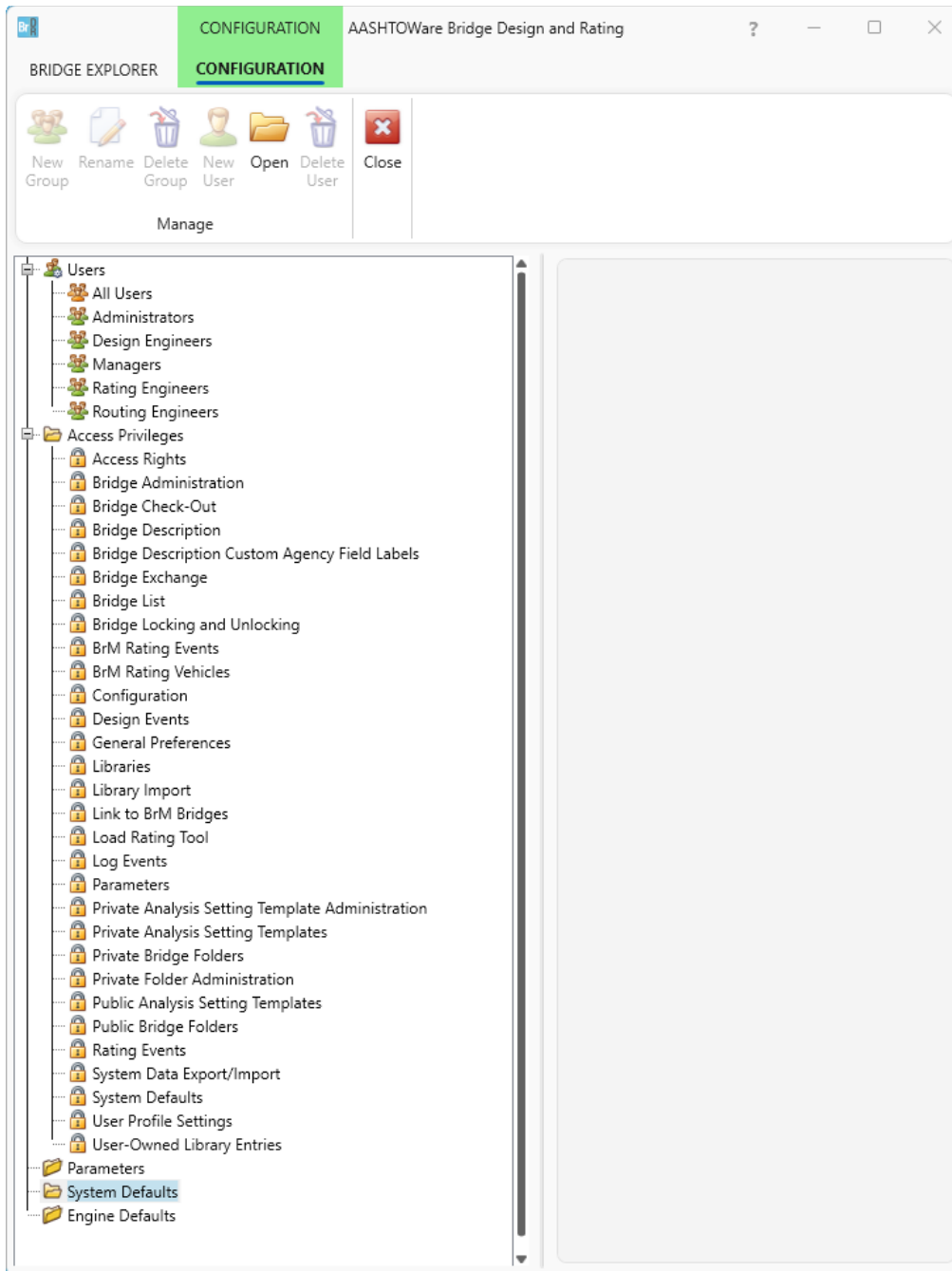# *Tolerances Example*

Tolerances- Example Illustrating the Effects of Tolerances

Tolerances Example

This example illustrates the effects of tolerances when analyzing members in BrDR.

BrDR provides a **Tolerance** tab in the **System Defaults** window that allows to specify tolerances for various units of length to be used by BrDR when determining if two points are the same location. This tolerance is used by BrDR to prevent tiny gaps or overlaps in the data commands exported to the analysis engine.

The **System Defaults** window can be opened from the **Configuration** Browser.

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The Tolerances tab of the **System Defaults** window appears as follows.
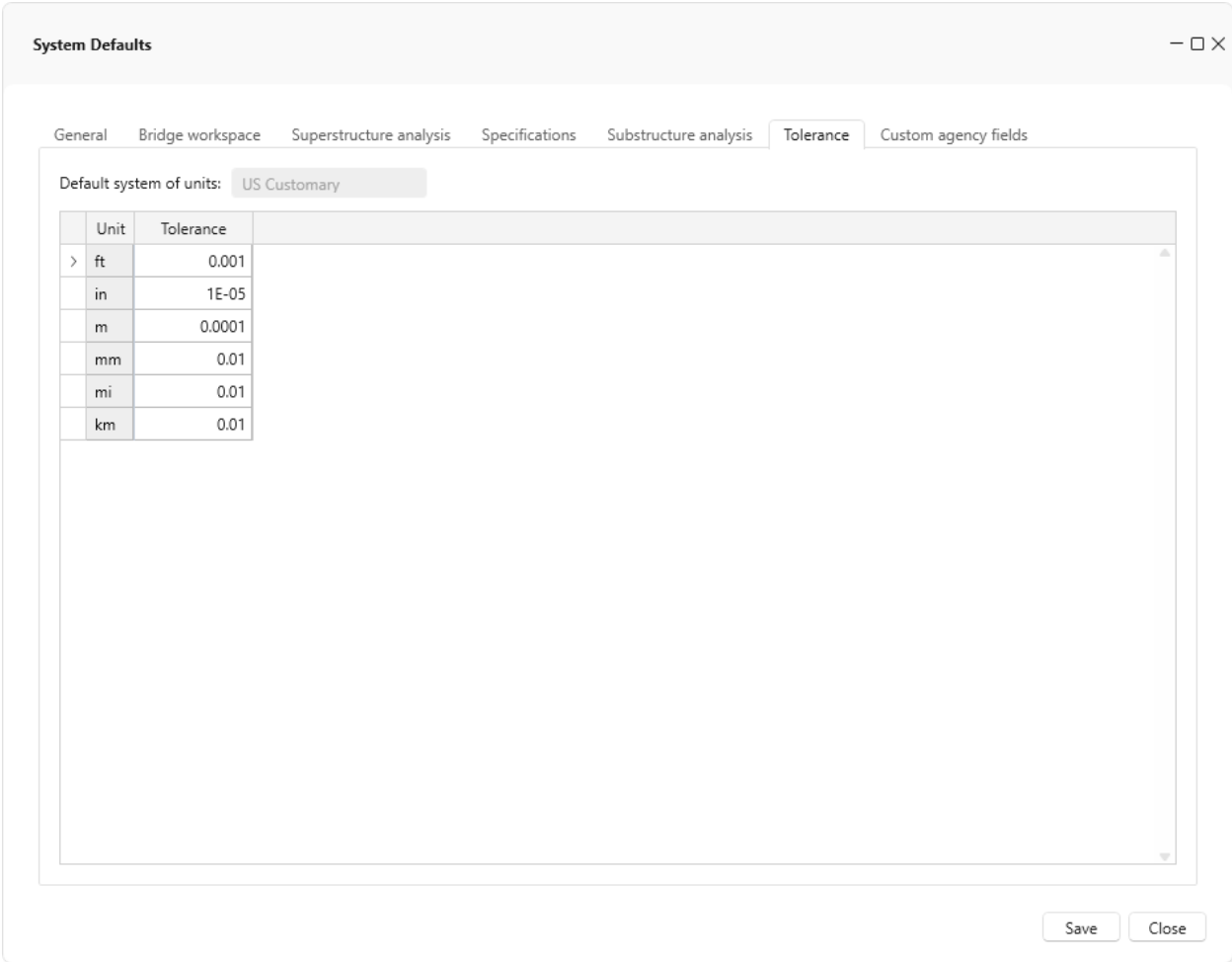
The tolerance for feet is shown as 0.001. That means that points that are within 0.001' of each other are considered to be the same location.

TrainingBridge1 in the sample database contains the following data for the bottom flange in the **Girder Profile** window for Member **G1**.

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The last flange plate starts at a distance of 124.3334' and has a length of 36.6666'. This results in an end distance for this plate of 161.0000'. This member has a length of 161.0000' so the analysis should proceed successfully.

Now change the length of this flange plate range from 36.6666' to 36.66'. This change results in the bottom flange plate ending at a distance of 160.9934'. This means there is now a gap of 0.006' between the end of the bottom flange plate and the end of the member. When saving this girder profile with the current tolerances, the following warning message:
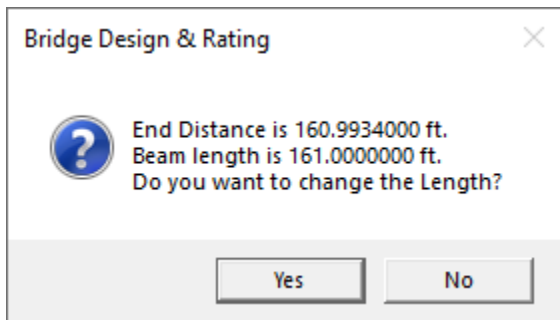
If we choose yes the length 36.66' will be adjusted to 36.6666' and saved. If we choose no and rate this member alternative we will get the following error message.

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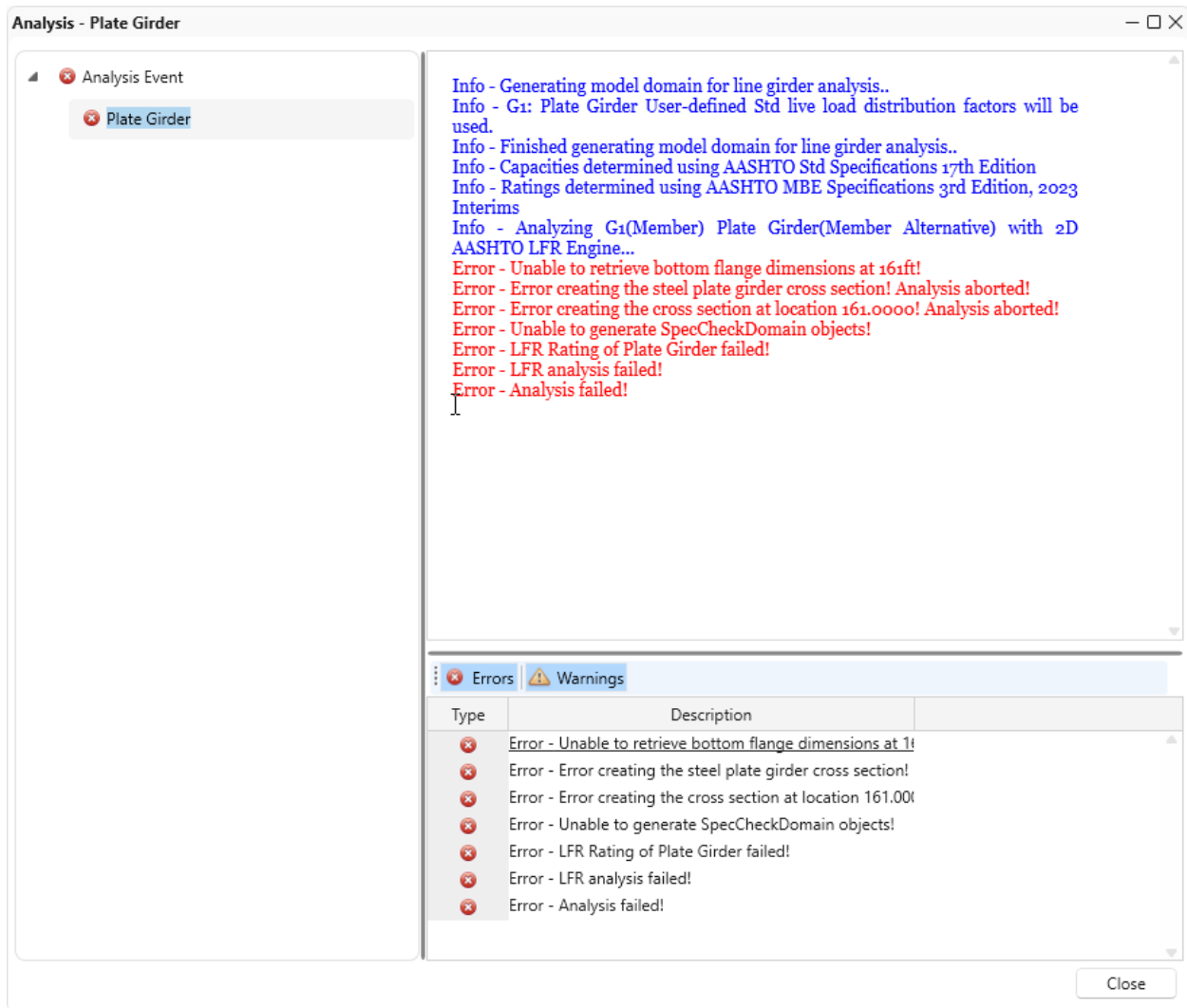
This error message tells us there was an error retrieving the flange plate properties to the left of the point at 161.00 ft. That is to be expected since we have a 0.006' gap at the end of the flange plate and our tolerance says that points must be within 0.001' of each other to be considered the same location.

If we change our tolerance for feet to 0.01', this member will be analyzed successfully since the 0.006' gap is less than the 0.001' tolerance.

Care should be taken to be consistent in the number of significant digits used when entering span lengths or ranges in BrDR so that tolerances do not become important when analyzing members.