AASHTOWare Bridge Design and Rating Visual Reference

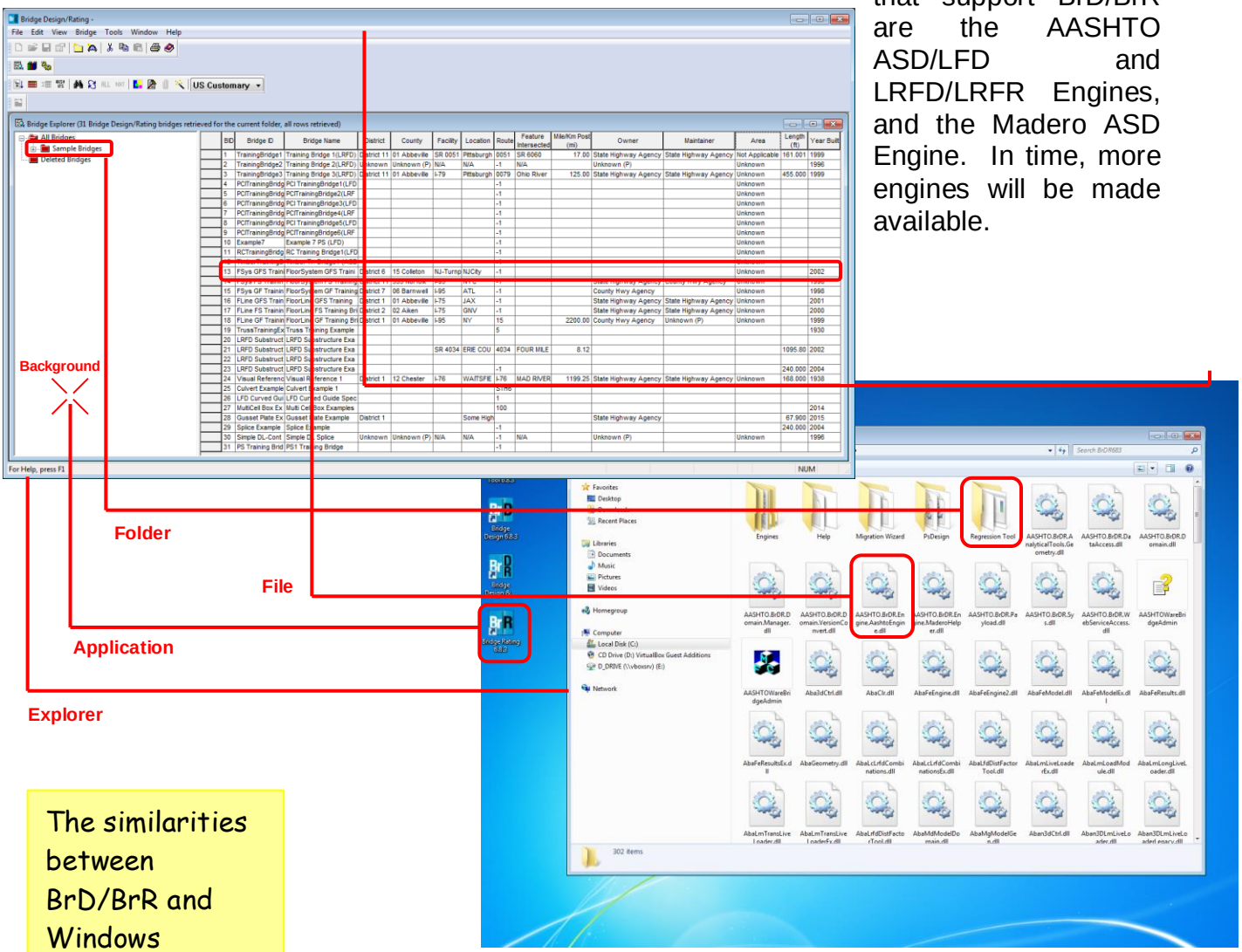
Getting Started

AASHTOWare Bridge Design and Rating Overview

What is AASHTOWare Bridge Design and Rating?

AASHTOWare Bridge Design and Rating may be considered as an operating environment with applications that aid in the design and load rating of bridges. This is similar to the role Microsoft Windows plays in that it is an environment where we run applications to conduct our day to day business.

AASHTOWare Bridge Design and Rating currently houses a few applications such as BrD and BrR for Design and Load rating. This is somewhat similar to applications that run in Windows, such as Excel or Word. The two applications still take the role of an environment, but their respective duties are more specific to their purpose. The underlying engines that support BrD/BrR are the AASHTO ASD/LFD and LRFD/LRFR Engines, and the Madero ASD Engine. In time, more engines will be made available.



The similarities between BrD/BrR and Windows

BrR

BrR is used for bridge superstructure and culvert load rating, featuring graphical tools to speed preparation of the data and application of the results. Using the AASHTO LFR/LRFR as its analytical engine for load factor rating, BrR provides an integrated database where rating inputs and outputs can readily be stored, reviewed, and reused.

BrD

BrD is currently a bridge superstructure, substructure and culvert design-review software product using the AASHTO Load and Resistance Factor Design (LRFD) Bridge Specifications. BrD employs the same database and graphical user interface as BrR, and shares much of the same source code. Development of both products began in 1997. The AASHTO LRFD Engine provides the system's structural analysis and specification checking engine.

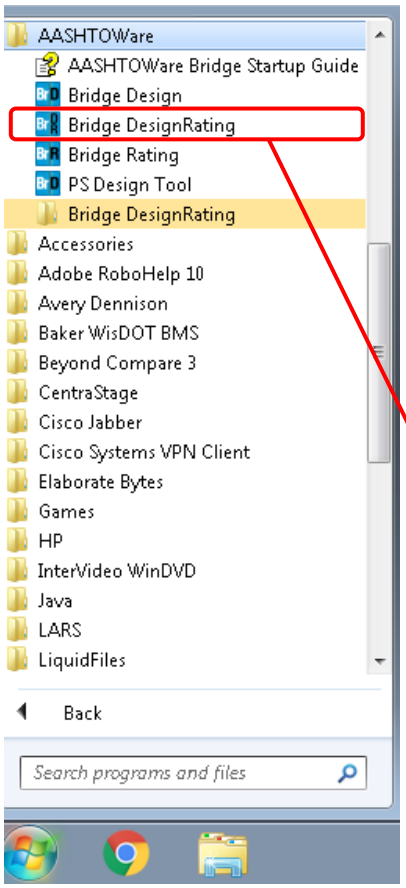
Starting AASHTOWare Bridge Design and Rating

From the Desktop

For most cases it would be best to double-click on the AASHTOWare Bridge Design and Rating icon. This would give you features of both BrD and BrR in one environment.

From the Start Menu

If you do not have icons on your desktop you can start the program from the Start Menu.

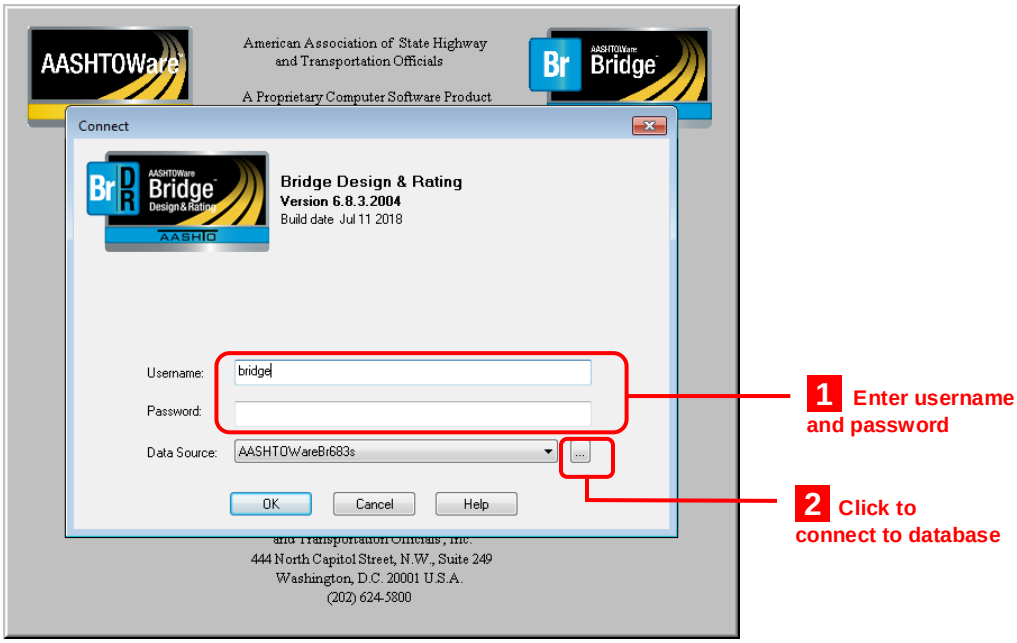


Select

Double-click

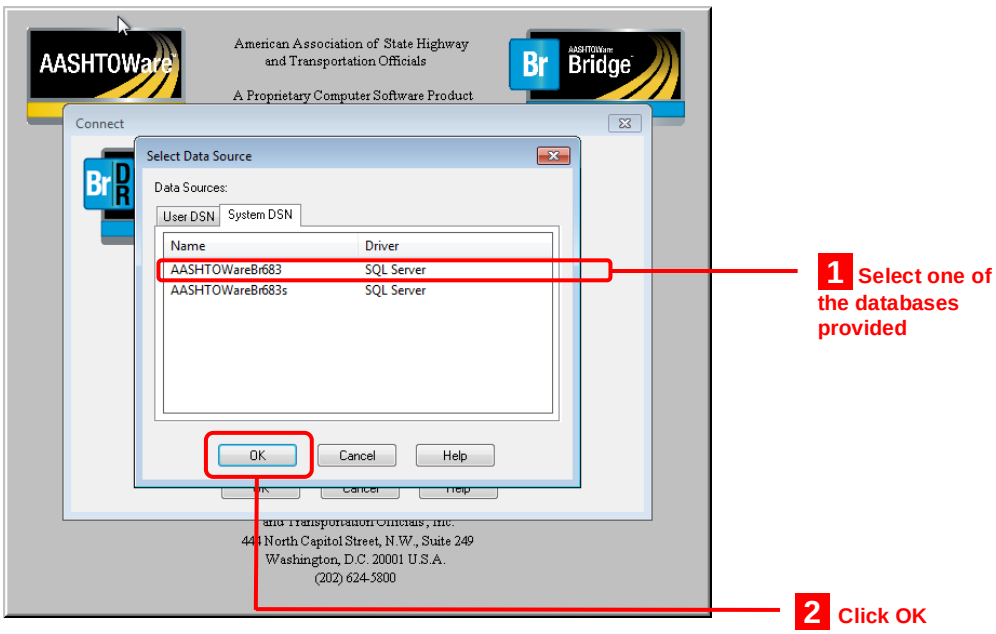
Entering Username and Password

The AASHTOWare Bridge Design and Rating Logo Window will pop up. Here you will need to enter your username and password in the provided fields.



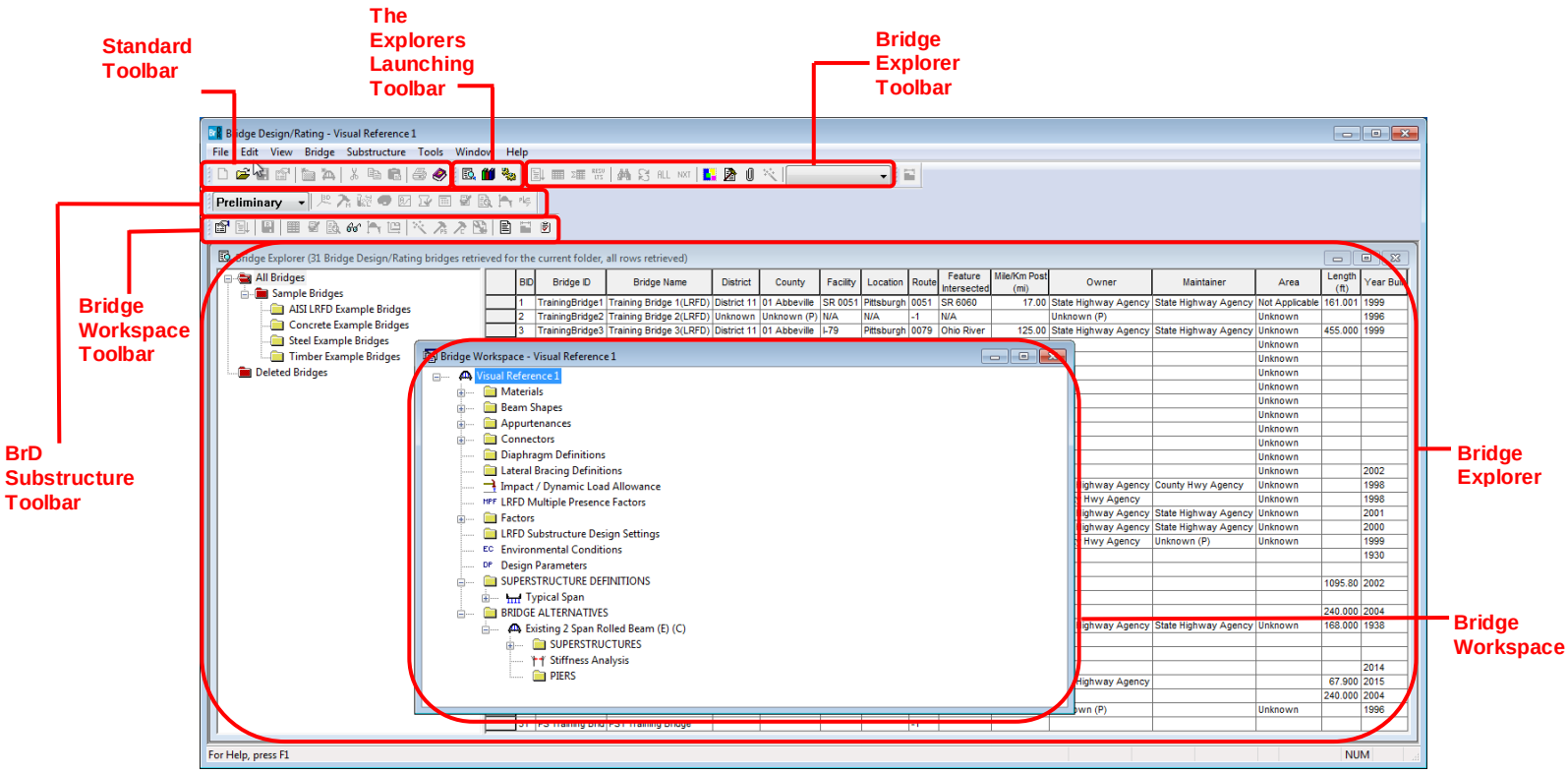
Connecting to the database

At times, the Data Source field will be empty. This means the database is not connected. You will need to connect to the database. To do this, click on the button with the three periods. Then . . .



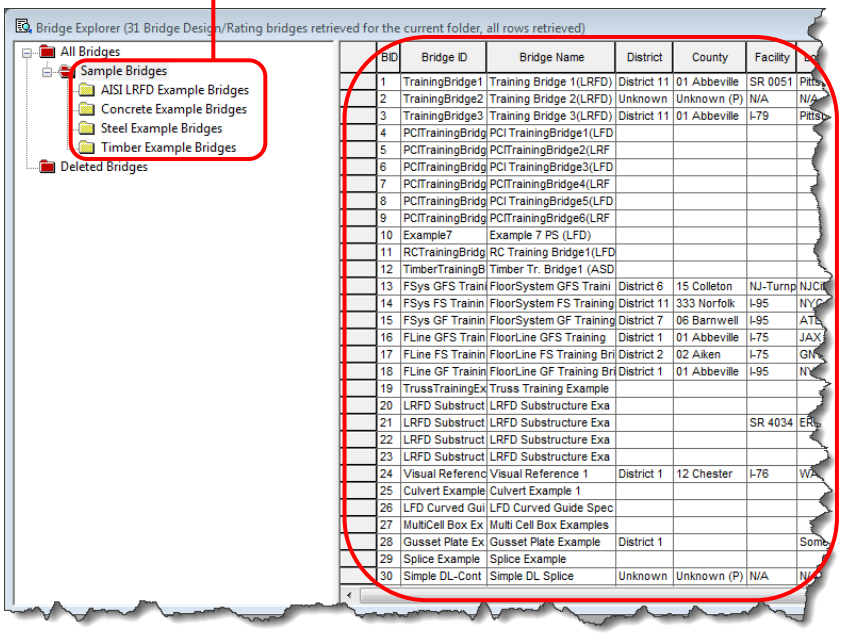
AASHTOWare Bridge Design and Rating Basics

AASHTOWare Bridge Design and Rating Environment Tour

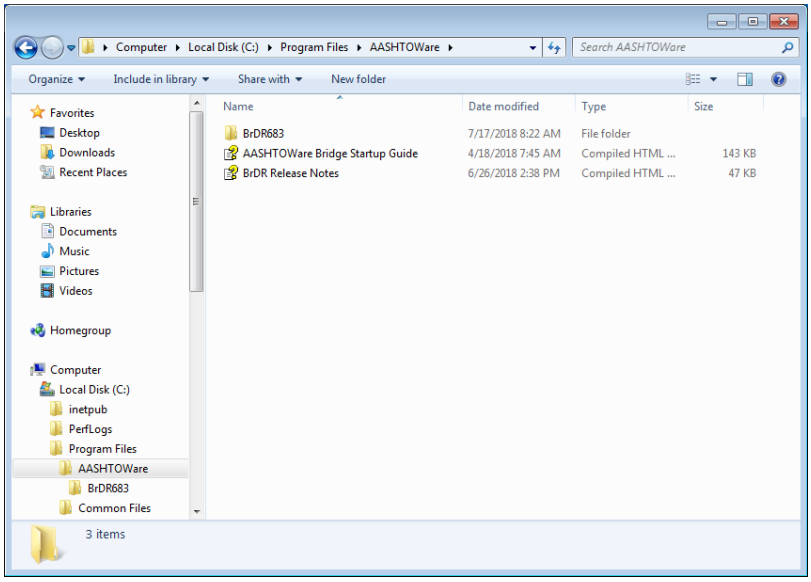


AASHTOWare Bridge Design and Rating Environment

Bridge Explorer tree



Bridge list corresponding to the selected folder



The Bridge Explorer is designed to work like the Windows Explorer

Bridge Explorer Window

Sorting the Bridge List

Once you select a folder to find a bridge, you may sort the corresponding bridge list to make the search easier. Sorting the bridge list requires double-clicking on a column heading. The first time you do this, it will sort in an ascending order. Double-clicking again, will result in a descending sort. For example, I am looking for bridge 24 on I-76 in Waitsfield.

1 Double-click column heading to sort the bridge ID in ascending order

BID	Bridge ID	Bridge Name	District	County	Facility	Location	Route	Feature Intersected	Mile/Km Post (mi)	Owner	Maintainer	Area	Length (ft)	Year Built
25	Culvert Example 1	Culvert Example 1					STH6							
10	Example7	Example 7 PS (LFD)					-1					Unknown		
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2	District 2	02 Aiken	I-75	GNV	-1			State Highway Agency	State Highway Agency	Unknown		2000
15	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3	District 1	01 Abbeville	I-95	NY	15		2200.00	County Hwy Agency	Unknown (P)	Unknown		1999
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1	District 1	01 Abbeville	I-75	JAX	-1			State Highway Agency	State Highway Agency	Unknown		2001
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2	District 11	333 Norfolk	I-95	NYC	-1			State Highway Agency	County Hwy Agency	Unknown		1998
5	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3	District 7	06 Barnwell	I-95	ATL	-1			County Hwy Agency		Unknown		1998
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1	District 6	15 Colleton	NJ-Turnp	NJCity	-1					Unknown		2002
28	Gusset Plate Example	Gusset Plate Example	District 1			Some High				State Highway Agency			67.900	2015
26	LFD Curved Guide Spec	LFD Curved Guide Spec Example					1							
20	LRFD Substructure Example 1	LRFD Substructure Example 1												
1	LRFD Substructure Example 2	LRFD Substructure Example 2			SR 4034	ERIE COU	4034	FOUR MILE	8.12				1095.80	2002
2	LRFD Substructure Example 3	LRFD Substructure Example 3												
3	LRFD Substructure Example 4	LRFD Substructure Example 4 (NHI Hammer Head)					-1						240.000	2004
27	MultiCell Box Examples	Multi Cell Box Examples					100							2014
4	PCITrainingBridge1	PCI TrainingBridge1(LFD)					-1					Unknown		
5	PCITrainingBridge2	PCITrainingBridge2(LRFD)					-1					Unknown		
6	PCITrainingBridge3	PCI TrainingBridge3(LFD)					-1					Unknown		
7	PCITrainingBridge4	PCITrainingBridge4(LRFD)					-1					Unknown		
8	PCITrainingBridge5	PCI TrainingBridge5(LFD)					-1					Unknown		
9	PCITrainingBridge6	PCITrainingBridge6(LRFD)					-1					Unknown		
31	PS Training Bridge	PS1 Training Bridge					-1							
11	RCTrainingBridge1	RC Training Bridge1(LFD)					-1					Unknown		
29	Splice Example	Splice Example					-1						240.000	2004
12	TimberTrainingBridge1	Timber Tr. Bridge1 (ASD)					-1					Unknown		
19	TrussTrainingExample	Truss Training Example					5							1930
15	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3	District 7	06 Barnwell	I-95	ATL	-1			County Hwy Agency		Unknown		1998
21	LRFD Substructure Example 2	LRFD Substructure Example 2			SR 4034	ERIE COU	4034	FOUR MILE	8.12				1095.80	2002
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2	District 2	02 Aiken	I-75	GNV	-1			State Highway Agency	State Highway Agency	Unknown		2000
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1	District 1	01 Abbeville	I-75	JAX	-1			State Highway Agency	State Highway Agency	Unknown		2001
30	Simple DL-Cont LL-Splice	Simple DL Splice	Unknown	Unknown (P)	N/A	N/A	-1	N/A		Unknown (P)		Unknown		1996
2	TrainingBridge2	Training Bridge 2(LRFD)	Unknown	Unknown (P)	N/A	N/A	-1	N/A		Unknown (P)		Unknown		1996
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1	District 6	15 Colleton	NJ-Turnp	NJCity	-1					Unknown		2002
18	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3	District 1	01 Abbeville	I-95	NY	15		2200.00	County Hwy Agency	Unknown (P)	Unknown		1999
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2	District 11	333 Norfolk	I-95	NYC	-1			State Highway Agency	County Hwy Agency	Unknown		1998
1	TrainingBridge1	Training Bridge 1(LRFD)	District 11	01 Abbeville	SR 0051	Pittsburgh	0051	SR 6060	17.00	State Highway Agency	State Highway Agency	Not Applicable	161.001	1999
3	TrainingBridge3	Training Bridge 3(LRFD)	District 11	01 Abbeville	I-79	Pittsburgh	0079	Ohio River	125.00	State Highway Agency	State Highway Agency	Unknown	455.000	1999
28	Gusset Plate Example	Gusset Plate Example	District 1			Some High				State Highway Agency			67.900	2015
24	Visual Reference 1	Visual Reference 1	District 1	12 Chester	I-76	WAITSFIE	I-76	MAD RIVER	1199.25	State Highway Agency	State Highway Agency	Unknown	168.000	1938

2 Double-click column heading to sort location in ascending order

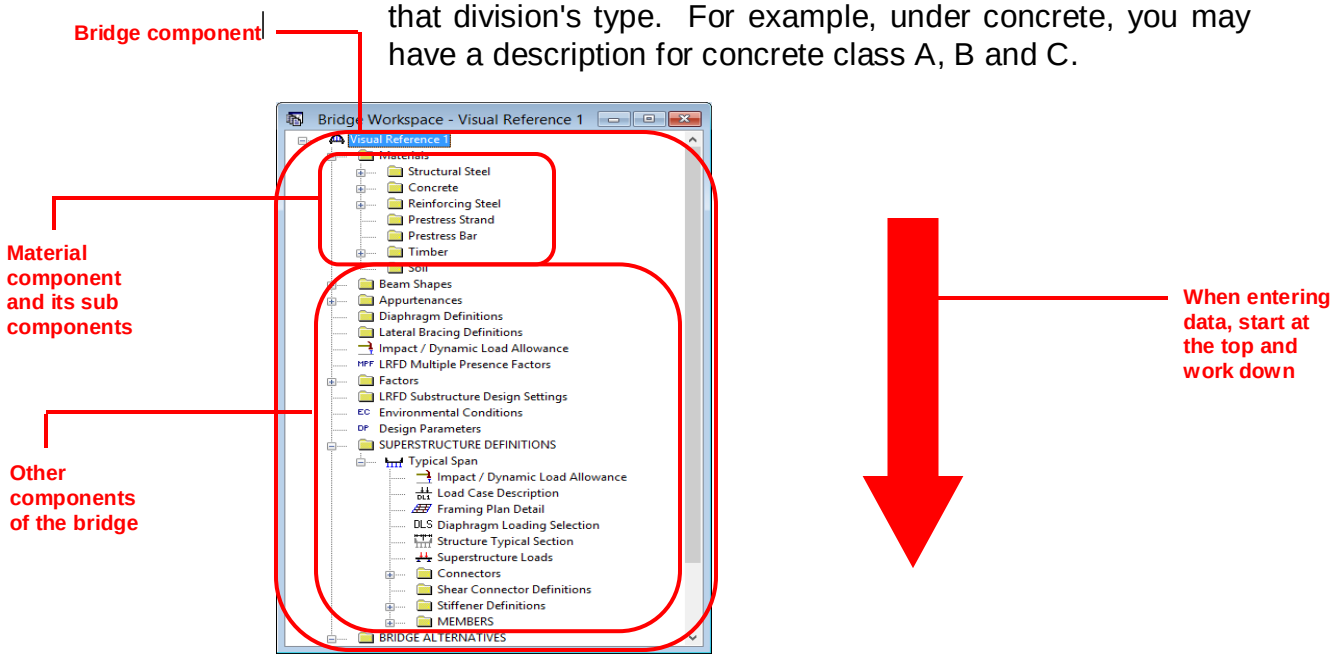
BID	Bridge ID	Bridge Name	District	County	Facility	Location	Route	Feature Intersected	Mile/Km Post (mi)	Owner	Maintainer	Area	Length (ft)	Year Built
25	Culvert Example 1	Culvert Example 1					STH6							
10	Example7	Example 7 PS (LFD)					-1					Unknown		
26	LFD Curved Guide Spec	LFD Curved Guide Spec Example					1							
20	LRFD Substructure Example 1	LRFD Substructure Example 1												
22	LRFD Substructure Example 3	LRFD Substructure Example 3												
23	LRFD Substructure Example 4	LRFD Substructure Example 4 (NHI Hammer Head)					-1						240.000	2004
27	MultiCell Box Examples	Multi Cell Box Examples					100							2014
4	PCITrainingBridge1	PCI TrainingBridge1(LFD)					-1					Unknown		
5	PCITrainingBridge2	PCITrainingBridge2(LRFD)					-1					Unknown		
6	PCITrainingBridge3	PCI TrainingBridge3(LFD)					-1					Unknown		
7	PCITrainingBridge4	PCITrainingBridge4(LRFD)					-1					Unknown		
8	PCITrainingBridge5	PCI TrainingBridge5(LFD)					-1					Unknown		
9	PCITrainingBridge6	PCITrainingBridge6(LRFD)					-1					Unknown		
31	PS Training Bridge	PS1 Training Bridge					-1							
11	RCTrainingBridge1	RC Training Bridge1(LFD)					-1					Unknown		
29	Splice Example	Splice Example					-1						240.000	2004
12	TimberTrainingBridge1	Timber Tr. Bridge1 (ASD)					-1					Unknown		
19	TrussTrainingExample	Truss Training Example					5							1930
15	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3	District 7	06 Barnwell	I-95	ATL	-1			County Hwy Agency		Unknown		1998
21	LRFD Substructure Example 2	LRFD Substructure Example 2			SR 4034	ERIE COU	4034	FOUR MILE	8.12				1095.80	2002
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2	District 2	02 Aiken	I-75	GNV	-1			State Highway Agency	State Highway Agency	Unknown		2000
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1	District 1	01 Abbeville	I-75	JAX	-1			State Highway Agency	State Highway Agency	Unknown		2001
30	Simple DL-Cont LL-Splice	Simple DL Splice	Unknown	Unknown (P)	N/A	N/A	-1	N/A		Unknown (P)		Unknown		1996
2	TrainingBridge2	Training Bridge 2(LRFD)	Unknown	Unknown (P)	N/A	N/A	-1	N/A		Unknown (P)		Unknown		1996
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1	District 6	15 Colleton	NJ-Turnp	NJCity	-1					Unknown		2002
18	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3	District 1	01 Abbeville	I-95	NY	15		2200.00	County Hwy Agency	Unknown (P)	Unknown		1999
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2	District 11	333 Norfolk	I-95	NYC	-1			State Highway Agency	County Hwy Agency	Unknown		1998
1	TrainingBridge1	Training Bridge 1(LRFD)	District 11	01 Abbeville	SR 0051	Pittsburgh	0051	SR 6060	17.00	State Highway Agency	State Highway Agency	Not Applicable	161.001	1999
3	TrainingBridge3	Training Bridge 3(LRFD)	District 11	01 Abbeville	I-79	Pittsburgh	0079	Ohio River	125.00	State Highway Agency	State Highway Agency	Unknown	455.000	1999
28	Gusset Plate Example	Gusset Plate Example	District 1			Some High				State Highway Agency			67.900	2015
24	Visual Reference 1	Visual Reference 1	District 1	12 Chester	I-76	WAITSFIE	I-76	MAD RIVER	1199.25	State Highway Agency	State Highway Agency	Unknown	168.000	1938

3 Select bridge from list

BID	Bridge ID	Bridge Name	District	County	Facility	Location	Route	Feature Intersected	Mile/Km Post (mi)	Owner	Maintainer	Area	Length (ft)	Year Built
25	Culvert Example 1	Culvert Example 1					STH6							
10	Example7	Example 7 PS (LFD)					-1					Unknown		
26	LFD Curved Guide Spec	LFD Curved Guide Spec Example					1							
20	LRFD Substructure Example 1	LRFD Substructure Example 1												
22	LRFD Substructure Example 3	LRFD Substructure Example 3												
23	LRFD Substructure Example 4	LRFD Substructure Example 4 (NHI Hammer Head)					-1						240.000	2004
27	MultiCell Box Examples	Multi Cell Box Examples					100							2014
4	PCITrainingBridge1	PCI TrainingBridge1(LFD)					-1					Unknown		
5	PCITrainingBridge2	PCITrainingBridge2(LRFD)					-1					Unknown		
6	PCITrainingBridge3	PCI TrainingBridge3(LFD)					-1					Unknown		
7	PCITrainingBridge4	PCITrainingBridge4(LRFD)					-1					Unknown		
8	PCITrainingBridge5	PCI TrainingBridge5(LFD)					-1					Unknown		
9	PCITrainingBridge6	PCITrainingBridge6(LRFD)					-1					Unknown		
31	PS Training Bridge	PS1 Training Bridge					-1							
11	RCTrainingBridge1	RC Training Bridge1(LFD)					-1					Unknown		
29	Splice Example	Splice Example					-1						240.000	2004
12	TimberTrainingBridge1	Timber Tr. Bridge1 (ASD)					-1					Unknown		
19	TrussTrainingExample	Truss Training Example					5							1930
15	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3	District 7	06 Barnwell	I-95	ATL	-1			County Hwy Agency		Unknown		1998
21	LRFD Substructure Example 2	LRFD Substructure Example 2			SR 4034	ERIE COU	4034	FOUR MILE	8.12				1095.80	2002
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2	District 2	02 Aiken	I-75	GNV	-1			State Highway Agency	State Highway Agency	Unknown		2000
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1	District 1	01 Abbeville	I-75	JAX	-1			State Highway Agency	State Highway Agency	Unknown		2001
30	Simple DL-Cont LL-Splice	Simple DL Splice	Unknown	Unknown (P)	N/A	N/A	-1	N/A		Unknown (P)		Unknown		1996
2	TrainingBridge2	Training Bridge 2(LRFD)	Unknown	Unknown (P)	N/A	N/A	-1	N/A		Unknown (P)		Unknown		1996
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1	District 6	15 Colleton	NJ-Turnp	NJCity	-1					Unknown		2002
18	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3	District 1	01 Abbeville	I-95	NY	15		2200.00	County Hwy Agency	Unknown (P)	Unknown		1999
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2	District 11	333 Norfolk	I-95	NYC	-1			State Highway Agency	County Hwy Agency	Unknown		1998
1	TrainingBridge1	Training Bridge 1(LRFD)	District 11	01 Abbeville	SR 0051	Pittsburgh	0051	SR 6060	17.00	State Highway Agency	State Highway Agency	Not Applicable	161.001	1999
3	TrainingBridge3	Training Bridge 3(LRFD)	District 11	01 Abbeville	I-79	Pittsburgh	0079	Ohio River	125.00	State Highway Agency	State Highway Agency	Unknown	455.000	1999
28	Gusset Plate Example	Gusset Plate Example	District 1			Some High				State Highway Agency			67.900	2015
24	Visual Reference 1	Visual Reference 1	District 1	12 Chester	I-76	WAITSFIE	I-76	MAD RIVER	1199.25	State Highway Agency	State Highway Agency	Unknown	168.000	1938

The result is that both the Bridge ID number and the Location are sorted in ascending order. At this point I look down the list in the location column for Waitsfield, then I look over at the Bridge ID until I find bridge 24 (see where the cursor is pointing in the third screen shot above).

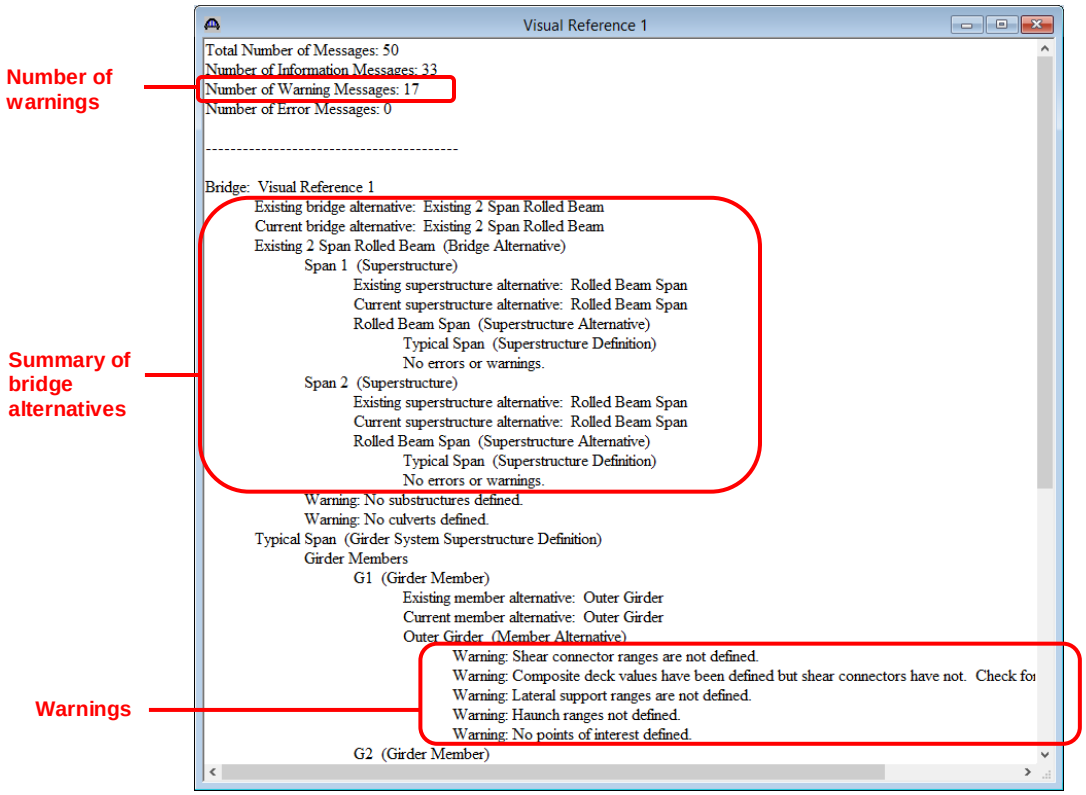
Double-clicking on a bridge from the bridge list opens the Bridge Workspace. The Bridge Workspace tree works similar to the Windows Explorer file tree, except that instead of sorting files and folders, the Bridge Workspace sorts out the different components of a bridge. These components include the materials the bridge uses, girders or beams, deck and supports to name a few. Each major component has components unto itself. The Materials component, for example, is broken down into structural and reinforcing steel, concrete, prestress strand and timber. These separate divisions are again broken down to the different materials of that division's type. For example, under concrete, you may have a description for concrete class A, B and C.



Checking Data Integrity

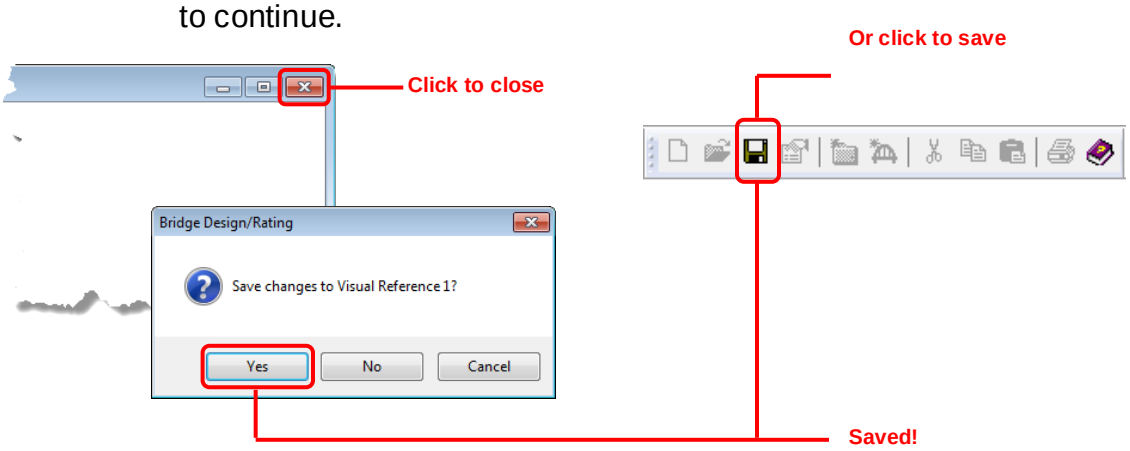
After completing your data entry for the bridge, the next step is to check your data for missing components. In some cases, this may not be necessary, but in general practice, it is always good to ensure you've entered all the data for your bridge design or rating. To run the check click on the validate button from the Bridge workspace toolbar. The Validation window will appear. This window will give you a summary of the bridge data you've entered. It will also list a series of warnings regarding your data. If you've missed something, it

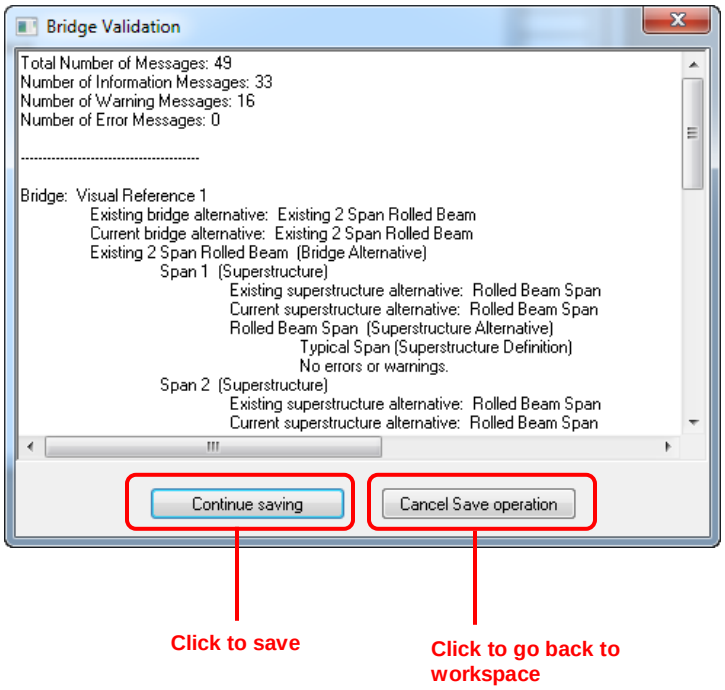
will be listed here. Use this as a guide to ensure your data entry is complete.



Saving your Bridge Data

Once your data has been entered and verified, click on the save button from the Standard Toolbar to save your data. If you close the bridge workspace before saving, AASHTOWare Bridge Design and Rating will ask if you want to save your data. Before saving, AASHTOWare Bridge Design and Rating will validate your data and ask if you want to continue.




Bridge Validation
Total Number of Messages: 49
Number of Information Messages: 33
Number of Warning Messages: 16
Number of Error Messages: 0

Bridge: Visual Reference 1
Existing bridge alternative: Existing 2 Span Rolled Beam
Current bridge alternative: Existing 2 Span Rolled Beam
Existing 2 Span Rolled Beam (Bridge Alternative)
Span 1 (Superstructure)
Existing superstructure alternative: Rolled Beam Span
Current superstructure alternative: Rolled Beam Span
Rolled Beam Span (Superstructure Alternative)
Typical Span (Superstructure Definition)
No errors or warnings.
Span 2 (Superstructure)
Existing superstructure alternative: Rolled Beam Span
Current superstructure alternative: Rolled Beam Span
Continue saving
Cancel Save operation
Click to save
Click to go back to workspace