



Practice Workbook

This workbook is designed for use in Live instructor-led training and for OnDemand selfstudy. The explanations and demonstrations are provided by the instructor in the classroom, or in the OnDemand eLectures of this course available on the Bentley LEARN Server (learn.bentley.com).

This practice workbook is formatted for on-screen viewing using a PDF reader. It is also available as a PDF document in the dataset for this course.

Precast Girder Bridge Modeling for OpenRoads Users

This workbook contains exercises to walk a designer through the process of quickly modeling a precast girder bridge using the ABC Wizard in LEAP Bridge Enterprise.



TRNC01366-1/0001

DO NOT DISTRIBUTE - Printing for student use is permitted

Description and Objectives

Course Description

This workbook contains exercises for modeling a 4 span precast girder bridge.

Skills Taught

- Use the ABC wizard in LEAP Bridge to quickly layout a 3D model of the superstructure and substructure of a bridge.
- Import data for the horizontal and vertical alignments and/or 3D DTM.
- Create MicroStation drawings of 2D and 3D views.

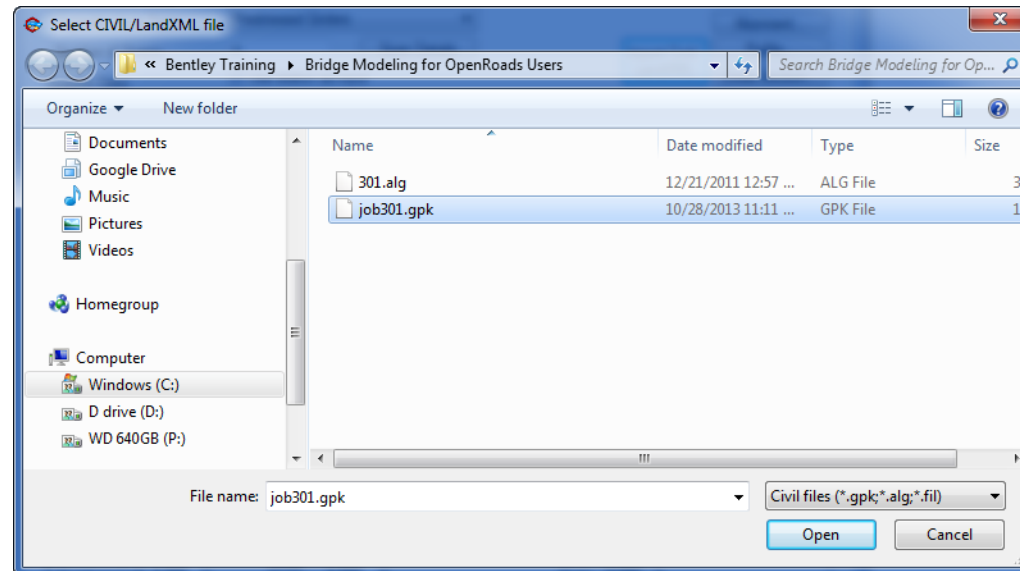
ABC Wizard

In this section, these steps will walk you through using the ABC Wizard in LEAP Bridge to create a 3D model of a 4 span bridge, including the super and substructure components.

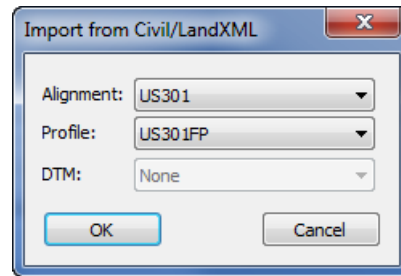
1. Start LEAP Bridge.
2. Start the **ABC Wizard**.



3. Select **Import Civil/LandXML**.
4. Set the **filter** to *Civil Files*.
5. Select *C:\Bentley Training\Bridge Modeling for OpenRoads Users\job301.gpk*.
6. Select the **Open** button to continue.



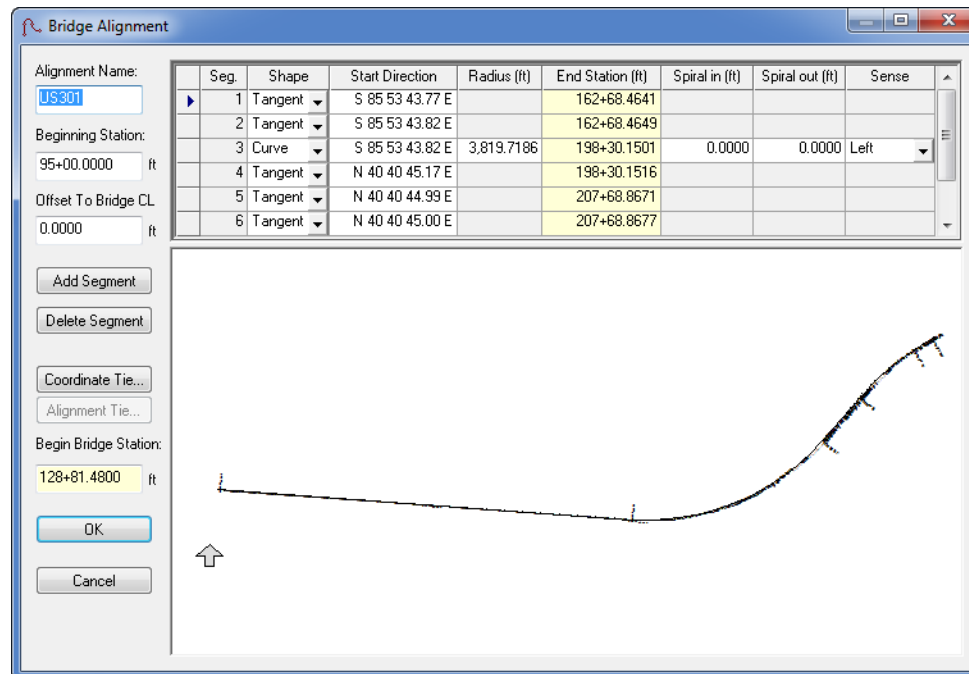
7. Select the alignment and profile as shown below.



8. Select **OK** to import the geometry.

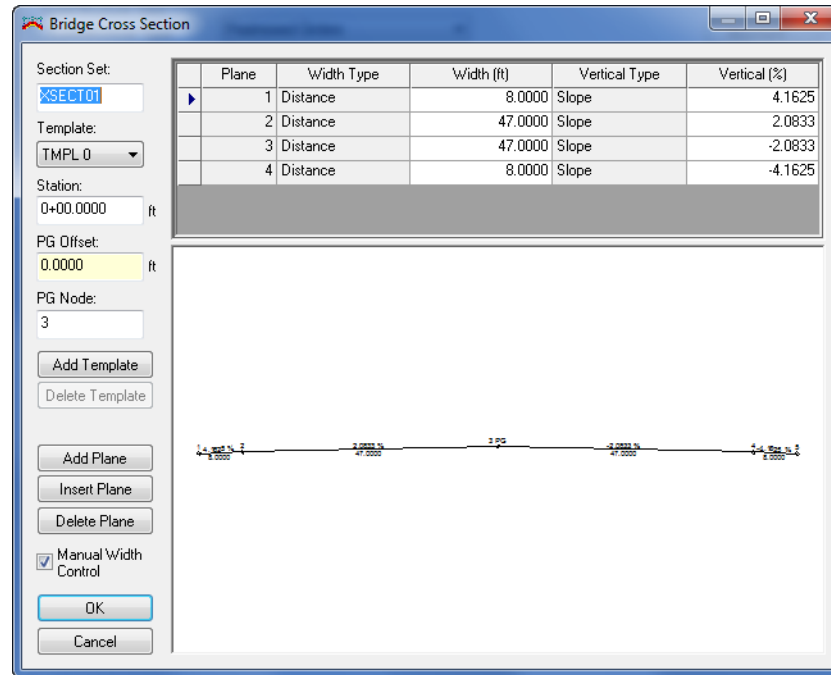
9. The centerline of the first abutment is located at station **128+81.48**. Select **Alignment...** and set the **Begin Bridge Station** to **128+81.48**.

10. Select **OK** to accept this value.



11. The Cross slope of the structure is 2.0% for 47' then 4.16% for 8'. Select **Cross Section...** from the ABC: Step 1 of 3 dialog to enter the data.

12. Enable the **Manual Control Width** toggle. Populate the Bridge Cross Section dialog as shown by using the Add Plane button as needed, and select **OK** when completed.



13. Populate the ABC: Step 1 of 3 dialog as shown below.

LEAP Bridge - ABC: Step 1 of 3

SuperStructure Data:
 Superstructure Type: **Prestressed Girders**
 Number of Spans: **4**
 Use station as input

Buttons: Alignment..., Span Details, Import Civil/LandXML, Profile..., Cross Section...

No.	Station (ft)	Skew or Bearing	Span Length (ft)
1	128+81.4800	N 7 52 18.00 E	0.0000
2	129+16.9800	N 7 52 18.00 E	35.5000
3	130+15.4800	N 7 52 18.00 E	98.5000
4	131+13.9800	N 7 52 18.00 E	98.5000
5	131+49.4800	N 7 52 18.00 E	35.5000

Girder Type: **I-Girder** Girder ID: **BT-54** Number of Girders: **13**

Diagram Labels:
 Curb Width Left: 1.500 ft Right: 1.500 ft
 Overall width: 110.000 ft
 Deck Thickness: 8.00 in
 Haunch Thickness: 1.00 in
 Overhang Left: 4.000 ft Right: 4.000 ft
 Girder Spacing: 8.500 ft

Allow Advanced Definition

Bentley Current Bridge: _____

Buttons: < Back, Next >, Cancel

14. Select the Span Details button and populate as shown, then select **OK** when completed.

Span Details

Girder clearance (-) begin Girder clearance (+) end

Bearing line offset, begin (+) Bearing line offset, end (+)

Supp. CL → Bearing CL →

Note: Values are measured normal to Pier CL

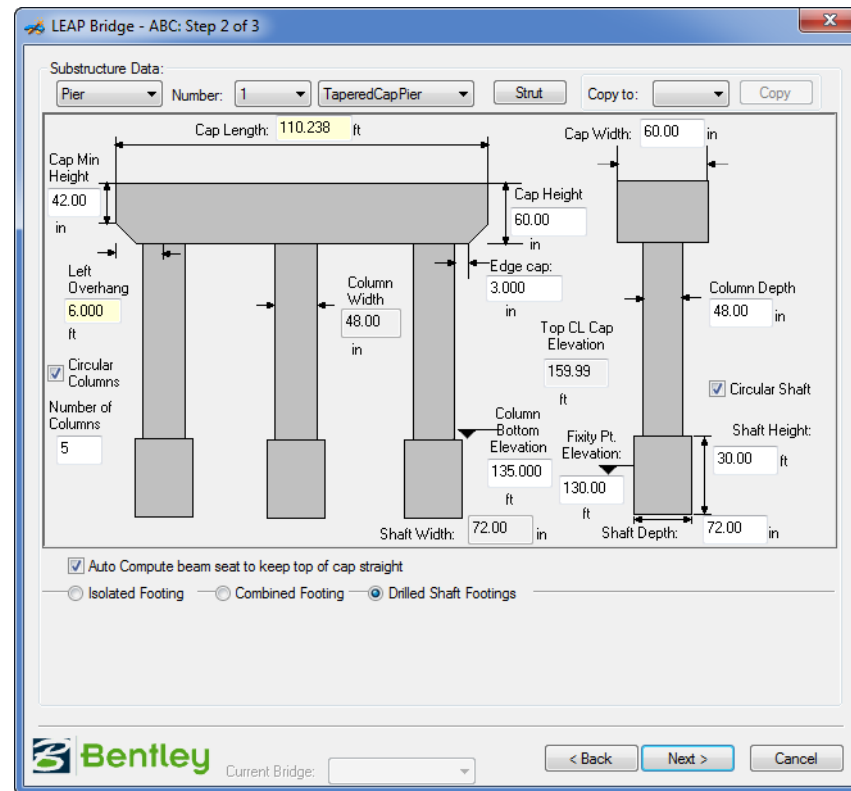
Span list:

No.	Bearing line offset begin, ft	Bearing line offset end, ft	Girder clearance begin, ft	Girder clearance end, ft
1	0.000	1.000	-2.000	0.500
2	1.000	1.000	0.500	0.500
3	1.000	1.000	0.500	0.500
4	1.000	0.000	0.500	-2.000

OK Cancel

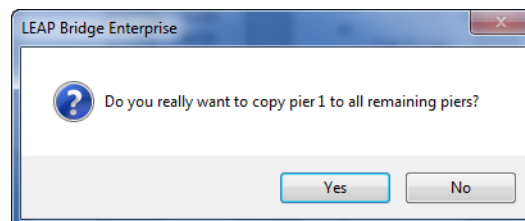
15. Select **Next** when complete.

16. For Pier 1, complete the dialog as shown.



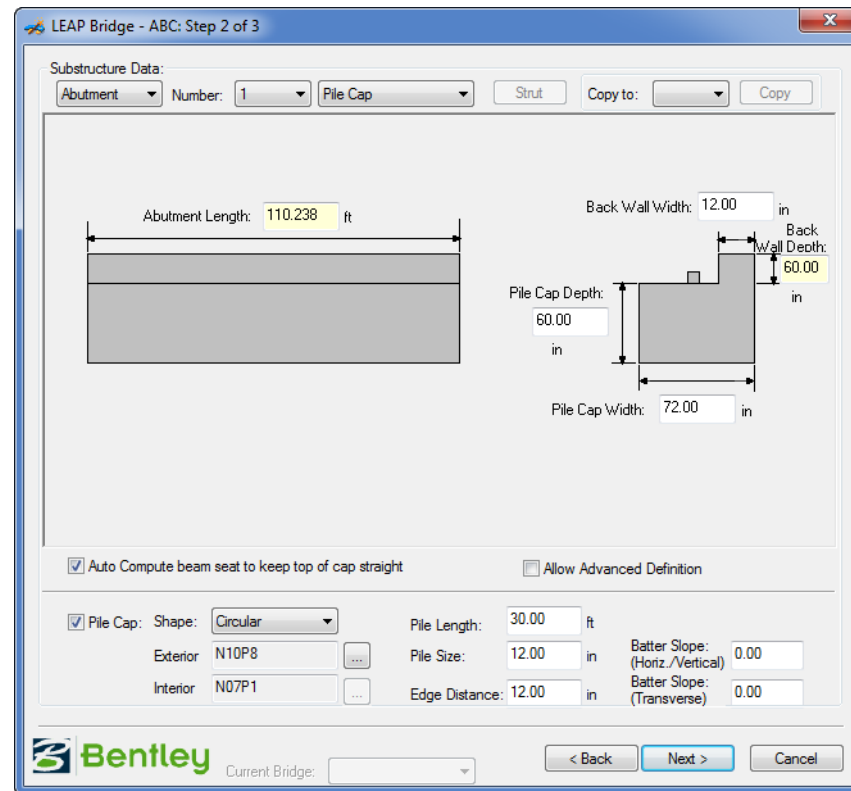
17. Set the **Copy To:** value to *All*, then select **Copy**.

18. When prompted to copy to all remaining piers, select **Yes**.



19. Select **Abutment 1** to modify.

20. Populate the dialog as shown below.



21. Set the **Copy to:** field to *All*. This will copy the abutment properties to the end abutment.

22. Select **Copy**.

23. Select **Yes** when prompted to confirm the copy action.

24. Select **Next**. We will accept the default Material properties.

25. Select **Finish** to complete the wizard.

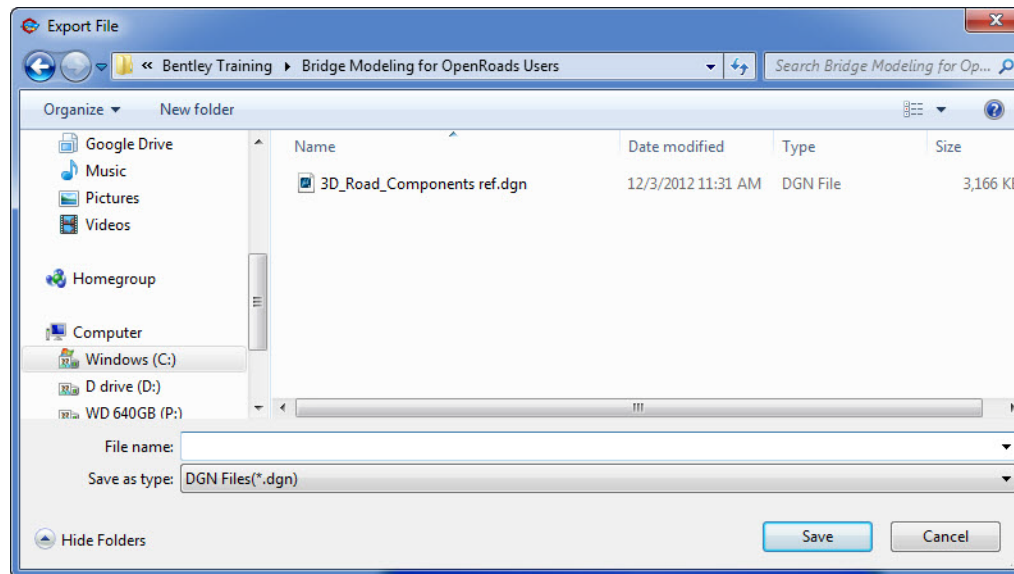
26. Select the **Geometry** tab to view a 3D model of structure.

27. Select **File > Save As...** and save a file called *Bridge01.xml*. This will save the LEAP Bridge file into the selected folder as well as create a folder called Bridge01.

Create a 3D Drawing of the Bridge

These steps will walk you through exporting the 3D model from LEAP Bridge to create a 3D drawing of the proposed bridge design.

1. Select the **Geometry** tab.
2. Right-click in the view to export a dgn file that can be viewed with MicroStation.
3. Select **Export**.



4. Type in a **file name** of *Bridge01*.
5. Select **Save**.
6. Select **OK** upon being prompted that the file has been created.
7. Open the resulting file with MicroStation to review the bridge model.
8. Attach as a reference the file *3D_Road_Components ref.dgn*. Review the bridge relative to the surrounding 3D road.