

AASHTOWare BrDR 6.8

Substructure Tutorial

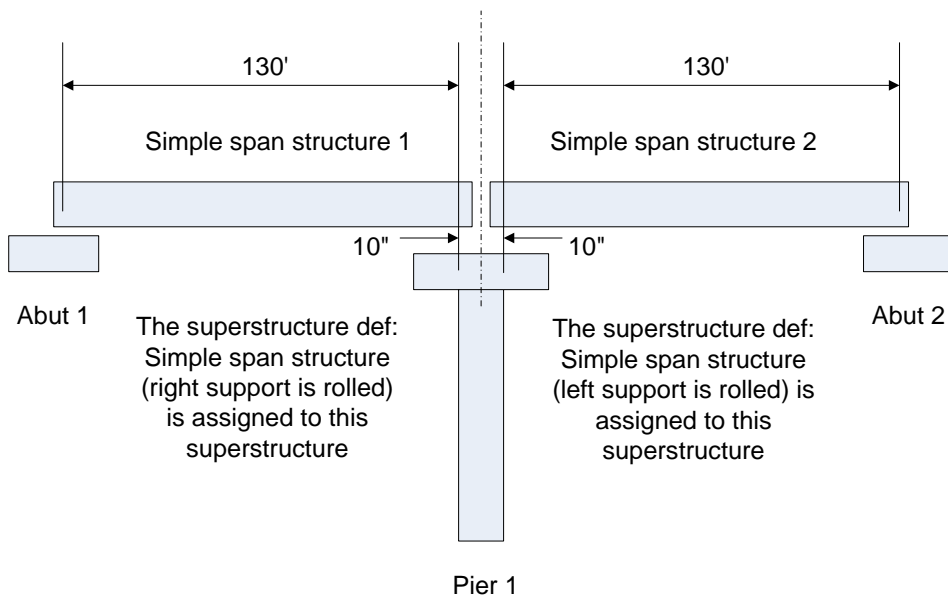
Pier Supports Two Superstructures

How to Describe a Pier that Supports 2 Independent Superstructures

This example illustrates how to describe a pier that supports 2 independent superstructures. In this example we have 2 prestressed simple spans that are **not** made continuous for live load. Therefore the pier supports 2 independent superstructures. If the prestress spans were made continuous for live load, the pier would be supporting only one superstructure.

Open the Bridge workspace for BID20, LRFD Substructure Example 1. This bridge contains an example of a pier supporting 2 independent superstructures.

The following sketch illustrates the Bridge Alternative named “2 span bridge”.



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The bridge alternative contains the 2 abutments and 1 pier:

The screenshot shows the 'Bridge Alternative' dialog box with the 'Substructures' tab selected. The 'Alternative Name' is '2 span bridge'. The 'Description' field is empty, with a red callout bubble pointing to it containing the text 'Length between abutment CL bearings'. Below the description, there is a checkbox for 'Horizontal curvature' which is unchecked. The 'Reference Line Length' is set to '261.67 ft'. There are two radio buttons: 'Start bearing' (selected) and 'End bearing'. The 'Starting Station' is '0.00 ft' and the 'Bearing' is 'N 90° 0' 0.00" E'. A red callout bubble points to the 'Starting Station' field with the text 'Abutment 1 CL Brg Sta'. To the right, the 'Global Positioning' section has 'Distance = 0.000 ft', 'Offset = 0.000 ft', and 'Elevation = | ft'. Below these are fields for 'Start tangent length', 'Curve length', 'Radius', 'Direction', and 'End tangent length', all in feet. At the bottom left are 'Superstructure Wizard...' and 'Culvert Wizard...' buttons. At the bottom right are 'OK', 'Apply', and 'Cancel' buttons.

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Bridge Alternative

Alternative Name: 2 span bridge

Description Substructures

Substructure Unit Name	Station (ft)	Offset (ft)	Unit Type
Abutment 1	0.000	-0.000	Abutment
Pier 1	130.833	-0.000	Pier
Abutment 2	261.667	-0.000	Abutment

CL Abut Brg Sta

CL Pier Sta

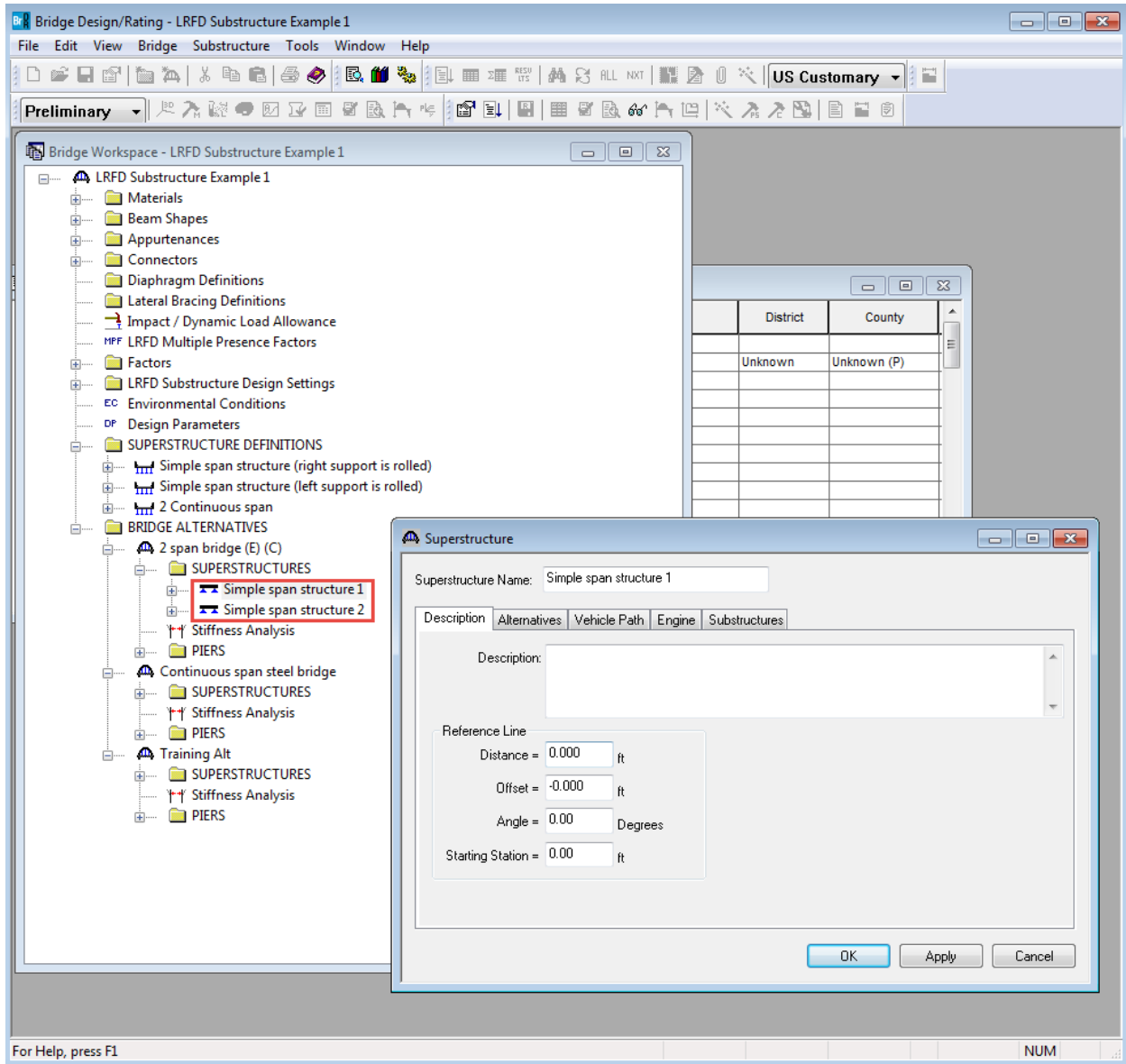
CL Abut Brg Sta

New Duplicate Delete

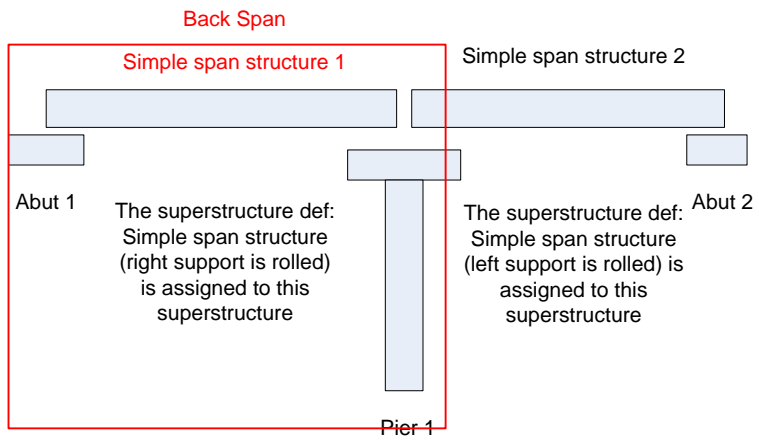
OK Apply Cancel

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The bridge alternative contains 2 superstructures, one for the back span structure and one for the ahead span structure. The following is the window for the back span structure. It is supported by Abut 1 and Pier 1.

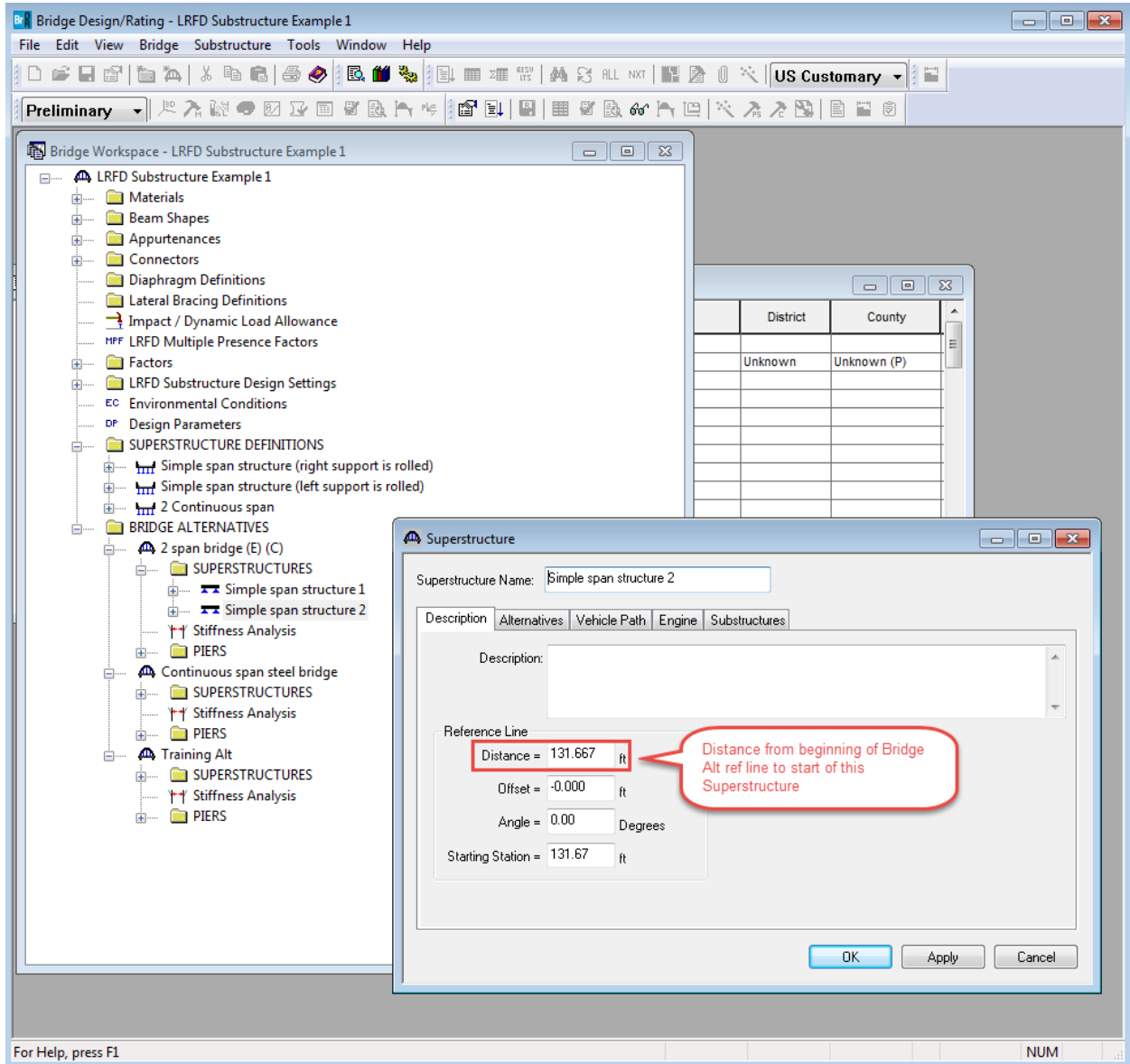


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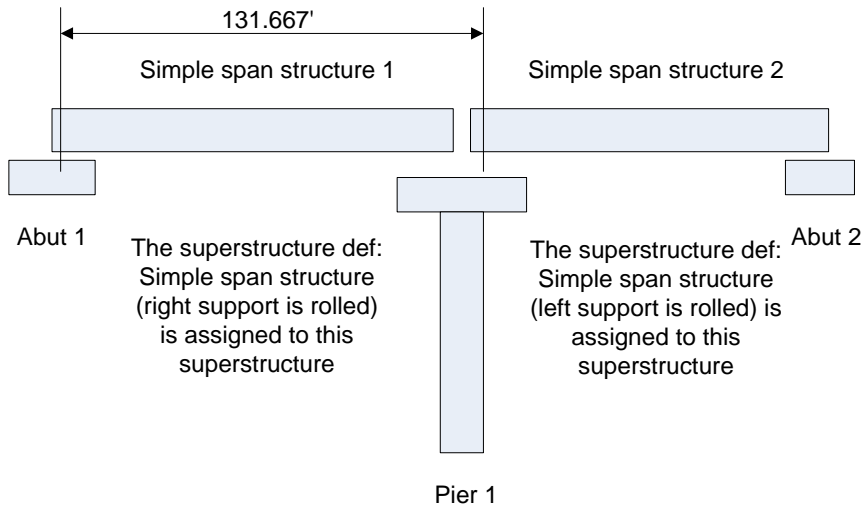


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Similar windows exist for the ahead span superstructure which is supported by Pier 1 and Abut 2.

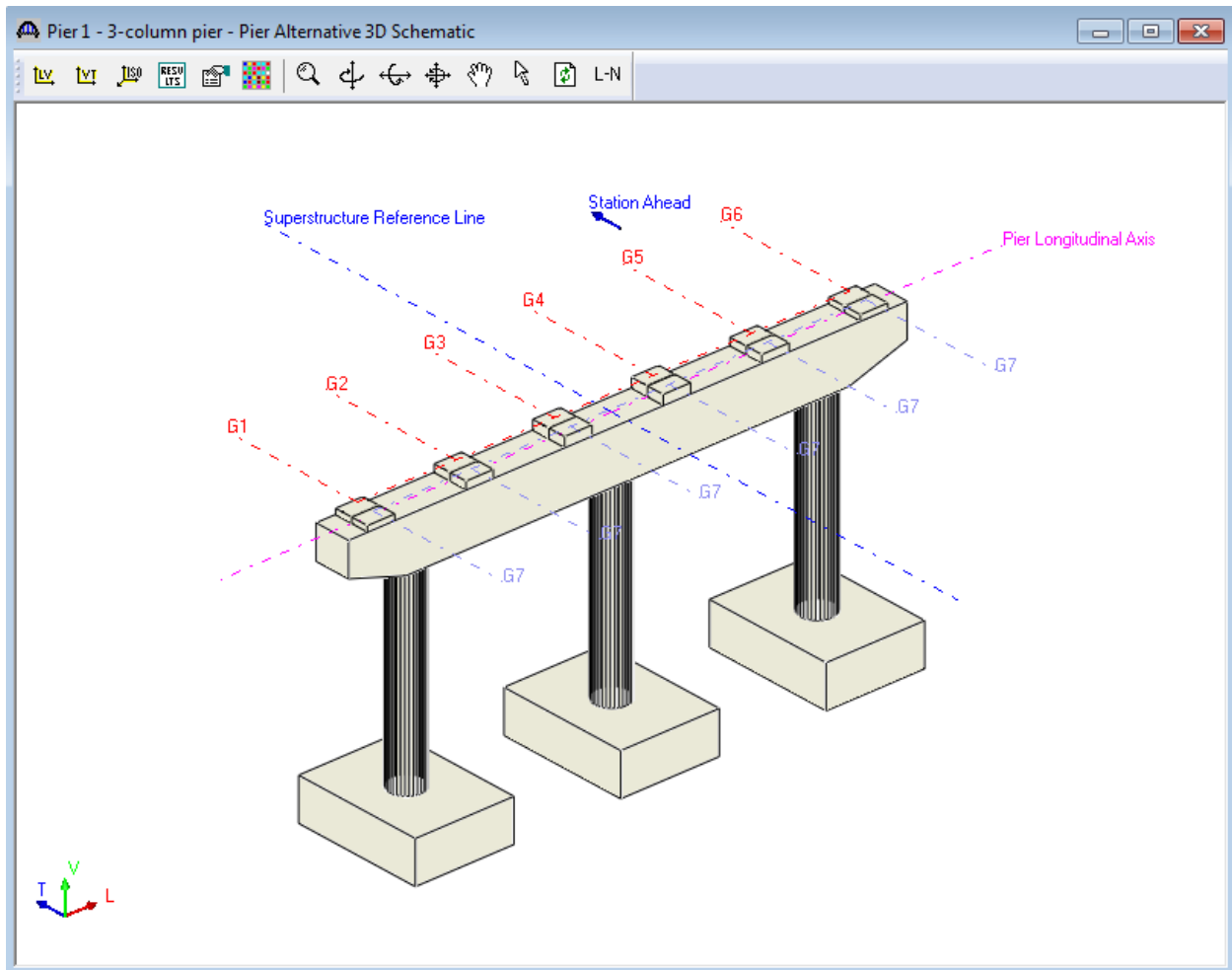


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The 3D schematic shows 2 bearing lines:



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And the Superstructure Loads window shows the girders for the back and ahead spans:

Superstructure Loads - Pier 1 - 3-column pier

Back Span Span No.: 1 Ahead Span Span No.: 1 Pier skew: 0.00 Degrees

Superstructure Definition: Simple span structure (right support) Superstructure Definition: Simple span structure (left support)

DL FR LL Settings LL-Reaction LL Distribution Back LL Distribution Ahead LL Distribution Back Ahead BR

Computed Reactions Result Up To Date Results timestamp: Friday, August 26, 2016 08:30:37

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DC Load	Computed Reactions (kip)					
	G1	G2	G3	G4	G5	G6
Non-composite (Stage 1)	125.04	134.65	134.65	134.65	134.65	125.04
Composite (long term) (Stage 2)	10.950	10.950	10.950	10.950	10.950	10.950
Total	135.99	145.60	145.60	145.60	145.60	135.99

DC Load	Computed Reactions (kip)					
	G1	G2	G3	G4	G5	G6
Non-composite (Stage 1)	125.04	134.65	134.65	134.65	134.65	125.04
Composite (long term) (Stage 2)	10.950	10.950	10.950	10.950	10.950	10.950
Total	135.99	145.60	145.60	145.60	145.60	135.99

DW Load	Computed Reactions (kip)					
	G1	G2	G3	G4	G5	G6
Non-composite (Stage 1)						
Composite (long term) (Stage 2)						
Total						

DW Load	Computed Reactions (kip)					
	G1	G2	G3	G4	G5	G6
Non-composite (Stage 1)						
Composite (long term) (Stage 2)						
Total						

Override Reactions Use override values

	G1	G2	G3	G4	G5	G6
DC						
DW						

Override Reactions Use override values

	G1	G2	G3	G4	G5	G6
DC						
DW						

Compute DL Reactions Compute LL Reactions OK Apply Cancel