

Virtis/Opis Visual Reference

Getting Started

Virtis/Opis Overview

What is Virtis/Opis?

Virtis/Opis 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.

Virtis/Opis currently houses a few applications such as Virtis and Opis for Load rating and Design. 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 Virtis/Opis are the AASHTO

The image shows a comparison between the Virtis/Opis Bridge Explorer application and a standard Windows Explorer window. Red boxes and lines highlight the similarities in their user interfaces.

- Background:** A red 'X' icon with the label 'Background' points to the background area of both windows.
- Folder:** A red box labeled 'Folder' points to the 'All Bridges' and 'Deleted Bridges' sections in the left sidebar of Bridge Explorer, and to the 'Virtis_opis_files' folder in Windows Explorer.
- File:** A red box labeled 'File' points to a specific row in the Bridge Explorer table and to a file icon in Windows Explorer.
- Application:** A red box labeled 'Application' points to the 'Virtis/Opis' icon in the Windows taskbar.

The Bridge Explorer table contains the following data:

BD	Bridge id	Bridge Name	District	County	Facility	Location	Route	Feet Intersected	Mi. Post (m)	Owner	Main
1	TrainingBridge1	Training Bridge 1(LRFD)	11	01	SR 005	Pittsburg	0051	SR 6060	17.00	1	1
2	TrainingBridge2	Training Bridge 2(LRFD)	-1	-1	N/A	N/A	-1	N/A	0.00	-1	1
3	TrainingBridge3	Training Bridge 3(LRFD)	11	01	I-79	Pittsburg	0079	Ohio River	125.00	1	1
4	PCITrainingBridge1	PCI TrainingBridge1(LFD)					-1		0.00		
5	PCITrainingBridge2	PCI TrainingBridge2(LRFD)					-1		0.00		
6	PCITrainingBridge3	PCI TrainingBridge3(LFD)					-1		0.00		
7	PCITrainingBridge4	PCI TrainingBridge4(LRFD)					-1		0.00		
8	PCITrainingBridge5	PCI TrainingBridge5(LFD)					-1		0.00		
9	PCITrainingBridge6	PCI TrainingBridge6(LRFD)					-1		0.00		
10	Example7	Example 7 PS (LFD)					-1		0.00		
11	RC TrainingBridge1	RC Training Bridge1(LFD)					-1		0.00		
12	Timber Tr. Bridge1	Timber Tr. Bridge1 (ASD)					-1		0.00		
13	Sys GFS TrainingBridge1	FloorSystem GFS Training B	06	15	NJ-Tur	NJCity	-1		0.00		
14	Sys FS TrainingBridge2	FloorSystem FS Training B	11	333	L-95	NYC	-1		0.00	1	2
15	Sys GF TrainingBridge3	FloorSystem GF Training B	07	06	L-95	ATL	-1		0.00	2	
16	Line GFS TrainingBridge1	FloorLine GFS Training Bri	01	01	L-75	JAX	-1		0.00	1	1
17	Line FS TrainingBridge2	FloorLine FS Training Bnd	02	02	L-75	GHV	-1		0.00	1	1
18	Line GF TrainingBridge3	FloorLine GF Training Bnd	01	01	L-95	NY	15	2200.00	2	-1	
19	Truss TrainingExample	Truss Training Example					5		0.00		
20	LRFD Substructure Examp	LRFD Substructure Examp							0.00		
21	LRFD Substructure Examp	LRFD Substructure Examp			SR 403	ERIE CO	4034	FOUR MILE	8.12		
22	LRFD Substructure Examp	LRFD Substructure Examp							0.00		
23	LRFD Substructure Examp	LRFD Substructure Examp					-1		0.00		

The similarities between Virtis/Opis and Windows

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ASD/LFD and LRFD/LRFR Engines the Madero Engine and an alternative Virtis ASD/LFD Standard spec Engine. In time, more engines will be made available.

Virtis

Virtis is used for bridge superstructure load rating, featuring graphical tools to speed preparation of the data and application of the results.

Using the Virtis Std Engine or the AASHTO LFR/LRFR as its analytical engine for load factor rating, Virtis provides an integrated database where rating inputs and outputs can readily be stored, reviewed, and reused.



Opis

Opis is currently a bridge superstructure and substructure design-review software product using the AASHTO Load and Resistance Factor Design (LRFD) Bridge Specifications. Opis employs the same database and graphical user interface as Virtis, 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.



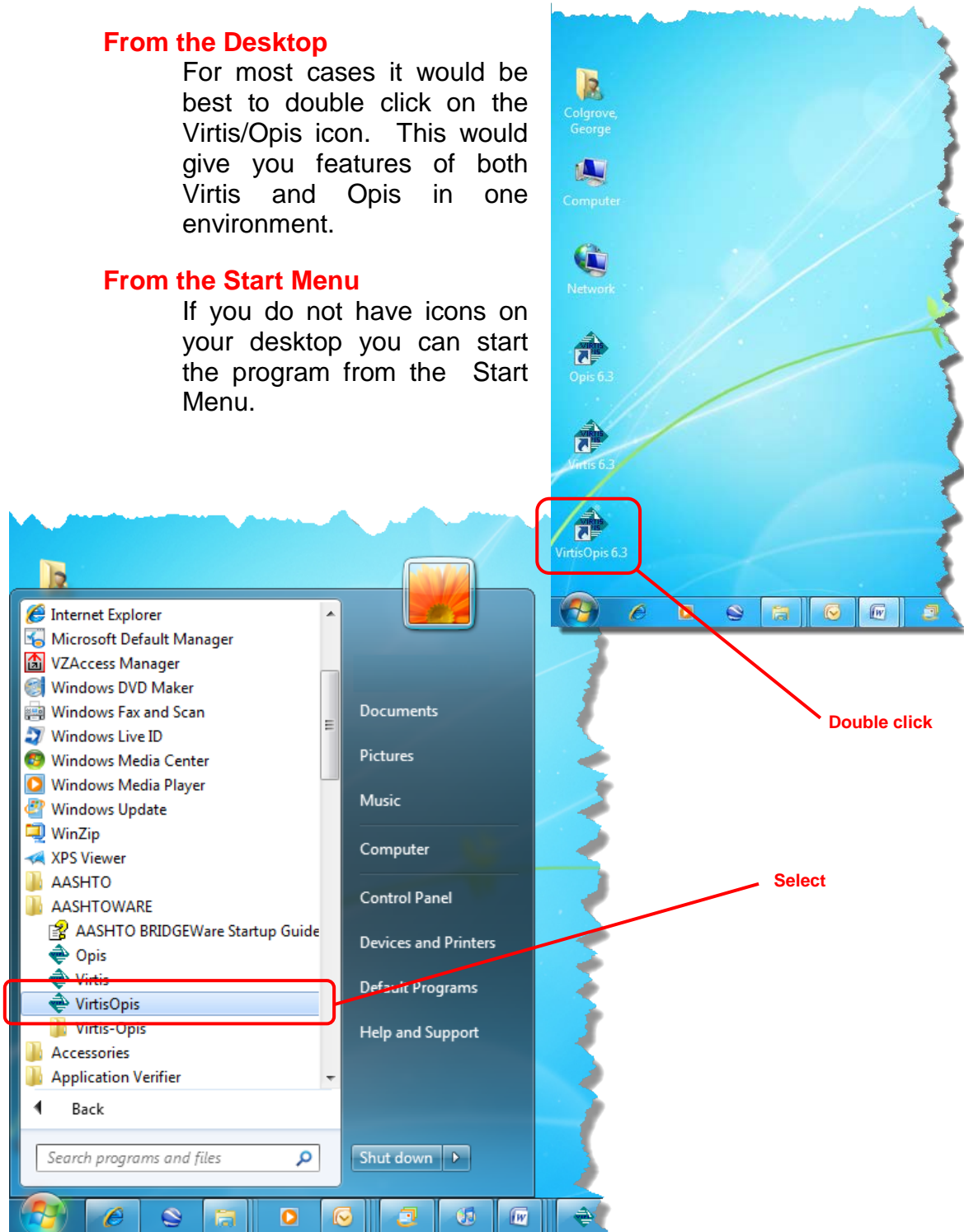
Starting Virtis/Opis

From the Desktop

For most cases it would be best to double click on the Virtis/Opis icon. This would give you features of both Virtis and Opis in one environment.

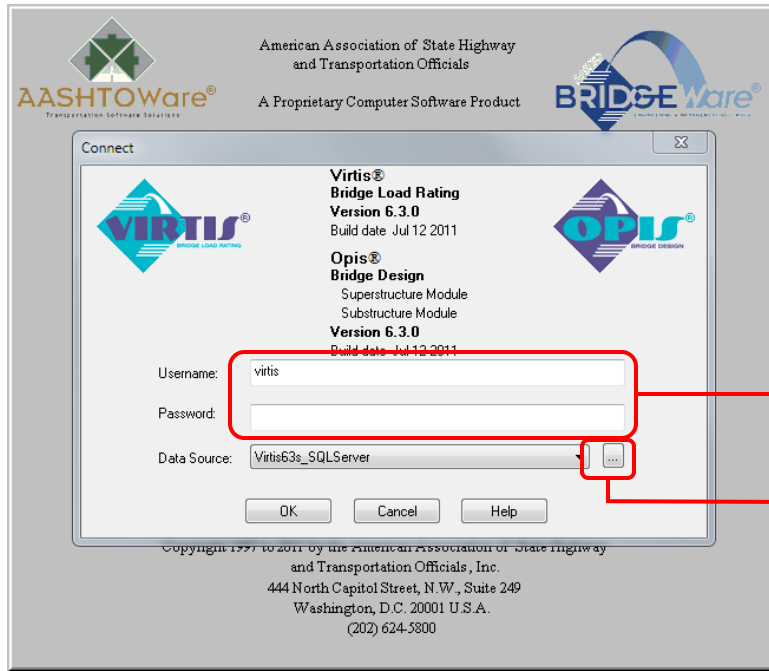
From the Start Menu

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



Entering User Name and Password

The Virtis/Opis Logo Window will pop up. Here you will need to enter your user name and password in the provided fields.

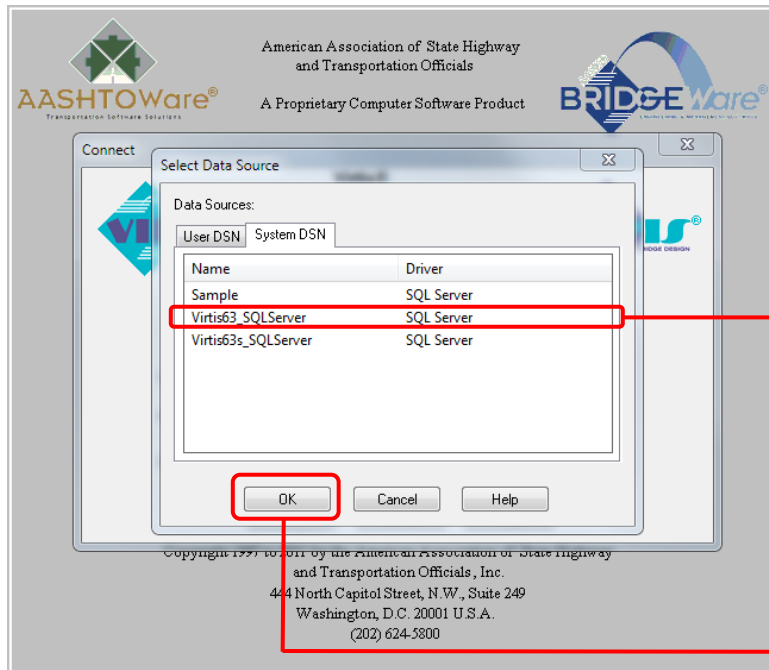


1 Enter username and password

2 Click to connect to database

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 . . .



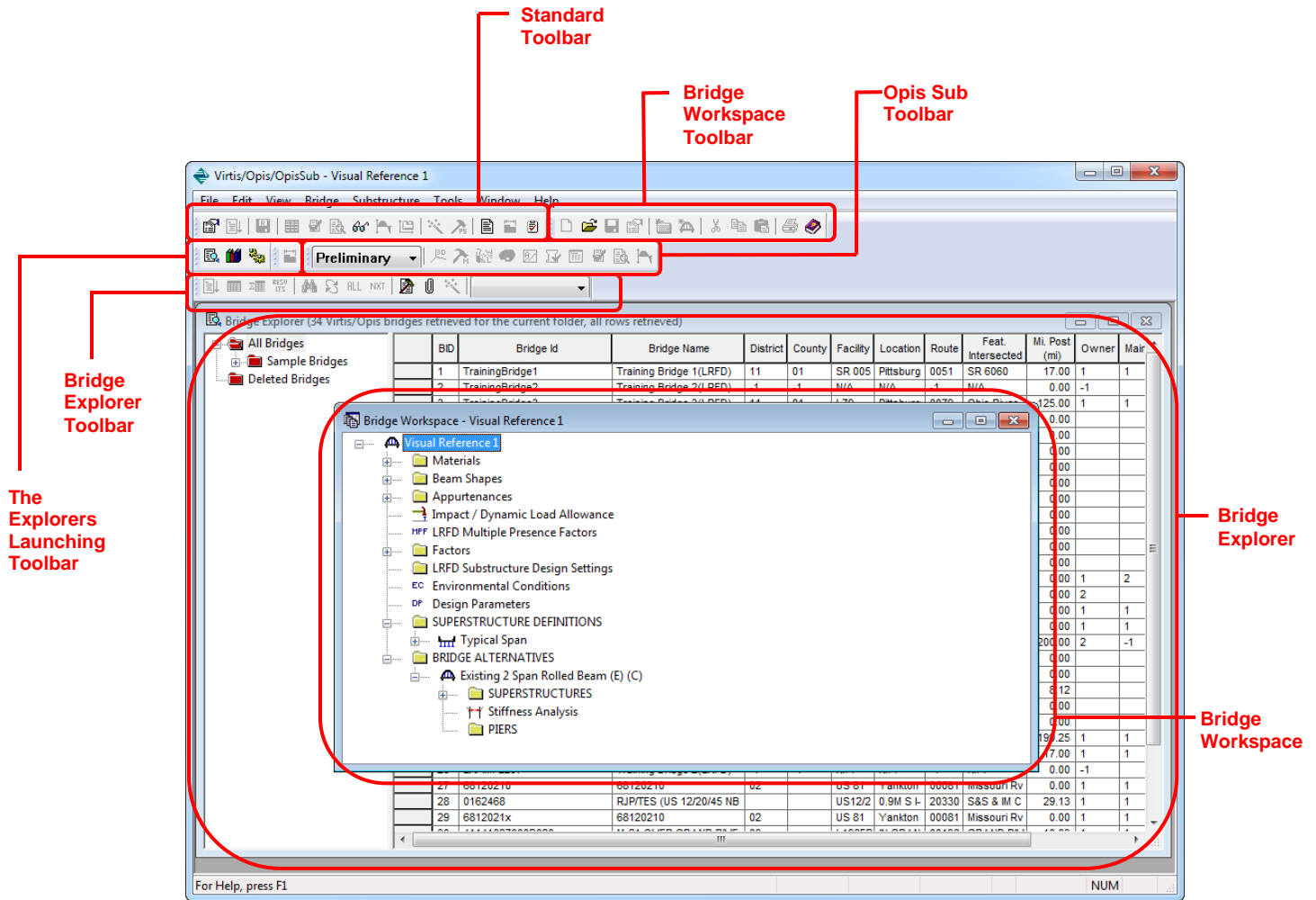
1 Select one of the databases provided

2 Click OK

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Virtis/Opis Basics

Virtis/Opis Environment Tour



Virtis/Opis Environment

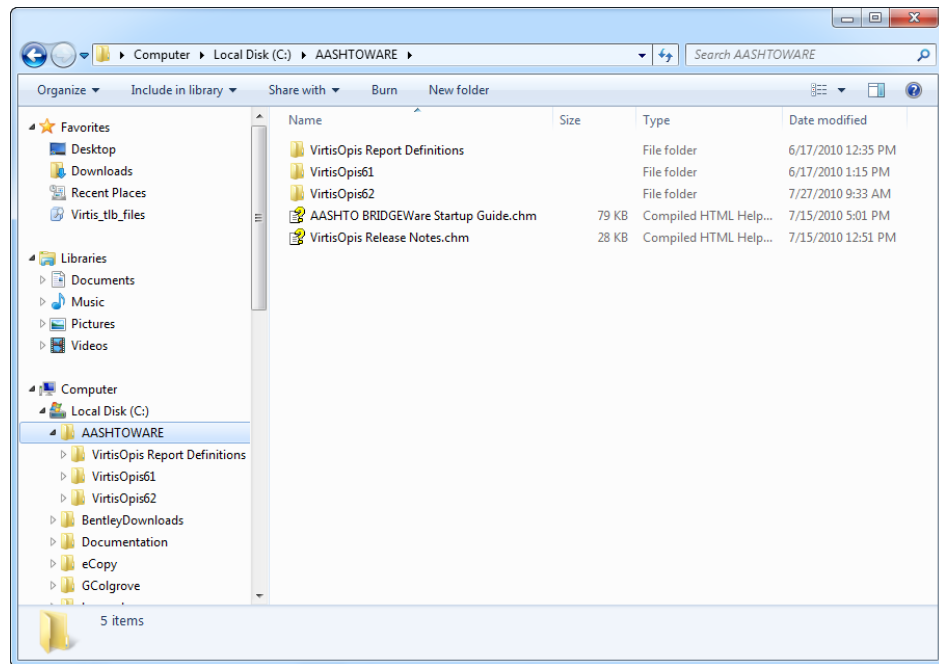
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Bridge Explorer tree

Bridge list corresponding to the selected folder

BID	Bridge Id	Bridge Name	District	County
1	TrainingBridge1	Training Bridge 1(LRFD)	11	01
2	TrainingBridge2	Training Bridge 2(LRFD)	-1	-1
3	TrainingBridge3	Training Bridge 3(LRFD)	11	01
4	PCITrainingBridge1	PCI TrainingBridge1(LRFD)		
5	PCITrainingBridge2	PCI TrainingBridge2(LRFD)		
6	PCITrainingBridge3	PCI TrainingBridge3(LRFD)		
7	PCITrainingBridge4	PCI TrainingBridge4(LRFD)		
8	PCITrainingBridge5	PCI TrainingBridge5(LRFD)		
9	PCITrainingBridge6	PCI TrainingBridge6(LRFD)		
10	Example7	Example 7 PS (LFD)		
11	RCTrainingBridge1	RC Training Bridge1(LRFD)		
12	TimberTrainingBridge1	Timber Tr. Bridge1 (ASD)		
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1	06	15
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2	11	333
15	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3	07	06
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1	01	01
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2	02	02
18	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3	01	01
19	TrussTrainingExample	Truss Training Example		
20	LRFD Substructure Example 1	LRFD Substructure Example 1		
21	LRFD Substructure Example 2	LRFD Substructure Example 2		
22	LRFD Substructure Example 3	LRFD Substructure Example 3		
23	LRFD Substructure Example 4	LRFD Substructure Example 4 (NHI Hammer Head)		
24	Visual Reference 1	Visual Reference 1	01	12
25	EXAMPLE01A	Training Bridge 1(LRFD) Modified	11	01
26	EXAMPLE07	Training Bridge 2(LRFD)	-1	-1
27	68120210	68120210	02	
28	0162468	RJ/PITES (US 12/20/45 NB over Canals/RR)(CWF/WPG)		
29	6812021x	68120210	02	

The Bridge Explorer is designed to work like the Windows Explorer



Bridge Explorer Window

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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	Checked	Checked	District	County	Facility	Location	Ro
10	Example7	Example 7 PS (LFD)							-1
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2			02	02	I-75	GNV	-1
18	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3			01	01	I-95	NY	15
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1			01	01	I-75	JAX	-1
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2			11	333	I-95	NYC	-1
15	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3			07	06	I-95	ATL	-1
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1			06	15	NJ-Tu	NJCity	-1
20	LRFD Substructure Example	LRFD Substructure Example 1							
21	LRFD Substructure Example	LRFD Substructure Example 2					SR 40	ERIE COUN	4034
22	LRFD Substructure Example	LRFD Substructure Example 3							
23	LRFD Substructure Example	LRFD Substructure Example 4 (NHI Hammer Head)							-1
11	RCTrainingBridge1	RC Training Bridge1(LFD)							-1
12	TimberTrainingBridge1	Timber Tr. Bridge1 (ASD)							-1
1	TrainingBridge1	Training Bridge 1(LRFD)			11	01	SR 00	Pittsburgh	0051
2	TrainingBridge2	Training Bridge 2(LRFD)			-1	-1	N/A	N/A	-1
3	TrainingBridge3	Training Bridge 3(LRFD)			11	01	I-79	Pittsburgh	0075
19	TrussTrainingExample	Truss Training Example							5
24	Visual Reference 1	Visual Reference 1			01	12	I-76	WAITSFIEL	I-76



2 Double click column heading to sort location in ascending order

BID	Bridge Id	Bridge Name	Checked	Checked	District	County	Facility	Location	Ro
10	Example7	Example 7 PS (LFD)							-1
20	LRFD Substructure Example	LRFD Substructure Example 1							
22	LRFD Substructure Example	LRFD Substructure Example 3							
23	LRFD Substructure Example	LRFD Substructure Example 4 (NHI Hammer Head)							-1
11	RCTrainingBridge1	RC Training Bridge1(LFD)							-1
12	TimberTrainingBridge1	Timber Tr. Bridge1 (ASD)							-1
19	TrussTrainingExample	Truss Training Example							5
15	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3			07	06	I-95	ATL	-1
21	LRFD Substructure Example	LRFD Substructure Example 2					SR 40	ERIE COUN	4034
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2			02	02	I-75	GNV	-1
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1			01	01	I-75	JAX	-1
2	TrainingBridge2	Training Bridge 2(LRFD)			-1	-1	N/A	N/A	-1
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1			06	15	NJ-Tu	NJCity	-1
18	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3			01	01	I-95	NY	15
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2			11	333	I-95	NYC	-1
1	TrainingBridge1	Training Bridge 1(LRFD)			11	01	SR 00	Pittsburgh	0051
3	TrainingBridge3	Training Bridge 3(LRFD)			11	01	I-79	Pittsburgh	0075
24	Visual Reference 1	Visual Reference 1			01	12	I-76	WAITSFIEL	I-76

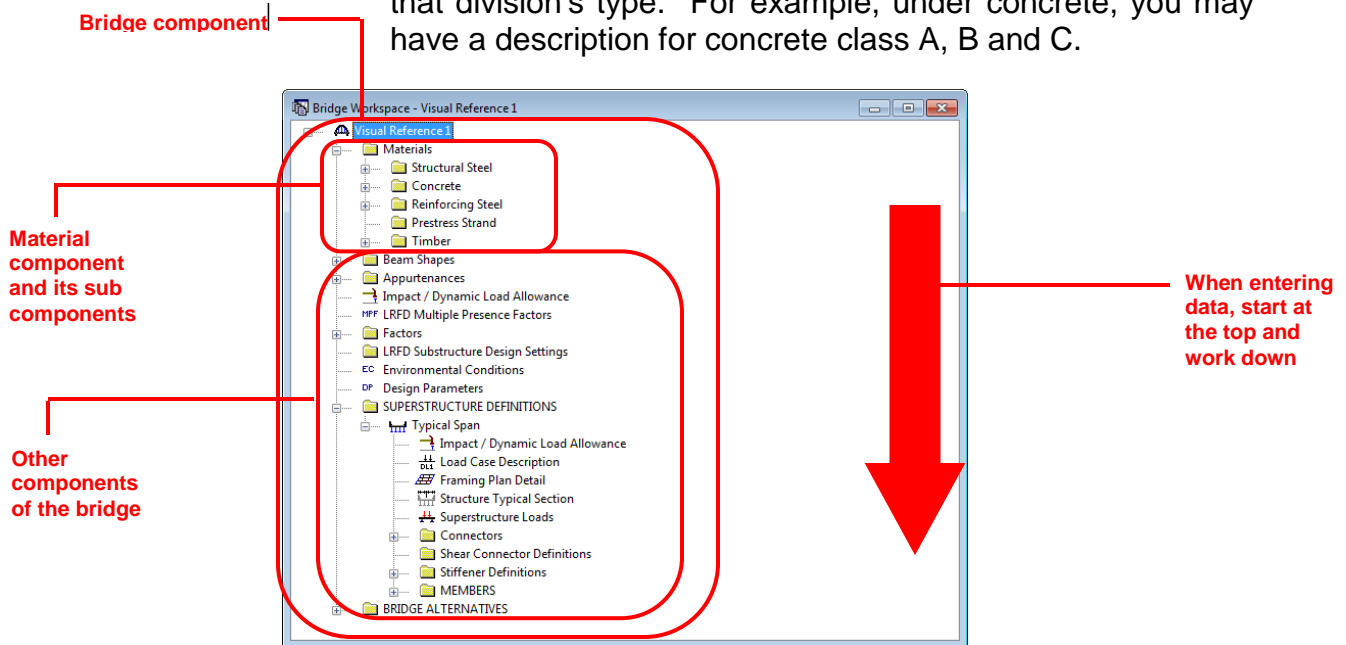


3 Select bridge from list

BID	Bridge Id	Bridge Name	Checked	Checked	District	County	Facility	Location	Ro
10	Example7	Example 7 PS (LFD)							-1
20	LRFD Substructure Example	LRFD Substructure Example 1							
22	LRFD Substructure Example	LRFD Substructure Example 3							
23	LRFD Substructure Example	LRFD Substructure Example 4 (NHI Hammer Head)							-1
11	RCTrainingBridge1	RC Training Bridge1(LFD)							-1
12	TimberTrainingBridge1	Timber Tr. Bridge1 (ASD)							-1
19	TrussTrainingExample	Truss Training Example							5
15	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3			07	06	I-95	ATL	-1
21	LRFD Substructure Example	LRFD Substructure Example 2					SR 40	ERIE COUN	4034
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2			02	02	I-75	GNV	-1
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1			01	01	I-75	JAX	-1
2	TrainingBridge2	Training Bridge 2(LRFD)			-1	-1	N/A	N/A	-1
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1			06	15	NJ-Tu	NJCity	-1
18	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3			01	01	I-95	NY	15
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2			11	333	I-95	NYC	-1
1	TrainingBridge1	Training Bridge 1(LRFD)			11	01	SR 00	Pittsburgh	0051
3	TrainingBridge3	Training Bridge 3(LRFD)			11	01	I-79	Pittsburgh	0075
24	Visual Reference 1	Visual Reference 1			01	12	I-76	WAITSFIEL	I-76

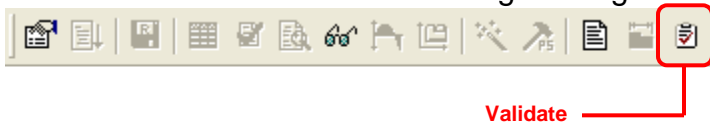
The result is that both the Bridge ID number and the Location are sorted in ascending order. At this point I look down the list in the location column for Waitsfield, then I look over at the Bridge ID until I find bridge 24 (see where the cursor is pointing in the third screen shot above).

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.



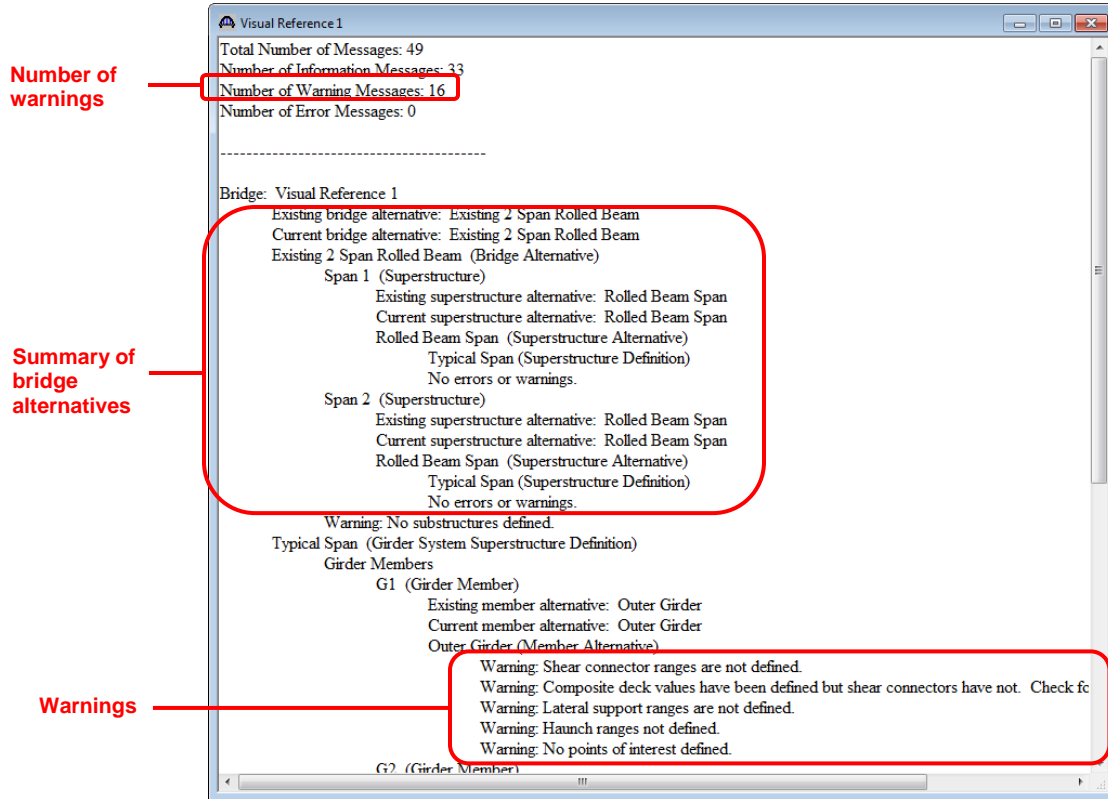
Checking Data Integrity

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



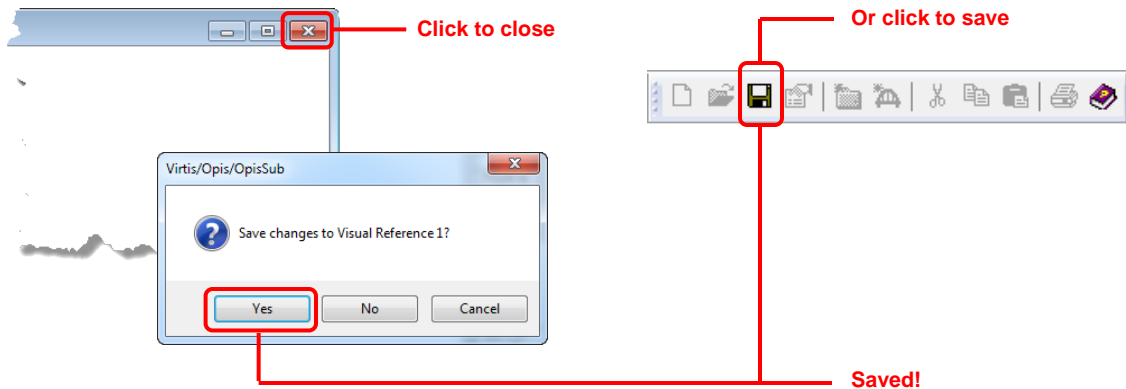
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your data. If you've missed something, it will be listed here. Use this as a guide to ensure your data entry is complete.

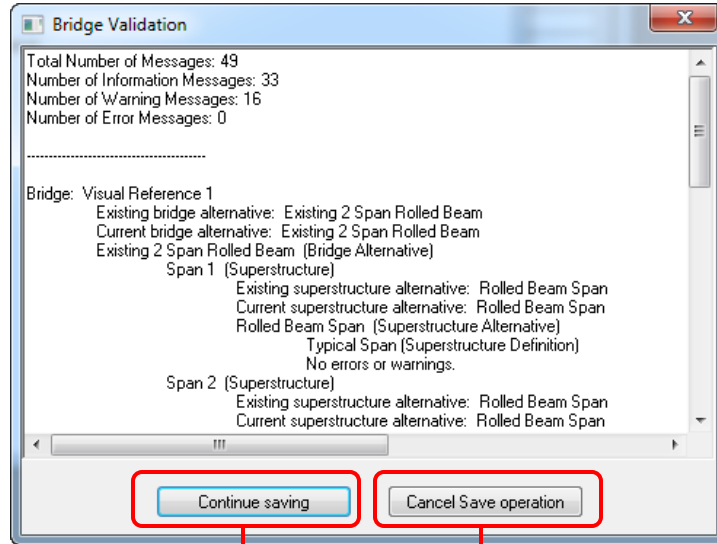


Saving your Bridge Data

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, Virtis/Opis will ask if you want to save your data. Before saving, Virtis/Opis will validate your data and ask if you want to continue.



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Click to save

Click to go back to workspace