



Creating Railings

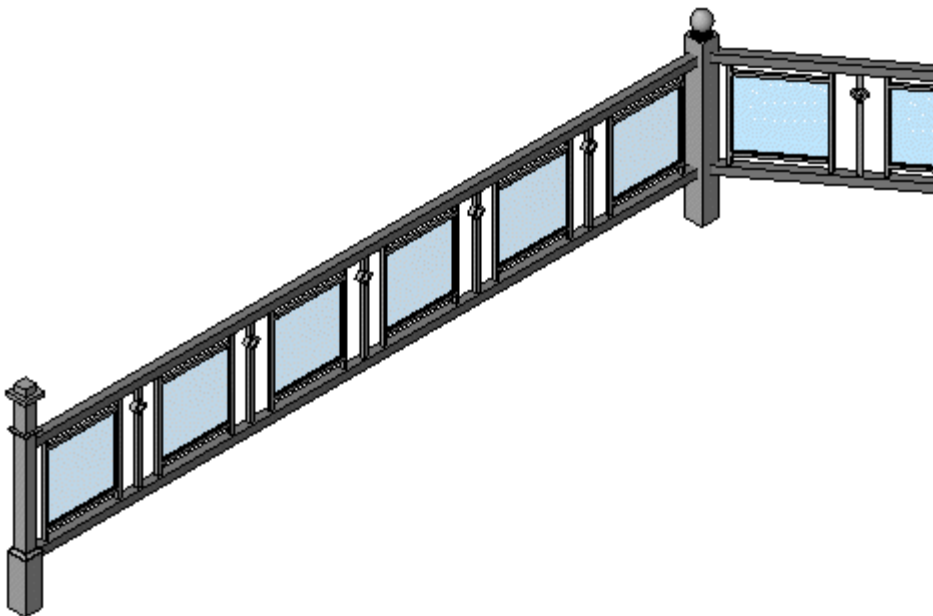
In this lesson, you learn how to create and place a railing using design information such as the shape and finish material of the rails. You also learn how to use a pattern editor to place balusters and posts and how to customize the railing with additional components, such as panels, between the balusters.

Exercises in this lesson:

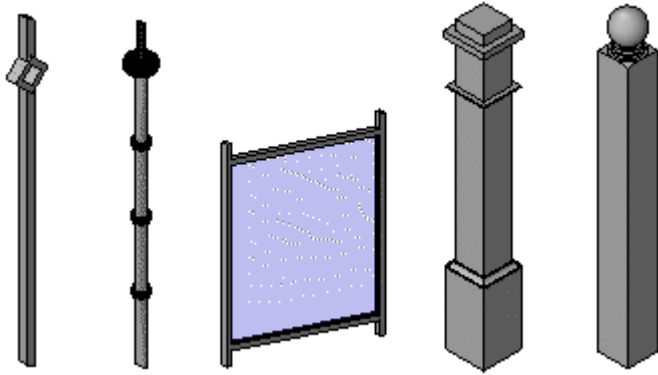
- [Creating the Railing Layout](#)
- [Adjusting Railing Parameters](#)

Creating the Railing Layout

In this exercise, you create a railing and add components to it. Before you lay out the railing, you need to load railing components from the library provided in the drawing template.



The railing layout in this exercise is based on these custom components.

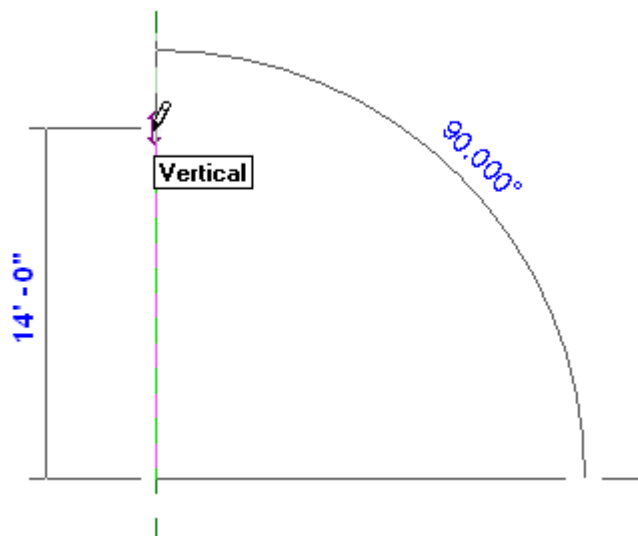


Open five component families

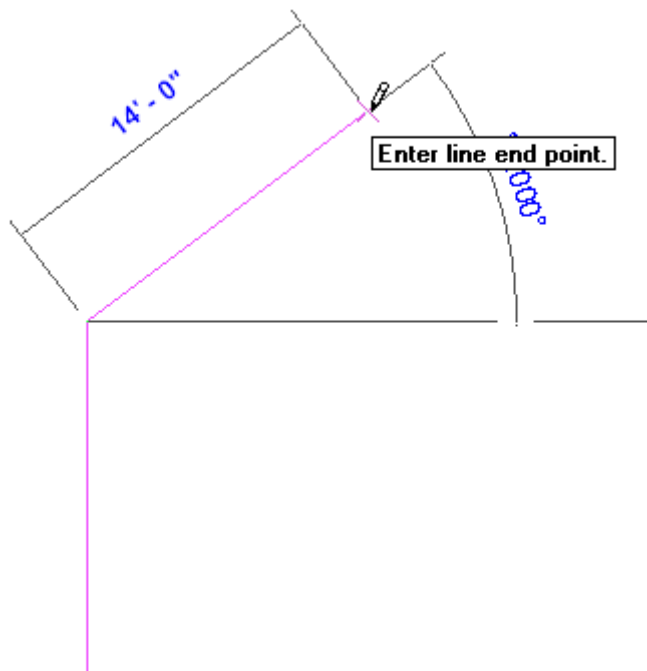
1. On the File menu, click New ► Project.
2. In the New Project dialog box, verify that *default.rte* is selected as the Template file from the Imperial Templates folder, Project is selected under Create new, and click OK.
3. On the File menu, click Load from Library ► Load Family.
4. In the Open dialog box, navigate to *Imperial Library/Balusters*, press the CTRL key, select *Baluster - Custom3.rfa*, *Baluster - Custom 4.rfa*, *Baluster Panel 1.rfa*, *Post - Newel.rfa*, and *Post - Square w Ball.rfa*, and click Open.

Sketch a plan view of two railing lines



5. On the Modelling tab of the Design Bar, click Railing.
6. On the Design Bar, click Lines.
7. On the Options Bar, click Chain.
8. Draw a 14' 0" vertical line from bottom to top as shown.



9. Draw a second 14' 0" line at an angle of 37 degrees as shown.



Specify the railing parameters

10. On the Design Bar, click Railing Properties.
11. In the Element properties dialog box, click Edit/New.
12. In the Type Properties dialog box, under Construction, click Duplicate.
13. In the Name dialog box, enter **Railing with Glass Panel** for Name, and click OK.
14. In the Type Properties dialog box, click Edit for Rail Structure.
15. In the Edit Rails dialog box, click Insert, and then do the following:
 - In row 1, enter **Top** for Name.
 - In row 2, enter **Bottom** for Name.
 - In row 2, enter **1' 0"** for Height.
 - In row 2, enter **-0' 1"** for Offset.
 - In row 2, select Rectangular Handrail : 2" x 2" for Profile.
16. In row 1, click in the Material field, and then click .
17. In the Materials dialog box, select Metal - Paint Finish - Dark Gray, Matte for Name, and click OK.
18. In the Edit Rails dialog box, in row 2, click in the Material field, and then click .
19. In the Materials dialog box, select Metal - Paint Finish - Dark Gray, Matte for Name, and click OK.
20. In the Edit Rails dialog box, click OK.

Rails					
	Name	Height	Offset	Profile	Material
1	Top	3' 0"	-0' 1"	Rectangular Handrail : 2"	Metal - Paint Finish
2	Bottom	1' 0"	-0' 1"	Rectangular Handrail : 2"	Metal - Paint Finish

21. In the Type Properties dialog box, under Construction, click Edit for Baluster Placement.

Lay out the main baluster pattern

22. In the Edit Baluster Placement dialog box, under Main pattern, click on row 2, and then click Duplicate.

Main pattern								
	Name	Baluster Family	Base	Base offset	Top	Top offset	Dist. from previous	Offset
1	Pattern star	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Regular bal	Baluster - Square : 3/	Host	0' 0"	Top	0' 0"	0' 2"	0' 0"
3	Regular bal	Baluster - Square : 3/	Host	0' 0"	Top	0' 0"	0' 2"	0' 0"
4	Pattern end	N/A	N/A	N/A	N/A	N/A	0' 2"	N/A

A new row is displayed.

23. In row 2, do the following:
- Select Baluster - Custom3 : 1" for Baluster Family.
 - Select Bottom for Base.
 - Enter 0' 6" for Dist. from previous.
24. In row 3, do the following:
- Enter **Glass Panel** for Name.
 - Select Baluster Panel 1: 18" x 3/4" - Glass for Baluster Family.
 - Select Bottom for Base.
 - Enter 1' 3" for Dist. from previous.
25. In row 4, enter 0' 9" for Dist. from previous.
26. Select Beginning for Justify.

Main pattern								
	Name	Baluster Family	Base	Base offset	Top	Top offset	Dist. from previous	Offset
1	Pattern star	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Regular bal	Baluster - Custom3 :	Bottom	0' 0"	Top	0' 0"	0' 6"	0' 0"
3	Glass Panel	Baluster Panel 1 : 18"	Bottom	0' 0"	Top	0' 0"	1' 3"	0' 0"
4	Pattern end	N/A	N/A	N/A	N/A	N/A	0' 9"	N/A

Break Pattern at: Angle: Pattern Length: Justify: Excess Length Fill: Spacing:

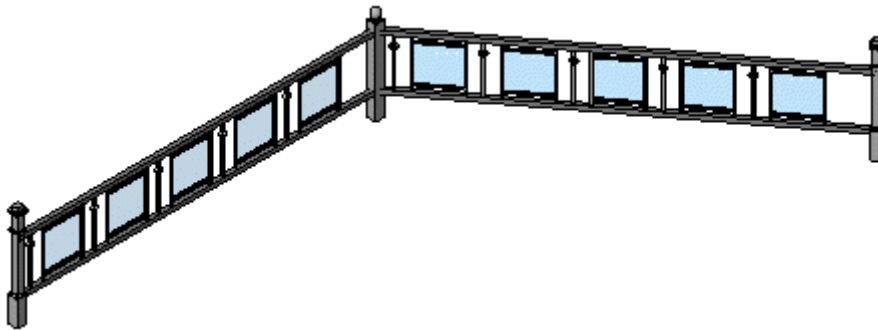
Lay out the post pattern

27. In the Edit Baluster Placement dialog box, under Posts, in row 1, select Post- Newel : 4 1/4" for Baluster Family and enter 0' 0" for Space.
28. In row 2, select Post - Square w Ball : 4 1/4" for Baluster Family and enter 0' 2" for Top offset.
29. In row 3, select Post- Newel : 4 1/4" for Baluster Family and enter 0' 0" for Space.

Posts								
	Name	Baluster Family	Base	Base offset	Top	Top offset	Space	Offset
1	Start Post	Post - Newel : 4 1/4"	Host	0' 0"	Top	0' 0"	0' 0"	0' 0"
2	Corner Post	Post - Square w Ball :	Host	0' 0"	Top	0' 2"	0' 0"	0' 0"
3	End Post	Post - Newel : 4 1/4"	Host	0' 0"	Top	0' 0"	0' 0"	0' 0"

Corner Posts At: Angle:

30. Click OK three times.
31. On the Design Bar, click Finish Sketch.
32. On the Toolbar, click .
33. On the View menu, click Shading with Edges.



34. On the File menu, click Save As and save the exercise file as *Training_Railing.rvt*.

IMPORTANT: Completing this tutorial is required to successfully complete some exercises in the tutorial on Stairs.

35. Proceed to the next exercise, [Adjusting Railing Parameters](#).

Adjusting Railing Parameters

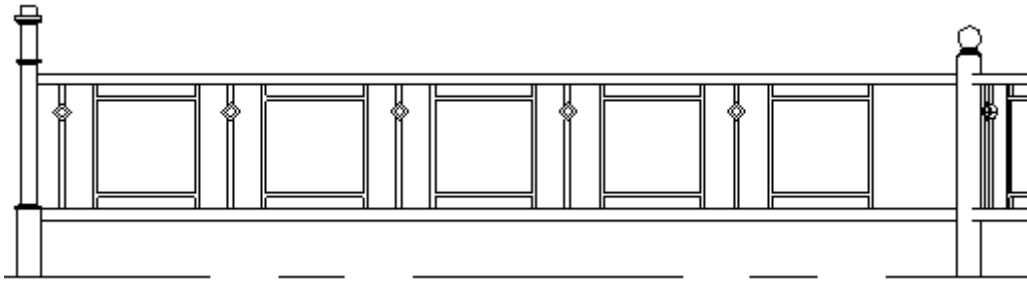
In this exercise, you change the pattern of balusters and posts with the pattern editor to show different design options for the railing.

Dataset

Continue to use the dataset you used in the previous exercise, *Training_Railing.rvt*.


View the beginning justification option

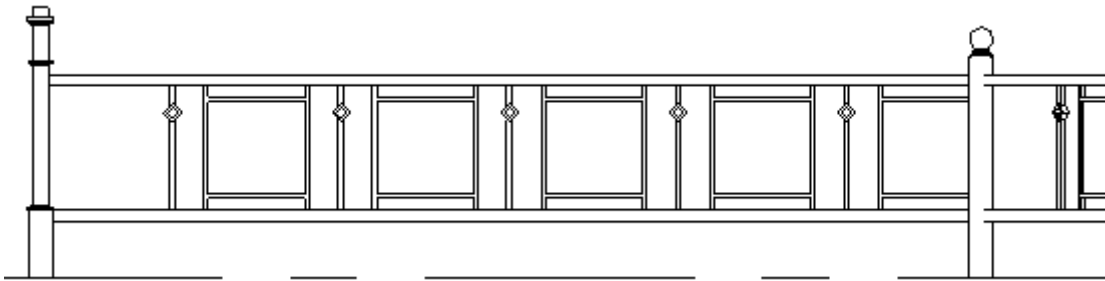
1. In the Project Browser, expand Views (all), expand Elevations, and double-click East.
2. Zoom in on the left side of the railing.



The railing layout reflects the beginning justification option that you assigned in the previous exercise.


View the end justification option

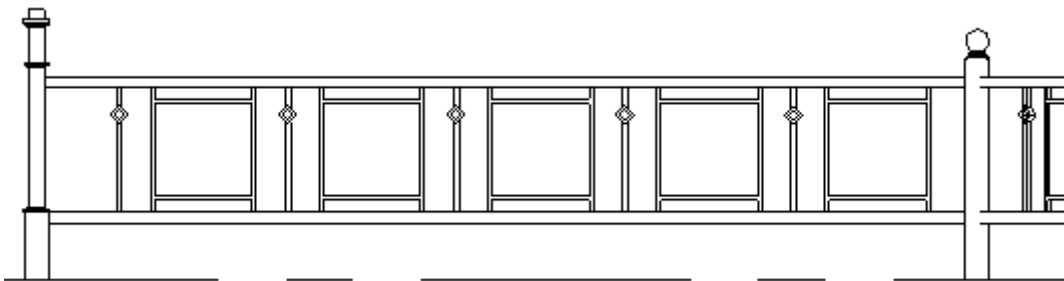
3. On the Design Bar, click Modify and select the railing.
4. On the Options Bar, click .
5. In the Element Properties dialog box, click Edit/New.
6. In the Type Properties dialog box, under Construction, click Edit for Baluster Placement.
7. In the Edit Baluster Placement dialog box, under Main pattern, select End for Justify.
8. Click OK three times.



The railing layout reflects the assigned end justification option.


View the center justification option

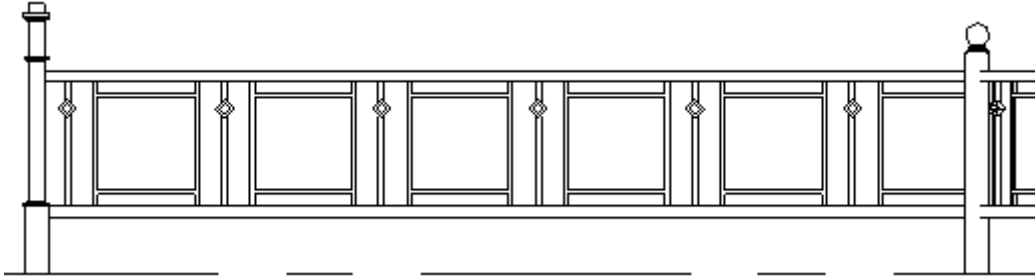
9. On the Options Bar, click .
10. In the Element Properties dialog box, click Edit/New.
11. In the Type Properties dialog box, under Construction, click Edit for Baluster Placement.
12. In the Edit Baluster Placement dialog box, under Main pattern, select Center for Justify.
13. Click OK three times.



The railing layout reflects the assigned center justification option.


View the spread pattern to fit option

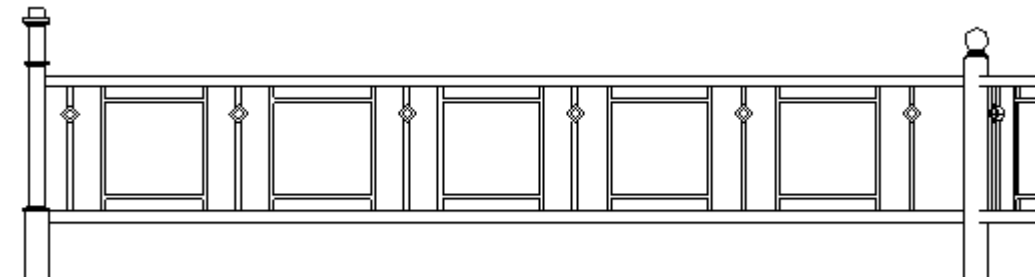
14. On the Options Bar, click .
15. In the Element Properties dialog box, click Edit/New.
16. In the Type Properties dialog box, under Construction, click Edit for Baluster Placement.
17. In the Edit Baluster Placement dialog box, under Main pattern, select Spread Pattern To Fit for Justify.
18. Click OK three times.



The railing layout reflects the assigned spread pattern to fit justification option.


View the truncate pattern excess length fill option

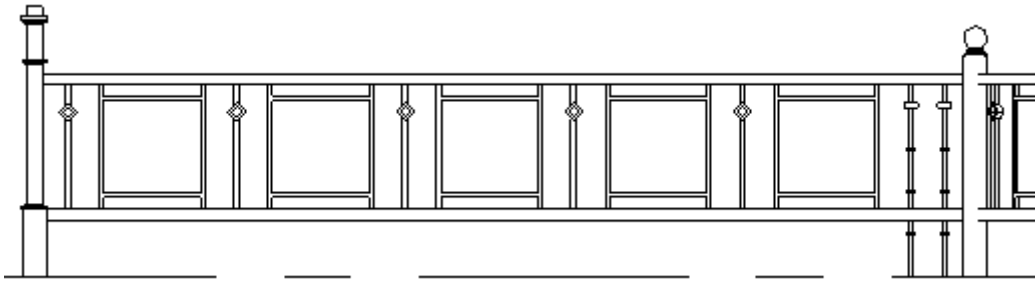
19. On the Options Bar, click .
20. In the Element Properties dialog box, click Edit/New.
21. In the Type Properties dialog box, under Construction, click Edit for Baluster Placement.
22. In the Edit Baluster Placement dialog box, under Main pattern, select Beginning for Justify, and select Truncate Pattern for Excess Length Fill.
23. Click OK three times.



The railing layout reflects the assigned beginning justification and truncated excess length fill options.



View the custom baluster with specified spacing excess length fill option

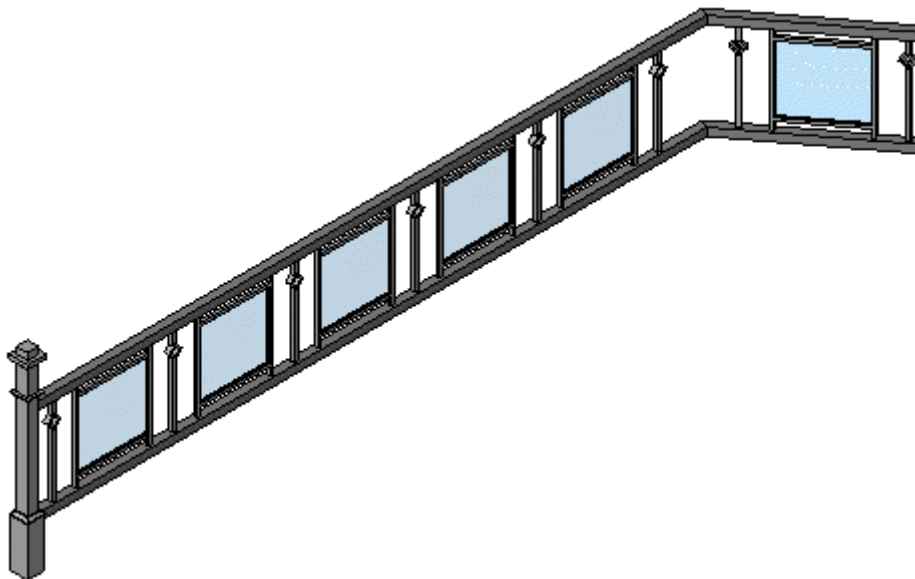
24. On the Options Bar, click .
25. In the Element Properties dialog box, click Edit/New.
26. In the Type Properties dialog box, under Construction, click Edit for Baluster Placement.
27. In the Edit Baluster Placement dialog box, under Main pattern, select Baluster - Custom4 : 1" for Excess Length Fill, and enter **0' 6"** for Spacing.
28. Click OK three times.



The railing layout reflects the assigned beginning justification, custom baluster excess length fill, and spacing options. Observe that the balusters that occur in the excess length fill area extend below the bottom rail. You cannot assign base top and bottom offset parameters to excess length fill balusters.


View post options

29. On the Options Bar, click .
30. In the Element Properties dialog box, click Edit/New.
31. In the Type Properties dialog box, under Construction, click Edit for Baluster Placement.
32. In the Edit Baluster Placement dialog box, under Main pattern, select Truncate Pattern for Excess Length Fill.
33. Under Posts, select Angles Greater Than for Corner Posts At, enter **54** degrees for Angle.
34. Click OK three times.
35. On the Toolbar, click .



The railing layout reflects the assigned minimum angle limit for the corner post option. Since the angle is less than 54 degrees, a corner post does not occur.

Specify the final railing layout

36. On the Design Bar, click Modify and select the railing.
37. On the Options Bar, click .
38. In the Element Properties dialog box, click Edit/New.
39. In the Type Properties dialog box, under Construction, click Edit for Baluster Placement.

40. In the Edit Baluster Placement dialog box, under Main pattern, do the following:
- In row 2, enter **0' 0"** for Dist. from previous.
 - In row 4, enter **1' 3"** for Dist. from previous.
 - Select **Spread Pattern To Fit** for Justify.

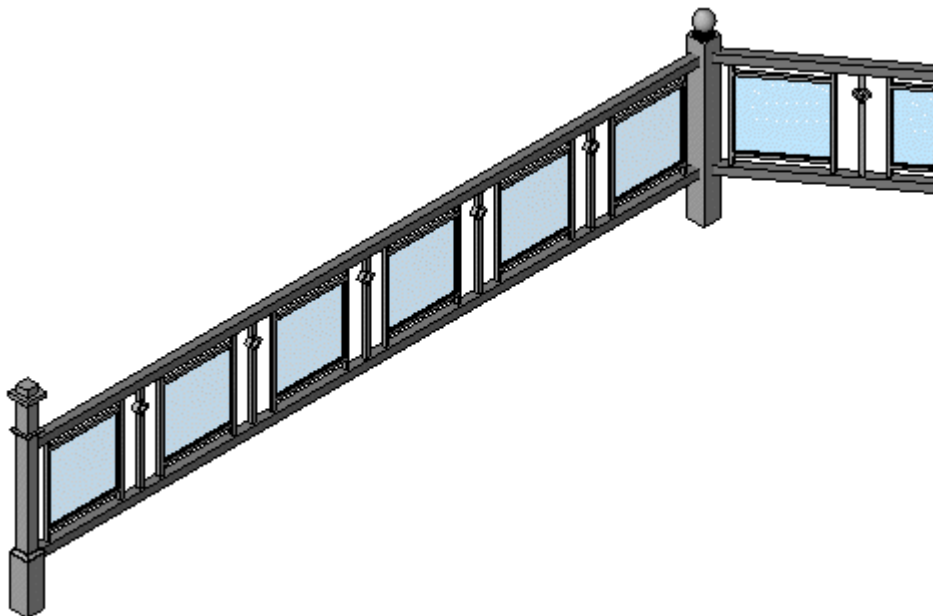
Main pattern

	Name	Baluster Family	Base	Base offset	Top	Top offset	Dist. from previous	Offset
1	Pattern star	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Regular bal	Baluster - Custom3 :	Bottom	0' 0"	Top	0' 0"	0' 0"	0' 0"
3	Glass Panel	Baluster Panel 1 : 18"	Bottom	0' 0"	Top	0' 0"	1' 3"	0' 0"
4	Pattern end	N/A	N/A	N/A	N/A	N/A	1' 3"	N/A

Break Pattern at: Angle: Pattern Length:

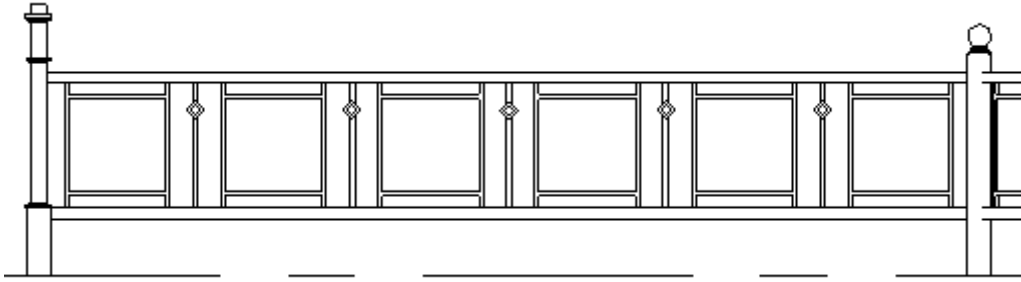
 Justify: Excess Length Fill: Spacing:

41. Under Posts, select **Each Segment End** for Corner Posts At.
42. Click **OK** three times.



The railing layout reflects the assigned distance and justification options.

43. In the Project Browser, under Elevations, double-click **East**.



44. On the File menu, click Save As and save the exercise file as *Training_Railing.rvt*.

IMPORTANT: This project is required to complete some exercises in the tutorial on Stairs in which you add this railing to your stairs.
