AASHTOWare BrDR 7.5.0

Feature Tutorial

Capacity Override at Points of Interest

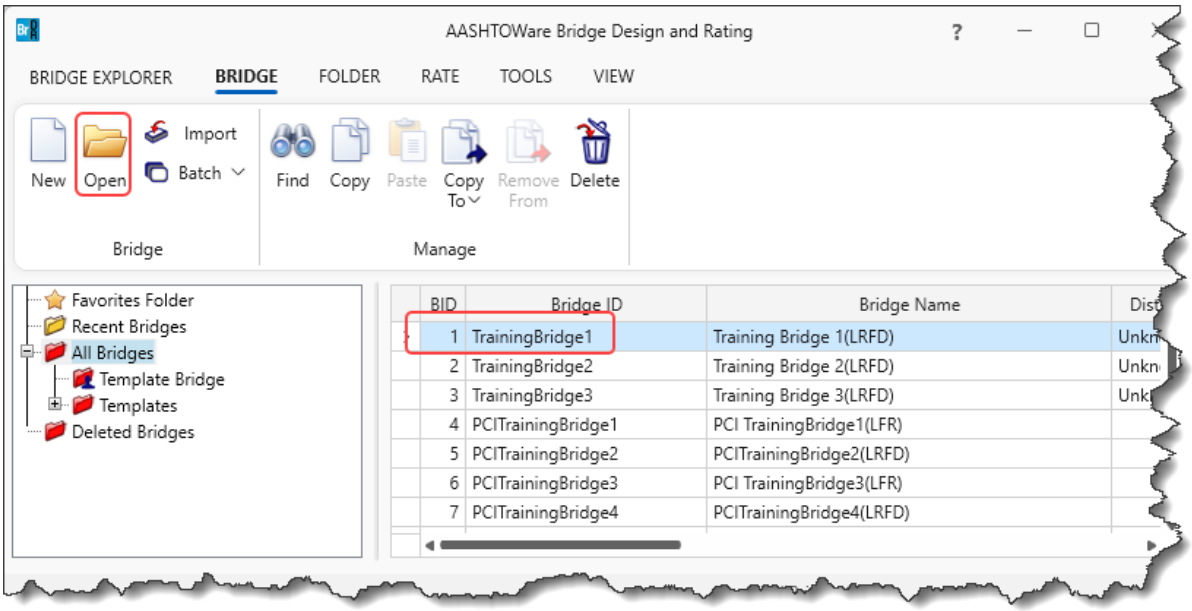
Capacity Override at Points of Interest

Topics Covered

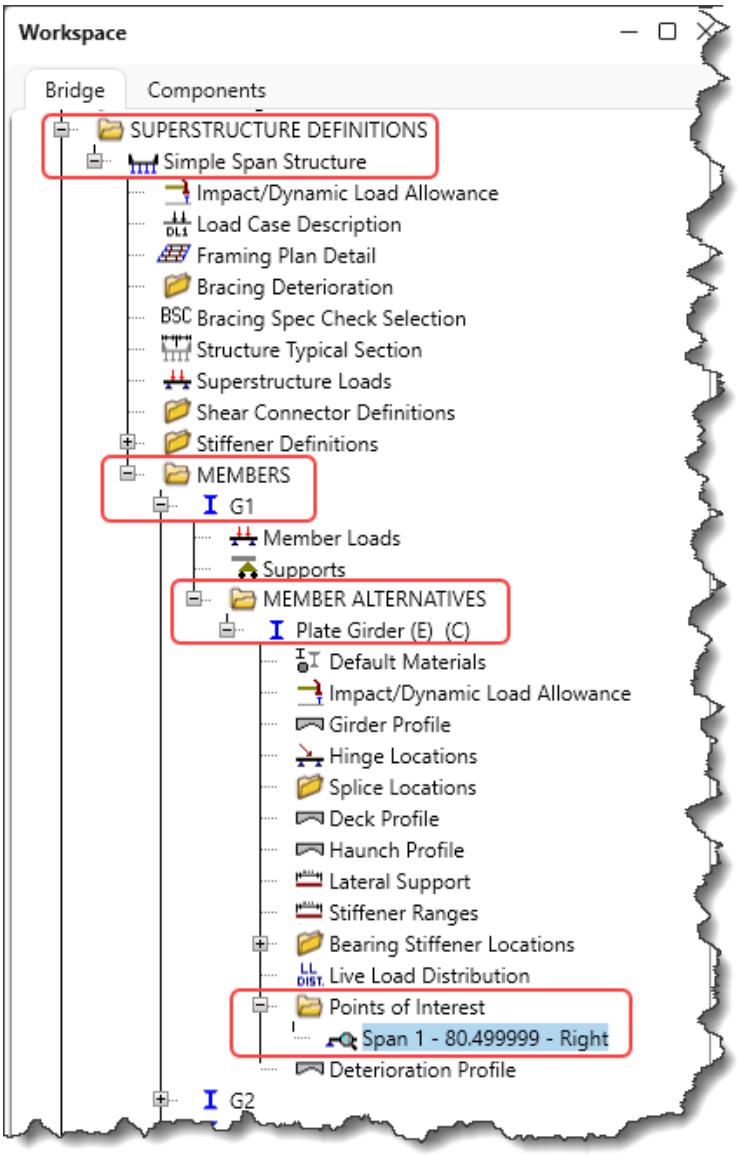
- Capacity Override LRFR
- Capacity Override LRFD

Capacity Override LRFR

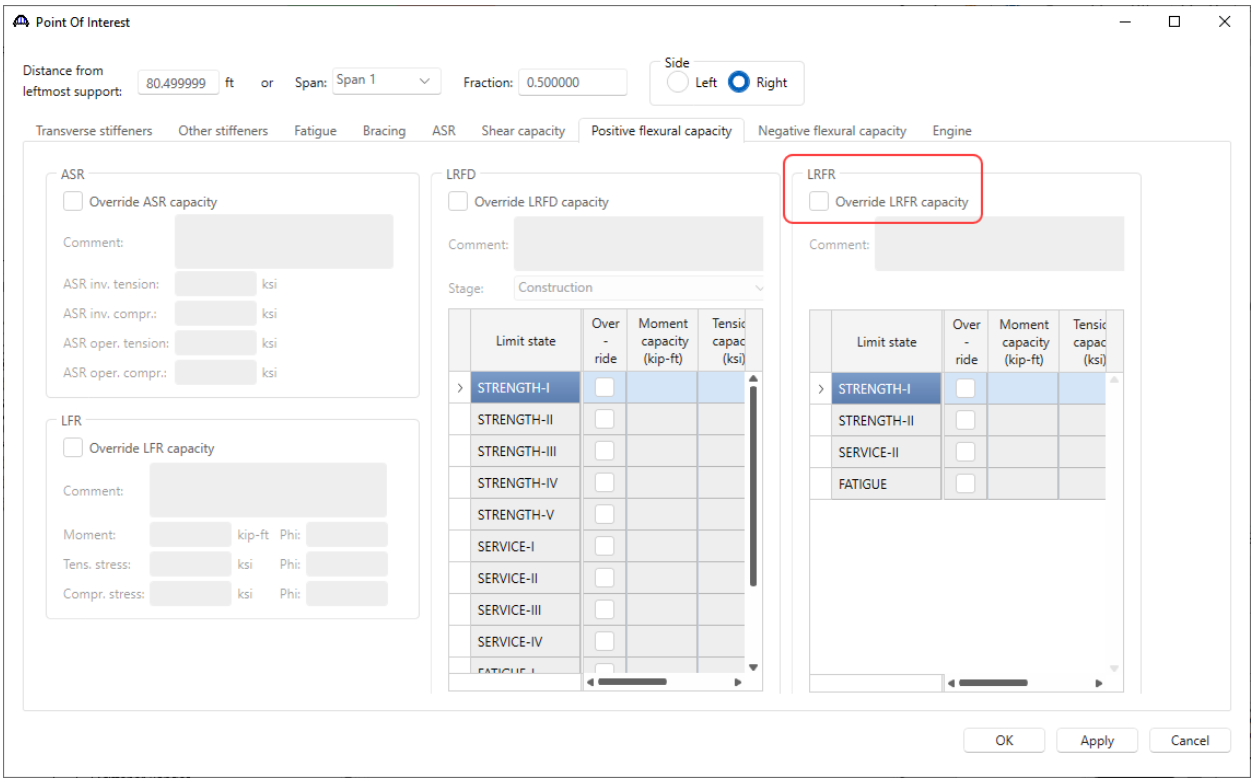
From the **Bridge Explorer**, double click on **BID1 - TrainingBridge1** (or select and click **Open** from the **Bridge** group of the **BRIDGE** ribbon) to open the bridge.



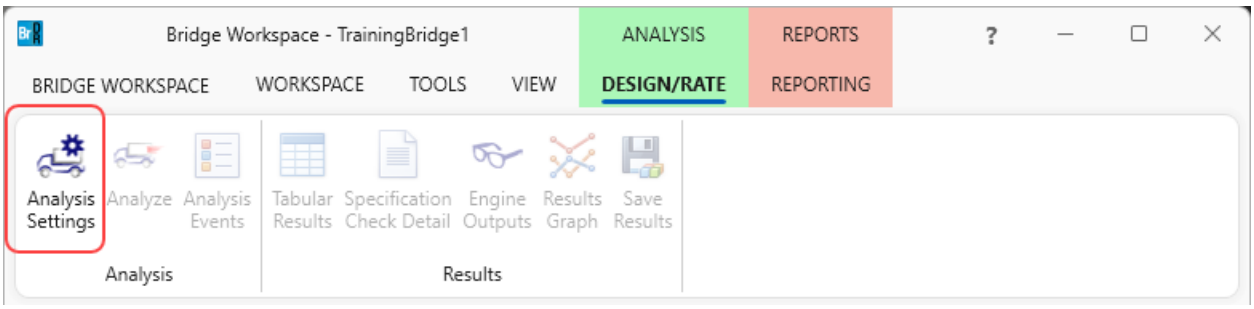
Navigate to **SUPERSTRUCTURE DEFINITIONS -> Simple Span Structure->Members->G1->Member Alternative->Plate Girder-> Point of Interests-> Span 1 - 80.499999 -Right.** Double click on this point of interest.



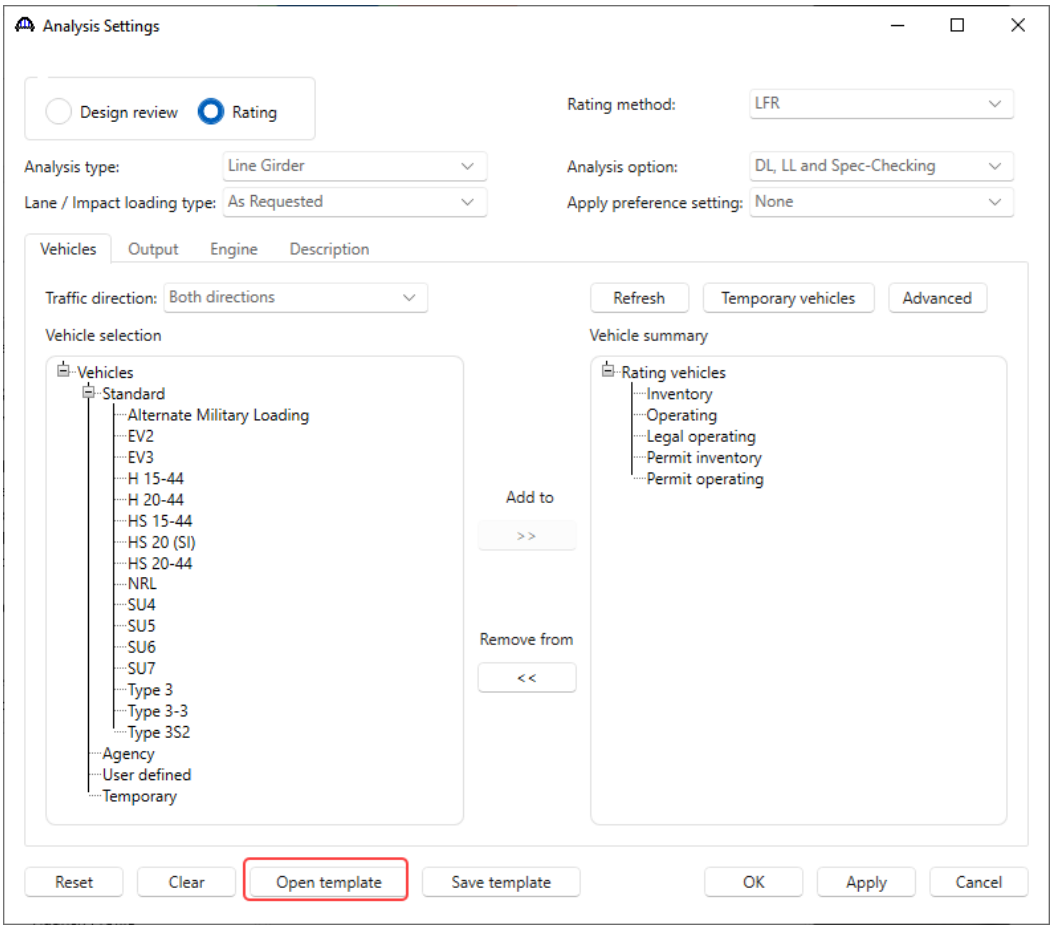
Navigate to the **Positive flexural capacity** tab of this window. As seen from the window below, the option for **Override LRFR capacity** is not checked. Hence, the beam capacities at 80.5 ft will be computed by the AASHTO LRFR Engine.

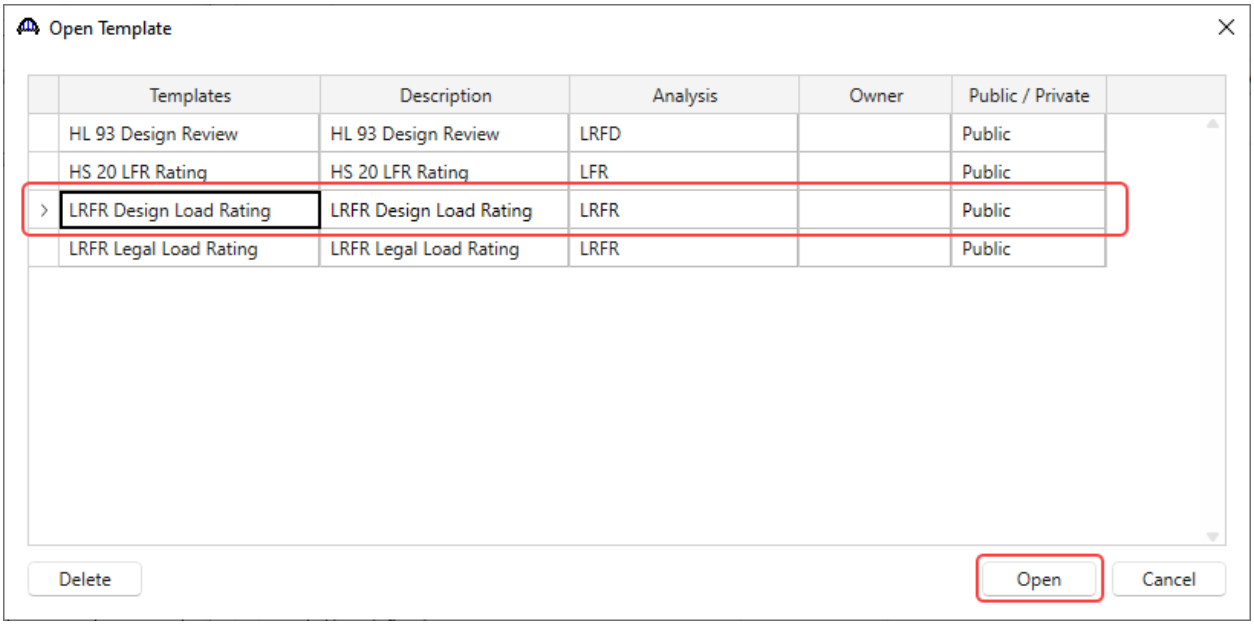


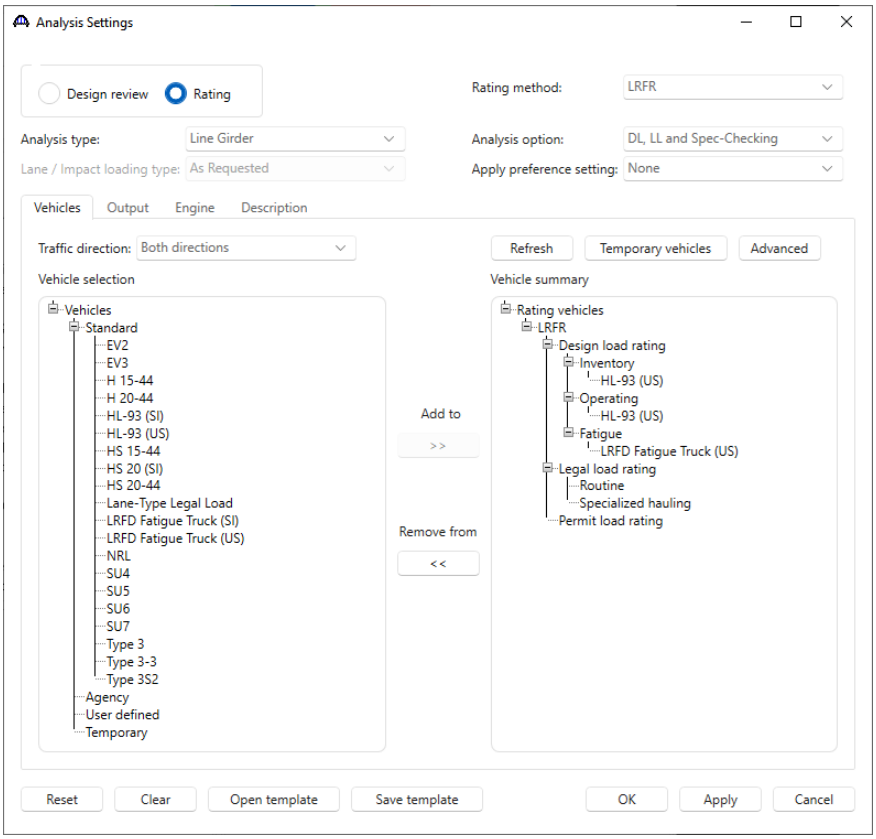
From the **Analysis** group of the **DESIGN/RATE** ribbon, click on the **Analysis Settings** button as shown below.



Click on the **Open template** button in the **Analysis Settings** window. Select the **LRFR Design Load Rating template**. The updated **Analysis Settings** window is shown below.

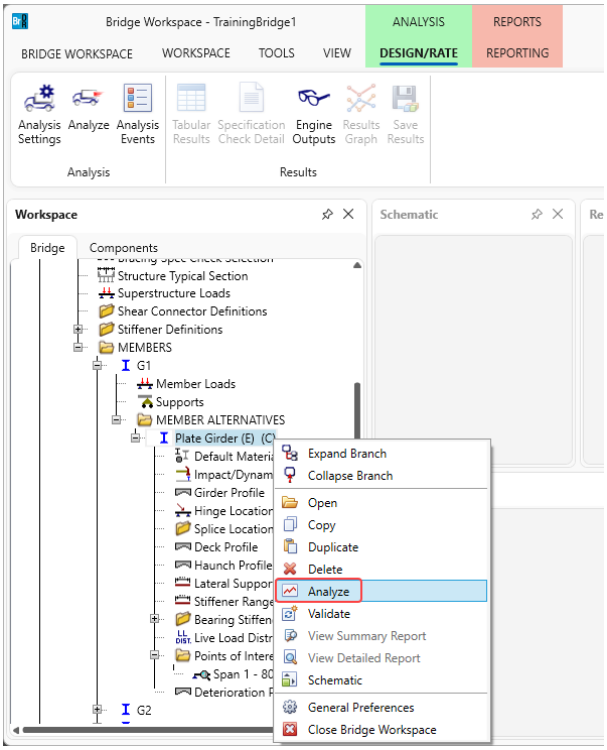






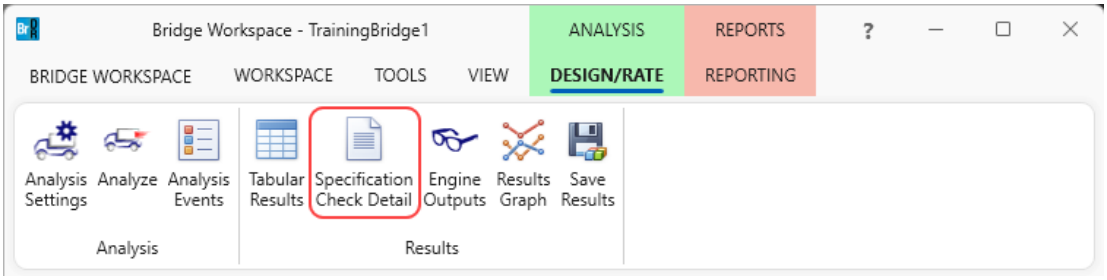
Click **OK** to apply the settings and close the window.

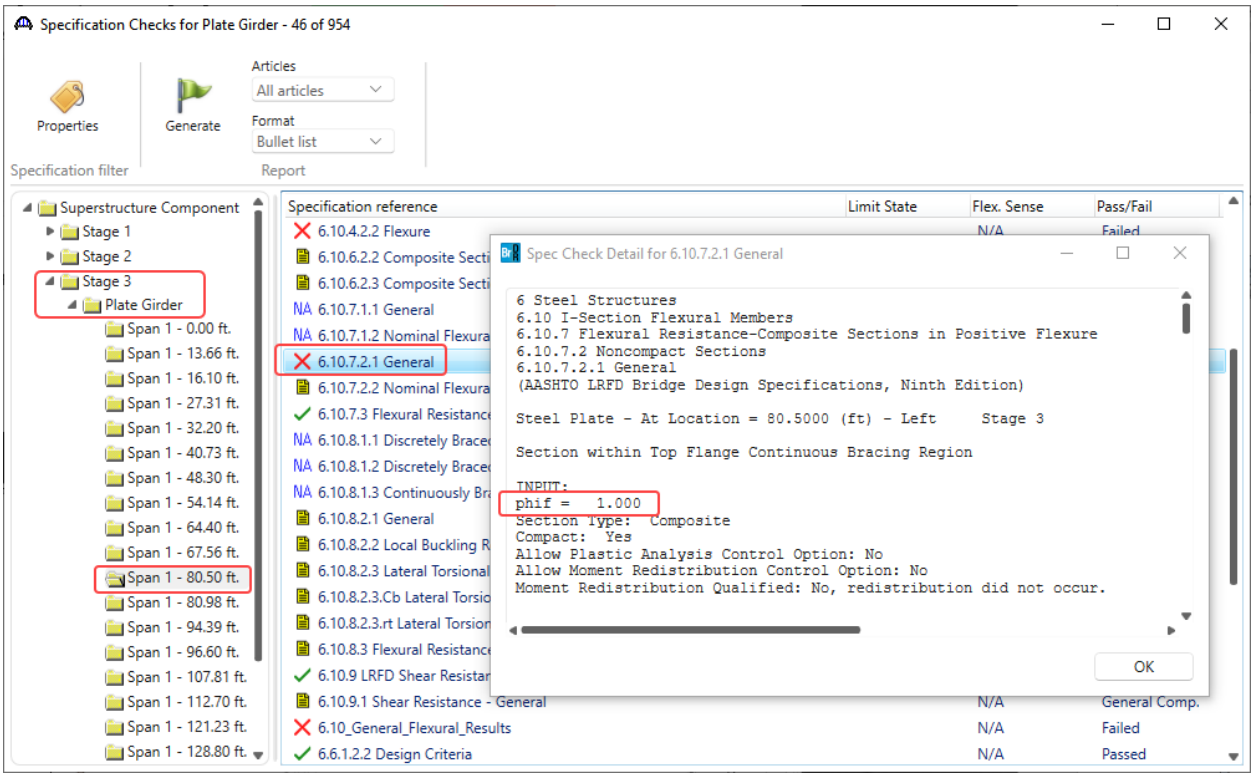
To analyze girder **G1**, right click on **Plate Girder** and select **Analyze** as shown below.



Capacity Override at Points of Interest

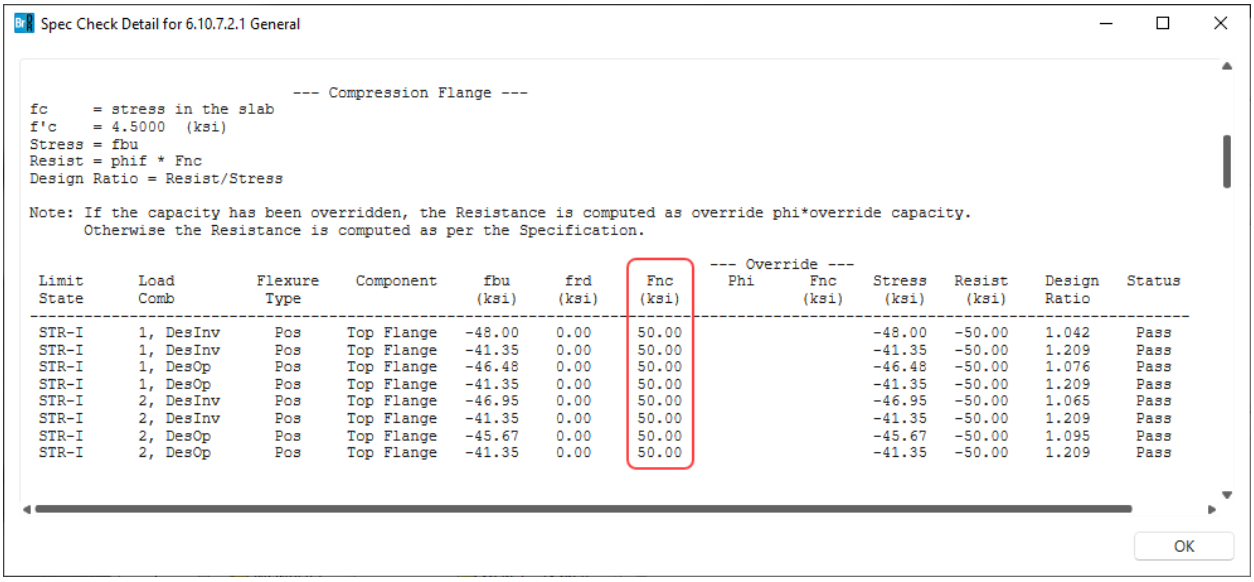
After the LRFR analysis is completed click on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon and navigate to **Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1**.

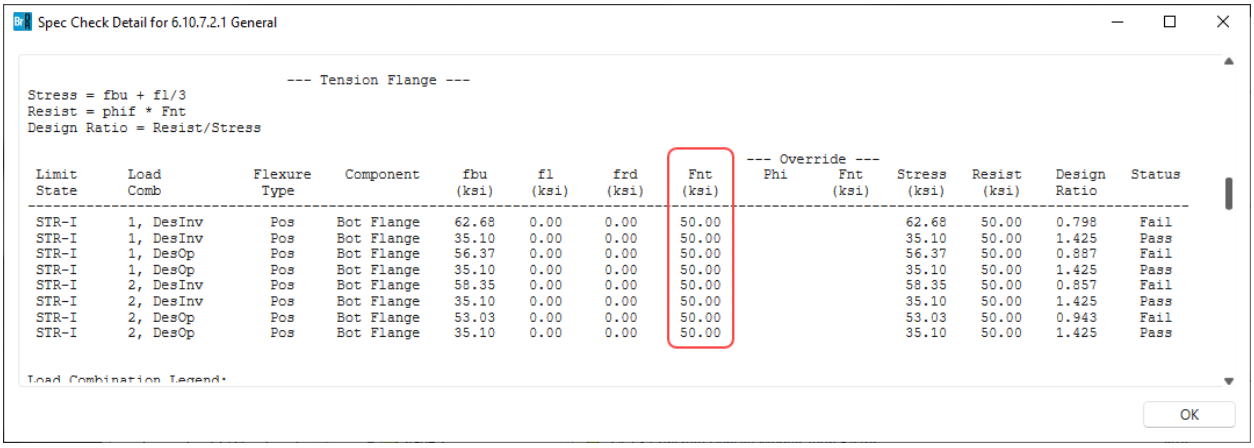




The resistance factor **phif** value is **1.0** as shown above.

Capacity Override at Points of Interest



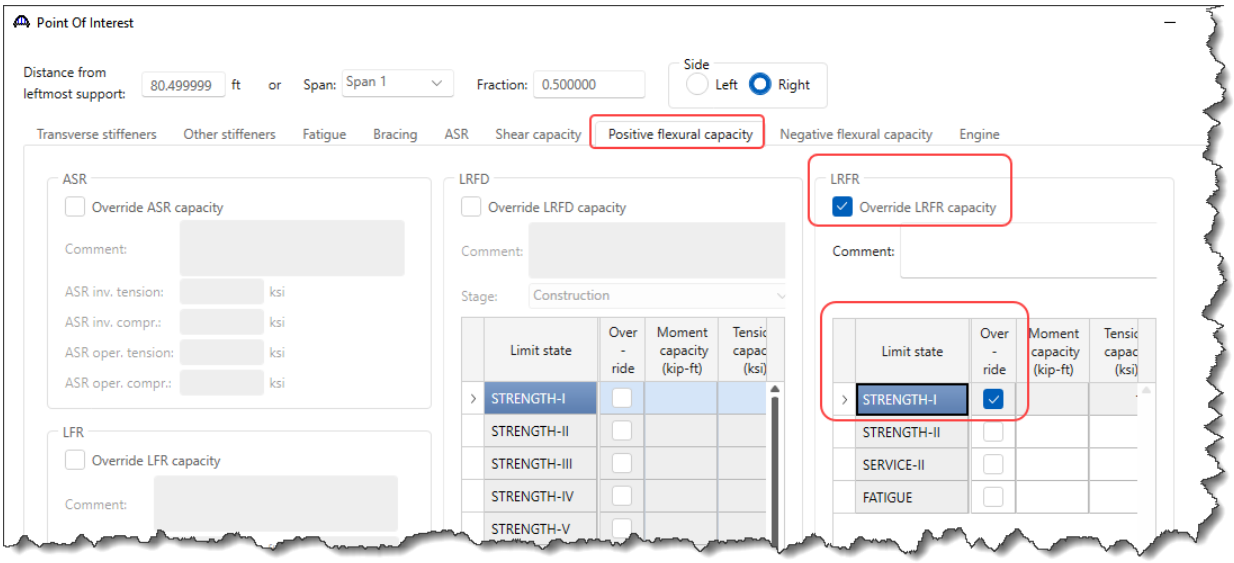


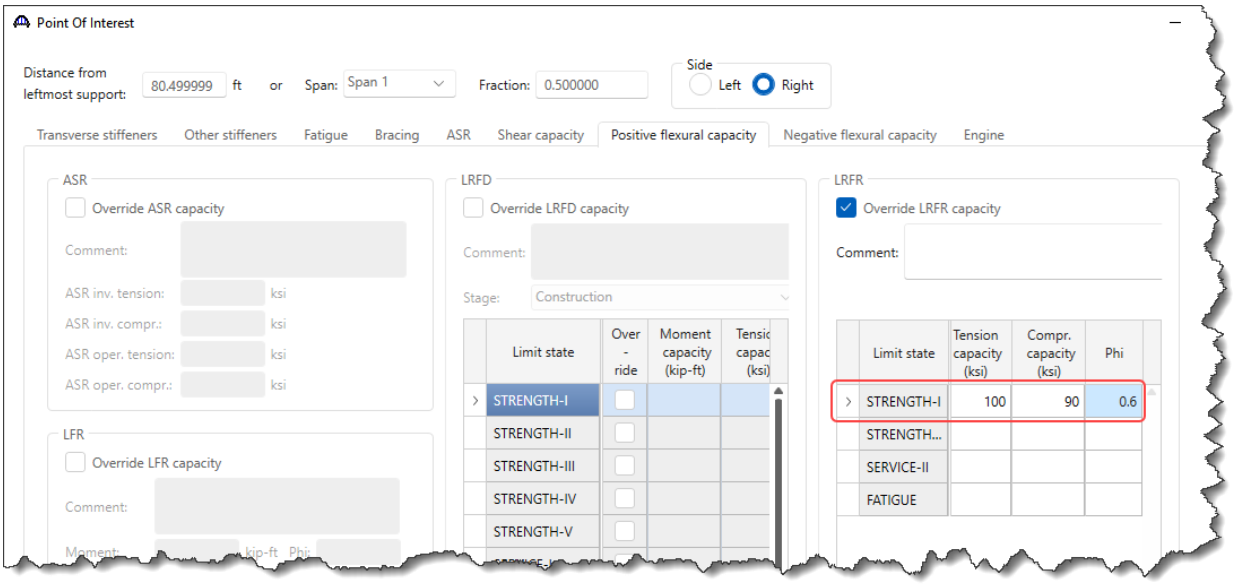
The above two figures show the computed resistances for the compression and the tension flanges at location 80.5 ft as F_{nc} and F_{nt} respectively .

Close the article and the **Specification Checks** window.

Again, navigate to **SUPERSTRUCTURE DEFINITIONS->Simple Span Structure->Members->G1->Member Alternative->Plate Girder-> Point of Interests->Span 1 80.5.**

Check the **Override LRFR capacity** for **Positive Flexural Capacity** and input the values as shown below.



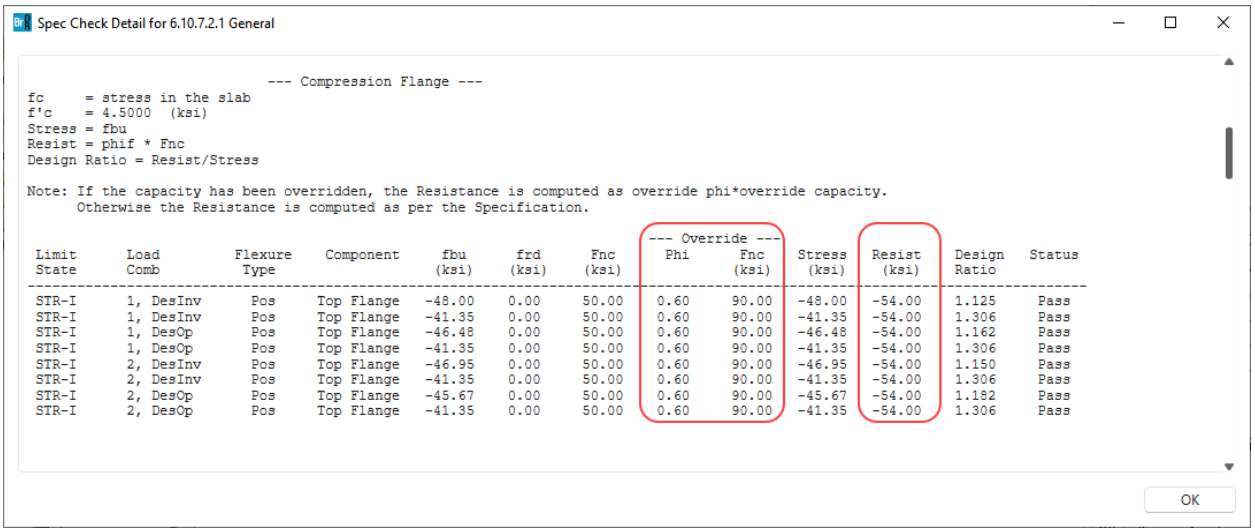


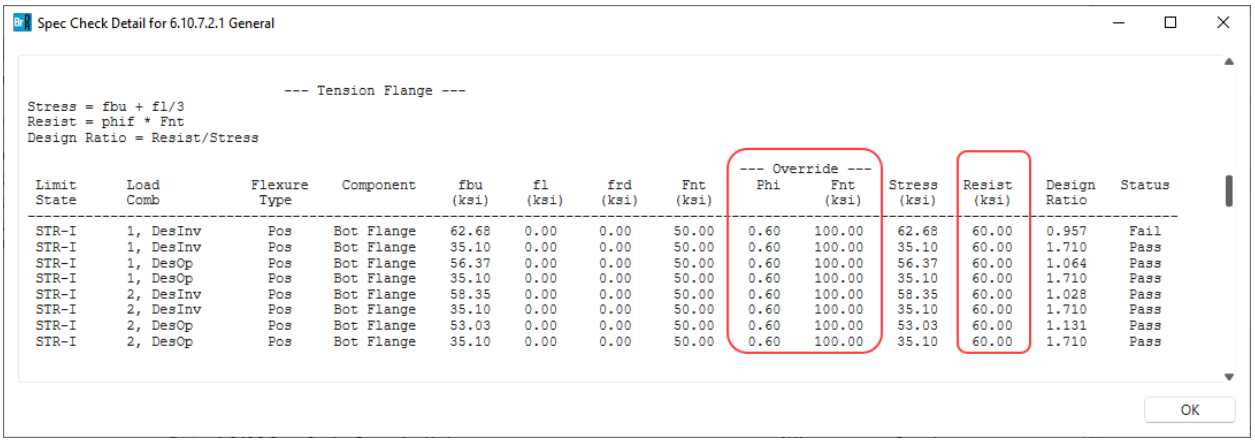
Click **OK** to save the data and right click on **Plate Girder** and select **Analyze**.

Capacity Override at Points of Interest

After the LRFR analysis is completed, click on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon and navigate to **Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1**.

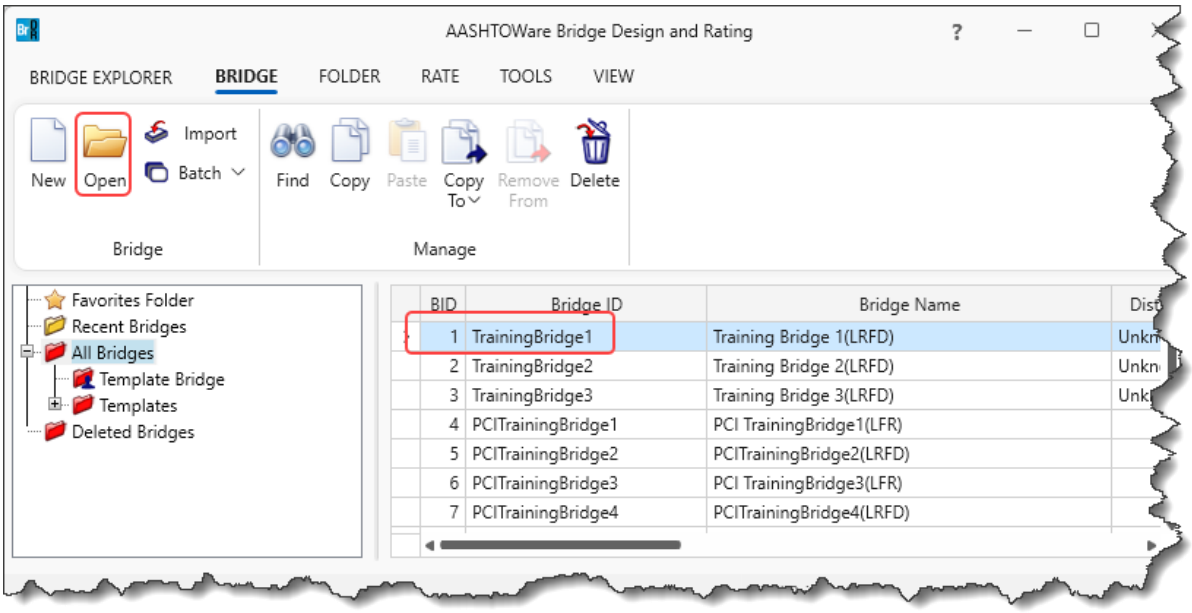
The **phif** value has been overridden to 0.60 for a specific limit state case (mentioned in the POI 80.5 ft. window) as can be seen from the figures below. The **Resist** field reflects the implementation of the capacity override. The value in the **Resist** column is Phi * Fnc (from the **Override** columns) in cases where there are values in the **Override** columns.



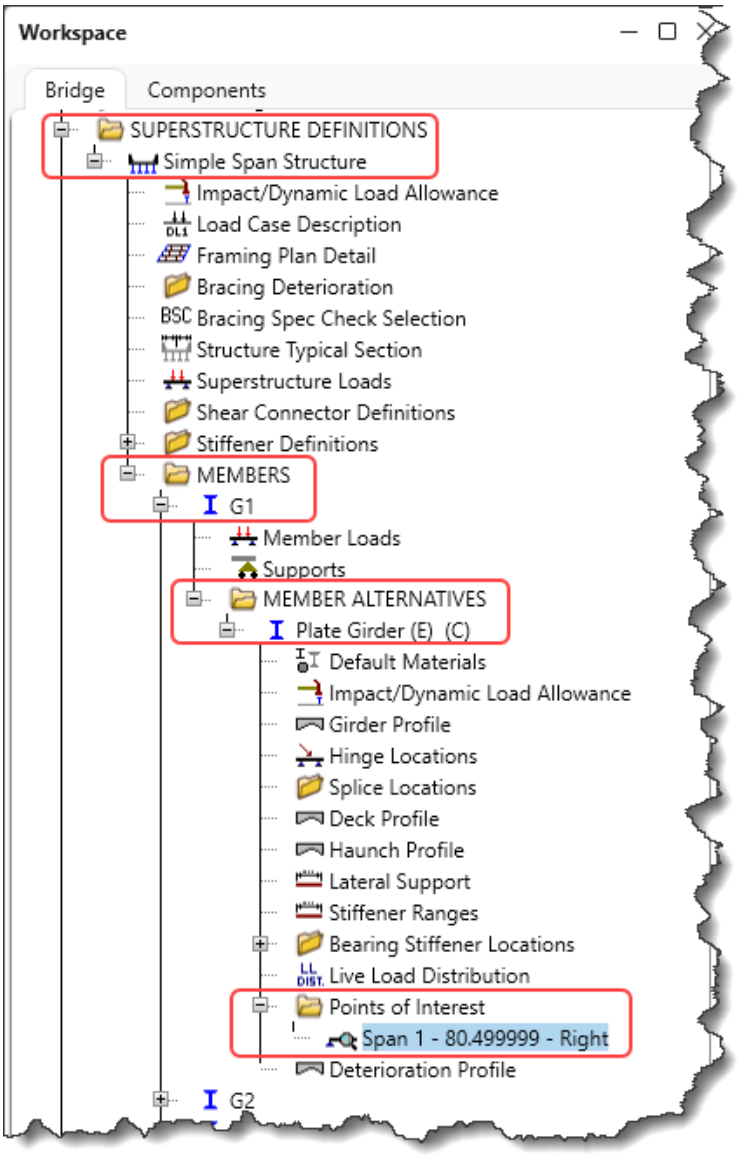


Capacity Override LRFD

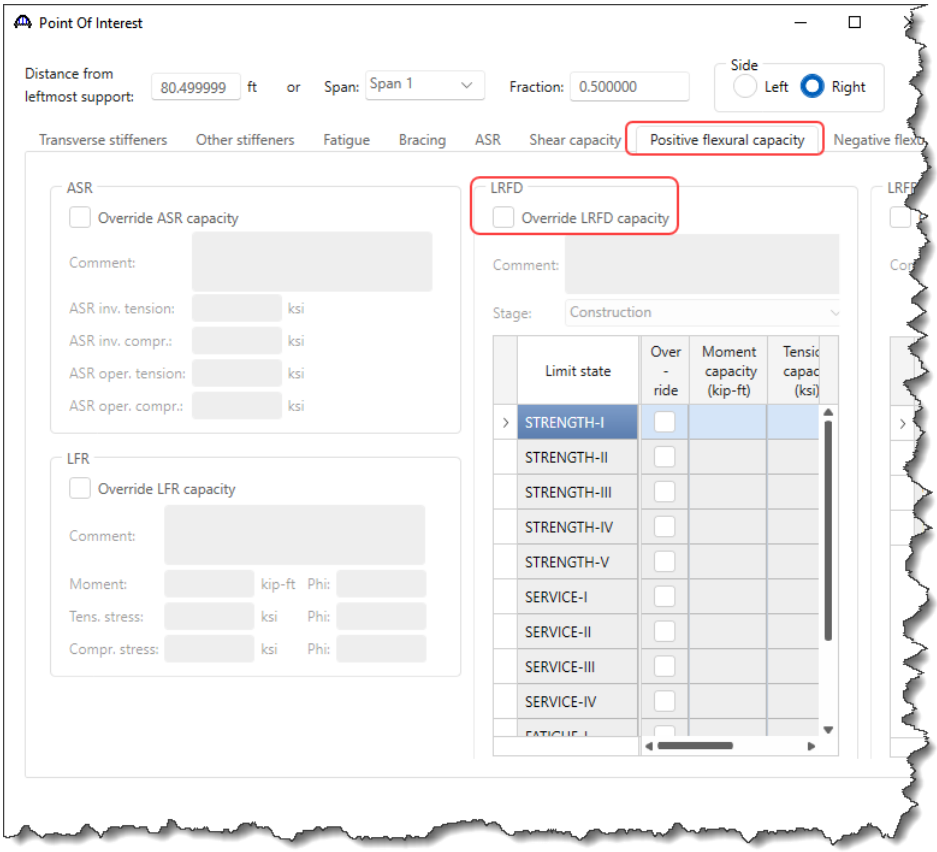
From the **Bridge Explorer**, double click on **BID1 - TrainingBridge1** (or select and click **Open** from the **Bridge** group of the **BRIDGE** ribbon) to open the bridge.



Navigate to **SUPERSTRUCTURE DEFINITIONS -> Simple Span Structure->Members->G1->Member Alternative->Plate Girder-> Point of Interests-> Span 1 - 80.499999 -Right.** Double click on this point of interest.

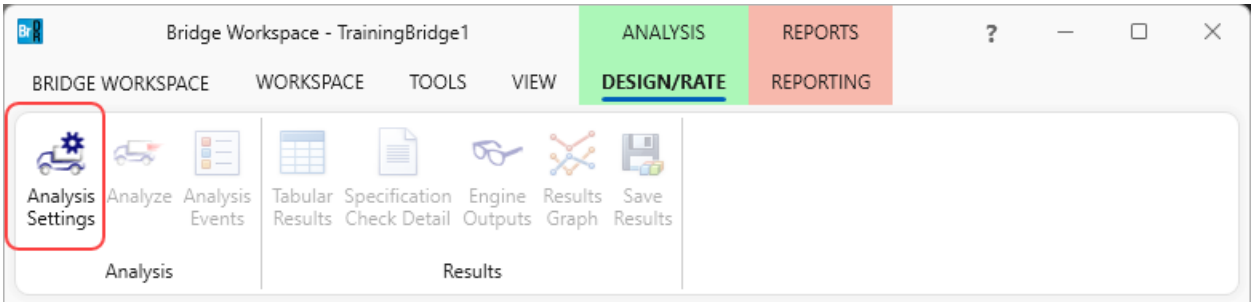


Navigate to the **Positive flexural capacity** tab of this window. As seen from the window below, the option for **Override LRFD capacity** is not checked. Hence, the beam capacities at 80.5 ft will be computed by the AASHTO LRFD Engine.

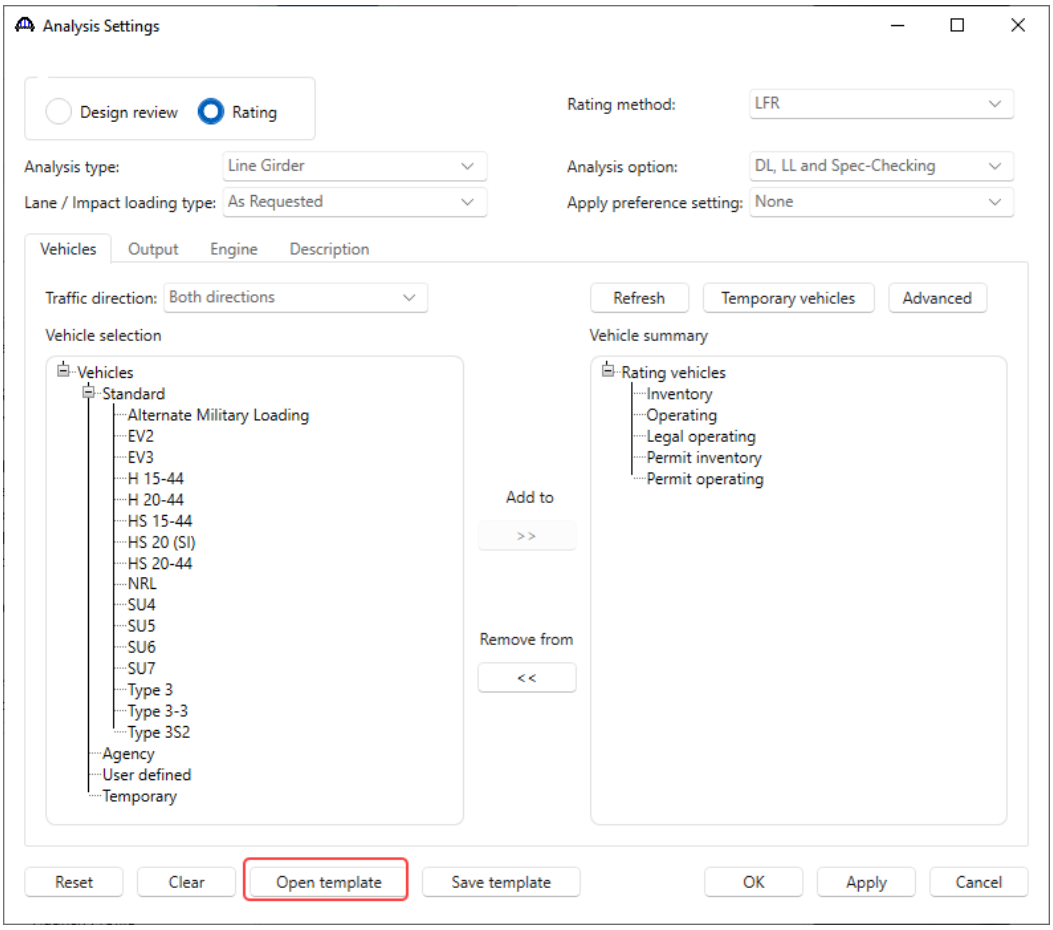


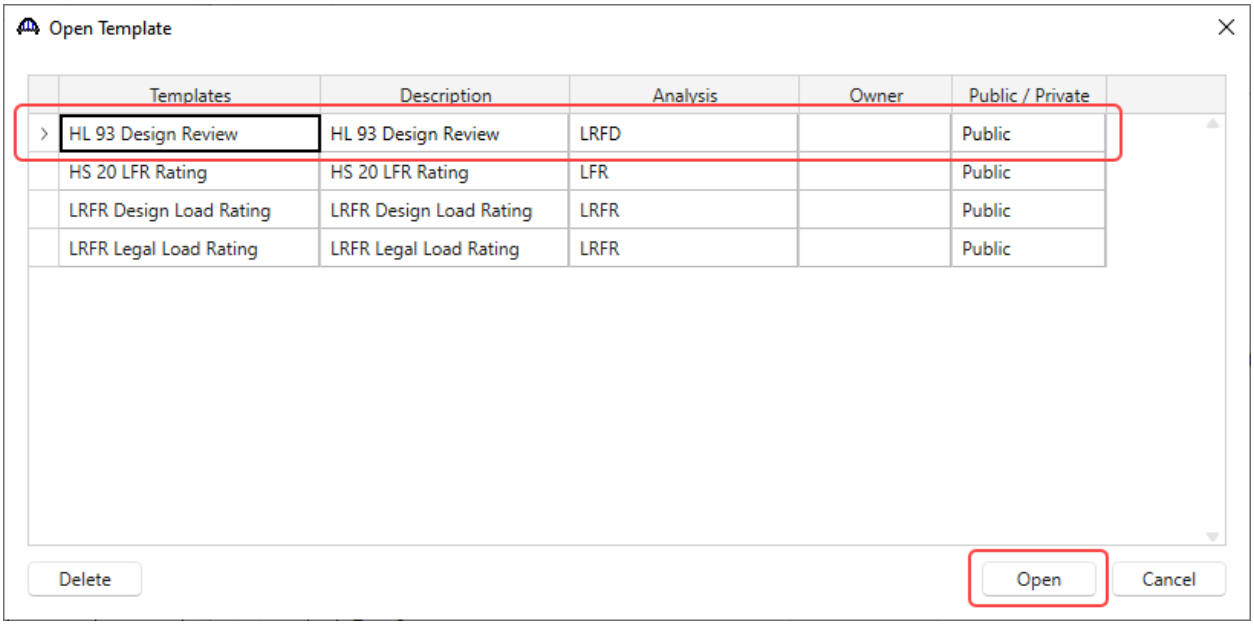
Click **OK** to apply the data and close the window.

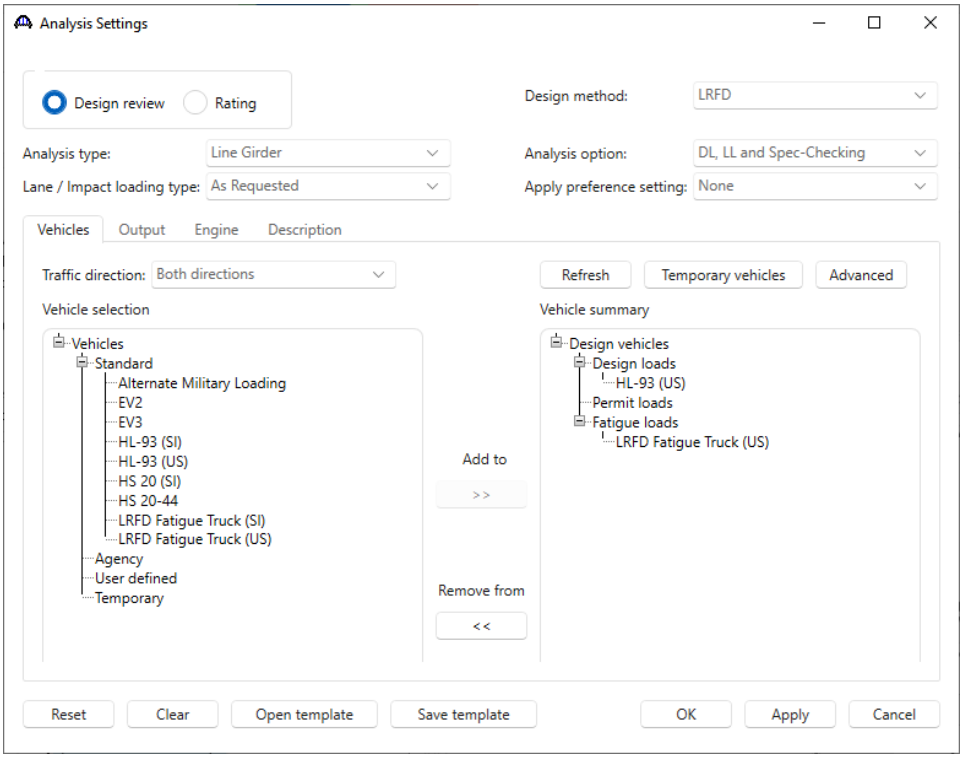
From the **Analysis** group of the **DESIGN/RATE** ribbon, click on the **Analysis Settings** button as shown below.



Click on the **Open template** button in the **Analysis Settings** window. Select the **HL 93 Design Review** template. The updated **Analysis Settings** window is shown below.

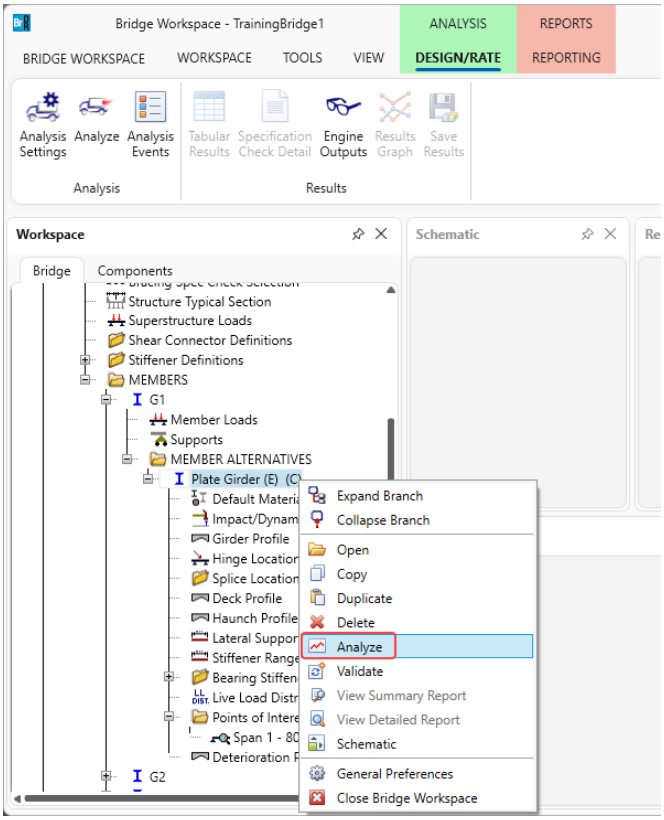




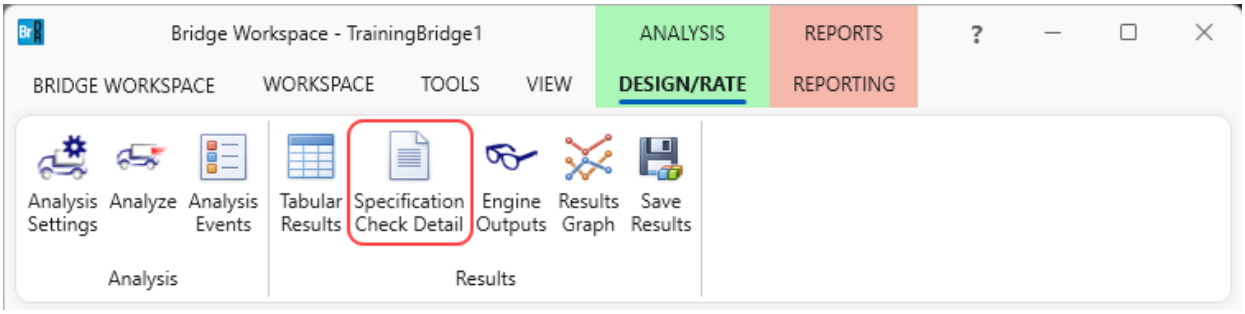


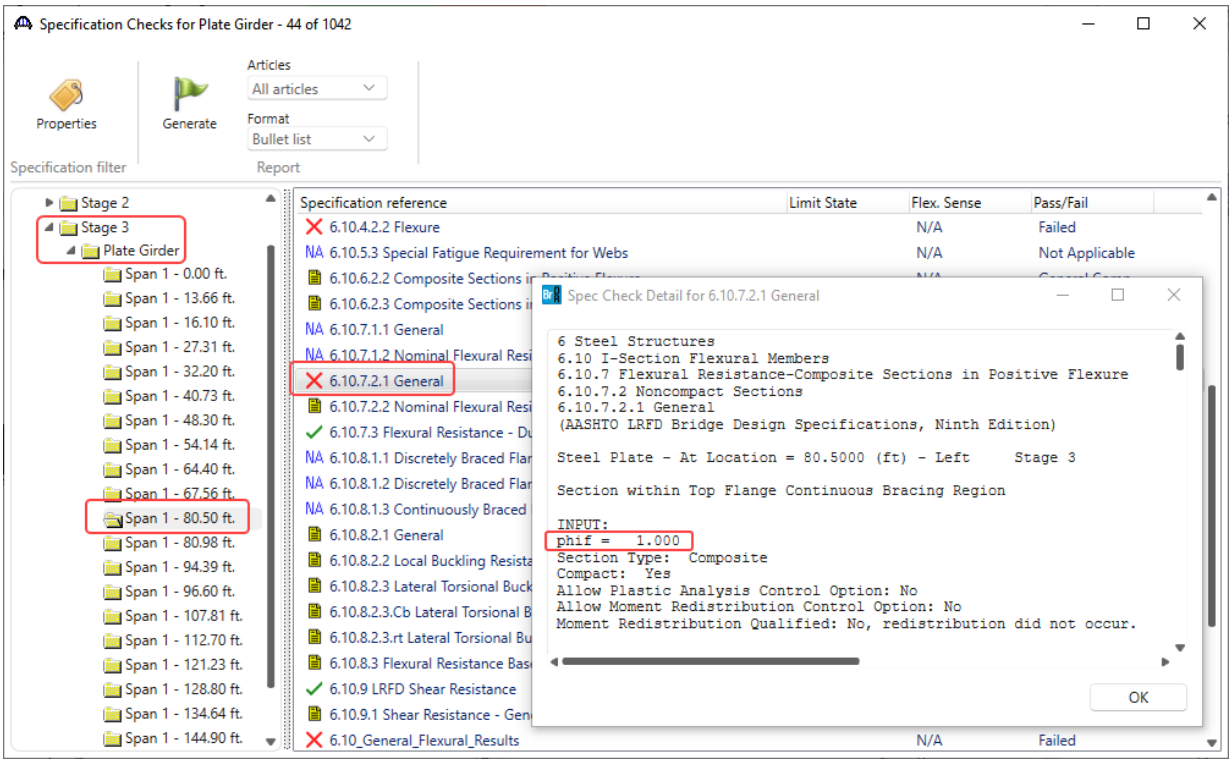
Click **OK** to apply the settings and close the window.

To analyze, right click on **Plate Girder** and select **Analyze**.



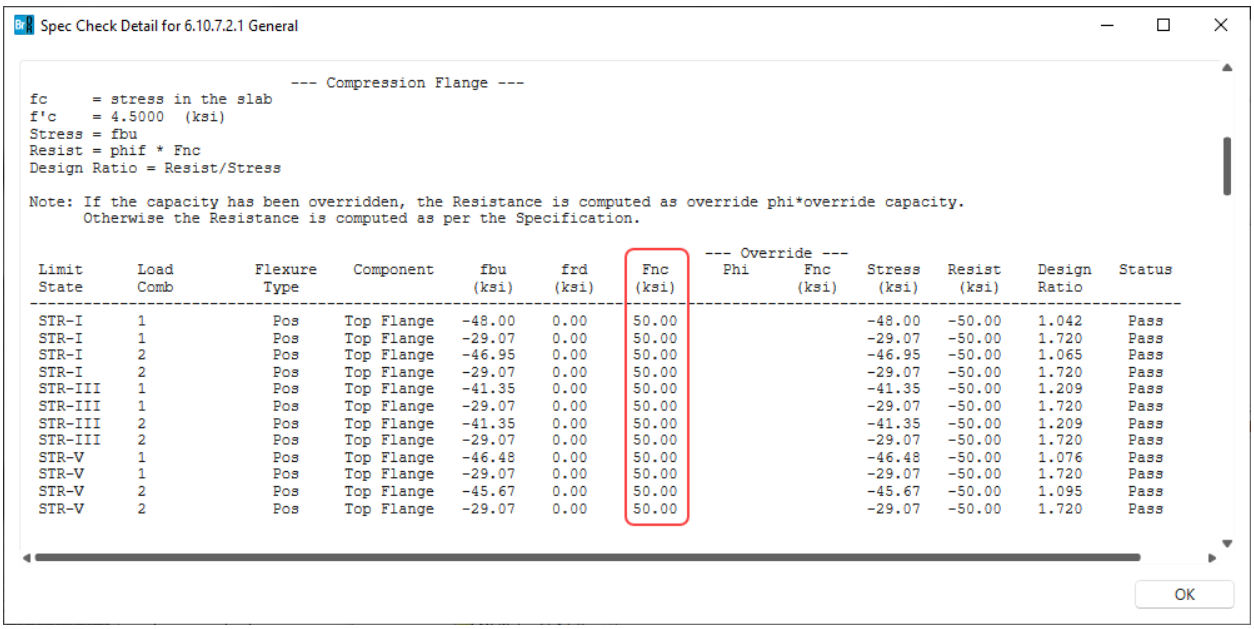
After the LRFD analysis is completed click on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon and navigate to **Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1**.

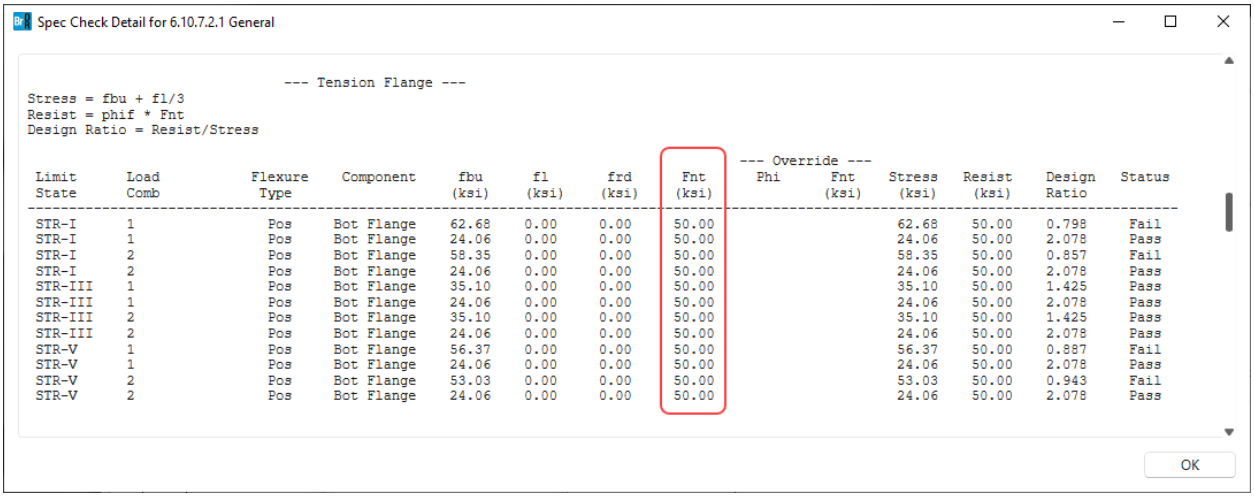




The resistance factor **phif** value is 1.0 as shown above.

Capacity Override at Points of Interest



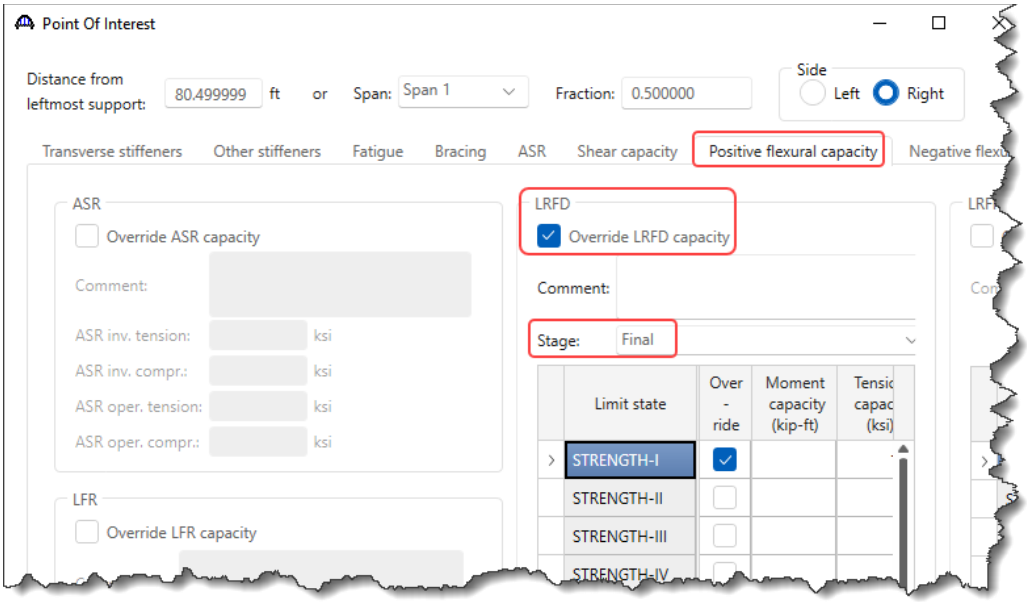


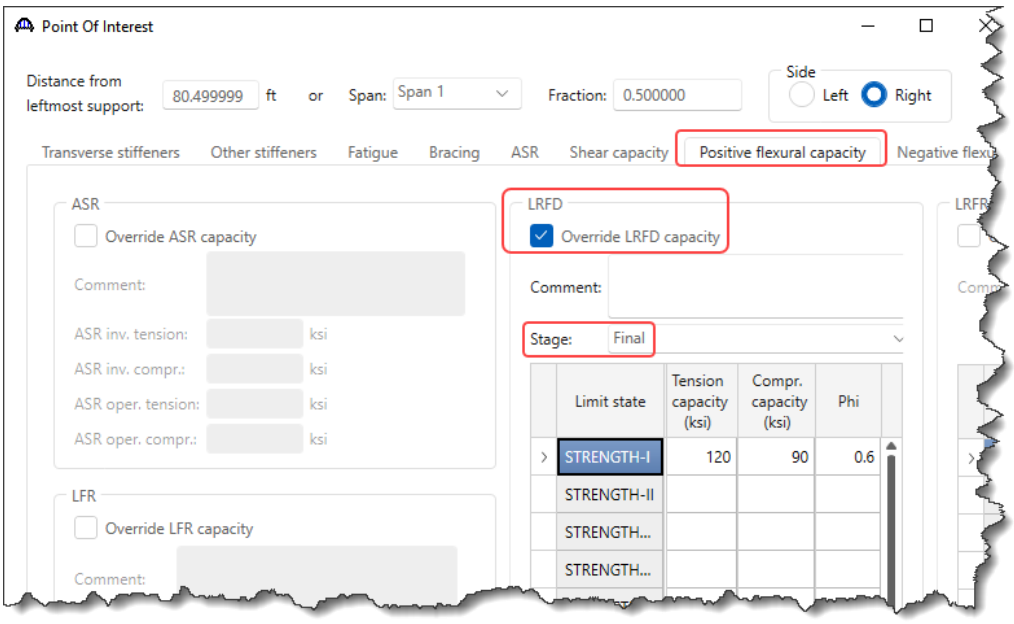
The above two figures show the computed resistances for the compression and the tension flanges at location 80.5 ft. as F_{nc} and F_{nt} respectively .

Close the article and the **Specification Checks** window.

Again, navigate to **SUPERSTRUCTURE DEFINITIONS->Simple Span Structure->Members->G1->Member Alternative->Plate Girder-> Point of Interests->Span 1 80.5.**

Check the **Override LRFD capacity** for **Positive Flexural Capacity** and input the values as shown below. The **Stage** field indicates that during which stage of design, the capacity values must be overridden.





Click **OK** to save the data and right click on **Plate Girder** and select **Analyze**.

Capacity Override at Points of Interest

After the LRFD analysis is completed click on the **Specification Check Detail** button from the **Results** group of the **DESIGN/RATE** ribbon and navigate to **Stage 3->Plate Girder->Span 1 80.5 ft. -> Article 6.10.7.2.1**.

The **phif** value has been overridden to 0.60 for a specific limit state case (mentioned in the POI 80.5 ft. window) as can be seen from the figures below. The **Resist** field reflects the implementation of the capacity override. The value in the **Resist** column is Phi * Fnc (from the **Override** columns) in cases where there are values in the **Override** columns.