AASHTOWare BrDR 7.6.0

Load Rating Tool Tutorial

LRT1 – Load Rating Tool Example

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This example describes the use of the Load Rating Tool feature in BrDR.

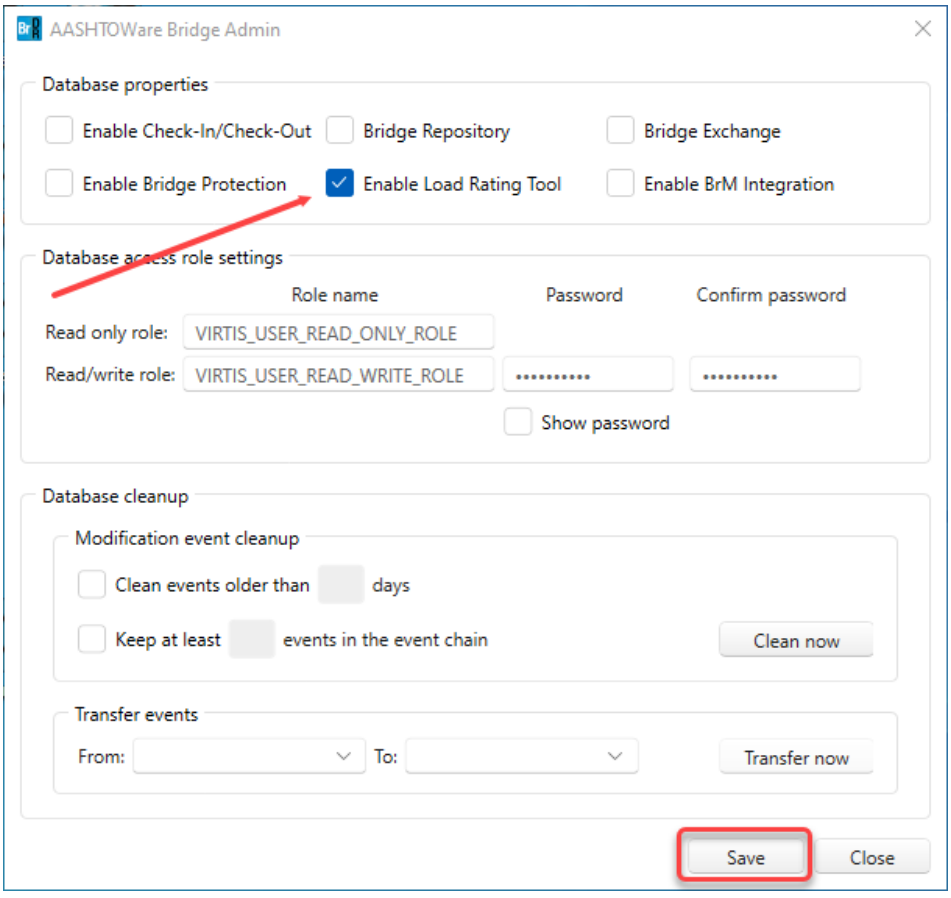
Topics covered

- Configuration of the Load Rating Tool
- Generation and maintenance of precomputed data
- Operation of the Load Rating Tool

Configuration of the Load Rating Tool

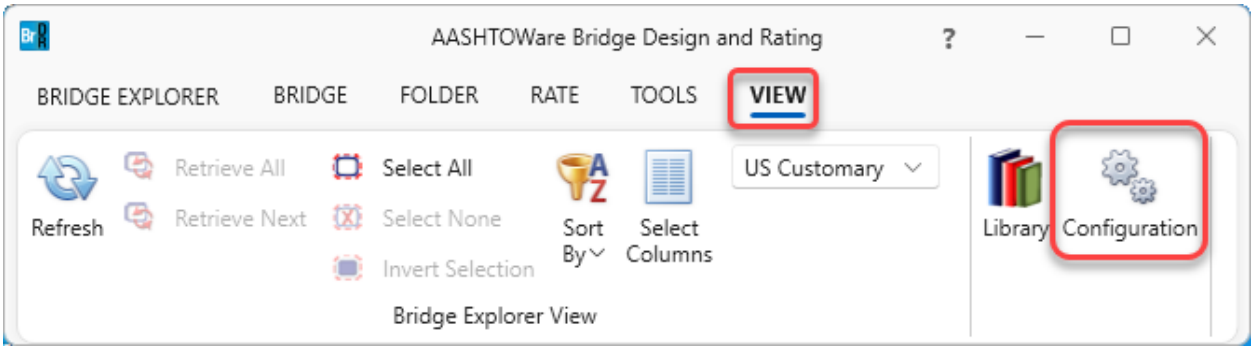
By default, the Load Rating Tool is disabled in the user interface. Before the Load Rating Tool can be used, it must be enabled through the **AASHTOWare Bridge Admin Utility**. *Note: The Bridge Admin Utility must have been selected for install while installing the BrDR product.*

To enable the Load Rating Tool, navigate to **Program Files/AASHTOWare/BrDR75** and open **AASHTOWareBridgeAdmin.exe**, login with the appropriate credentials, and select **Enable Load Rating Tool**. Click **Save** to accept the changes then **OK** followed by **Close** to close the window.

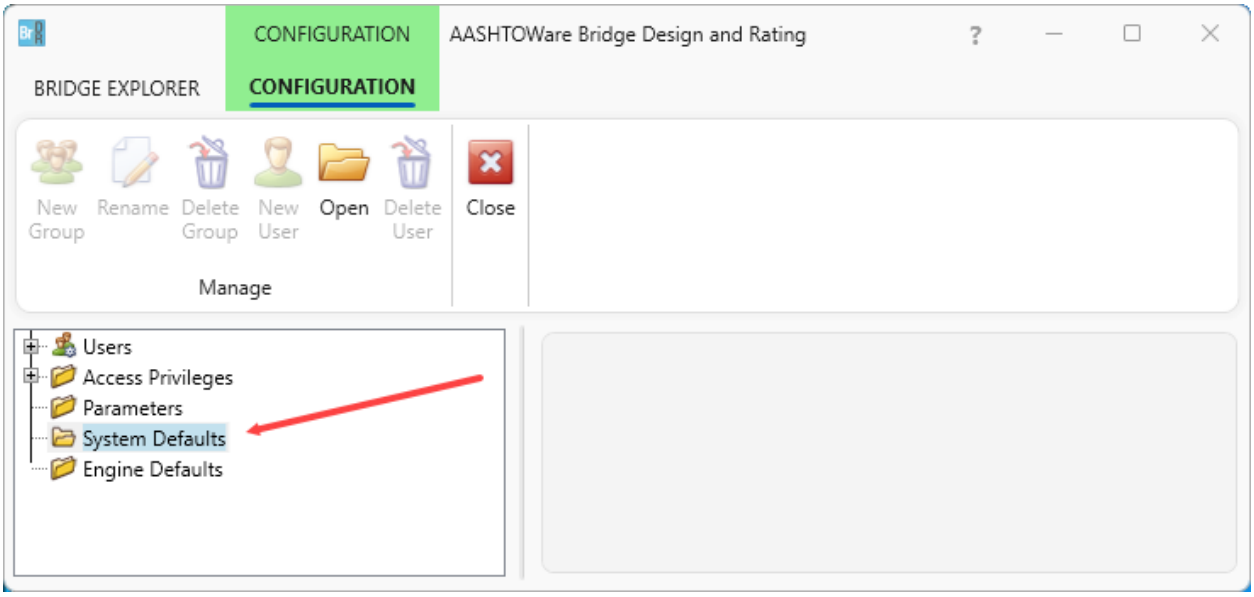


After the **Load Rating Tool** has been enabled in the **Bridge Admin Utility**, log into BrDR to begin the configuration process.

The **Load Rating Tool** configuration can be accessed by selecting **View** from the ribbon and then clicking the **Configuration** button.

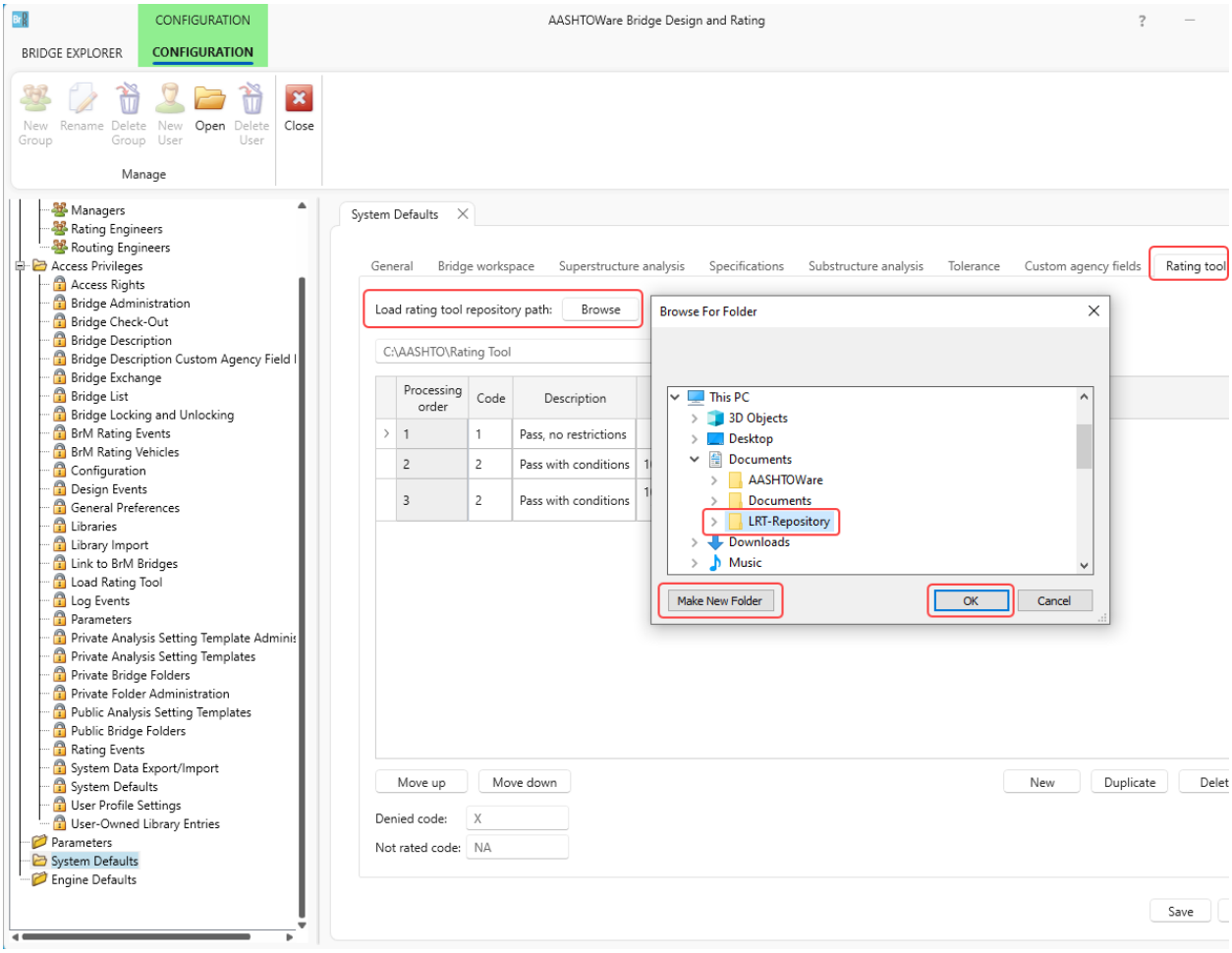


Navigate to **System Defaults**.



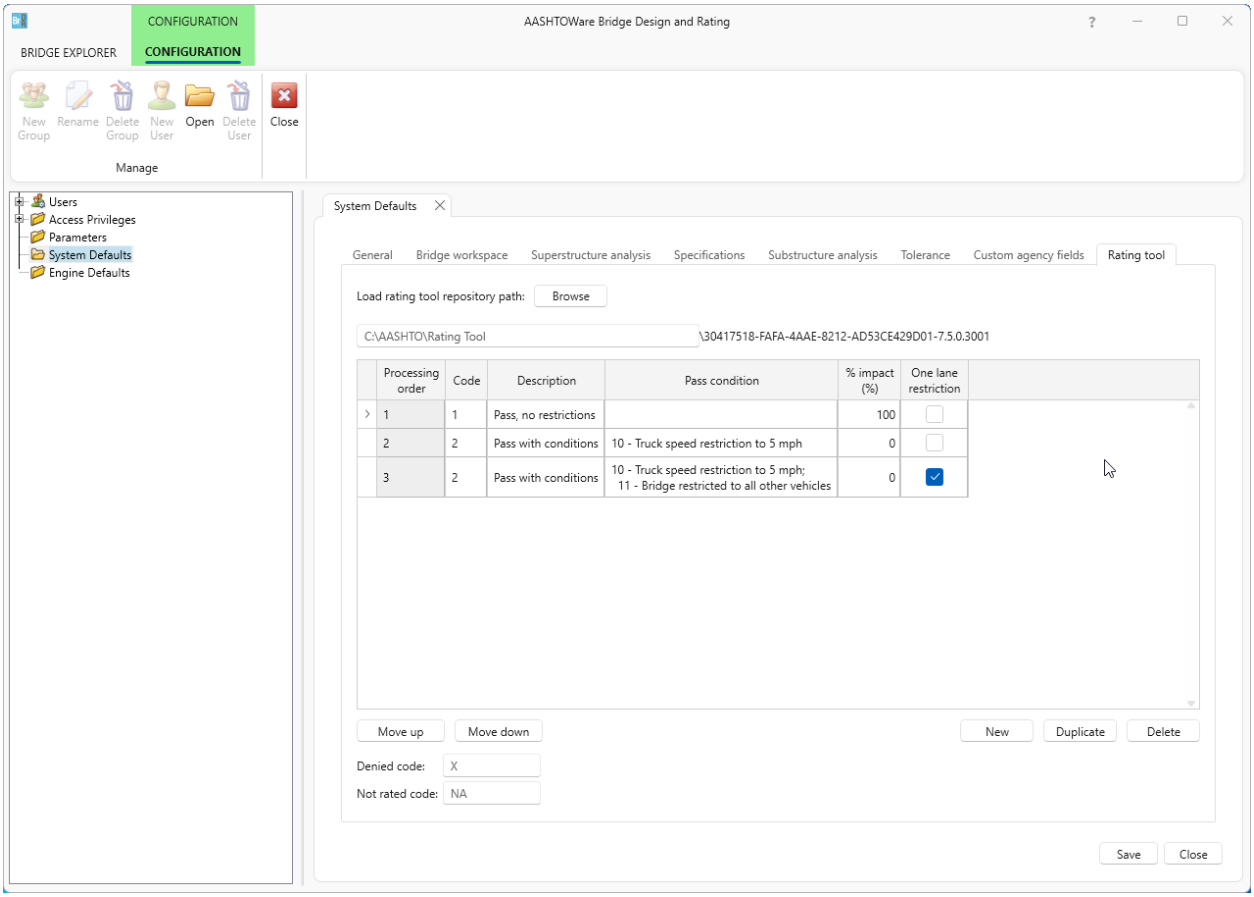
The **Rating Tool** configuration tab consists of setting the repository path, defining rating scenarios, setting the denied code, and setting the not rated code.

In this tutorial, only the **Load rating tool repository path** location will need to be set. The repository path location defines the folder where the precomputed data files will be stored. In a production environment, this repository location could be a network folder which would provide access to multiple users. This tutorial will review all the steps necessary to maintain the precomputed data and to keep it up to date as changes are made to the bridge. For this tutorial, manually create a local folder location and specify that location in the **Load rating tool repository** folder, as shown in the figure below. *Note: If this folder is not manually created, the application will provide a message indicating that the repository path is not set and will provide instructions to set the path location*.



The label shown after the repository path displays the unique folder that will be created after the first precomputed data analysis completes successfully. This folder will be created automatically, thus manual creation of this directory is not necessary. This unique folder name prevents precomputed data files from becoming mixed with other versions of the product.

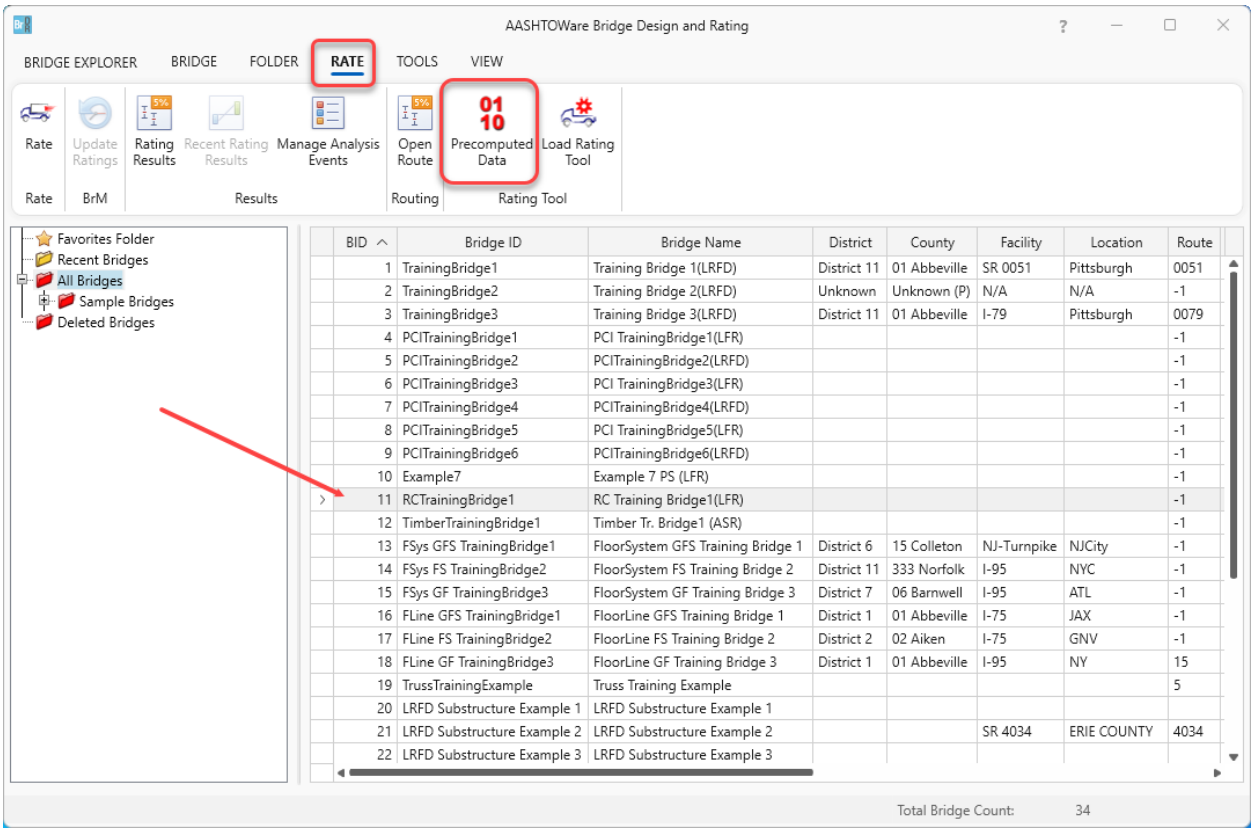
The remaining options define the rating scenarios and analysis codes. These load rating scenarios and codes are usually customized per agency and vary state-to-state. These options provide a flexibility that allow the Load Rating Tool to be seamlessly integrated into existing agency processes without requiring them to adapt to the tool output. In brief, each scenario is run in the processing order described below. If the scenario is denied, the next scenario is run. If a scenario passes, no further scenarios are run for that bridge.



Select **Save** and **Close** the **Configuration** window.

Precomputed Data

Generating precomputed data is the first step in using the Load Rating Tool. The precomputed data is required by the Load Rating Tool to perform near-instantaneous ratings, thus it is a required step in the operation. To generate precomputed data, select bridges from the **Bridge Explorer** directly or by selecting a folder (list or query based). Once the bridges of interest are selected, click on the **Precomputed data** button in the **Rating Tool** group of the **RATE** ribbon (see the following screen shot).

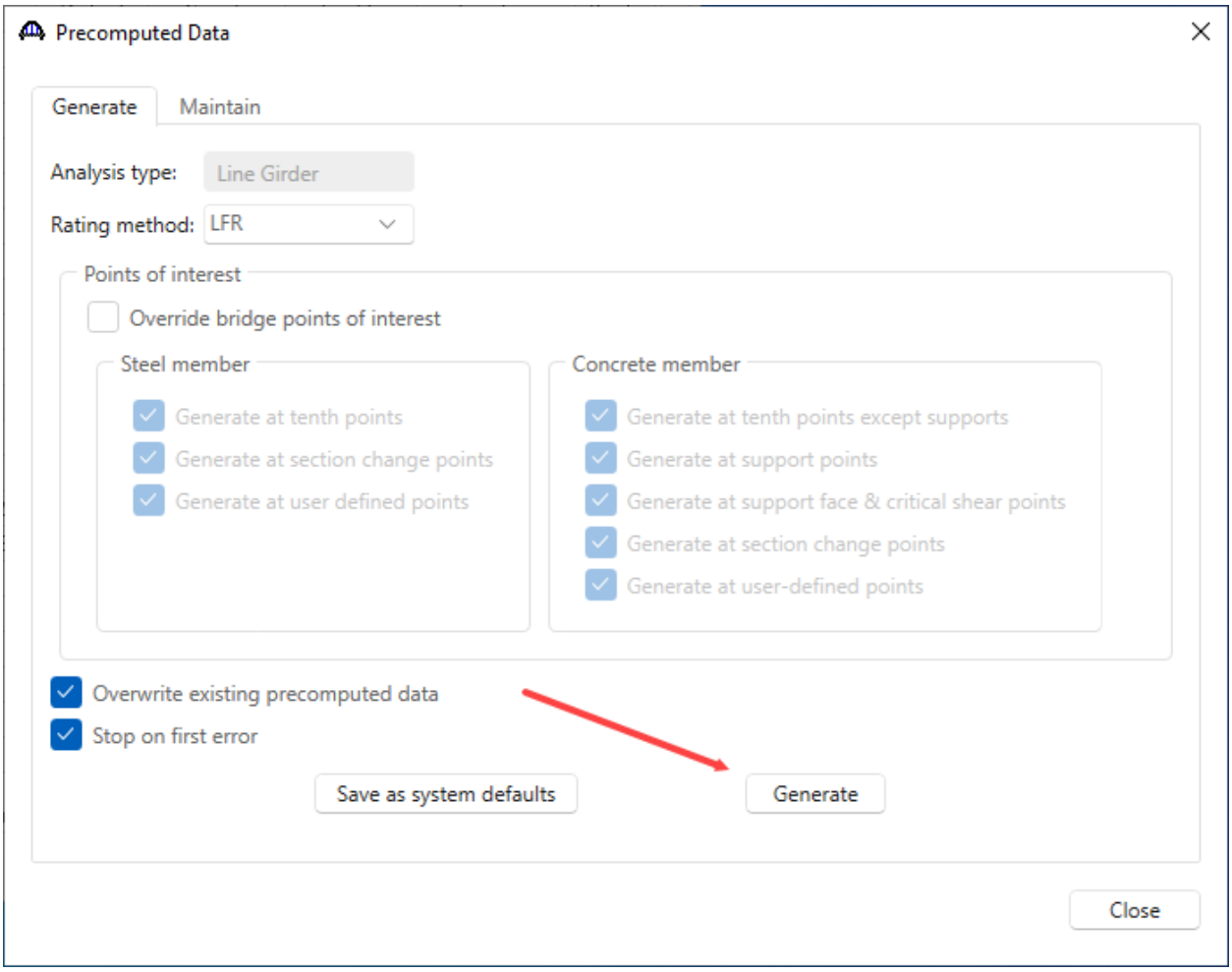


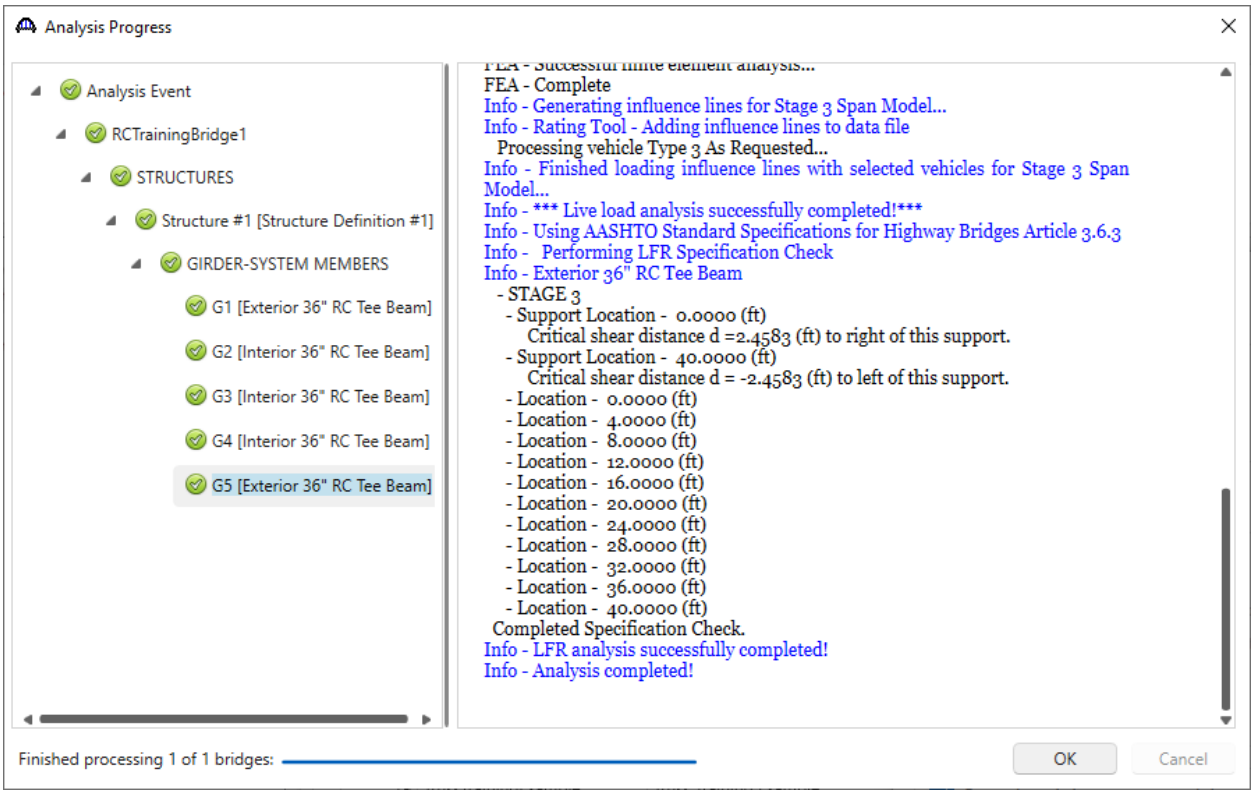
BID	Bridge ID	Bridge Name	District	County	Facility	Location	Route
1	TrainingBridge1	Training Bridge 1(LRFD)	District 11	01 Abbeville	SR 0051	Pittsburgh	0051
2	TrainingBridge2	Training Bridge 2(LRFD)	Unknown	Unknown (P)	N/A	N/A	-1
3	TrainingBridge3	Training Bridge 3(LRFD)	District 11	01 Abbeville	I-79	Pittsburgh	0079
4	PCITrainingBridge1	PCI TrainingBridge1(LFR)					-1
5	PCITrainingBridge2	PCITrainingBridge2(LRFD)					-1
6	PCITrainingBridge3	PCI TrainingBridge3(LFR)					-1
7	PCITrainingBridge4	PCITrainingBridge4(LRFD)					-1
8	PCITrainingBridge5	PCI TrainingBridge5(LFR)					-1
9	PCITrainingBridge6	PCITrainingBridge6(LRFD)					-1
10	Example7	Example 7 PS (LFR)					-1
11	RCTrainingBridge1	RC Training Bridge1(LFR)					-1
12	TimberTrainingBridge1	Timber Tr. Bridge1 (ASR)					-1
13	FSys GFS TrainingBridge1	FloorSystem GFS Training Bridge 1	District 6	15 Colleton	NJ-Turnpike	NJCity	-1
14	FSys FS TrainingBridge2	FloorSystem FS Training Bridge 2	District 11	333 Norfolk	I-95	NYC	-1
15	FSys GF TrainingBridge3	FloorSystem GF Training Bridge 3	District 7	06 Barnwell	I-95	ATL	-1
16	FLine GFS TrainingBridge1	FloorLine GFS Training Bridge 1	District 1	01 Abbeville	I-75	JAX	-1
17	FLine FS TrainingBridge2	FloorLine FS Training Bridge 2	District 2	02 Aiken	I-75	GNV	-1
18	FLine GF TrainingBridge3	FloorLine GF Training Bridge 3	District 1	01 Abbeville	I-95	NY	15
19	TrussTrainingExample	Truss Training Example					5
20	LRFD Substructure Example 1	LRFD Substructure Example 1					
21	LRFD Substructure Example 2	LRFD Substructure Example 2			SR 4034	ERIE COUNTY	4034
22	LRFD Substructure Example 3	LRFD Substructure Example 3					

Generating Precomputed Data

The **Generate** tab on the **Precomputed Data** window, is used to specify overrides and other miscellaneous options for the precomputed data analysis.

For this tutorial, leave the options set as the defaults and click the **Generate** button. This will open the **Analysis Progress** window and generate precomputed data for the selected bridges.





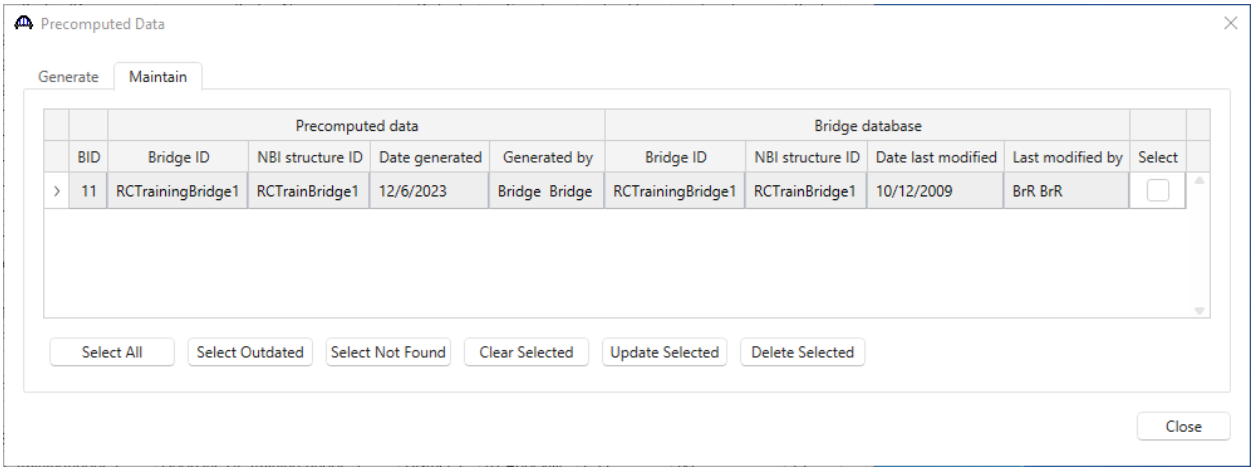
Once the analysis is complete click **OK** to close the **Analysis Progress** window and return to the **Precomputed Data** window, click **Close** to return to the Bridge Explorer.

Maintaining Precomputed Data

Reopen the **Precomputed Data** window by clicking the **Precomputed Data** button in the **Rating Tool** group of the **RATE** ribbon. Navigate to the **Maintain** tab to view bridges which are now in the precomputed data repository.

This tab provides information on when the precomputed data was last generated, by whom it was generated, when the bridge was last modified, and who modified the bridge. This information is useful for determining when precomputed data should be regenerated for a specific bridge. For example, the **Select Outdated** button will automatically select bridges that have been modified since the precomputed data was last generated and then **Update Selected** can be clicked to regenerate the precomputed data for those bridges.

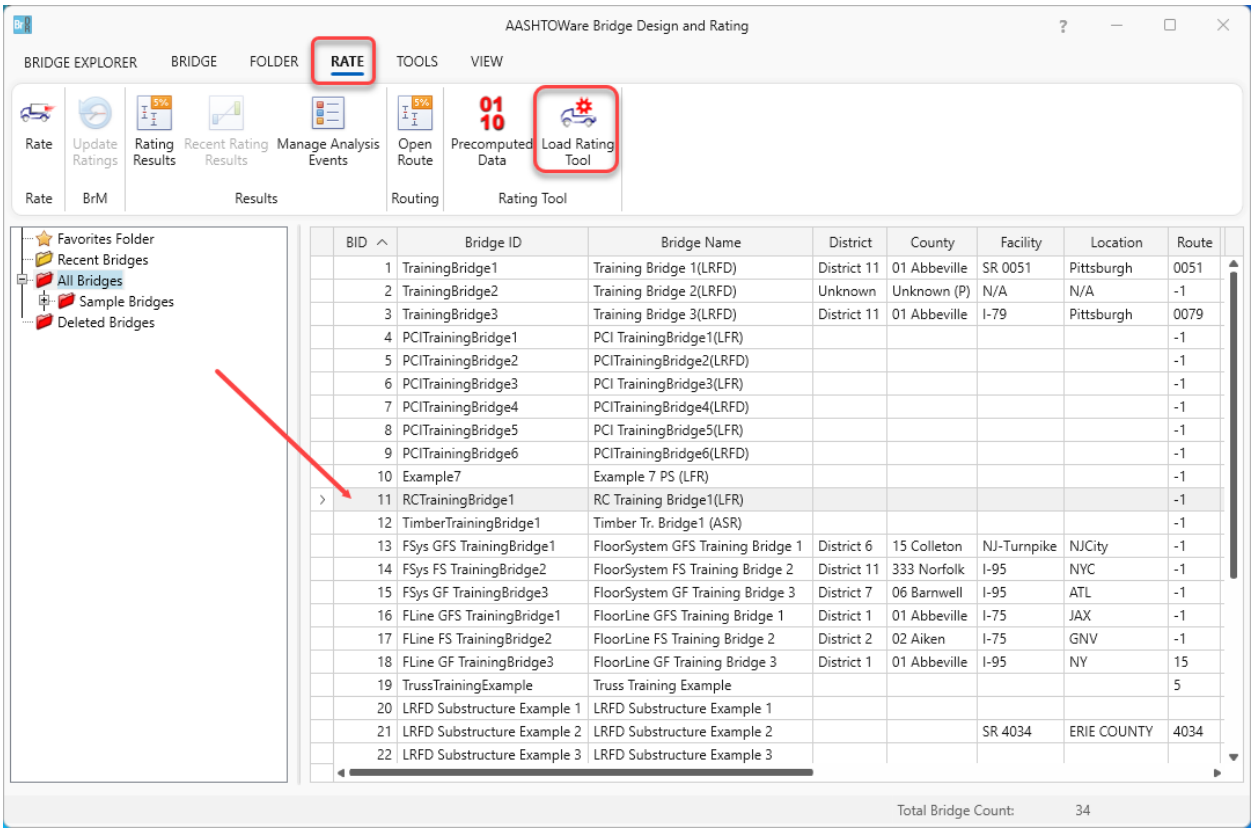
Click the **Close** button to return to the Bridge Explorer.



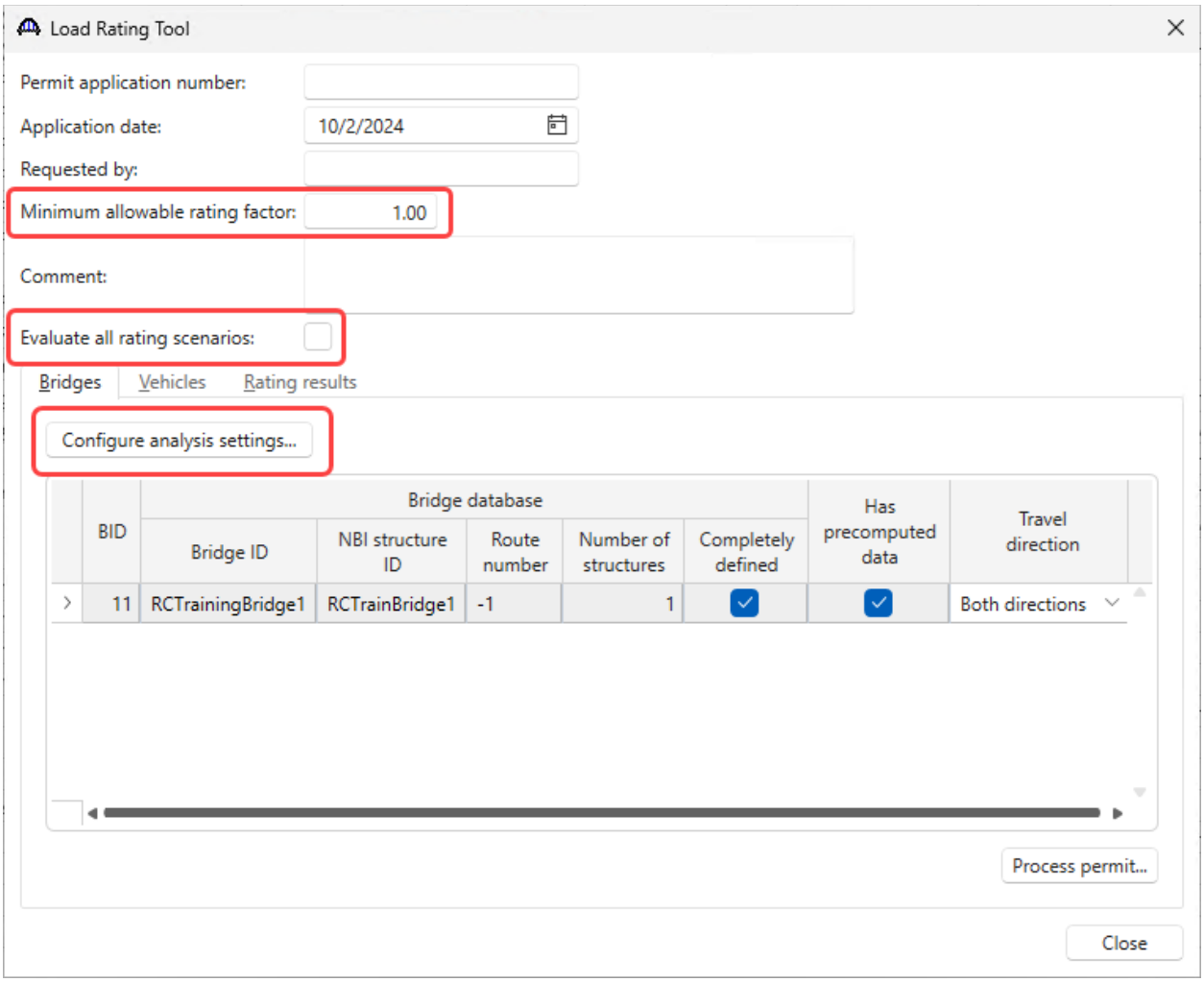
Operation of the Load Rating Tool

Once precomputed data is available in the repository for a given bridge (or set of bridges), a high-speed rating from the Load Rating Tool can be made.

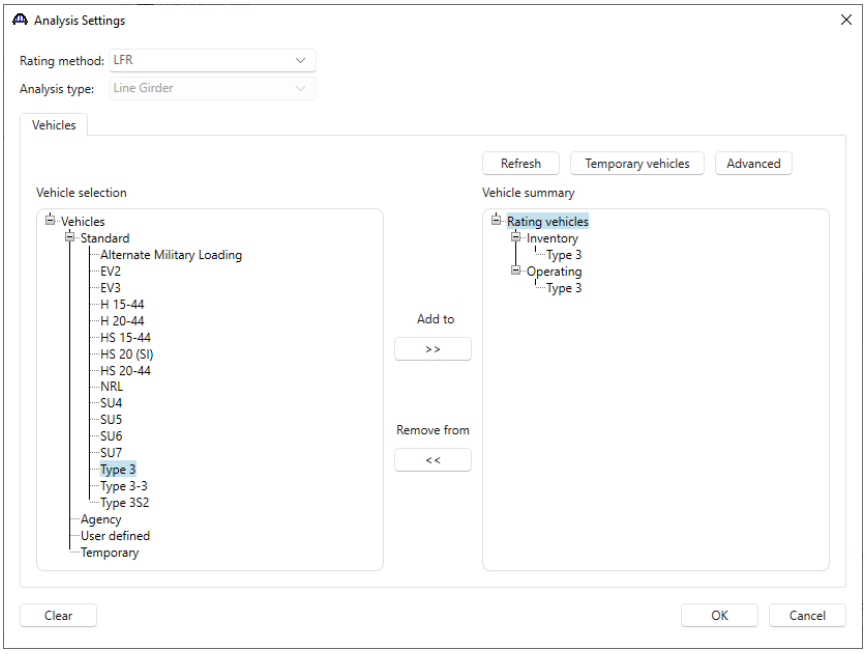
Select a bridge or set of bridges from the Bridge Explorer that has precomputed data and then click the **Load Rating Tool** button in the **Rating Tool** group (see the screen shot below) to open the tool.



The **Load Rating Tool** window shows several attributes specific to the rating event along with several configuration options. The only required items for rating are a **Minimum allowable rating factor** and **Analysis settings** with only Inventory and/or Operating vehicles.

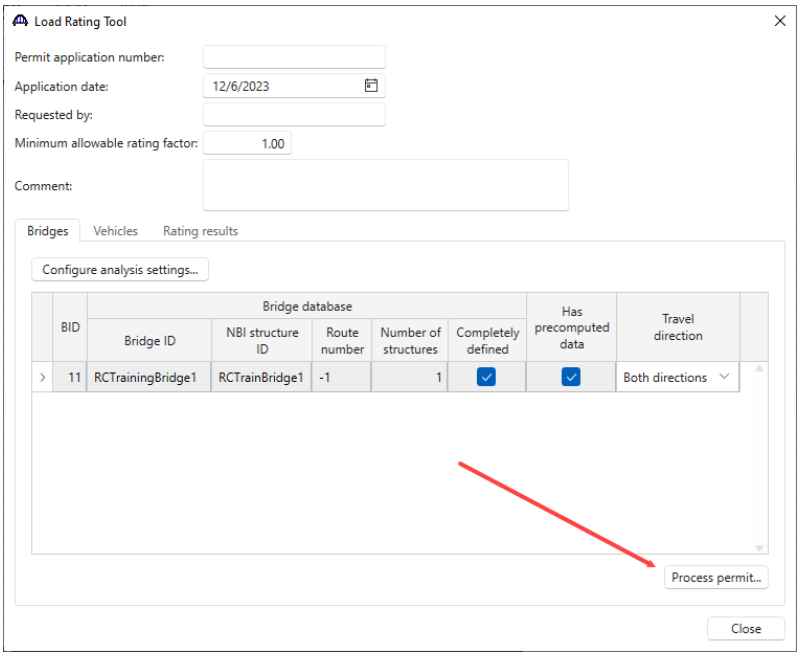


The **Evaluate all rating scenarios** checkbox will ensure that all scenarios will be evaluated even when a previous evaluation passes.



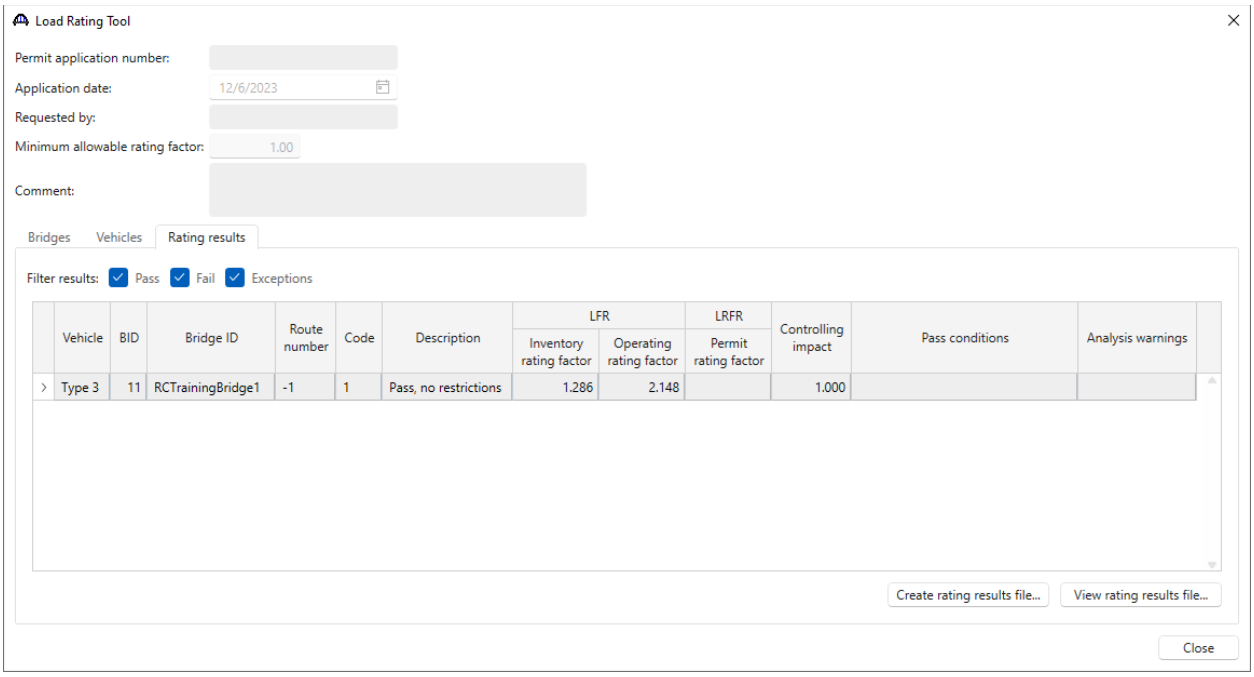
Click **OK** to apply the settings and close the window.

Clicking the **Process Permit** button will launch a rating. Any bridges that do not have precomputed data will be evaluated using a traditional full analysis.



The Load Rating Tool will evaluate the scenarios as outlined in the configuration step of this tutorial defined on the **System Defaults** window. For each bridge, the tool will start with the first scenario, test the rating factor from that scenario against the minimum allowable rating factor defined on the **Load Rating Tool** window, and then stop if the scenario passes. If the scenario fails, it will proceed on to the next scenario and repeat until all scenarios have been exhausted. The tool will then repeat that process for all the bridges selected to be analyzed.

Once the rating has completed, the **Rating results** tab becomes focused. This tab shows the results for all the bridges and for each scenario run for each bridge. The **Filter results** checkboxes can be used to select the results displayed on this tab.



The **Create rating results file…** button can be used to create a formatted report containing the results of the rating analysis.

Permit Application Number:

Application Date: 12/6/2023

Requested By:

Processed Date: 12/6/2023 1:42:48 PM

Processed By: bridge

Minimum Allowable Rating Factor: 1.00

Comments:

Load Rating Tool Results Output

Vehicle	BID	Bridge ID	Route ID	Code	Description	Inventory rating factor	Operating rating factor	Permit rating factor	Controlling impact	Pass conditions	Analysis warnings
Type 3	11	RCTrainingBridge1	-1	1	Pass, no restrictions	1.286	2.148		1.000		

Vehicle Information

Vehicle name: Type 3

Description: AASHTO Type 3

Notional vehicle: False

Axle no.	Axle load (kip)	Gage distance (ft)	Wheel contact width (in)	Minimum axle spacing (ft)	Maximum axle spacing (ft)
1	16.00	6.00	14.1422		
2	17.00	6.00	14.5775	15.00	15.00
3	17.00	6.00	14.5775	4.00	4.00
Totals:	50.00			19.00	19.00