AUTODESK UNIVERSITY

FAB129156-L

# Up and Running with Advance Steel

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## 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.

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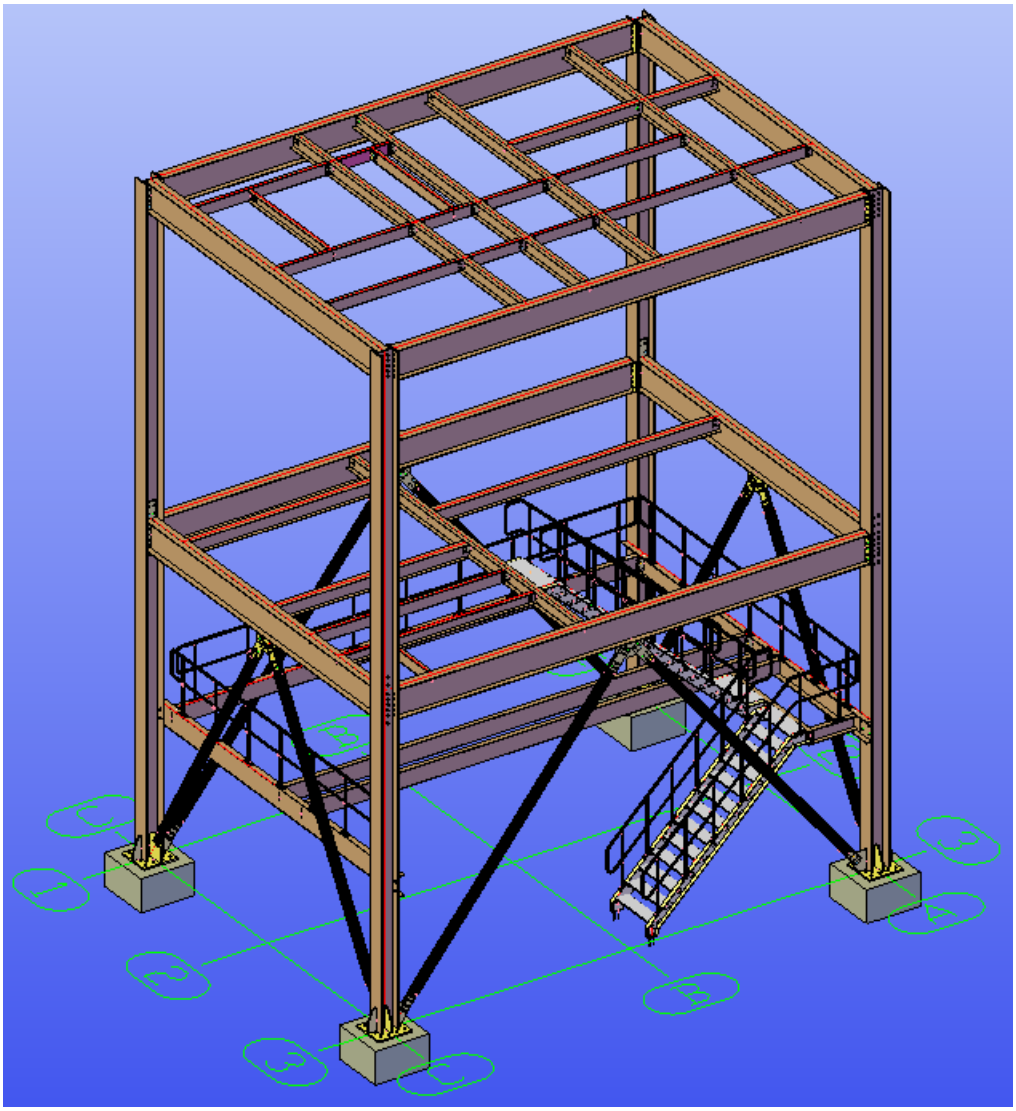
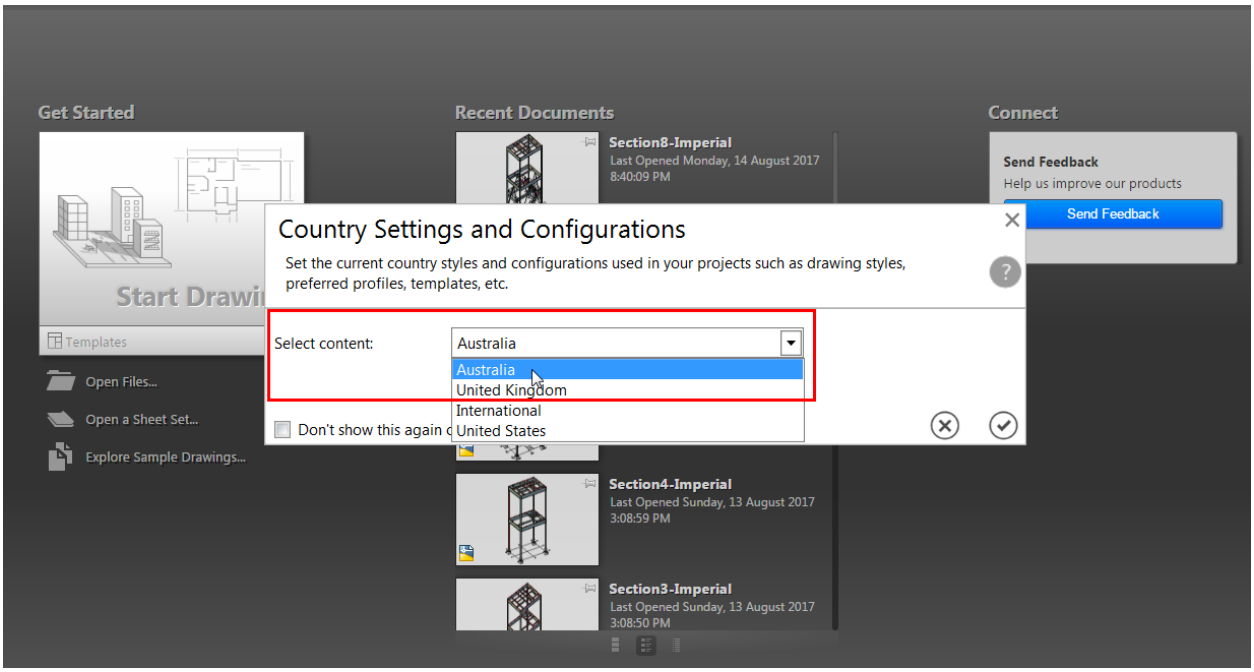
**In this lab, you will create the model shown in the figure below and generate its fabrication drawings, NC files, and BOMs**



## 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 of Australia Standard.

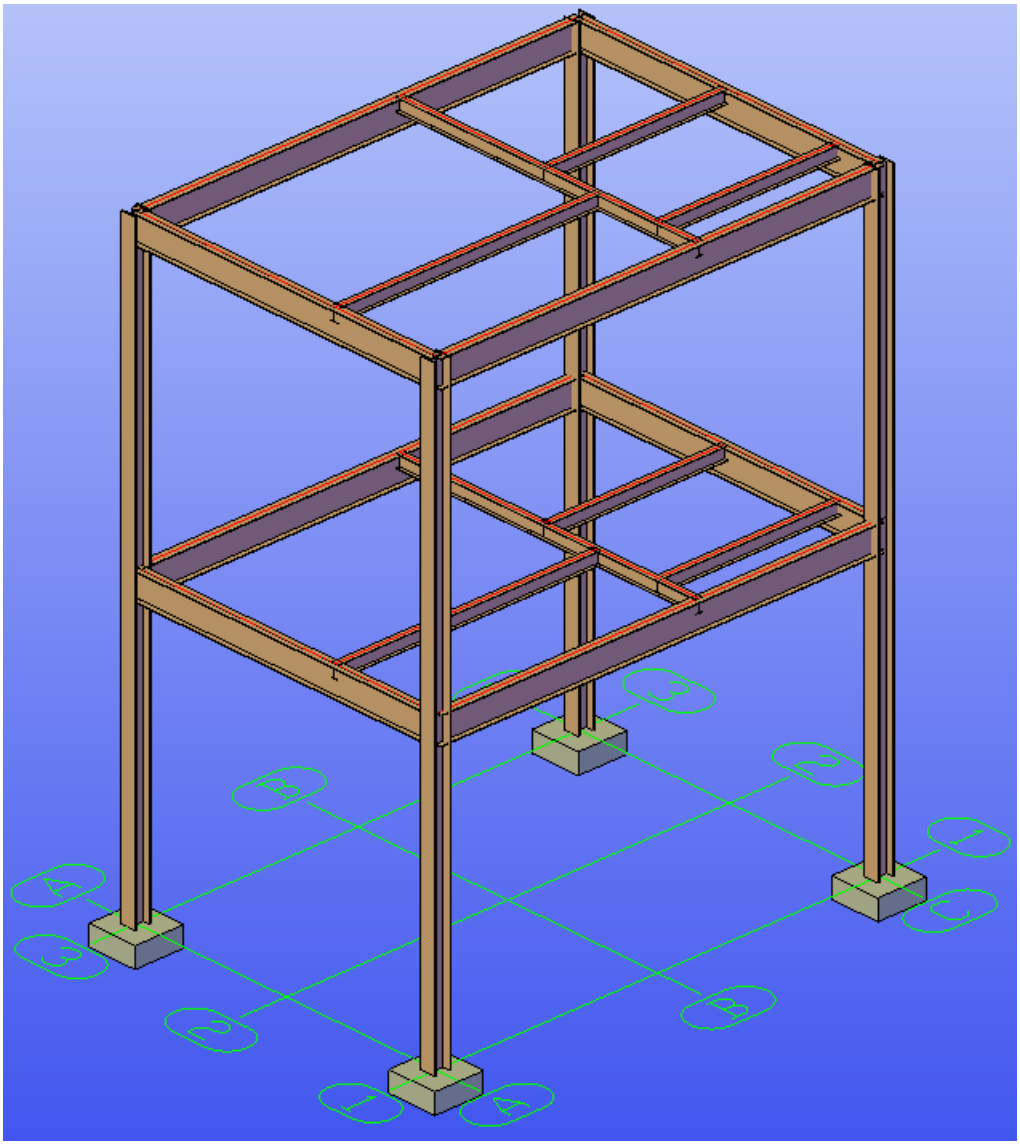
1. From the **Country Settings and Configurations** dialog box in front of you, select **Australia** (for Metric Units), as shown in the figure below:




***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 and Peripheral Beams

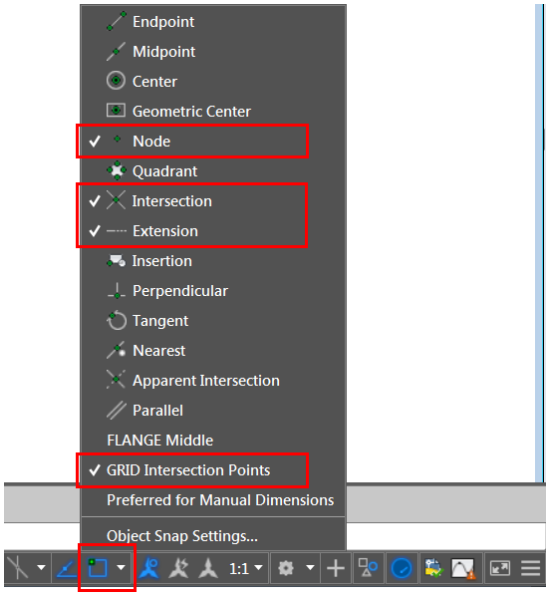
In this section, you will open the **Section2-Metric.dwg** file from the exercise files folder and then insert and copy Columns and Peripheral beams, as shown in the figure below.



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

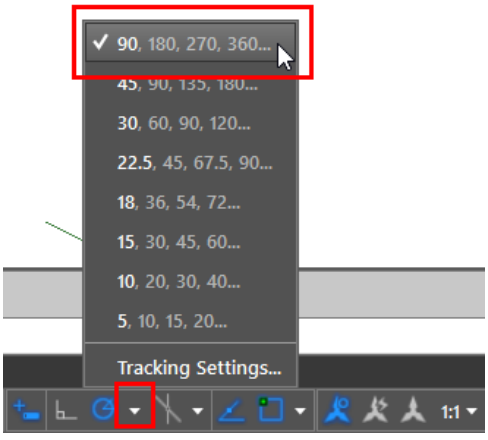
Before you insert the sections, you need to make sure you select the **GRID Intersection Points**, **Node**, **Intersection**, and **Extension** Object Snap type and clear any other Object Snap type, including **Endpoint** and **Midpoint**.

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**.

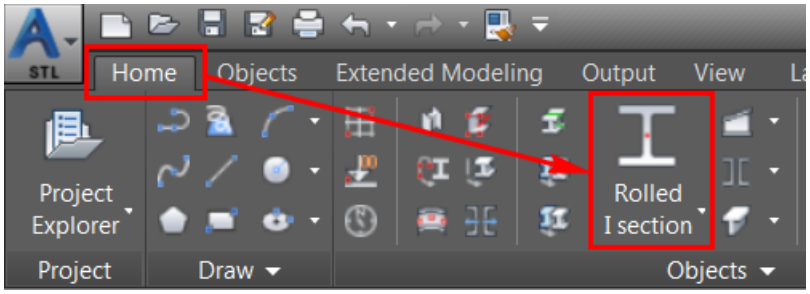
4. Set the Polar Tracking to **90, 180, 270, 360**, as shown below:




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 12000mm. In this tutorial, you will insert a single column of that height.

7. With the cursor tracking along the Z direction, enter 12000 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.

9. 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.

10. From the second flyout in the **Section** list, select **Australian Universal Column** as the section type.

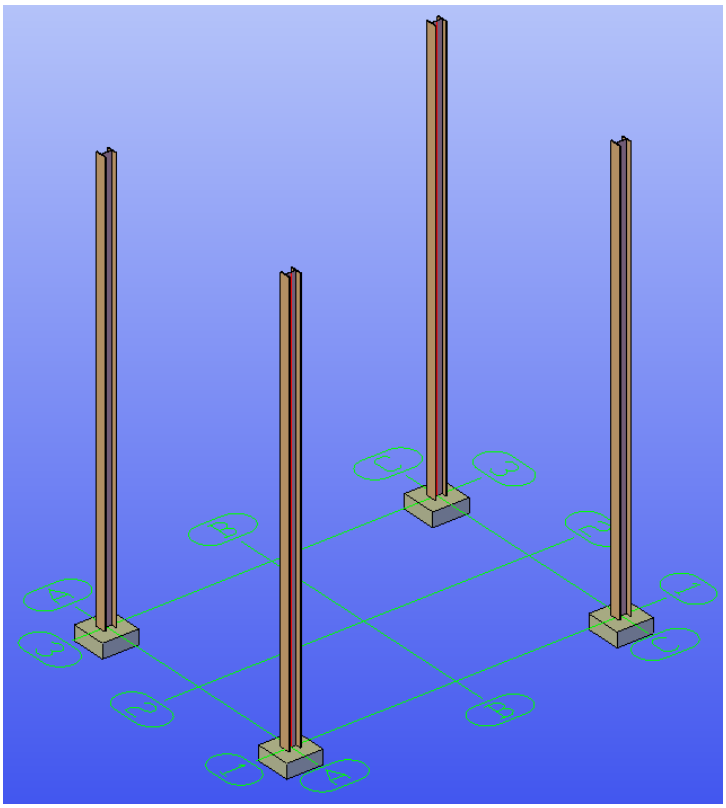
11. From the third flyout in the **Section** list, select **310 UC 158** as the section size.

12. From the left pane of the dialog box, select the **Naming** tab.

13. From the **Model Role** list, select **Column** as the model role for this section.

14. Close the dialog box.

15. 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:



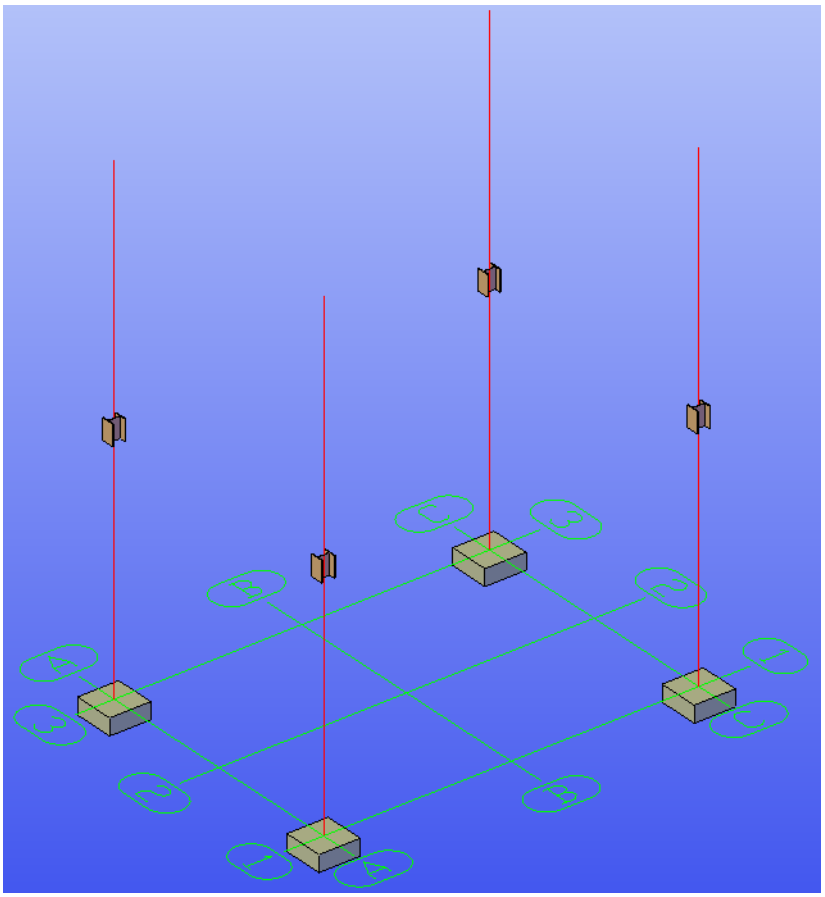
Next, you will insert the peripheral beams using the **Continuous Beam** tool. Before you start inserting the perimeter and filter beams, it is recommended to change the display type of the four columns.

16. Select the four columns and then right-click in the blank area of the drawing window; the shortcut menu is displayed.

17. Select **Advance Properties** from the shortcut menu; the **Advance Steel - Beam [X]** dialog box is displayed.

18. From the left pane of the dialog box, select the **Display type** tab.

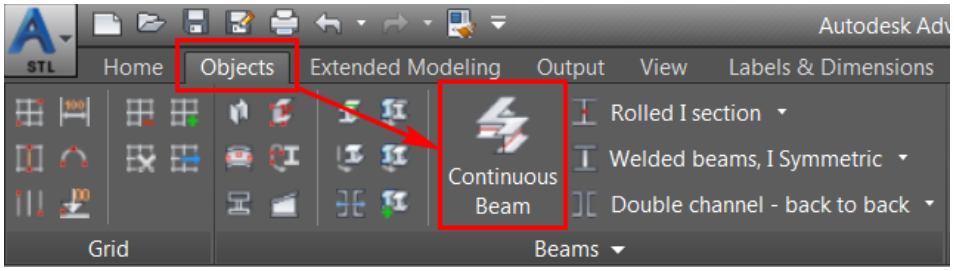
19. From the right pane, select **Symbolic**; the four columns are displayed as system axes with the actual section displayed partially at the midpoint, as shown in the figure below:



20. Close the dialog box.

The four beams to be inserted on the outside are Australian Universal Beam > 530 UB 82.0. You will now use the **Continuous Beam** tool to insert these beams.

21. 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.



22. Select the midpoint of one of the columns; you are prompted to specify the endpoint of the system axis.

23. Select the midpoint of the next column; a beam is inserted between the two midpoints and you are again prompted to specify the endpoint of the system axis.

24. Similarly, select the midpoints of the remaining two columns and then of the first column again to insert four beams.

25. After selecting the last midpoint, press the ENTER key; the **Advance Steel - Beam [X] dialog box** is displayed.

26. 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.

27. From the second flyout of the **Section** list, select **Australian Universal Beam** as the section type.

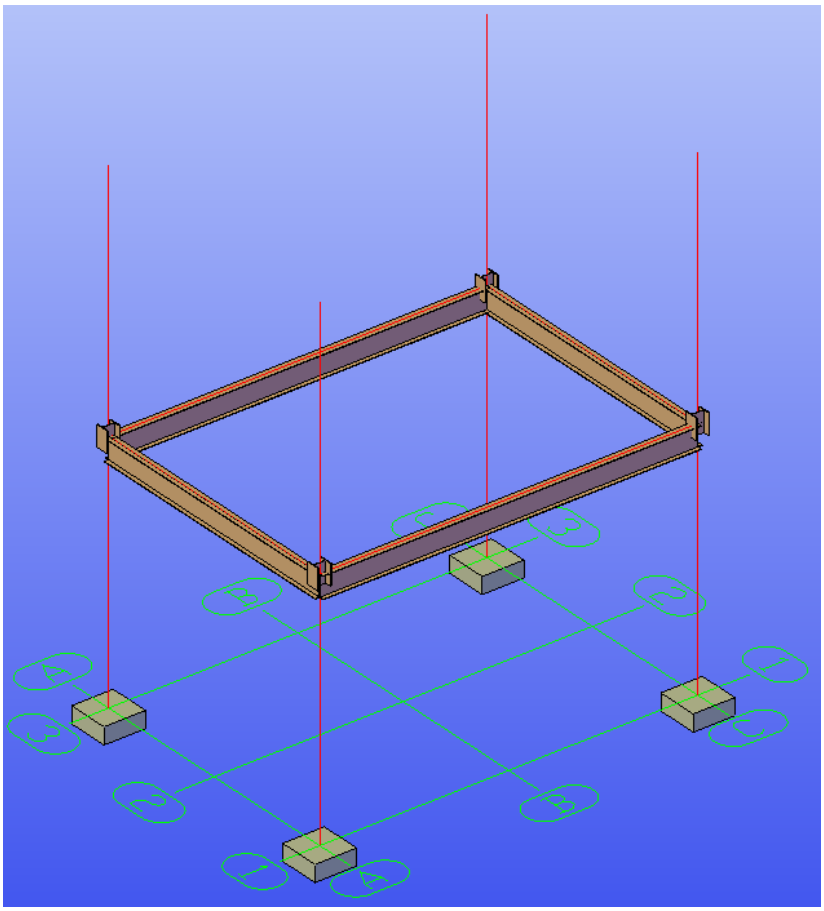
28. From the third flyout of the **Section** list, select **530 UB 82.0** as the section size.

29. From the left pane of the dialog box, select the **Positioning** tab.

30. 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.

31. From the **Naming** tab > **Model Role** list, select **Beam** as the model role.

32. Close the dialog box. The model, after inserting the beams, is shown in the following figure:

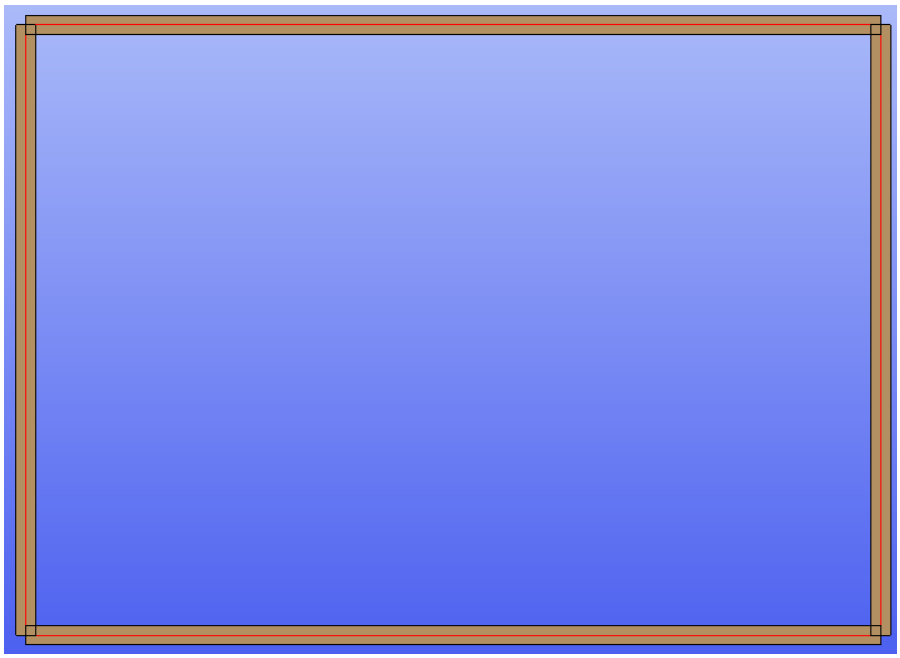


Next, you will insert the filter beams. But first, you will isolate the peripheral beams you inserted in the previous steps.

33. With no tool active, select the four perimeter beams inserted in the above steps.

34. 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.

35. 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:

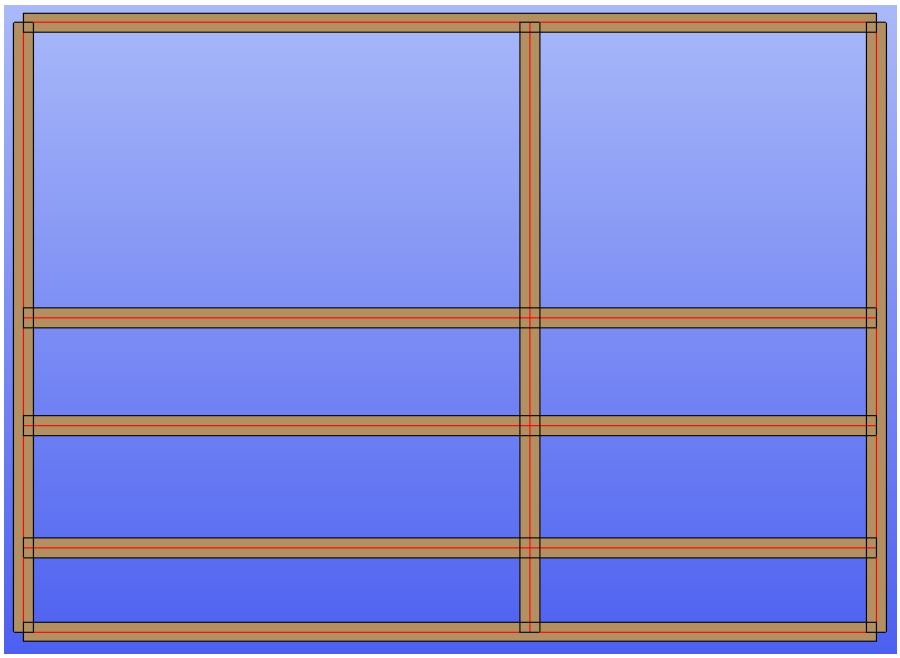


36. Using the **Copy** tool and **Polar Tracking**, copy the left perimeter beam towards the right at a distance of **5400.**

37. Similarly, copy the bottom perimeter beam up three times at the following distance values:

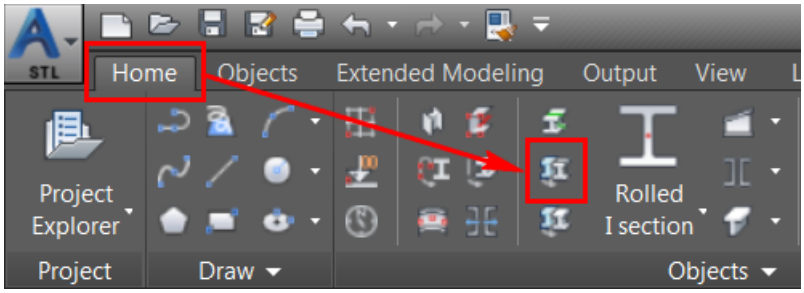
    **900**
    **2200**
    **3350**

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

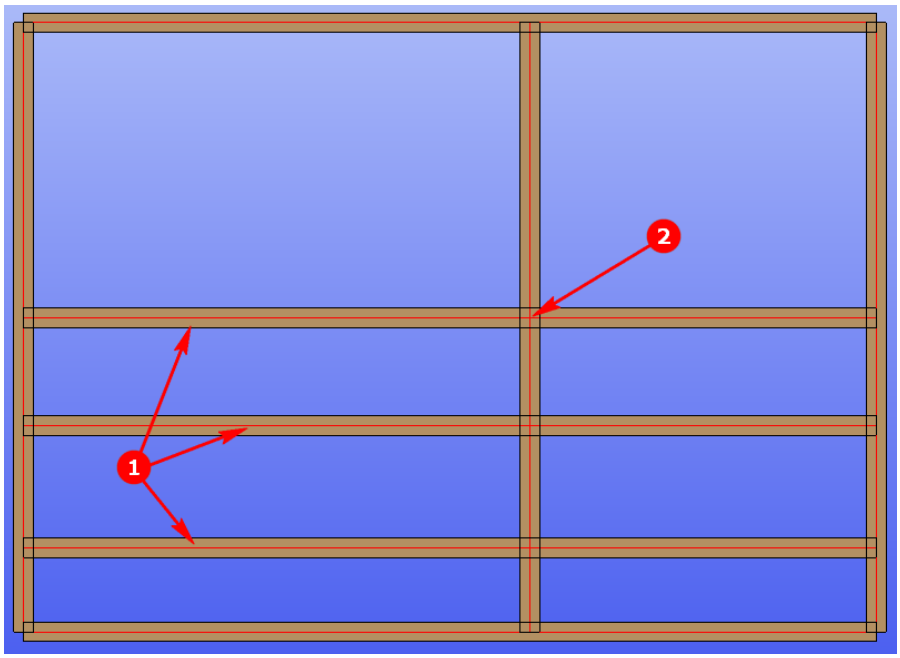


Next, you will split the beams and the delete the unwanted portion of these beams.

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



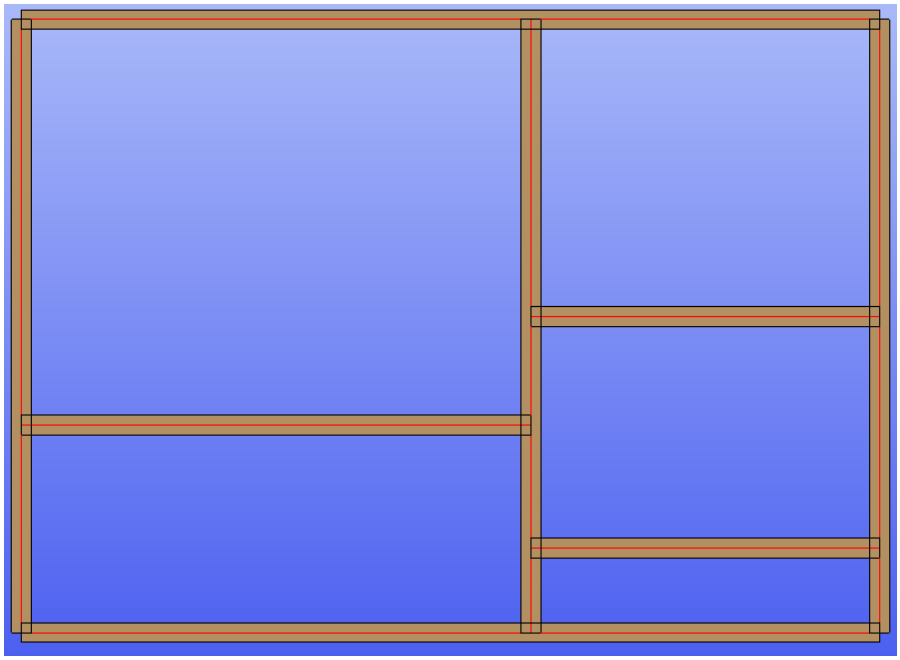

39. Select the three sections labeled as **1** in the following figure and then press ENTER; you are prompted to select the split point or define the gap.




40. 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.

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

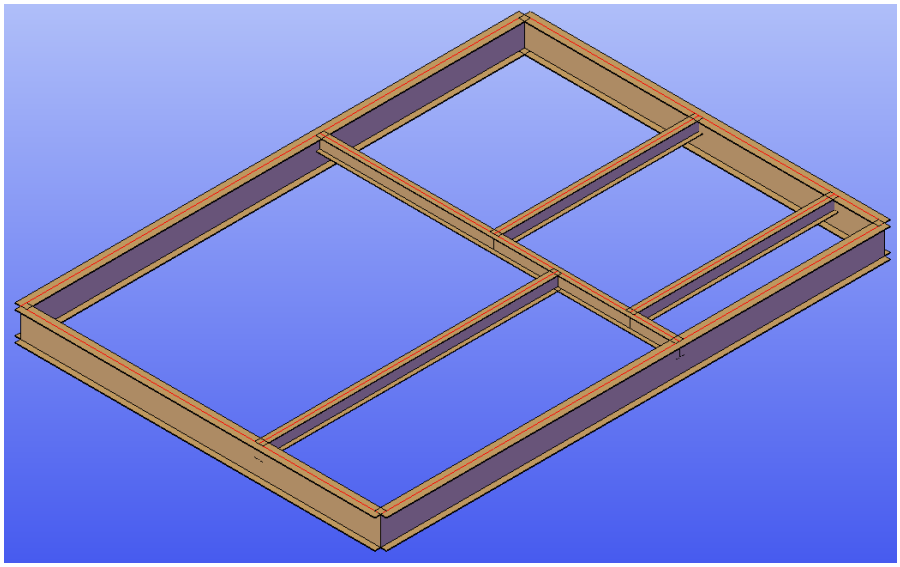


42. Select all the filter beams.

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

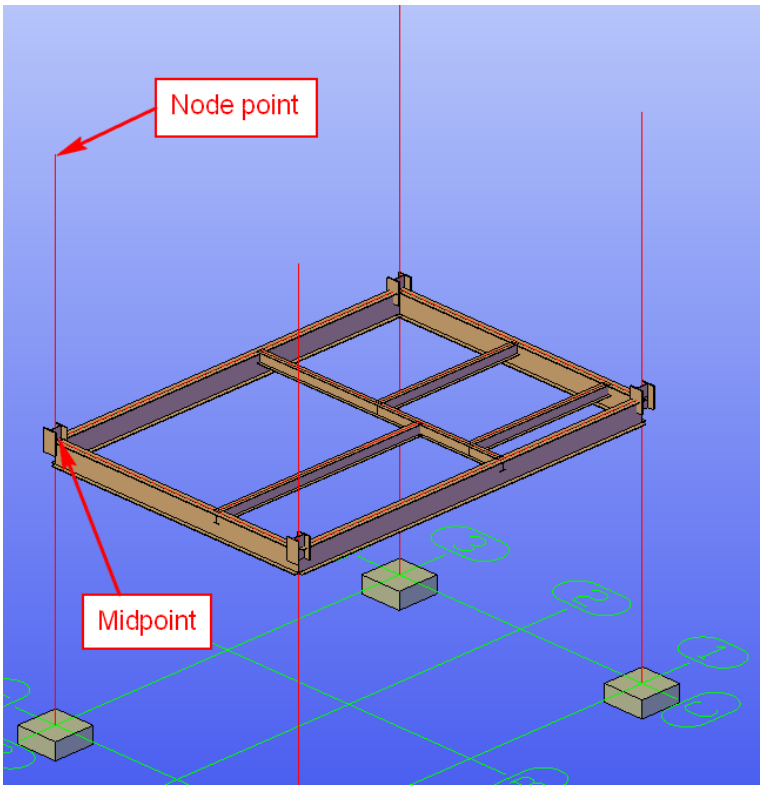
44. Change all the beam types to **Australian Universal Beam > 250 UB 31.4**.

45. Change the view to Home view with parallel projection. The model should look similar to the one shown below:



46. Right-click in the blank area of the graphics window and select **Isolate > End Object Isolation**; all the hidden objects reappear.

47. Copy all the beams from the midpoint of the columns to the top **Node** point of the columns, as shown below.

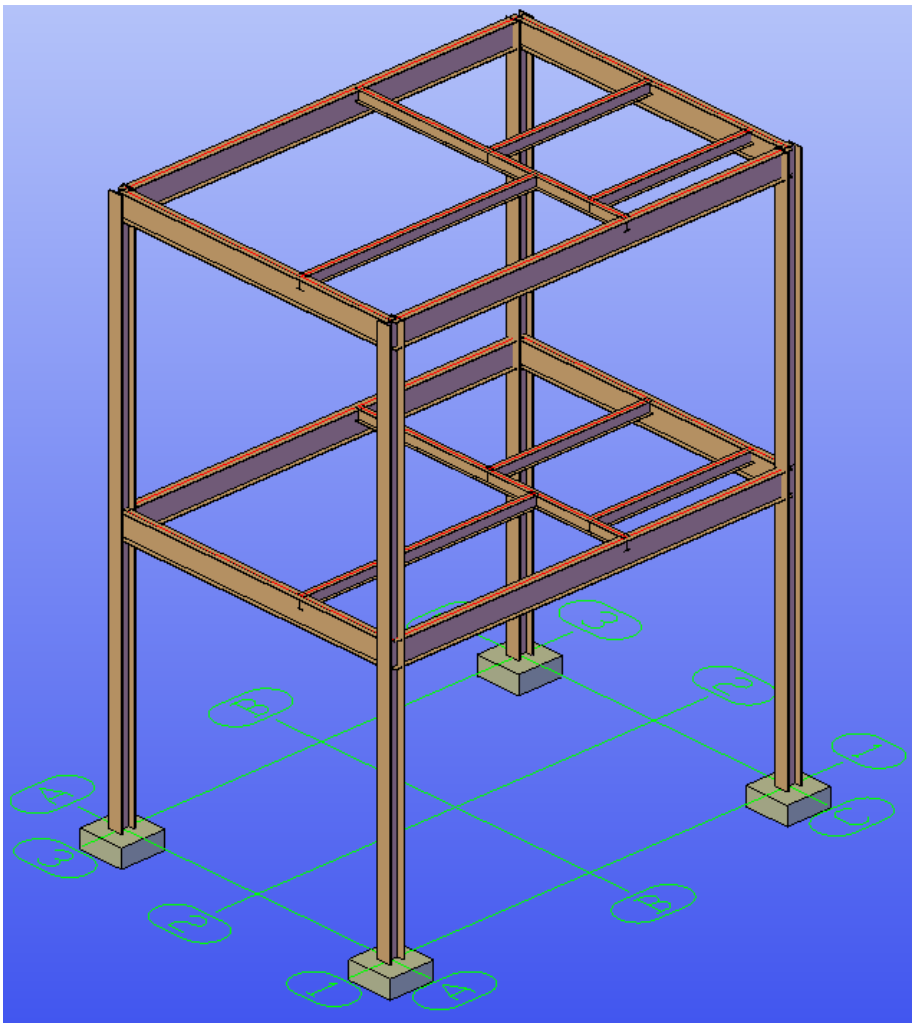



48. Select the four columns displayed as system lines and then right-click in the blank area of the graphics window.

49. From the shortcut menu, select **Advance Settings**.

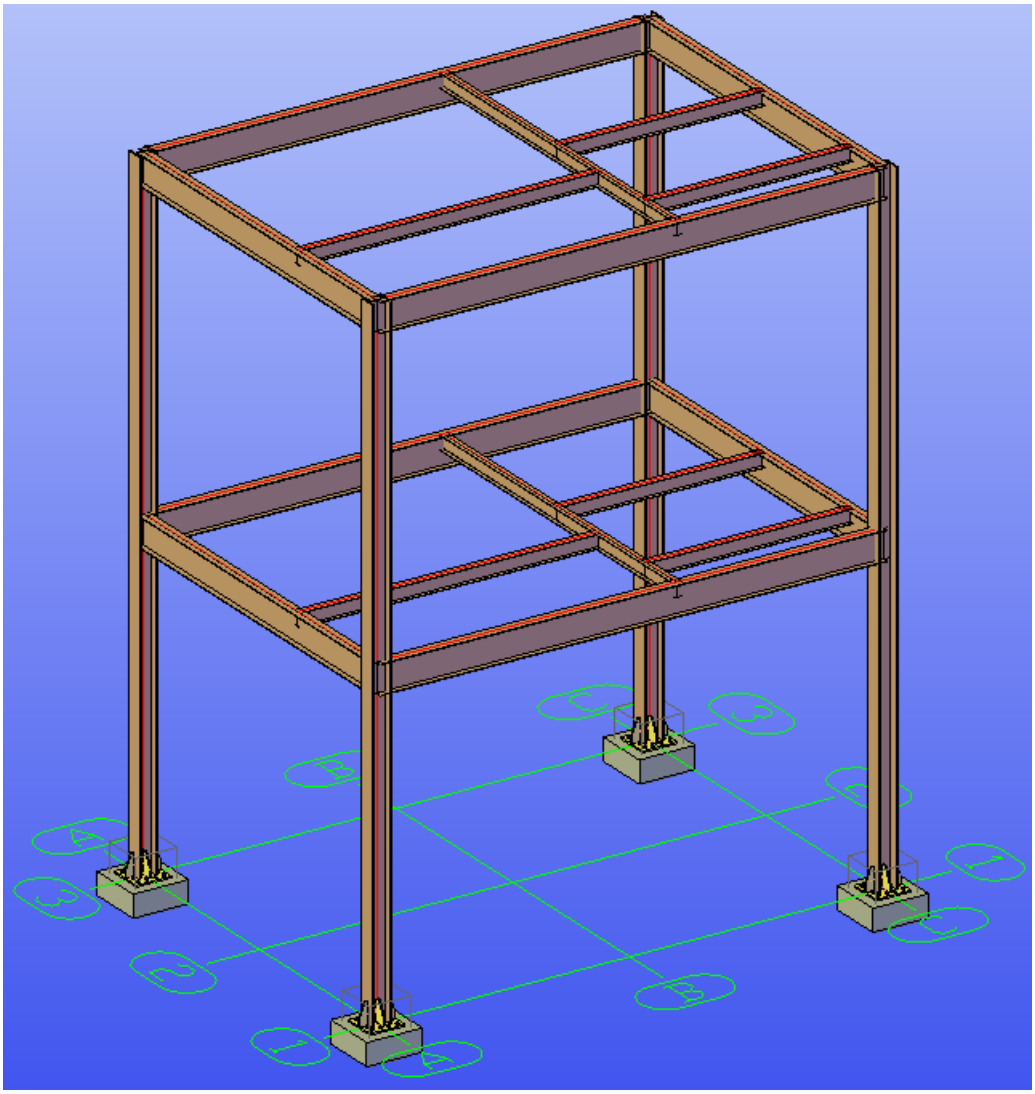
50. From the **Display type** tab, select **Standard** as the display style.

51. Close the dialog box. The model should appear similar to the one shown in the following figure:

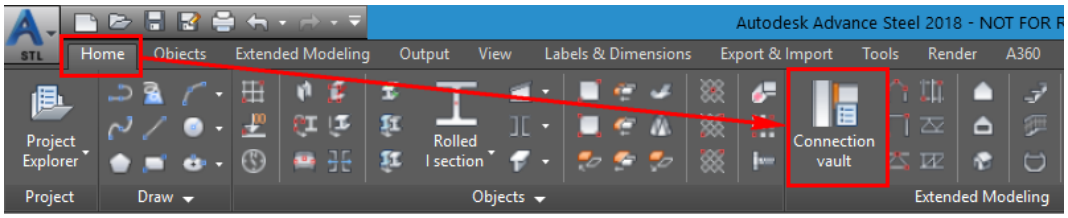


## Section 3: Inserting and Copying the Base Plate Joints

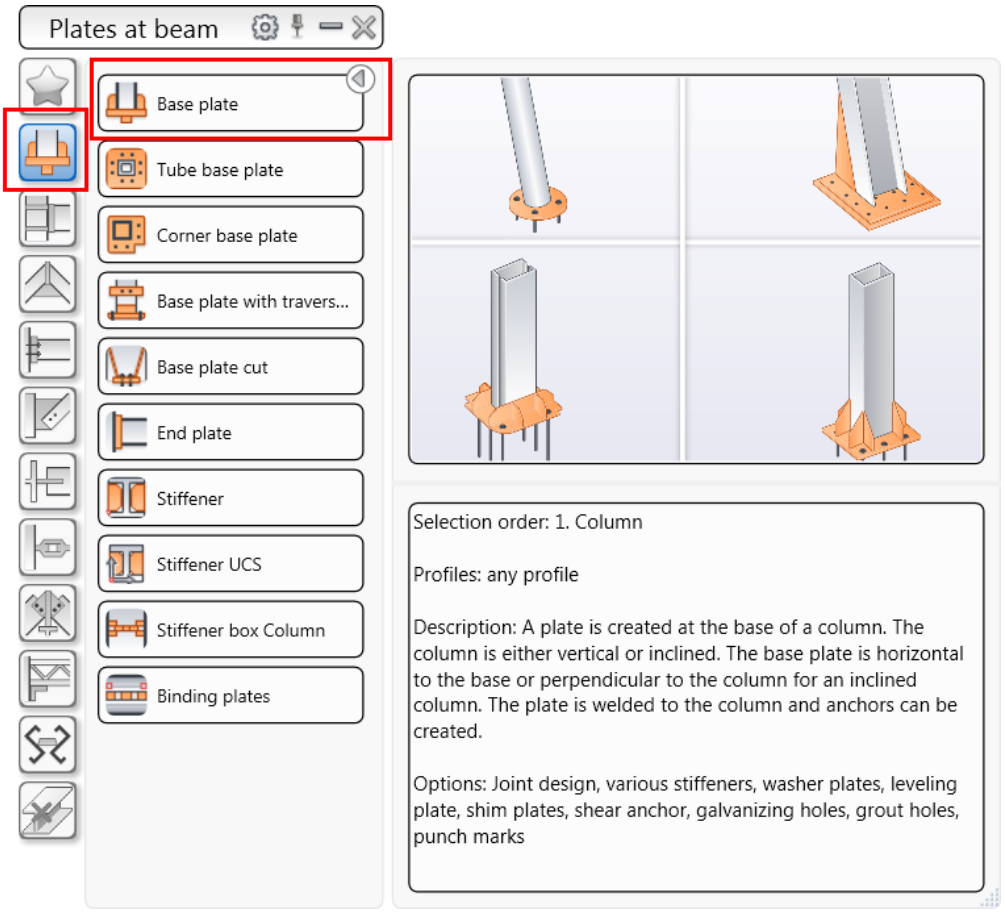
In this section, you will open the **Section3-Metric.dwg** file from the exercise files folder and then insert and copy the **Base plate** joints, as shown in the figure below.



1. Open the **Section3-Metric.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; 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.

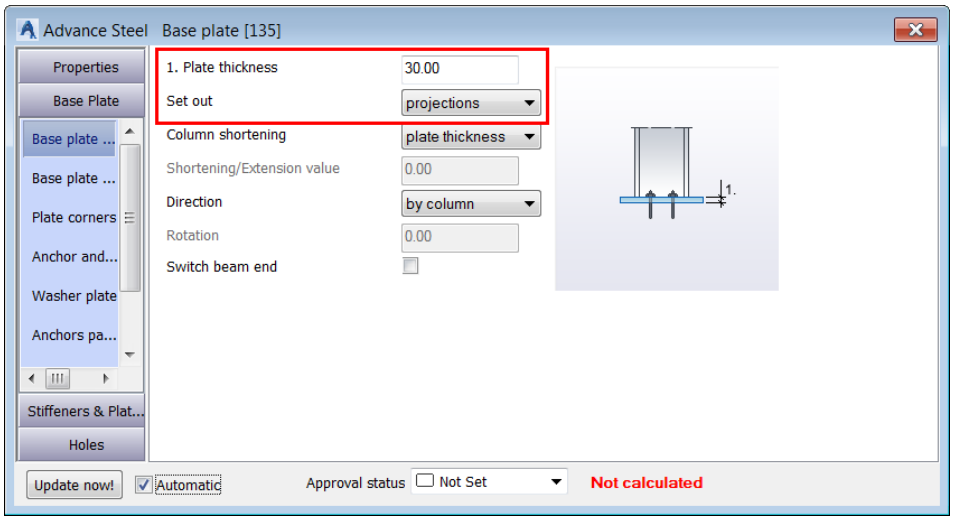
6. From the top right of the **Connection vault** title bar that displays **Plates at beam**, click the minus "-" sign to hide the palette.

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.

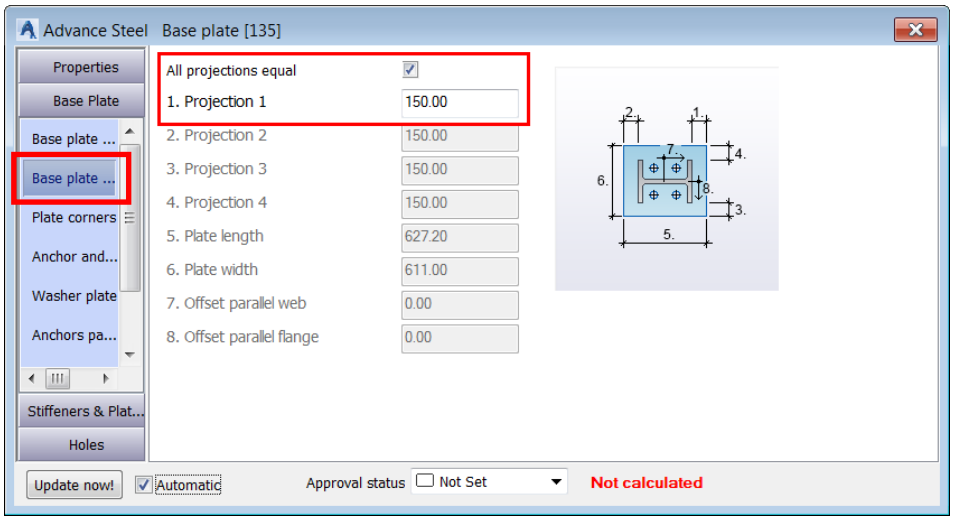
9. From the left pane of the dialog box, select the **Base Plate > Base plate layout** tab.

10. Configure the settings, as shown below.



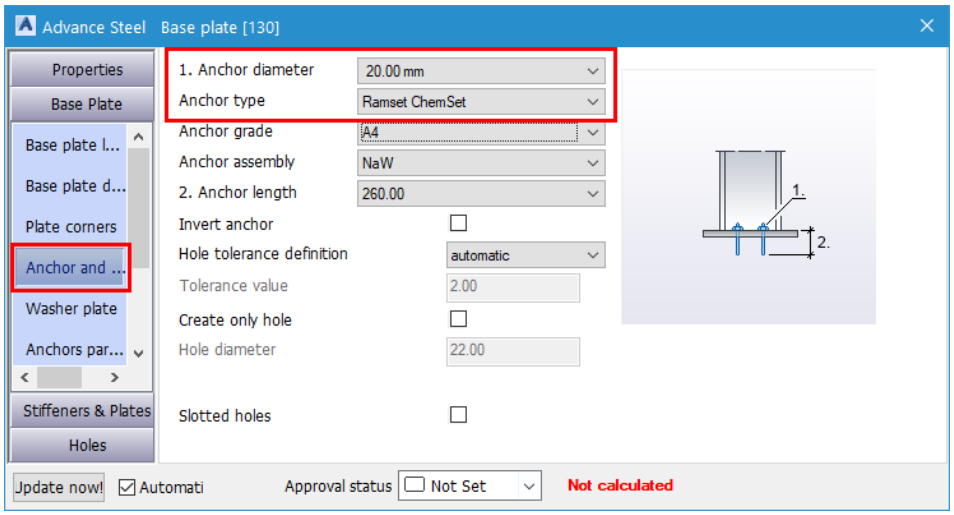

11. Activate the **Base plate dimensions** tab.

12. In the **Projection 1** edit box, enter **150**, as shown below.



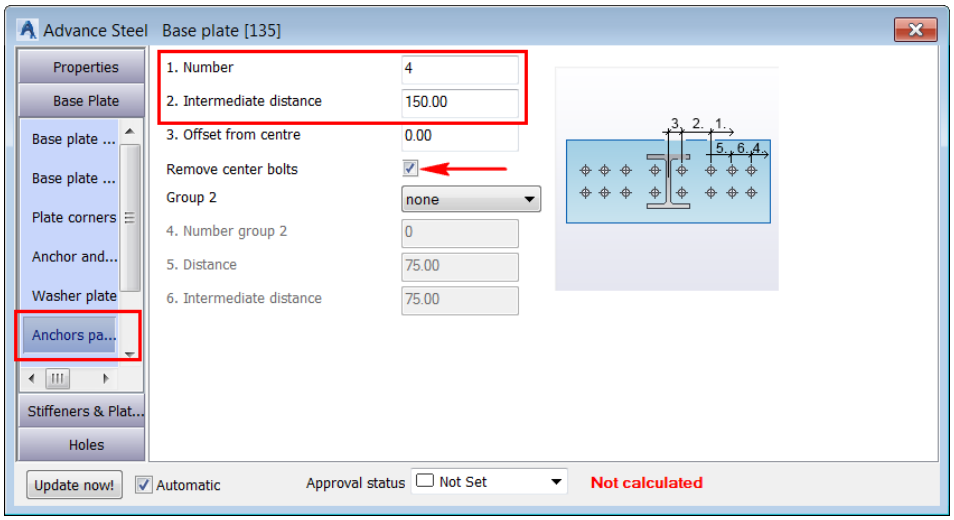

13. Activate the **Anchor and holes** tab.

14. Configure the settings, as shown below.



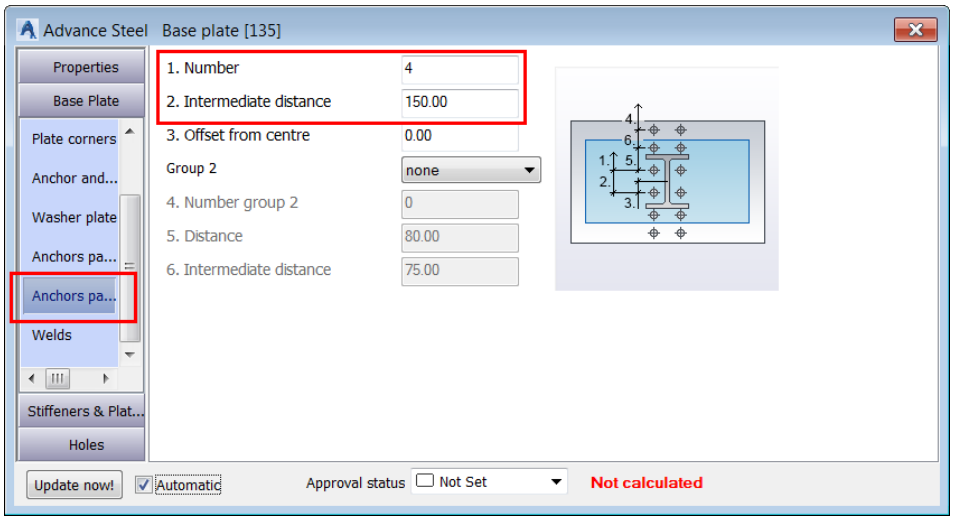

15. Activate the **Anchor parallel web** tab.

16. Configure the settings, as shown below.



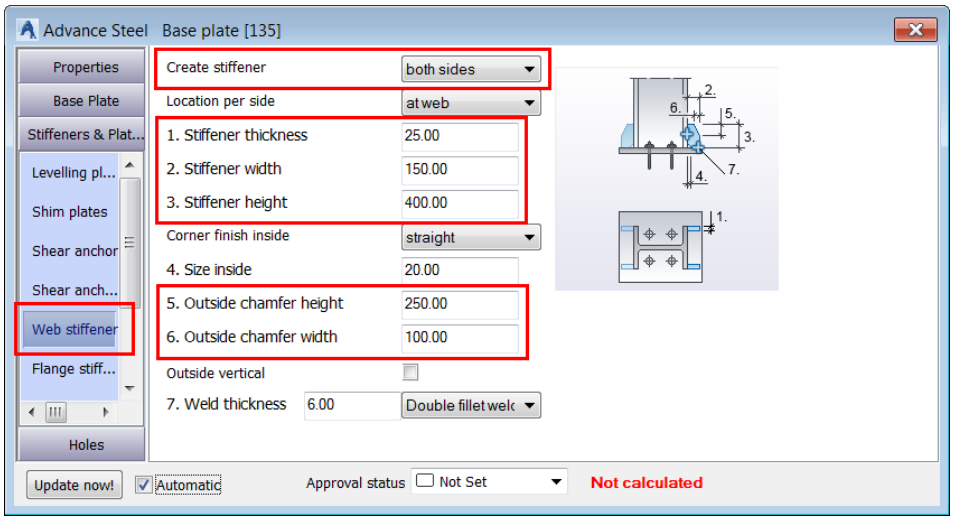

17. Activate the **Anchor parallel flange** tab.

18. Configure the settings, as shown below.



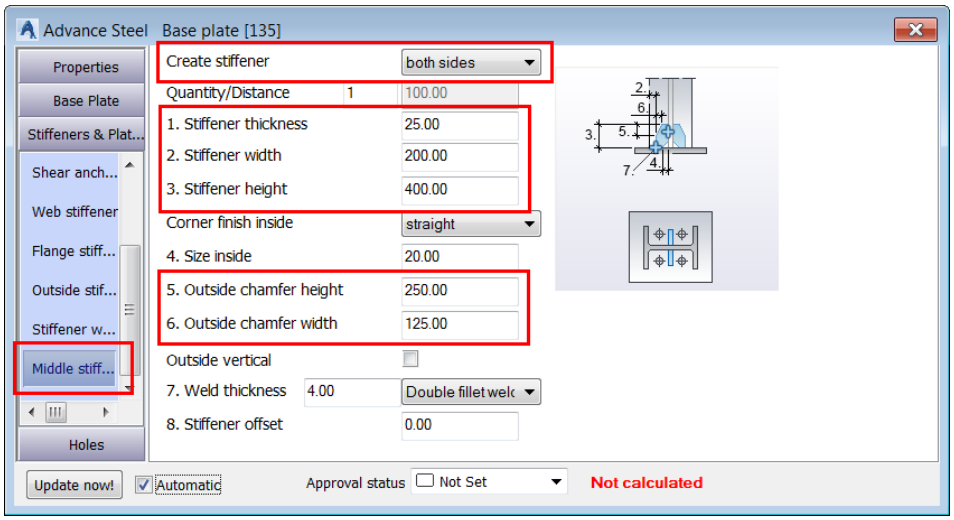

19. From the left pane of the dialog box, select the **Stiffeners & Plates > Web stiffener** tab.

20. Configure the settings, as shown below.

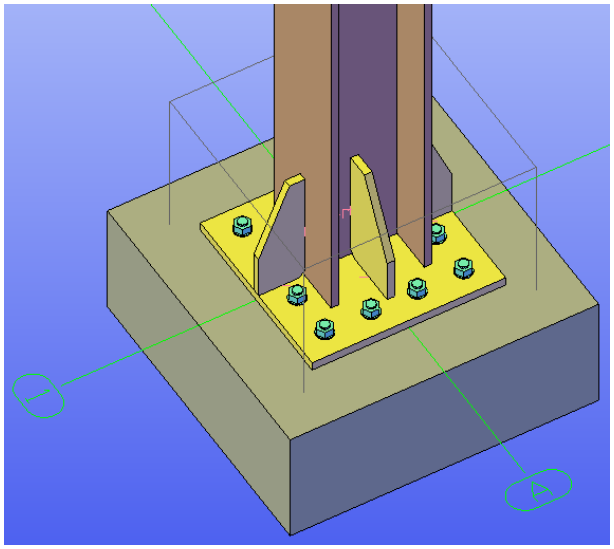



21. From the left pane of the dialog box, select the **Stiffeners & Plates > Middle stiffener** tab.

22. Configure the settings, as shown below.

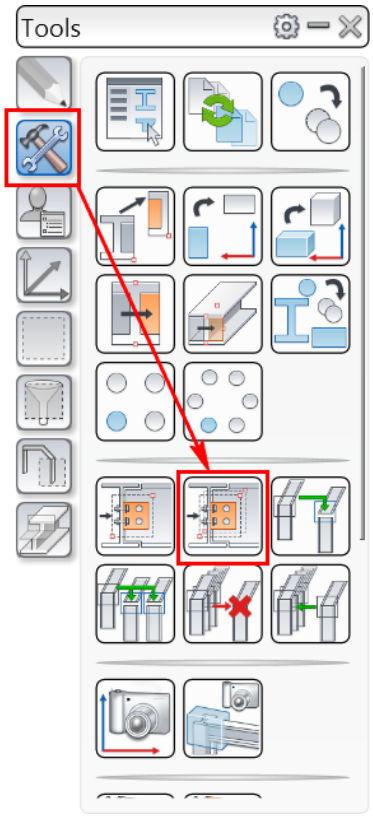



23. Close the dialog box. The joint should look similar to the one below:



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.

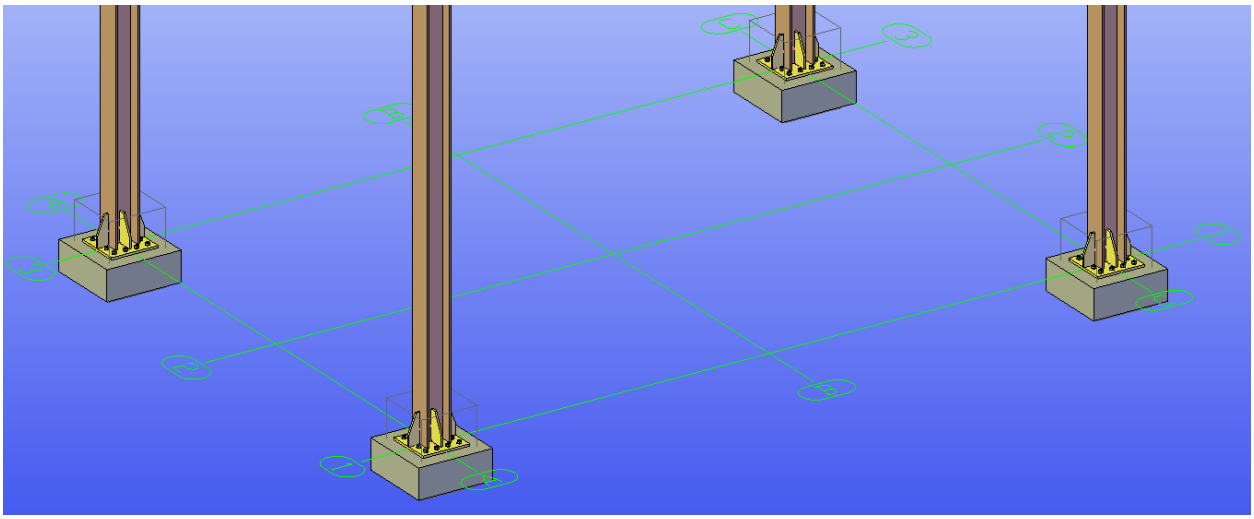



25. Select one of the plates or bolts of the base plate joint you inserted in earlier steps; you are again prompted to select objects.

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.

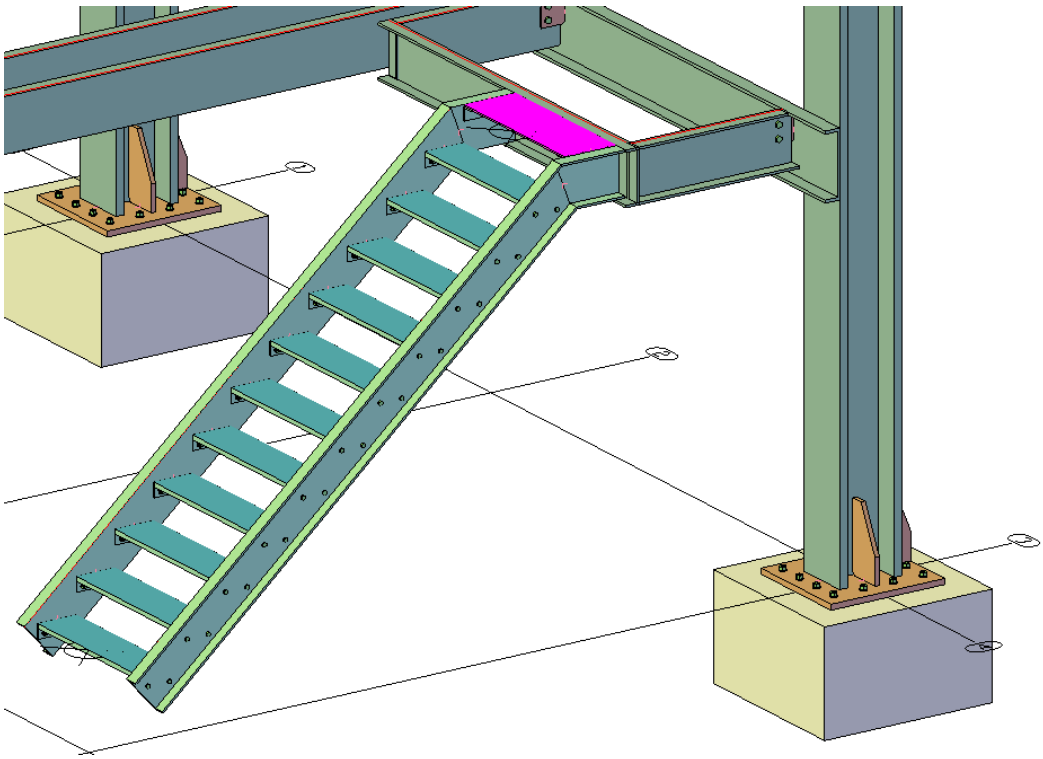
28. Press ESC to exit the tool. The model, after copying the joints, is shown in the following figure:



***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 4: Inserting Stairs

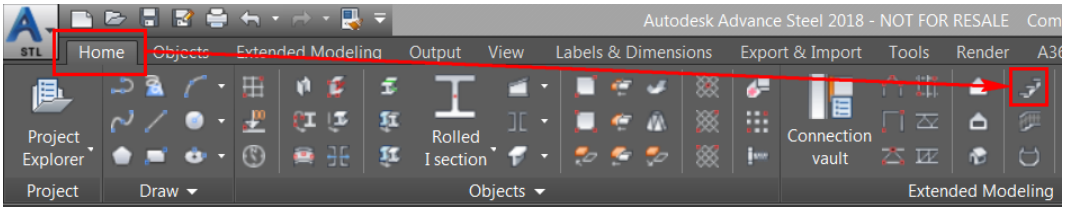
In this section, you will open the **Section4-Metric.dwg** file from the exercise files folder and then insert stairs, as shown in the figure below.



1. Open the **Section4-Metric.dwg** file from the exercise files folder.

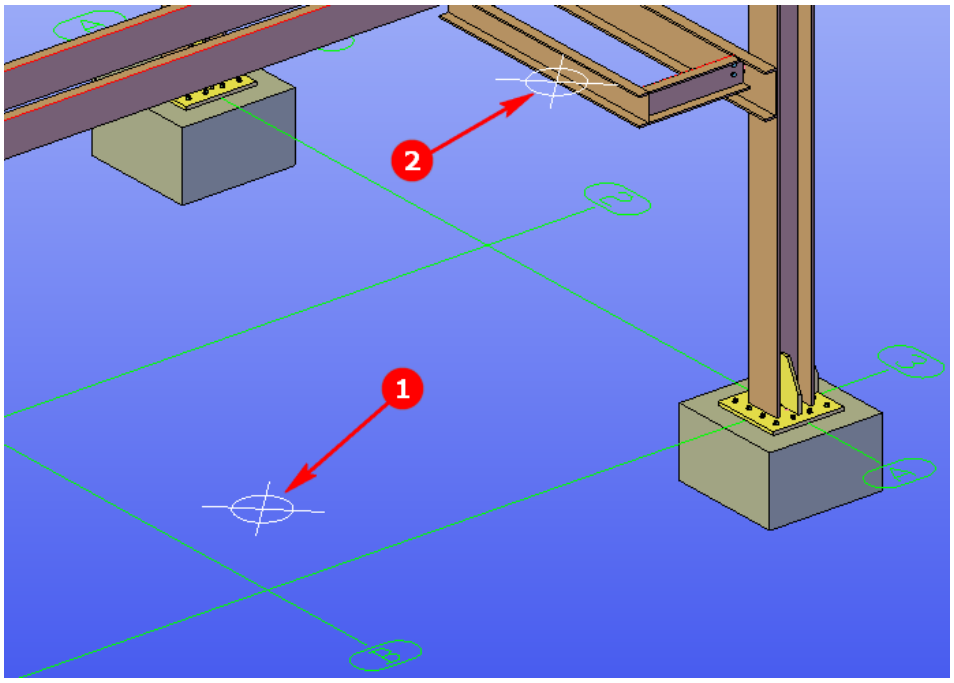
You will now insert stairs in this model using the start and the end points of the stair. The points to be used as the start and end are already created in this file for your reference.

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.

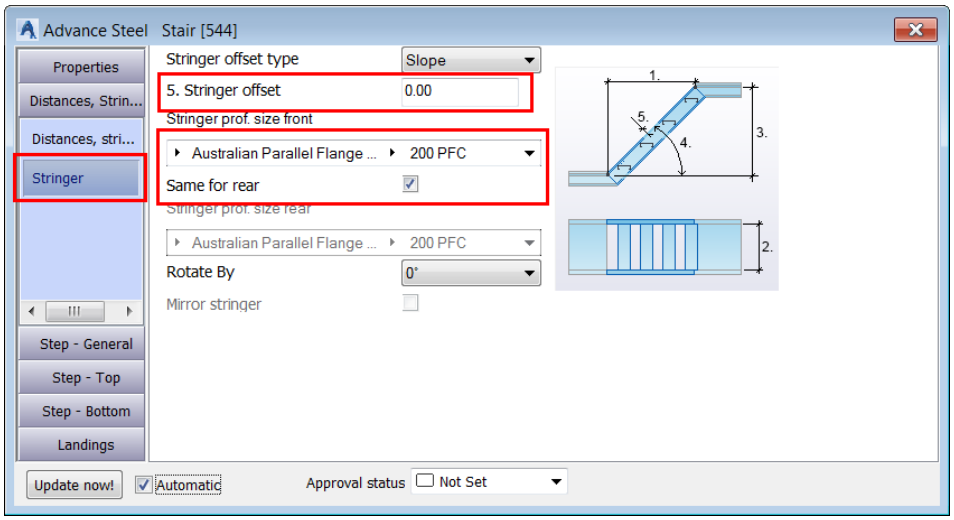
6. Select the point labeled as 2 in the figure above as the end point of the stair; you are informed that the middle alignment is by default selected to align the stair.

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.

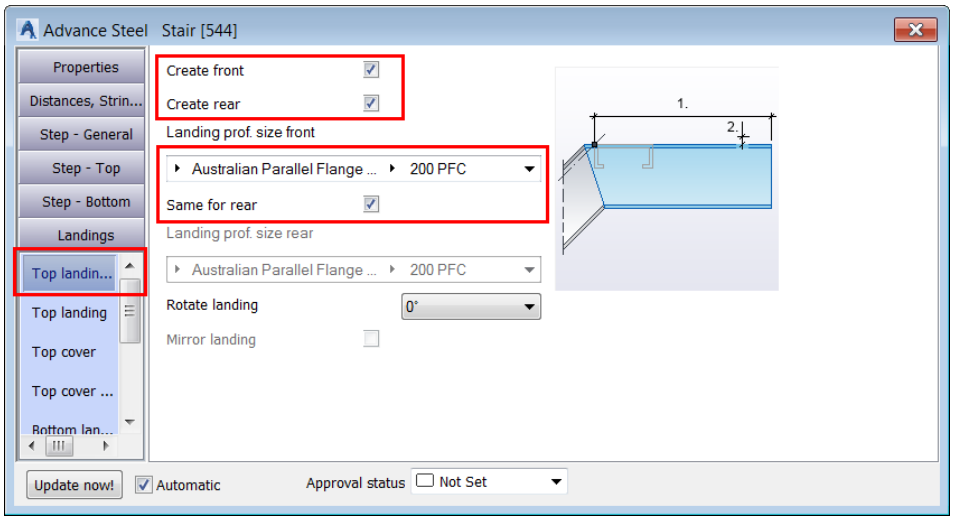
8. Activate the **Distances, Stringer** > **Stringer** tab.

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



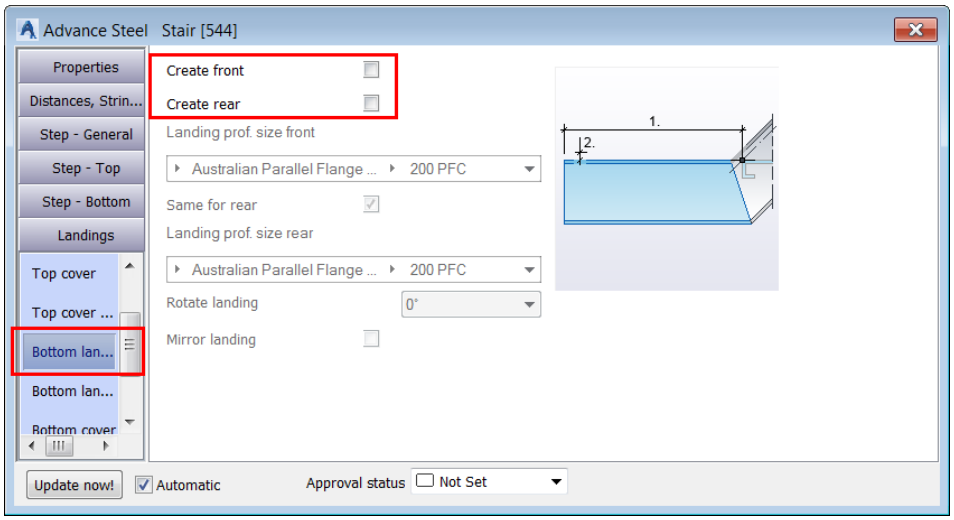

10. Activate the **Landings > Top landing prof.** tab.

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.

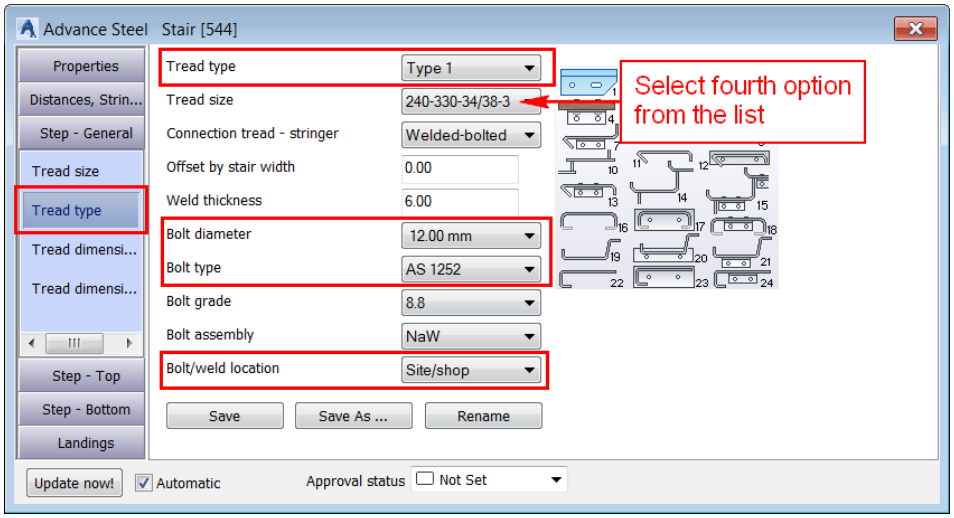



This ensures the bottom landings are not created. This is because in the next chapter, you will insert the Stair Anchor Base Plate joint to the bottom of the stringer.

Next, you will change the step tread type.

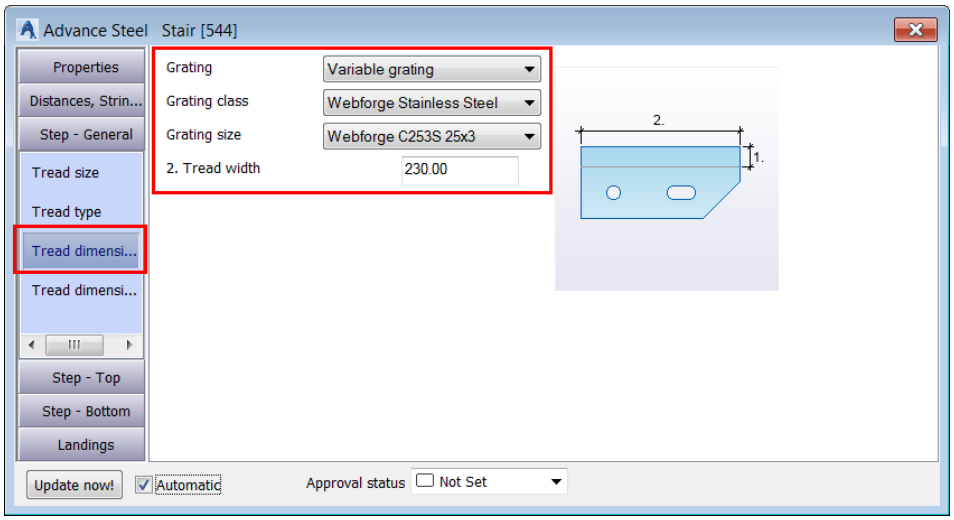
14. Activate the **Step - General > Tread type** tab.

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



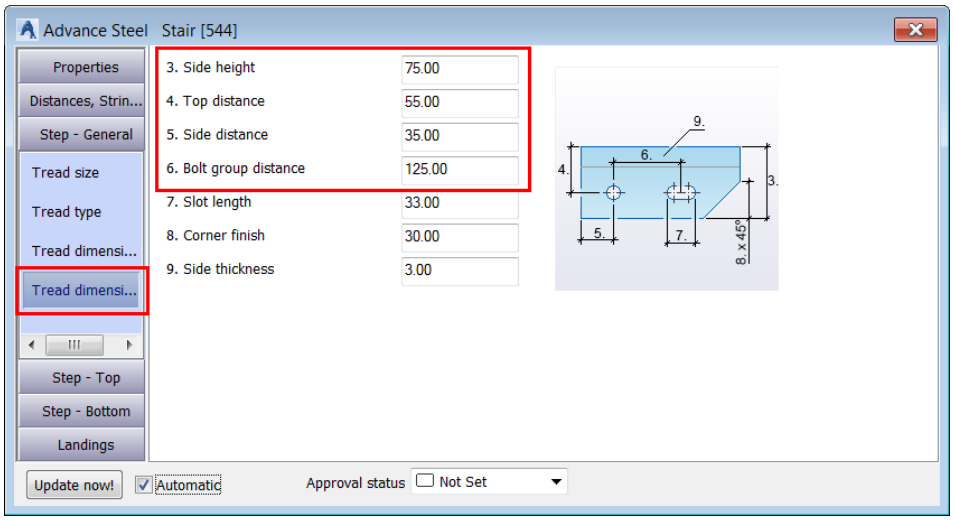

16. Activate the **Step - General > Tread dimensions 1** tab.

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



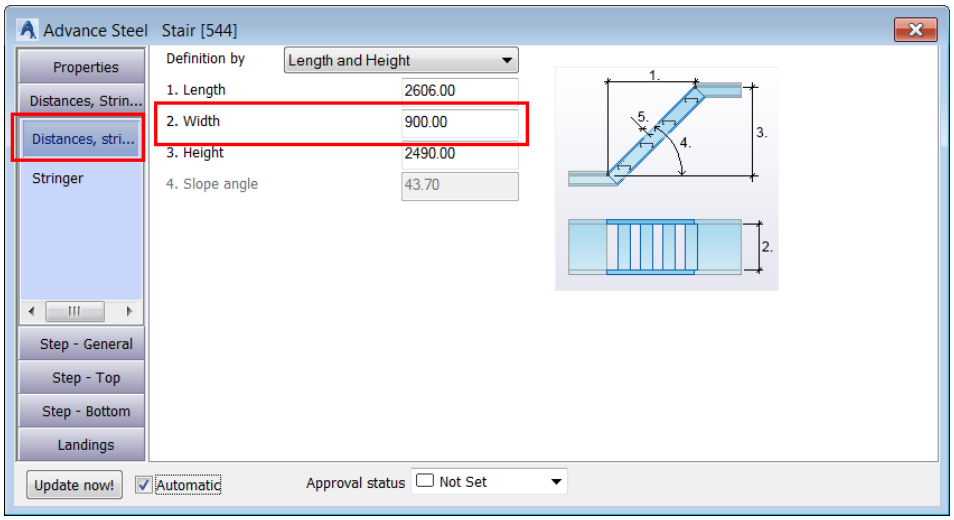

Next, you will change the dimensions of the end plate.

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.

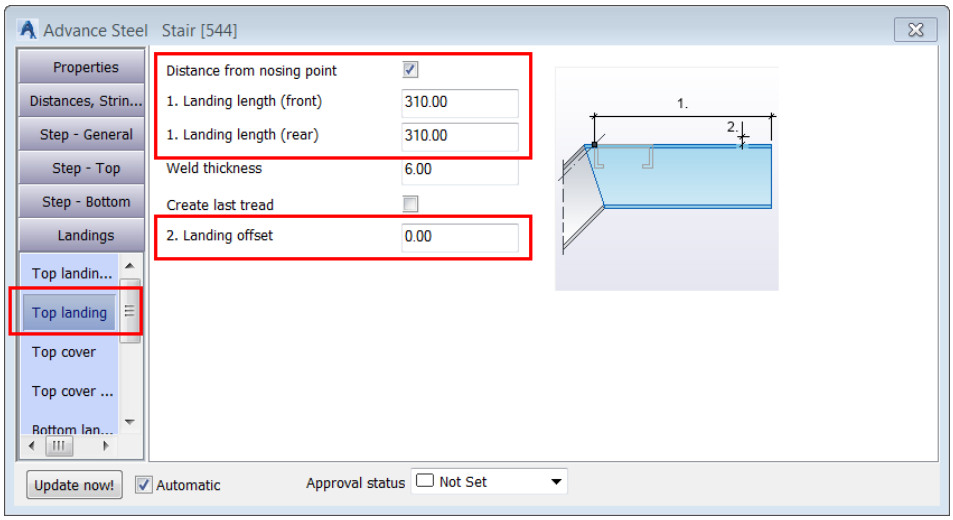
20. Activate the **Distances, Stringer > Distances, stringer** tab.
21. Configure the settings as shown in the figure below:




Next, you will modify the landing parameters.

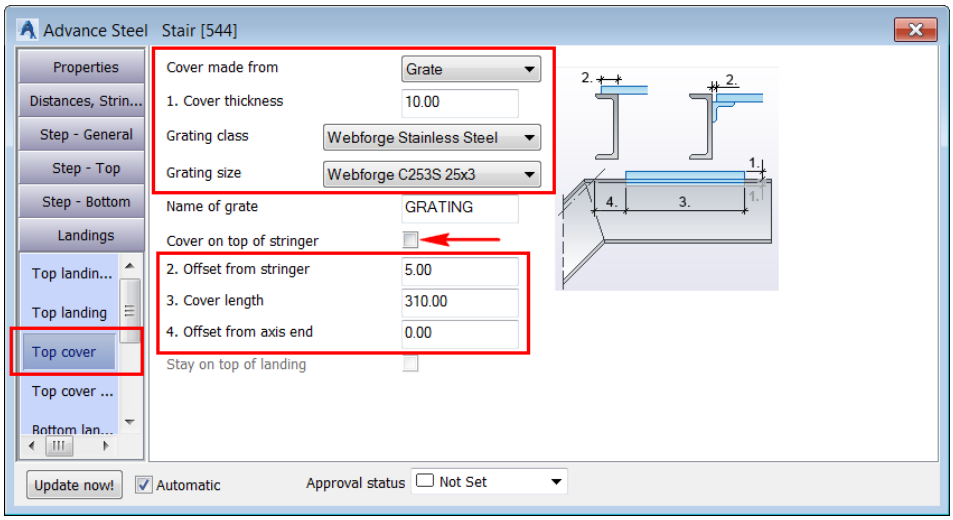
22. Activate the **Landings > Top landing** tab.

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




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

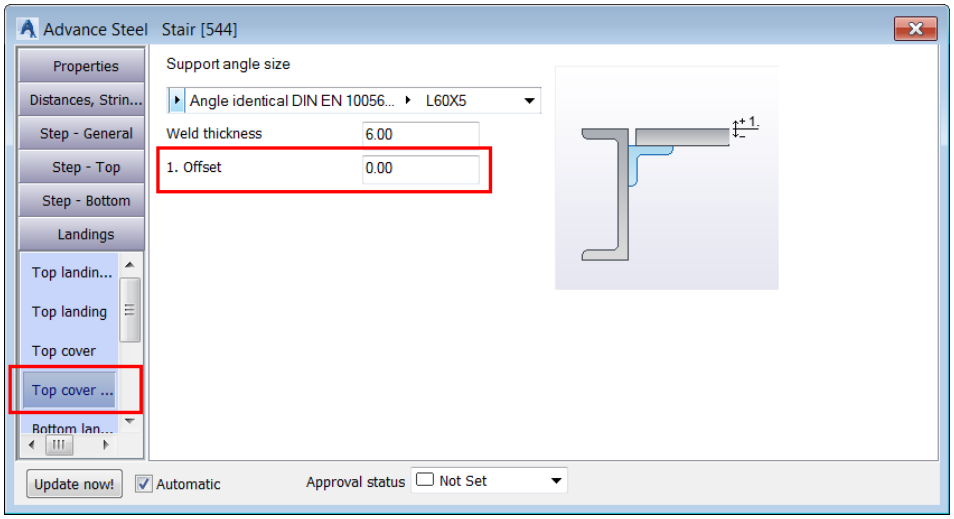
25. Configure the settings as shown in the figure below:




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:



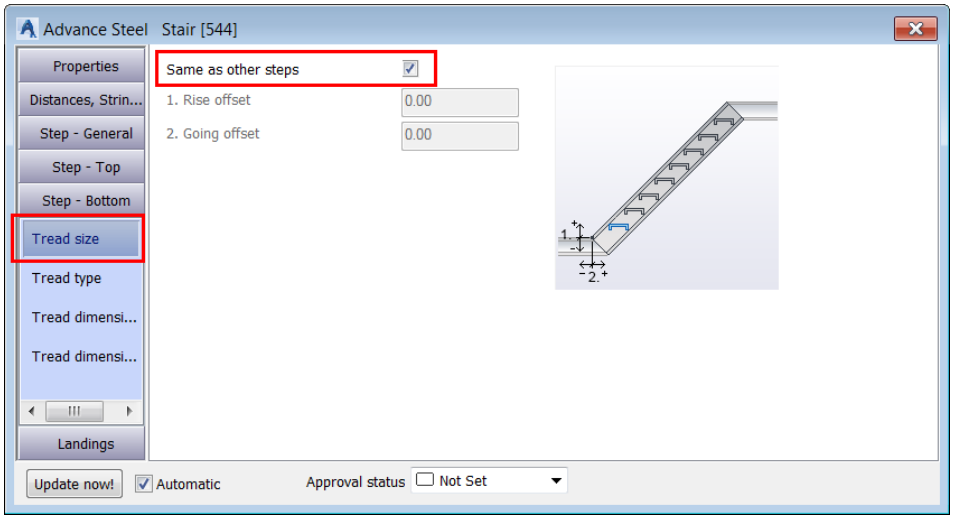

    Next, you need to modify the parameters of the bottom landing and the first tread.

28. Navigate to the bottom of the stair.

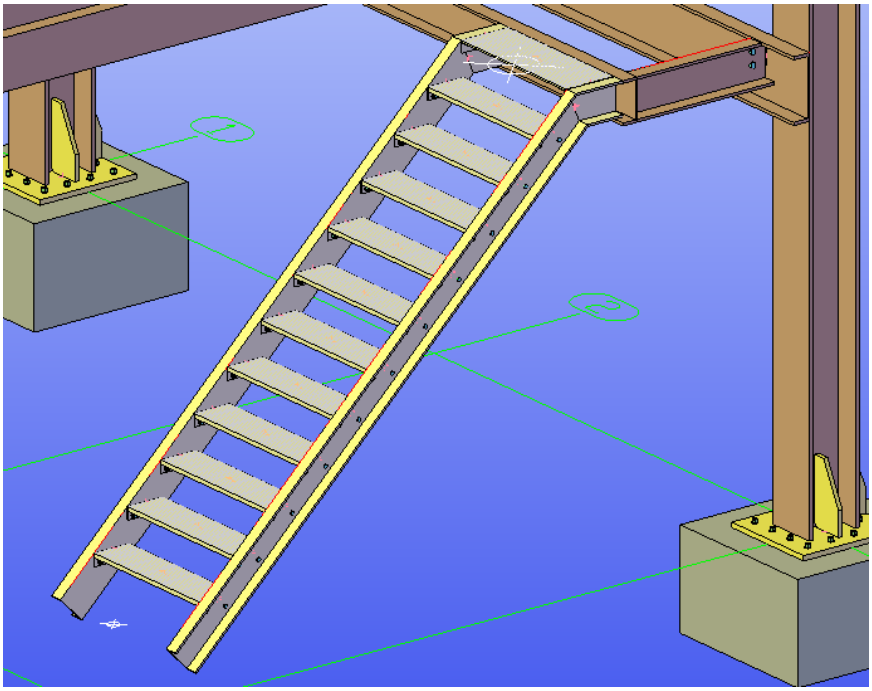
    Notice that the first tread is not the same as the remaining treads. Therefore, you need to modify this tread to match the remaining treads.

29. Activate the **Step - Bottom > Tread 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

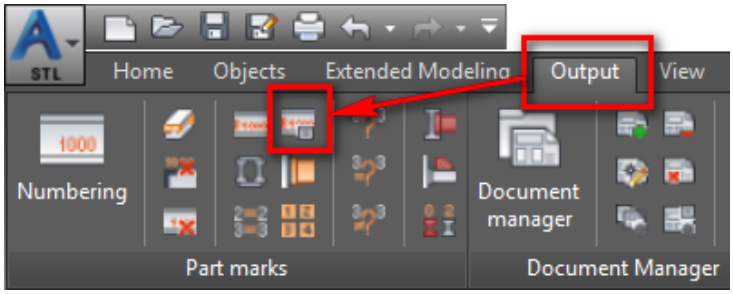
In this section, you will open the **Section5-Metric.dwg** file from the exercise files folder and then number the single parts and assemblies based on the default numbering prefixes.

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

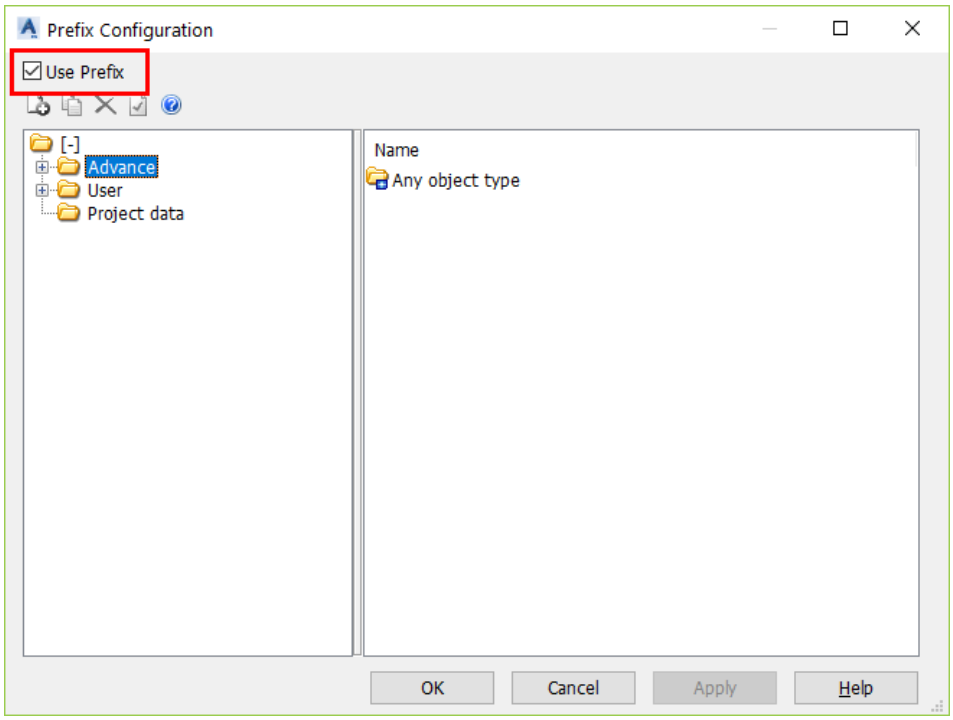
   This model has a few more stairs, handrails and joints added.

   You need to make sure the **Numbering** tool utilizes default prefixes while numbering objects. For that, you need to turn on the use of prefix.

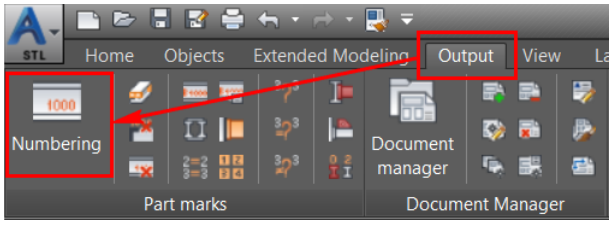
2. From the **Output** ribbon tab > **Part marks** ribbon panel, invoke the **Prefix settings** tool, as shown below; the **Prefix Configuration** dialog box is displayed.



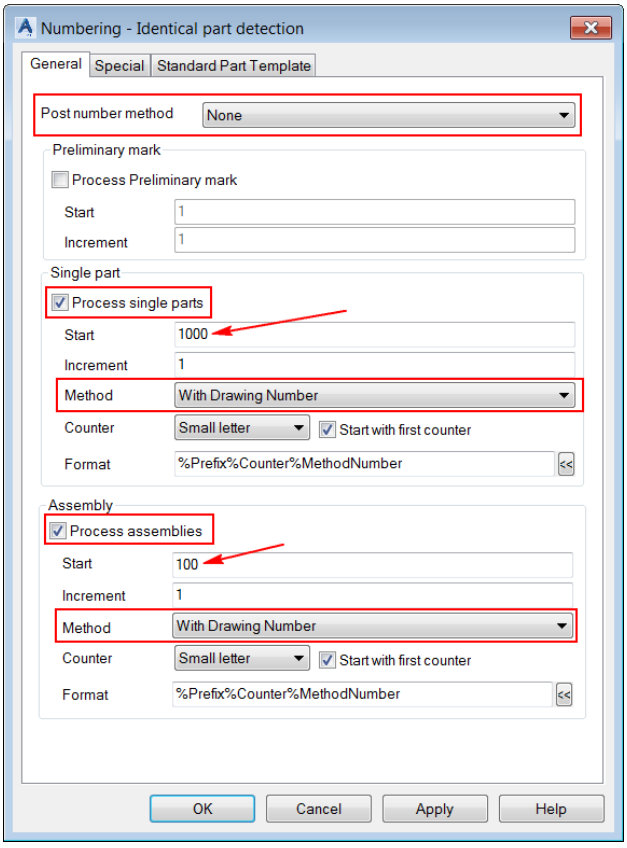

3. Select the **Use Prefix** tick box, as shown below and then close the dialog box.



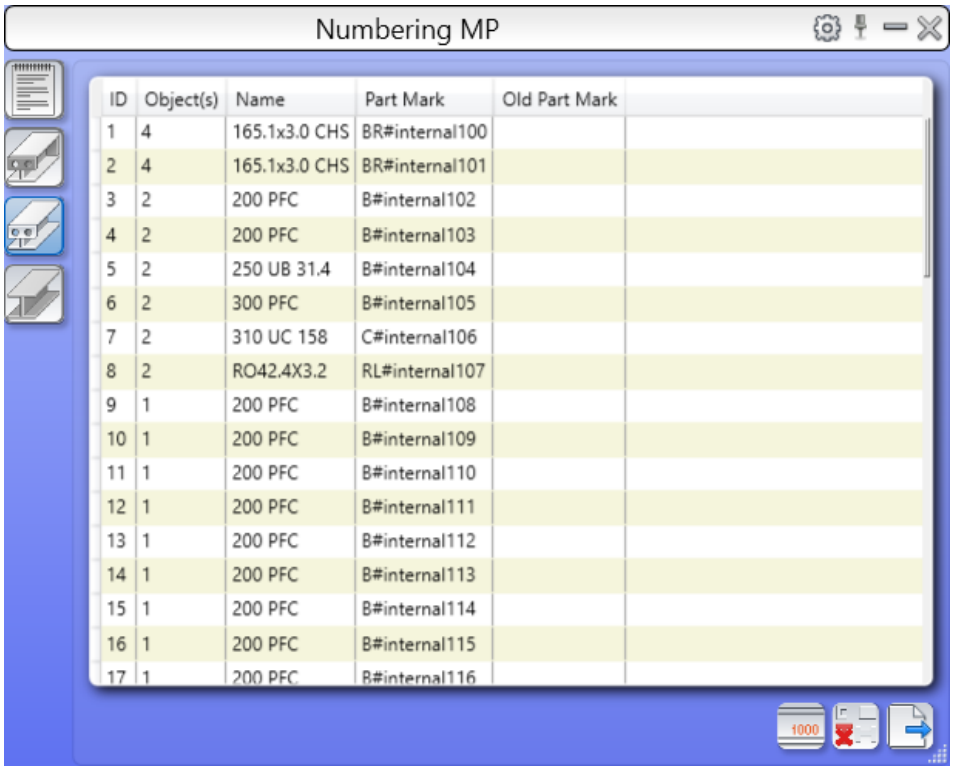
4. From the **Output** ribbon tab > **Part marks** ribbon panel, invoke the **Numbering** tool, as shown below; the **Numbering - Identical part detection** dialog box is displayed.




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




6. 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.




| ID | Object(s) | Name | Part Mark | Old Part Mark |
|---|---|---|---|---|
| 1 | 4 | 165.1x3.0 CHS | BR#internal100 | |
| 2 | 4 | 165.1x3.0 CHS | BR#internal101 | |
| 3 | 2 | 200 PFC | B#internal102 | |
| 4 | 2 | 200 PFC | B#internal103 | |
| 5 | 2 | 250 UB 31.4 | B#internal104 | |
| 6 | 2 | 300 PFC | B#internal105 | |
| 7 | 2 | 310 UC 158 | C#internal106 | |
| 8 | 2 | RO42.4X3.2 | RL#internal107 | |
| 9 | 1 | 200 PFC | B#internal108 | |
| 10 | 1 | 200 PFC | B#internal109 | |
| 11 | 1 | 200 PFC | B#internal110 | |
| 12 | 1 | 200 PFC | B#internal111 | |
| 13 | 1 | 200 PFC | B#internal112 | |
| 14 | 1 | 200 PFC | B#internal113 | |
| 15 | 1 | 200 PFC | B#internal114 | |
| 16 | 1 | 200 PFC | B#internal115 | |
| 17 | 1 | 200 PFC | B#internal116 | |

7. 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,

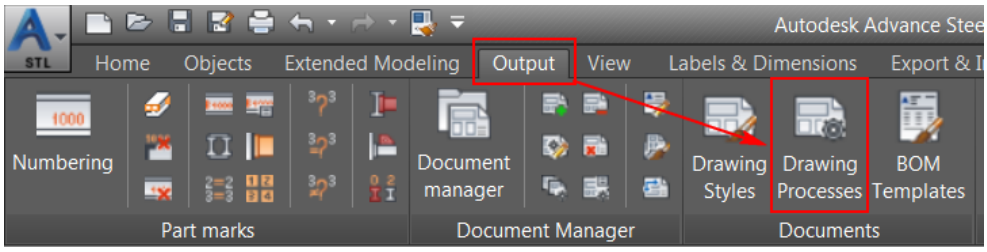
8. Close the **Numbering SP** window.

9. Save the file.

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

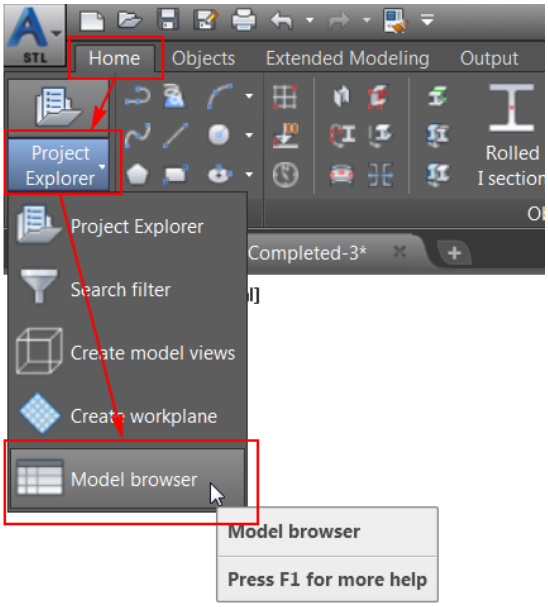
In this section, you will generate single part using the default Drawing Processes.

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 **Assemblies** tab selected from the left side of this palette.

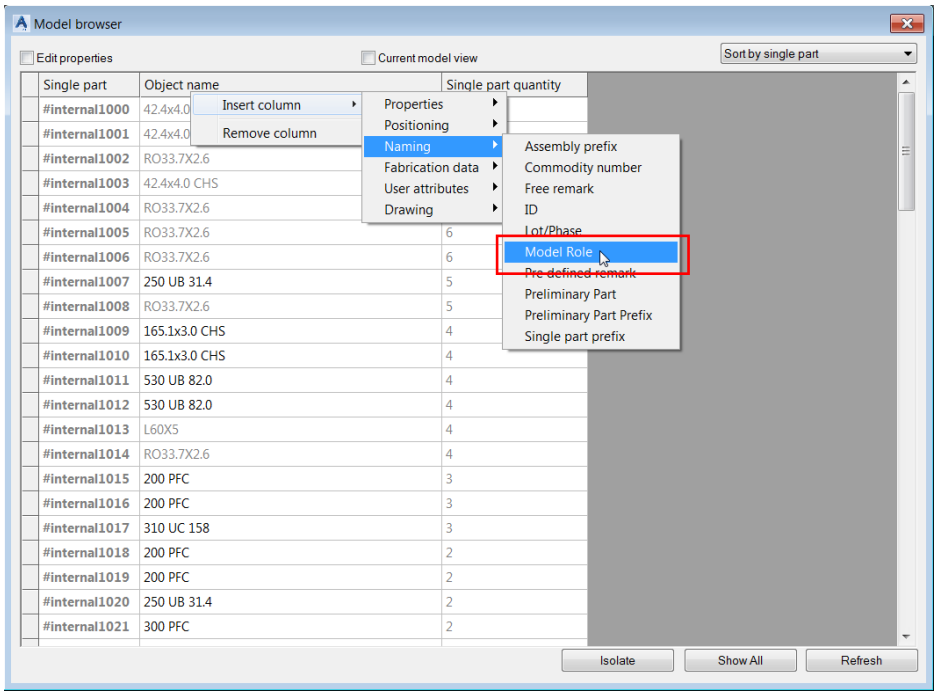



You will first generate the single part drawings of all the beam object types.

2. From the **Home** ribbon tab > **Project** ribbon panel > **Project Explorer** flyout, select **Model browser**, as shown below; the **Model browser** dialog box is displayed.

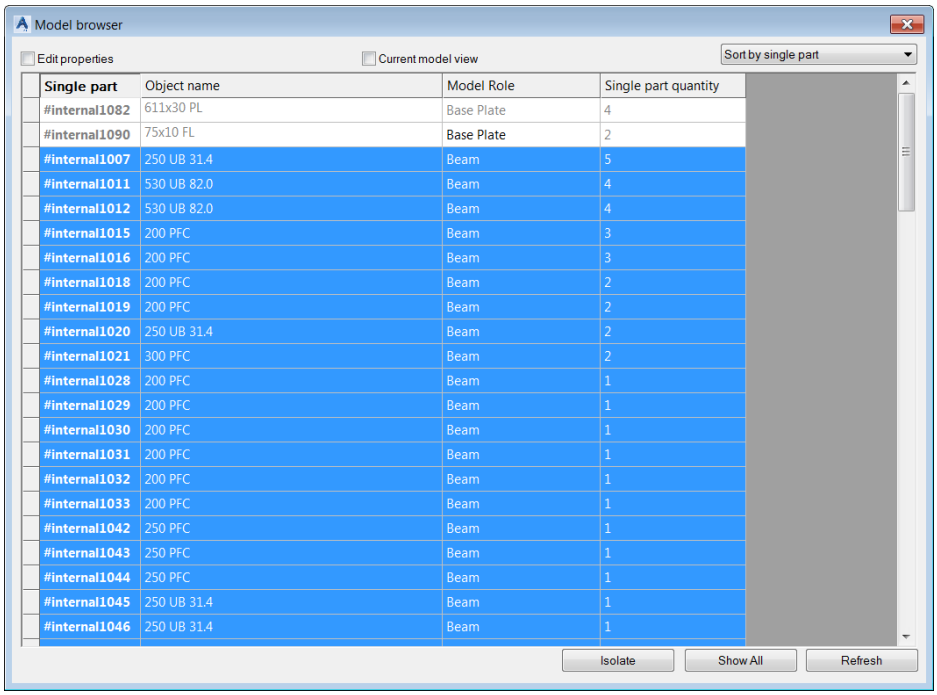



3. Right-click on the **Object name** column and select **Insert column > Naming > Model Role**, as shown below:




4. Click on the **Model Role** column name to sort the objects by their model roles.

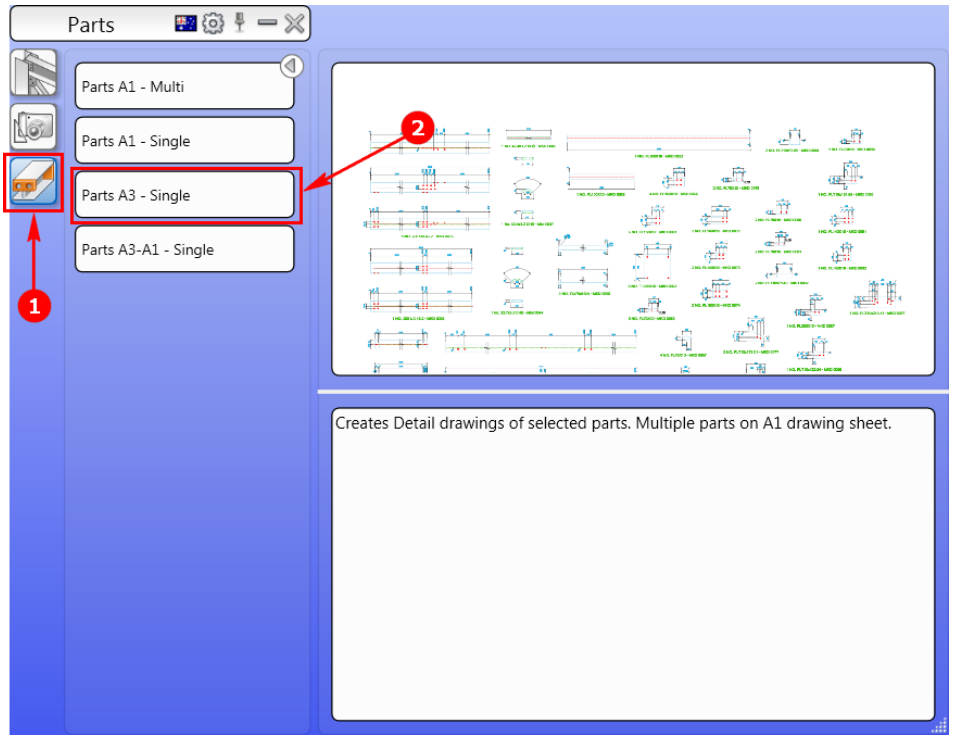
5. Hold down the SHIFT key and select all the objects that have **Beam** as their model role, as shown below.



6. Close the **Model browser** dialog box.

   You will now use the **Parts** process category to generate the drawings of the selected beam object types.

7. From the **Drawing Processes** palette, select **Parts** category labeled as **1** in the figure below.




8. Click on the **Parts A3 - Single** button labeled as **2** in the figure above; the **Process properties** dialog box is displayed.

9. Click **OK** in the dialog box; the process of generating the beam drawings starts.

10. Once all the drawings are generated, select the four columns from the drawing window.

11. Click on the **Parts A3 - Single** button labeled as **2** in the figure above; the **Process properties** dialog box is displayed.

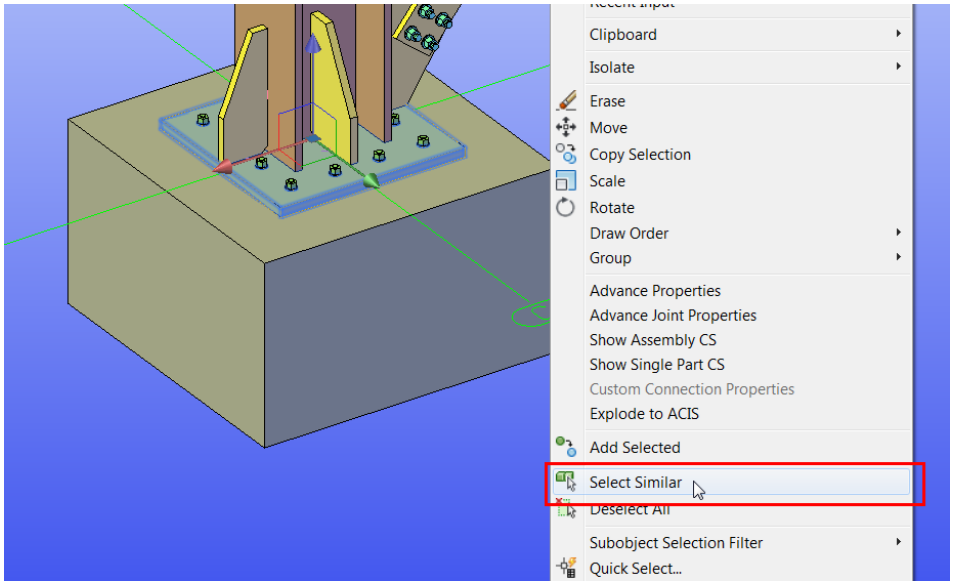
12. Click **OK** in the dialog box; the process of generating the column drawings starts.

    Next, you will generate the drawings of plates. But you will document as many plates as you can on a single drawing sheet. For that, you will first select the plates.

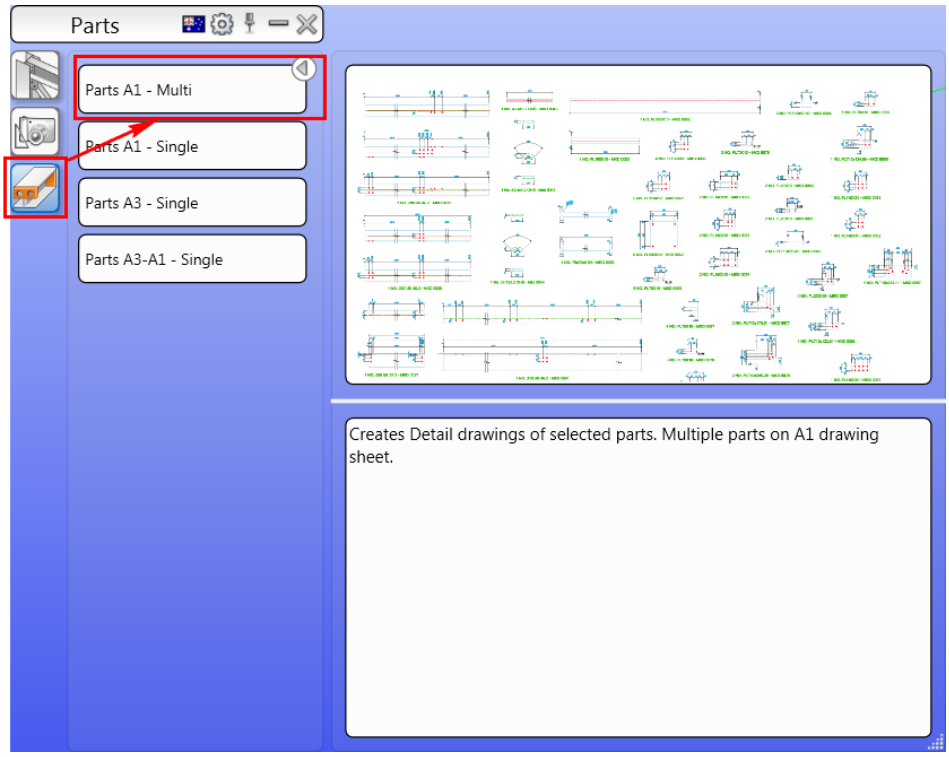
13. Zoom close to the bottom of one of the columns, refer to the figure below.

14. Select the base plate of the base plate joint and then right-click to display the shortcut menu, as shown in the figure below.

15. From the shortcut menu, click **Select Similar**, as shown in the figure below; all the plate objects are selected.




16. From the **Drawing Processes** palette, select **Parts > Parts A1 - Multi**, as shown below; the **Process properties** dialog box is displayed.

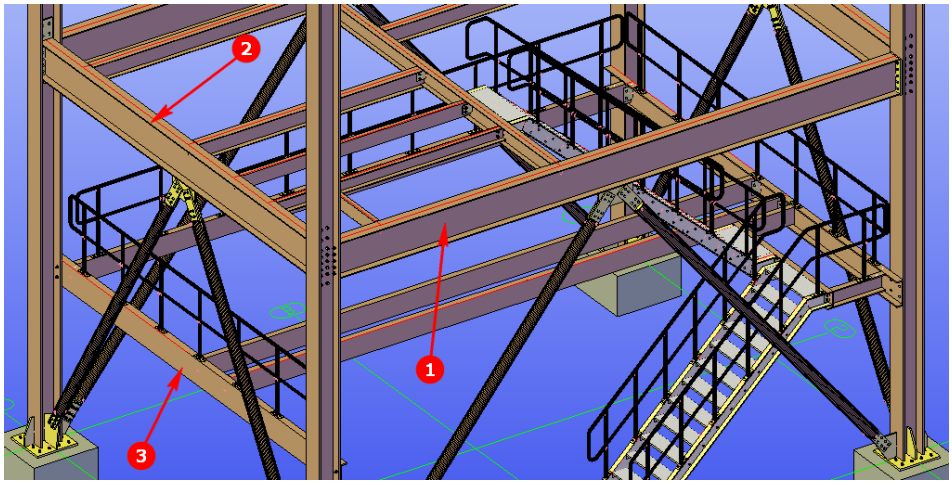



17. Click **OK** in the dialog box; the process of generating the plate drawings starts.

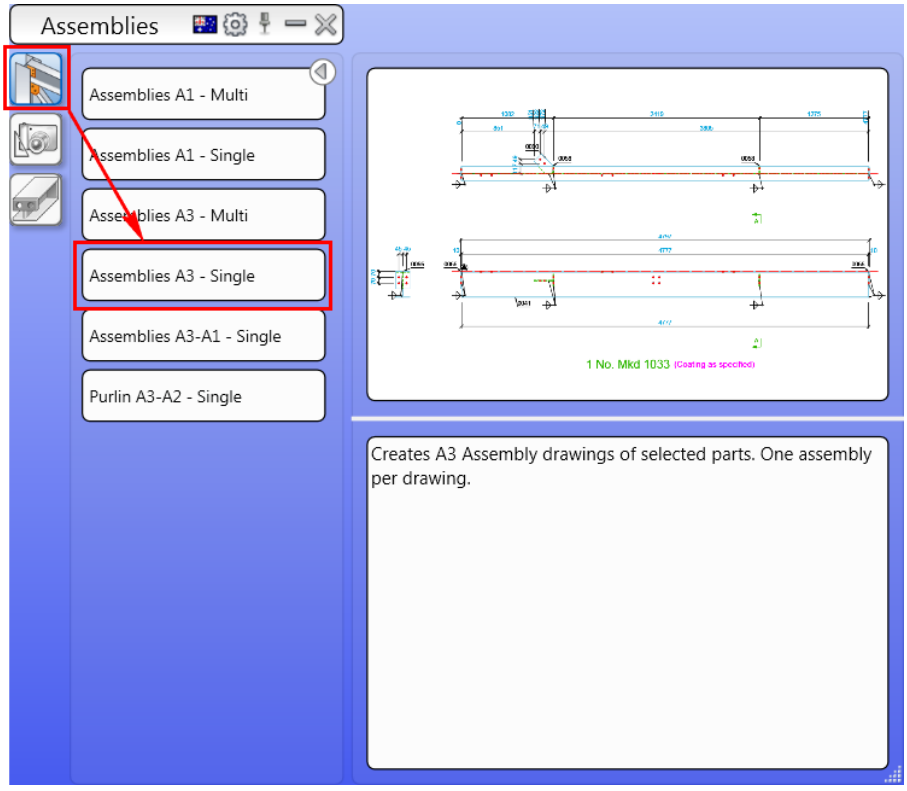
## Section 7: Generating Assembly Drawings Using the Default Drawing Processes

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 **Assemblies > Assemblies A3 - Single**, as shown below; the **Process properties** dialog box is displayed.

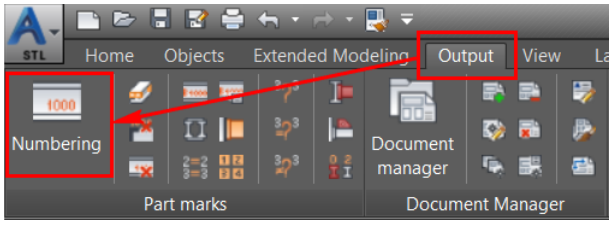


3. Click **OK** in the dialog box; the process of generating the assembly drawings starts.

## Section 8: Running the Numbering Again

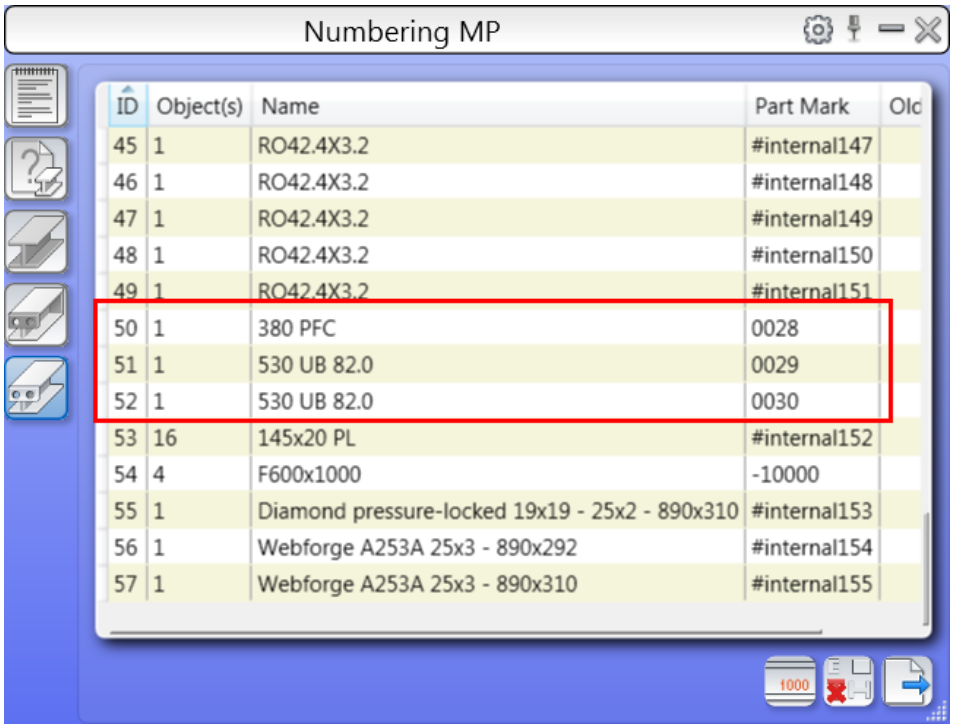
Because you used the process of generating the single part and assembly numbers based on the drawings, you will now run the numbering again to update the single part and assembly numbers to update the numbers of the objects whose drawings are generated.

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.

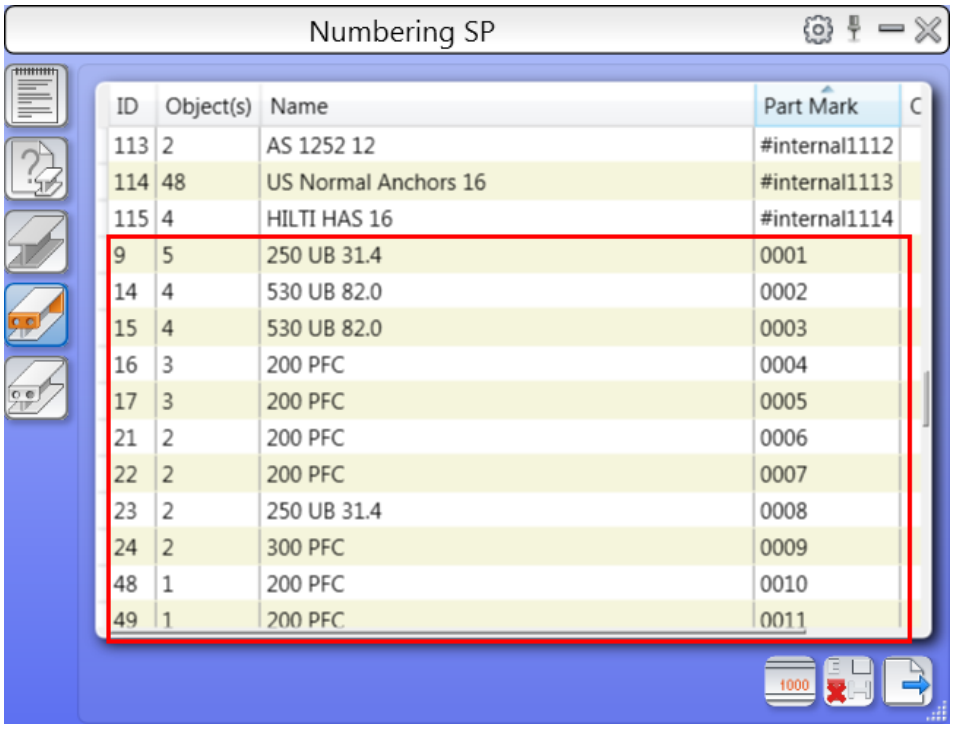



2. Click **OK** in the dialog box; the numbering is updated and the **Numbering MP** window is displayed.

3. Scroll down in the window and notice that there are three main parts that show proper part marks, as shown below:




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

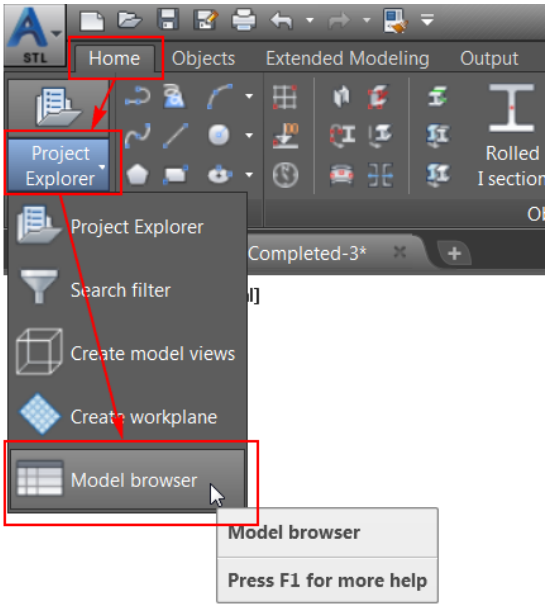



5. Close the **Numbering SP** window.

## 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.

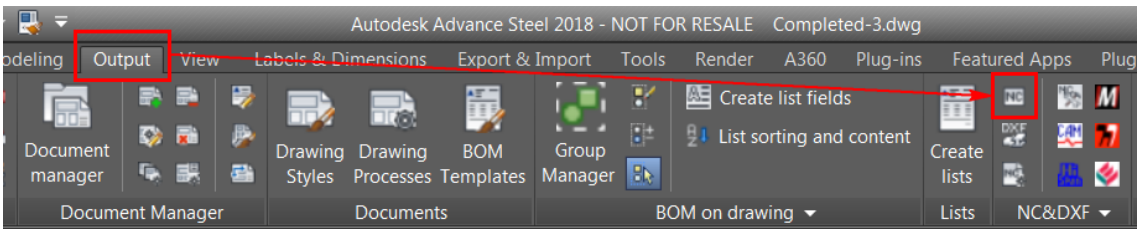
1. From the **Home** ribbon tab > **Project** ribbon panel > **Project Explorer** flyout, select **Model browser**, as shown below; the **Model browser** dialog box is displayed.




2. Select all objects that have **Beam** as the model role.

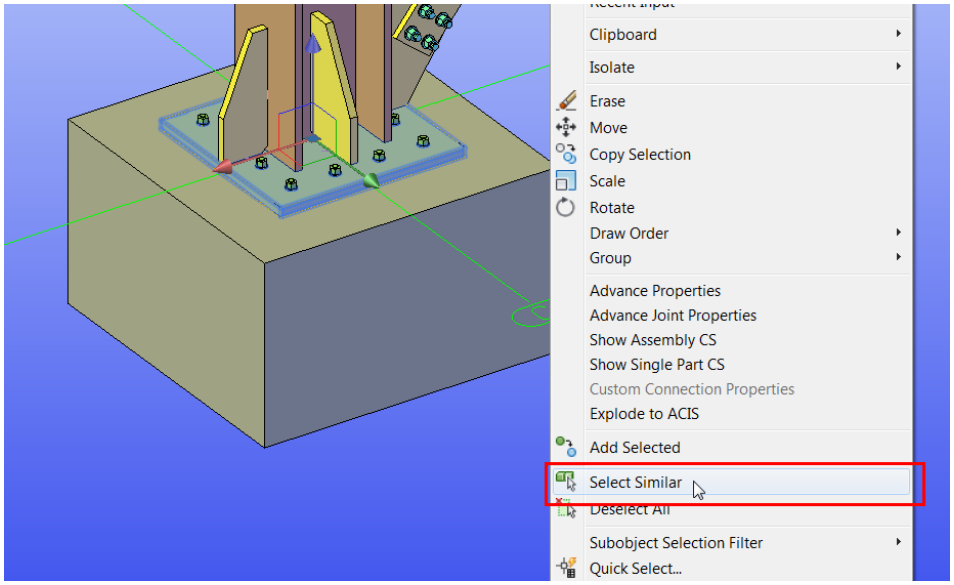
3. Close the **Model browser** dialog box.

4. 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.

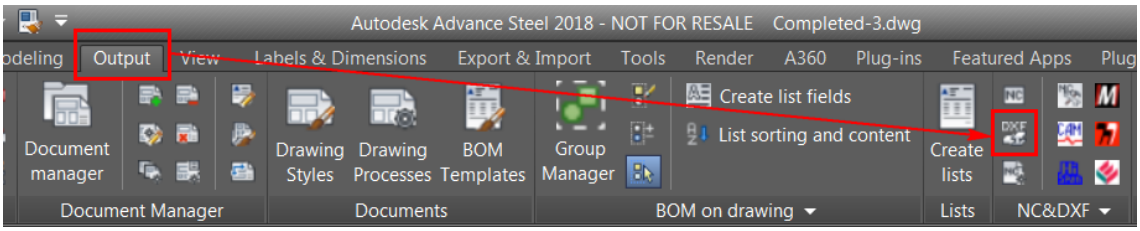



5. Once the NC files are generated, press ESC to deselect all the beams.

6. 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.




7. 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.



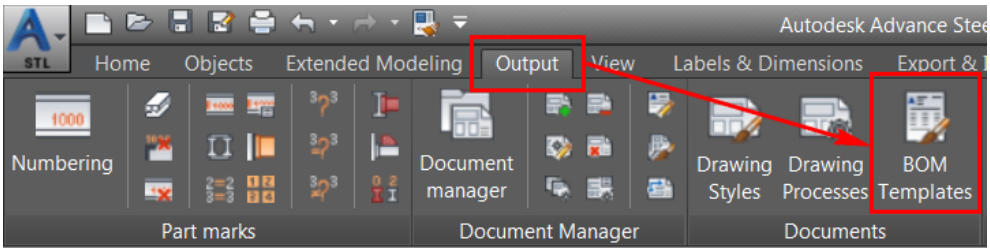

8. Once the DXF files are generated, press the ESC key to deselect the plates.

## Section 10: Generating Bill of Materials (BOMs)

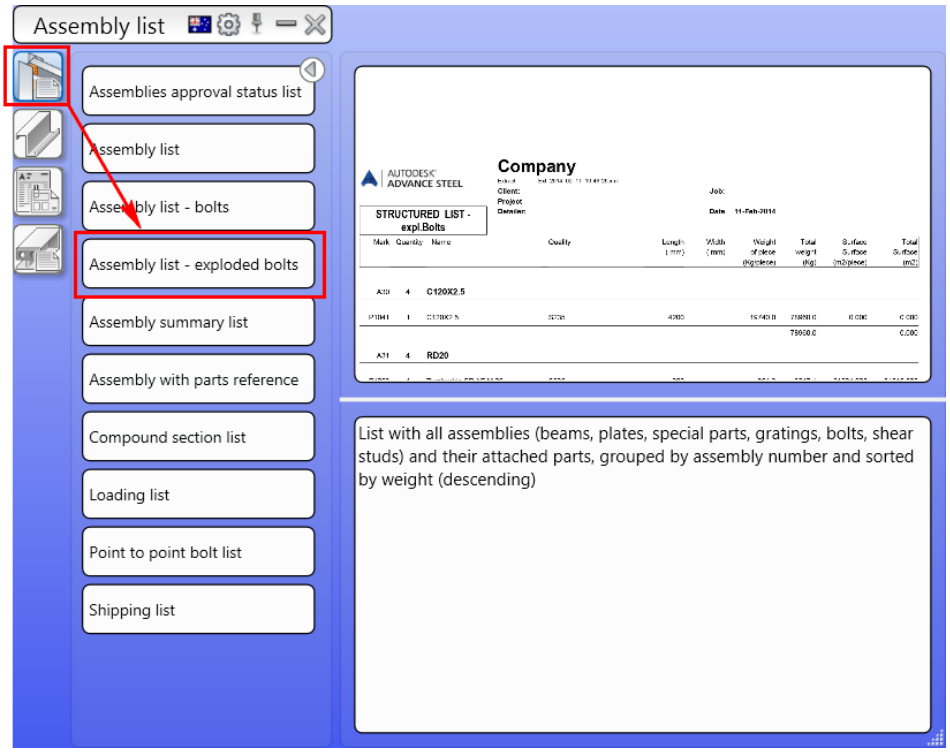
In this section, you will generate the NC files for the selected beams and DXF files for the selected plates.

1. Press the ESC key to make sure nothing is selected from the model.

2. From the **Output** ribbon tab > **Documents** ribbon panel, invoke the **BOM Templates** tool, as shown below; the **BOM Templates** palette is displayed.

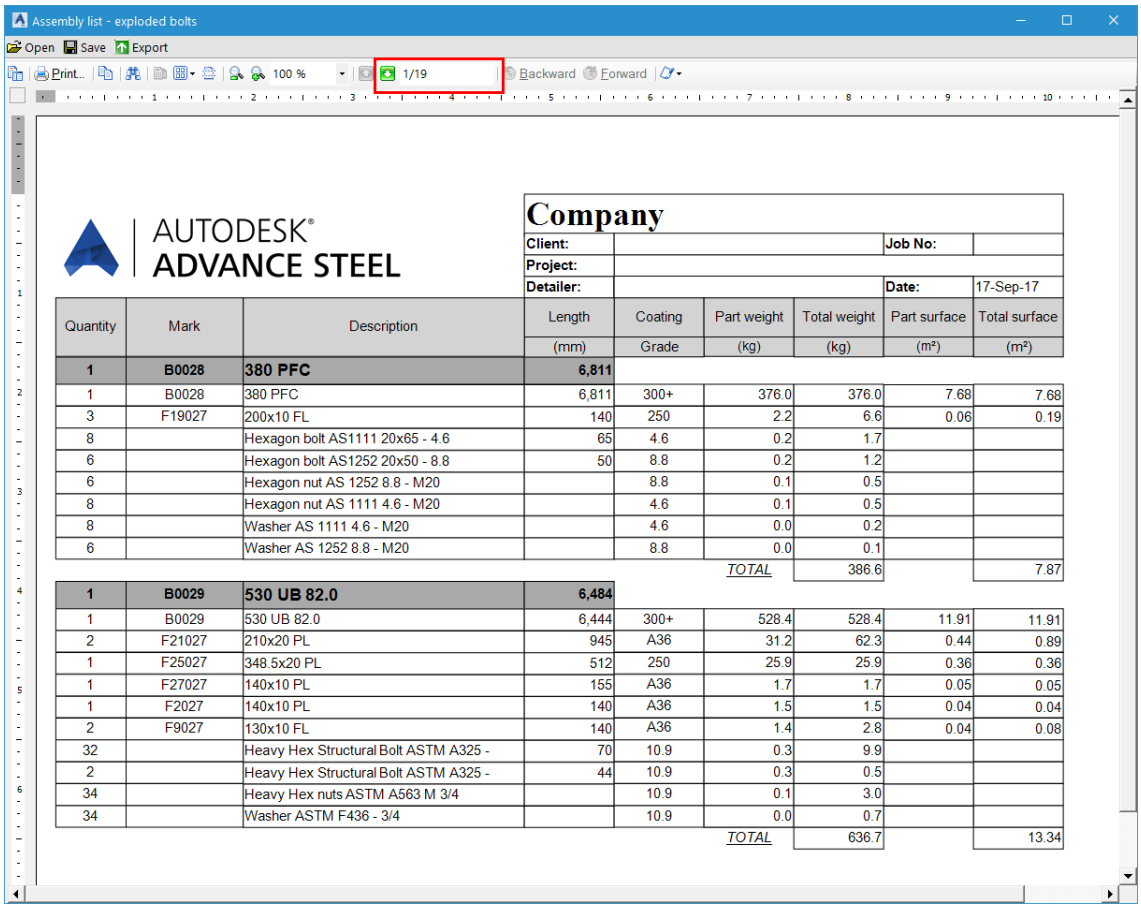



3. From the **Assembly list** category, select **Assembly list – exploded bolts**, as shown below.




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

4. 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.

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|---|---|---|---|
| **Client:** | | **Job No:** | |
| **Project:** | | | |
| **Detailer:** | | **Date:** | 17-Sep-17 |

| Quantity | Mark | Description | Length (mm) | Coating Grade | Part weight (kg) | Total weight (kg) | Part surface (m²) | Total surface (m²) |
|---|---|---|---|---|---|---|---|---|
| **1** | **B0028** | **380 PFC** | **6,811** | | | | | |
| 1 | B0028 | 380 PFC | 6,811 | 300+ | 376.0 | 376.0 | 7.68 | 7.68 |
| 3 | F19027 | 200x10 FL | 140 | 250 | 2.2 | 6.6 | 0.06 | 0.19 |
| 8 | | Hexagon bolt AS1111 20x65 - 4.6 | 65 | 4.6 | 0.2 | 1.7 | | |
| 6 | | Hexagon bolt AS1252 20x50 - 8.8 | 50 | 8.8 | 0.2 | 1.2 | | |
| 6 | | Hexagon nut AS 1252 8.8 - M20 | | 8.8 | 0.1 | 0.5 | | |
| 8 | | Hexagon nut AS 1111 4.6 - M20 | | 4.6 | 0.1 | 0.5 | | |
| 8 | | Washer AS 1111 4.6 - M20 | | 4.6 | 0.0 | 0.2 | | |
| 6 | | Washer AS 1252 8.8 - M20 | | 8.8 | 0.0 | 0.1 | | |
| | | | | | TOTAL | 386.6 | | 7.87 |
| **1** | **B0029** | **530 UB 82.0** | **6,484** | | | | | |
| 1 | B0029 | 530 UB 82.0 | 6,444 | 300+ | 528.4 | 528.4 | 11.91 | 11.91 |
| 2 | F21027 | 210x20 PL | 945 | A36 | 31.2 | 62.3 | 0.44 | 0.89 |
| 1 | F25027 | 348.5x20 PL | 512 | 250 | 25.9 | 25.9 | 0.36 | 0.36 |
| 1 | F27027 | 140x10 PL | 155 | A36 | 1.7 | 1.7 | 0.05 | 0.05 |
| 1 | F2027 | 140x10 PL | 140 | A36 | 1.5 | 1.5 | 0.04 | 0.04 |
| 2 | F9027 | 130x10 FL | 140 | A36 | 1.4 | 2.8 | 0.04 | 0.08 |
| 32 | | Heavy Hex Structural Bolt ASTM A325 - | 70 | 10.9 | 0.3 | 9.9 | | |
| 2 | | Heavy Hex Structural Bolt ASTM A325 - | 44 | 10.9 | 0.3 | 0.5 | | |
| 34 | | Heavy Hex nuts ASTM A563 M 3/4 | | 10.9 | 0.1 | 3.0 | | |
| 34 | | Washer ASTM F436 - 3/4 | | 10.9 | 0.0 | 0.7 | | |
| | | | | | TOTAL | 636.7 | | 13.34 |

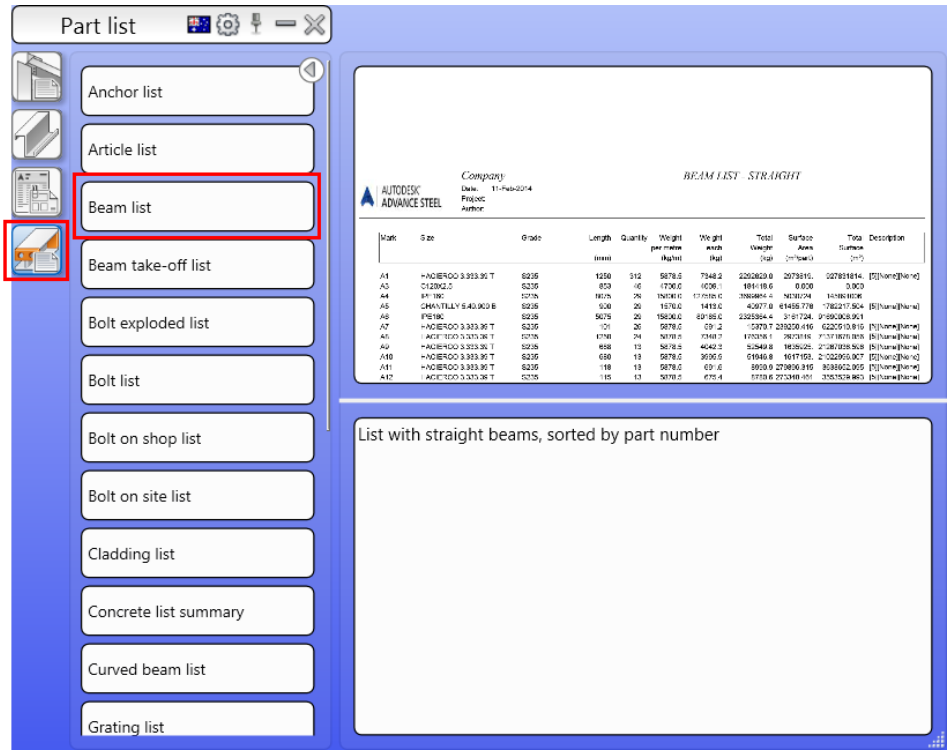
5. From the top left of the **Assembly list – exploded bolts** window, click **Save**; the **Save As** dialog box is displayed.

6. 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.*

7. Close the **Assembly list – exploded bolts** window to return to the model.

8. From the **Parts list** category, invoke the **Beam list** tool, as shown below; the beam list is generated and listed in a separate window.

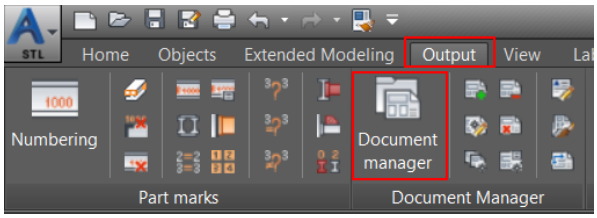



9. Save the beam list.
10. Save the file and close it.

## 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.

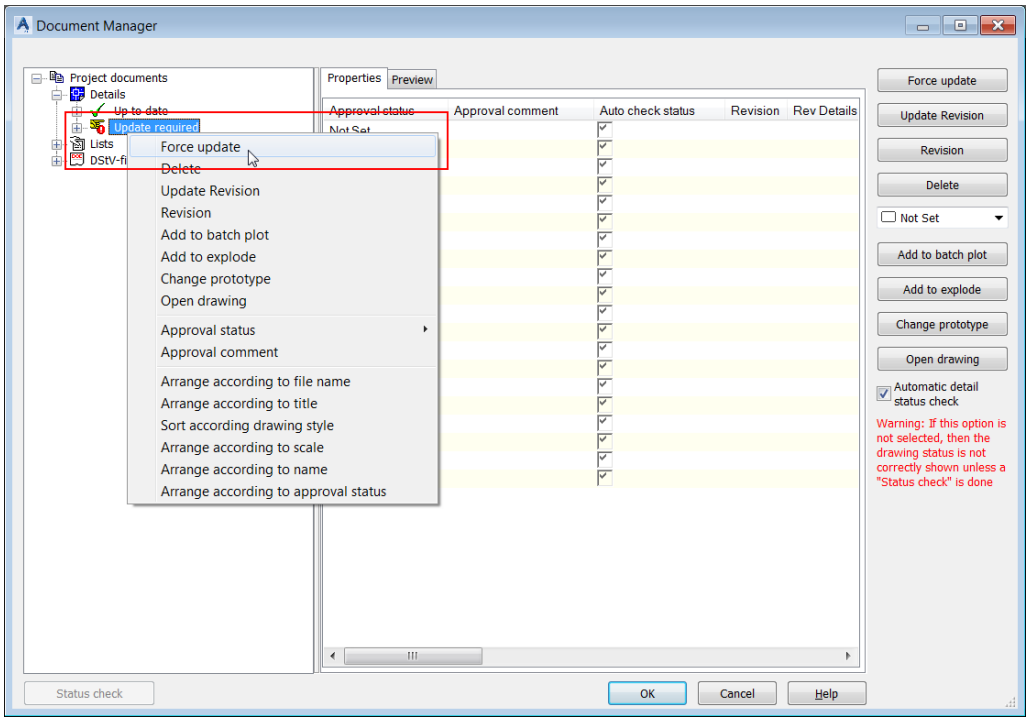
1. From the **Output** ribbon tab > **Document Manager** ribbon panel, invoke the **Document manager** tool, as shown below; the **Document Manager** dialog box is displayed.




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.

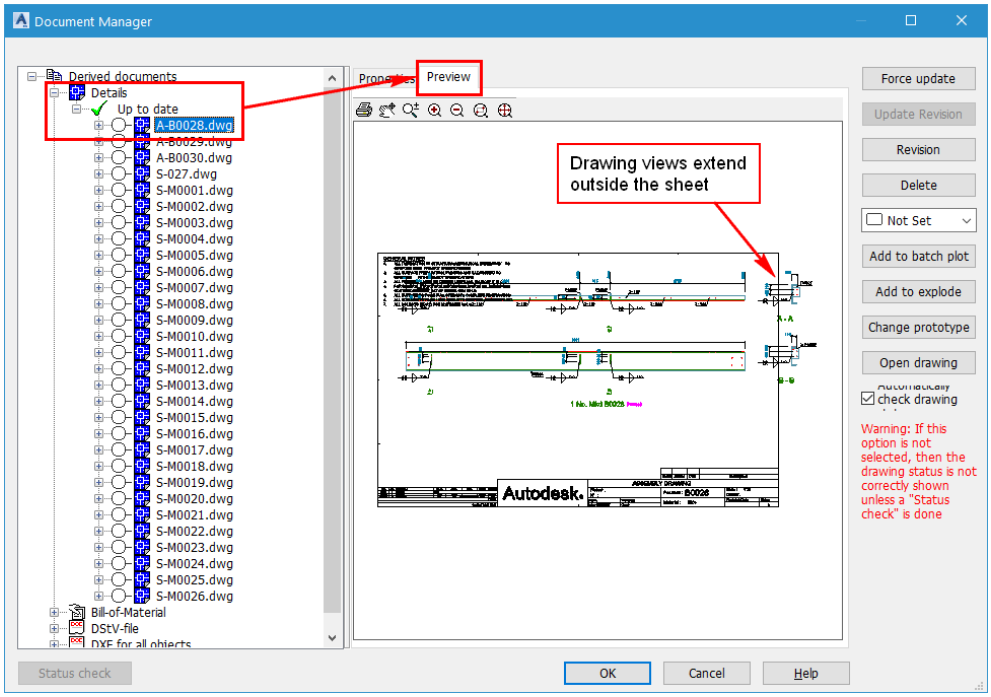
3. Right-click on the **Update required** category and select **Force update** from the shortcut menu, as shown below:




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.

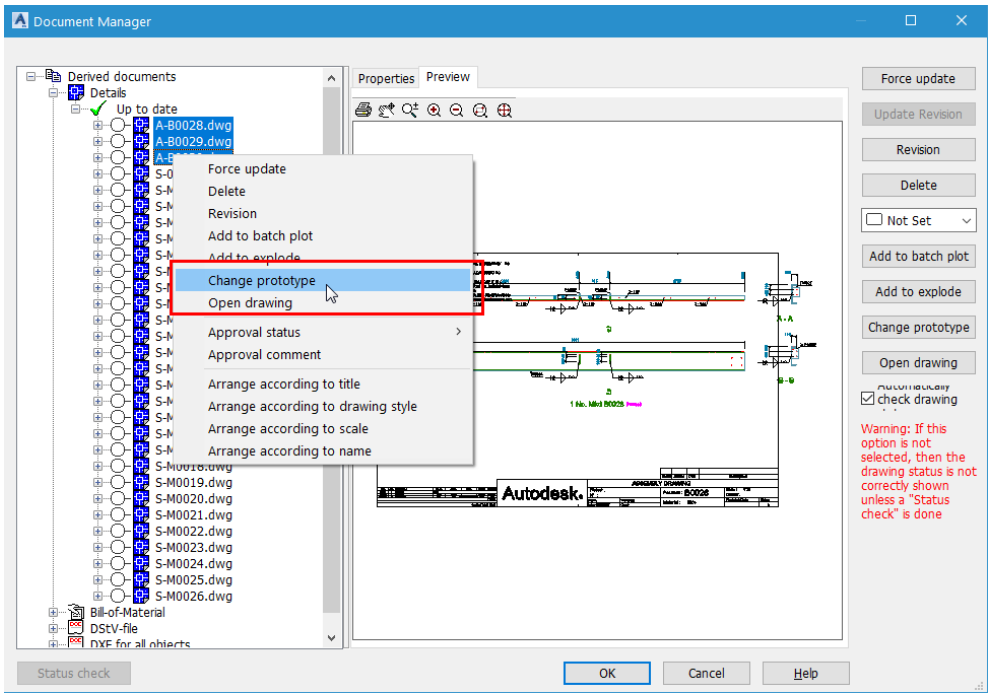
5. From the right pane of the dialog box, select **Preview** to preview this drawing, as shown in the figure below.



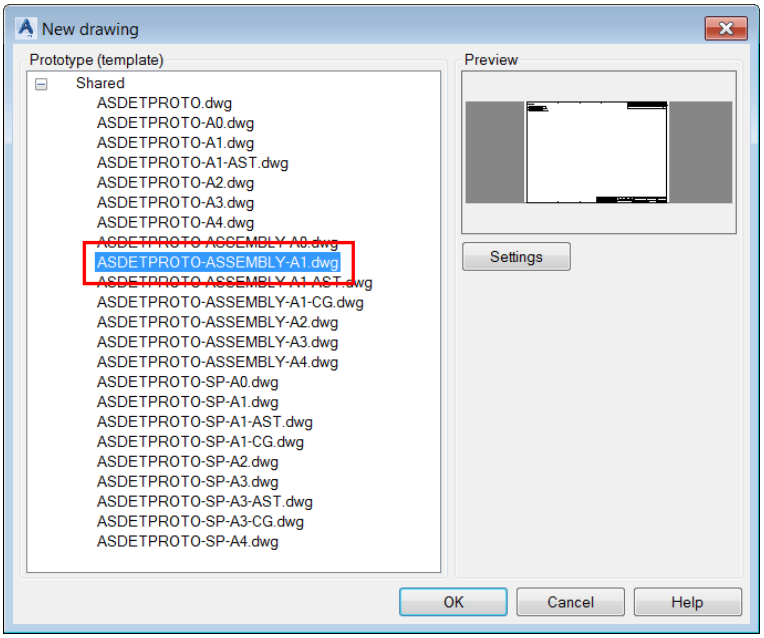

Notice that the drawing views extend outside the sheet. This is the case with all three assembly drawings. Therefore, you need to change the prototype of these assembly drawings.

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.

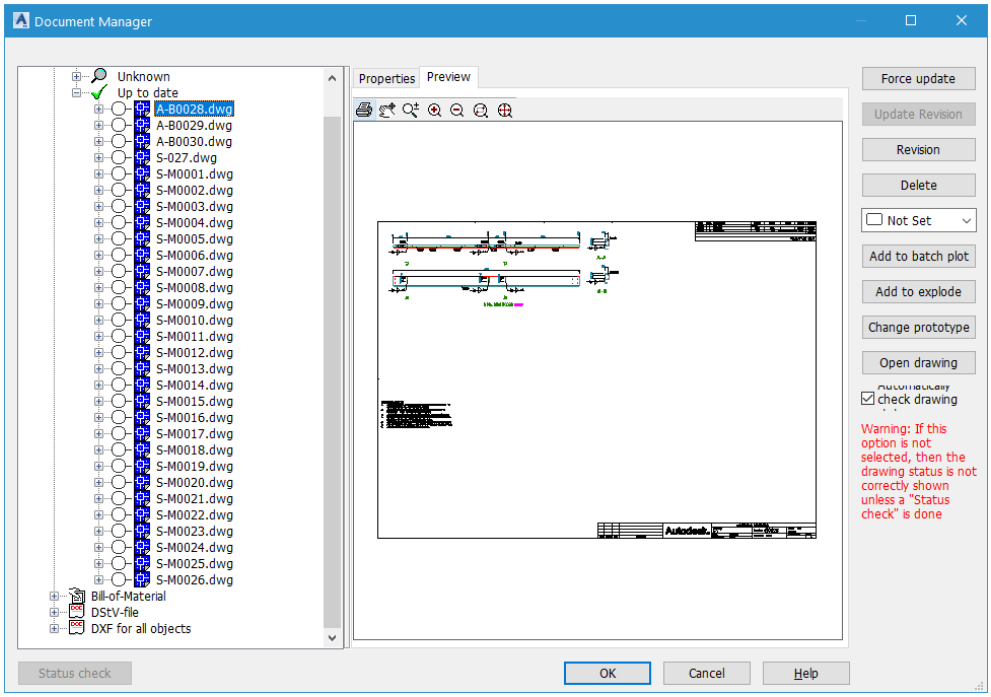



8. From the **New drawing** dialog box, select **ASDETPROTO-ASSEMBLY-A1.dwg**, as shown below:

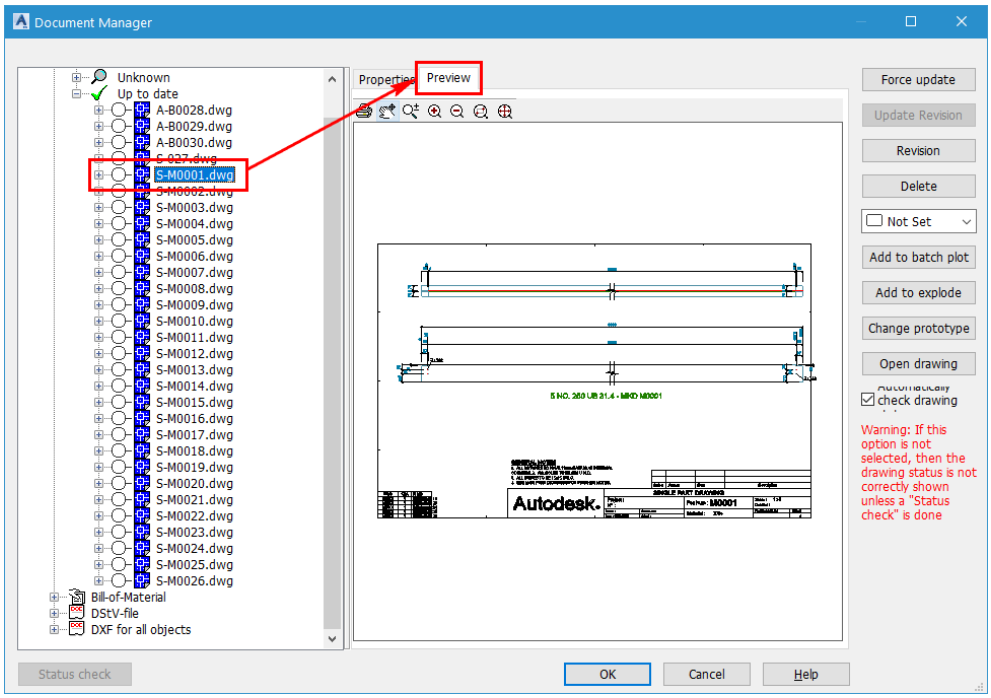



9. Click **OK** in the dialog box; the prototypes of the assembly drawings will be updated. However, there will be a new category created called **Unknown**. This category will automatically disappear once you close the dialog box.

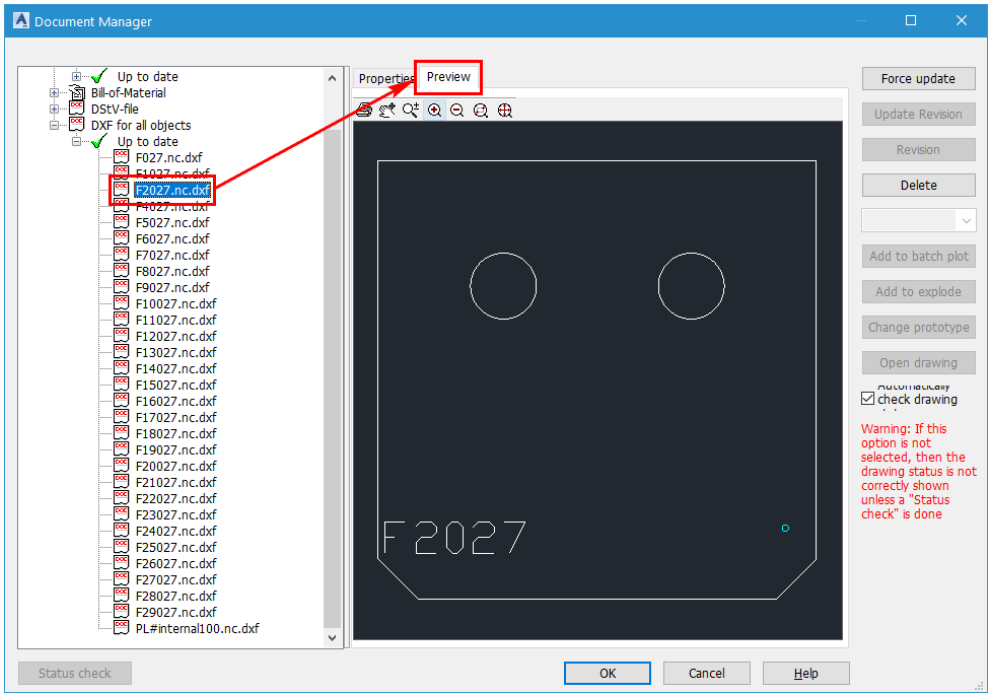
10. Expand the **Details > Up to date** category and then click on the first assembly drawing in the list; the preview shows the drawing views inside the drawing sheet, as shown in the figure below.




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




12. Expand the **DXF for all objects > Up to date** category to preview the DXF files of the plates, as shown below.



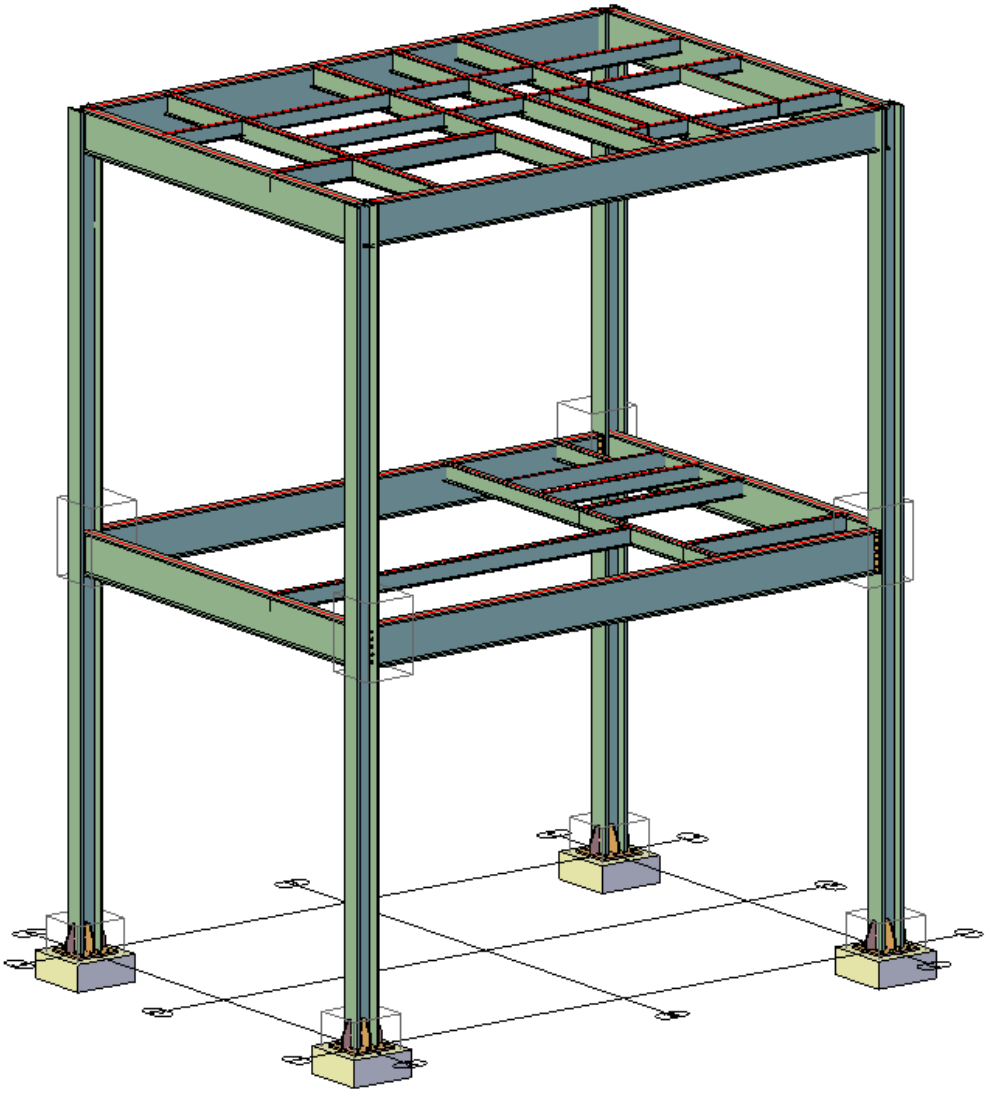

13. Similarly, expand the **DStV-NC** category and preview the NC code of the beams.

14. Close the dialog box.

15. Save the file.

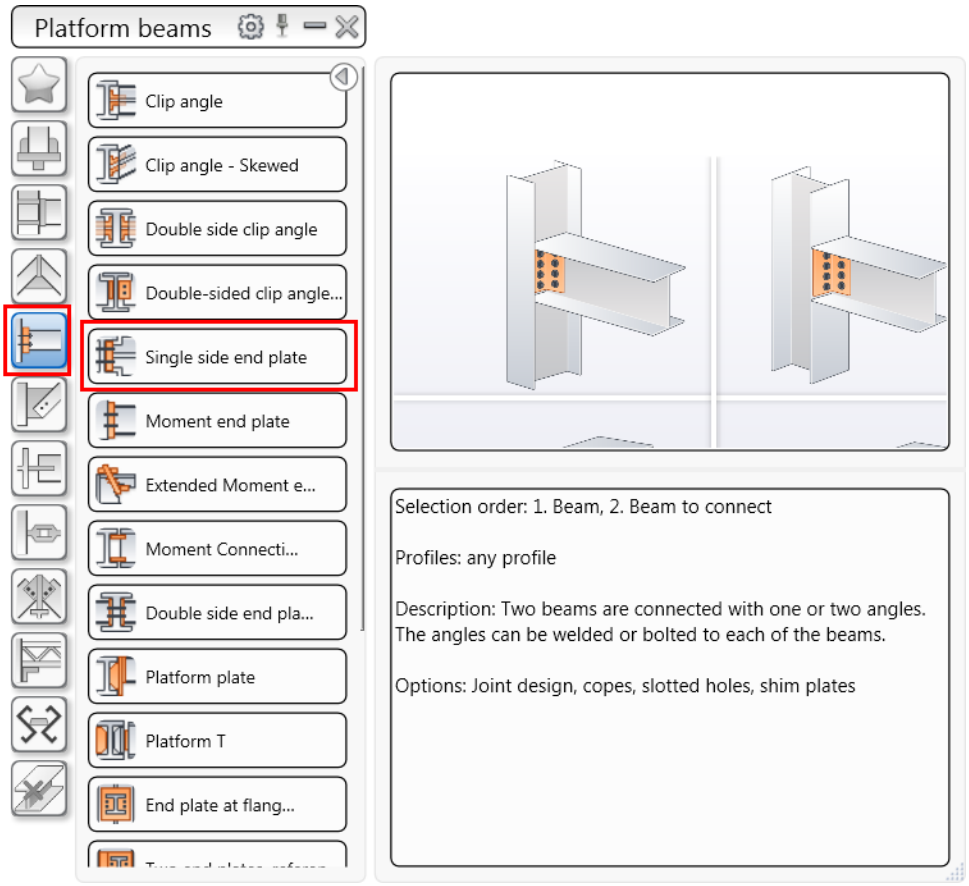
## Section 12: Inserting and Copying the End Plate Joints *(Additional Practice)*

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



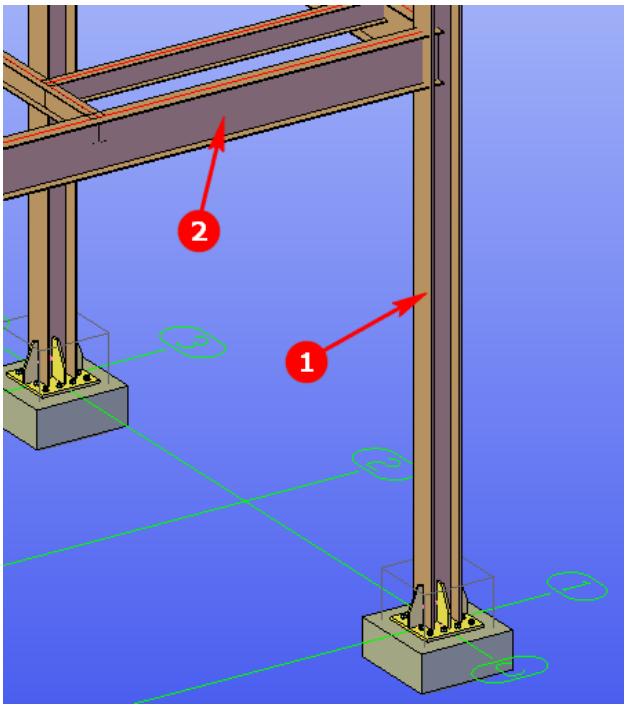
1. Open the **Section12-Metric.dwg** file from the exercise files folder.

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.

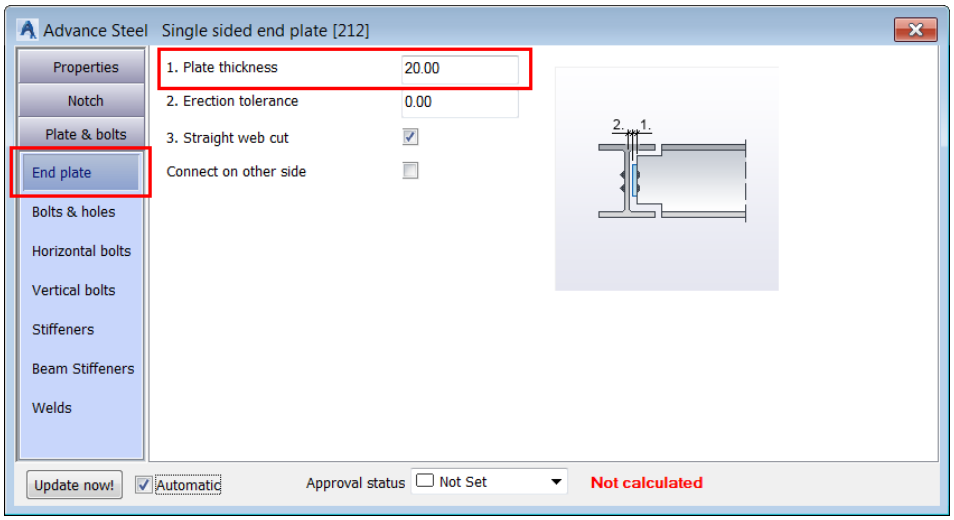



***Note:*** *In this joint, the names of various dialog box options vary depending on the country standard you selected while installing the software. In the following steps, the names in the United States and Australia installations are used. These may be different from your country installation.*

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

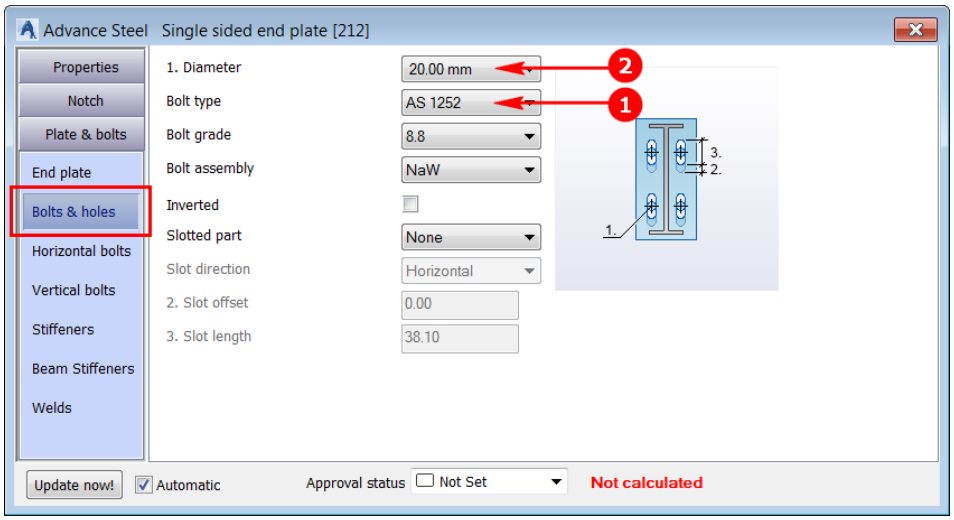



4. Select the column labeled as 1 in the figure above.
5. Press the ENTER key; you are prompted to select the secondary beam.
6. Select the beam labeled as 2 in the figure above.
7. Press the ENTER key; the **Advance Steel - Single Side End Plate [X]** dialog box is displayed and the joint with the default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



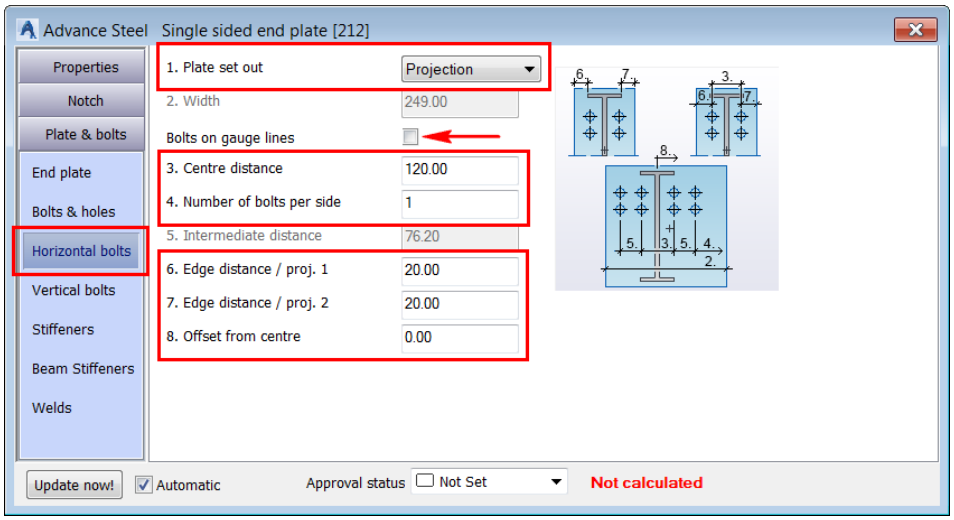

10. Activate the **Bolts and holes** tab.

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



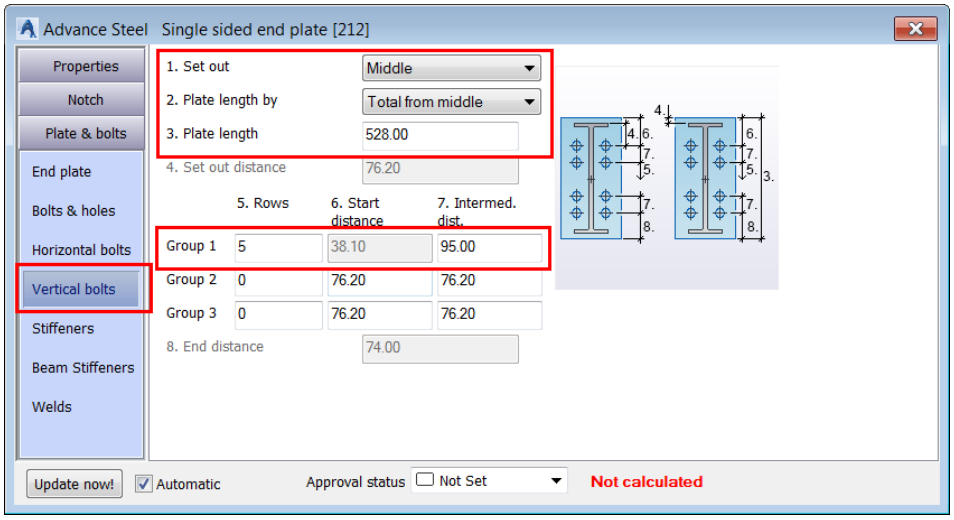

12. Activate the **Horizontal bolts** tab.

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

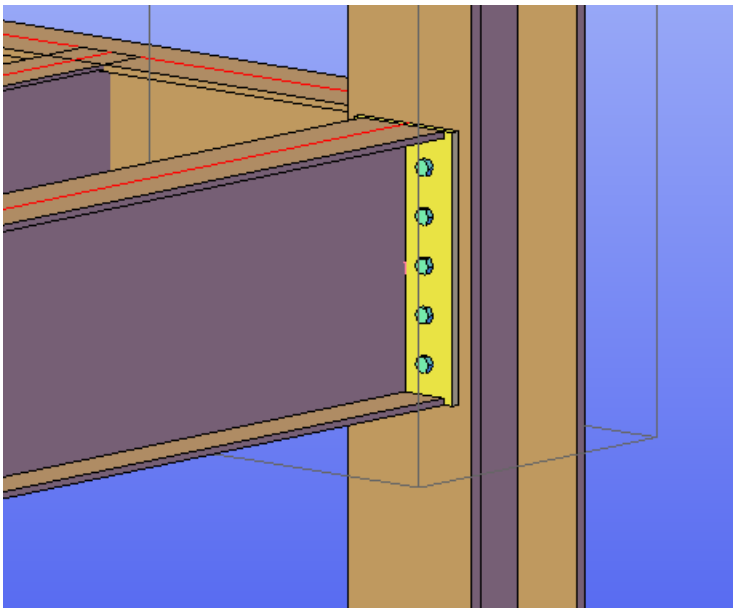



14. Activate the **Vertical bolts** tab.

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

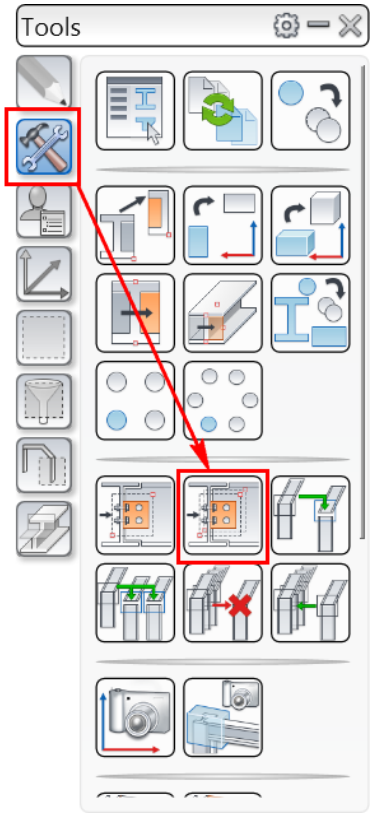



16. Close the dialog box. The model, after inserting this joint, is shown in the following figure.



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.

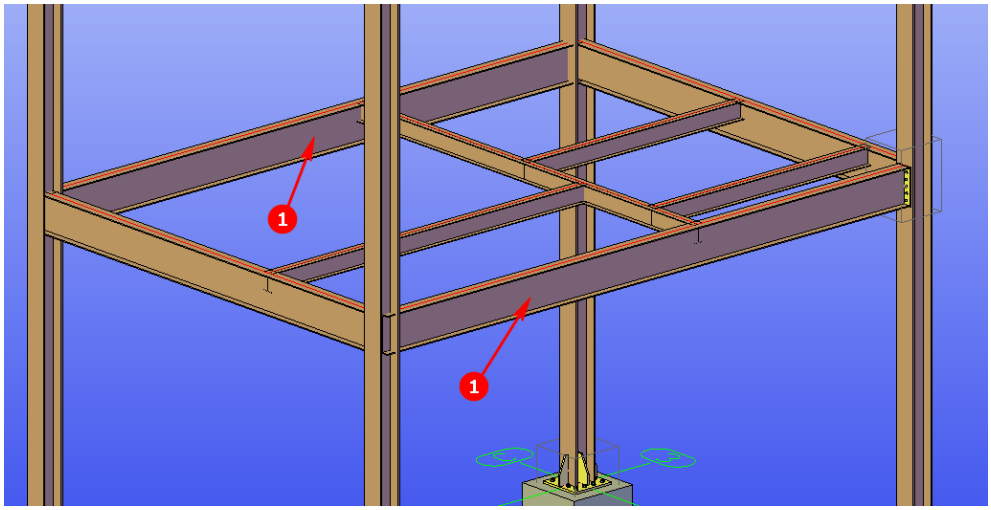


18. Select one of the plates or bolts of the end plate joint you inserted in earlier steps; you are again prompted to select objects.

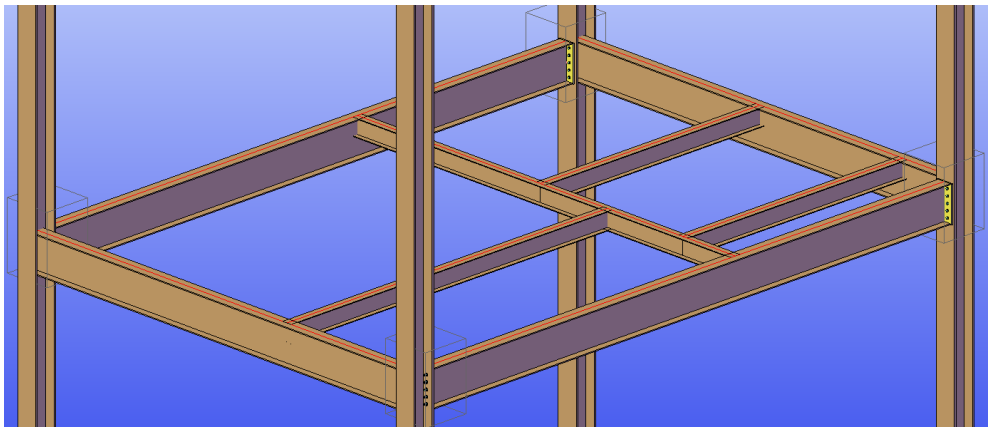
19. Press ENTER; you are prompted to select beams corresponding to the source joints input (1/2).

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.



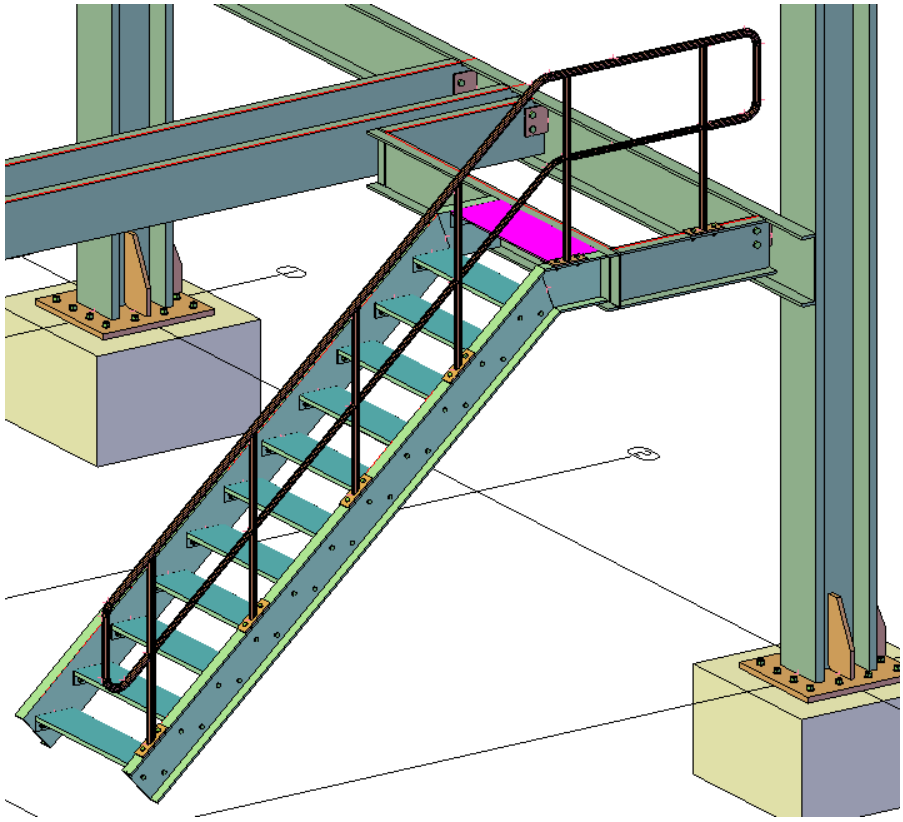

22. Press ENTER; the joint is copied at three locations. The model, after copying the joints, is shown in the following figure.



***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.*

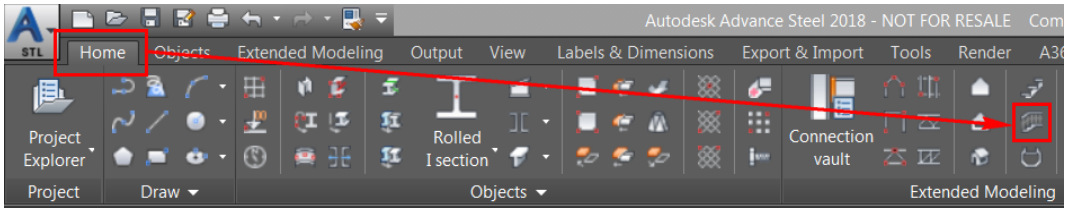
## Section 13: Inserting Handrails *(Additional Practice)*

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

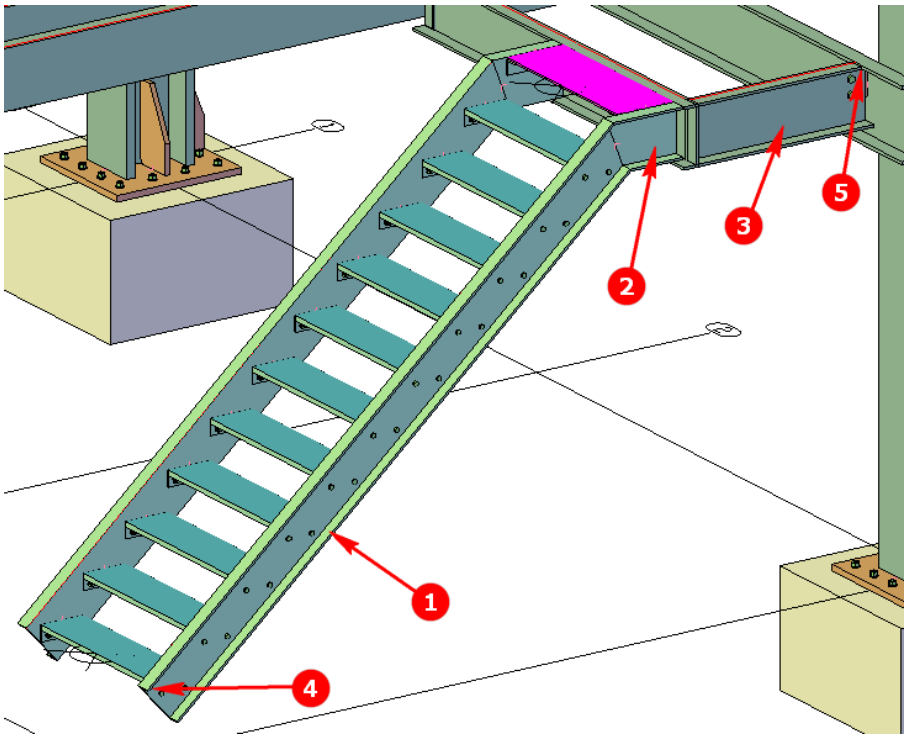


1. Open the **Section13-Metric.dwg** file from the exercise files folder.

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.

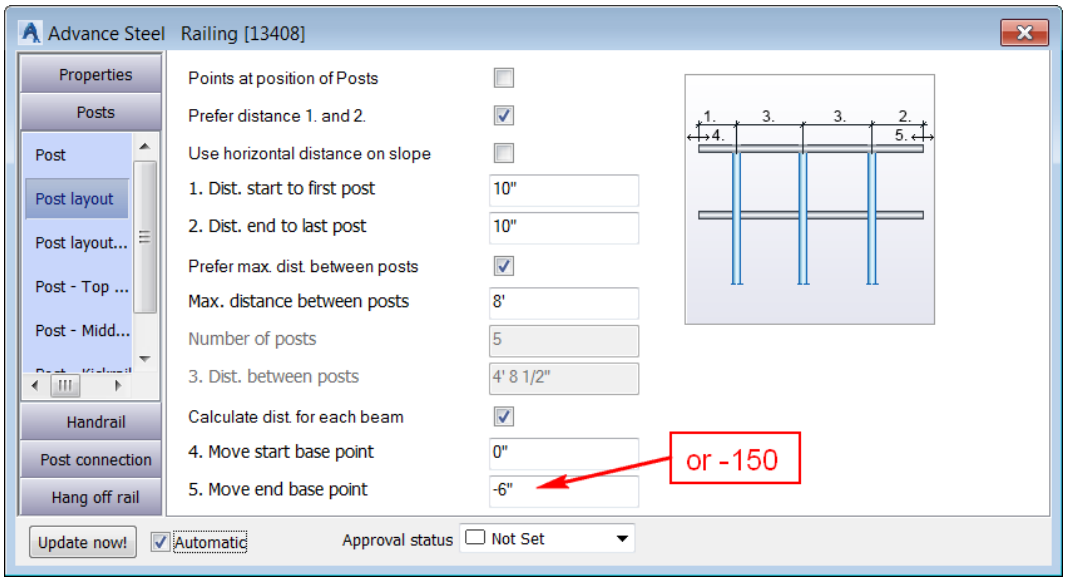
6. Select the point labeled as 5 in the figure above as the endpoint of the railing.

   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.

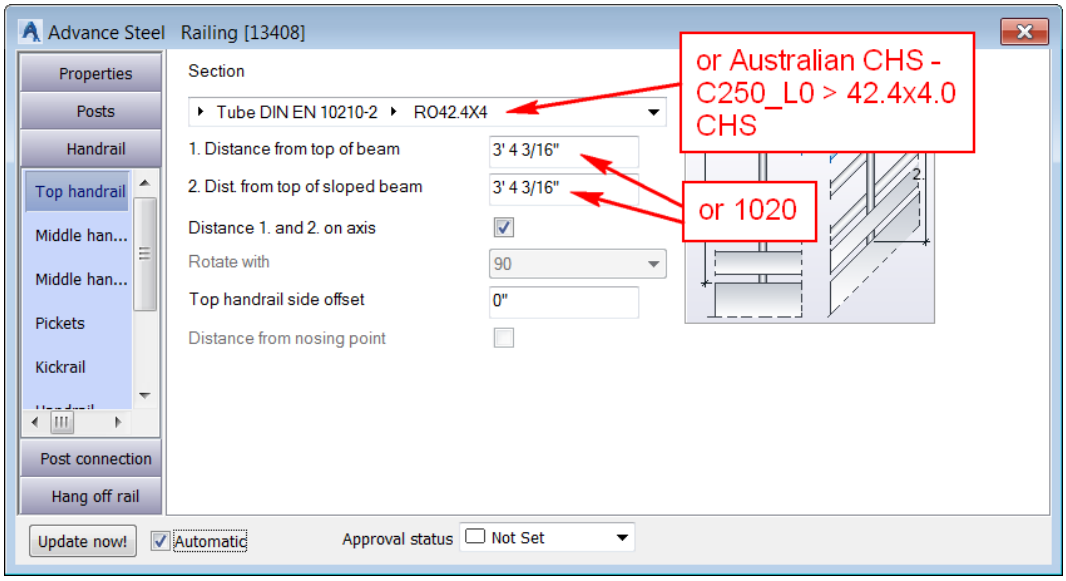
8. Activate the **Posts > Post layout** (Imperial) or **Set out of posts** (Metric) tab.

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.



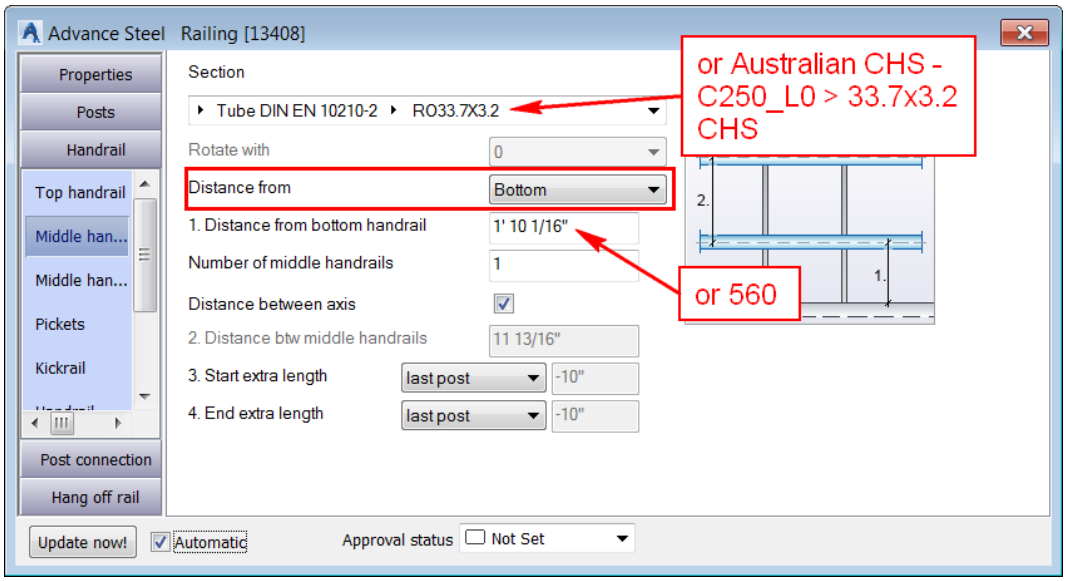

10. Activate the **Handrail > Top handrail** tab.

11. Configure the settings as shown below:




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

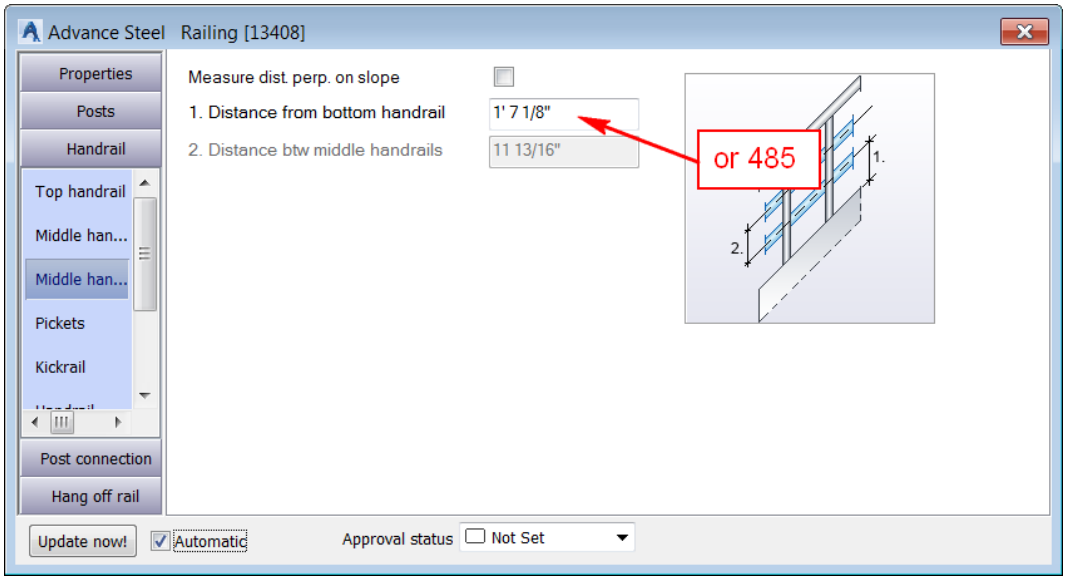
13. Configure the settings as shown below:




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” or 485**, as shown below:




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

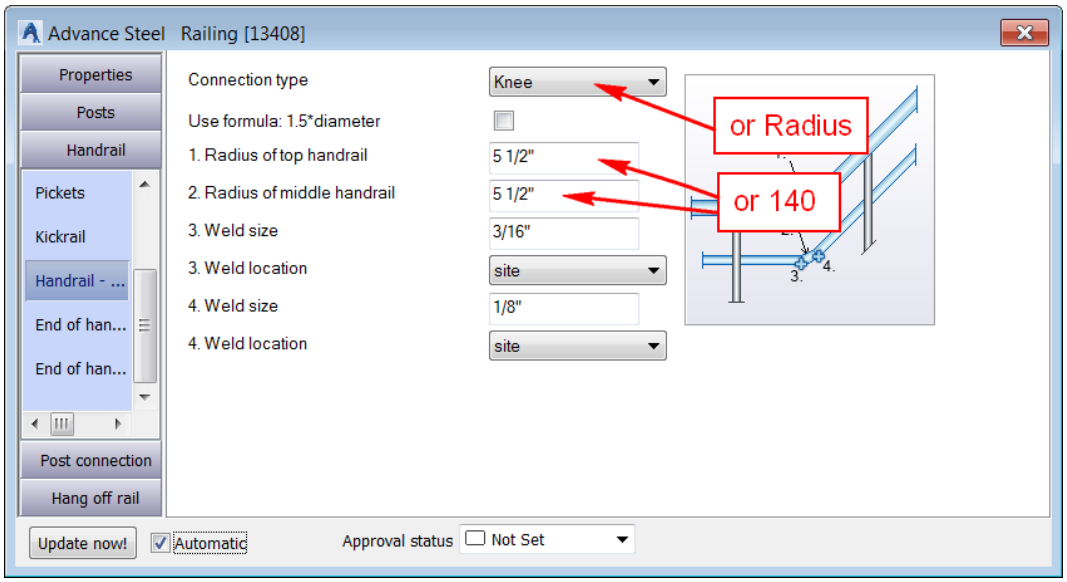
16. Activate the **Handrail > Kickrail** (Imperial) or **Kick plate** (Metric) tab.

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.

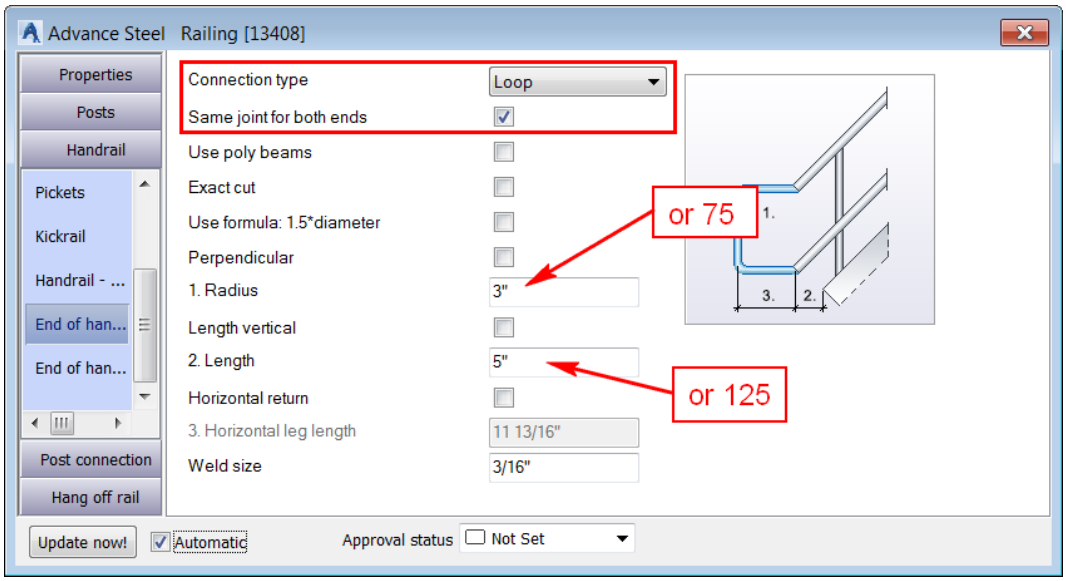
19. Configure the settings as shown below:




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.

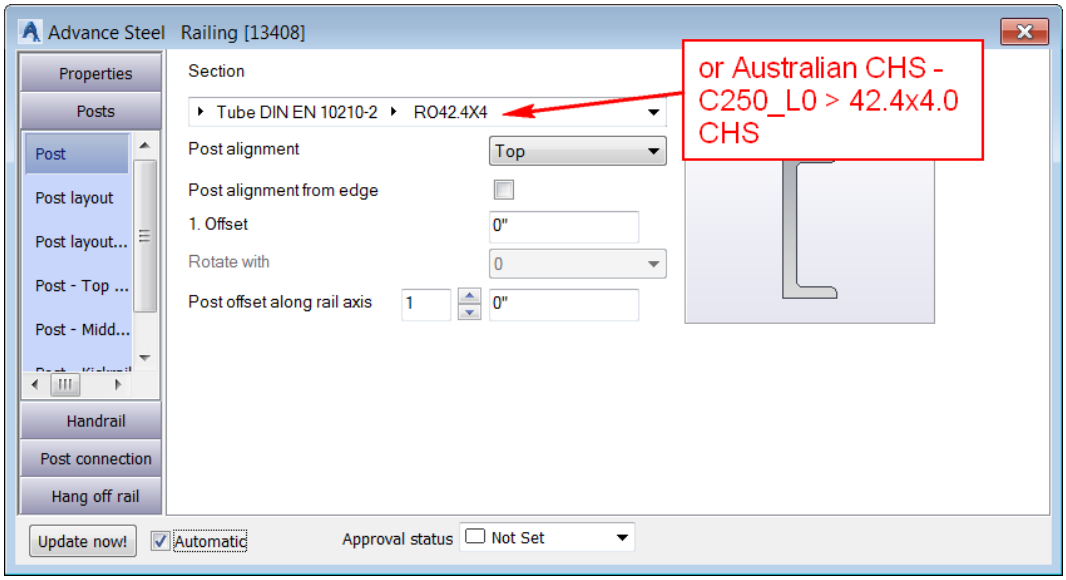
21. Configure the settings as shown below:




Next, you will define the post parameters.

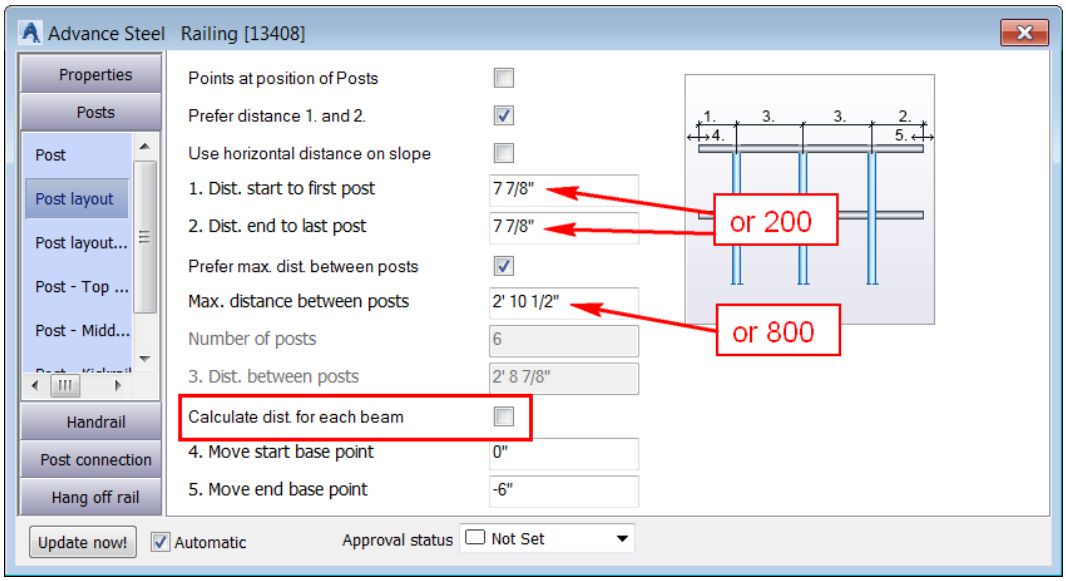
22. Activate the **Posts > Post** tab.

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:



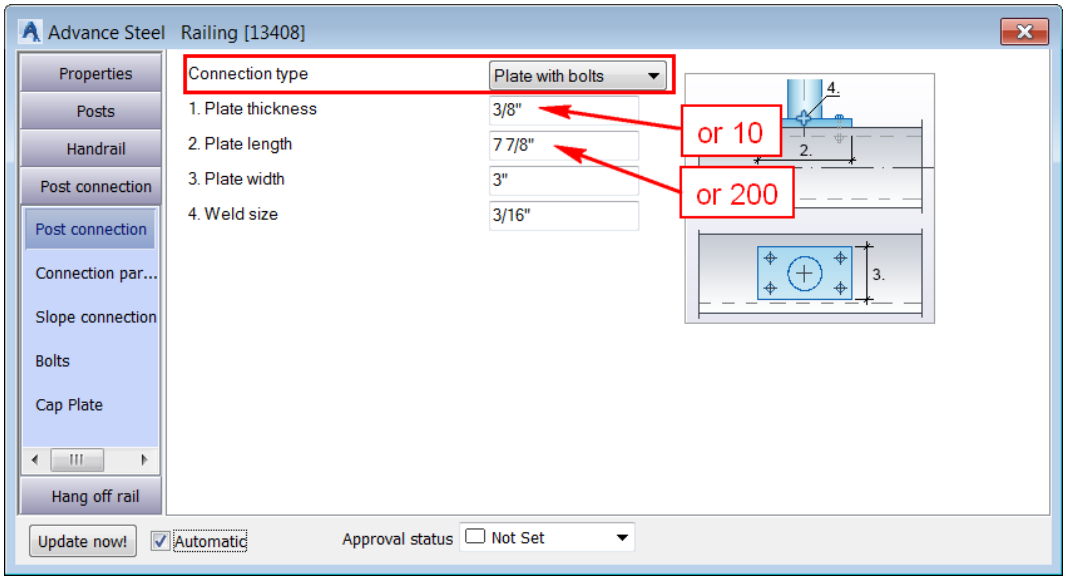

24. Activate the **Post > Post layout** (Imperial) or **Set out of posts** (Metric) tab.

25. Configure the settings as shown below:



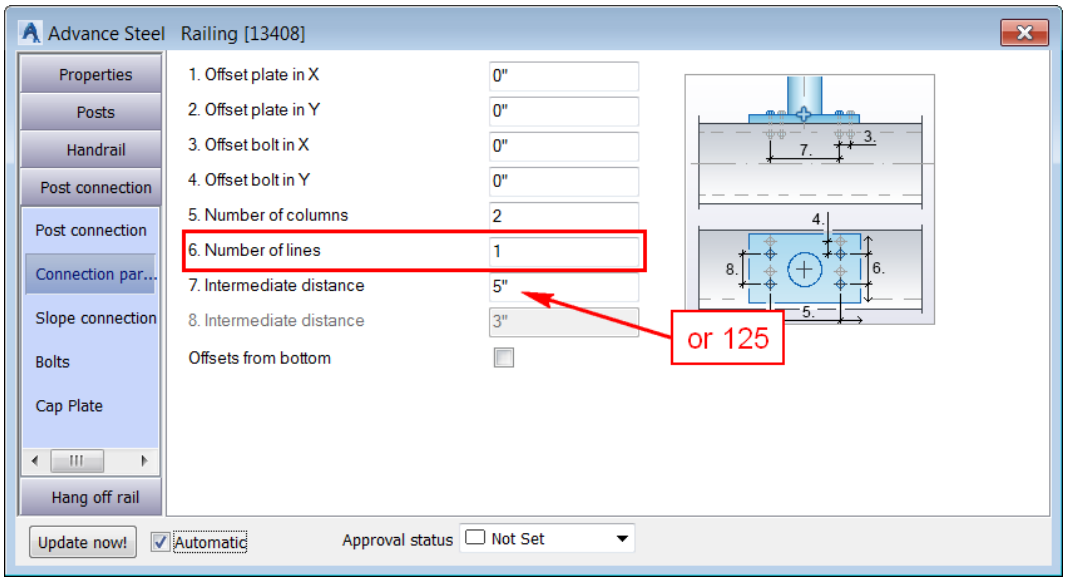

26. Activate the **Post connection > Post connection** tab (Imperial) or **Post fixing > Fixing of post tab** (Metric).

27. Configure the settings as shown below:



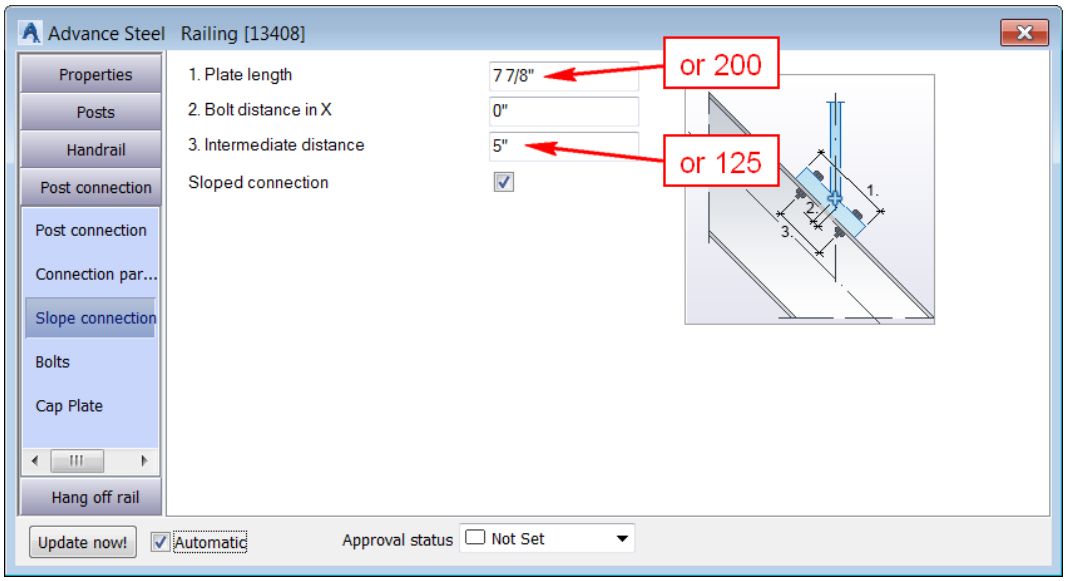

28. Activate the **Post connection > Connection parameter** tab (Imperial) or **Post fixing > Fixing parameters** tab (Metric).

29. Configure the settings as shown below:



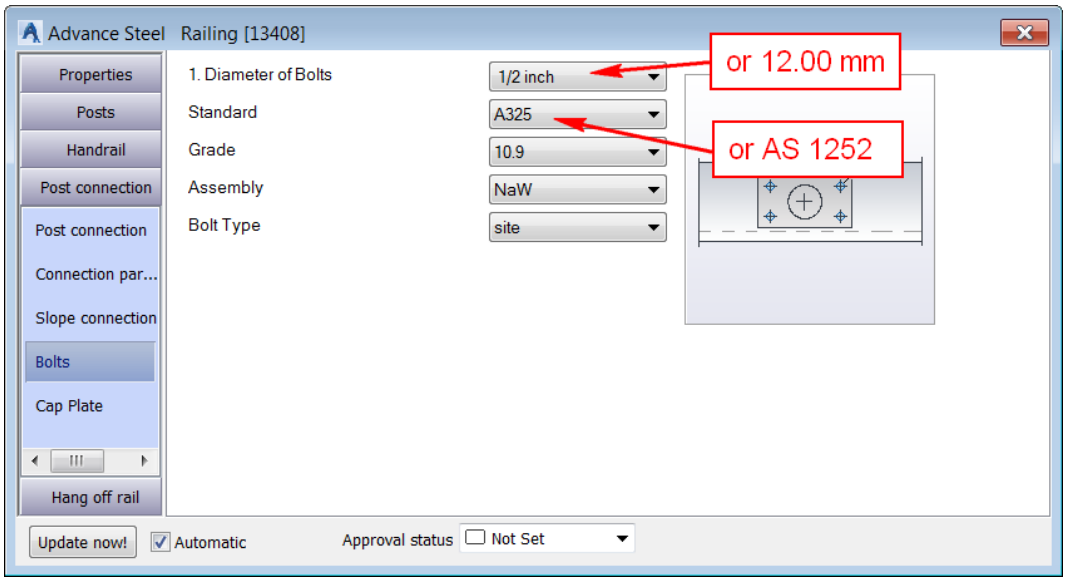

30. Activate the **Post connection > Slope connection** tab (Imperial) or **Post fixing > Fixing slope tab** (Metric).

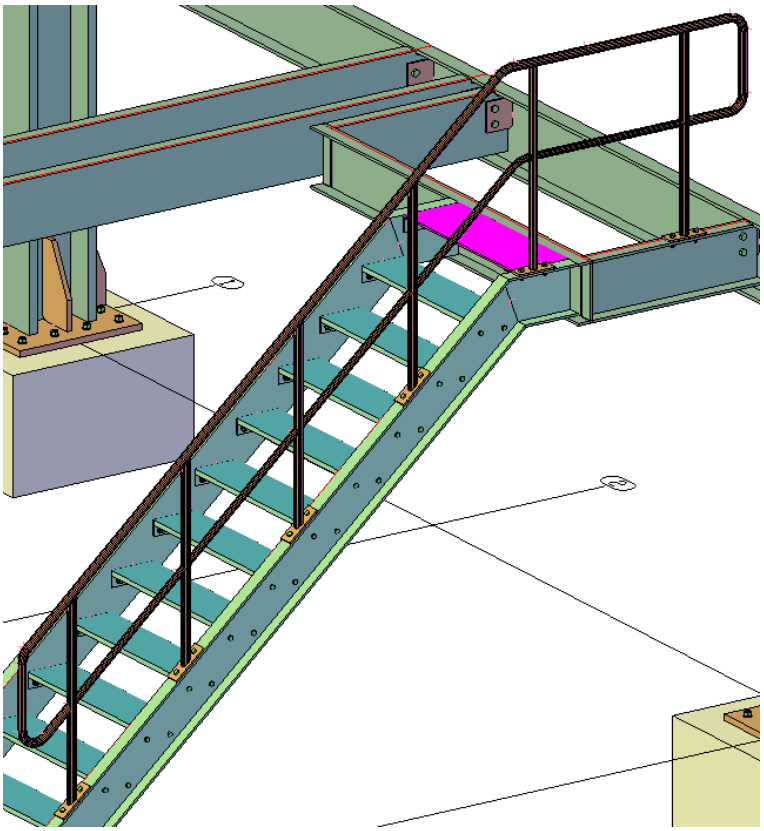
31. Configure the settings as shown below:




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.