	52.39	2.05	\$3,002.00	0.6829	\$1	Bridge-Replacement	04 07896-NMNV-045678	50.34	50.95	0.61	\$91,914.00	0.0066	\$151	Paint-General	System Generated	50.34	51.48	1.14	\$196,200.00	0.0058	\$172	Bearings-Replace	04 07896-NMNV-045678	50.34	51.48	1.14	\$196,200.00	0.0058	\$172	Deck-Resurface	04 07896-NMNV-045678	50.34	51.48	1.14	\$16,800.00	0.0679	\$15	Deck-Seal	04 07896-NMNV-045678	50.34	51.48	1.14	\$96,300.00	0.0118	\$84	Approach Railing	System Generated	50.34	51.48	1.14	\$1,693,800.00	0.0007	\$1,486	Approach Slab-Repair	System Generated	50.34	51.48	1.14	\$139,500.00	0.0082	\$122	Channel-Repair Washouts/Erosion	04 07896-NMNV-045678	50.34	51.48	1.14	\$169,200.00	0.0067	\$148
Action	Work Candidate	Base Utility	Utility	Utility Change	Estimated Cost	Benefit / Cost (\$k)	Cost (\$k) / Benefit																																																																																							
Misc-Paint ID	04 07896-NMNV-045678	50.34	52.42	2.08	\$9,842,148.00	0.0002	\$4,732																																																																																							
Joints-Rehabilitate	04 07896-NMNV-045678	50.34	52.39	2.05	\$3,002.00	0.6829	\$1																																																																																							
Bridge-Replacement	04 07896-NMNV-045678	50.34	50.95	0.61	\$91,914.00	0.0066	\$151																																																																																							
Paint-General	System Generated	50.34	51.48	1.14	\$196,200.00	0.0058	\$172																																																																																							
Bearings-Replace	04 07896-NMNV-045678	50.34	51.48	1.14	\$196,200.00	0.0058	\$172																																																																																							
Deck-Resurface	04 07896-NMNV-045678	50.34	51.48	1.14	\$16,800.00	0.0679	\$15																																																																																							
Deck-Seal	04 07896-NMNV-045678	50.34	51.48	1.14	\$96,300.00	0.0118	\$84																																																																																							
Approach Railing	System Generated	50.34	51.48	1.14	\$1,693,800.00	0.0007	\$1,486																																																																																							
Approach Slab-Repair	System Generated	50.34	51.48	1.14	\$139,500.00	0.0082	\$122																																																																																							
Channel-Repair Washouts/Erosion	04 07896-NMNV-045678	50.34	51.48	1.14	\$169,200.00	0.0067	\$148																																																																																							
> 04 07603	7TH ST S OF GREENWAY PKWY	02	013	7TH STREET	-112.0654944	33.637033																																																																																								
> 04 07878	DESERT FOOT AT FRYE RD	02	013	DESERT FOOTHILLS	-112.0608444	33.2981246																																																																																								
> 04 07935	INT ELLIOT RD & 48TH ST	02	013	ELLIOT ROAD & 48TH	-111.973357844922	33.3123077041172																																																																																								
> 04 08003	0.5 mi N of Buckeye Rd	02	013	75th Ave	-112.2210993	33.4456691																																																																																								
> 04 08508	.4 MI N OF DUNLAP RD	02	013	25TH AVENUE	-112.1122222	33.5711104																																																																																								
> 04 08511	1.5 MILE EAST OF 24TH ST	02	013	CENTER FLYOVER	-112.0108333	33.4366663																																																																																								
> 04 08529	SKY HARBOR AIRPORT TERM 3	02	013	PARKING ENT&EXITS	-112.0069444	33.4361107																																																																																								
> 04 08530	SKY HARBOR AIRPORT TERM 3	02	013	PARKING ENT&EXIT	-112.0069444	33.4349996																																																																																								
> 04 09175	19th Av N Of Indian Sch	02	013	19TH AVE	-112.0999107	33.4995774																																																																																								

Page size: 10
56 items in 6 pages



Project Details - Summary

BrM

Bridge

Management

Welcome: Pontus Us
Database: BrM521 SQL Serv
Sample D
Help ? Account LogOut

Menu

View List
Manage Layouts
Manage Filters
Edit Project
Create Project
Bridge Query
Project Details
Upload Project
Combine Projects
Delete Project
Manage Programs
Manage Funding

Bridges Reports Admin Inspection Gateway Analysis Projects

Save Save & Close Split Cancel

Selected Project: New Project

Summary Analysis Management

Project Details

Project ID: 2235-5234-19 Alternate ID: Project Status: Planning Project URL:
Project Name: Project Type: Paint Year Start: Year End: Created by: John Smith Date: 5/31/2014
Project Description:

Project Notes

Project Cost and Benefits

Indirect Cost
Calculated: 20.0%
Entered: %

Project Cost
Direct Cost: \$5,000,000 Other Costs:
Indirect Cost: \$1,000,000 Total Cost: \$6,000,000

Performance Measure Average Benefit Median Benefit Total Benefit
Health Index 20.31 21.71 321.32
Condition 15.21 16.02 214.64
Risk 4.56 4.5 40.42
Mobility 14.84 15.00 63.24
Life cycle Cost 23.54 23.50 267.43
TOTAL BENEFIT 1,483.43

Bridge and Work Summary

Bridge View Map View

Bridge ID	Location	Base Utility	Utility	Utility Change	Estimated Cost	Benefit / Cost (\$k)	Cost (\$k) / Benefit
04 07598	Jesse Owens N Of Baseline	50.34	60.44	10.04	\$12,345,000	.1245	\$2,136
Action	Work Candidate	Base Utility	Utility	Utility Change	Estimated Cost	Benefit / Cost (\$k)	Cost (\$k) / Benefit
Misc-Paint ID	04 07896-NMIV-045678	50.34	52.42	2.08	\$9,842,148.00	0.0002	\$4,732
Joints-Rehabilitate	04 07896-NMIV-045678	50.34	52.39	2.05	\$3,002.00	0.6829	\$1
Bridge-Replacement	System Generated	50.34	50.95	0.61	\$91,914.00	0.0066	\$151
Paint-General	04 07896-NMIV-045678	50.34	51.48	1.14	\$196,200.00	0.0058	\$172
Bearings-Replace	04 07896-NMIV-045678	50.34	51.48	1.14	\$196,200.00	0.0058	\$172
Deck-Resurface	System Generated	50.34	51.48	1.14	\$16,800.00	0.0679	\$15
Deck-Seal	04 07896-NMIV-045678	50.34	51.48	1.14	\$96,300.00	0.0118	\$84
Approach Railing	System Generated	50.34	51.48	1.14	\$1,693,800.00	0.0007	\$1,486
Approach Slab-Repair	04 07896-NMIV-045678	50.34	51.48	1.14	\$139,500.00	0.0082	\$122
Channel-Repair Washouts/Erosion	04 07896-NMIV-045678	50.34	51.48	1.14	\$169,200.00	0.0067	\$148
04 07603	7TH ST S OF GREENWAY PKWY						
04 07878	DESERT FOOT AT FRYE RD	50.34	60.44	10.04	\$12,345,000	.1245	\$2,136
04 07935	INT ELIJOT RD & 48TH ST	62.34	75.44	13.04	\$3,874,000	.2134	\$1,428
04 08003	0.5 mi N of Buckeye Rd	50.34	60.44	10.04	\$12,345,000	.1245	\$2,136
04 08508	4 MI N OF DUNLAP RD	62.34	75.44	13.04	\$3,874,000	.2134	\$1,428
04 08511	1.5 MILE EAST OF 24TH ST	50.34	60.44	10.04	\$12,345,000	.1245	\$2,136
04 08529	SKY HARBOR AIRPORT TERM 3	62.34	75.44	13.04	\$3,874,000	.2134	\$1,428
04 08530	SKY HARBOR AIRPORT TERM 3	50.34	60.44	10.04	\$12,345,000	.1245	\$2,136
04 09175	19th Av N Of Indian Sch	62.34	75.44	13.04	\$3,874,000	.2134	\$1,428

Page size: 10

56 items in 6 pages

BrM

Project Details – Analysis

Menu

View List

Manage Layouts

Manage Filters

Edit Project

Create Project

Bridge Query

Project Details

Upload Project

Combine Projects

Delete Project

Manage Programs

Manage Funding

Bridges Reports Admin Inspection Gateway Analysis Projects

Save Save & Close Split Cancel

Selected Project: New Project

Summary Analysis Management

Selected Bridge: 04 07603

Bridge Work Description:

Description

Route:	00000	Milepoint:	mi
District:	District 2	County:	Maricopa
Owner:	City/Municipal Hwy Agenc	Area:	02B - Paul Goldsmith
Material:	5 Prestressed Concrete	Resp:	City/Municipal Hwy Agenc
Scour:	6 Calcs not made	Design:	05 Multiple Box Beam

Conditions

Deck:	4 Poor	Superstr:	6 Satisfactory
Substr:	7 Good	Culvert:	N N/A (NBI)
Structure:	8 Protected	Deck Index:	50.07
Superstr Index:	45.89	Substr Index:	
Culvert Index:		Structure HI:	42.16

Current Scaled Performance

Condition:	59.32	Risk:	53.81
Lifecycle:		Mobility:	34.2

Sufficiency

Rating:	97.5	SD/FO:	Not Deficient
---------	------	--------	---------------

Recent Completed Work

Year	Cost (\$k)
No recently completed work found.	

Work Candidates Existing for the Selected Bridge

Selected Work All Work

Work Candidate	Utility	Utility Change	Cost	Benefit / Cost (\$k)	Cost (\$k) / Benefit	Action Year
Do Nothing	50.34		\$45,000	.156	\$12	0
04 0759-JQX-031914-6ABA193714 - Approach Railing-Repair	52.5	2.16	\$125,000	.032	\$0	0
04 0759-NIMO-042114-E90D693A52 - Approach Railing-Repair	52.5	2.16	\$25,000	.141	\$0	0
04 0759-NIMO-091313-E2A8C9DA58 - Approach Slab-Repair	51.48	1.14	\$150,000	.114	\$9	0
A-DOT001-057F6A47-0000006A - Bridge Rail-Repair	50.34	0	\$75,000	.176	\$7	0
A-DOT001-057F6A47-0000006D - Deck-Rehab	50.34	0	\$100,000	.198	\$10	0

Page size: 10

6 items in 1 pages

Effects on Each Utility Criterion

Category name	Before WC	After WC
Total Utility	50.34	52.5
Condition	59.32	61.88
Deck	42	98
Superstructure	81	81
Substructure	91	91
Scour	58	58
Element ratings	52.44	62.89
(12) Reinforced Concrete Deck	32.04	48.46
(38) Reinforced Concrete Deck	31.98	48.42
(65) Other Slab	100	100
(116) Reinforced Concrete Closed Web/Box Girder	100	100
(320) Prestress Concrete Approach Slab	10.66	10.66
(321) Reinforced Concrete Approach Slab	10.66	10.66
(331) Reinforced Concrete Bridge Railing	28.42	100
(520) Deck/Slab Protection Systems	100	100
(521) Concrete Protective Coating	10.66	10.66
(144) Reinforced Concrete Arch	100	100
Risk	53.81	57.58
Accident	53.81	57.58
Mobility	34.2	34.2
Percent of truck detoured.	34.2	34.2

Effects on Each Element

Element	Str. Unit	Env.	Condition	Effect
(12) Re Concrete Deck	0	Low (2)		
(12) Re Concrete Deck	0	Mod. (3)		
(38) Re Concrete Slab	0	Low (2)		
(65) Other Slab	0	Ben. (1)		
(116) Re Conc Stringer	0	Ben. (1)		
(144) Re Conc Arch	0	Ben. (1)		
(320) Pre Conc Appr Slab	0	Low (2)		
(321) Re Conc Approach Slab	0	Low (2)		
(331) Re Conc Bridge Railing	0	Low (2)		
(12) Re Concrete Deck	1	Mod. (3)		

Deterioration

Bridge

Element



Metric Assessment Report

- Working with FHWA to include logic used for NBIS Metric Assessment Reports
- Ability to use current data to check NBIS Metric compliance
- Allow state and FWHA to better track interim deadlines for their Corrective Action Plans

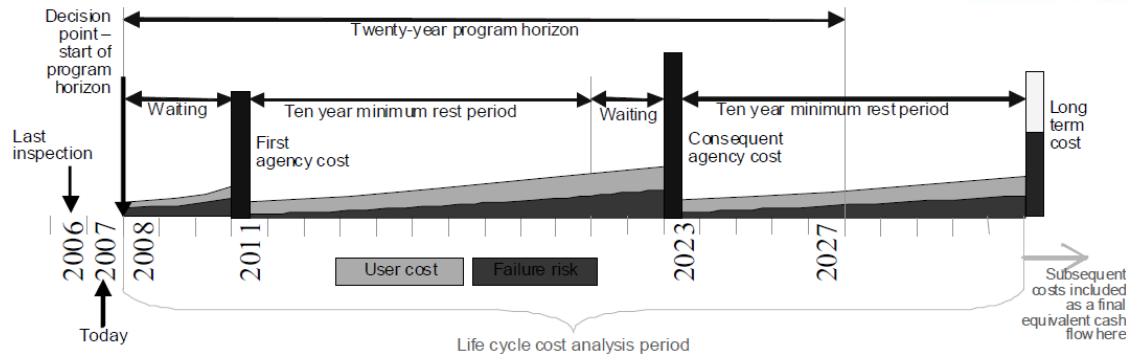


Bridge Management 5.2.3

- Planned Release in 2016
- Fully supporting the FHWA Identified Rule Making
- Key Features
 - Capability to perform life cycle cost analysis
 - Capability to perform network level analysis
 - Dashboards for easy data visualization and tracking performance measures.
 - Enhanced User Help System



Life-Cycle Cost Analysis



Short-Term LCCA

All costs incurred on a bridge within the program horizon and runs in the context of a set of work candidates specified by users, generated by BrM, or a combination of the two. The short-term LCCA sums the *direct* and *indirect* costs of all actions planned within the program. To accurately evaluate future actions, LCCA will utilize the newly developed deterioration modeling framework.

Long-Term LCCA

Estimates the total life-cycle cost of a bridge incurred once the program is completed. Long-term LCCA allows for reasonable comparisons of bridges in differing condition states. The long-term LCCA disregards indirect costs of actions. BrM forecasts the approximate sequence of interventions that will be performed on the bridge over an extended, user defined period of time (ex. 200+ years).

White Papers



White papers providing additional details regarding the Life-Cycle Cost Analysis and Deterioration Modeling enhancements will be found at www.aashtowarebridge.com

AASHTOWare Bridge Management (BrM) Software
Life-Cycle Cost Analysis Prototype

Life-Cycle Cost Analysis (LCCA) Requirements Specification

The Life-Cycle Cost Analysis (LCCA) assists agencies in developing bridge maintenance programs. Agencies can evaluate the economic impact of several program alternatives through the LCCA. The length of programs depends on the agencies' policies. However, we'll assume that a typical program extends for a period of 10-20 years.

AASHTOWare Bridge Management (BrM) Software
Tuning the Weibull shaping parameter and transition times in BrM 5.2.2

Introduction

Version 5.2.2 of the AASHTOWare Bridge Management (BrM) software will introduce the Weibull model as an enhancement to the pre-existing Markovian deterioration model. The introduction of the Weibull model aids in managing the known shortcomings of the Markovian model. The combination of the models provides a more realistic representation of the overall bridge deterioration process.

The accuracy of the model is largely dependent on properly configuring the modeling parameters. This document outlines:

- The effect that the parameter configurations have on the deterioration forecasted by the combined model
- How an agency can tune the parameters to best meet their needs

Weibull and Markovian Models

In BrM 5.2.2 the Weibull model is only used to model the onset of deterioration, or the transition of an element from the best condition state (CS1) to the next condition state (CS2). The rest of the transitions are modeled via the Markovian model. There are several parameters that need to be configured as part of the element deterioration model.

Transition times (T1, T2, T3)

A transition time T_i is defined as the median number of years a unit of the element stays in condition state i prior to transitioning to the next state.

Based on this definition, one can expect half of an element originally in condition state i to transition to the next state by the specified transition time.

Transition times are defined for both the Weibull and Markovian models.

Weibull Shaping Parameter (β)

As its name implies, the shaping parameter is responsible for controlling the shape of the Weibull distribution. Figure 1 illustrates the effect of different shaping parameters on the Weibull model. A Weibull model with a shaping parameter value of "1" behaves identical to the Markovian model.

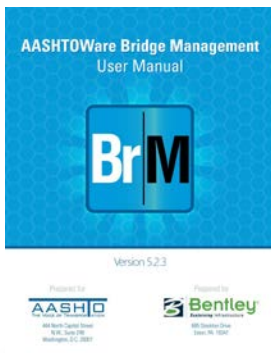
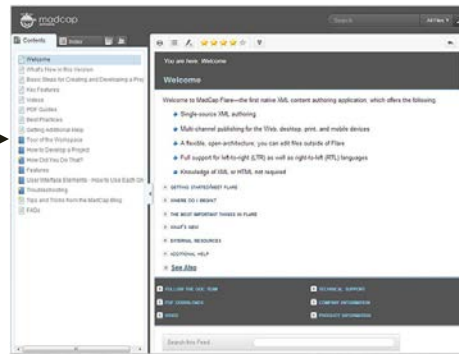
The point in which all of the CS1 curves in Figure 1 intersect corresponds to the median number of years for the element to transition to CS2. Fifty percent of the

Figure 1 - Comparison of Weibull shaping parameter values
*Values over 2 shown for illustration only

444 N. Capital St. • Suite 249 • Washington, DC 20001
<http://aashtowarebridge.com>



Enhanced User Help System



- Complete rewrite of the User Manual using MadCap Flare software
- Multi-channel publishing for the web-based Help system and, printed documentation
- Clicking the 'Help' icon within the software will take the user to the specific section of the Help System
- Detailed page-by-page explanation



Tunnel Inspection Elements

- NTIS final rule issued **July 14, 2015**
- The AASHTOWare BrM Task Force is actively pursuing potential methods of including new asset types (tunnels, culverts, signs, etc.) into the BrM Software.



Tunnel Inspection Elements

- This will be a multi-phased approach:
 - Phase 0 – Create Excel spreadsheet to collect initial inventory and export XML file to send to FHWA (**underway**)
 - Phase 1 – Defining new asset types and implementation of a framework
 - Phase 2 – Fully develop the functionality required to integrate new asset types into the software
 - Further phases will be planned out as needed.

Bridge Management Contact Information

Feel free to contact us or visit our website for more information:

Support line: 1-877-913-1550

Support email: pontis@bentley.com

Website: <http://aashtowarebridge.com>



AASHTOWare Bridge Management

About News Support Training Downloads Links Contact

AASHTO's proven Bridge Management Software

Welcome

The **AASHTOWare™** Bridge Management software **BrM** (formerly **Pontis**) was first developed under an NCHRP project sponsored by the FHWA in the early 1990's and soon thereafter was transferred to **AASHTO** for further development, maintenance and support. For over 20 years **BrM** has seen dramatic improvements due to technological changes, product innovations, and, most importantly, direct user feedback. As a key product in the **AASHTOWare** software suite, **BrM** continues to be widely used as the primary bridge management software by transportation agencies across the U.S., and internationally.

AASHTOWare's efforts are headed by a **Task Force** comprised of State bridge engineering and information technology professionals. This Task Force manages the product and the contractor's efforts on behalf of AASHTO and the user community in order to ensure development, maintenance, and support of the software meets the needs and requirements of current bridge owners in State and local agencies, governmental organizations such as the **FHWA**, and private consultants.

The latest official release of **BrM** is 5.1.3. This version was accepted by the TAG and approved by the Task Force for release in April 2013. Agencies wishing to install and use 5.1.3 should contact the Contractor directly to request the software (email or phone call will suffice). The contractor is currently developing the next generation of AASHTOWare Bridge Management software (version 5.2), sponsored by a national project solicitation. This next generation of **BrM** is expected to be released soon.

Like 24 people like this. Sign Up to see what your friends like.

Follow @AASHTOWareBrM

Search for:

Recent Posts

- Home
- 5.1.3 Official Release
- Product Update
- Element Migrator Webinar
- JIRA Migration Complete

Archives

AASHTOWare Bridge Management

www.AASHTOWareBridge.com

Contact Information

- Todd Thompson
- 605-773-3285
- todd.thompson@state.sd.us



Questions?

