

MSF119044-L

Up and Running with Advance Steel

Deepak Maini
Cadgroup Australia

Learning Objectives

- Learn how to create structural models from scratch in Advance Steel
- Learn how to insert automated connection using Connection Vault
- Learn how to generate 2D fabrication and general arrangement drawings
- Learn how to create NC files for steel cutting

Description

This lab is designed to give you a feel of the ease of use of Advance Steel detailing software, the structural steel package that's getting the industry talking. You will create a structural model from scratch and then insert automated connection between structural sections. Finally, you'll learn how to generate fabrication drawings and NC files from your structural model.

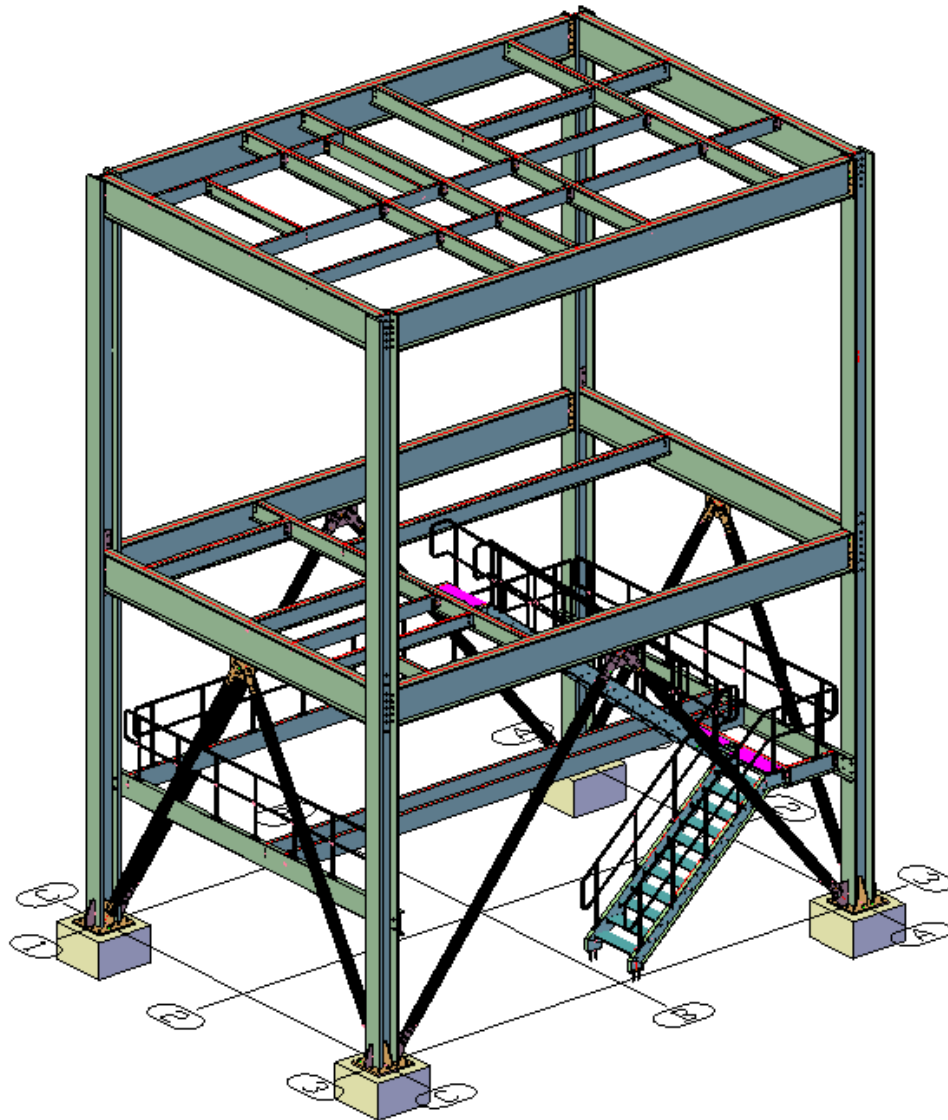
Speaker

Deepak is a qualified Mechanical Engineer with more than 18 years of experience of working in the design industry. He is currently working as the National Technical Manager - Named Accounts, with Cadgroup Australia. Deepak is also a guest lecturer at the University of Technology Sydney (UTS) and University of New South Wales (UNSW), two of the biggest universities in Australia.

He is the author of the [Up and Running with Autodesk Advance Steel](#) and [Up and Running with Autodesk Navisworks](#) series of textbooks. Visit the Authored Textbook page of his website www.deepakmaini.com to know about these books.

Deepak is a regular speaker at Autodesk University in Las Vegas and is one of the [Top Rated Speakers](#) for last three years in a row. At AU2016, he was also one of the [Top Rated Online Speakers](#). He was recently rated among the [Top Three Speakers](#) at BILT ANZ Conference and [Top Six Speakers](#) at BILT Asia Conference.

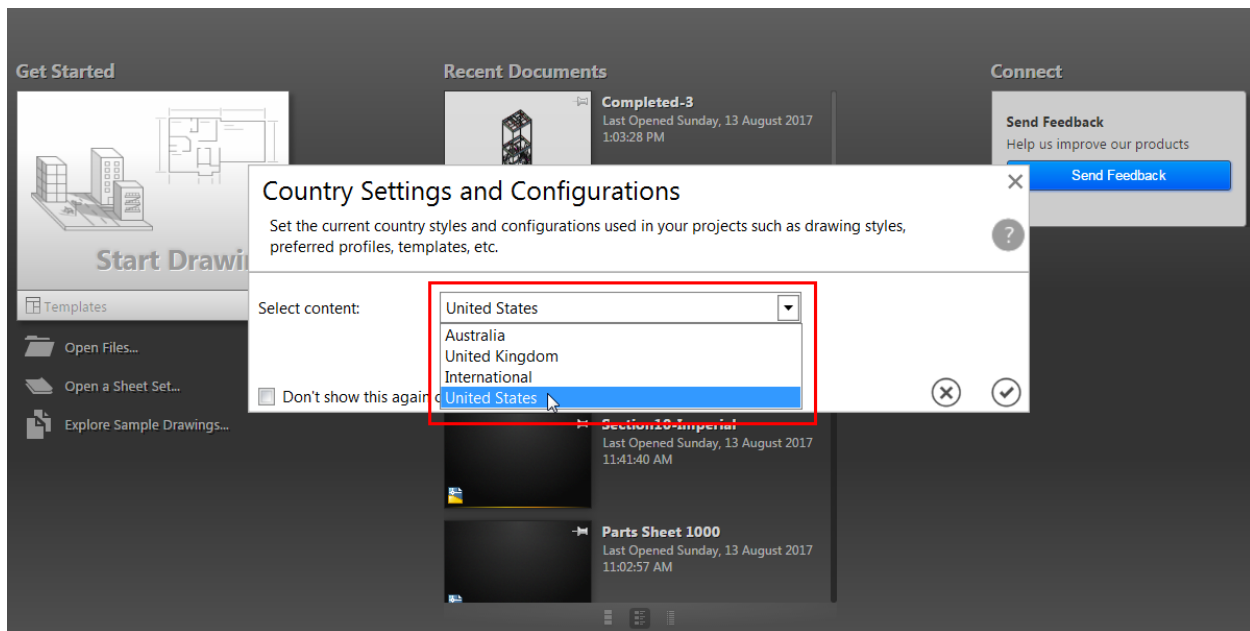
In this lab, you will create the model shown in the figure below and generate its fabrication drawings, NC files, and BOMs



Section 1: Starting Autodesk Advance Steel with the Required Country Settings and Units

Advance Steel can be started with various country settings and configurations so that the Steel Standards of that country can be followed. In this lab, you will start Advance Steel either using the United States Standard or Australia Standard.

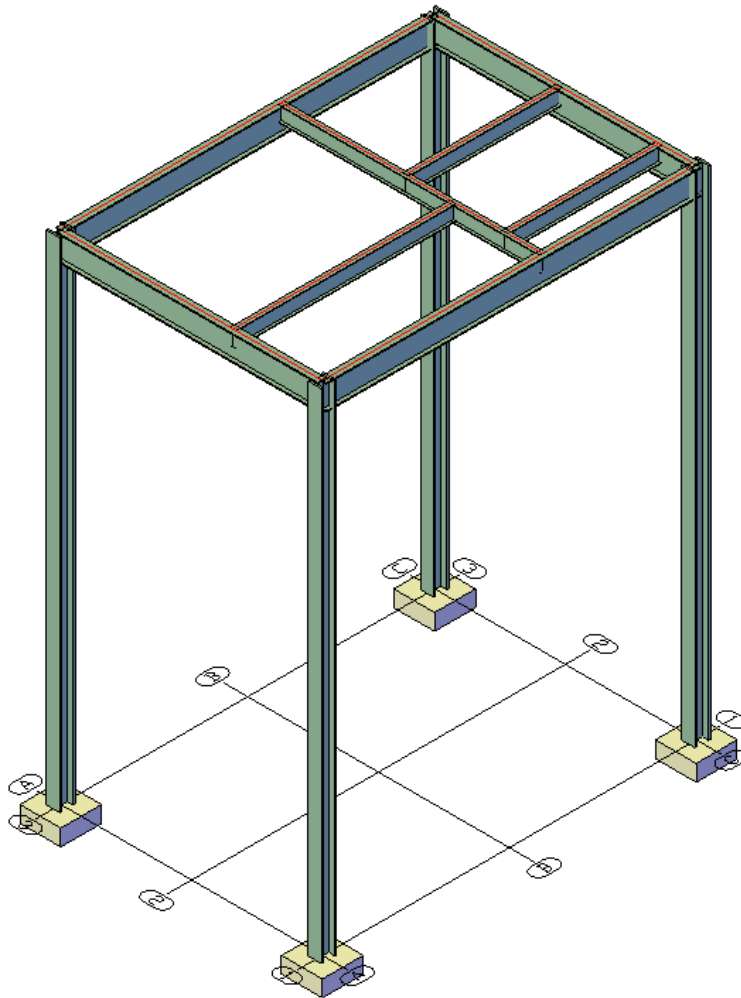
1. From the **Country Settings and Configurations** dialog box in front of you, select **United States** (for Imperial Units), as shown in the figure below:



***Tip:** If you do not see this dialog box, it means someone earlier started Advance Steel and selected the option to not display this dialog box again. In that case, you can go to **Start > All Programs > Autodesk > Advance Steel 2018 > Reset Settings to Default – Advance Steel 2018**.*

Section 2: Inserting and Copying Columns, Peripheral Beams, and Filter Beams

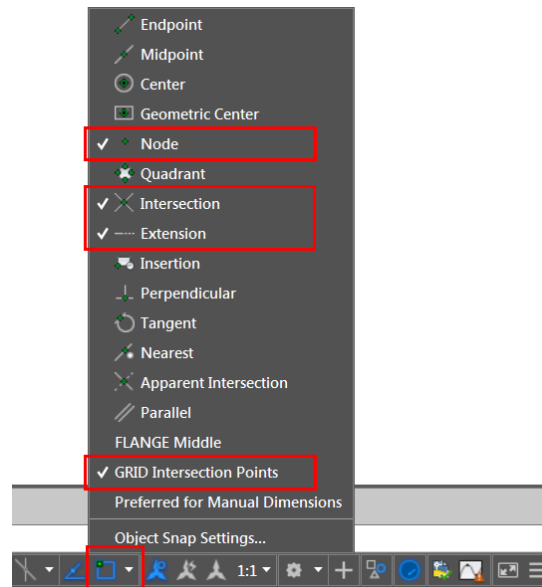
In this section, you will open the **Section2-Imperial.dwg** file from the exercise files folder and then insert and copy Columns and Peripheral beams, as shown in the figure below.



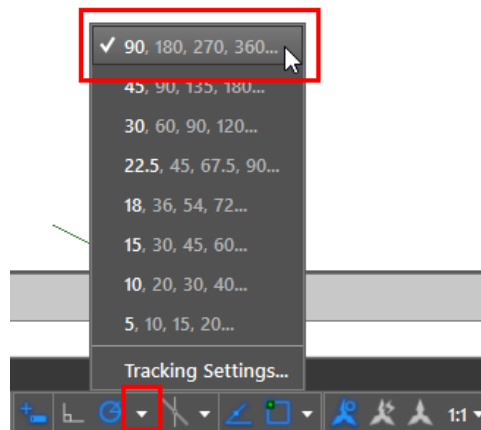
1. From the exercise files folder, open the **Section2-Imperial.dwg** file.

Before you insert the sections, you need to make sure you select the **GRID Intersection Points, Node, Intersection, and Extension** Object Snap type and clear any other Object Snap type, including **Endpoint** and **Midpoint**.

2. From the **Object Snaps** list on the status bar, select **GRID Intersection Points, Node, Intersection, and Extension**, as shown below:



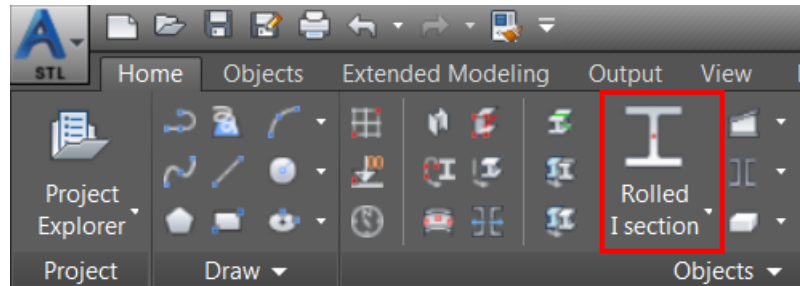
3. Clear any other Object Snap types, including **Endpoint** and **Midpoint**.
4. Set the Polar Tracking to **90, 180, 270, 360**, as shown below:



Notice that this file already has the four isolated footings and grids created. You will now use the **Rolled I section** tool to insert a column at the grid intersection point C1.

***Note:** The reason you are not using the **Column** tool to insert the column is that this tool does not prompt for the height of the column while inserting it. As a result, you will need to grip edit the height of the column after inserting. However, if you still want to use the **Column** tool, you can edit the default height of the column using the **Management Tools > Beams > General > Default height for column** edit box.*

5. From the **Home** ribbon tab > **Objects** ribbon panel, invoke the **Rolled I section** tool, as shown below; you are prompted to locate the start point of the system axis.



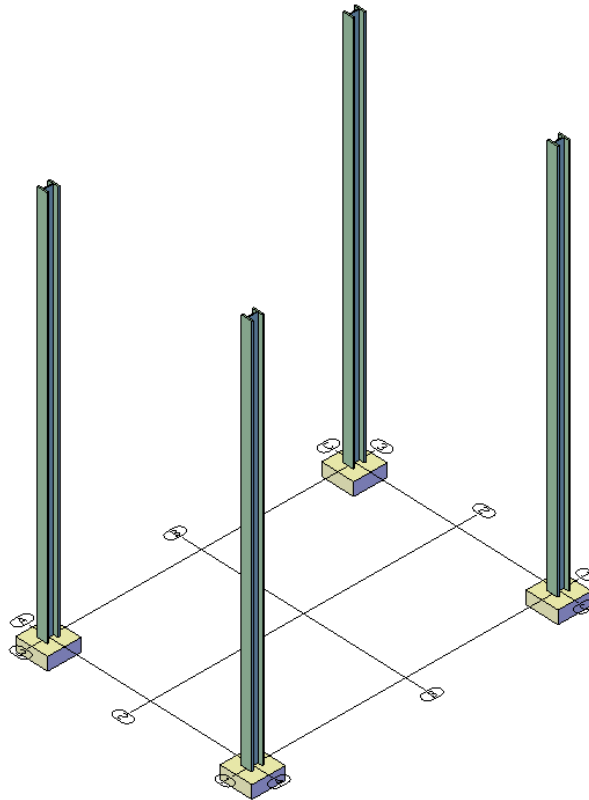
6. Select the **A1** grid intersection point and then move the cursor up so that you are tracking along the Z direction.

The total height to the Top of Steel on level 2 is 40'. In this tutorial, you will insert a single column of that height.

7. With the cursor tracking along the Z direction, enter 40' as the value; you are again prompted to specify the start point of the system axis.
8. Press ENTER; the **Advance Steel - Beam [X]** dialog box is displayed with the **Section & Material** tab active.

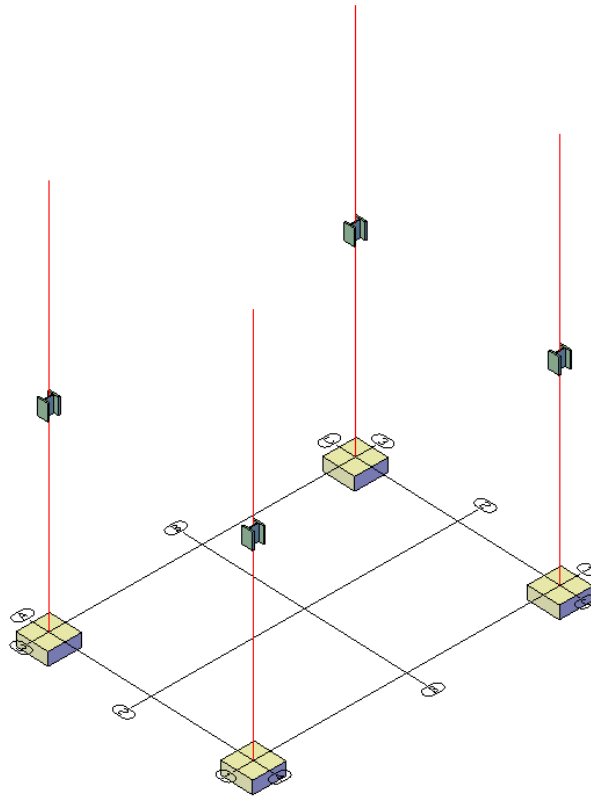
Notice that in the first flyout of the **Section** list, **I Sections** is automatically selected. You now need to select the section type and section size from the next two flyouts.

9. From the second flyout in the **Section** list, select **AISC 14.1 W** as the section type.
10. From the third flyout in the **Section** list, select **W12x210** as the section size.
11. From the left pane of the dialog box, select the **Naming** tab.
12. From the **Model Role** list, select **Column** as the model role for this section.
13. Close the dialog box.
14. Using the **Copy** tool, copy the column to the grid intersection points **A3**, **C1**, and **C3**. The model, after inserting the columns, is shown below:



Next, you will insert the peripheral beams using the **Continuous Beam** tool. Before you start inserting the perimeter and filter beams, it is recommended to change the display type of the four columns.

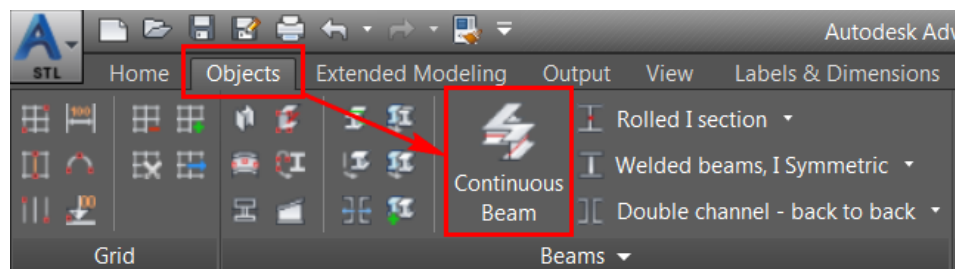
15. Select the four columns and then right-click in the blank area of the drawing window; the shortcut menu is displayed.
16. Select **Advance Properties** from the shortcut menu; the **Advance Steel - Beam [X]** dialog box is displayed.
17. From the left pane of the dialog box, select the **Display type** tab.
18. From the right pane, select **Symbol**; the four columns are displayed as system axes with the actual section displayed partially at the midpoint, as shown in the figure below:



19. Close the dialog box.

The four beams to be inserted on the outside are AISC 14.1 S > S24X121. You will now use the **Continuous Beam** tool to insert these beams.

20. From the **Objects** ribbon tab > **Beams** ribbon panel, invoke the **Continuous Beam** tool, as shown below; you are prompted to locate the start point of the system axis.



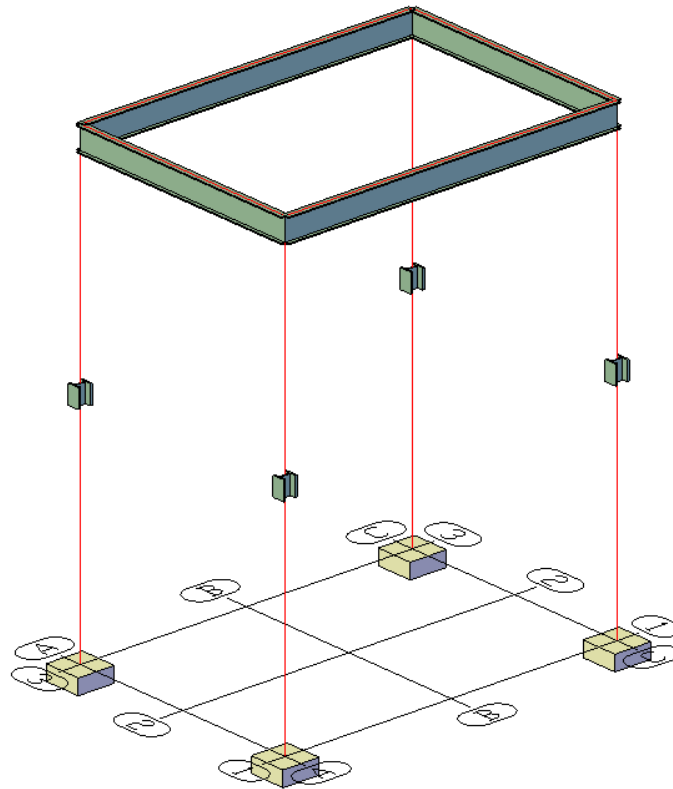
21. Select the top **Node** of one of the columns; you are prompted to specify the endpoint of the system axis.



22. Select the top **Node** of the next column; a beam is inserted between the two node points and you are again prompted to specify the endpoint of the system axis.
23. Similarly, select the top **Node** of the remaining two columns and then of the first column again to insert four beams.
24. After selecting the last top **Node** point, press the ENTER key; the **Advance Steel - Beam [X] dialog box** is displayed.

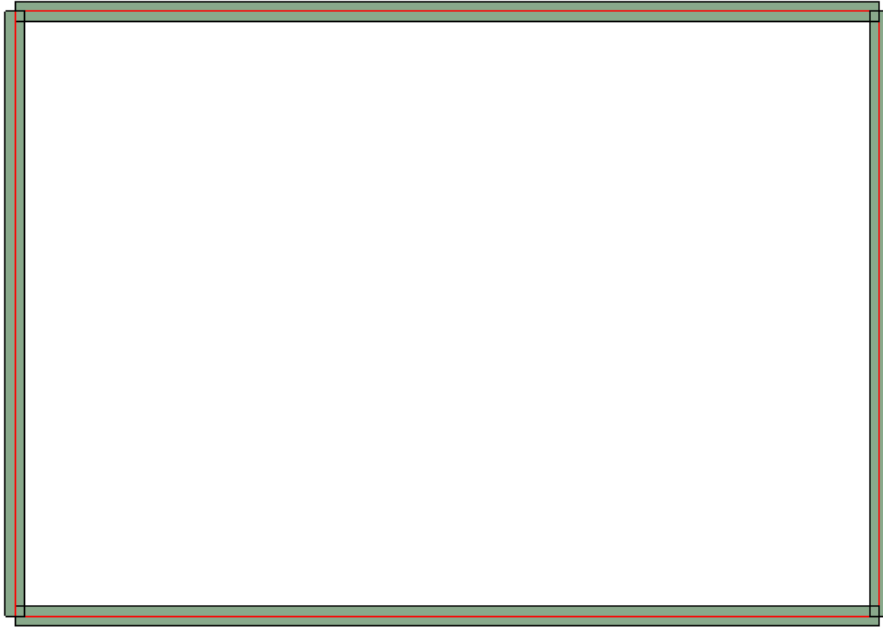
The first flyout in the **Section** list automatically shows **I Sections** selected. You will now select the section type and size from the second and third flyouts.

25. From the second flyout of the **Section** list, select **AISC 14.1 S** as the section type.
26. From the third flyout of the **Section** list, select **S24X121** as the section size.
27. From the left pane of the dialog box, select the **Positioning** tab.
28. From the right pane, in the **Offset** area, select the top center radio button; all the four beams are aligned such that their system axes are at the top face.
29. From the **Naming** tab > **Model Role** list, select **Beam** as the model role.
30. Close the dialog box. The model, after inserting the beams, is shown in the following figure:



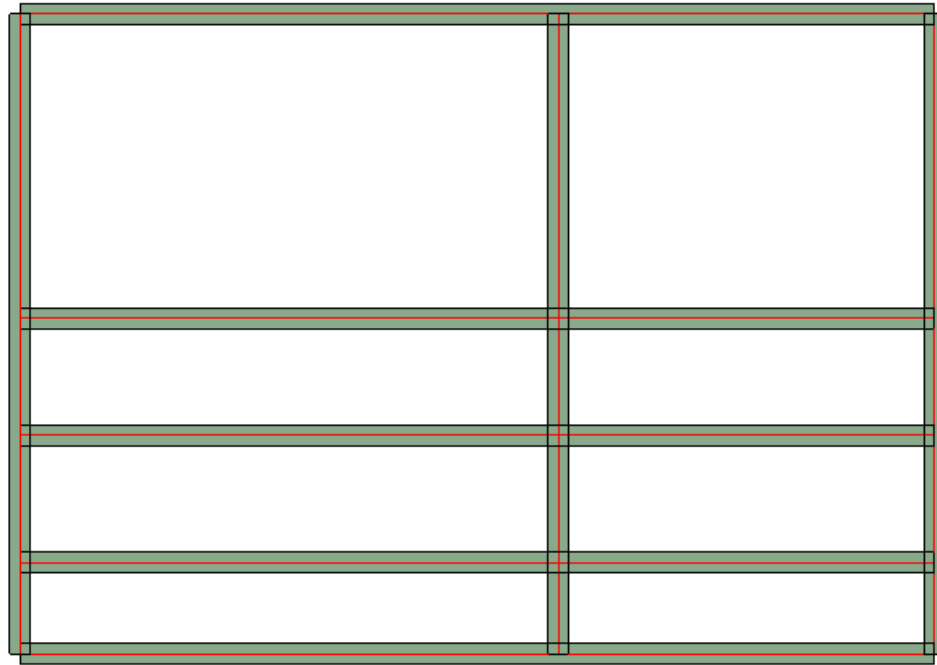
Next, you will insert the filter beams. But first, you will isolate the peripheral beams you inserted in the previous steps.

31. With no tool active, select the four perimeter beams inserted in the above steps.
32. Right-click in the blank area of the drawing window and select **Isolate > Isolate Objects** from the shortcut menu; all objects, other than the selected perimeter beams, are turned off.
33. Using the **ViewCube**, change the current view to the **Top view**. Also, right-click on the ViewCube and then select **Parallel** from the shortcut menu, if not already selected, to change the current camera to parallel projection. The model should appear similar to the one shown below:



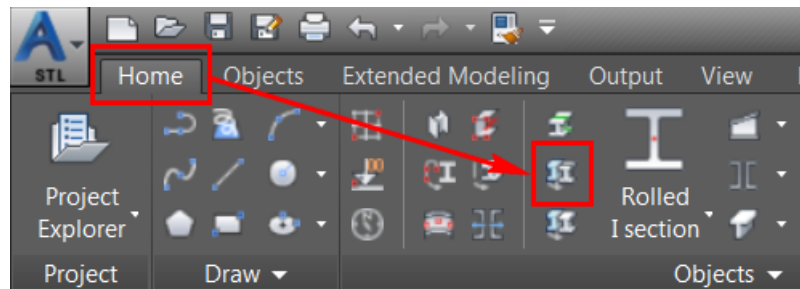
34. Using the Copy tool and Polar Tracking, copy the left perimeter beam towards the right at a distance of **17'8"**.
35. Similarly, copy the bottom perimeter beam up three times at the following distance values:
3'
7'2"
11'

The model, after copying the beams, is shown in the figure below:

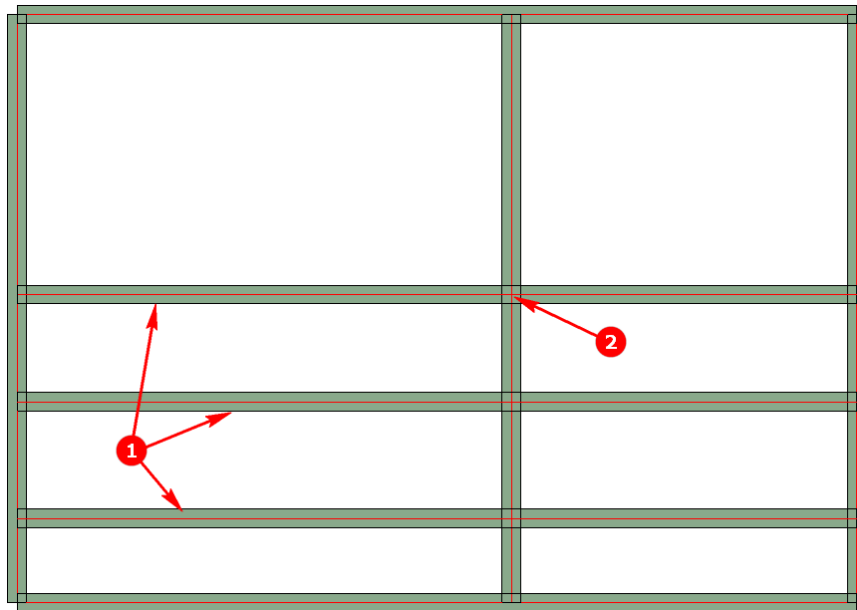


Next, you will split the beams and delete the unwanted portion of these beams.

36. From the **Home** ribbon tab > **Objects** ribbon panel, invoke the **Split beams** tool, as shown below; you are prompted to select objects.



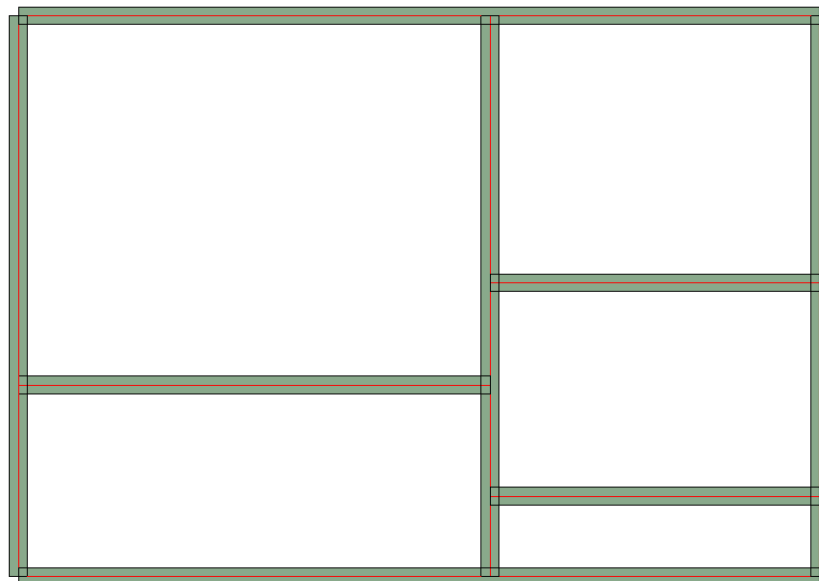
37. Select the three sections labeled as **1** in the following figure and then press ENTER; you are prompted to select the split point or define the gap.



38. Select the intersection point labeled as 2 in the above figure and then press ENTER.

Notice that although you selected only one point labeled as 2, all the selected sections are still split along a plane at that point.

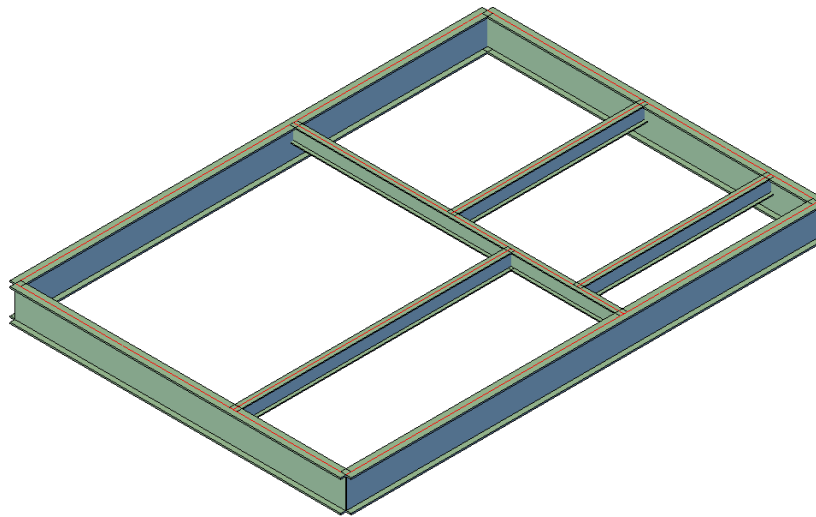
39. Erase the beams such that the model appear similar to the one shown below:



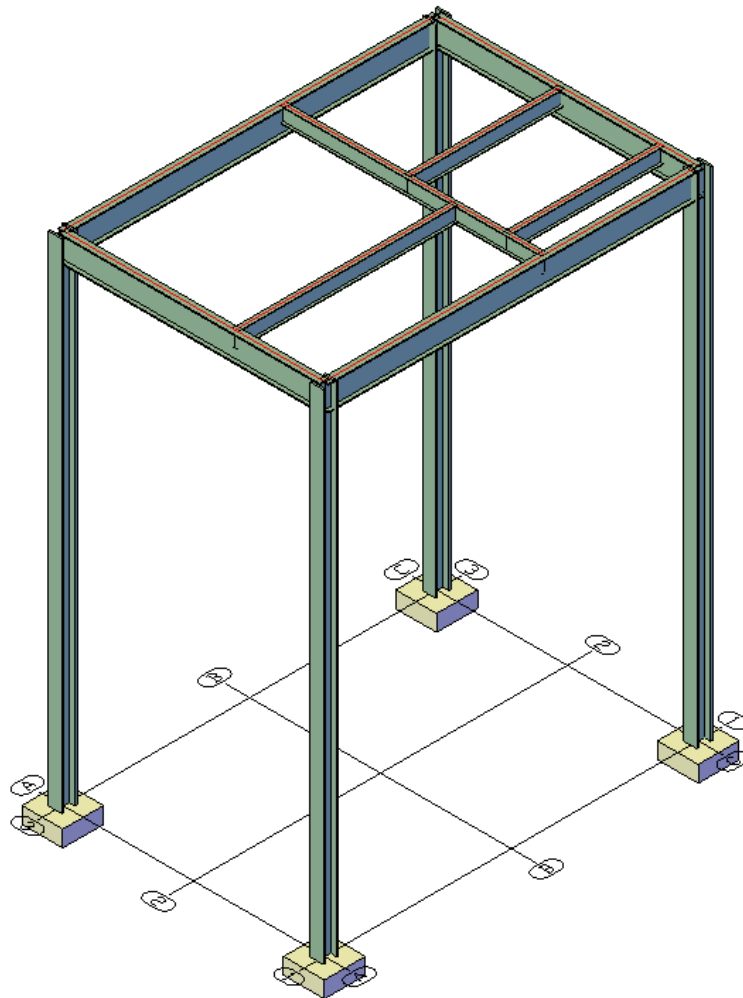
40. Select all the filter beams.

41. Right-click in the blank area of the graphics window and select **Advance Properties**; the **Advance Steel – Beam [X]** dialog box is displayed.

42. Change all the beam types to **AISC 14.1 S > S12X50**.
43. Change the view to Home view with parallel projection. The model should look similar to the one shown below:

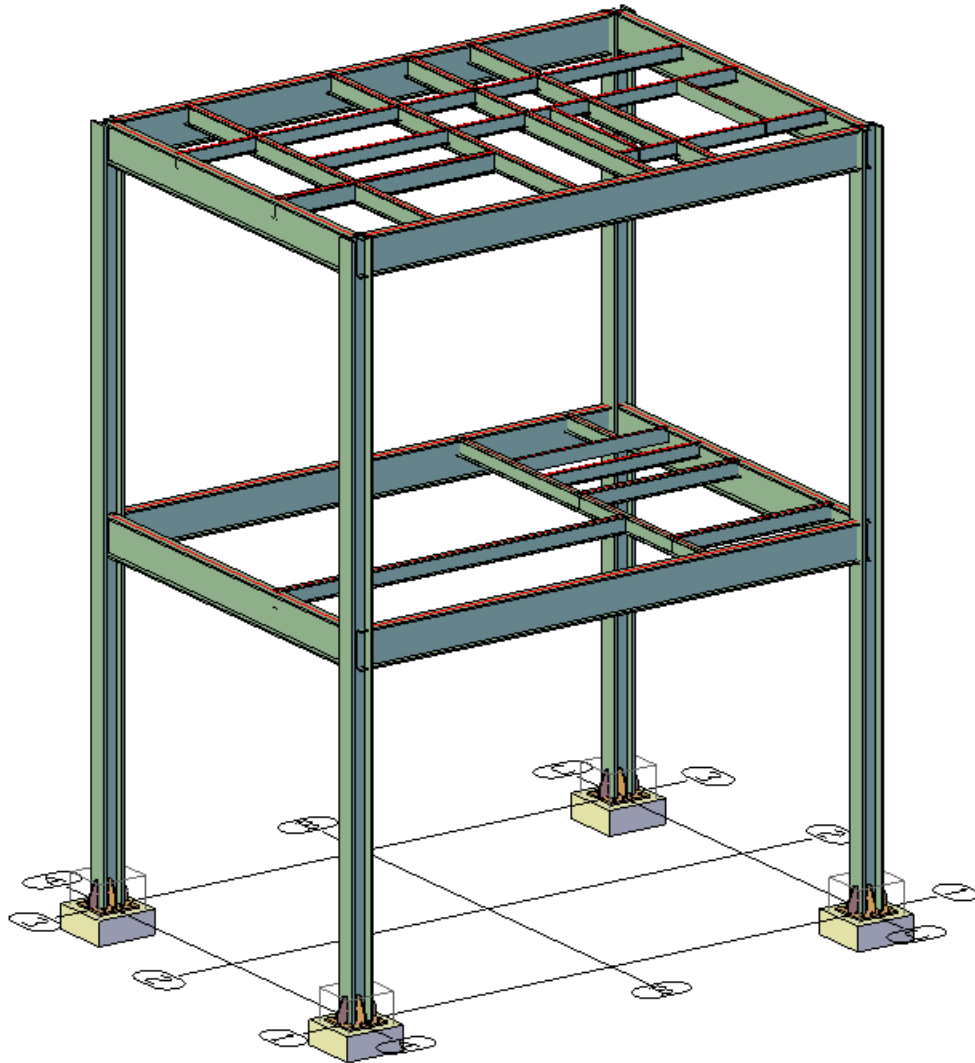


44. Right-click in the blank area of the graphics window and select **Isolate > End Object Isolation**; all the hidden objects reappear.
45. Select the four columns displayed as system lines and then right-click in the blank area of the graphics window.
46. From the shortcut menu, select **Advance Settings**.
47. From the **Display type** tab, select **Standard** as the display style.
48. Close the dialog box. The model should appear similar to the one shown in the following figure:

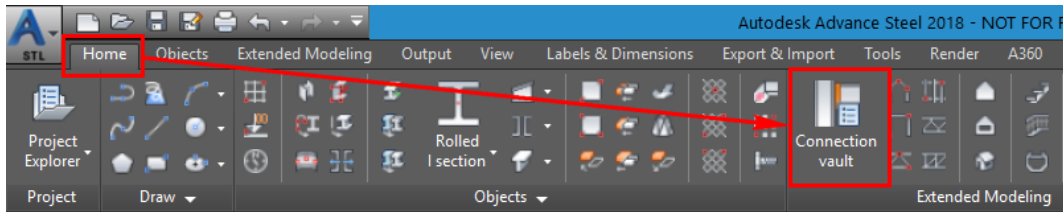


Section 3: Inserting and Copying the Base Plate Joints

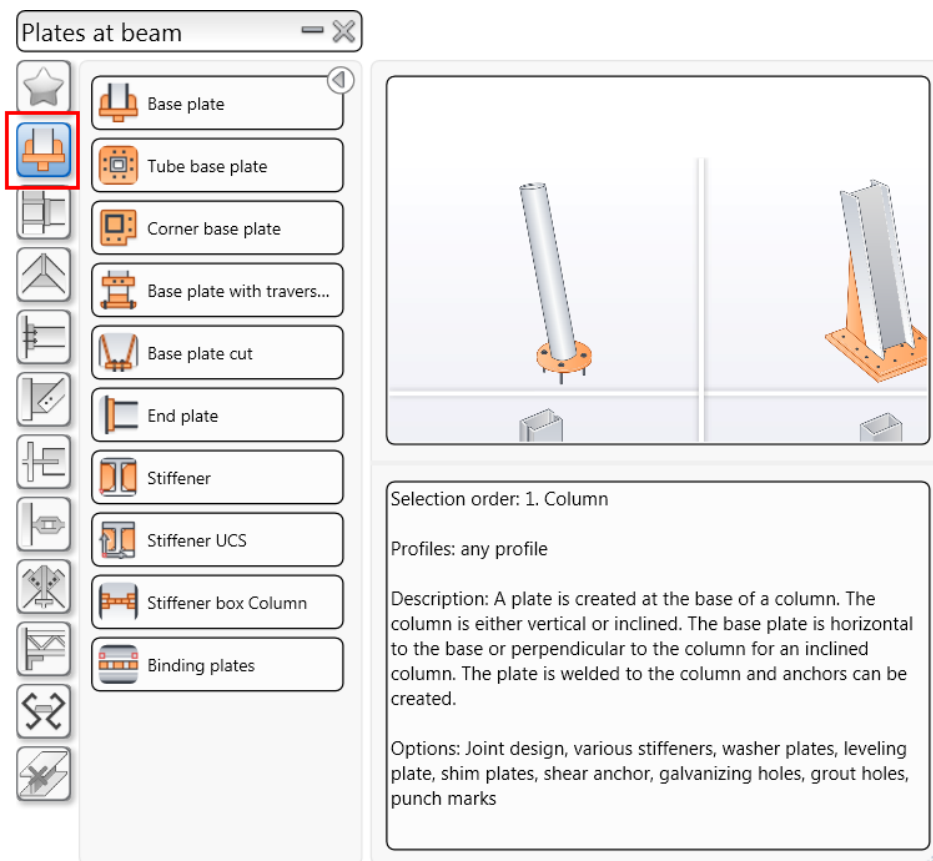
In this section, you will open the **Section3-Imperial.dwg** file from the exercise files folder and then insert and copy the **Base plate** joints, as shown in the figure below.



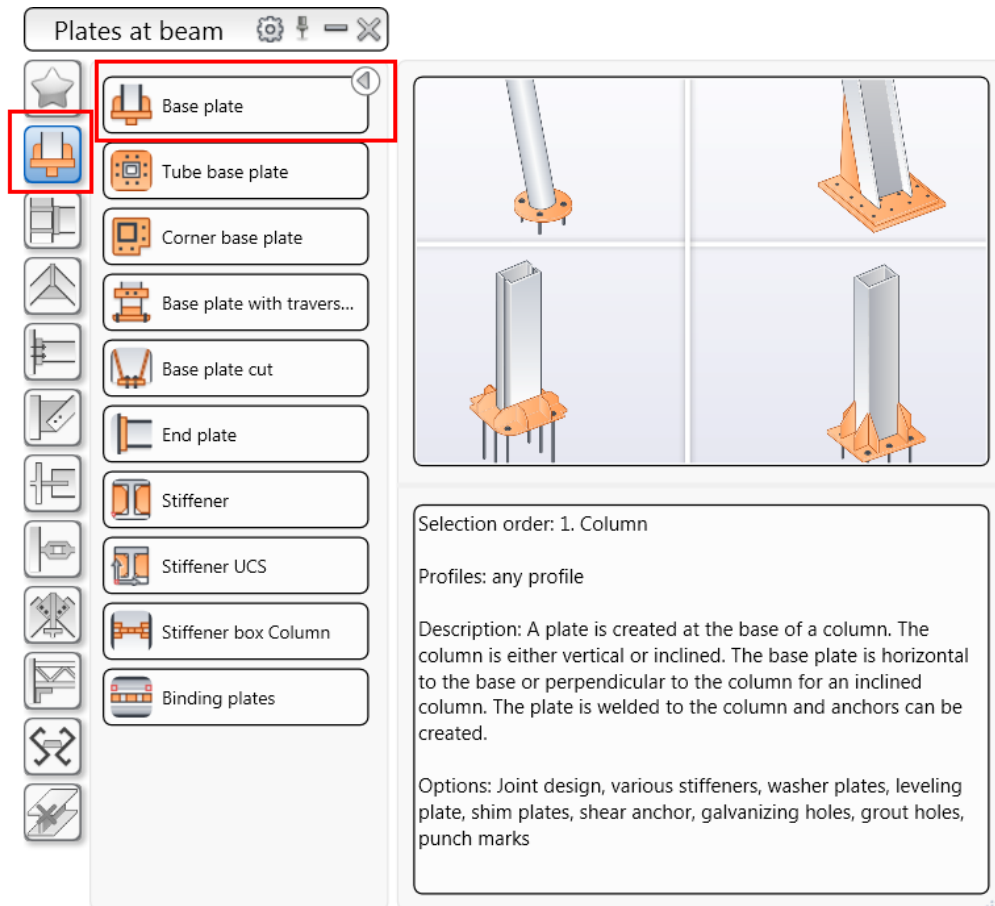
1. Open the **Section3-Imperial.dwg** file from the exercise files folder.
2. Zoom close to the **A1** grid intersection point.
3. From the **Home** ribbon tab > **Extended Modeling** ribbon panel, invoke the **Connection vault** tool, as shown below; the **Connection vault palette** is displayed.



4. From the **Joint Categories** area, click the **Plates at beam** button, which is the second button; various plates and beam joints are displayed in the **Joint Type** area, as shown below:

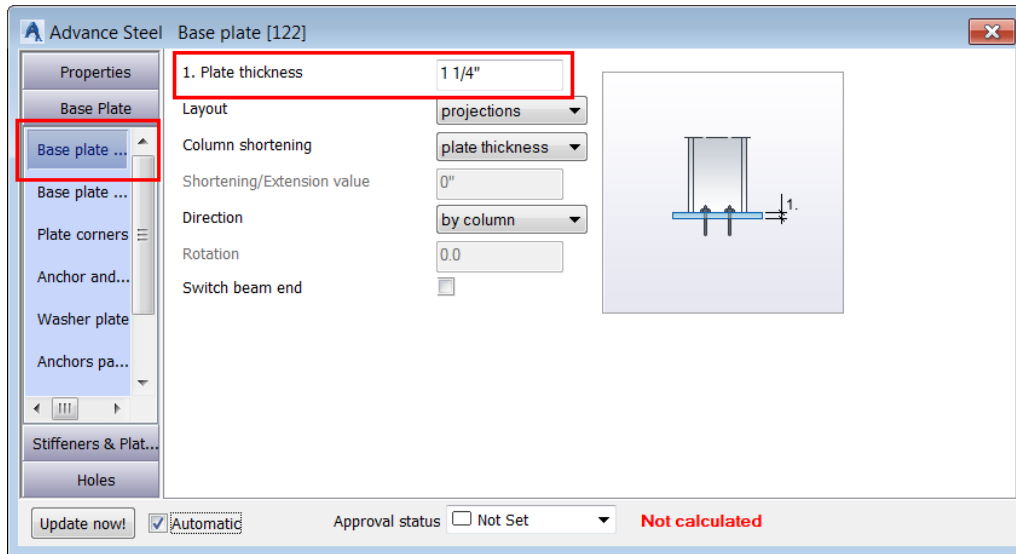


5. Click the **Base plate** button to invoke this joint type, as shown below; you are prompted to select the column.



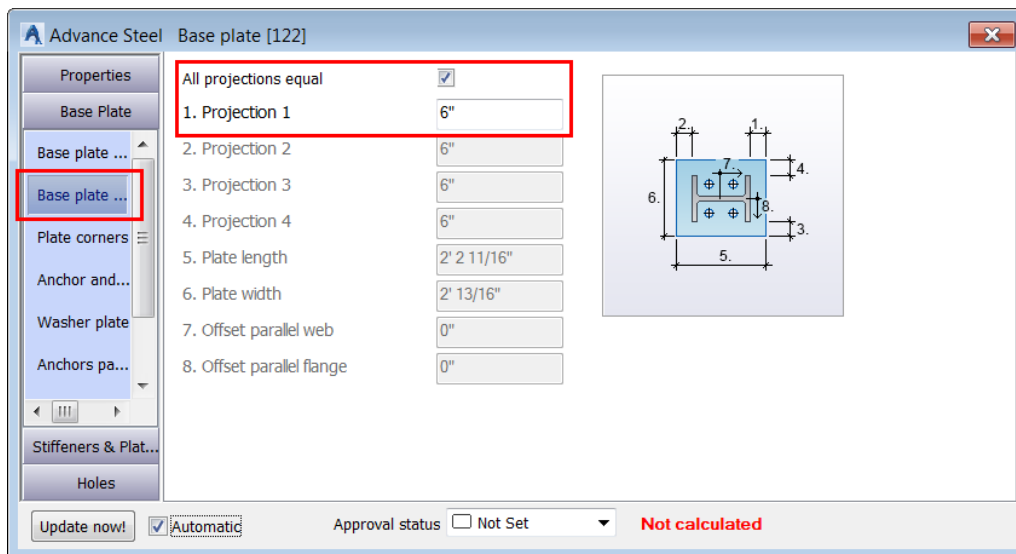
Before you select the column, it is better to hide the **Connection vault palette**. If you do not hide this palette, it will interfere with the joint dialog box.

6. From the top right of the **Connection vault** title bar that displays **Plates at beam**, click the minus “-” sign to hide the palette.
7. Now, select the column at the **A1** grid intersection point; you are prompted to specify if you want to select an additional concrete object.
8. Press the ENTER key to accept No; the joint with the default parameters is created and the **Advance Steel - Base plate [X]** dialog box is displayed.
9. From the left pane of the dialog box, select the **Base Plate > Base plate layout** tab.
10. In the **Plate thickness** edit box, enter **1 1/4”**, as shown below; the base plate thickness is increased.



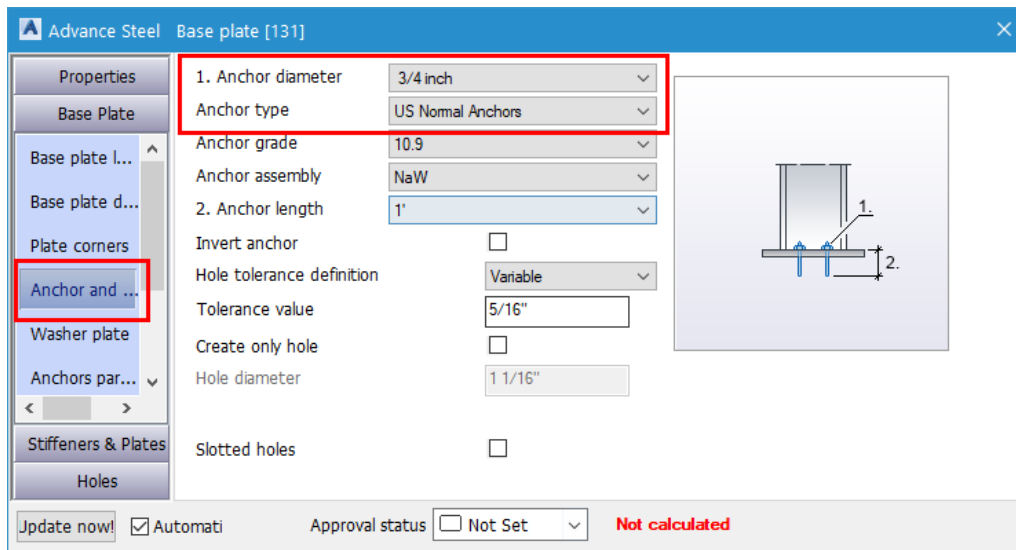
11. Activate the **Base plate dimensions** tab.

12. In the **Projection 1** edit box, enter **6"**, as shown below.



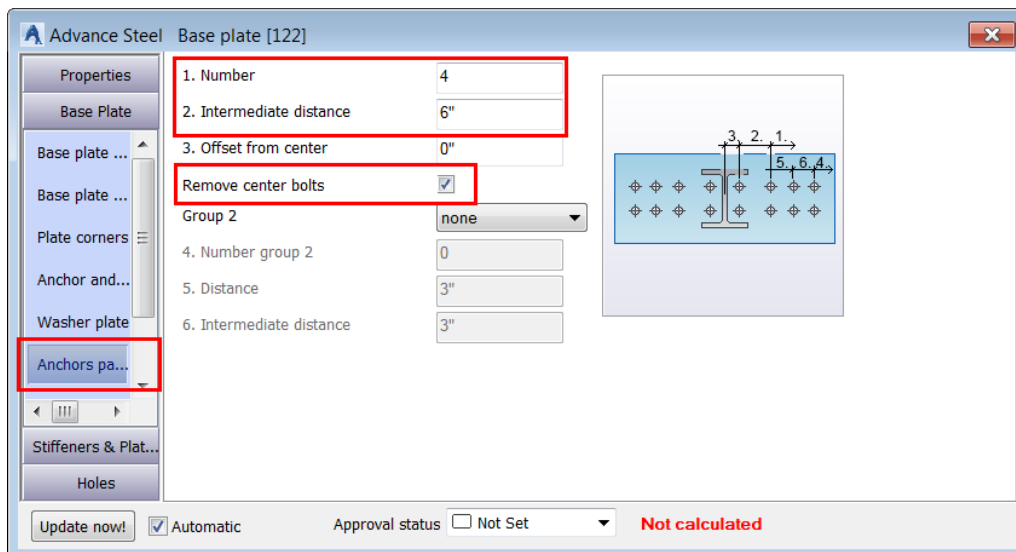
13. Activate the **Anchor and holes** tab.

14. Configure the settings, as shown below:



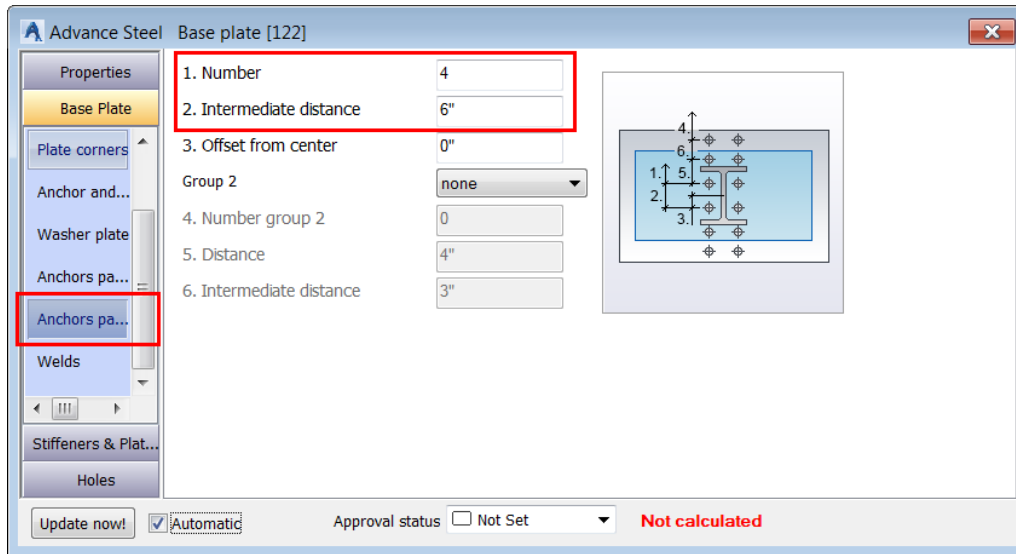
15. Activate the **Anchor parallel web** tab.

16. Configure the settings as shown below:



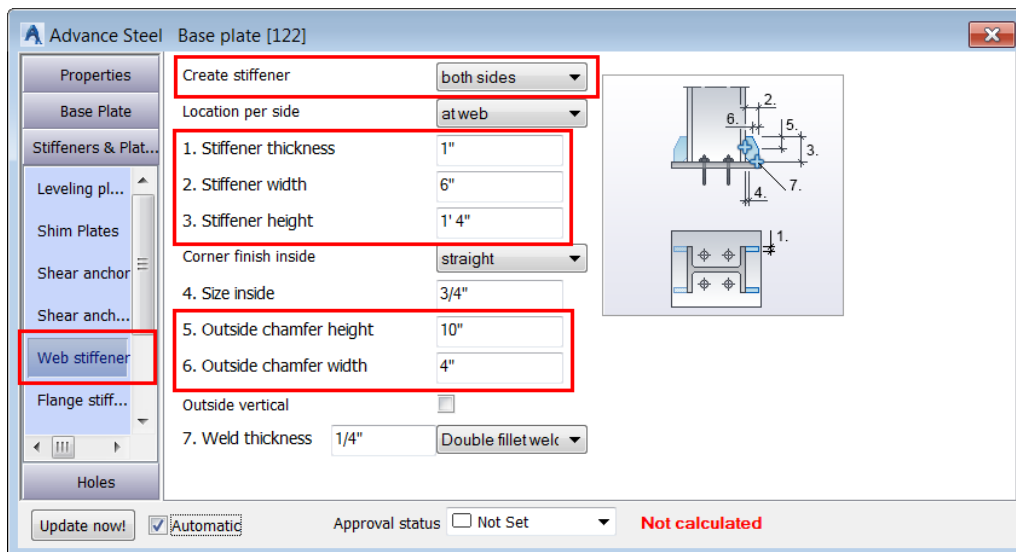
17. Activate the **Anchor parallel flange** tab.

18. Configure the settings as shown below:



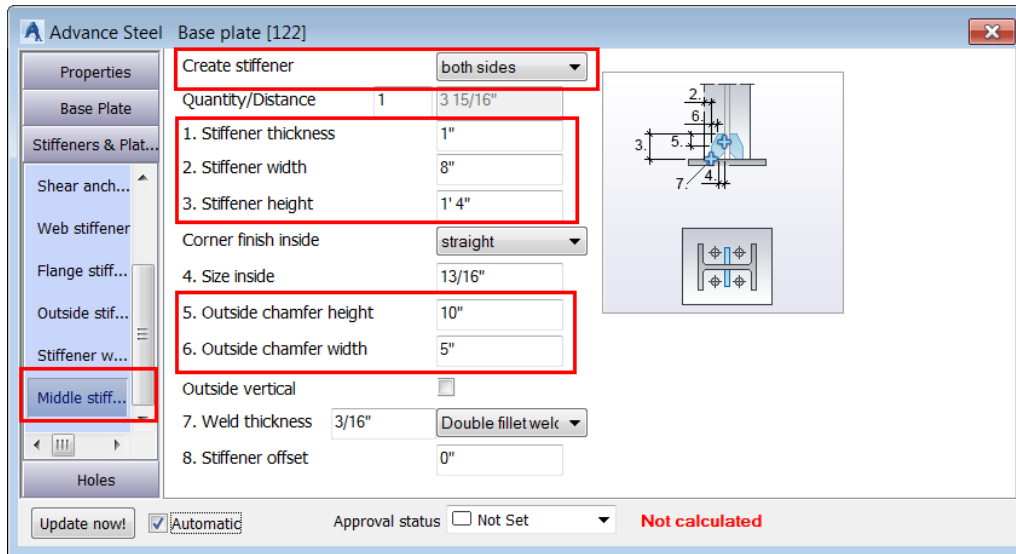
19. From the left pane of the dialog box, select the **Stiffeners & Plates > Web stiffener** tab.

20. Configure the settings as shown below:

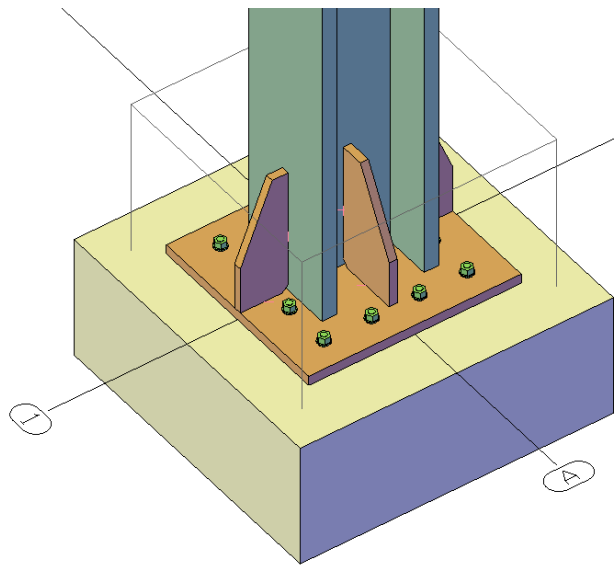


21. From the left pane of the dialog box, select the **Stiffeners & Plates > Middle stiffener** tab.

22. Configure the settings as shown below:

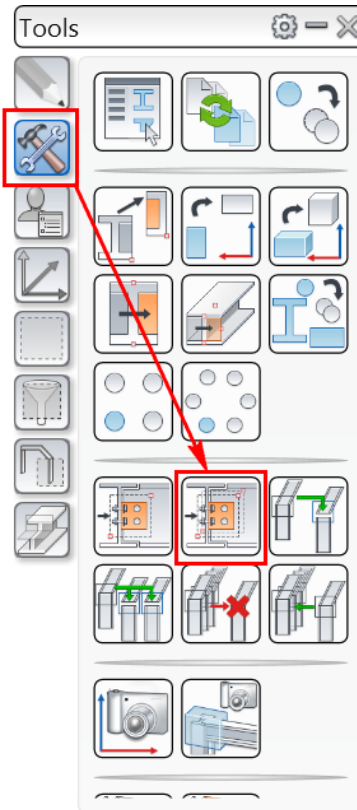


23. Close the dialog box. The joint should look similar to the one below:



Next, you will copy this joint at the base of the rest of the three columns.

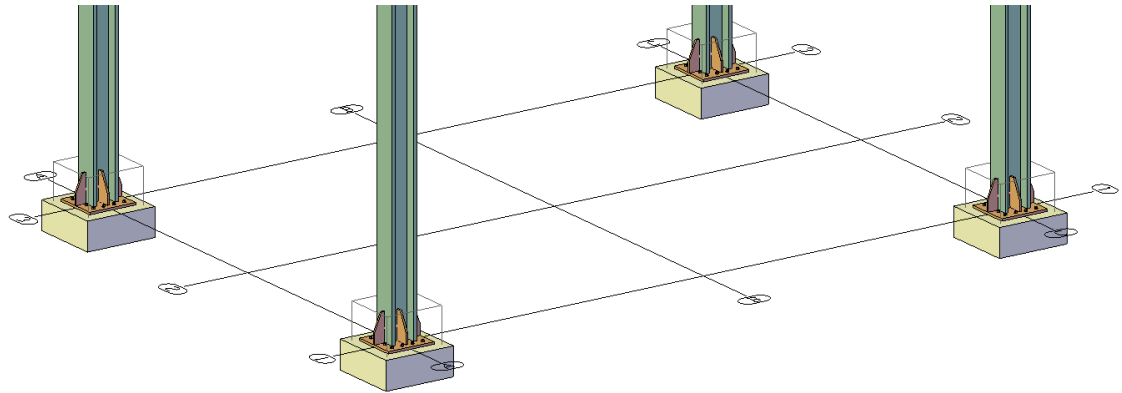
24. From the **Advance Steel Palette > Tools** tab, invoke the **Create by template, multiple** tool, as shown below; you are prompted to select the source joint.



25. Select one of the plates or bolts of the base plate joint you inserted in earlier steps; you are again prompted to select objects.
26. Press ENTER; you are prompted to select beams corresponding to the source joints input.
27. Select the remaining three columns and then press ENTER; the same joint is added to the remaining three columns as well.

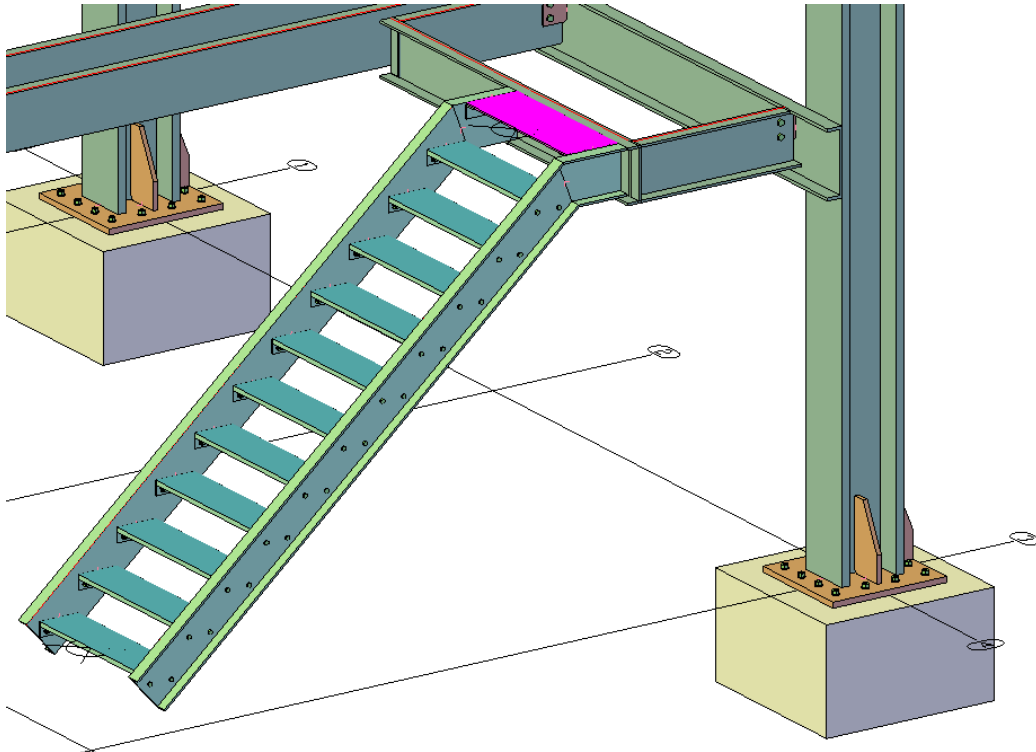
Note: *Although it is the same joint added to the remaining three columns, but all four joints are independent joints and can be edited individually.*

The model, after copying the joints, is shown in the following figure:

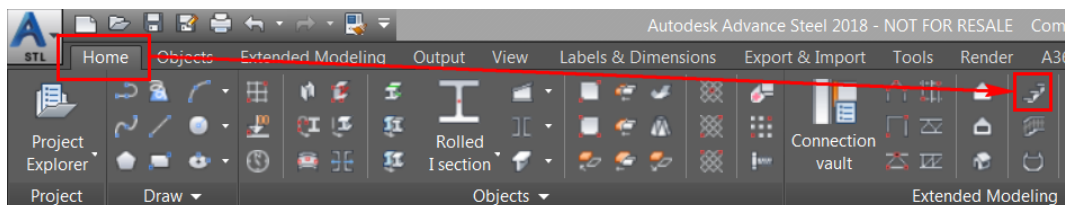


Section 4: Inserting Stairs

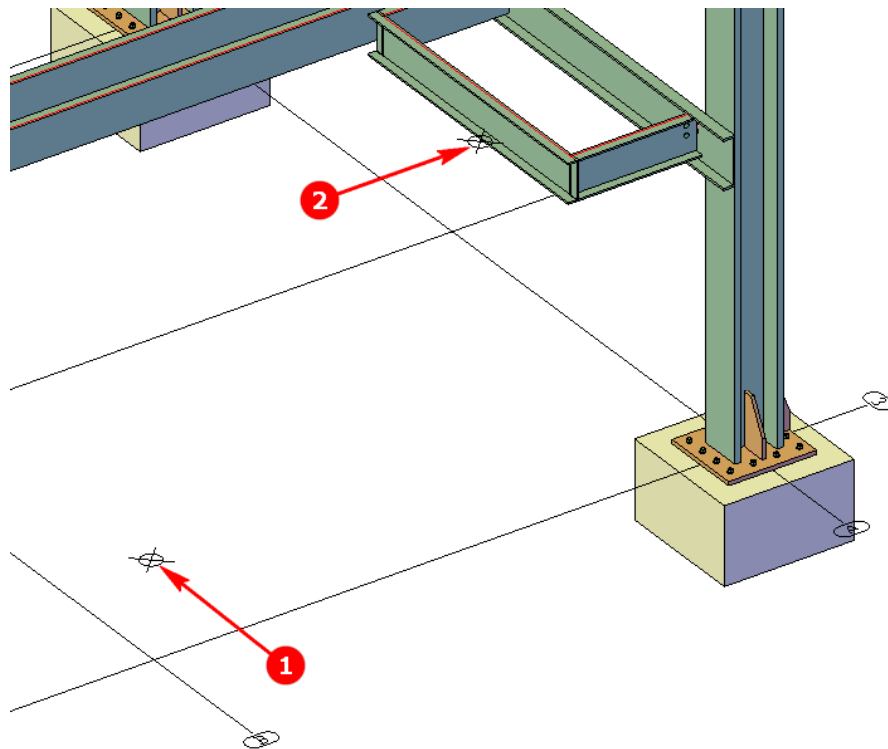
In this section, you will open the **Section4-Imperial.dwg** file from the exercise files folder and then insert stairs, as shown in the figure below.



1. Open the **Section4-Imperial.dwg** file from the exercise files folder.
You will now insert stairs in this model using the start and the end points of the stair. The points to be used as the start and end are already created in this file for your reference.
2. From the **Home** ribbon tab > **Extended Modeling** ribbon panel, invoke the **Straight stair** tool, as shown below; you are informed that the start and end point method is the default method to create stair.



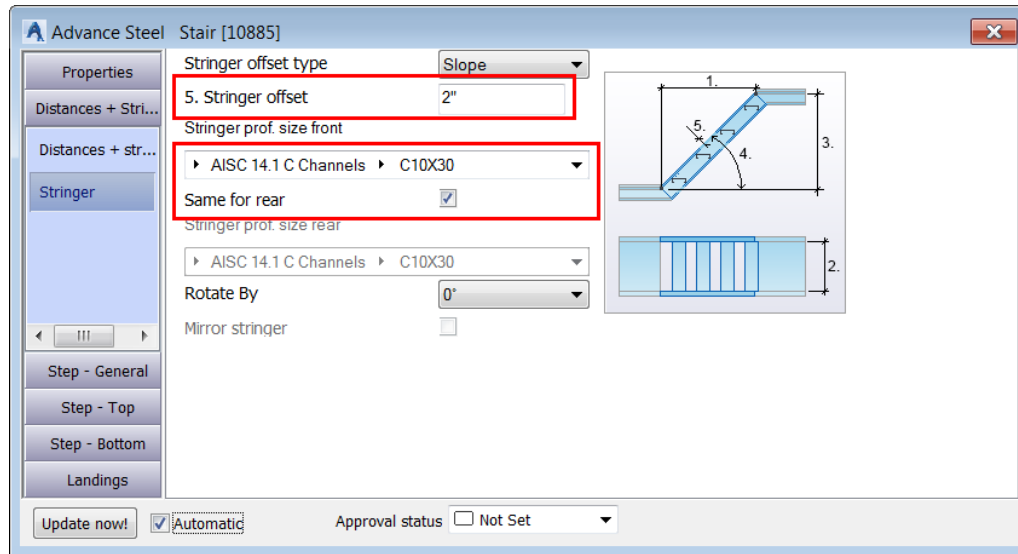
3. Press ENTER at this prompt; you are prompted to select the first point of the stair.
4. Navigate to the area shown in the following figure.



5. Select the point labeled as 1 in the figure above as the start point of the stair; you are prompted to select the second point of the stair.
6. Select the point labeled as 2 in the figure above as the end point of the stair; you are informed that the middle alignment is by default selected to align the stair.
7. Press ENTER at this prompt; a stair with the default values is inserted and the Advance Steel - Stair [X] dialog box is displayed.

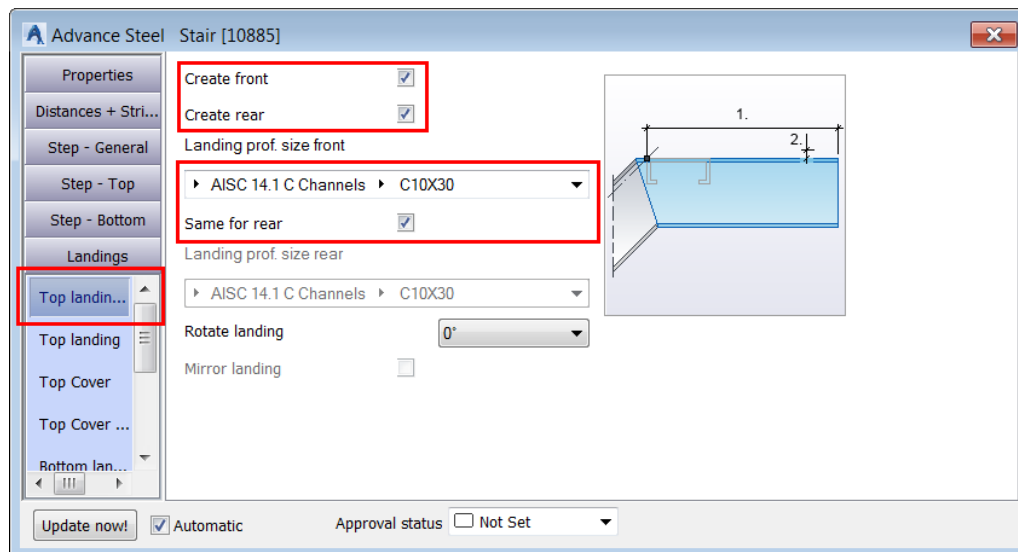
First of all, you will change the stringer and landing profiles.

8. Activate the **Distances + Stringer > Stringer** tab.
9. Configure the settings as shown in the figure below:



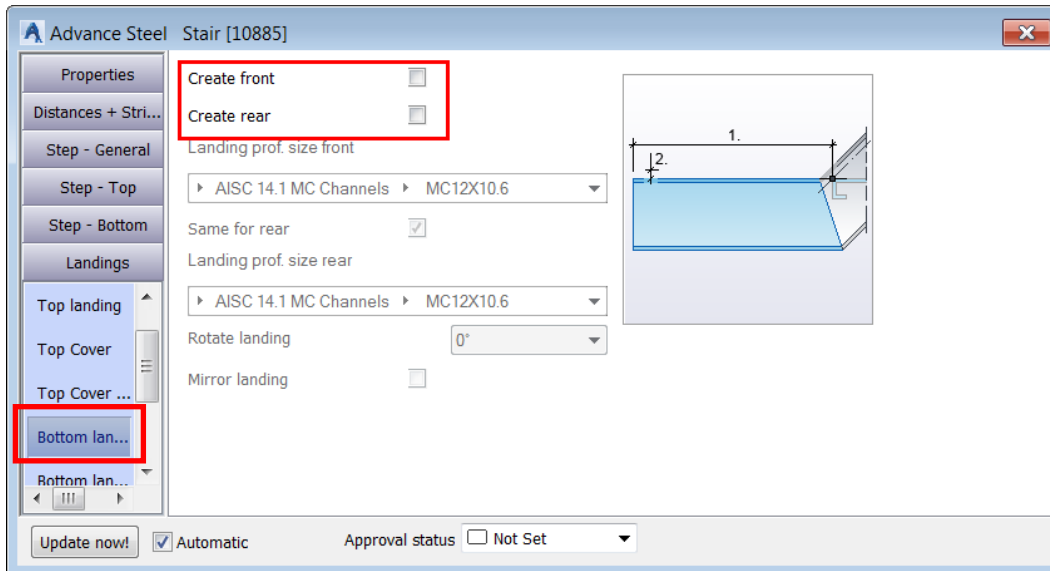
10. Activate the **Landings > Top landing prof. tab.**

11. Configure the settings as shown in the figure below:



12. Activate the **Landings > Bottom landing prof. tab.**

13. Clear the **Create front** and **Create rear** tick boxes, as shown below.

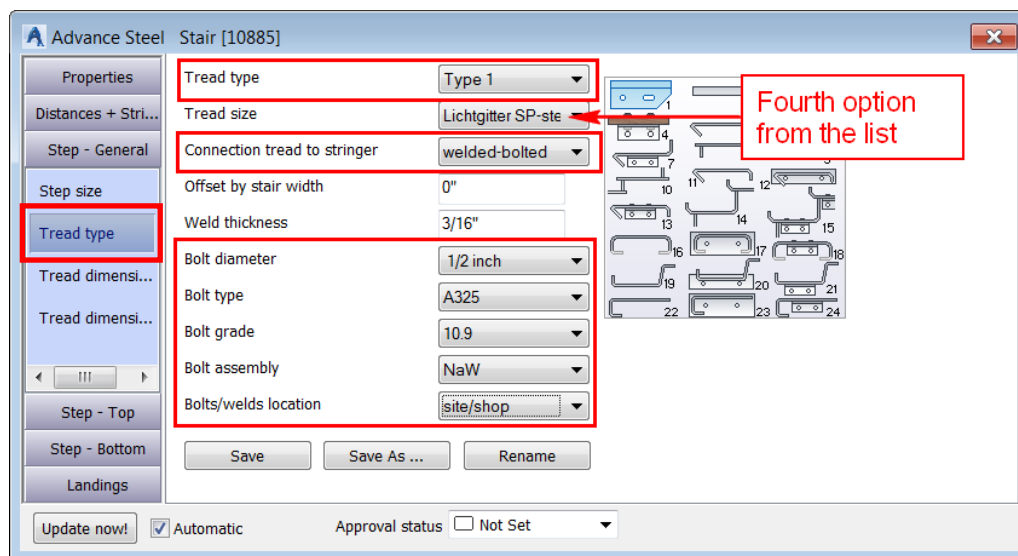


This ensures the bottom landings are not created.

Next, you will change the step tread type.

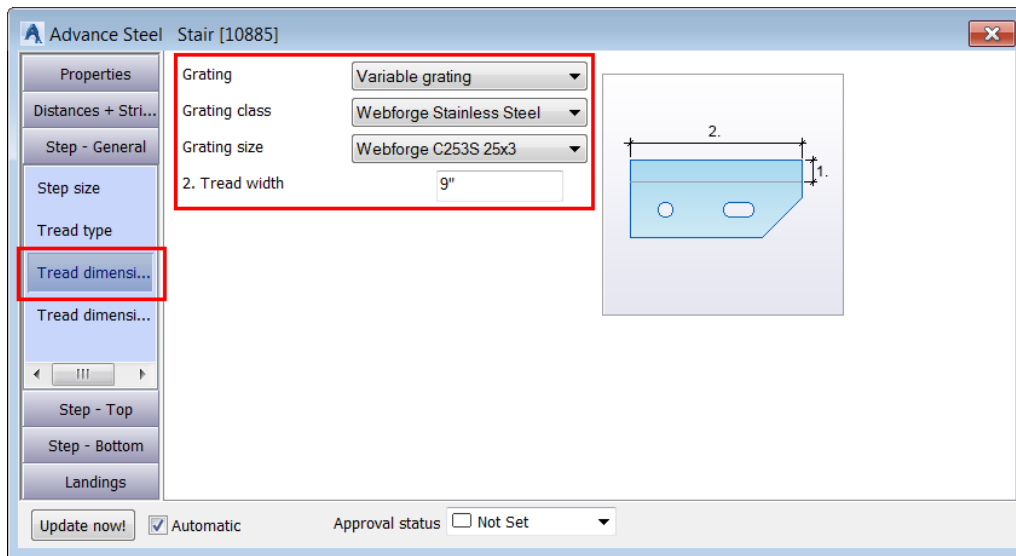
14. Activate the **Step - General > Tread type** tab.

15. Configure the settings as shown in the figure below:



16. Activate the **Step - General > Tread dimensions 1** tab.

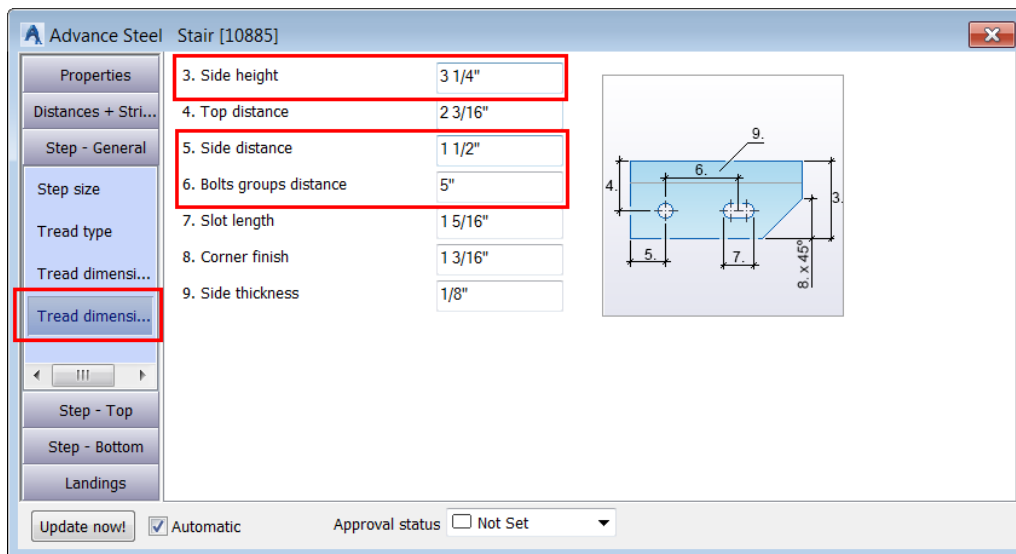
17. Configure the settings as shown in the figure below:



Next, you will change the dimensions of the end plate.

18. Activate the **Step - General > Tread dimensions 2** tab.

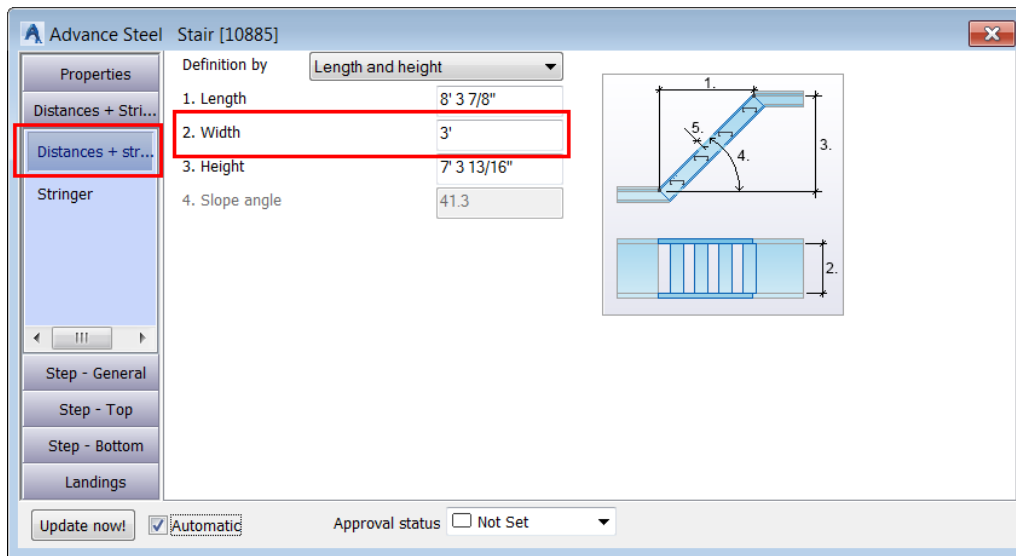
19. Configure the settings as shown in the figure below:



Next, you will update the width of the stair in the Distances + stringer tab.

20. Activate the **Distances + Stringer > Distances + stringer** tab.

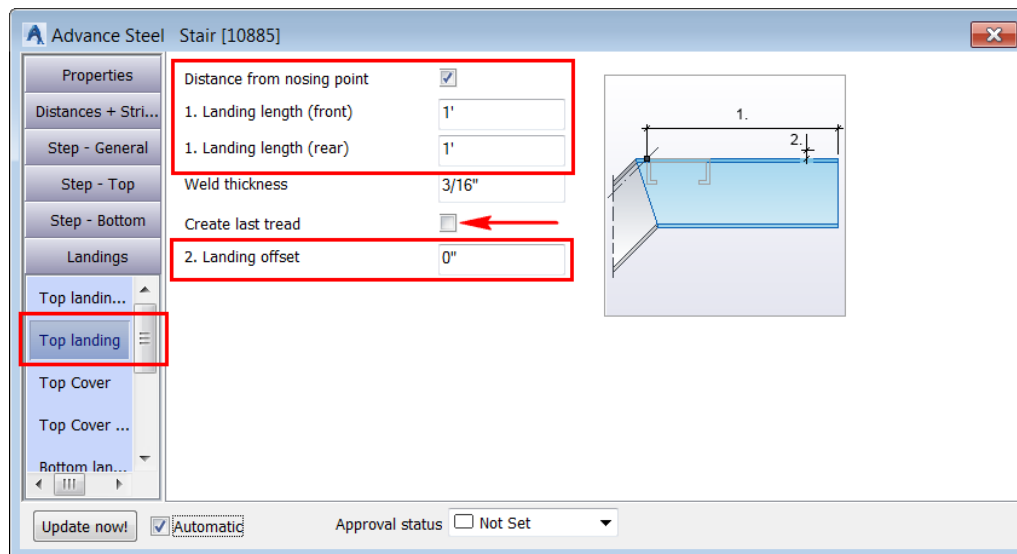
21. Configure the settings as shown in the figure below:



Next, you will modify the landing parameters.

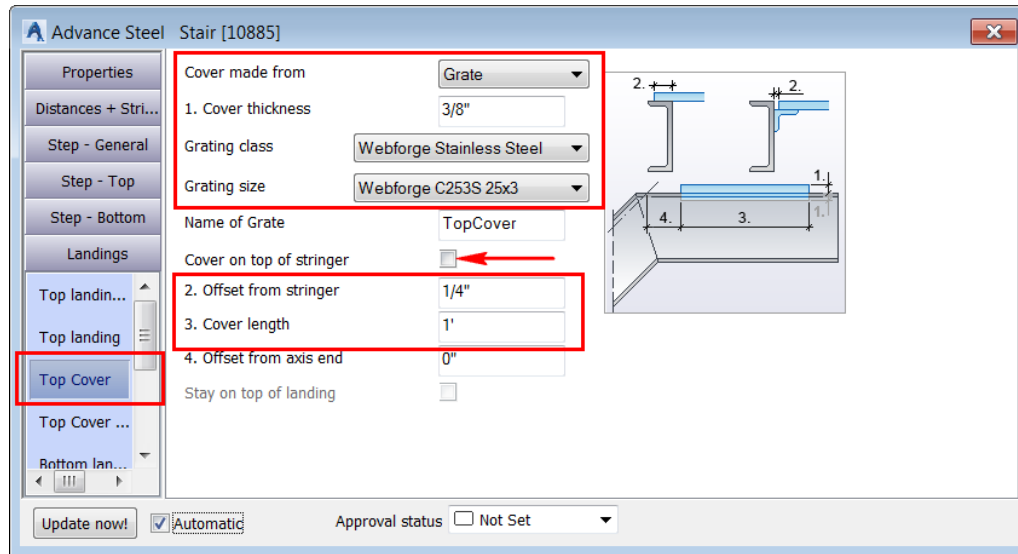
22. Activate the **Landings > Top landing** tab.

23. Configure the settings as shown in the figure below:



24. Activate the **Landings > Top Cover** tab.

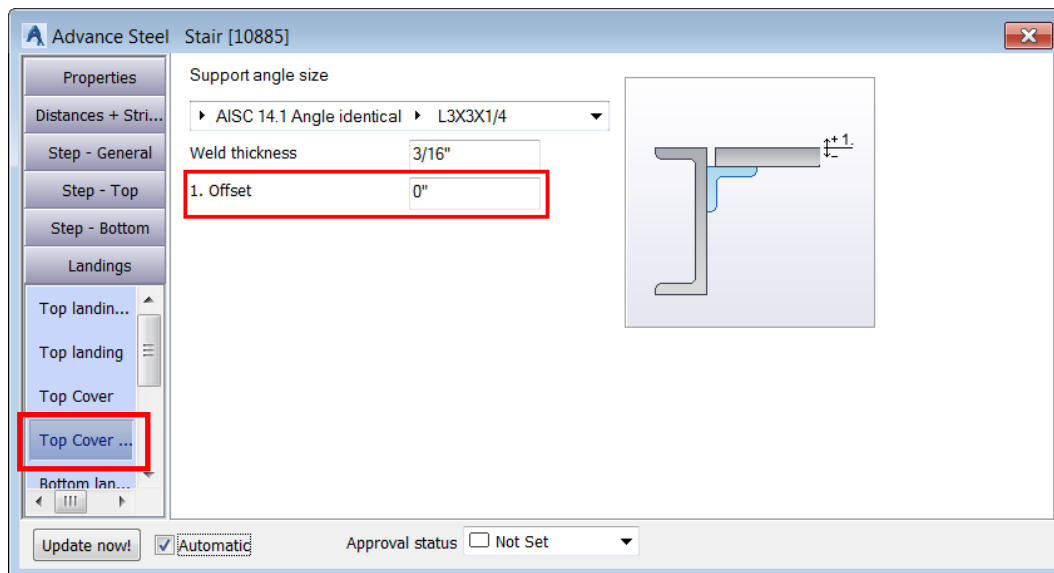
25. Configure the settings as shown in the figure below:



26. Activate the **Landings > Top Cover - Angle** tab.

You will accept the default angle section size.

27. Configure the settings as shown in the figure below:



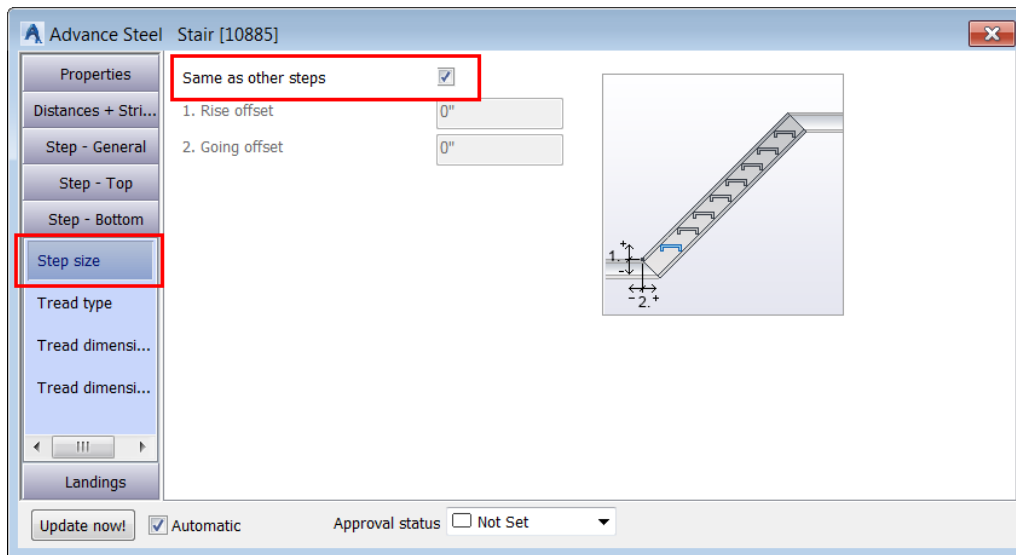
Next, you need to modify the parameters of the bottom landing and the first tread.

28. Navigate to the bottom of the stair.

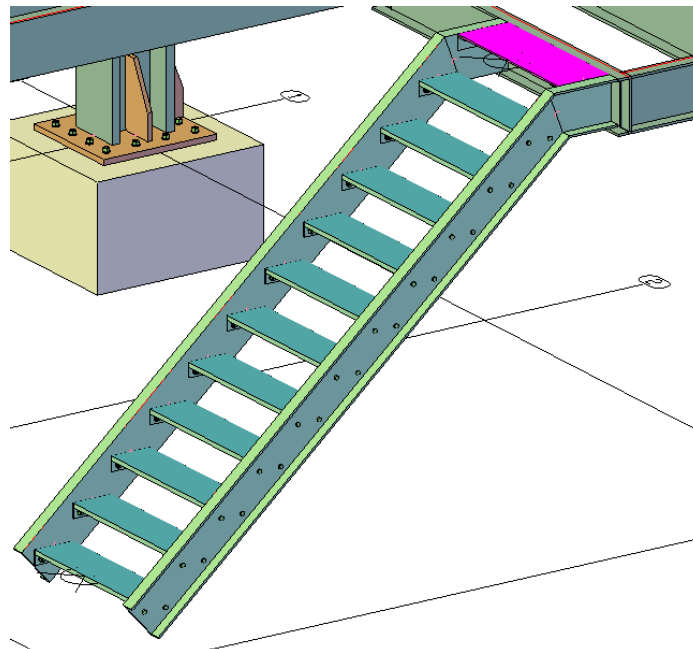
Notice that the first tread is not the same as the remaining treads. Therefore, you need to modify this tread to match the remaining treads.

29. Activate the **Step - Bottom > Step size** tab.

30. Select the **Same as other steps** tick box, as shown below; the first tread is modified to match the remaining treads of the stairs.



31. Close the dialog box. This completes the insertion of stairs. The model, after inserting the stairs, is shown in the following figure:



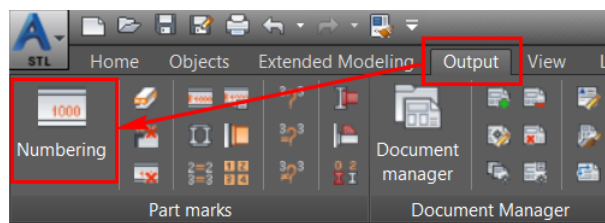
Section 5: Numbering Single Parts and Assemblies

In this section, you will open the **Section5-Imperial.dwg** file from the exercise files folder and then number the single parts and assemblies based on the default numbering prefixes.

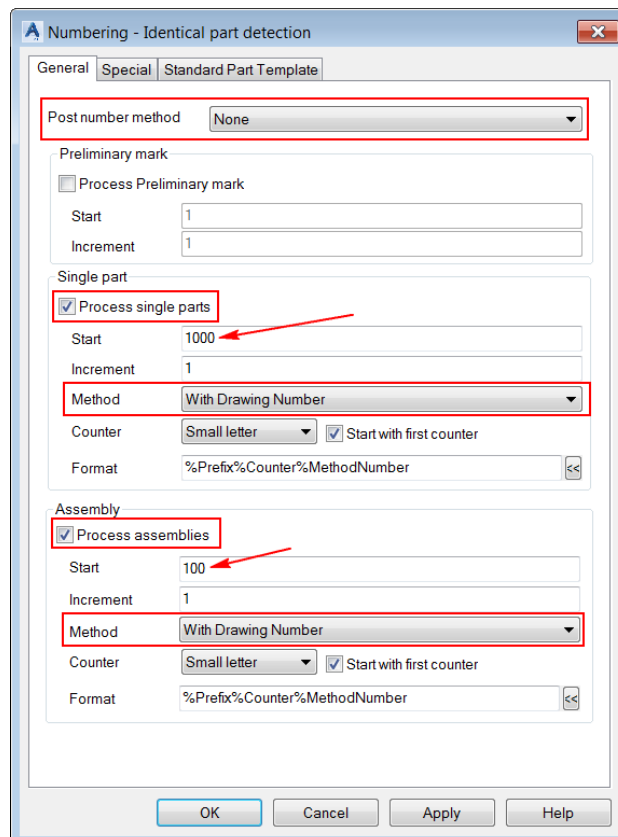
1. Open the **Section5-Imperial.dwg** file from the exercise files folder.

This model has another stair, handrails and joints added.

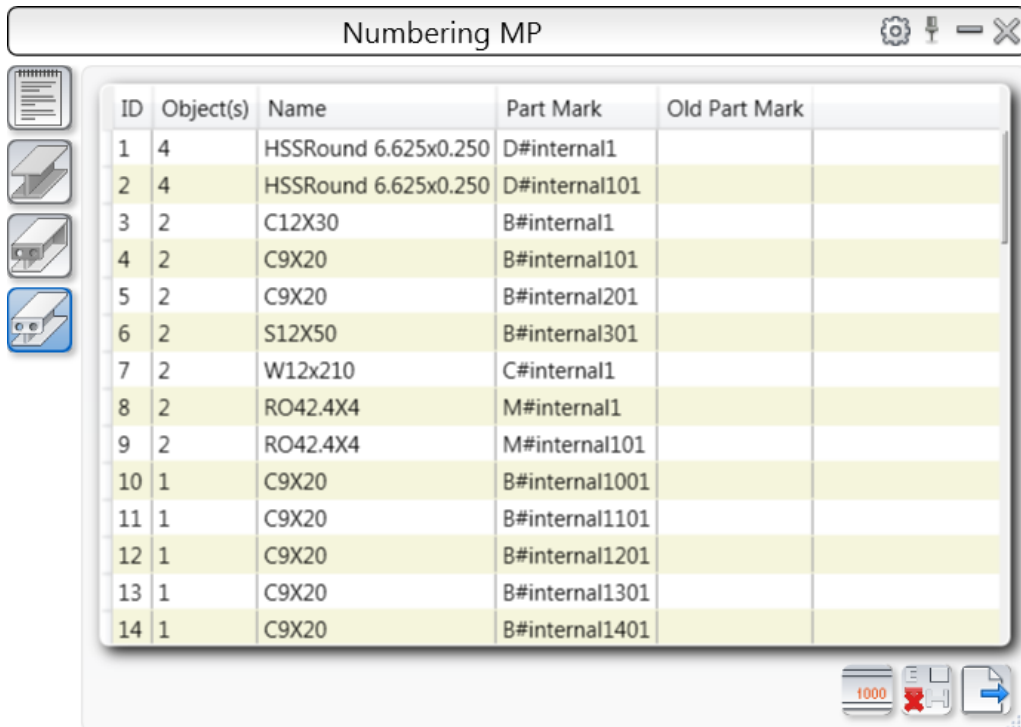
2. From the **Output** ribbon tab > **Part marks** ribbon panel, invoke the **Numbering** tool, as shown below; the **Numbering - Identical part detection** dialog box is displayed.



3. Configure the settings in the dialog box, as shown below:



4. Click **OK** in the dialog box; all single parts and assemblies are numbered and the **Numbering MP** window is displayed with the main part numbering, as shown below. Notice the part mark shown as #internalXXX. This is because currently there are no drawings generated for these main parts. Once the drawings are generated, you will run the numbering again for these main parts to get their numbers from the drawings.



The screenshot shows the 'Numbering MP' window with a table of 14 rows. The table has columns for ID, Object(s), Name, Part Mark, and Old Part Mark. The rows are numbered 1 through 14. The 'Part Mark' column shows values like D#internal1, B#internal101, B#internal1, B#internal201, B#internal301, C#internal1, M#internal1, M#internal101, B#internal1001, B#internal1101, B#internal1201, B#internal1301, and B#internal1401. The 'Old Part Mark' column is empty for all rows.

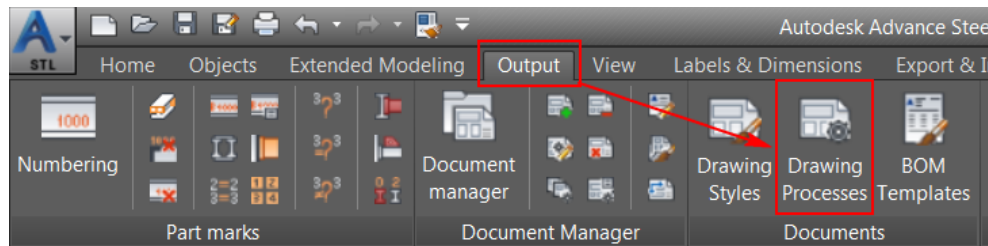
ID	Object(s)	Name	Part Mark	Old Part Mark
1	4	HSSRound 6.625x0.250	D#internal1	
2	4	HSSRound 6.625x0.250	D#internal101	
3	2	C12X30	B#internal1	
4	2	C9X20	B#internal101	
5	2	C9X20	B#internal201	
6	2	S12X50	B#internal301	
7	2	W12x210	C#internal1	
8	2	RO42.4X4	M#internal1	
9	2	RO42.4X4	M#internal101	
10	1	C9X20	B#internal1001	
11	1	C9X20	B#internal1101	
12	1	C9X20	B#internal1201	
13	1	C9X20	B#internal1301	
14	1	C9X20	B#internal1401	

5. From the tabs available on the left in the **Numbering MP** window, click **Numbering SP**; the window changes to the **Numbering SP** window. You will notice that the single parts also display #internalXXXX as the numbers. Once the single parts are numbered,
6. Close the **Numbering SP** window.
7. Save the file.

Section 6: Generating Single Part Drawings Using the Default Drawing Processes

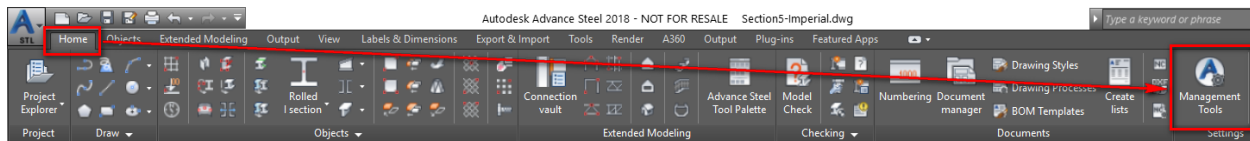
In this section, you will generate single part using the default Drawing Processes.

1. From the **Output** ribbon tab > **Documents** ribbon panel, invoke the **Drawing Processes** tool, as shown below. On doing so, the **Drawing Processes** palette is displayed in with the **1 – Cameras** tab selected from the left side of this palette.

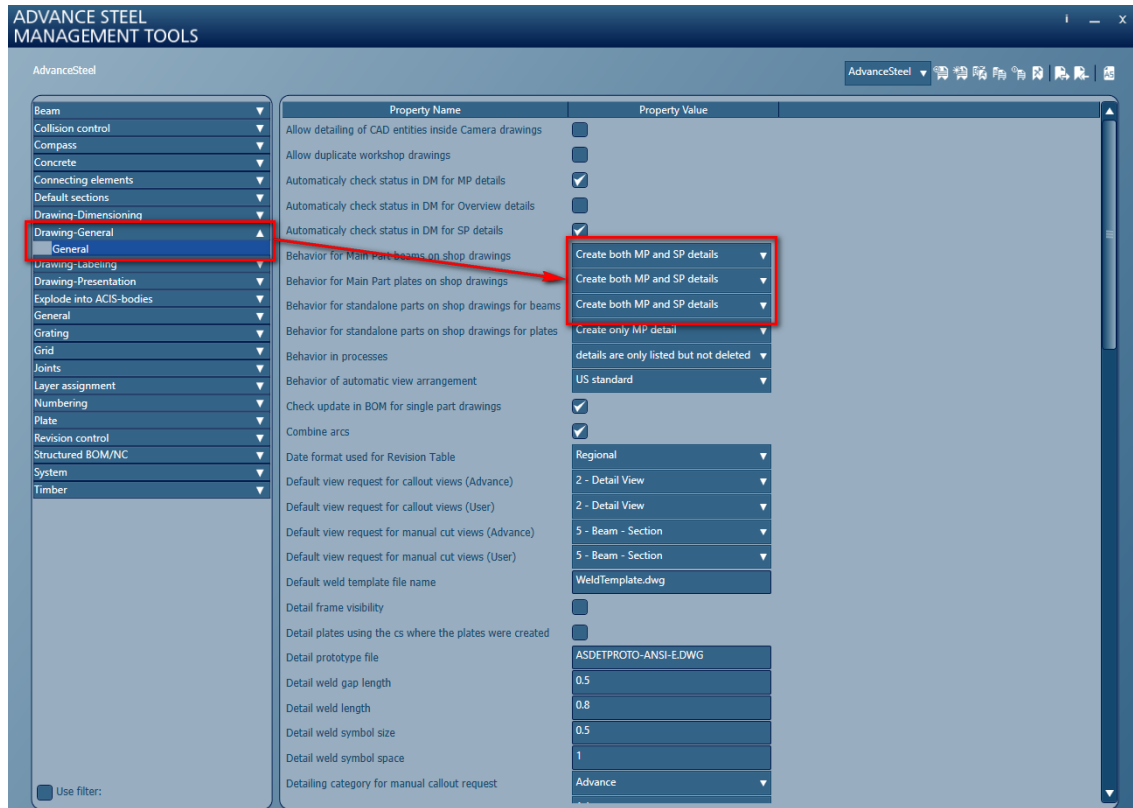


In the Imperial settings, the Main Parts are not documented as Single Parts by default. So you need to change the Management Tools settings for this.

2. From the **Home** ribbon tab > **Settings** ribbon panel, invoke the **Management Tools** window, as shown below:

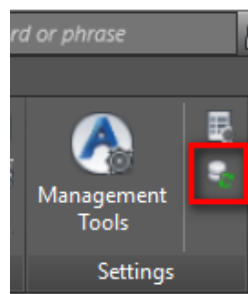


3. Click **Defaults** from the top right in this window.
4. In the left pane of the dialog box, click **Drawing General** > General, as shown in the figure below.
5. Select the **Create both MP and SP details** setting, as shown below.



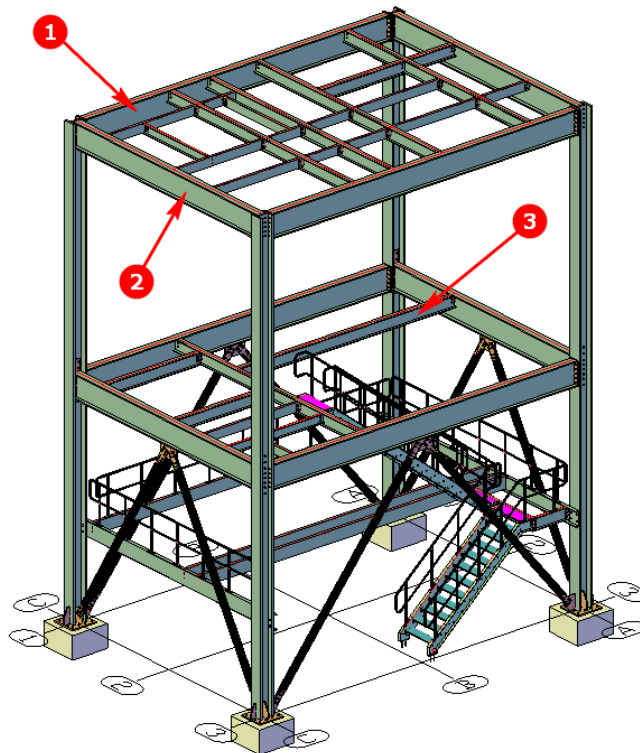
Next, you need to update defaults to reflect this change.

- Click the **Update defaults** button available on the right of the **Management Tools** button, as shown below.



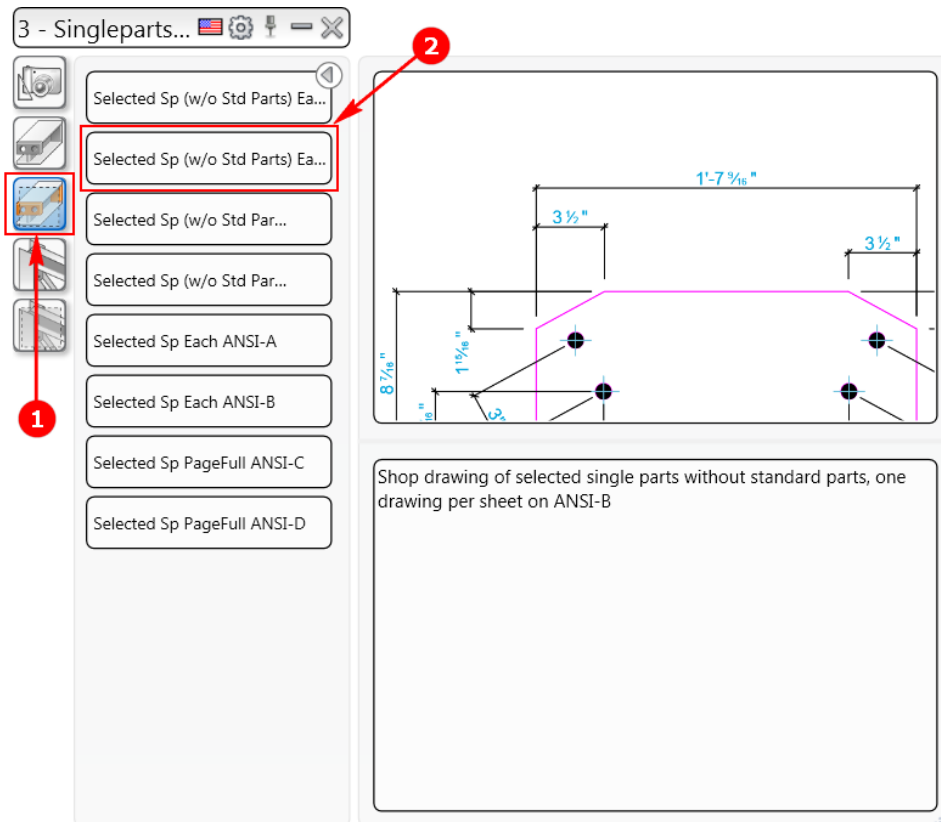
You will first generate the single part drawings of the selected beams.

- Select the sections labeled as **1**, **2**, and **3** in the figure below:

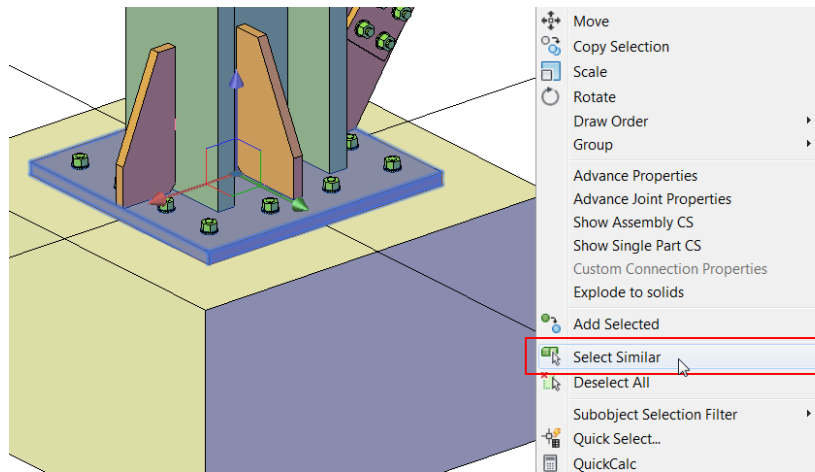


You will now use the **3 – Singleparts – Selected** process category to generate the drawings of the selected beam object types.

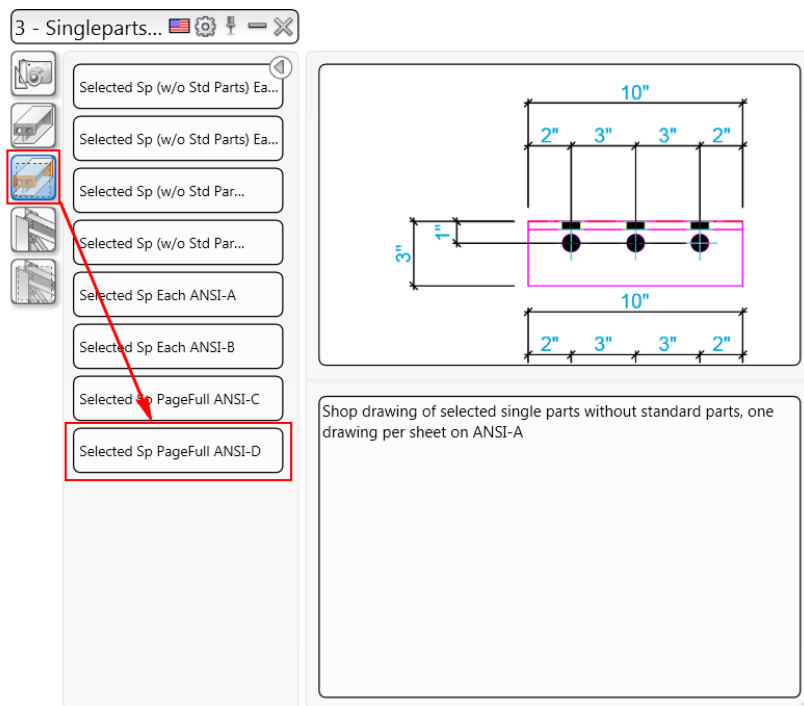
8. From the **Drawing Processes** palette, select **3 – Singleparts – Selected** category labeled as **1** in the figure below.



9. Click on the **Selected Sp (w/o Std Parts) Each ANSI B** button labeled as **2** in the figure above; the **Process properties** dialog box is displayed.
10. Click **OK** in the dialog box; the process of generating the beam drawings starts.
11. Once the drawings are generated, zoom close to the bottom of one of the columns, refer to the figure below.
12. Select the base plate of the base plate joint and then right-click to display the shortcut menu, as shown in the figure below.
13. From the shortcut menu, click **Select Similar**, as shown in the figure below; all the plate objects are selected.



14. From the **Drawing Processes** palette, select **3 – Singleparts – Selected > Selected Sp PageFull ANSI-D**, as shown below; the **Process properties** dialog box is displayed.

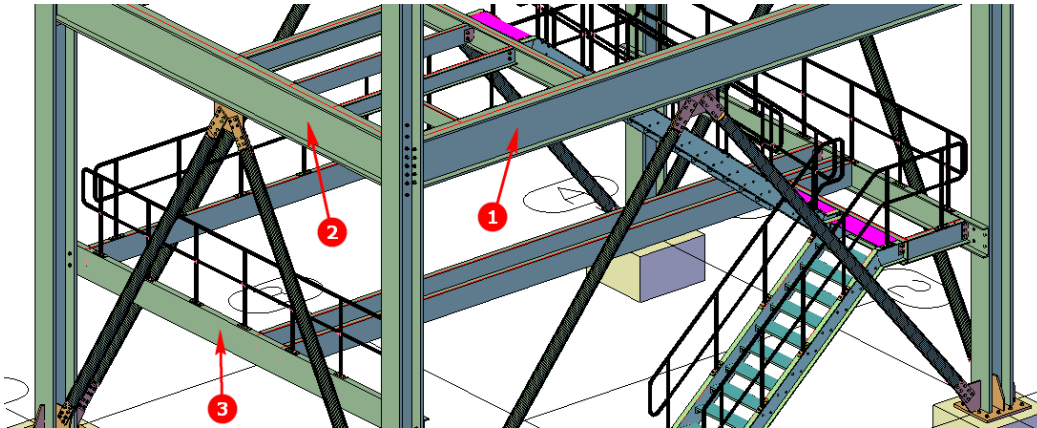


15. Click **OK** in the dialog box; the process of generating the plate drawings starts.

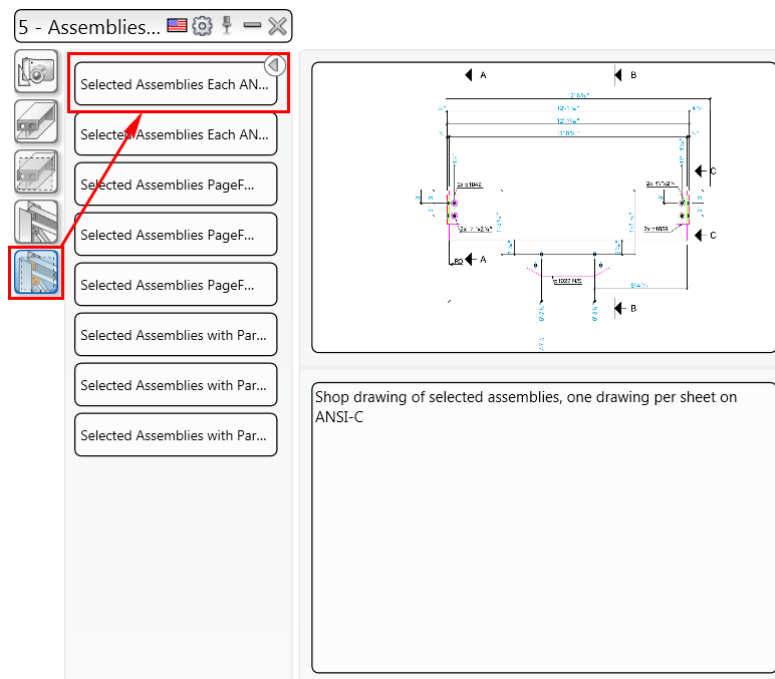
Section 7: Generating Assembly Drawings Using the Default Drawing Processes

In this section, you will generate assembly drawings using the default Drawing Processes.

1. From the drawing window, select the sections labeled as **1**, **2**, and **3** in the figure below:



2. From the **Drawing Processes** palette, select **5 – Assemblies – Selected > Selected Assemblies Each ANSI-B**, as shown below; the **Process properties** dialog box is displayed.

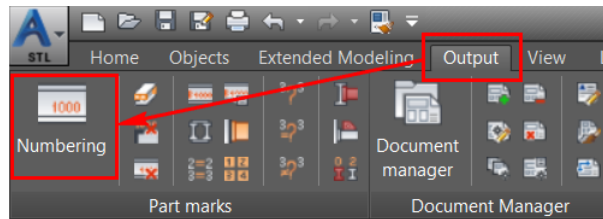


3. Click **OK** in the dialog box; the process of generating the assembly drawings starts.

Section 8: Running the Numbering Again

Because you used the process of generating the single part and assembly numbers based on the drawings, you will now run the numbering again to update the single part and assembly numbers to update the numbers of the objects whose drawings are generated.

1. From the **Output** ribbon tab > **Part marks** ribbon panel, invoke the **Numbering** tool, as shown below; the **Numbering - Identical part detection** dialog box is displayed.



2. Click **OK** in the dialog box; the numbering is updated and the **Numbering MP** window is displayed.
3. Scroll down in the window and notice that there are three main parts that show proper part marks, as shown below:

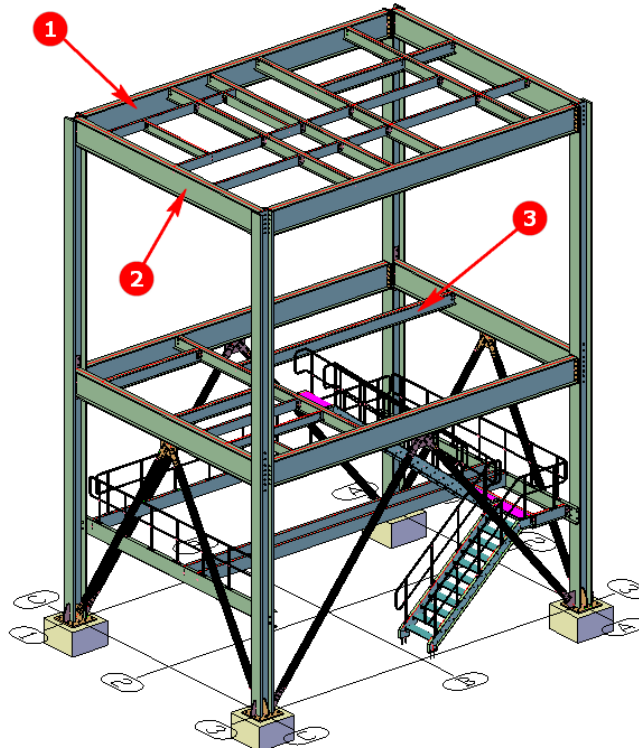
ID	Object(s)	Name	Part Mark	Old Part Mark
34	1	S24X121	B#internal131	
35	1	S24X121	B#internal132	
36	1	S24X121	B#internal133	
37	1	S24X121	B#internal134	
38	1	S24X121	B#internal135	
39	1	C15X33.9	Ba100	
40	1	S24X121	Ba102	
41	1	S24X121	Bb100	
42	1	W12x210	C#internal101	
43	1	W12x210	C#internal102	
44	1	RO33.7X3.2	M#internal102	
45	1	RO42.4X4	M#internal103	
46	1	RO42.4X4	M#internal104	
47	1	RO42.4X4	M#internal105	

4. Click on the **Numbering SP** button on the left of the **Numbering MP** window and notice where single parts showing proper part marks.
5. Close the **Numbering SP** window.

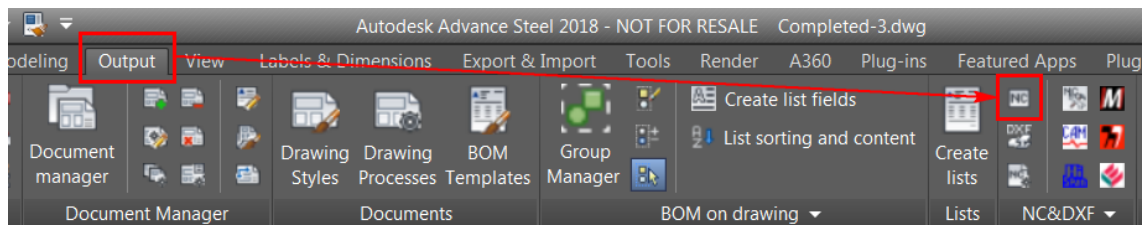
Section 9: Generating NC Files for Beams and DXF Files for Plates

In this section, you will generate the NC files for the selected beams and DXF files for the selected plates.

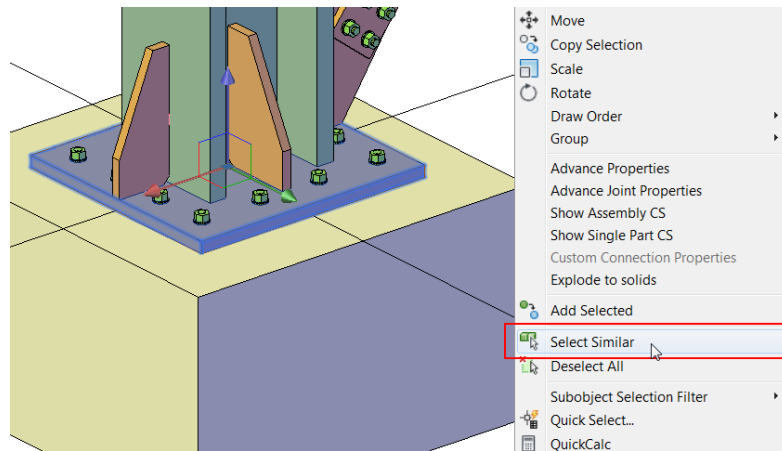
1. Select the sections labeled as **1**, **2**, and **3** in the figure below:



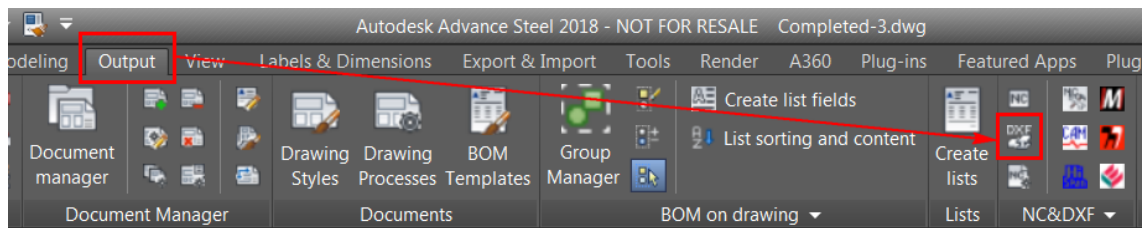
2. From the **Output** ribbon tab > **NC&DXF** ribbon panel, select **NC**, as shown below; the process to generate NC files of the selected beams starts.



3. Once the NC files are generated, press ESC to deselect all the beams.
4. Right-click on the base plate of one of the base plate joints and click **Select Similar** from the shortcut menu, as shown in the figure below; all the plate objects are selected.




- From the **Output** ribbon tab > **NC&DXF** ribbon panel, select **DXF**, as shown below; the process to generate DXF files of the selected beams plates starts.







- Once the DXF files are generated, press the ESC key to deselect the plates.


In this section, you will generate the NC files for the selected beams and DXF files for the selected plates.

-
- The screenshot shows the Autodesk Advance Steel software interface. The 'Output' tab is selected on the ribbon. Within this tab, the 'BOM Templates' button is highlighted with a red box. A red arrow points from the 'BOM Templates' button to the 'BOM Templates' button in the 'Documents' section of the ribbon.


- 

Assemble lists










Assemblies approval status list



Assembly list



Assembly list - bolts



Assembly list - exploded bolts


Assembly summary list

Assembly with parts reference

Compound section list

Loading list

Shipping list



AUTODESK®
ADVANCE STEEL

Company

 Name: _____
 Project: _____
 Date: _____

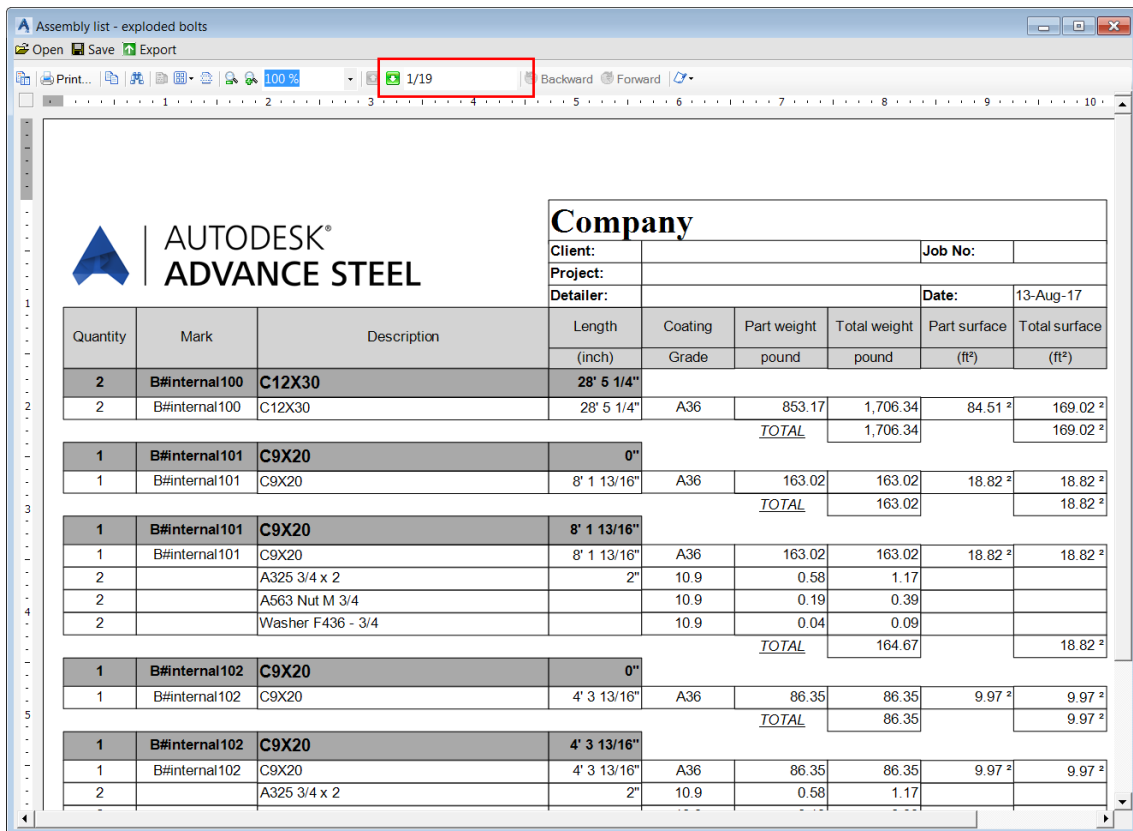
Job No: _____
 Date: _____

Quantity	Mark	Description	Length (ft)	Quantity ft	Unit weight lb/ft	Total weight lb	Total weight kg	Part weight lb	Part weight kg
12	B1	W12x16	27'-10 1/8"						
12	B1	W12x16	27'-2 1/8"	A262	94.20	1,130.83	513.44		
10	B2	L3x3x3/8	10'-10 7/8"		70.79	1,130.83			
10	B2	L3x3x3/8	27'-2 7/8"	A36	45.70	457.27	207.4		
					70.79	457.27			
2	B43	W12x26	11'-10 1/8"						
2	B43	W12x26	11'-10 1/8"	A262	363.11	618.21	280.4		
12		A36 5/8 x 1/2 x 6	1'-10 1/8"	16.0	3.30	4.93			
12		A36 5/8 x 1/2 x 6		16.0	3.12	4.93			
12		A36 5/8 x 1/2 x 6		16.0	3.04	4.87			
		20x4x1/2			81.4				

List with all assemblies (beams, plates, special parts, gratings, bolts, shear studs) and their attached parts, grouped by assembly number and sorted by weight (descending)

Once the assembly list with exploded bolts is generated, it will be opened in a separate window.

- Using the Green list at the top of this window (enclosed in the Red rectangle in the figure below), cycle through various pages of this report.



AUTODESK® ADVANCE STEEL				Company					
				Client:				Job No:	
				Project:				Date:	13-Aug-17
				Detailer:					
Quantity	Mark	Description	Length	Coating	Part weight	Total weight	Part surface	Total surface	
			(inch)	Grade	pound	pound	(ft²)	(ft²)	
2	B#internal100	C12X30	28' 5 1/4"	A36	853.17	1,706.34	84.51 ²	169.02 ²	
2	B#internal100	C12X30	28' 5 1/4"	A36	853.17	1,706.34	84.51 ²	169.02 ²	
					TOTAL	1,706.34		169.02 ²	
1	B#internal101	C9X20	0"						
1	B#internal101	C9X20	8' 1 13/16"	A36	163.02	163.02	18.82 ²	18.82 ²	
					TOTAL	163.02		18.82 ²	
1	B#internal101	C9X20	8' 1 13/16"						
1	B#internal101	C9X20	8' 1 13/16"	A36	163.02	163.02	18.82 ²	18.82 ²	
2		A325 3/4 x 2	2"	10.9	0.58	1.17			
2		A563 Nut M 3/4		10.9	0.19	0.39			
2		Washer F436 - 3/4		10.9	0.04	0.09			
					TOTAL	164.67		18.82 ²	
1	B#internal102	C9X20	0"						
1	B#internal102	C9X20	4' 3 13/16"	A36	86.35	86.35	9.97 ²	9.97 ²	
					TOTAL	86.35		9.97 ²	
1	B#internal102	C9X20	4' 3 13/16"						
1	B#internal102	C9X20	4' 3 13/16"	A36	86.35	86.35	9.97 ²	9.97 ²	
2		A325 3/4 x 2	2"	10.9	0.58	1.17			

- From the top left of the **Assembly list – exploded bolts** window, click **Save**; the **Save As** dialog box is displayed.
- Click the **Save** button; the BOM list will be saved in the project folder.
*Note: Once you save this list, you can open it again using the **Document Manager > Lists** category.*
- Close the **Assembly list – exploded bolts** window to return to the model.
- From the **Parts list** category, invoke the **Beam list** tool, as shown below; the beam list is generated and listed in a separate window.

Part lists

Article list

Beam list

Beam take-off list

Cladding list

Curved beam list

Grating list

Material list

Material list summary

Plate list

Preliminary list

Saw list

Saw list pictures

AUTODESK
ADVANCE STEEL

Company
Client: _____ Job No: _____
Project: _____ Date: 11-04-2016
User: _____

Q'ty	Mark	Description	Length (feet)	Grade	Part name	Total weight (pounds)	Remarks
2	D1	MSD 10: 1 1/2" RB 11'12" #40 2563.607	7.5 512"	A36	39 71	51.42	
2	D2	MSD 10: 1 1/2" RB 11'12" #40 2563.606	8.5 512"	A36	37 71	76.42	
2	D3	MSD 10: 1 1/2" RB 11'12" #40 29.5205	8' 6" 512"	A36	38 23	76.39	
2	D4	MSD 10: 1 1/2" RB 11'12" #40 2563.609	10' 11" 512"	A36	40 44	87.80	
1	D5	MSD 10: 1 1/2" RB 11'12" #40 49.492	3' 1' 512"	A36	11 62	47.29	
1	D7	MSD 10: 2 1/2" RB 11'12" #40 50.756	11' 0" 512"	A36	18 65	87.25	
4	D8	MSD 10: 1 1/2" RB 11'12" #40 652.490	3' 2" 512"	A36	11 74	46.85	
TOTAL QUANTITY			20				
TOTAL WEIGHT					402.05	pounds	

List with special parts (articles), sorted by part number

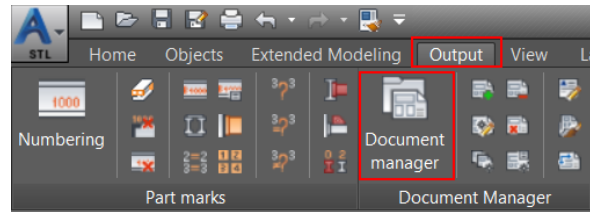
9. Save the beam list.

10. Save the file and close it.

Section 11: Reviewing the Generated Documentation

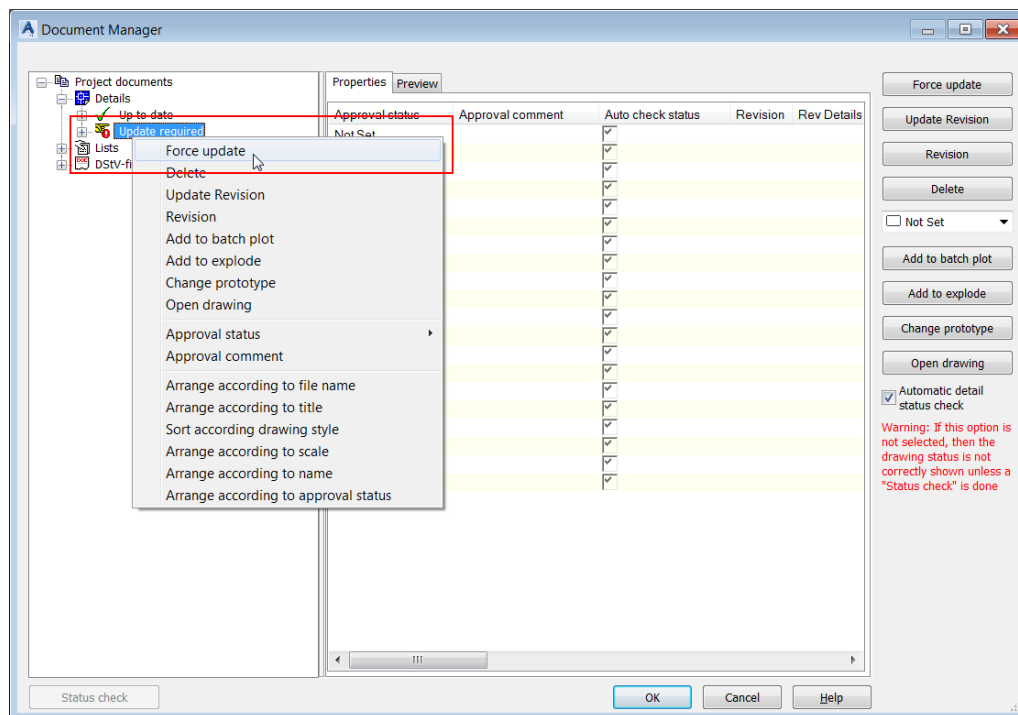
In this section, you will open the **Document Manager** and review the documents that you generated in previous sections.

1. From the **Output** ribbon tab > **Document Manager** ribbon panel, invoke the **Document manager** tool, as shown below; the **Document Manager** dialog box is displayed.



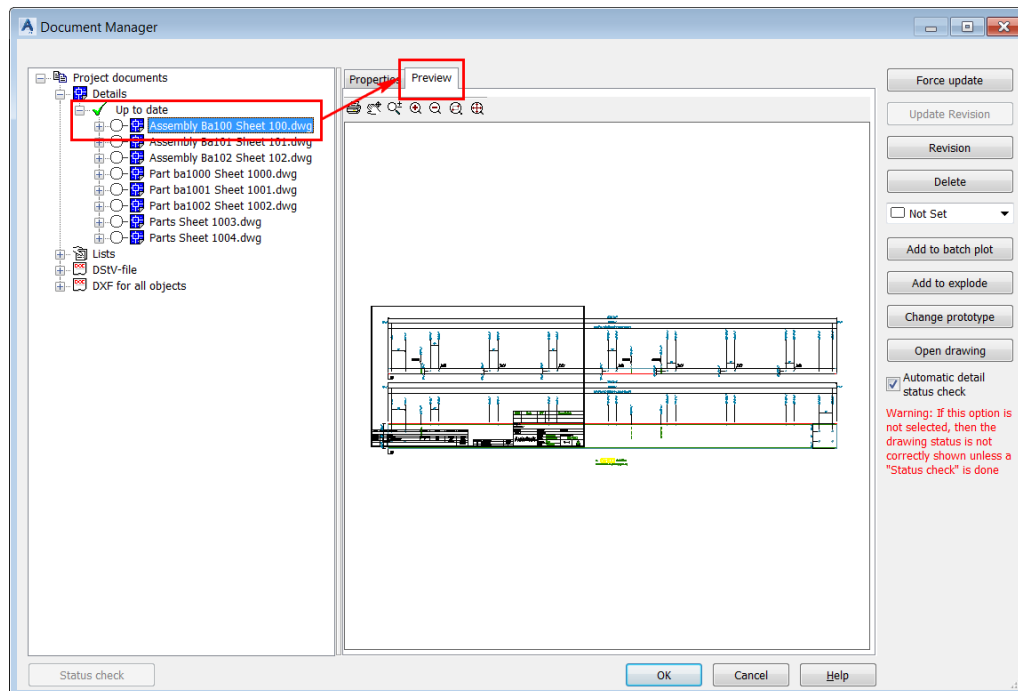
Before you review the drawings, you will update the drawings that require update after renumbering.

2. From the left pane of the dialog box, expand **Details**; the drawings that do not require update are listed in the **Up to date** category and the drawings that require update are listed in the **Update required** category.
3. Right-click on the **Update required** category and select **Force update** from the shortcut menu, as shown below:



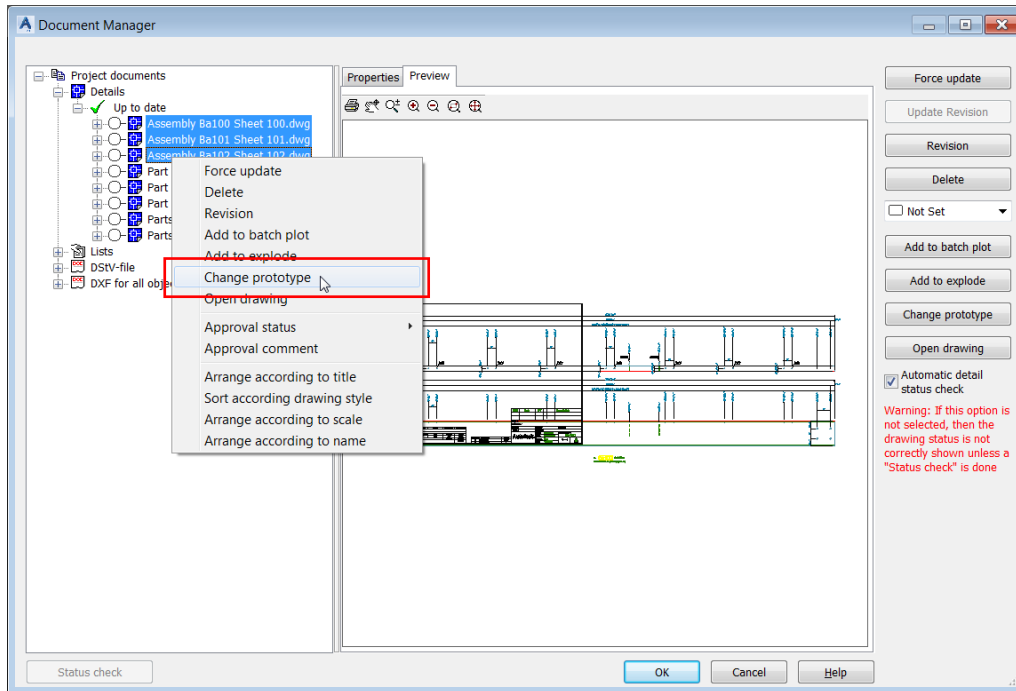
Once the update is completed, all the drawings will be listed in the **Up to date** category.

4. Expand the **Details > Up to date** category and then click on the first drawing in the list, which is an assembly drawing.
5. From the right pane of the dialog box, select **Preview** to preview this drawing, as shown in the figure below.

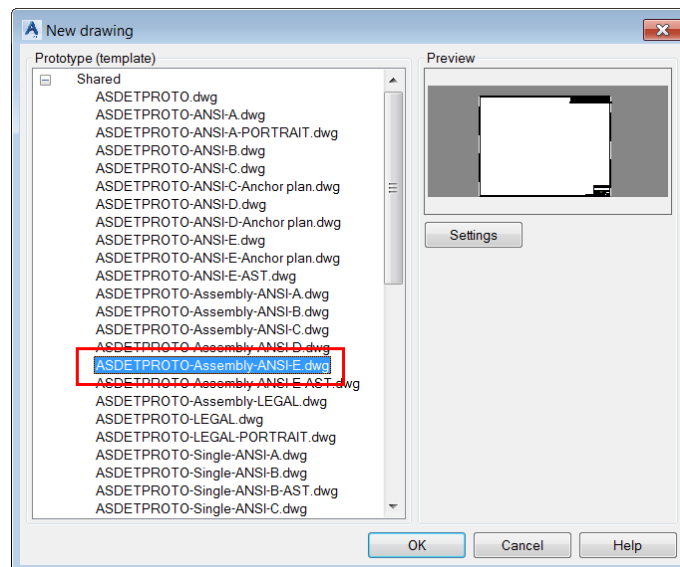


Notice that the drawing views extend outside the sheet. This is the case with all three assembly drawings. Therefore, you need to change the prototype of these assembly drawings.

6. Hold down the SHIFT key and select the three assembly drawings.
7. Right-click on one of the selected assembly drawing and select **Change prototype** from the shortcut menu, as shown below; the **New drawing** dialog box is displayed.

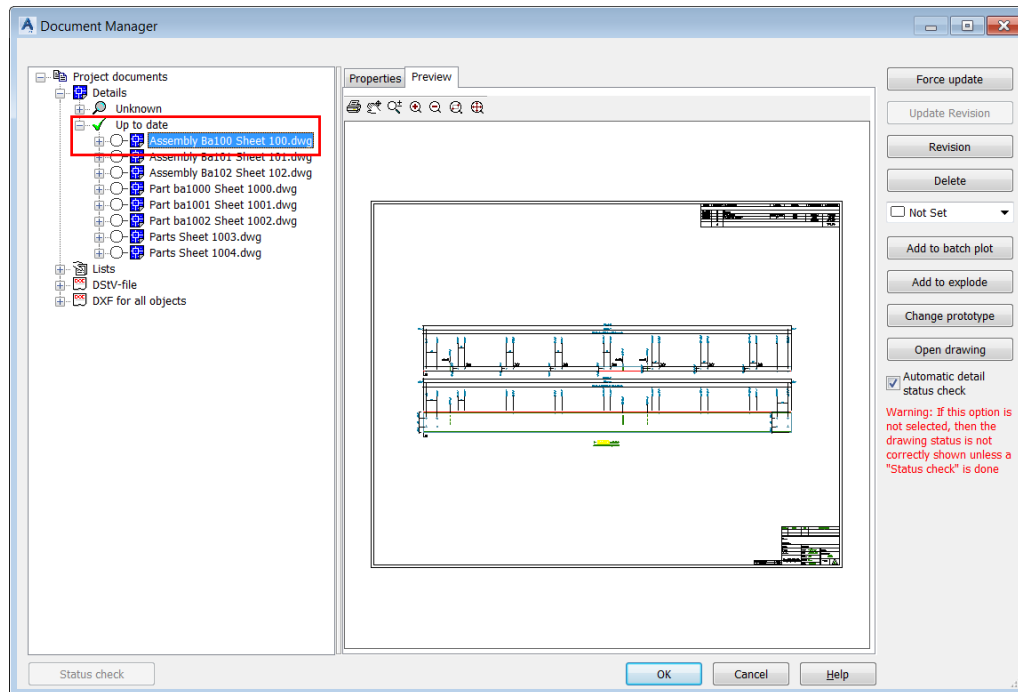


8. From the **New drawing** dialog box, select **ASDETPROTO-Assembly-ANSI-E.dwg**, as shown below:

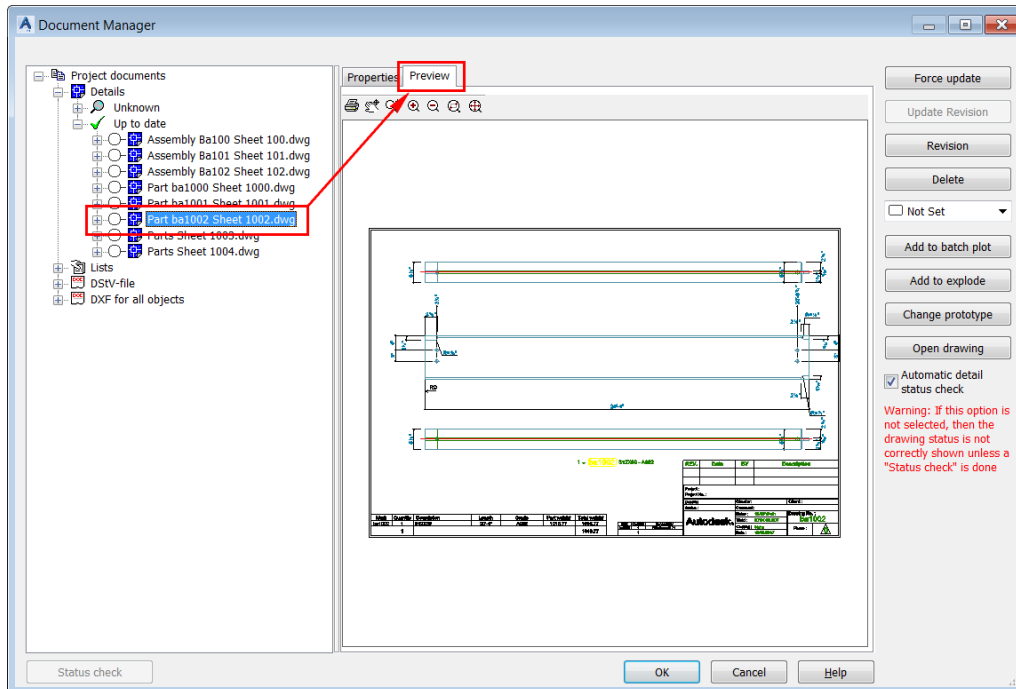


9. Click **OK** in the dialog box; the prototypes of the assembly drawings will be updated. However, there will be a new category created called **Unknown**. This category will automatically disappear once you close the dialog box.

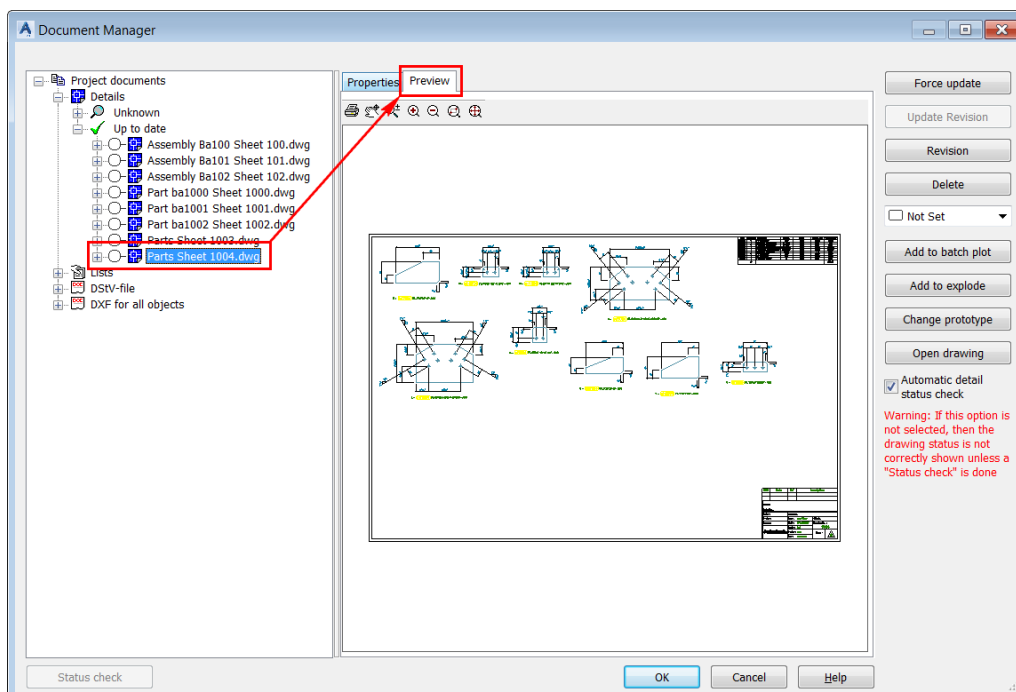
10. Expand the **Details > Up to date** category and then click on the first assembly drawing in the list; the preview shows the drawing views inside the drawing sheet, as shown in the figure below.



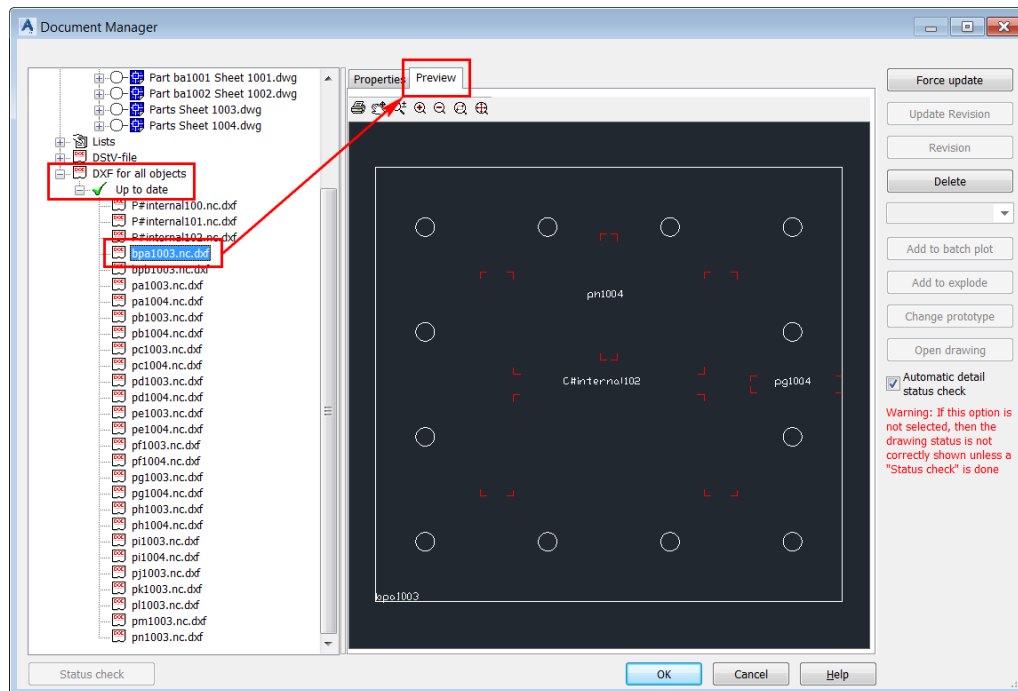
11. From the left pane, select the third part drawing, which is the sixth drawing in the list, as shown below; the preview shows the single part drawing.



12. Similarly, click on the last drawing in the list, which shows multiple plates documented on a single drawing.



13. Expand the **DXF for all objects** category to preview the DXF files of the plates.



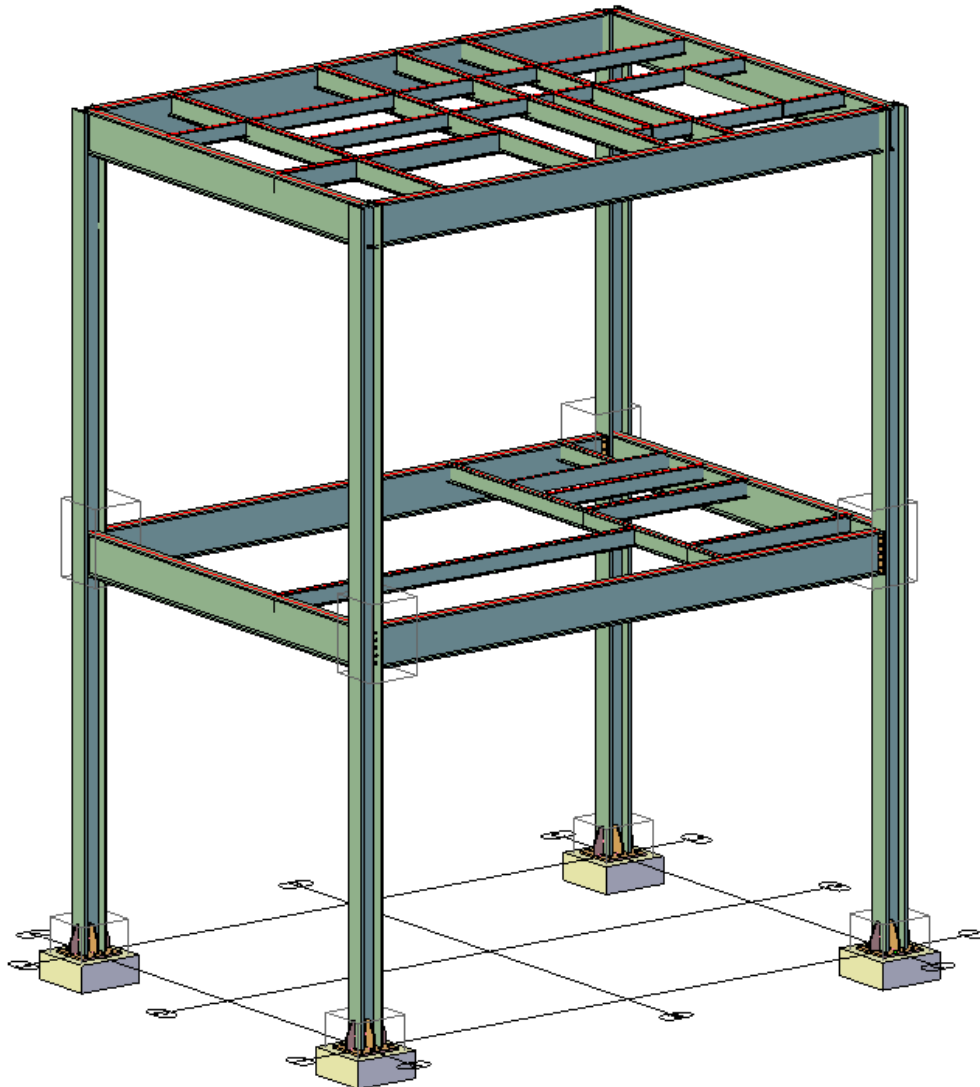
14. Similarly, expand the **DStV-NC** category and preview the NC code of the beams.

15. Close the dialog box.

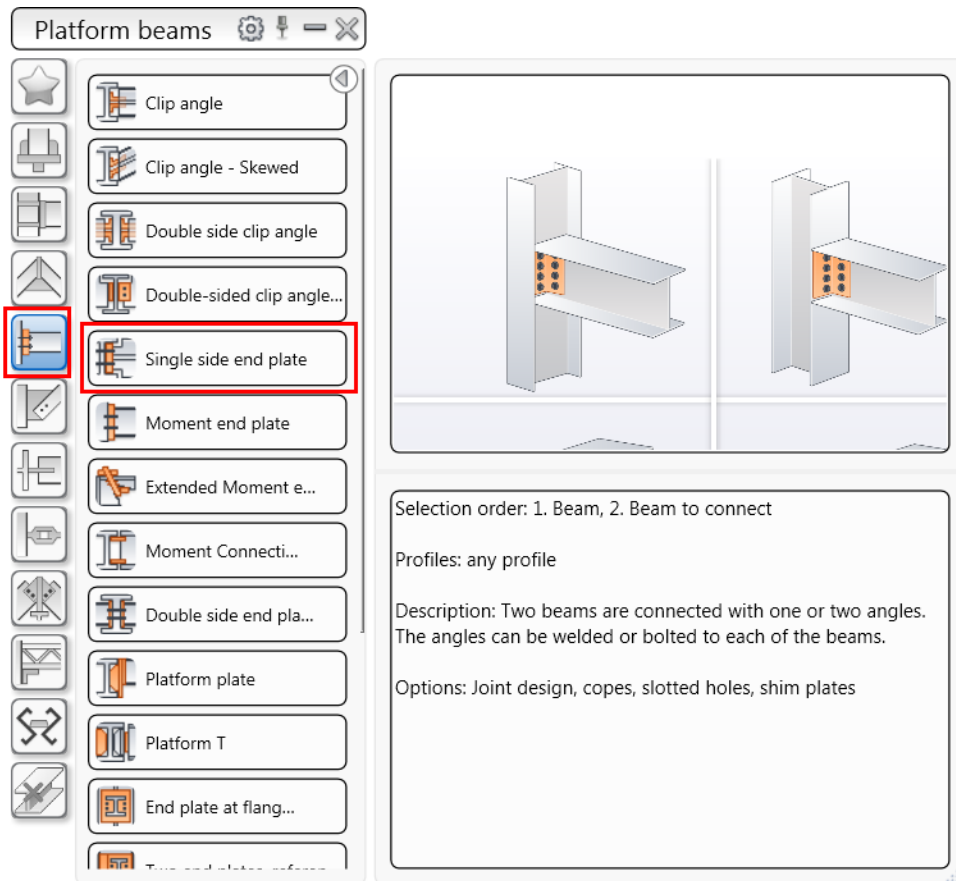
16. Save the file.

Section 12: Inserting and Copying the End Plate Joints (*Additional Practice*)

In this section, you will open the **Section12-Imperial.dwg** file from the exercise files folder and then insert and copy the **Single side end plate** joints, as shown in the figure below.

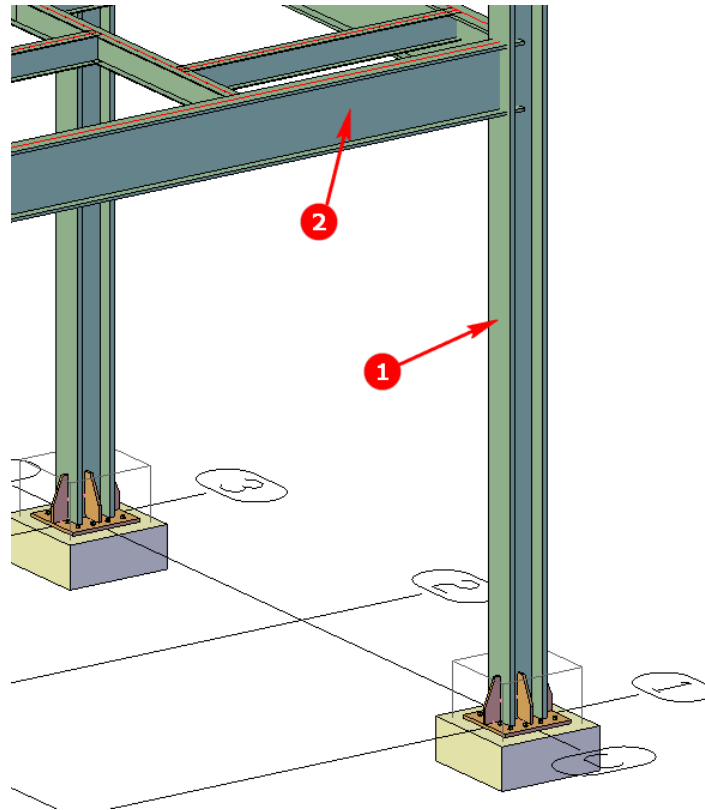


1. Open the **Section12-Imperial.dwg** file from the exercise files folder.
2. From the **Connection vault palette**, click the **Platform beams > Single side end plate** button, as shown below; you are prompted to select the main beam.

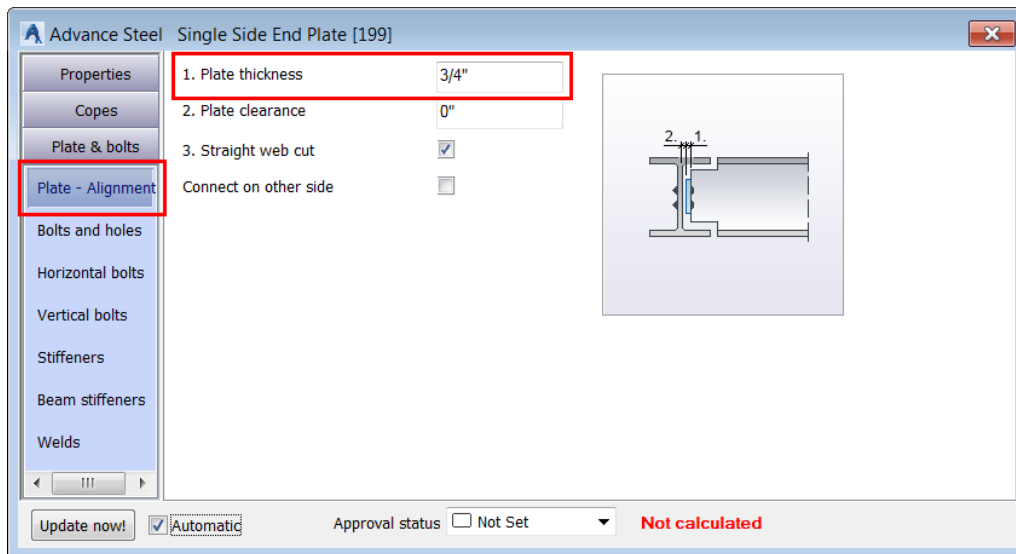


Note: In this joint, the names of various dialog box options vary depending on the country standard you selected while installing the software. In the following steps, the names in the United States settings are used. These may be different from your country settings.

3. Navigate to the area shown in the following figure.

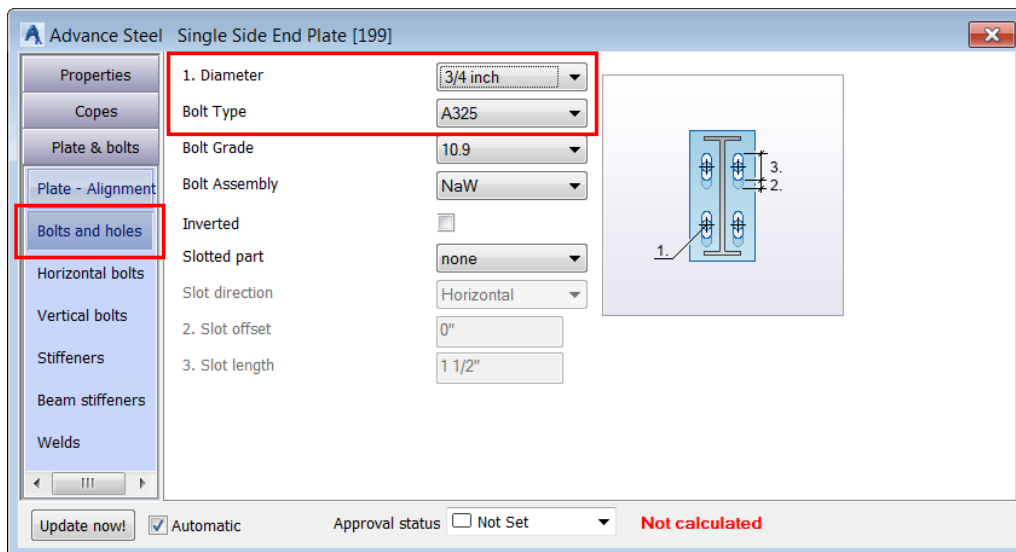


4. Select the column labeled as 1 in the figure above.
5. Press the ENTER key; you are prompted to select the secondary beam.
6. Select the beam labeled as 2 in the figure above.
7. Press the ENTER key; the **Advance Steel - Single Side End Plate [X]** dialog box is displayed and the joint with the default values is created.
8. From the left pane of the dialog box, activate the **Plate & bolts > Plate - Alignment** tab.
9. Enter the value as shown in the following image:



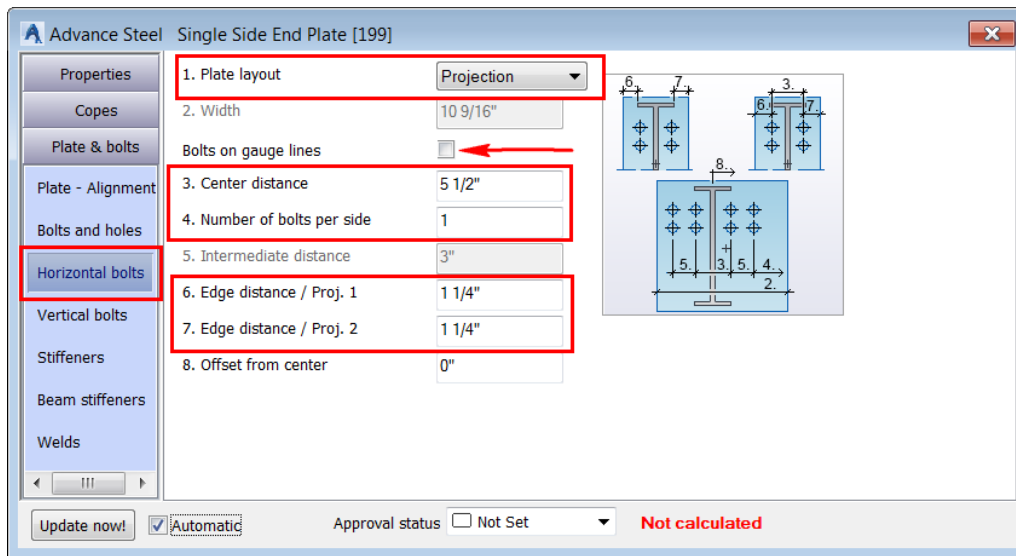
10. Activate the **Bolts and holes** tab.

11. Enter the values as shown in the image below:



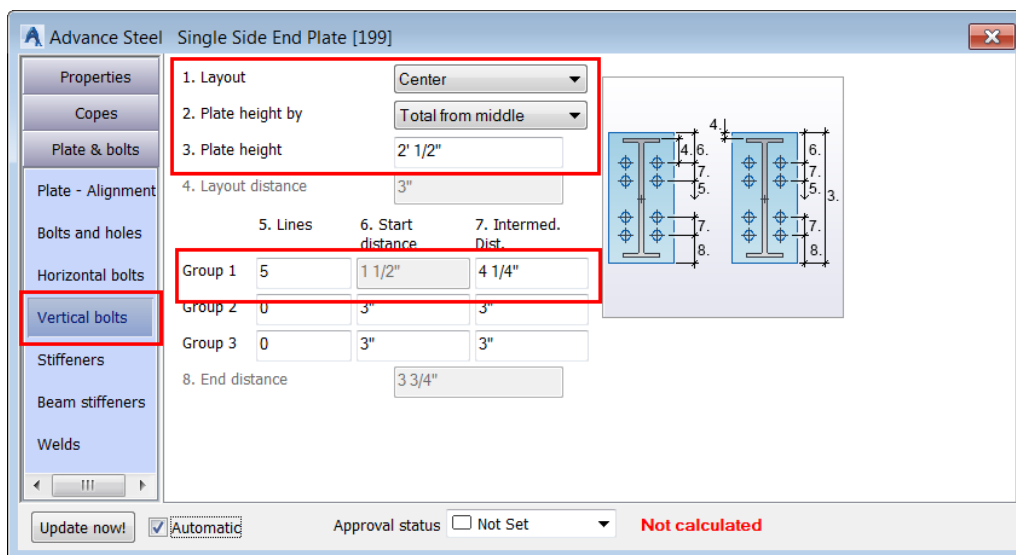
12. Activate the **Horizontal bolts** tab.

13. Configure the settings as shown in the following image:

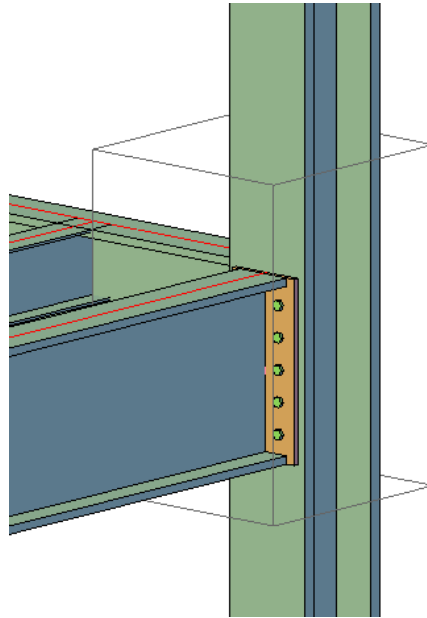


14. Activate the **Vertical bolts** tab.

15. Configure the settings as shown in the following image:

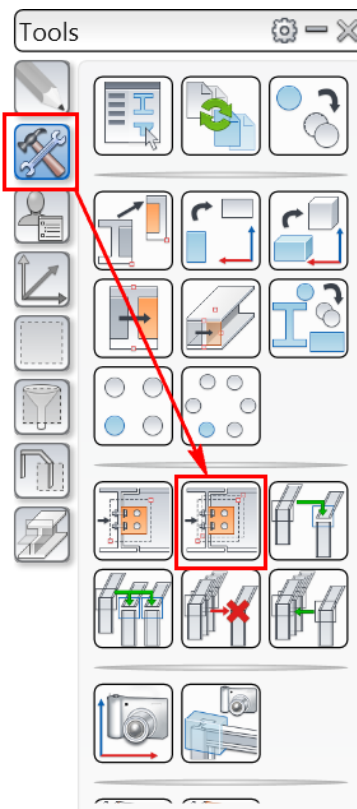


16. Close the dialog box. The model, after inserting this joint, is shown in the following figure.

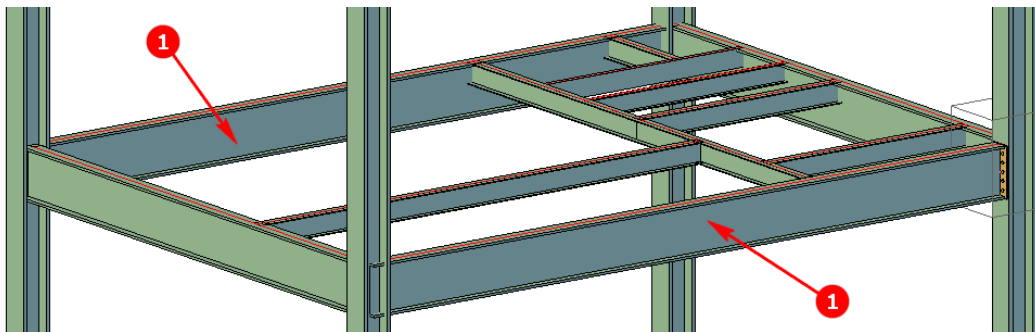


Next, you will copy this joint at the remaining 4 places.

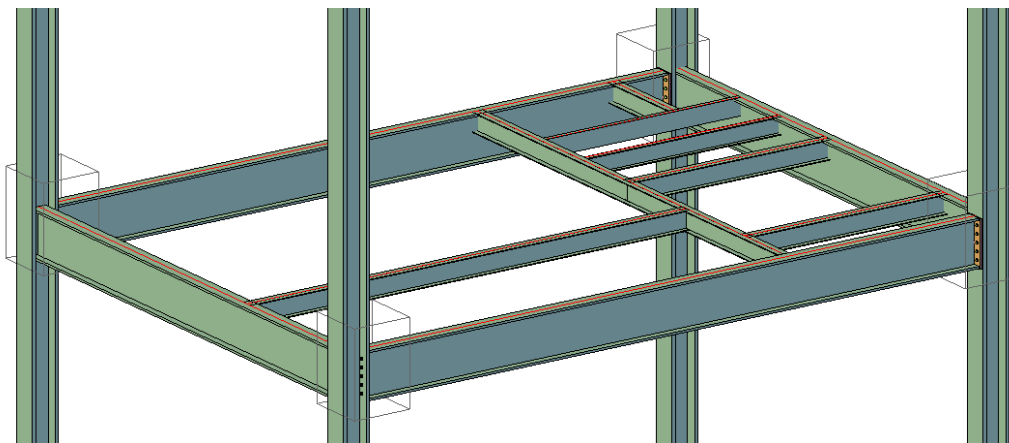
17. From the **Advance Steel Palette > Tools** tab, invoke the **Create by template, multiple** tool, as shown below; you are prompted to select the source joint.



18. Select one of the plates or bolts of the end plate joint you inserted in earlier steps; you are again prompted to select objects.
19. Press ENTER; you are prompted to select beams corresponding to the source joints input (1/2).
20. Select the remaining three columns and then press ENTER; you are prompted to select beams corresponding to the source joints input (2/2).
21. Select the two beams labeled as 1 in the following figure.



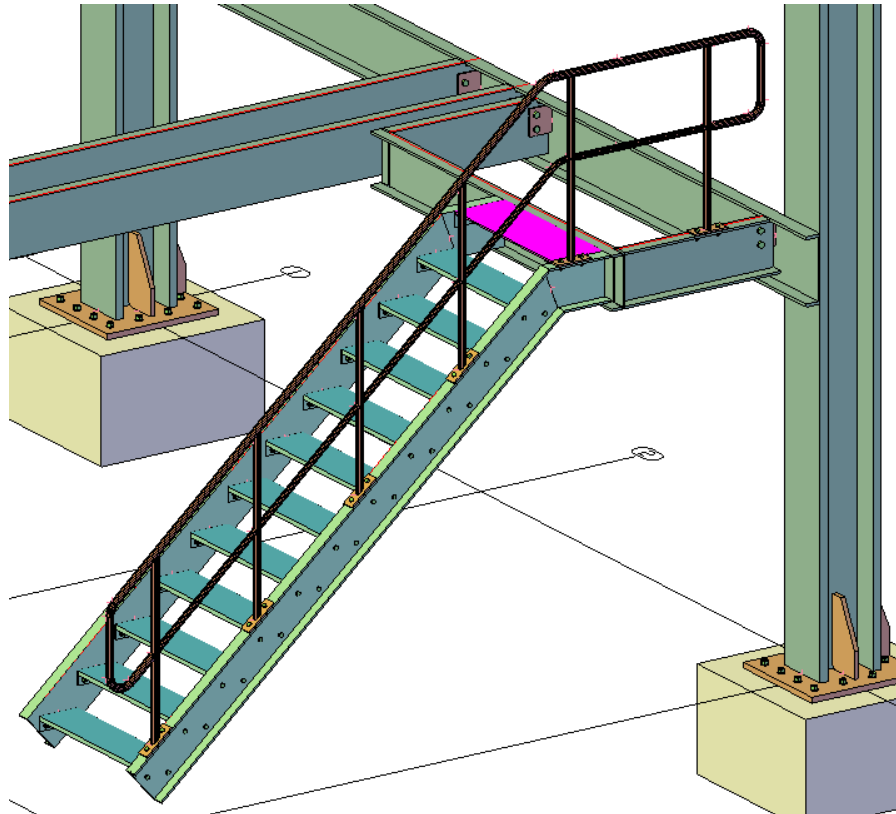
22. Press ENTER; the joint is copied at three locations. The model, after copying the joints, is shown in the following figure.



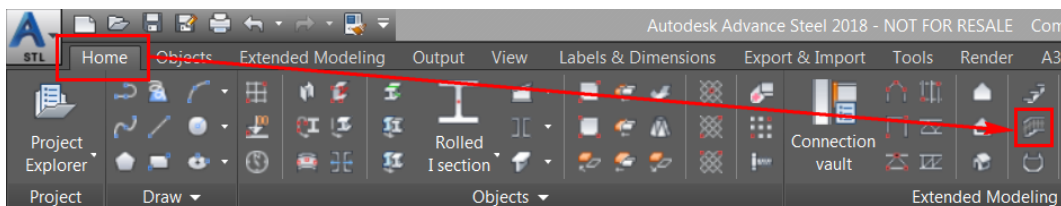
***Note:** Although it is the same joint added to the remaining three columns, but all four joints are independent joints and can be edited individually.*

Section 13: Inserting Handrails *(Additional Practice)*

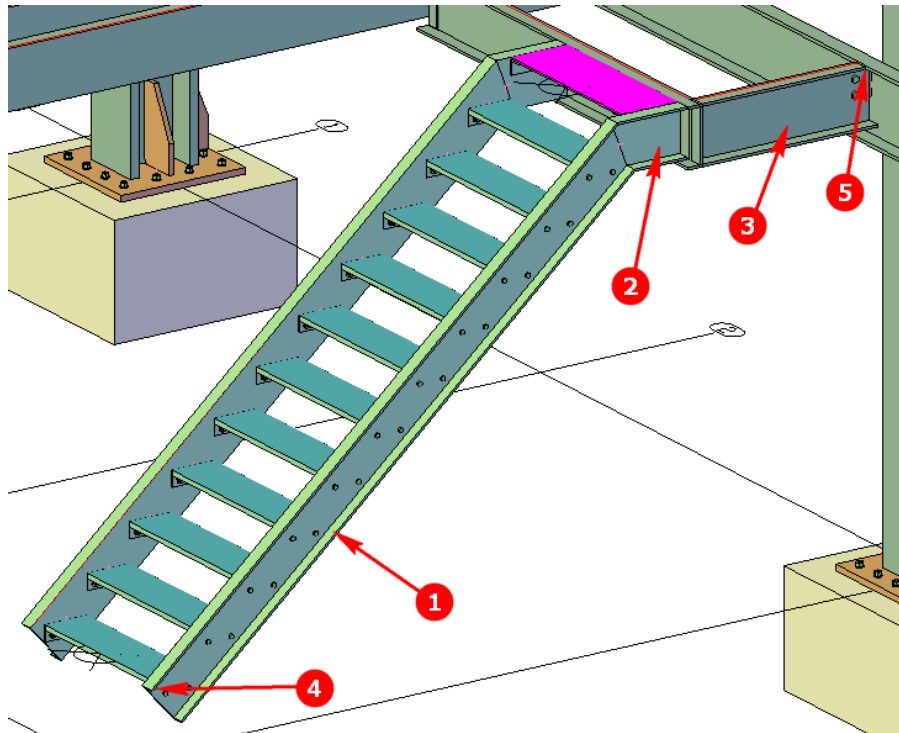
In this section, you will open the **Section13-Imperial.dwg** file from the exercise files folder and then insert stairs, as shown in the figure below.



1. Open the **Section13-Imperial.dwg** file from the exercise files folder.
2. From the **Home** ribbon tab > **Extended Modeling** ribbon panel, invoke the **Hand-railing** tool, as shown below; you are prompted to select the base beam for railing.



3. Navigate to the stairs, as shown below, and select the beams labeled as 1, 2 and 3 as the base beams.



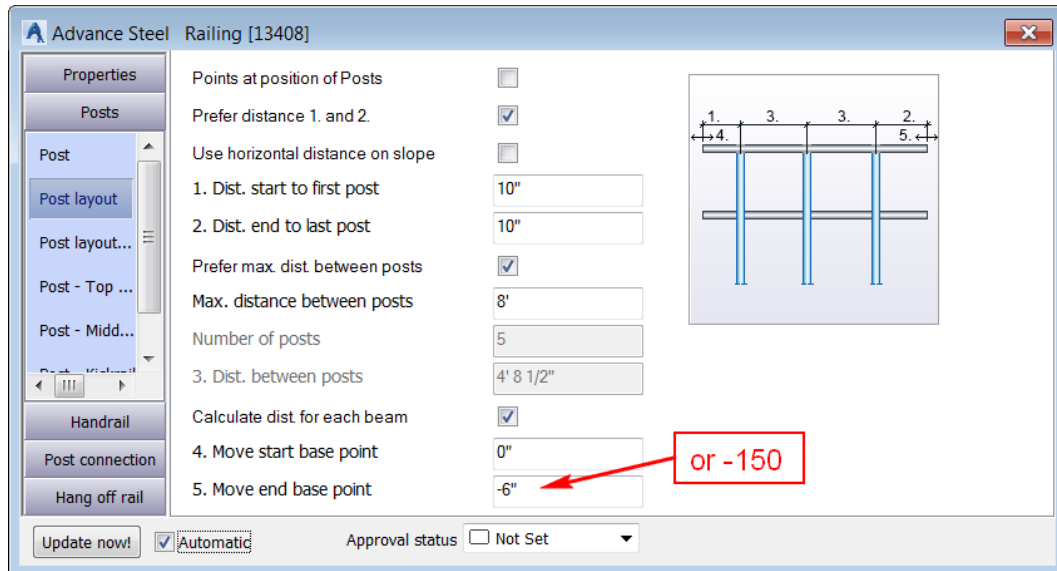
4. Press ENTER; you are prompted to select the start point of the railing.
5. Select the endpoint labeled as 4 in the figure above as the start point of the railing; you are prompted to select the endpoint of the railing.

The railing needs to terminate 6" or 150 behind the point labeled as 5. In Advance Steel, you do not need to use object snap tracking to get that point. Instead, the endpoint can be moved in the dialog box.

6. Select the point labeled as 5 in the figure above as the endpoint of the railing.

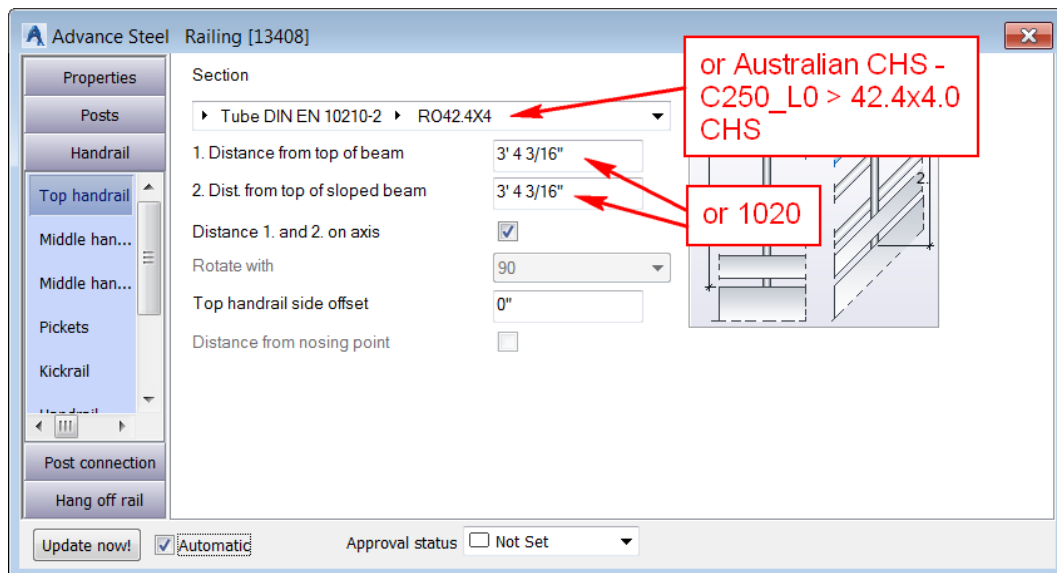
After specifying the endpoint of the railing, you are prompted to specify whether you want to select a nosing point relative to the start point.

7. Press ENTER to accept **No** for the previous prompt; the **Advance Steel - Railing [X]** dialog box is displayed and the railing with the default values is created.
8. Activate the **Posts > Post layout** (Imperial) or **Set out of posts** (Metric) tab.
9. In the Move end base point edit box, enter **-6"** or **-150**, as shown below; the endpoint of the railing moves back by the specified value.



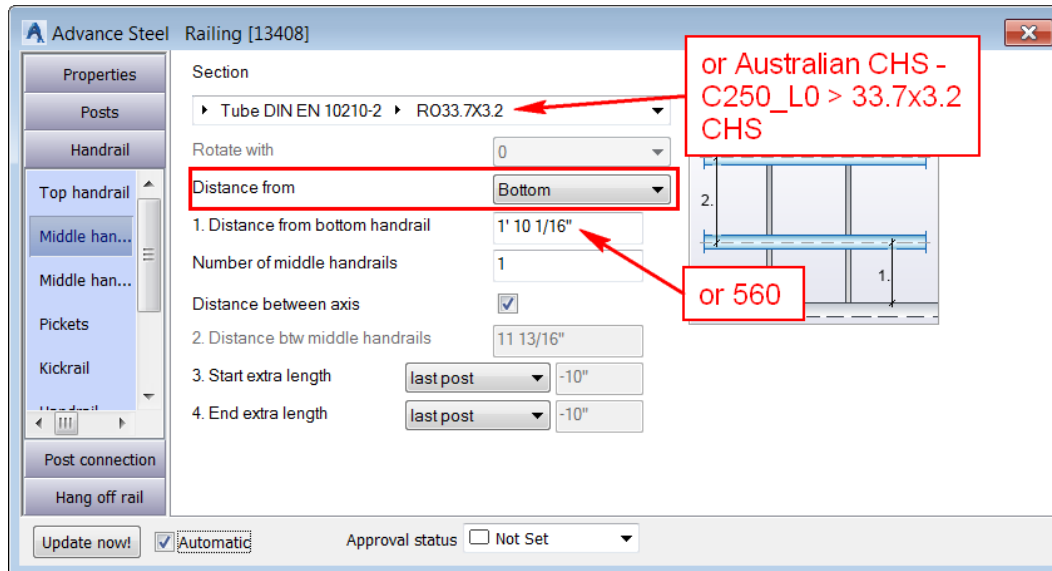
10. Activate the **Handrail > Top handrail** tab.

11. Configure the settings as shown below:



12. Activate the **Handrail > Middle handrail horizontal** tab.

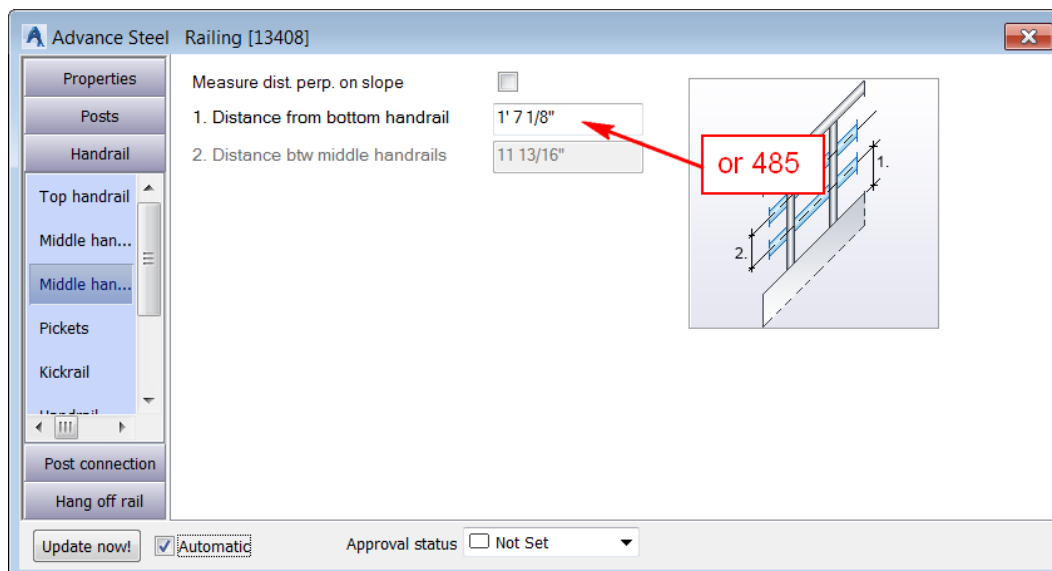
13. Configure the settings as shown below:



Generally, the distance of the middle handrail on the sloped beam of the stair is less than that on the horizontal beam. Therefore, you need to change this value now.

14. Activate the **Handrail > Middle handrail sloped** tab.

15. In the **Distance from bottom handrail** edit box, enter **1' 7 1/8\"**



Next, you will turn off the kickrail as it is not required.

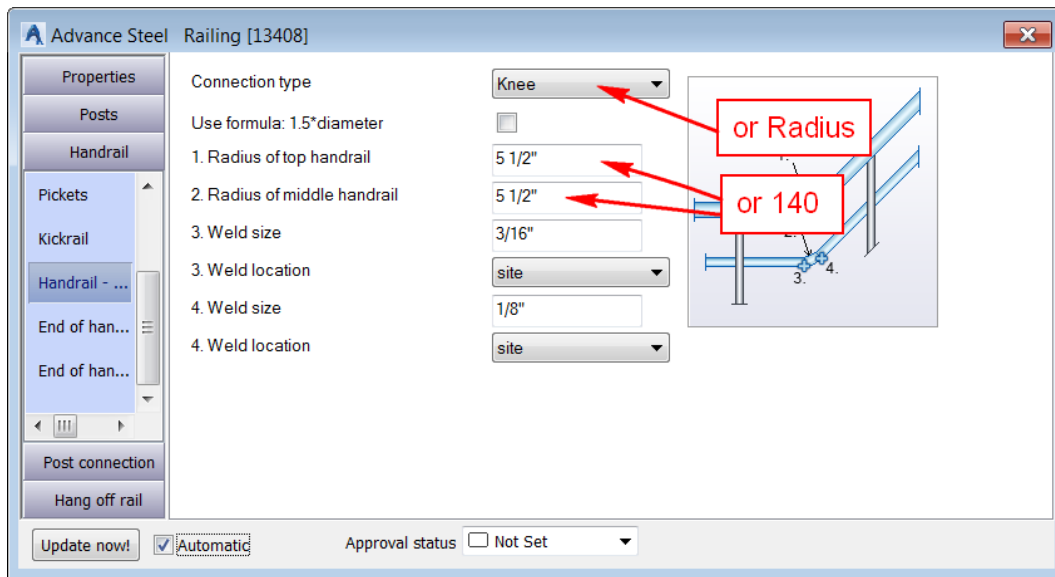
16. Activate the **Handrail > Kickrail (Imperial)** or **Kick plate (Metric)** tab.

17. Clear the **Use kick rail** tick box; the kickrail is no more created.

Next, you will define how the handrails connect at the bends.

18. Activate the **Handrail > Handrail - Handrail** tab.

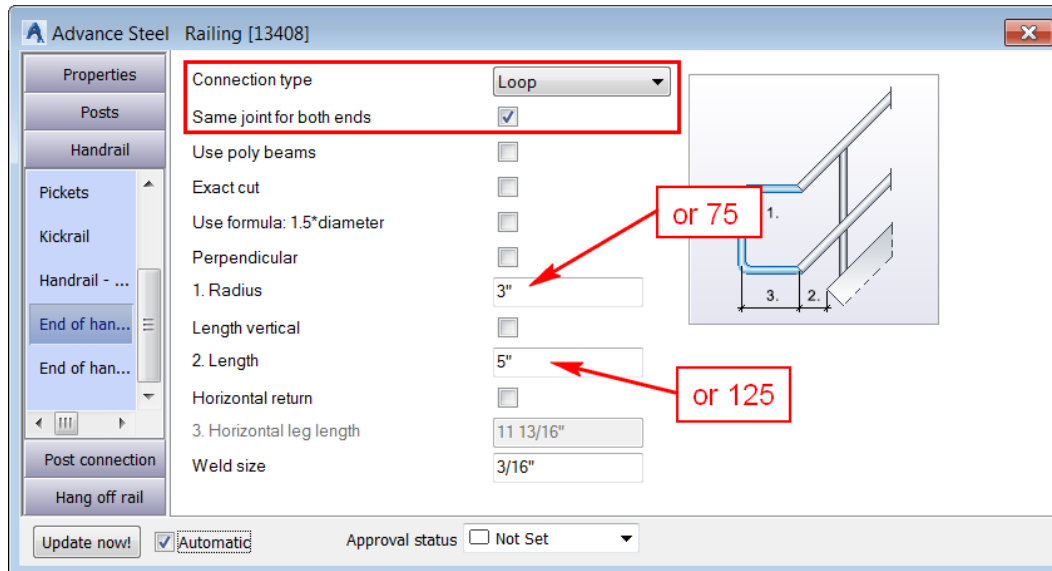
19. Configure the settings as shown below:



Next, you will define the connection type at the two ends of the handrail.

20. Activate the **Handrail > End of handrail** (Imperial) or **End of handrail (start)** (Metric) tab.

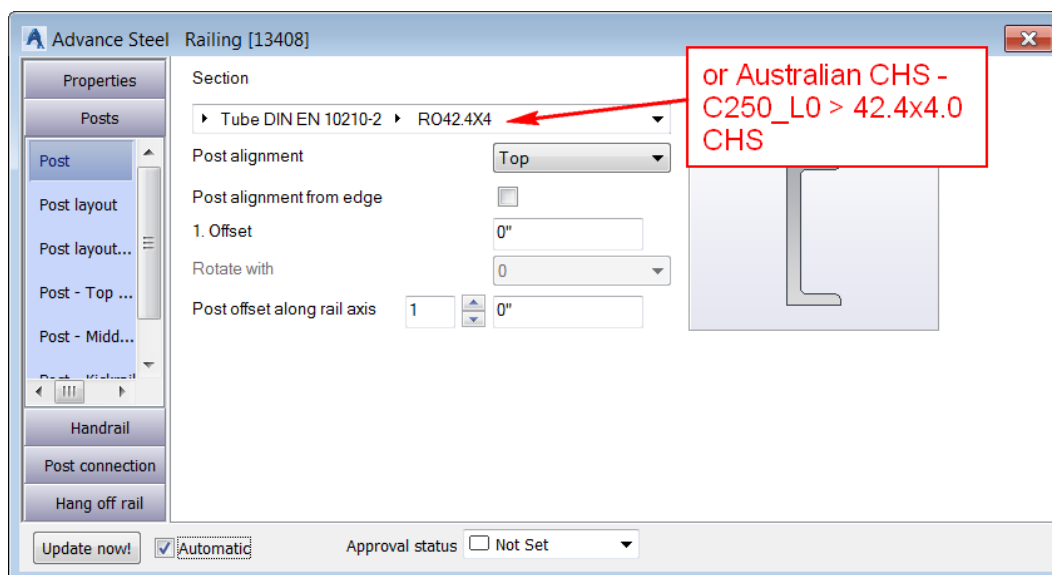
21. Configure the settings as shown below:



Next, you will define the post parameters.

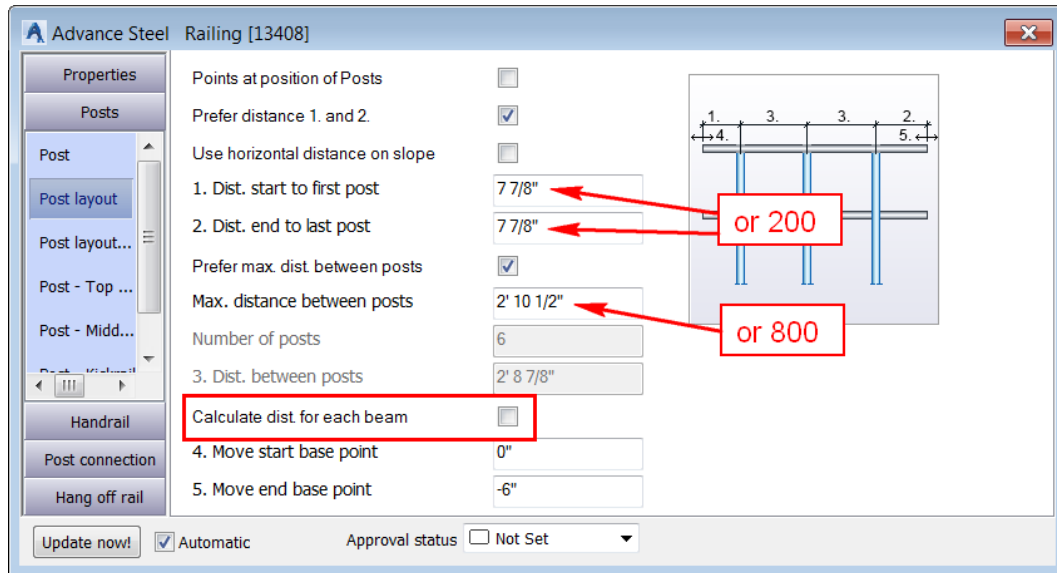
22. Activate the **Posts > Post** tab.

23. From the **Section** list, select **Tube DIN EN 10210-2 > RO42.4X4** (for Imperial) or **Australian CHS - C250_L0 > 42.4x4.0 CHS** (for Metric), as shown below:



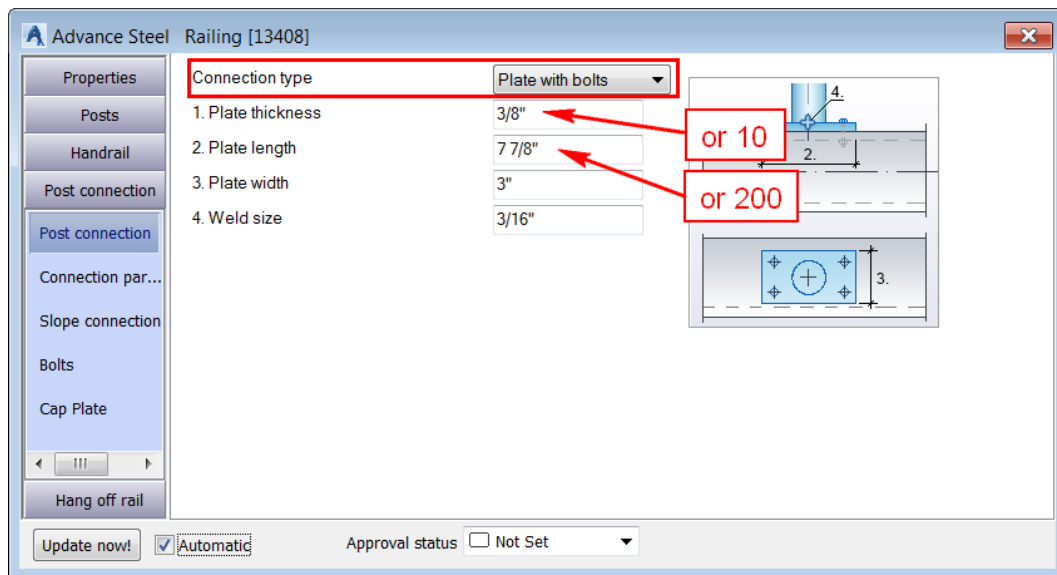
24. Activate the **Post > Post layout** (Imperial) or **Set out of posts** (Metric) tab.

25. Configure the settings as shown below:



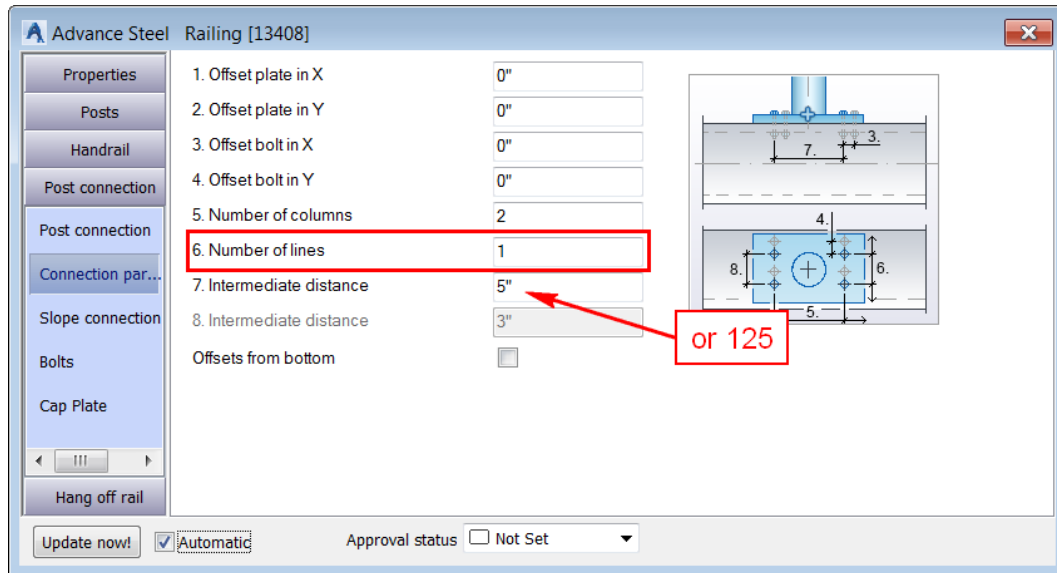
26. Activate the **Post connection > Post connection** tab (Imperial) or **Post fixing > Fixing of post tab** (Metric).

27. Configure the settings as shown below:



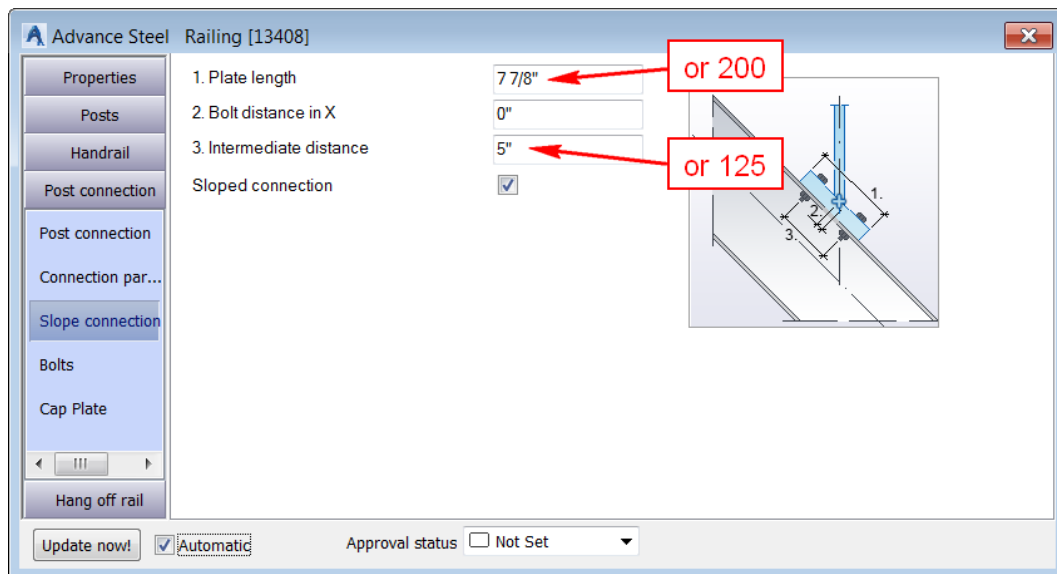
28. Activate the **Post connection > Connection parameter** tab (Imperial) or **Post fixing > Fixing parameters** tab (Metric).

29. Configure the settings as shown below:



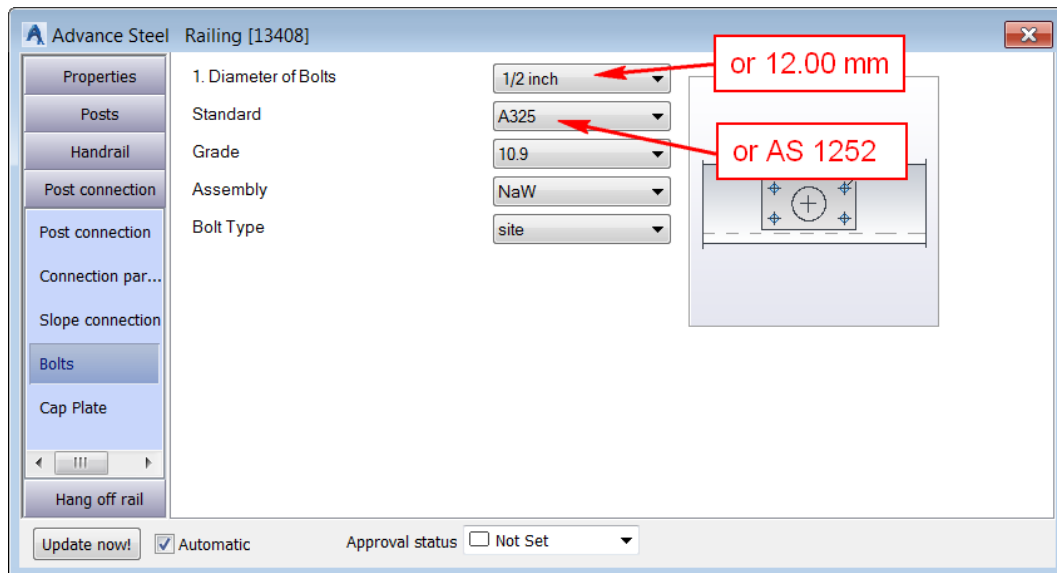
30. Activate the **Post connection > Slope connection** tab (Imperial) or **Post fixing > Fixing slope** tab (Metric).

31. Configure the settings as shown below:



32. Activate the **Post connection > Bolts** tab (Imperial) or **Post fixing > Fixing bolts** tab (Metric).

33. Configure the settings as shown below:



This completes all the modifications in the handrails. The following figure shows the handrails.

