

Part D5:

Management

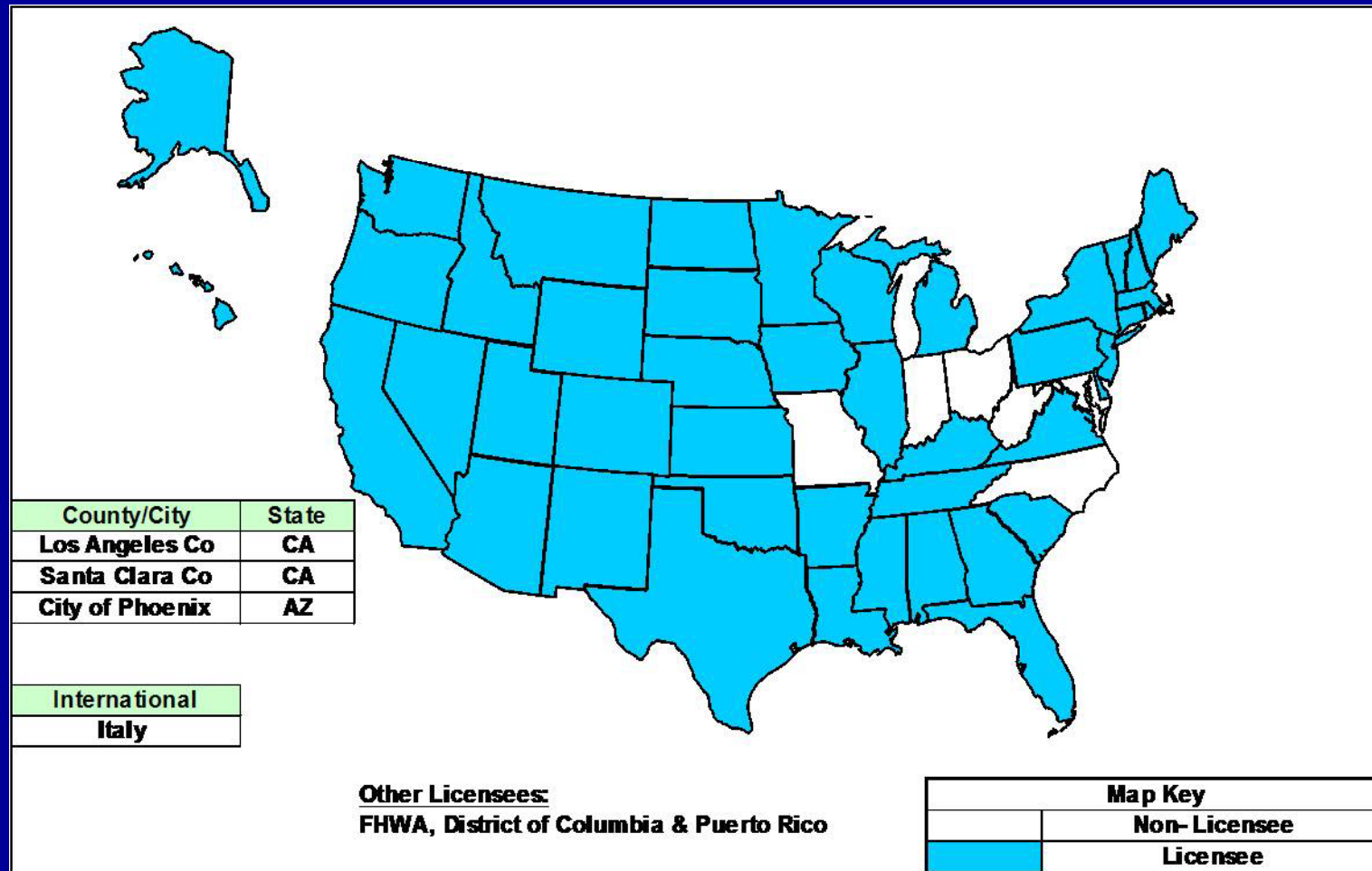


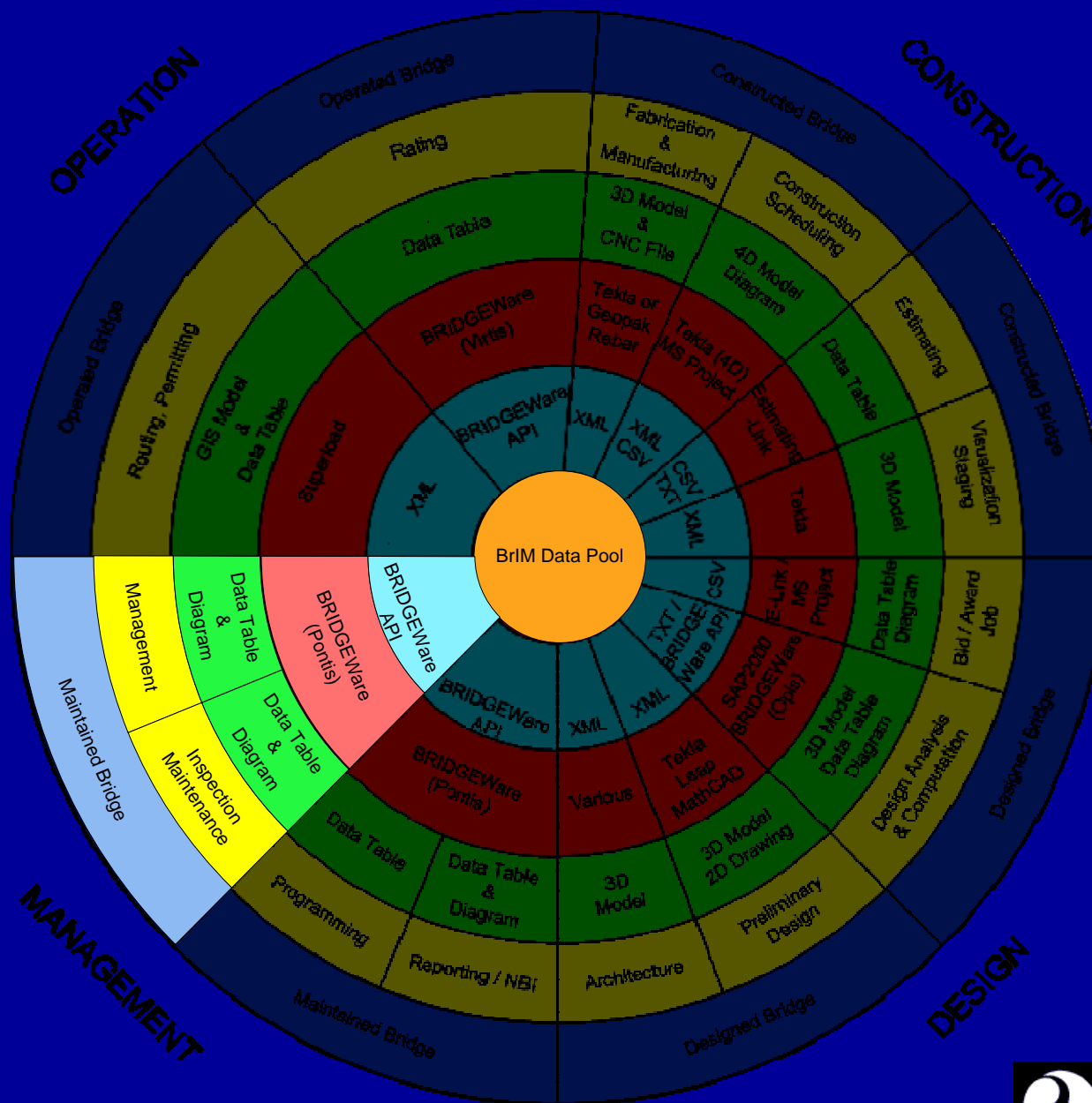
Overview (D5-Management)

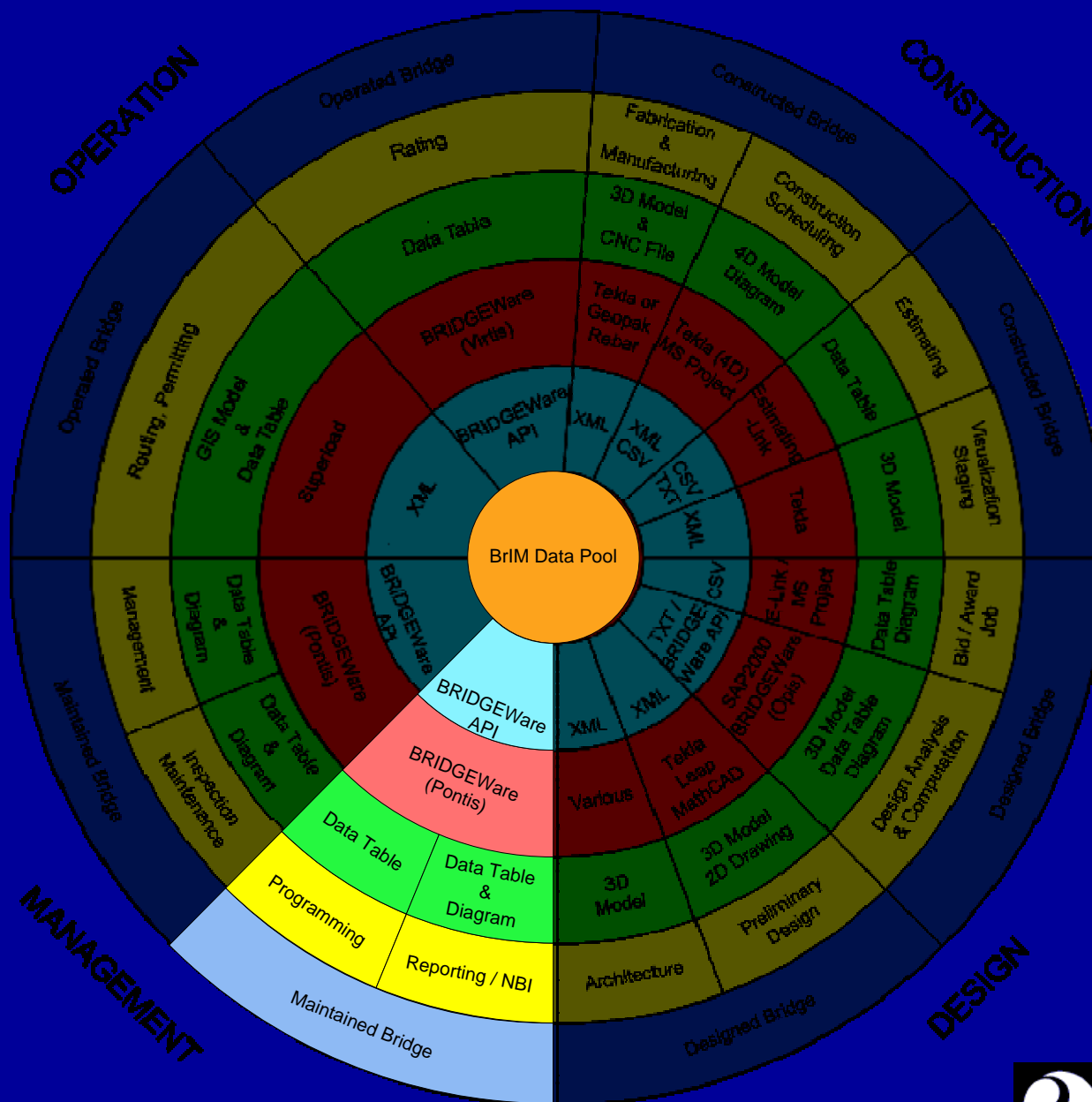
- Where BridgeWare Fits In
- (Inspection) Condition Data Management
- Linking Deteriorated Inspection Condition to (Re-)Rating
- Preservation (Costs, etc)
- Programming
- Project Planning and Funding

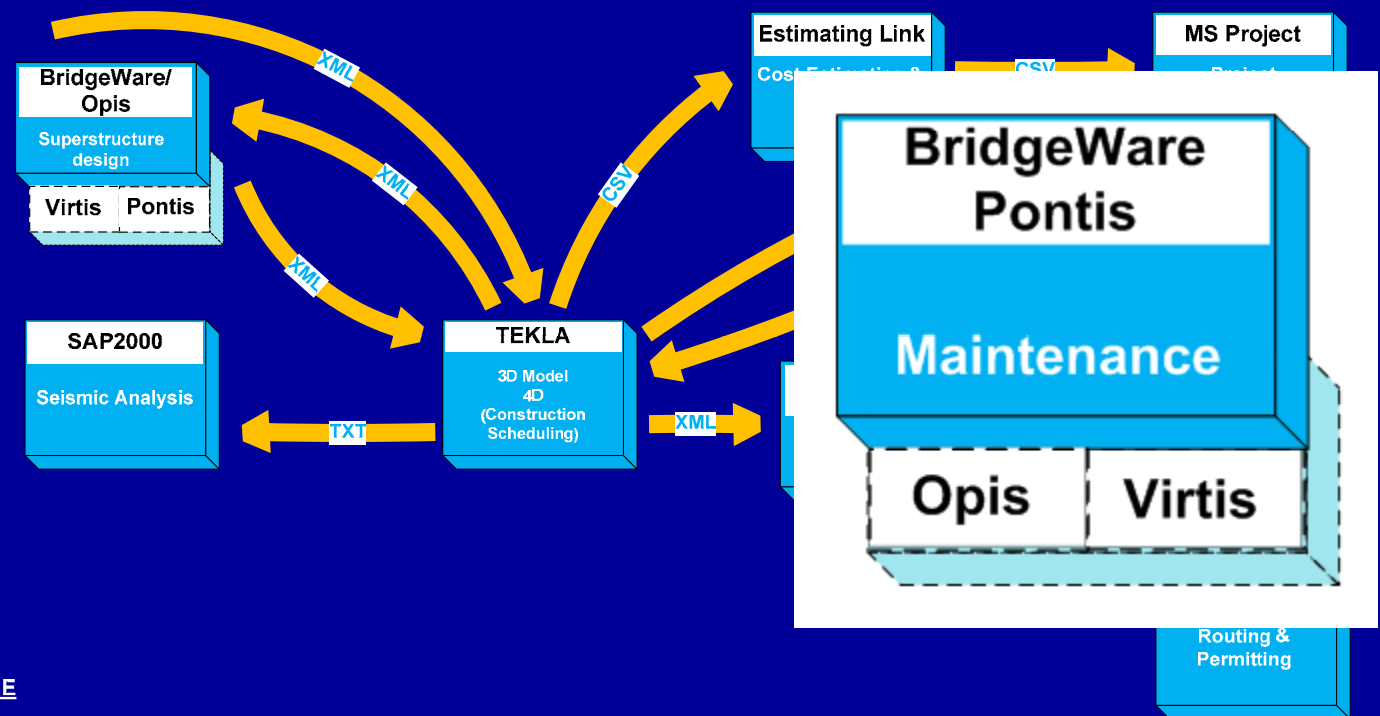


Map of Pontis Licensing States 2009









METHOD OF DATA EXCHANGE

TXT – TEXT FILE

XML – EXTENSIBLE MARKUP LANGUAGE

LANDXML – LAND EXTENSIBLE MARKUP LANGUAGE

VBA – VISUAL BASIC FOR APPLICATIONS

CSV – COMMA SEPARATED VALUES

BARS/LARS – AASHTOWARE AND BENTLEY SOFTWARE



What is Pontis?

Pontis is a comprehensive bridge management system.

- It can assist agencies in allocating scarce resources to protect existing infrastructure investments, ensure safety and maintain mobility.
- It stores inventory and inspection information, and provides a rich set of modeling and analysis tools to support project development, budgeting and program development.
- It helps an agency to formulate network-wide preservation and improvement policies for use in evaluating the needs of each structure in a network; and makes recommendations for what projects to include in an agency's capital plan.
- It also provides the capability to analyze the impact of different project alternatives on the performance of individual structures and on a network of structures.



Pontis Modules

- **Inspection Module**
Collect and maintain inventory and inspection information about structures.
- **Project Planning Module**
Build projects from Pontis-generated or inspector recommended work items.
- **Programming Module**
Organize projects into agency-wide programs categorized by funding or maintenance needs.
- **Preservation Module**
Develop a preservation strategy with cost and deterioration models to be used in analysis.
- **Results Module**
View and present graphical information about needs, programmed work and expected performances between the various program simulations to aid in programming decisions.
- **Gateway Module**
Import and export data between Pontis and other systems (i.e., NBIS submittals).
- **Configuration Module**
Customize Pontis according to the needs of individual agencies.



Pontis---Inspection Module



Bridge basic information definitions...



Structure (Bridge) List

The bridge we just input...

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as VIRTIS

File View Tools Window Help

Desktop - Inspection

Inspection Layout Count Find... Select... Save... Unselect All Just Selected

Rows 1 to 33 of 529 Layout: -- Default Structure Layout --

Bridge ID	Feature Intersected	Dist	Cnty	Own	Maint.	Area	Meters	Built	Structure Name	Facility Carried
QUINCY	SR 6060	District 1	Unknown (P)	State Highway Agen	State Highway Agen	-1	84	2009	QUINCY AVE BRIDGE	SR 0051
29 0197R	MOKELUMNE RIVER	District 3	ISAN JOAQ	State Highway Agency	State Highway Agency	05	376	1979	MOKELUMNE RIV	INTERSTATE 5
29 0197L	MOKELUMNE RIVER	District 3	ISAN JOAQ	State Highway Agency	State Highway Agency	05	376	1979	MOKELUMNE RIV	INTERSTATE 5
25 0106	EAGLE FALLS SHVD 2	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	27	1991	EGL FLS SHVD 2	STATE ROUTE 89
25 0098	SOUTH FORK AMERICA	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	94	1990	SFK AMERICAN R	U.S. HIGHWAY 50
25 0084R	CAMERON PK UC	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	34	1970	CAMERON PK UC	U.S. HIGHWAY 50
25 0084L	CAMERON PK UC	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	34	1970	CAMERON PK UC	U.S. HIGHWAY 50
25 0083	CAMBRIDGE ROAD	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	73	1970	CAMBRIDGE RD OC	CAMBRIDGE ROAD
25 0079	CARSON CREEK	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	11	1939	CARSON CREEK	U.S. HIGHWAY 50
25 0078R	E SHINGL SP UC	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	40	1969	E SHINGLE SP U	U.S. HIGHWAY 50
25 0078L	E SHINGL SP UC	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	40	1969	E SHINGLE SP U	U.S. HIGHWAY 50
25 0076	EL DORADO ROAD	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	63	1969	EL DORADO RD OC	EL DORADO ROAD
25 0075R	GREENSTONE ROAD	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	27	1969	GREENSTONE UC	U.S. HIGHWAY 50
25 0075L	GREENSTONE ROAD	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	27	1969	GREENSTONE ROAD UC	U.S. HIGHWAY 50
25 0074	PONDEROSA ROAD	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	71	1969	SHINGLE SPR OC	PONDEROSA ROAD
25 0073R	BASS LAKE ROAD	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	35	1966	BASS LK RD UC	U.S. HIGHWAY 50
25 0073L	BASS LAKE ROAD	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	38	1966	BASS LK RD UC	U.S. HIGHWAY 50
25 0072R	CLARKSVILLE UC	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	34	1965	CLARKSVILLE UC	U.S. HIGHWAY 50
25 0072L	CLARKSVILLE UC	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	34	1965	CLARKSVILLE UC	U.S. HIGHWAY 50
25 0071S	F50 LATROBE RD OFF	District 3	EL DORAD	State Highway Agency	State Highway Agency	06	48	1965	LATROBE RD UC	U.S. HIGHWAY 50

NBI (National Bridge Inventory)...



Inventory

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as VIRTIS

File View Tools Window Help

Bridge Inspection Mode: Edit Type: Regular NBI Key: KYGW

Bridge: QUINCY Find... Inspections (2): 03/16/2009 Metric English Reports... Save

1 CONDITION 2 NOTES 3 WORK 4 APPRAISAL 5 INVENTORY 7 SCHEDULE 8 MEDIA

1 ID/Admin

Structure Identification:

Agency Structure ID: QUINCY

Name: QUINCY AVE BRIDGE

NBI Structure No (8): QUINCY BRKEY: QUINCY

2 Design

Location:

District (2): District 1

County (3): Unknown (P)

City/Town/Placecode (4): 0000

Feature Intersected (6a): SR 6060

Facility Carried (7): SR 0051

Location (9):

Latitude (16) / Long (17): Missing Missing

Border St/FHWA Reg (98): Unknown -

Share: -1 %

Border Struct No (99):

FIPS State/Region (1): 08 Unknown (P)

3 Roads

Age and Service:

Year Built (27): 2000

Year Reconstruct (106): -1

Type of Service On (42a): Unknown (NBI)

Under (42b): Unknown (NBI)

Lanes Under (28b): -1

4 Structure Units

Management:

Maint Resp (21): State Highway Agency

Owner (22): State Highway Agency

On/Off Agency System:

Agency Bridge Group: -1

Agency Admin. Area: 901 - Unknown

5 Classification

In Inspection
Module...



Create an inspection

New Inspection Setup Mode: New (Duplicate) Type: Regular NBI

Bridge: QUINCY

Current Inspection:

Inspection Date: 03/16/2009

Inspector: P. Pontis (1)

Primary Type: Regular NBI

Inspection Types Performed:

NBI: ☒

Element: ☒

Fracture Critical: ☐

Underwater: ☐

Other Special: ☐

☒ Duplicate Previous

OK Help Cancel

We can duplicate previous inspection to setup a new one...



Verify the inspection schedule

Verify Inspection Schedule

Summary:

Inspection Date: 03/16/2009

Inspector: P. Pontis (1)

Primary Type: Regular NBI

Review Required: ☒

Inspection Group:

Types Of Inspections Performed:

National Bridge Inventory: ☒

Element: ☒

Fracture Critical: ☐

Underwater: ☐

Other Special: ☐

Schedule:

	Required (Y/N)	Last Date	Frequency	Next Date
NBI (90):		01/01/1900	(91): 24 mos	03/16/2011
Fracture Critical (92A): <input type="checkbox"/>	(93A): 1/1/1900	(92A): -1 mos	1/1/1900	
Underwater (92B): <input type="checkbox"/>	(93B): 1/1/1900	(92B): -1 mos	1/1/1900	
Other Special (92C): <input type="checkbox"/>	(93C): 1/1/1900	(92C): -1 mos	1/1/1900	
Element: NA			24 mos	03/16/2011

Bridge Inspection Resources:

Next Inspector: v. virtis (2)

Bridge Group: -1

Crew Hours: 0

Flagger Hours: 0

Helper Hours: 0

Snooper Hours: 0

Special Crew Hours: 0

Special Equip Hours: 0


OK Help Cancel



Define Element

Edit Element Detail [?] [X]

Edit detail for element 109
Structure Unit Structure Unit 1 (1) Environment 1.
New Values:

Element ID:	109 - P/S Conc Open Gird	Element Description:
Structure Unit:	Structure Unit 1 / Type=M	 B1 Girder; the interior girder in span 1. Element record added 2009-03-16.
Environment:	Ben.	
Quantity/Count:	13.600 m.	
Scale Factor:	1.000	
Element Record Trigger:	Off	

[OK] [Help] [Cancel]



Condition Card Entry

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as VIRTIS

File View Tools Window Help

Bridge Inspection Mode: New (Duplicate) Type: Regular NBI Key: KYGW

Bridge: QUINCY Find... Metric English Reports... Save

1 CONDITION 2 NOTES 3 WORK 4 APPRAISAL 5 INVENTORY 7 SCHEDULE 8 MEDIA

NBI Rating: Deck (58): Unknown (NBI) Substructure (60): Unknown (NBI) Culvert (62): Unknown (NBI)
Superstructure (59): 2 Critical 61: Unknown (NBI) Waterway (71): Unknown (NBI)
Unrepaired spalls: 3 Serious
4 Poor
5 Fair
6 Satisfactory
7 Good
8 Very Good

Create Element Edit

Key: 1 Stru Type: M Main

Elem / Env	Elem	Qty1	Qty2	Qty3	Qty4	Qty5
12 / 1	Bare Concrete Deck (ea	1	0	0	0	0
109 / 1	P/S Conc Open Girder	7	0	0	0	0

Input the element condition in current inspection procedure...

Element Condition

State: 1 No deterioration The element shows little or no deterioration. There may be discoloration, efflorescence, and/or superf



Inspection Schedule

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as VIRTIS

File View Tools Window Help

Bridge Inspection Mode: New (Duplicate) Type: Regular NBI Key: KYGW

Bridge: QUINCY Find... Metric English R

1 CONDITION 2 NOTES 3 WORK 4 APPRAISAL 5 INVENTORY 7 SCHEDULE 8 MEDIA

Summary:

Inspection Date: 03/16/2009
 Inspector: P. Pontis (1)
 Primary Type: Regular NBI
 Review Required: ☒
 Inspection Group:

Types Of Inspections Performed:

National Bridge Inventory: ☒
 Element: ☒
 Fracture Critical: ☐
 Underwater: ☐
 Other Special: ☐

Schedule:

	Required (Y/N)	Last Date	Frequency	Next Date
NBI (90):		01/30/2009	(91): 24 mos	03/16/2011
Fracture Critical (92A):	<input checked="" type="checkbox"/>	(93A): 1/30/2009	(92A): 24 mos	1/30/2011
Underwater (92B):	<input checked="" type="checkbox"/>	(93B): 1/30/2009	(92B): 24 mos	1/30/2011
Other Special (92C):	<input checked="" type="checkbox"/>	(93C): 1/30/2009	(92C): 24 mos	1/30/2011
Element: NA			24 mos	01/30/2011

Bridge Inspection Resources:

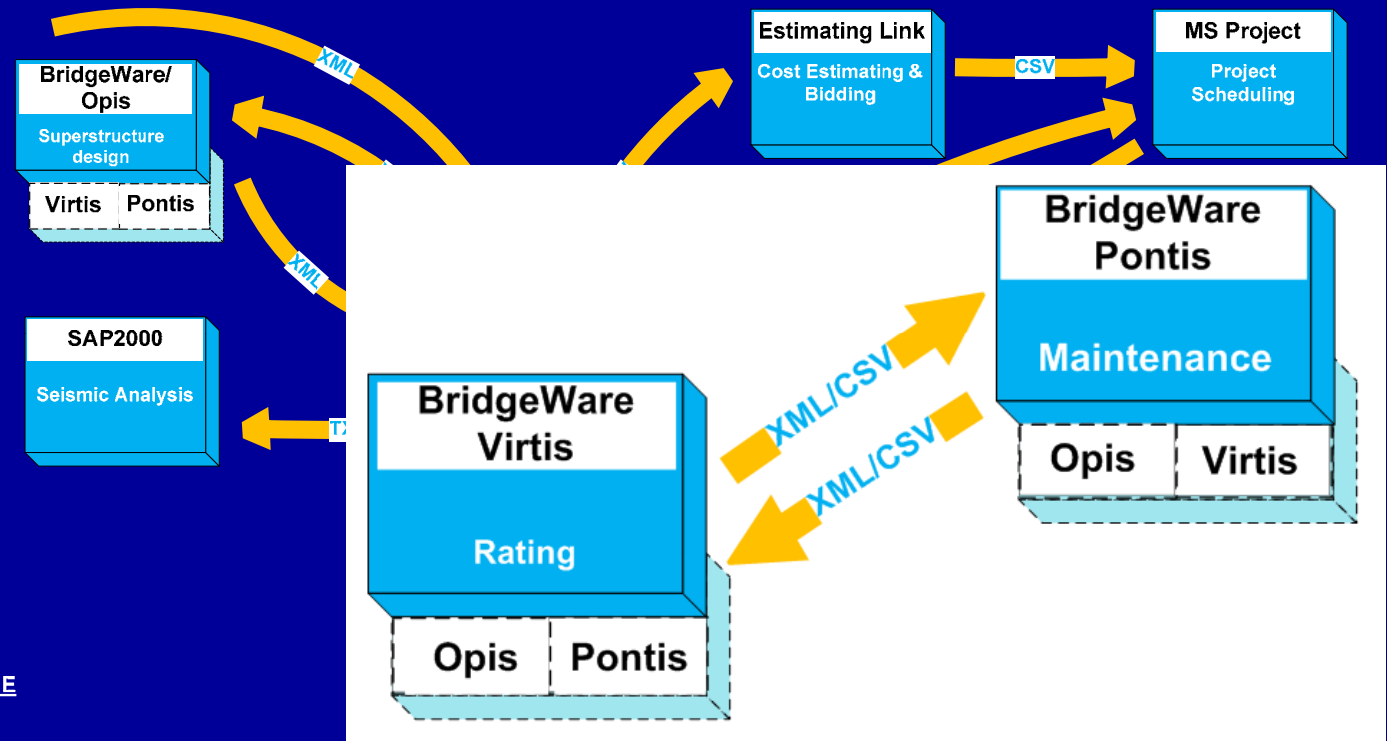
Next Inspector: v. virtis (2)
 Bridge Group: -1

Crew Hours: 5
 Flagger Hours: 4
 Helper Hours: 2

Snooper Hours: 3
 Special Crew Hours: 5
 Special Equip Hours: 4



Pontis-Virtis Linkage



METHOD OF DATA EXCHANGE

TXT – TEXT FILE

XML – EXTENSIBLE MARKUP LANGUAGE

LANDXML – LAND EXTENSIBLE MARKUP LANGUAGE

VBA – VISUAL BASIC FOR APPLICATIONS

CSV – COMMA SEPARATED VALUES

BARS/LARS – AASHTOWARE AND BENTLEY SOFTWARE



Inspection Data: Girder Section Loss

Web Section Loss Input Form (web_Section_Loss.csv file):

	A	B	C	D	E	F
1	Girder Type (Interior = 1; External=0)	Girder No.	Thickness Loss (%)	Span No.	Start Distance (ft)	Length (ft)
2		1	20	1	13	2
3		0	10	1	3	0.5
4		1	5	1	1	0.4
5		1	5	1	3	7
6		1	10	2	5	2

Flange Section Loss Input Form (tf_Section_Loss.csv file):

	A	B	C	D	E	F	G
1	Girder Type (Interior = 1; External=0)	Girder No.	Widthness Loss (%)	Thickness Loss (%)	Span No.	Start Distance (ft)	Length (ft)
2		1	19	21	1	13	2
3		1	0	13	1	2	2
4		0	5	5	1	1	3
5							

Input the section loss data from current inspection into csv (Comma Separated Value) linkage file which can be edited in Excel...



Inspection Data: Girder Section Loss

- ❖ Section loss data can be attached in Pontis:

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as PONTIS

File View Tools Window Help

Bridge Inspection Mode: New (Duplicate) Type: Regular NBI Key: FKYU

Bridge: 99 QUINCY Find... Metric English Reports... Save

1 CONDITION 2 NOTES 3 WORK 4 APPRAISAL 5 INVENTORY 7 SCHEDULE 8 MEDIA

Context: INSPECTION The Document Root Directory is C:\

Name	Type	Agency Type	Report Flag	Sort Order	Location
web_Section_Loss	CSV	Design Document	<input type="checkbox"/>		D:\
tf_Section_Loss	CSV	Design Document	<input checked="" type="checkbox"/>		D:\

Notes:

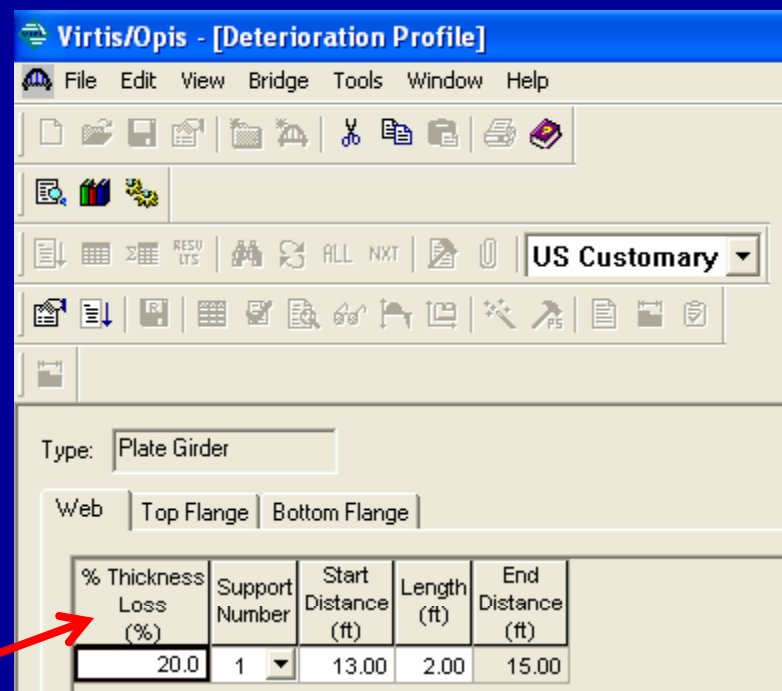
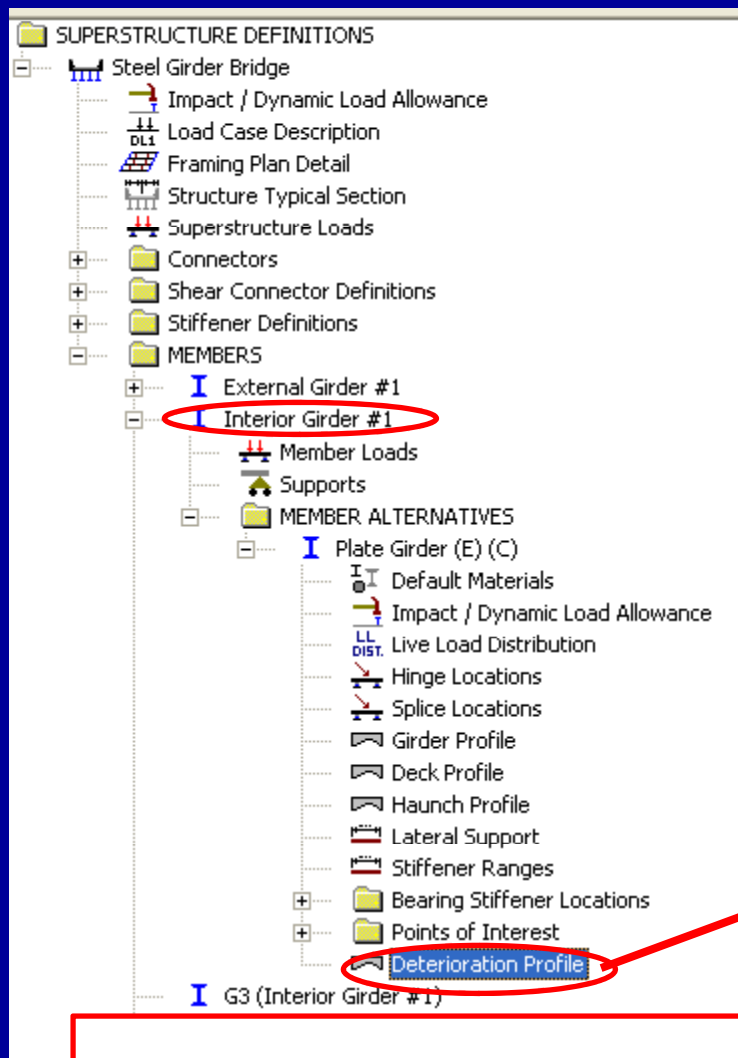
Document Information

File: tf_Section_Loss.csv
Location: D:\tf_Section_Loss.csv
Created: 3/12/2009 17:19:03 Size: 179 Bytes
Accessed: 3/12/2009 22:52:23 Status: AVAILABLE
Modified: 3/12/2009 22:52:23

Help
Unlink
Link
Open



Girder Section Loss Data Inputs in Virtis

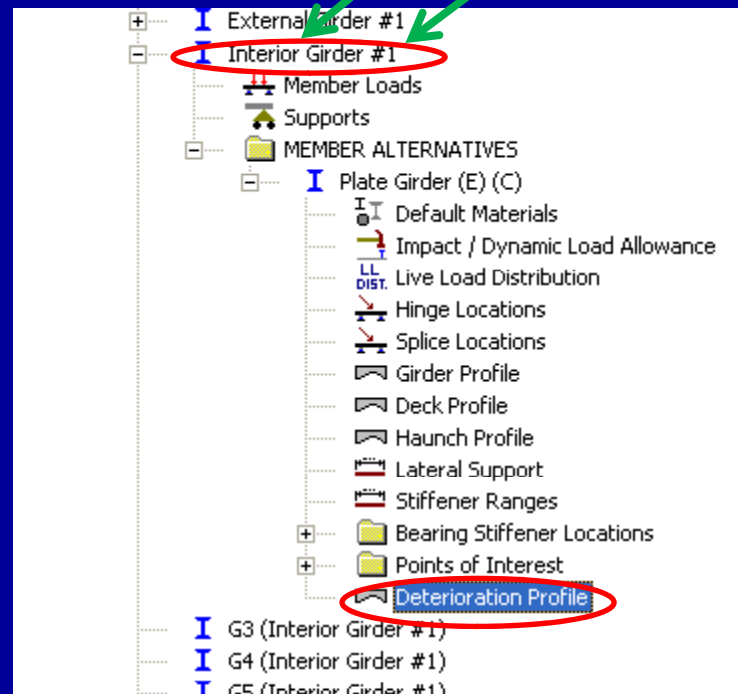


1. The program is developed by C# in Visual Studio;
2. It calls BRIDGEWare APIs to update the section loss data



Transfer Section Loss Data into Virtis

	A	B	C	D	E	F
1	Girder Type (Interior = 1; External=0)	Girder No.	Thickness Loss (%)	Span No.	Start Distance (ft)	Length (ft)
2	1	1	20	1	13	2
3	0	1	10	1	3	0.5
4	1	2	5	1	1	0.4
5	1	3	5	1	3	7
6	1	4	10	2	5	2



The screenshot shows the 'Plate Girder' properties dialog. The 'Web' tab is selected. The table shows the transfer of data from the first row of the data table.

% Thickness Loss (%)	Support Number	Start Distance (ft)	Length (ft)	End Distance (ft)
20.0	1	13.00	2.00	15.00

Compare the Rating Results (Dead Load)

Before Section Loss:

Report Type		Stage		Dead Load (k)	
Dead Load Actions		Non-composite (Stage 1)		Girder Weigh	

	Span	Location (ft)	% Span	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction (kip)	X Deflection (in)	Y Deflection (in)
	1	0.00	0.0	0.00	0.83	-0.00	0.83	0.0000	0.0000
	1	4.55	10.0	1.27	-0.27	-0.00		0.0000	-0.0055
	1	9.10	20.0	-2.44	-1.36	-0.00		0.0000	-0.0111
	1	13.65	30.0	-11.12	-2.46	-0.00		0.0000	-0.0165

After Section Loss:

Report Type		Stage		Dead Load	
Dead Load Actions		Non-composite (Stage 1)		Girder Weigh	

	Span	Location (ft)	% Span	Moment (kip-ft)	Shear (kip)	Axial (kip)	Reaction (kip)	X Deflection (in)	Y Deflection (in)
	1	0.00	0.0	0.00	0.80	-0.00	0.80	0.0000	0.0000
	1	4.55	10.0	1.14	-0.30	-0.00		0.0000	-0.0056
	1	9.10	20.0	-2.69	-1.39	-0.00		0.0000	-0.0112
	1	13.65	30.0	-11.50	-2.47	-0.00		0.0000	-0.0166



Compare the Rating Results (Live Load)

Before Section Loss:

Report Type

Stage

Live Load

Live Load Type

Live Load Actions

Composite (short term) (Stage 3)

HL-93 (US)

Design Truck

	Span	Location (ft)	% Span	Positive Moment (kip-ft)	Negative Moment (kip-ft)	Positive Shear (kip)	Negative Shear (kip)	Positive Axial (kip)	Negative Axial (kip)	Positive Reaction (kip)	Negative Reaction (kip)	Positive X Deflection (in)	Negative X Deflection (in)	Positive Y Deflection (in)	Negative Y Deflection (in)	% Impact Pos Reaction	% Impact Neg Reaction
	1	0.00	0.0	0.00	-0.00	70.63	-25.90	0.00	0.00	70.63	-25.90	0.0000	0.0000	0.0000	0.0000	33.000	33.000
	1	4.55	10.0	274.56	-117.85	61.14	-25.90	0.00	0.00			0.0000	0.0000	0.0346	-0.0361		
	1	9.10	20.0	458.69	-235.69	51.11	-25.90	0.00	0.00			0.0000	0.0000	0.0654	-0.0700		
	1	13.65	30.0	560.29	-353.54	41.44	-25.90	0.00	0.00			0.0000	0.0000	0.0886	-0.0995		

After Section Loss:

Report Type

Live Load Actions

Stage

Composite (short term) (Stage 3)

Live Load

HL-93 (US)

Live Load Type

Design Truck

	Span	Location (ft)	% Span	Positive Moment (kip-ft)	Negative Moment (kip-ft)	Positive Shear (kip)	Negative Shear (kip)	Positive Axial (kip)	Negative Axial (kip)	Positive Reaction (kip)	Negative Reaction (kip)	Positive X Deflection (in)	Negative X Deflection (in)	Positive Y Deflection (in)	Negative Y Deflection (in)	% Impact Pos Reaction	% Impact Neg Reaction
	1	0.00	0.0	0.00	-0.00	70.62	-25.90	0.00	0.00	70.62	-25.90	0.0000	0.0000	0.0000	0.0000	33.000	33.000
	1	4.55	10.0	274.54	-117.83	61.14	-25.90	0.00	0.00			0.0000	0.0000	0.0348	-0.0362		
	1	9.10	20.0	458.63	-235.65	51.10	-25.90	0.00	0.00			0.0000	0.0000	0.0656	-0.0702		
	1	13.65	30.0	560.18	-353.47	41.43	-25.90	0.00	0.00			0.0000	0.0000	0.0891	-0.0998		



Pontis: Preservation Module



Preservation Module Desktop

The preservation module allows editing of the agency policies, cost, and deterioration models for a selected element and environment.

From here, you can select different elements and/or environments, edit expert elicitations, update the models based on elicitation or historical results, or build the preservation optimization model.

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as PONTIS

File View Tools Window Help

Desktop - Preservation Models and Optimization

Preservation Element: P Conc Deck/AC Ovly (14) Env: Ben. Metric English

Element: P Conc Deck/AC Ovly (14)		Transition Probabilities to State					Unit Cost (\$)	
Action (>> = recommended)		1	2	3	4	5	Direct	Long-Term
State: 1 - No damage							Optimal Percent in State: 15.48	
>> 0	Do Nothing	97.47	2.53	0.00	0.00	0.00	0.00	0.23
State: 2 - Distress <= 10%							Optimal Percent in State: 19.39	
>> 0	Do Nothing	0.00	97.98	2.02	0.00	0.00	0.00	0.68
1	Repair potholes and substrate	0.00	100.00	0.00	0.00	0.00	165.57	166.22
State: 3 - 10-25% distress							Optimal Percent in State: 38.79	
>> 0	Do Nothing	0.00	0.00	98.99	1.01	0.00	0.00	2.37
1	Repair potholes and substrate	0.00	0.00	100.00	0.00	0.00	162.28	164.53
2	Replace overlay and repair substrate	100.00	0.00	0.00	0.00	0.00	68.18	68.40
State: 4 - 25-50% distress							Optimal Percent in State: 25.94	
>> 0	Do Nothing	0.00	0.00	0.00	98.49	1.51	0.00	14.05
1	Repair potholes and substrate	0.00	0.00	0.00	100.00	0.00	45.46	58.84
2	Repair substrate and replace overlay	100.00	0.00	0.00	0.00	0.00	96.94	97.16
State: 5 - Distress >=50%							Optimal Percent in State: 0.39	
0	Do Nothing	0.00	0.00	0.00	0.00	98.49	0.00	65.82
>> 1	Repair substrate and replace overlay	100.00	0.00	0.00	0.00	0.00	60.23	60.45
2	Replace deck	100.00	0.00	0.00	0.00	0.00	298.30	298.52
Units: sq.m.							Agency Failure Cost: 633.44	
							User Failure Cost: 0.00	
Long-Term Optimal Unit Cost (\$): 0.24							Probability of Failure from Last State: 1.51	

Elicit Cost
Elicit Deter.
Update
Restore
Print
Adjust Costs
Optimize
H Target
Reports



Elicit Cost

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as PONTIS

File View Tools Window Help

Expert Transition Probability Cost Elicitation

User: Pontis

Element: 14 Concrete Deck - Protected w/ AC Overlay

Environment: 1 Ben.

Material: Decks Category: Decks/Slabs Type: Decks/Slab

Agency Cost of Element Failure (\$): 600.00 Units: per sq.m..

User Cost of Element Failure (\$): 0.00

Scale Factor: 1

Weight: 20 bridges Effective Date: 05/23/1996

User	Matl	State	#	Action	Description	Unit Cost (\$)
Pontis	Decks	No damage	0 DN	Do Nothing	Do Nothing	.00
		Distress <= 10%	0 DN	Do Nothing	Do Nothing	.00
			1 Repair	Repair potholes and substrate	Repair potholes and substrate	156.83
		10-25% distress	0 DN	Do Nothing	Do Nothing	.00
			1 Repair	Repair potholes and substrate	Repair potholes and substrate	153.71
			2 Repl Ovly	Replace overlay and repair substrate	Replace overlay and repair substrate	64.58
		25-50% distress	0 DN	Do Nothing	Do Nothing	.00
			1 Repair	Repair potholes and substrate	Repair potholes and substrate	43.06
			2 Repl Ovly	Repair substrate and replace overlay	Repair substrate and replace overlay	91.82
		Distress >=50%	0 DN	Do Nothing	Do Nothing	.00
			1 Repl Ovly	Repair substrate and replace overlay	Repair substrate and replace overlay	57.05
			2 Replace	Replace deck	Replace deck	282.55

Edit agency-based costs of different preservation actions.



Expert Transition Probability Model Elicitation

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as PONTIS

File View Tools Window Help

Expert Transition Probability Model Elicitation

User: Pontis

Element: 14 Concrete Deck - Protected w/ AC Overlay

Environment: 1 Ben.

Material: Decks

Category: Decks/Slabs

Type: Decks/Slab

Weight: 20 bridges Effective Date: 09/19/1996

User	Element	Matl	Env	#	State	#	Action	Med Yrs	P. St.1	P. St.2	P. St.3	P. St.4	P. St.5
Pontis	P Conc Deck/Decks		Ben.	1	No damage	0	DN	27.0	97.47	2.53			
				2	Distress <= 10%	0	DN	33.9		97.98	2.02		
						1	Repair		0	100.00	0	0	0
				3	10-25% distress	0	DN	68.6			98.00	1.01	
						1	Repair		0	0	100.00	0	0
						2	Repl Ovly		100.00	0	0	0	0
				4	25-50% distress	0	DN	45.5				98.49	1.51
						1	Repair		0	0	0	100.00	0
						2	Repl Ovly		100.00	0	0	0	0
				5	Distress >=50%	0	DN	45.5					98.49
						1	Repl Ovly		100.00	0	0	0	0
						2	Replace		100.00	0	0	0	0

Edit agency-based actions regarding how different structure elements deteriorate.



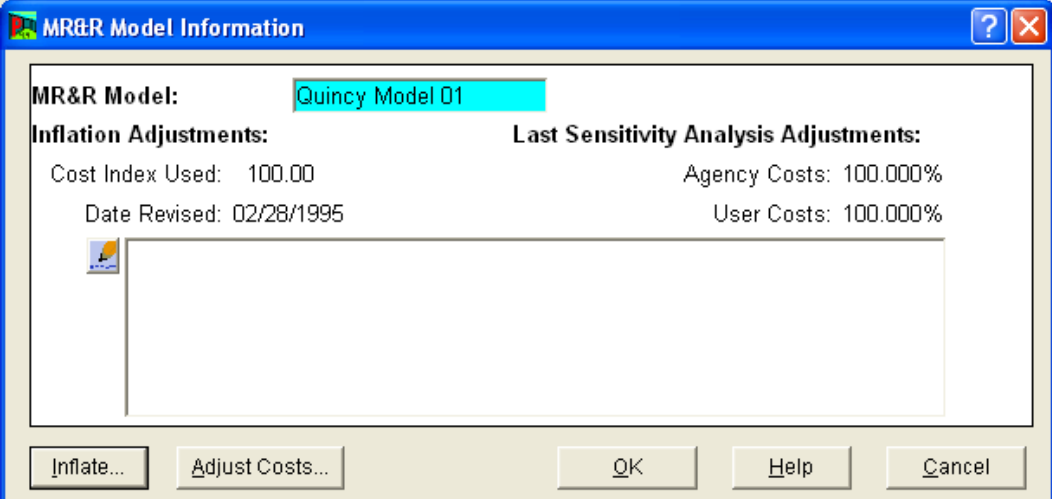
Adjust Costs

Inflation Adjustments:

- **Cost Index Used**---- Numeric value of cost index last used for inflation adjustments.
- **Date Revised**---- Date the MR&R model information was last revised.

Last Sensitivity Analysis Adjustments:

- **Agency Costs**---- Percentage by which MR&R unit costs were last adjusted for the preservation optimization. For example, to increase all agency costs by 20 percent, enter 120. To decrease all agency costs by 20 percent, enter 80.
- **User Costs**----Percentage by which user costs were last adjusted for the preservation optimization.



The screenshot shows a Windows-style dialog box titled "MR&R Model Information". It contains the following fields and buttons:

- MR&R Model:** A text box containing "Quincy Model 01".
- Inflation Adjustments:**
 - Cost Index Used:** 100.00
 - Date Revised:** 02/28/1995
- Last Sensitivity Analysis Adjustments:**
 - Agency Costs:** 100.000%
 - User Costs:** 100.000%
- A large empty rectangular box with a small icon in the top-left corner.
- Buttons at the bottom: "Inflate...", "Adjust Costs...", "OK", "Help", and "Cancel".

Adjust the preservation costs for inflation to determine the impact to a program of increases or decreases.



Reports---Preservation model details

YourState Department of Transportation				Bureau of Bridges and Structures Bridge Maintenance			
Preservation Model Details							
Element (Environment): 27 (1)							
Concrete Deck - Protected w/ Cathodic System (Ben.)				Long-Term Optimal Unit Cost(\$):		0.16	
				Failure Probability (%):		1.01	
Metric Units: sq.m.				Element Failure Unit Costs(\$)			
English Units: (SF)				Agency Cost:		469.80	
				User Cost:		0.00	
Action	Direct	Transition Probabilities (%)					Long-Term
(>> = recommended)	Unit Cost(\$)	1	2	3	4	5	Cost(\$)
State: 1 No damage	Optimal Percent in State:	10.16				Unit Benefit:	0.00
>> 0 Do Nothing	0.00	97.47	2.53	0.00	0.00	0.00	0.09
1 Add a protective system	190.03	100.00	0.00	0.00	0.00	0.00	190.12
State: 2 Distress <= 10%	Optimal Percent in State:	12.72				Unit Benefit:	0.00
>> 0 Do Nothing	0.00	0.00	97.98	2.02	0.00	0.00	0.28
1 Repair spalls and delaminations	85.23	0.00	100.00	0.00	0.00	0.00	85.49
2 Add a protective system	190.03	100.00	0.00	0.00	0.00	0.00	190.12
State: 3 10-25% distress	Optimal Percent in State:	51.41				Unit Benefit:	0.00
>> 0 Do Nothing	0.00	0.00	0.00	99.50	0.50	0.00	0.96
1 Repair spalls and delaminations	109.89	0.00	0.00	100.00	0.00	0.00	110.80
2 Repair spalls and delaminations at	108.64	100.00	0.00	0.00	0.00	0.00	108.73

Ready

Intergrat

Ready

Integration

- A detailed report can be printed to view the preservation strategy for each condition unit, including the recommended actions (represented by >>) for each element/environment combination.
- The report also shows the long-term optimal cost for the condition unit, representing best cost-benefit choice.
- Also, the report indicates the percentage chance of failure from the worst condition state of the condition unit and the agency and user unit failure costs.



Pontis: Programming Module



Programming Module Desktop

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as PONTIS

File View Tools Window Help

Desktop - Programming

Programming Scenario: VV VV <Please name this scenario> Set As Default Set As Program

Scenario Name: VV <Please name this scenario>

Simulation Time Frame:
First Sim Yr: 2001 First Proj Yr: 2001 Sim Duration (Yrs): 5

Simulation Parameters:
Policy: Default
Cost: Default Cost Set
Budget: Default Budget
Improve: Default Improvement

Simulation Rules:
Scoping: 00 - Default Scope Set
Look Ahead: 00 - Default Look Set
Rehab: 00 - Default Rehab Set
Agency Pol: 00 - Default Agency Policy

Thresholds:
Min Project Cost: (\$) 5000
Min Action Cost: (\$) 250
Paint Rule: Do Not Use Thresholds
Paint All when PCI is <= 0 %
Paint S2-S5 when PCI is <= 0 %
Deferment (Yrs): 0

Project Types to Include:
Optimal & User Projects

Needs to Address:
MRR & Functional Needs

Needs Growth:
Grow All Needs

More Options:
Set Scenario Elements...
Set Advanced Parameters...

Store bridge-level results ☐

VV - Copy of SE <Please name this scenario>.
Created by virtis.
03/16/2009 16:03:46.

SE - Copy of Default scenario.
Created by virtis.
03/16/2009 16:03:40.

Define and run program scenarios. From this screen a user can edit functional improvement standards, cost and benefit assumptions, annual budgets, improvement models, and simulation rules.



Simulation Parameters---Policy Definition

Policy Variable Settings For Policy ID 00 - Default

3 - Not State Owned/On NHS4 - Not State Owned/Off NHS

Copy...SaveModel InfoReportsMetricEnglish

1 - State Owned/On NHS2 - State Owned/Off NHS

Dimensions		Legal						Design			
ADTClass	Functional Class	Lane Width	Shoulder Width	Vertical Clearance	Operating Rating	Inventory Rating	Other Rating	Lane Width	Shoulder Width	Vertical Clearance	Replace Swell Factor
		m	m	m	mton	mton	mton	m	m	m	
00	00	3.400	0.900	4.300	41.000	-1.000	-1.000	3.700	4.900	4.900	1.200
ADT Class 1	01 Rural Interstate	3.400	0.900	4.300	41.000	-1.000	-1.000	3.700	4.900	4.900	1.200
	02 Rural Other Princ	3.400	0.900	4.300	36.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	06 Rural Minor Arterial	3.400	0.000	4.300	36.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	07 Rural Mjr Collector	3.400	0.900	4.300	33.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	08 Rural min Collector	3.400	0.900	4.300	30.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	09 Rural Local	3.400	0.900	4.300	27.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	11 Urban Interstate	3.400	0.900	4.300	41.000	-1.000	-1.000	3.700	4.900	4.900	1.200
	12 Urban Fwy/Expwy	3.400	0.900	4.300	36.000	-1.000	-1.000	3.700	2.400	4.900	1.200
	14 Urban Other Princ	3.400	0.900	4.300	36.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	16 Urban Minor Arterial	3.400	0.000	4.300	36.000	-1.000	-1.000	3.700	2.400	4.400	1.200
17 Urban Collector	3.400	0.900	4.300	33.000	-1.000	-1.000	3.700	2.400	4.400	1.200	
19 Urban Local	3.400	0.900	4.300	27.000	-1.000	-1.000	3.700	2.400	4.400	1.200	
ADT Class 2	01 Rural Interstate	3.400	0.900	4.300	41.000	-1.000	-1.000	3.700	4.900	4.900	1.200
	02 Rural Other Princ	3.400	0.900	4.300	36.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	06 Rural Minor Arterial	3.400	0.000	4.300	36.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	07 Rural Mjr Collector	3.400	0.900	4.300	33.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	08 Rural min Collector	3.400	0.900	4.300	30.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	09 Rural Local	3.400	0.900	4.300	27.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	11 Urban Interstate	3.400	0.900	4.300	41.000	-1.000	-1.000	3.700	4.900	4.900	1.200
	12 Urban Fwy/Expwy	3.400	0.900	4.300	36.000	-1.000	-1.000	3.700	2.400	4.900	1.200
	14 Urban Other Princ	3.400	0.900	4.300	36.000	-1.000	-1.000	3.700	2.400	4.400	1.200
	16 Urban Minor Arterial	3.400	0.000	4.300	36.000	-1.000	-1.000	3.700	2.400	4.400	1.200
17 Urban Collector	3.400	0.900	4.300	33.000	-1.000	-1.000	3.700	2.400	4.400	1.200	
19 Urban Local	3.400	0.900	4.300	27.000	-1.000	-1.000	3.700	2.400	4.400	1.200	

Policy Sets can be edited that will specify the functional improvement standards used in the scenario.



Simulation Parameters---Costs Definition

User & Agency Cost Variable Settings For Cost Set ID 00 - Default Cost Set

3 - Not State Owned/On NHS 4 - Not State Owned/Off NHS Copy... Save Model Info Reports Metric English

1 - State Owned/On NHS 2 - State Owned/Off NHS

Dimensions		Unit costs				User costs			
District	Functional Class	Replace per sq.m.	Widening per sq.m.	Raise per sq.m.	Strengthen per sq.m.	Detour per hr	Detour per km	Avg per accident	Weight
00	00	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
District 1	01 Rural Interstate	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	02 Rural Other Prin	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	06 Rural Minor Arte	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	07 Rural Mjr Collec	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	08 Rural min Colle	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	09 Rural Local	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	11 Urban Interstate	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	12 Urban Fwy/Expw	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	14 Urban Other Prii	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	16 Urban Minor Arte	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
District 2	17 Urban Collector	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	19 Urban Local	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	01 Rural Interstate	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	02 Rural Other Prin	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	06 Rural Minor Arte	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	07 Rural Mjr Collec	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	08 Rural min Colle	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	09 Rural Local	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00
	11 Urban Interstate	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	12 Urban Fwy/Expw	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
District 3	14 Urban Other Prii	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	16 Urban Minor Arte	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	17 Urban Collector	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	19 Urban Local	860.00	640.00	320.00	320.00	19.34	0.25	12,600	50.00
	01 Rural Interstate	860.00	640.00	320.00	320.00	19.34	0.25	37,600	50.00

Cost Sets can be edited that will specify the set of functional improvement unit costs and benefits used in the scenarios.



Simulation Parameters---Budgets Definition

Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as PONTIS

File View Tools Window Help

Annual Funding Levels -- Row 1 of 1

ID	Revised	Budget Set	Notes
00	8/12/1998	Default Budget	

Initialize... New Copy Delete Save ? |< < > >| Print Reports

Funding - All Sources

Year	Budget (\$)
2004	2,000,000,000
2005	2,000,000,000
2006	2,000,000,000
2007	2,000,000,000
2008	2,000,000,000

Budget Sets can be defined to be used in the various scenario simulations.



Simulation Parameters---Improvement Parameters Definition

Improve:

Improvement Sets can be edited that will specify the improvement benefit model parameters used by the scenario.

Parameters For Improvement ID 00 - 'Default Improvement Set'

Save Model Info Reports

Parameters

gaccriska [The minimum possible NBI approach alignment rating, ordinarily 2]:	2.00000
gaccriskb [The maximum possible NBI approach alignment rating, ordinarily 9]:	9.0
gaccriskc [The accident rate is proportional to $W^{\wedge}(-GAccRiskC)$]:	6.50
defaulttruckpct [Default truck percentage. Specified as a percentage]:	5.0
accrisccoeff [Accident risk coefficient]:	200
mindualtst [Tech Manual G(L) is 0 when load limit is below this value, specified in metric tons]:	2.300
dualttsba [X-coordinate (load) of right endpoint of first piece of G(L) pw-linear model. Specified in metric tons]:	18.000
dualtstya [Y-coordinate (percent) of right endpoint of first piece of G(L) pw-linear model]:	64.32
dualttsbb [X-coordinate (load) of right endpoint of second piece of G(L) pw-linear model. Specified in metric tons]:	41.000
dualtstyb [Y-coordinate (percent) of right endpoint of second piece of G(L) pw-linear model]:	83.57
widthdefactor [Width deficiency factor, specified as a fraction]:	0.90
raisecriticaladt [Critical ADT for raising needs, specified in terms of vehicles per day]:	50
raisecriticalbypasslen [Critical bypass length for raising needs, in kilometers]:	8
replacecriticaladt [Critical ADT for replacement needs, specified in terms of vehicles per day]:	50
replacecriticalbypasslen [Critical bypass length for replacement needs, in kilometers]:	8
elddataurethrs [1st input threshold for vert. el. data ure startfunction. Specified in	0



Simulation Rules

Rules - Scoping rule 1 of 7

1 Scoping | 2 Look Ahead | 3 Major Rehab | 4 Agency Policy

Existing Rules

Scoping Set: Default Scope Set [Edit] [Delete] [?] [←] [≤] [≥] [→] [Add Rule] [Delete Rule] [Renumber]

Rule in English	Priority
If REPLACE ELEMENT is done to DECK/SLABS, then also do REPLACE ELEMENT to JOINTS	1.0
If REPLACE ELEMENT is done to DECK/SLABS, then also do REPLACE ELEMENT to RAILINGS/BARRIERS	2.0
If ELEMENT REHABILITATION is done to DECK/SLABS, then also do REPLACE ELEMENT to STRIP SEAL EXP JOINT	3.0
If ELEMENT REHABILITATION is done to DECK/SLABS, then also do REPLACE ELEMENT to COMPRESSN	4.0
If ELEMENT REHABILITATION is done to DECK/SLABS, then also do ELEMENT REHABILITATION to OPEN EXPANSION JOINT	5.0
If ELEMENT REHABILITATION is done to DECK/SLABS, then also do ELEMENT REHABILITATION to POURABLE JOINT SEAL	6.0
If ELEMENT REHABILITATION is done to DECK/SLABS, then also do ELEMENT REHABILITATION to ASSEMBLY JOINT/SEAL	7.0

Build a Rule

If this action is done to this object

2 Element Category [↓] 1 Action Type [↓]

Element Categories Action Types

Decks/Slabs [↓] Replace Element [↓]

then (also) do this action to this object

2 Element Category [↓] 1 Action Type [↓]

Element Categories Action Types

Joints [↓] Replace Element [↓]

Priority [1] [↑] [↓]

[OK] [Help] [Cancel]

Rules - Look Ahead rule 1 of 45

1 Scoping | 2 Look Ahead | 3 Major Rehab | 4 Agency Policy

Existing Rules

Look Ahead Set: Default Look Set [Edit] [Delete] [?] [←] [≤] [≥] [→] [Add Rule] [Delete Rule]

Rule in English	Min Year
If PAINT BRIDGE (FLEX) to BRIDGE < 5 years, then no PAINTING to BEARINGS	5
If PAINT BRIDGE (FLEX) to BRIDGE < 5 years, then no PAINTING to DECK/SLABS	5
If PAINT BRIDGE (FLEX) to BRIDGE < 5 years, then no PAINTING to JOINTS	5
If PAINT BRIDGE (FLEX) to BRIDGE < 5 years, then no PAINTING to OTHER ELEMENTS	5
If PAINT BRIDGE (FLEX) to BRIDGE < 5 years, then no PAINTING to SUBSTRUCTURE	5
If PAINT BRIDGE (FLEX) to BRIDGE < 5 years, then no PAINTING to SUPERSTRUCTURE	5
If REHAB SUB (FLEX) to SUBSTRUCTURE < 5 years, then no MAINT&REPAIR to SUBSTRUCTURE	5
If REHAB SUB (FLEX) to SUBSTRUCTURE < 5 years, then no PAINTING to SUBSTRUCTURE	5
If REHAB SUB (FLEX) to SUBSTRUCTURE < 5 years, then no REHABILITATION to SUBSTRUCTURE	5
If REHAB SUPER (FLEX) to SUPERSTRUCTURE < 5 years, then no MAINT&REPAIR to SUPERSTRUCTURE	5
If REHAB SUPER (FLEX) to SUPERSTRUCTURE < 5 years, then no PAINTING to SUPERSTRUCTURE	5

Build a Rule

If this action is done to this object within <n> years

0 Bridge [↓] 3 Flex Action [↓]

Flexible Actions

Paint Bridge (flex) [↓]

then do NOT do this action to this object

2 Element Category [↓] 2 Action Category [↓]

Element Categories Action Categories

Bearings [↓] Painting [↓]

Years [5] [↑] [↓]

[OK] [Help] [Cancel]

Rules that control the behavior of program simulation can be defined and edited (i.e. If a bridge replacement is < 5 years, then no rehab to any other elements).



Results----Total Needs vs. Programmed Work Over Time

Report Selection (Programming) PROG003_TOTAL_NEEDS_PROG_WORK

Selected: prog003_total_needs_prog_work

New Report Click to View Long Comments ->

Describe Report Generate Report Print First Page Prior Page Next Page Last Page Close

Bridge Maintenance

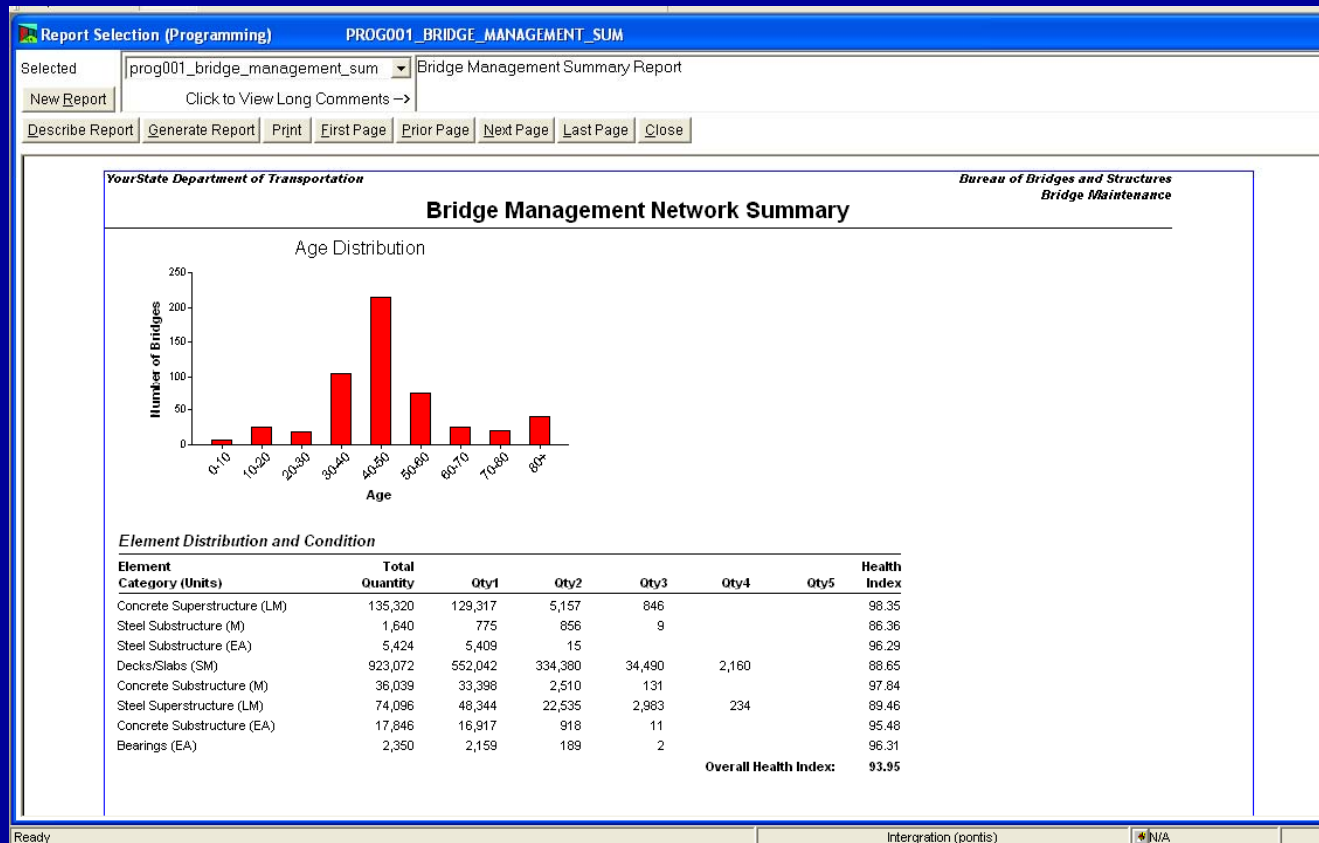
Total Needs vs. Programmed Work Over Time											
Year	Budget	District	Func. Class	On/Off Sys.	IHS	Feasible Needs		Work Programmed		Hum. Structures	
						Cost (\$)	Benefit (\$)	Cost (\$)	Benefit (\$)	Needs	Prog.
2006	2,000,000	Total, All Districts				193,612,840	439,785,049	0	0	209	0
		03	District Total			193,612,840	439,785,049	0	0	209	0
		01	Rural Interstate	On System	On NHS	8,929,486	26,015,922	0	0	39	0
		02	Rural Other Princ	On System	Off NHS	2,823,102	3,777,669	0	0	7	0
		02	Rural Other Princ	On System	On NHS	6,461,837	26,656,792	0	0	22	0
		06	Rural Minor Arterial	On System	Off NHS	13,391,214	28,472,238	0	0	25	0
		06	Rural Minor Arterial	On System	On NHS	19,990,900	57,014,170	0	0	0	0
		07	Rural Mjr Collector	On System	Off NHS	9,203,556	63,581,416	0	0	18	0
		07	Rural Mjr Collector	On System	On NHS	1,121,306	93,827,647	0	0	1	0
		08	Rural min Collector	On System	Off NHS	3,678,242	4,241,752	0	0	7	0
		09	Rural Local	On System	Off NHS	4,579,391	2,569,521	0	0	7	0
		11	Urban Interstate	On System	Off NHS	6,834	32,626	0	0	1	0
		11	Urban Interstate	On System	On NHS	49,652,014	74,398,557	0	0	6	0
		12	Urban Fwy/Expwy	On System	Off NHS	29,150,865	17,366,131	0	0	8	0
		12	Urban Fwy/Expwy	On System	On NHS	15,104,446	24,244,292	0	0	25	0
		14	Urban Other Princ	On System	Off NHS	5,081,807	3,402,677	0	0	4	0
		14	Urban Other Princ	On System	On NHS	645,984	1,516,424	0	0	2	0
		16	Urban Minor Arterial	On System	Off NHS	9,580,403	3,433,233	0	0	11	0
		17	Urban Collector	On System	Off NHS	9,448,065	6,481,108	0	0	11	0
		19	Urban Local	On System	Off NHS	2,702,037	1,260,312	0	0	5	0
		19	Urban Local	On System	On NHS	1,988,024	1,055,367	0	0	2	0
2007	2,000,000	Total, All Districts				195,382,198	485,972,528	0	0	224	0
		01	District Total			0	0	0	0	0	0
		-1		-1	Off NHS	0	0	0	0	0	0
		03	District Total			195,382,198	485,972,528	0	0	224	0
		00		On System	Off NHS	0	0	0	0	0	0

Ready Intergration (pontis) N/A

A report that can be generated that summarizes the needs and programmed work over time for the current Pontis scenario by a specified budget year.



Results---Bridge Management Network Summary



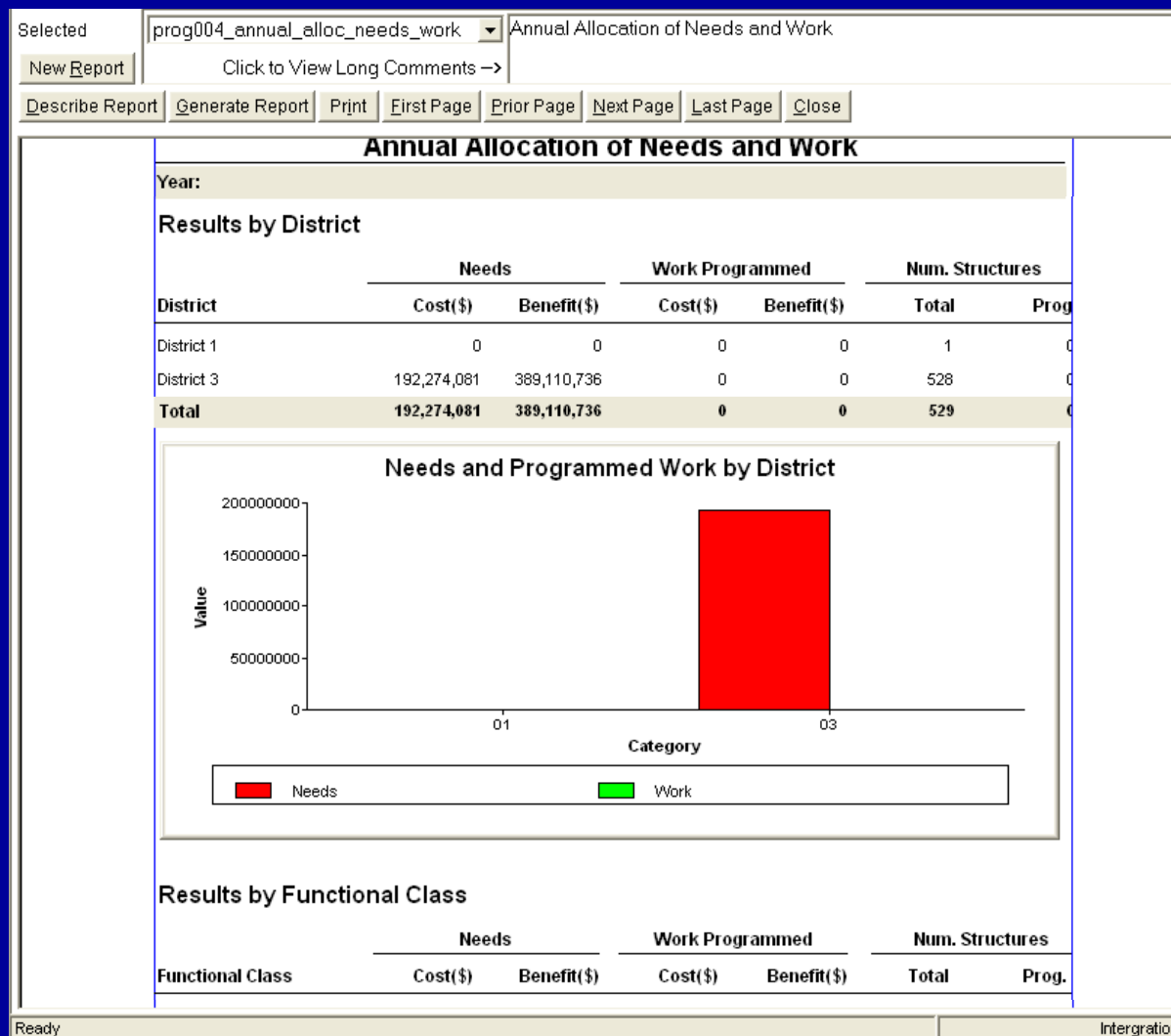
The Bridge Management Summary Report provides an overview of the state of the bridge network.



Results---Annual Allocation of Needs and Work

A report can be generated to summarize needs and programmed work for the current scenario for each program year, providing separate summaries and graphs for each program year by

- district,
- functional class,
- on/off National Highway System (NHS) status, and
- on/off State System status.



Results---- Network Performance Measure Summary

Selected

prog006_network_perf_measures

Network Performance Measure Summary

New Report

Click to View Long Comments →

Describe Report

Generate Report

Print

First Page

Prior Page

Next Page

Last Page

Close

Network Performance Measure Summary

District	Func Class	On/Off Sys	On/Off NHS	Structure Count	Health Index	Number of Structures								
						SR <25	SR 25-50	SR 50-80	SR >80	SD	FO	HBRR-Rehab	HBRR - Repl	Not HBRR Elig
Year: 2001														
01			Off	1	99.70	1	0	0	0	0	0	0	0	1
03	00	On	Off	20	97.50	20	0	0	0	0	0	0	0	20
	01	On	Off	5	95.50	0	0	1	4	0	1	0	0	5
			On	91	93.70	0	0	8	83	5	10	5	0	86
	02	On	Off	16	97.00	0	1	5	10	0	3	2	1	13
			On	73	95.20	0	2	21	50	3	20	9	2	62
	06	On	Off	95	96.40	1	2	38	54	2	17	16	1	78
			On	18	87.00	0	0	8	10	0	3	3	0	15
	07	On	Off	26	88.60	0	3	0	14	0	12	6	3	17
			On	1	70.90	0	1	0	0	0	1	0	1	0
	08	On	Off	15	99.20	0	0	4	11	0	11	3	0	12
	09	On	Off	12	98.20	0	0	2	10	0	9	1	0	11
	11	On	Off	1	99.00	0	0	0	1	0	1	0	0	1
			On	12	85.20	0	0	5	7	2	3	3	0	9
	12	On	Off	19	96.00	0	1	9	9	0	13	4	1	14
			On	76	96.20	0	0	9	67	0	23	7	0	69
	14	On	Off	10	97.70	0	0	4	6	0	8	4	0	6
			On	4	93.90	0	0	3	1	0	2	2	0	2
	16	On	Off	12	98.20	0	0	5	7	1	9	5	0	7
	17	On	Off	12	97.40	0	0	4	8	0	11	4	0	8
	19	On	Off	7	93.60	0	0	4	3	0	7	4	0	3
			On	3	96.70	0	0	0	3	0	3	0	0	3
Total				529		22	10	139	358	13	167	78	9	442

Scenario:PVV Programmed Work

Fri 5/15/2009 12:47:48

Ready

Integration (pontic)

N/A

A report that summarizes performance measures for the entire network can be generated. Performance measures are broken down by district, functional class, on/off National Highway System (NHS) status, and on/off State System status.



Results--- Preservation Work Programmed by District

Selected

proc010_pres_work_by_district

New Report

Click to View Long Comments →

Describe Report

Generate Report

Print

First Page

Prior Page

Next Page

Last Page

Close

YourState Department of Transportation

Bureau of Bridges and Structures
Bridge Maintenance

Preservation Work Programmed by District

Key	Scenario Name	District	2000		2001		2002		2003		2004		2005
			Cost	Benefit	Cost	Benefit	Cost	Benefit	Cost	Benefit	Cost	Benefit	Cost
00	Default scenario	District 3			383,955	2,793,043	216,676	3,225,663	262,776	4,584,595	307,981	6,487,224	474,646
	Total		0	0	383,955	2,793,043	216,676	3,225,663	262,776	4,584,595	307,981	6,487,224	474,646
BA	Bridge Analysis	District 3	0	0									
	Total		0	0	0	0	0	0	0	0	0	0	0

This report shows programmed preservation work (work modeled by Pontis as being programmed given the budget constraint), and the benefits of preservation work programmed by district and year for each scenario.



Results---- Scenario Specification Report

Selected	prog012_scenario_report	Scenario Report
New Report	Click to View Long Comments ->	
Describe Report	Generate Report	Print
First Page	Prior Page	Next Page
Last Page	Close	

YourState Department of Transportation

Bureau of Bridges and Structures
Bridge Maintenance

Scenario Specification Report

PW Programmed Work

Overview
Last Modified: 5/15/2009 04:03:16 By: Pontis - Pontis Pontis
Scenario Notes:

Programmed Work

Simulation Time Frame
First Sim. Year: 2001
First Proj. Year: 2001
Sim. Duration: 10 years

Simulation Parameters
Current Functional Needs Only: ☐ Optimal Only: ☒ Replacement Critical Cutoff: 75 %
Current MR&R Needs Only: ☐ Optimal User Only: ☐ Minimum Project Cost: 5000
MR&R Projects Only: ☐ Deferment Years: 0
Prohibit Replacements: ☐

Improvement Standards
00 - Default Rev. Date 03/14/95

Policy Notes:

Improvement Costs
00 - Default Cost Set Rev. Date 02/06/95
Index 1.00
Imp. Cost Notes:

Discount Rate
.9525

Ready Intergration

This report documents key elements of the current Pontis scenario being used.



Pontis: Project Planning Module



Project Planning Desktop


Pontis 4.4.2 Hot Fix 5 - EVAL-1228 - You are currently logged in as PONTIS - [Desktop - Project Planning]

File View Tools Window Help

Project Plan Layout Count Find... Select... Save... Select All Just Selected Refresh

Rows 519 to 529 of 529 Layout: -- Default Structure Layout --

Bridge ID	Feature Intersected	Dist	Cnty	Own	Maint.	Area	Meters	Built	Structure Name	Facility Carried
25 0078L	E SHINGL SP UC	District 3	JEL DORA	State Highway Agency	State Highway Agency	06	40	1969	E SHINGLE SP U	U.S. HIGHWAY 50
25 0078R	E SHINGL SP UC	District 3	JEL DORA	State Highway Agency	State Highway Agency	06	40	1969	E SHINGLE SP U	U.S. HIGHWAY 50
25 0079	CARSON CREEK	District 3	JEL DORA	State Highway Agency	State Highway Agency	06	11	1939	CARSON CREEK	U.S. HIGHWAY 50
25 0083	CAMBRIDGE ROAD	District 3	JEL DORA	State Highway Agency	State Highway Agency	06	73	1970	CAMBRIDGE RD	CAMBRIDGE ROAD
25 0084L	CAMERON PK UC	District 3	JEL DORA	State Highway Agency	State Highway Agency	06	34	1970	CAMERON PK UC	U.S. HIGHWAY 50
25 0084R	CAMERON PK UC	District 3	JEL DORA	State Highway Agency	State Highway Agency	06	34	1970	CAMERON PK UC	U.S. HIGHWAY 50
25 0098	SOUTH FORK AMERICA	District 3	JEL DORA	State Highway Agency	State Highway Agency	06	94	1990	SFK AMERICAN FU	U.S. HIGHWAY 50
25 0106	EAGLE FALLS SHVD 2	District 3	JEL DORA	State Highway Agency	State Highway Agency	06	27	1991	EGL FLS SHVD 2	STATE ROUTE 89
29 0197L	MOKELUMNE RIVER	District 3	SAN JOAQ	State Highway Agency	State Highway Agency	05	376	1979	MOKELUMNE RIV	INTERSTATE 5
29 0197R	MOKELUMNE RIVER	District 3	SAN JOAQ	State Highway Agency	State Highway Agency	05	376	1979	MOKELUMNE RIV	INTERSTATE 5
QUINCY	SR 6060	District 1	Unknown (P)	State Highway Agen	State Highway Agen	-1	84	2000	QUINCY AVE BR	SR 0051

Retrieve 

Limit to 999999




Desktop
☒ Three panels
☐ Explorer
☐ Bridge List
☐ Candidates

Reports

QUINCY

1 Description

Select... From List Sync List Go

Scope:  All Items Status:  All Items Source:  All Items

A	S	Bridge ID	Object	Action	Year	Cost (\$)	Benefit (\$)
---	---	-----------	--------	--------	------	-----------	--------------

Select All Create Projects Delete Refresh Help ? ||< |< << >> |> >

Shows work candidates that can be dragged onto projects or bridges in the treeview to the left

Integration (pontis) N/A

05/15/2009 13:05:12

A user can search through a list of bridges or a list of projects and edit or create new projects.



Program Setup Screen

This screen allows you to define and edit the bridge construction or maintenance programs.

Adding Program

Program ID: Prog_Quincy_Rehab_2009 **Type:** 0 Preservation

Name: Quincy Ave. Bridge Preservation 2009

Objective:

Start Year: 2009 **End Year:** 2010 **Status:** 0 Active

Notes:

When adding a new program, enter the start year and end year above, and then the list below will provide rows where you can enter each year's budget.

Year	Fund Source	Budget (\$)	Notes
2009	Federal	500,000	
2010	Federal	0	
Total:		500,000	

Fund Sources OK Cancel Help



Funding Source Setup

This screen allows you to view and edit the funding sources defined in the database.

The screenshot displays the 'Funding Source Setup' application window. It contains a table with three columns: 'Funding Source', 'Description', and 'Funding Type'. The table lists two entries: 'Federal' with 'Federal Funding' and '2 Federal', and 'State' with 'State Funding' and '1 State'. The 'State' row is selected. Below the table is a button labeled 'Set as Default Funding'. Overlaid on this window is a 'Modifying Funding Source State' dialog box. This dialog has three fields: 'Funding Source' (set to 'State'), 'Primary Type' (set to '1 State'), and 'Description' (set to 'State Funding'). There is also a 'Notes' section with a text area and a small icon. At the bottom of the dialog are 'OK', 'Cancel', and 'Help' buttons.

Funding Source	Description	Funding Type
Federal	Federal Funding	2 Federal
State	State Funding	1 State

Set as Default Funding

Modifying Funding Source State

Funding Source: State Primary Type: 1 State

Description: State Funding

Notes:

OK Cancel Help



New/Open Project - Overview Screen

- The New/Open Project screen allows you to create a new project or edit the information for an existing project.
- The Overview tab contains general project-level information.

Project Pontis at 05/15/2009 13:16:25 (row 4 of 4)

#	Project ID	Project Name	Program
	Pontis at 05/15/2009 13:16:25	<Change This Project Name>	

1 Overview Work Items Contract & Funding Agency

Project ID: Tab Popup Help Label Goes Here 5; 25
Name: <Change This Project Name>
Program: Maintenance FY 2000-2001
Program Year: 2009
Action Type:
Status: 0 Proposed
Scenario Treatment:
Agency Ranking: 9999
Program Rank:
Responsible District:
Route:
KM Point Begin End
Review Status: 0 Recommended
Reviewed By: Hoyt Nelson
Date Completed: 00/00/0000 Notes

'Pontis at 05/15/2009 13:16:25' has no work items

Item 1:
Item 2:
Item 3:
Item 4:
Item 5:
Item 6:
Item 7:
Item 8:
Item 9:
Item 10:

Close Help Show Projects...



Rank Projects Screen

Rank Projects

Select the program for which you want to set the project rankings; that will populate the list of projects so you can rank them.

Program: The program year can be used to filter projects: ☐ Filter on Year

#	Project ID	Year	Benefit (\$)	Cost (\$)	B/C Ratio	Health Index	Sufficiency Rating	Agency Rank	Program Rank
1	FY 2000 Repl	2000	0	1,121,306	0.00	67.3	29.0	1	1.00
2	FY 2000 Widenings	2001	5,597	2,654,682	0.00	98.0	61.5	2	2.00

Projects can be assigned an agency program ranking based on project benefit, cost, benefit/cost ratio, health index or sufficiency rating or an agency preference.



Reports---- Projects and Work Candidates by Bridge

A report can be generated to show all projects and work candidates for selected structures after a particular scenario has been run.

Report Selection (Planning) PLAN002_PROJECTS_CANDIDATES

Selected: plan002_projects_candidates

New Report Click to View Long Comments ->

Describe Report Generate Report Print First Page Prior Page Next Page Last Page Close

Projects and Work Candidates by Bridge

Bridge ID: 11 0017 Facility: STATE ROUTE 162

Inspector Candidates:

Candidate ID	Status	Priority	Assigned	Structure Unit	Action	Object	Work Rec. Date
A-P2T2.8-01182D94-00000003	Under review	Medium	<input type="checkbox"/>	2 ELI Frame	Ovly Deck	Unp Conc Deck/AC Ovl	12/16/1997

Pontis Candidates:

Scenario	Year	Pontis Prog.	Assigned to a Project	Structure Unit	Action	Object	Cost(\$)	Benefit(\$)
00 Default scenario	2002	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	P/S Conc Open Gird	43,371	1,058,058
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	R/Conc Open Girder	1,250	32,985
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	R/Conc Cap	17,126	602,487
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Rehab Elem	Open Expansion Joli	470	3,154
	2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Rehab Elem	Timb Bridge Railing	2,802	14,274
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	P/S Conc Open Gird	45,821	1,117,838
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	R/Conc Open Girder	1,333	35,178
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	R/Conc Column	2,088	296,325
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	R/Conc Pier Wall	407	10,727
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	R/Conc Cap	16,724	588,328
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Rehab Elem	Open Expansion Joli	434	2,916
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Rehab Elem	Fixed Bearing	712	5,490
	2004	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Rehab Elem	Timb Bridge Railing	3,347	17,049
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Rehab Elem	Other Bridge Railing	6,271	55,143
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	P/S Conc Open Gird	45,960	1,121,216
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ELI Frame	Min Repair	R/Conc Open Girder	1,338	35,324

Ready Intergration (pontis) N/A



Reports---- Project Priority List on Actual Projects

Report Selection (Planning)

PLAN003_PROJECT_PRIORITY_LIST

Selected

plan003_project_priority_list

Project Priority List

New Report

Click to View Long Comments ->

Describe Report

Generate Report

Print

First Page

Prior Page

Next Page

Last Page

Close

YourState Department of Transportation

Bureau of Bridges and Structures
Bridge Maintenance

Project Priority List

Projects listed by program year and benefit/cost ratio

Project ID	Project Name	Year	Predominant Action Type	Project Status	Cost(\$)	Benefit(\$)	B/C ratio	Agency Rank	Program Rank
Program ID: Improve 2000-2001		Program Name: Improvements FY 2000-2001							
FY 2000 Repl	FY 2000 Replacements	2000	Replace	2 Programmed	1,121,306	0	0.00	1	1
FY 2000 Widenir	FY 2000 Widenings	2001	Widen	0 Proposed	2,654,682	5,597	0.00	2	2
Program ID: Maint 2000-2001		Program Name: Maintenance FY 2000-2001							
FY 2000 Rehab	Rehab 17 0063R	2000	Rehab Elem	0 Proposed	24,500	155,275	6.34	3	1

A report can be generated to display a list of projects, sorted by program, program year and benefit/cost ratio.



Reports---- Project Details Sheet

Report Selection (Planning) PLAN004_PROJECT_DETAILS

Selected: plan004_project_details Project Details

New Report Click to View Long Comments ->

Describe Report Generate Report Print First Page Prior Page Next Page Last Page Close

Project Details Sheet

IDENTIFICATION	
Project ID:	FY 2000 Widenings
Project Name:	FY 2000 Widenings
Action Type:	21
Program Year:	2001
Project Status:	0 Proposed
End Date:	1/1/1901
Program:	Improve 2000-21
District:	03
Route:	-1
Kmpost Begin:	0.00
End:	0.00
Review Status:	0
Scenario Treatment:	0

COSTS & BENEFITS		
	Cost(\$)	Benefit(\$)
Direct:	2,654,682	5,597
Indirect:	0	0
Total:	2,654,682	5,597

PERFORMANCE MEASURES	
B/C Ratio:	0.00
Avg. Health Index:	98.0
Avg. Sufficiency Rating:	61.5
Agency Rank:	2
Program Rank:	2

CONTRACT DATA	
Contract ID:	-1
Contractor:	-1
Est. Cost:	0
Contract Cost:	0
Final Cost:	0

FUNDING SOURCES	
-----------------	--

Work Item Details:

Action	Object	Cost(\$)	Benefit(\$)	Quantity	Units
Bridge ID: 16 0035	Structure Unit: 0				Main Span

Ready Integration (port)

A report detailing project information can be generated.



Reports---- Actual versus Budgeted Work

Report Selection (Planning) PLAN005_ACTUAL_VS_BUDGET

Selected: plan005_actual_vs_budget Actual versus Budgeted Work by Program

New Report Click to View Long Comments →

Describe Report Generate Report Print First Page Prior Page Next Page Last Page Close

YourState Department of Transportation *Bureau of Bridges and Structures*
Bridge Maintenance

Actual versus Budgeted Work by Program

Program ID	Program Name	Year	Budgeted (\$)	Actual (\$)
Improve 2000-2001	Improvements FY 2000-2001	2000	2,000,000	1,121,306
		2001	4,000,000	2,654,682
		Total, All Years	6,000,000	3,775,988
Maint 2000-2001	Maintenance FY 2000-2001	2000	4,000,000	24,500
		Total, All Years	4,000,000	24,500

A report that indicates actual work accomplished versus budgeted work can be generated for each program.



Reports---- Program Funding

Report Selection (Planning)

PLAN006_PROGRAM_FUNDING

Selected

plan006_program_funding

Program Funding by Year and Funding Source

New Report

Click to View Long Comments ->

Describe Report

Generate Report

Print

First Page

Prior Page

Next Page

Last Page

Close

YourState Department of Transportation

Bureau of Bridges and Structures
Bridge Maintenance

Program Funding by Year and Funding Source

Program	Year	Federal	State	Total
00 Maint 2000-2001	2000		1,000,000	1,000,000
	2001		1,000,000	1,000,000
00 Total		0	2,000,000	2,000,000
01 Improve 2000-2001	2000		2,000,000	2,000,000
	2001		2,000,000	2,000,000
01 Total		0	4,000,000	4,000,000
02 Prog_Quincy_Rehab_2009	2009	500,000		500,000
	2010	0		0
02 Total		500,000	0	500,000
Grand Total		500,000	6,000,000	6,500,000

A report to show the various programs, their funding and funding source details can be generated.



Reports---- Pontis Priority List on Program Simulation

Report Selection (Planning) PLAN008_PONTIS_CANDIDATE_LIST

Selected: plan008_pontis_candidate_list Pontis Work Candidate List (Pontis Programmed plus Needs)

New Report Click to View Long Comments ->

Describe Report Generate Report Print First Page Prior Page Next Page Last Page Close

Pontis Work Candidate List									
Pontis work candidates grouped by year, listed in decreasing order of cost									
Bridge ID	Year	Pontis Prog.	Structure Unit	Action	Object	Cost(\$)	Benefit(\$)	Explication	
24 0004R	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	10,027,411	0	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
24 0003	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	6,046,746	2,529,142	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
18 0005	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	3,440,528	111,333	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
12 0188	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	1,748,800	0	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
24 0262L	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	1,018,813	120,807	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
24 0262R	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	1,018,813	90,605	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
24 0001L	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	997,920	405,402	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
18 0008	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	959,088	1,500,195	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
24 0051	2001	<input type="checkbox"/> 0	Main Span	Widen	Bridge	827,750	84,561	Widening, infeasible, Pontis model, Suppressed (infeasible)	
12 0034	2001	<input type="checkbox"/> 0	Main Span	Widen	Bridge	817,011	12,435	Widening, infeasible, Pontis model, Suppressed (infeasible)	
24 0053	2001	<input type="checkbox"/> 0	Main Span	Widen	Bridge	791,347	54,214	Widening, infeasible, Pontis model, Suppressed (infeasible)	
24 0001L	2001	<input type="checkbox"/> 0	Main Span	Widen	Bridge	701,568	2,069	Widening, infeasible, Pontis model, Suppressed (infeasible)	
12 0034	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	485,981	205,930	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	
24 0052	2001	<input type="checkbox"/> 0	Main Span	Widen	Bridge	448,096	36,177	Widening, infeasible, Pontis model, Suppressed (infeasible)	
24 0051	2001	<input type="checkbox"/> 0	Main Span	Strengthen	Bridge	340,838	357,798	Strengthening, infeasible, Pontis model, Suppressed (infeasible)	

Ready Integration (pontis) N/A

A report that outlines Pontis-generated projects in order of cost/benefit ratio for the scenario selected can be generated and then compared to other scenarios for budgetary impact and/or policy change sensitivity.



Summary (D5-Management)

- Workflow demonstrated leveraging constructed bridge (model) downstream for asset management concerns surrounding bridge condition
- One of several possible such workflows
- Encompassing individual bridge condition documentation using inspection data, bridge load (re-)rating, and network-level programming

