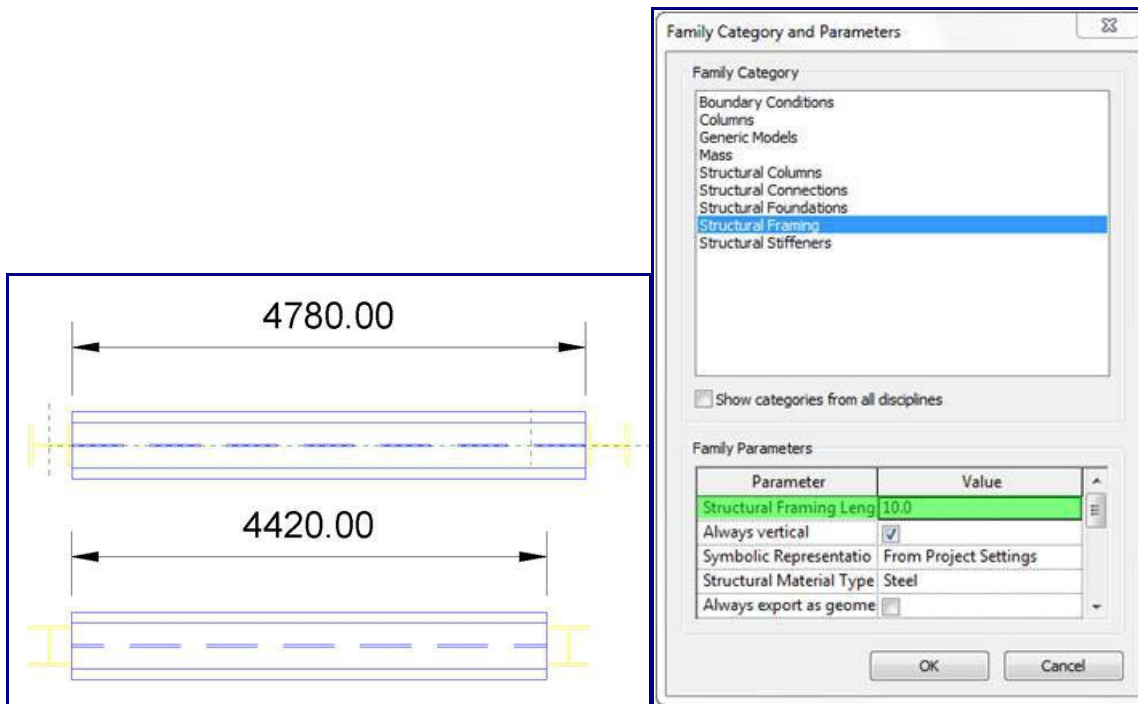
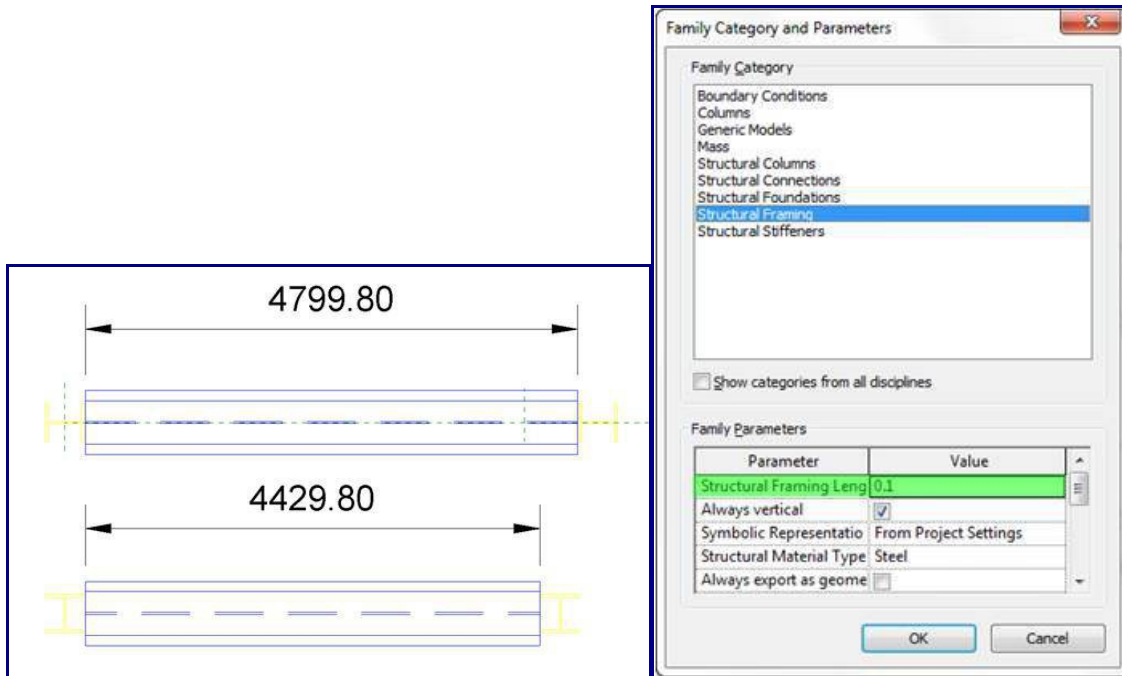


# Tips and Tricks when creating Revit Structural Framing families

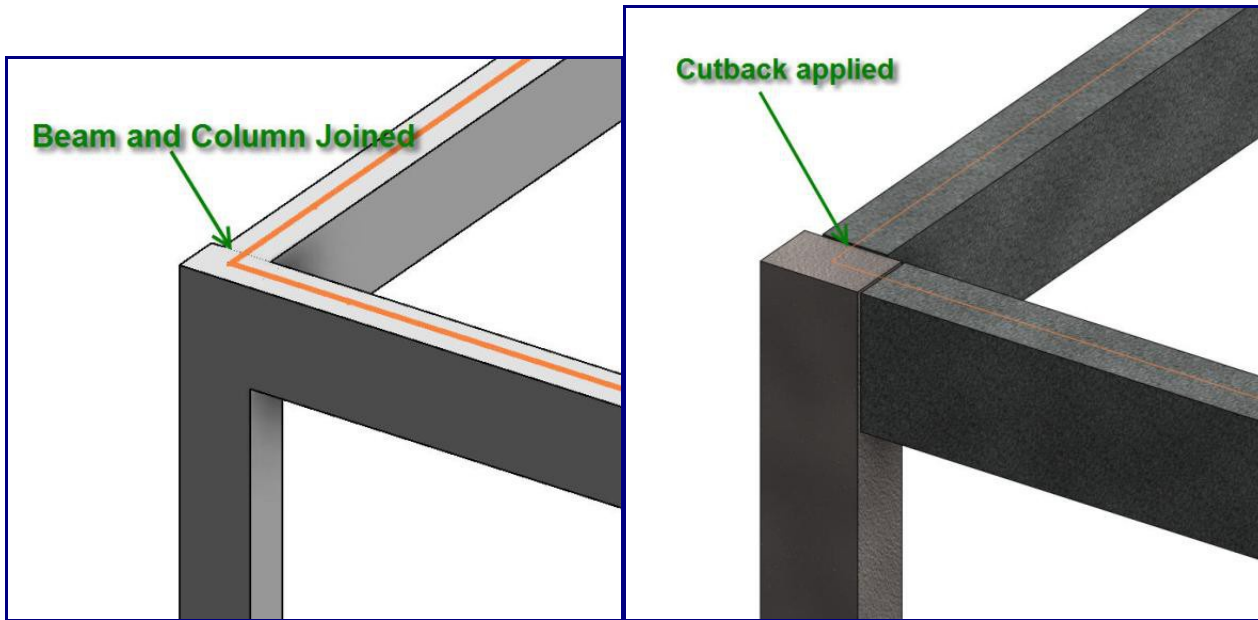
Posted on [June 9, 2011](#) by [lawrencech](#)

Those of you that were able to attend our Revit Structure 2012 forum will have seen the presentation on Revit content creation. One very important aspect of this is the various settings within the Family Category and Parameters dialog box. Typically, these settings control how your family file operates within a project. Here are some tips and tricks for framing families.

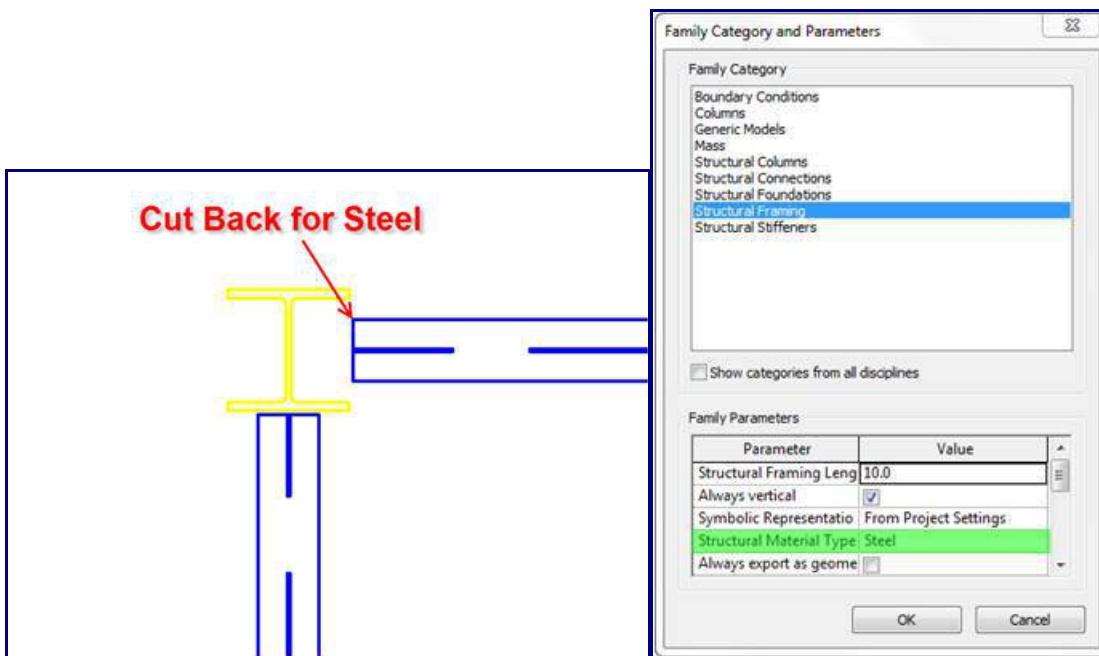


The Structural Framing Length Round off parameter controls the physical accuracy of the beam you are modelling. This can have a significant impact on the scheduling of structural framing. As you can see, this also controls the dimensioning of this framing element within a project. It is also significant when scheduling beams and will affect the count when rounding is used.

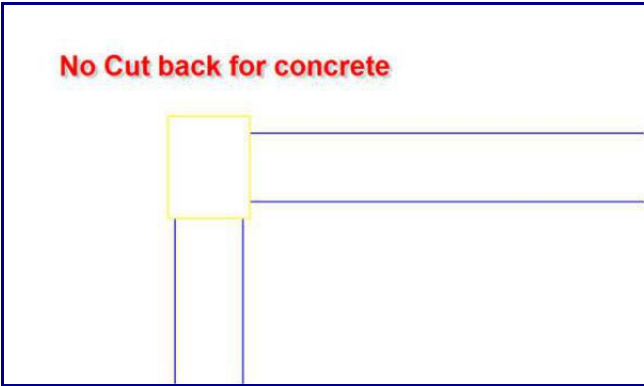
Many of you may have wondered how Revit Structure understands when to cut back a beam and when to create a monolithic structure.



This functionality is simply controlled by the Structural Material Type within the Family Category and Parameters dialog box. See below.



Here you can see the settings for a Steel Beam family.



Family Category and Parameters

Family Category

- Boundary Conditions
- Columns
- Generic Models
- Mass
- Structural Columns
- Structural Connections
- Structural Foundations
- Structural Framing
- Structural Stiffeners

Show categories from all disciplines

Family Parameters

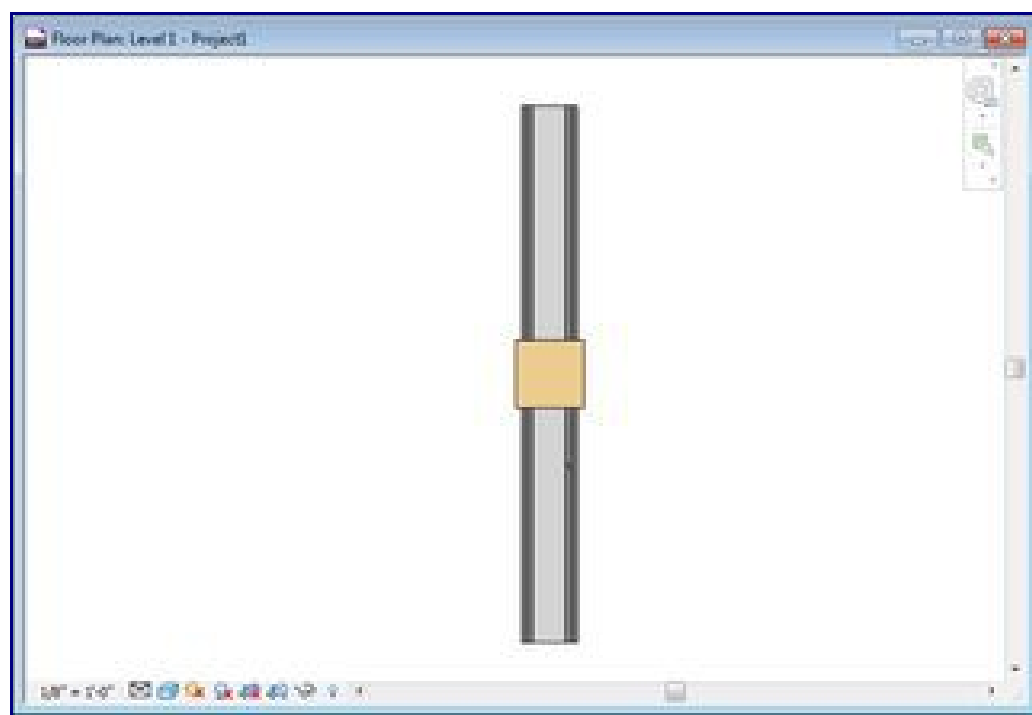
Parameter	Value
Structural Framing Leng	
Always vertical	<input checked="" type="checkbox"/>
Symbolic Representatio	From Family
Structural Material Type	Concrete
Always export as geome	<input type="checkbox"/>

OK Cancel

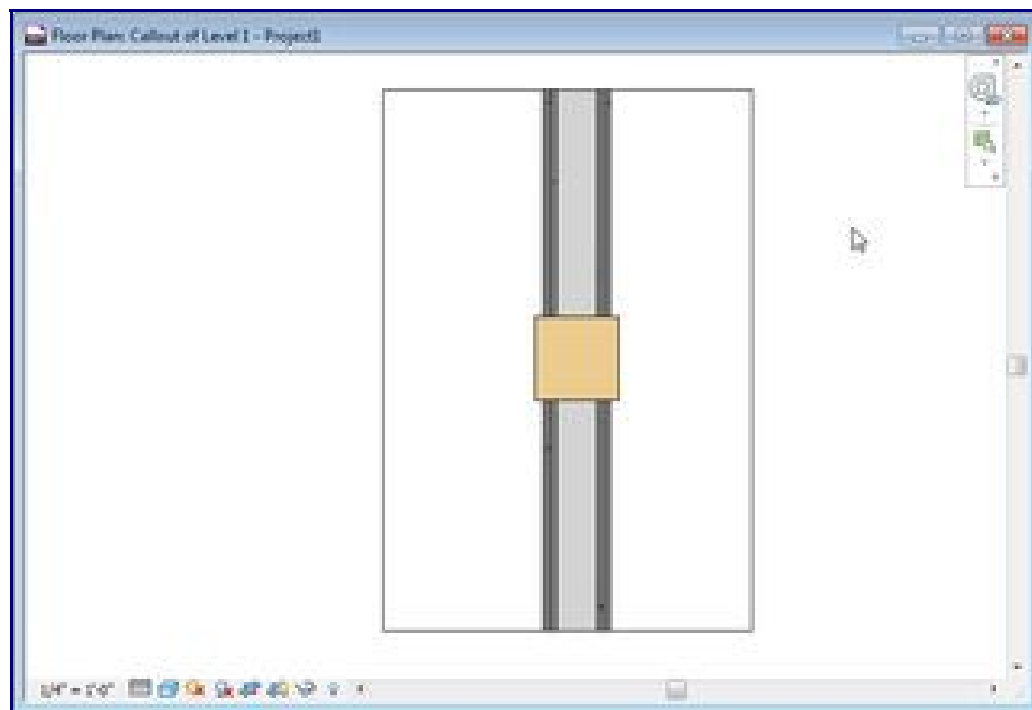
Hope this helps,

## Transparent Columns in Detail Callouts

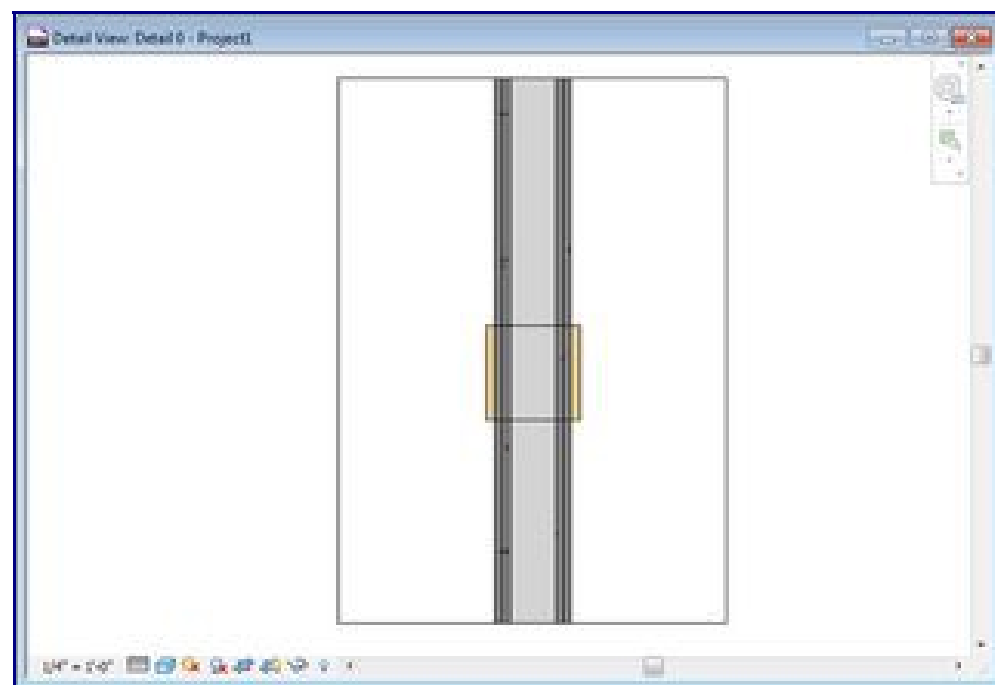
I have had this question come up a few times and thought the explanation was worth a blog post. Let's say you have the following scenario of a wall and column:



You add a Floor Plan Callout, which results in what you expected:



And then a Detail Callout, where the results are not what you were expecting:



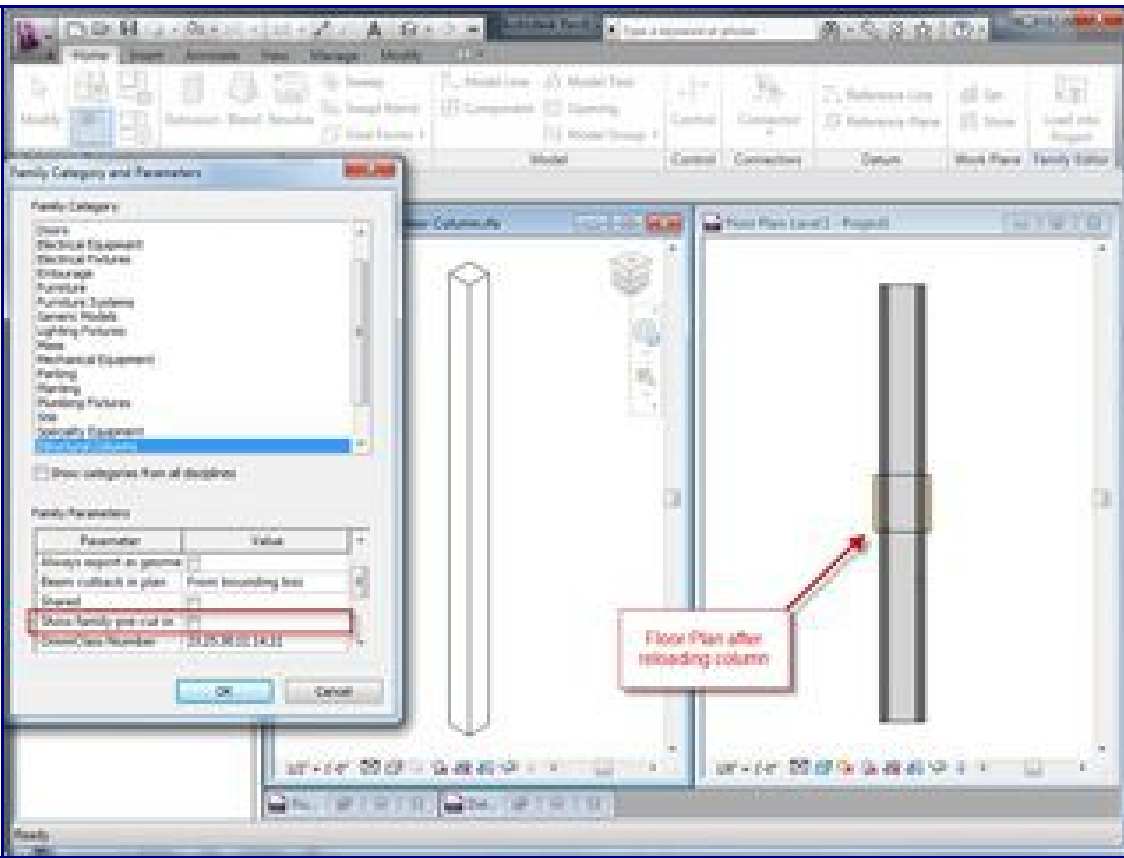
So why does the column appear to be transparent in the Detail callout?

The reason for this is that, when unjoined, the wall and column occupy the same physical space. You do not see this display in your Floor Plan and Floor Plan Callout because of the "*show family pre-cut in plan views*" parameter of the column family.

This parameter determines whether the column displays based on the cut plane specified in the project's view or within the family. Keeping this parameter checked results in columns that always display the same regardless of the project view's settings. More information on this can be found in the [Specifying How a Structural Column Displays in Plan View](#) document in the Help menu.

So when this parameter is checked, you are not seeing the 'real' relationship between the elements in your Floor Plan and Plan callout - you are seeing a representation of the column based on the cut plane in the family.

To further clarify, if you edit the column family, go to Family Category and Parameters and clear this checkbox, you'll see the that column displays with the same sort of transparent appearance in all views, not just the detail.



The way Detail Callouts are generated internally is different from true 'plan' views and they do not use this parameter, so they show consistently based on the cut plane of the project regardless of whether it is checked or not.

The ways to approach this would be to join the wall and column where applicable (so their geometry no longer overlaps) or to use a Floor Plan callout when needed instead.

## Specifying How a Structural Column Displays in Plan View

For a column family, you can select the option Show family pre-cut in plan views, in the Family Category and Parameters dialog. When you select this option and load the family into a project, the column displays in a plan view using the cut plane specified in the plan view of the family.

1. Open a column family or start a new column family.
2. Click Home tab > Properties panel > Family Category and Parameters.
3. In the Family Category and Parameters dialog, under Family Parameters, select or clear the parameter, Show family pre-cut in plan views.

**When loaded into a project, if you want the column to display in plan view**

**then**

based on the cut plane of the project's plan view,

clear the parameter, Show family pre-cut in plan views.

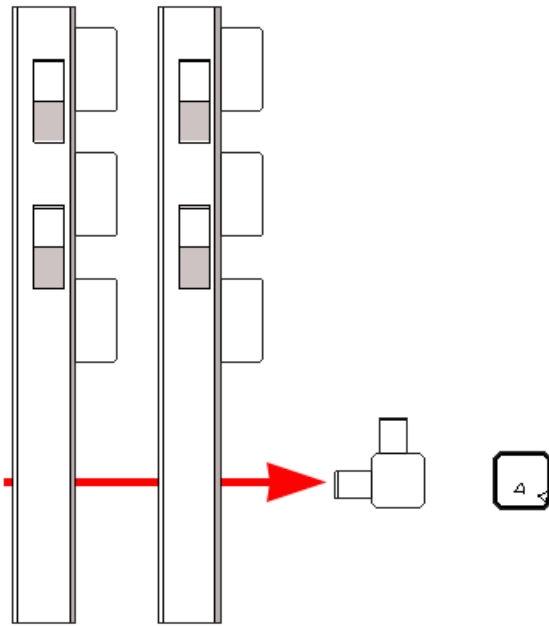
consistently, regardless of the cut plane of the project's plan view,

select the parameter, Show family pre-cut in plan views. The column displays using the cut plane specified within the Family Editor plan view.

4. Click OK.
5. Save the column family.

After you load the column family into a project, the column displays based on the parameter settings you specified within the Family Editor.

A column with corbels family depicting "Show family pre-cut in plan views" enabled (left) and disabled (right). Notice the cut plane of the project's plan view has no affect on the display of the column. The horizontal arrow marks the cut plane for the section views to the right.



**IF YOUR WALL IS NON BEARING THE COLUMN WILL CUT IT.**

**IF YOUR WALL IS BEARING, IT WILL EAT YOUR COLUMN.**

However the structural engineer can't. They always ask us to make our walls bearing so they can see them.

## BEAM VISIBILITY

1. Start a new project from your template.
2. In "Project Browser" under "Family", check if you have "Structural Framing", in there you should have some categories such as "Dimension Lumber", under it, there should have some lumbers like 2x12.

If you do not see those, that means you have to load them into your project first. Suppose that you do not have them, do followings:

a. Go to "Open", "Family", in "Imperial Library" under folder "Structural Framing", subfolder "Wood", select "Dimension Lumber" for example, and open it.

b. Load it into your project. Then you will see "Structural Framing" in your Browser.

3. Since you are able to see them in 3D and sections, that means you have to adjust some settings.

a. Try to change scale to  $1/2" = 1'-0"$ , set detail level to "Fine" and visual style to "Wireframe". This setting will let you see those beams on floor plan Level 2, and ceiling plan Level 1.

b. If you still can not see them in ceiling view, then go to "View", "Visibility/Graphics", to see if "Structural Beam Systems" and "Structural Framing" are checked.

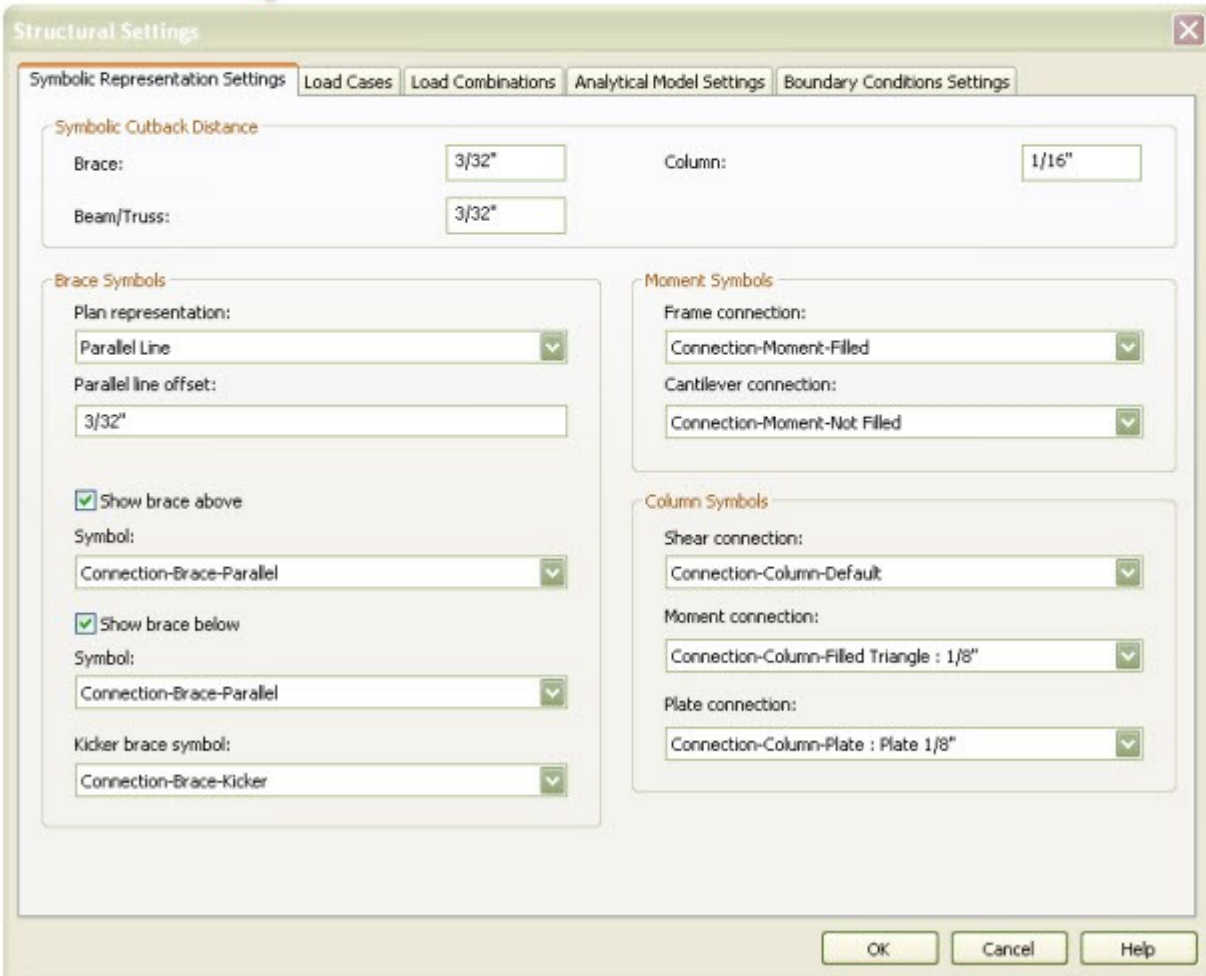
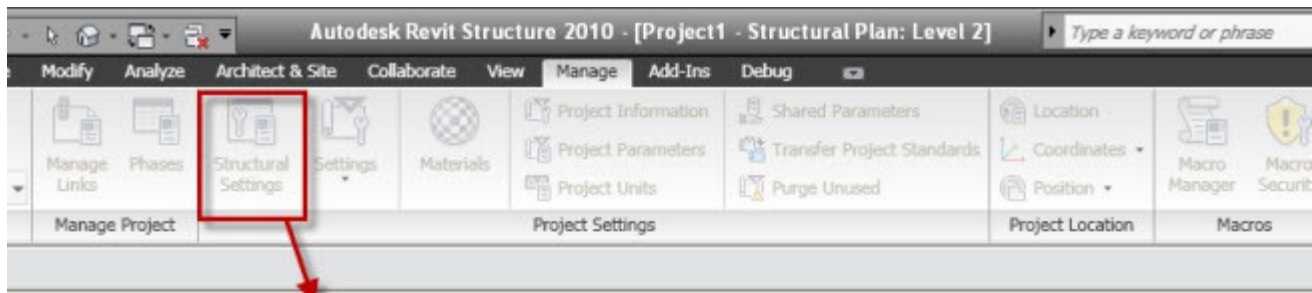
I think that will solve your problems.

Afterward, try to set those in your project template.

## Changing the Visibility Settings of Structural Bracing

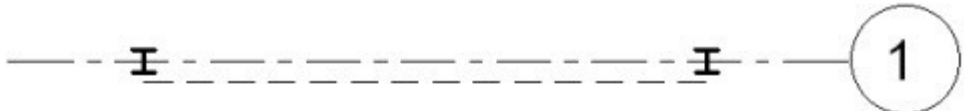
I wanted to bring up a topic that I've seen generate some confusion with users. I have handled many Support Requests logged because users made modifications to the line weight, style, or color of bracing in Plan views but do not see the changes update.

In Coarse display, braces are represented by symbols that are determined in the Structural Settings dialog (click images to e):






Many users go to Visibility/Graphics Model Categories > Structural Framing to modify the brace settings, as shown in the following screenshot. You'll see that even though the braces are set to show Red, they're still black.



Visibility/Graphic Overrides for Structural Plan: Level 2

Model Categories | Annotation Categories | Imported Categories | Filters

Show model categories in this view If a category is unchecked, it will not be visible.

Visibility	Projection/Surface		Cut		Halftone	Transpar ...	Detail Level
	Lines	Patterns	Lines	Patterns			
<input checked="" type="checkbox"/> Structural Framing					<input type="checkbox"/>	<input type="checkbox"/>	By View
<input type="checkbox"/> Analytical Model							
<input checked="" type="checkbox"/> Chord							
<input checked="" type="checkbox"/> Girder							
<input checked="" type="checkbox"/> Hidden Faces							
<input checked="" type="checkbox"/> Hidden Lines							
<input checked="" type="checkbox"/> Horizontal Bracing							
<input checked="" type="checkbox"/> Joist							
<input checked="" type="checkbox"/> Kicker Bracing							
<input checked="" type="checkbox"/> Other							
<input checked="" type="checkbox"/> Purlin							
<input type="checkbox"/> Rigid Links							
<input checked="" type="checkbox"/> Stick Symbols							
<input checked="" type="checkbox"/> Vertical Bracing			Override...				
<input checked="" type="checkbox"/> Web							
<input type="checkbox"/> Structural Internal Loads						<input type="checkbox"/>	By View
<input type="checkbox"/> Structural Load Cases							By View

Show categories from all disciplines

Override Host Layers  
 Cut Line Styles

Non-overridden categories are drawn according to Object Style settings.

This is because in Coarse representation you are controlling the display of the brace symbols, and not the actual brace geometry. Rather than being controlled in the Model Categories, the display is controlled in **Visibility/Graphics > Annotation Categories > Brace in Plan View Symbols**, as shown below:

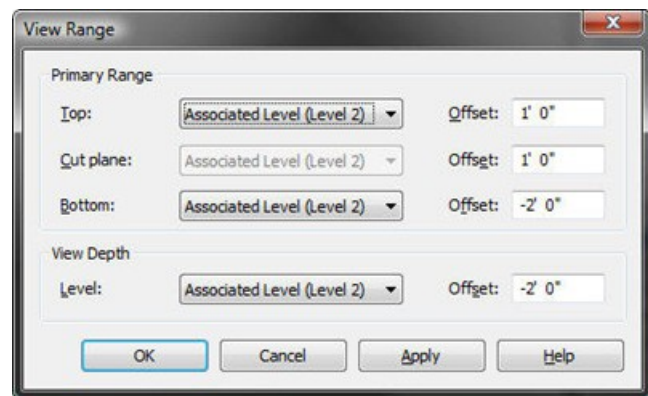


The screenshot shows a software dialog box titled "Visibility/Graphic Overrides for Structural Plan: Level 2". It has four tabs: "Model Categories", "Annotation Categories", "Imported Categories", and "Filters". The "Annotation Categories" tab is active. A checkbox at the top left is checked, labeled "Show annotation categories in this view". To the right of this checkbox is the text "If a category is unchecked, it will not be visible." Below this is a table with three columns: "Visibility", "Projection/Surface", and "Halftone". The "Projection/Surface" column has a sub-column "Lines". The row "Brace in Plan View Symbols" is highlighted with a red box. Below the table are buttons for "All", "None", "Invert", and "Expand All". There is also a checkbox for "Show categories from all disciplines". At the bottom, there is a text box stating "Non-overridden categories are drawn according to Object Style settings." and a button labeled "Object Styles...". At the very bottom of the dialog are buttons for "OK", "Cancel", "Apply", and "Help".

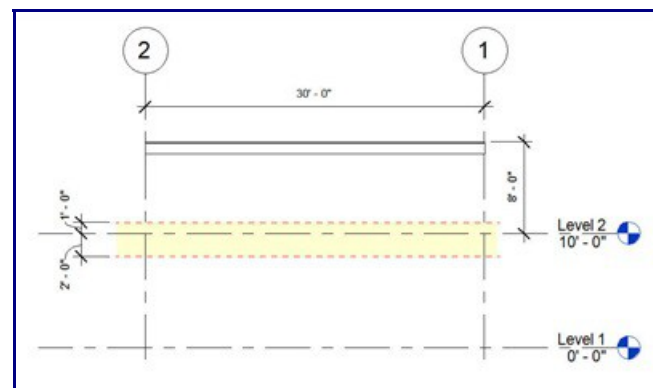
Visibility	Projection/Surface	
	Lines	Halftone
<input checked="" type="checkbox"/> Area Load Tags		<input type="checkbox"/>
<input checked="" type="checkbox"/> <b>Brace in Plan View Symbols</b>	<b>Green</b>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Callouts		<input type="checkbox"/>
<input checked="" type="checkbox"/> Connection Symbols		<input type="checkbox"/>
<input checked="" type="checkbox"/> Constraints		<input type="checkbox"/>
<input checked="" type="checkbox"/> Detail Item Tags		<input type="checkbox"/>
<input checked="" type="checkbox"/> Dimensions		<input type="checkbox"/>
<input checked="" type="checkbox"/> Elevations		<input type="checkbox"/>
<input checked="" type="checkbox"/> Floor Tags		<input type="checkbox"/>
<input checked="" type="checkbox"/> Foundation Span Direction Symbol		<input type="checkbox"/>
<input checked="" type="checkbox"/> Generic Annotations		<input type="checkbox"/>
<input checked="" type="checkbox"/> Generic Model Tags		<input type="checkbox"/>
<input checked="" type="checkbox"/> Grids		<input type="checkbox"/>
<input checked="" type="checkbox"/> Internal Area Load Tags		<input type="checkbox"/>
<input checked="" type="checkbox"/> Internal Line Load Tags		<input type="checkbox"/>
<input checked="" type="checkbox"/> Internal Point Load Tags		<input type="checkbox"/>
<input checked="" type="checkbox"/> Keynote Tags		<input type="checkbox"/>

# Pesky beams

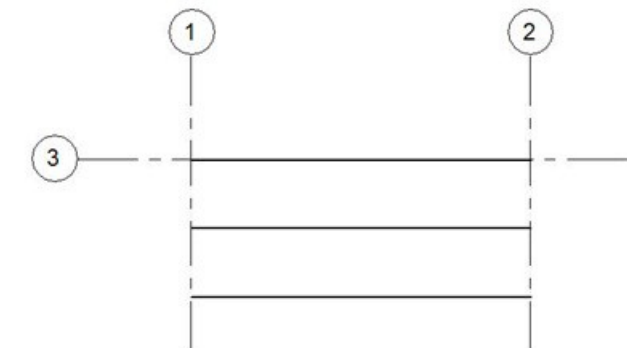
So you have a plan view with the following **View Range**:



which should only show elements in the shaded area:

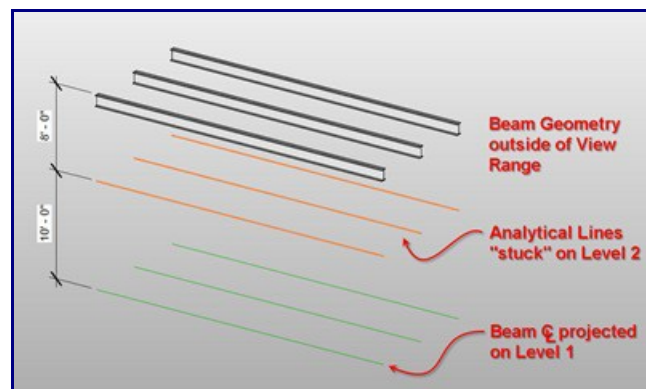


Notice that the beams are above our view range. However in a plan view, you get this:



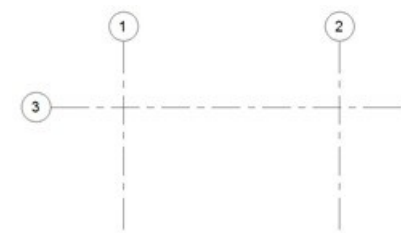
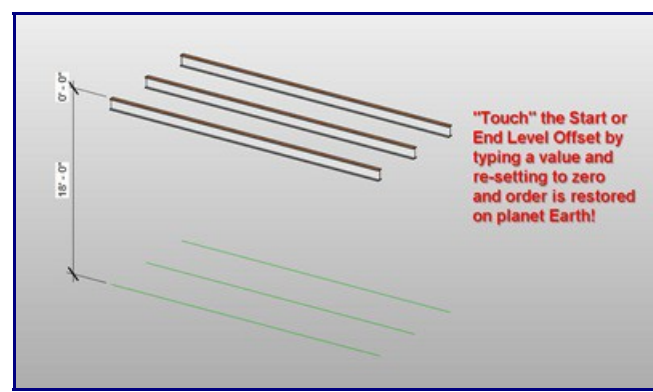
Parameter	Value
<b>Constraints</b>	
Reference Level	Level 2
Work Plane	Level : Level 2
Start Level Offset	0' 0"
End Level Offset	0' 0"
z-Direction Justification	Other
z-Direction Offset Value	8' 0"
Lateral Justification	Center
Orientation	Normal
Cross-Section Rotation	0.000°
<b>Analytical Model</b>	
Vertical Projection	Auto-detect
Auto-detect Horizontal Projection	<input type="checkbox"/>
<b>Other</b>	
Start Extension Calculation	10' 0"
End Extension Calculation	10' 0"

Why on earth are those beams showing up in that plan view? After taking a look at the properties, one might not see any issues. Upon inspecting a 3D view, the Analytical Lines don't seem to be set correctly, however the **Vertical Projection** in the Properties is set to "Auto-detect". So what gives?



The answer is at the top of the properties dialog. Notice that the beam's **Reference Level** is grayed out and so is the

**Workplane.** Now try and enter a value for the **Start** or **End Level Offset** and notice how the **Workplane** parameter disappears and the **Reference Level** is now editable. Just re-set the Start/End Level Offset to zero and alas, the analytical model will come to its senses and will start detecting the correct location. Bug? I dare say so but I'll seek an official confirmation and post an update.



The interesting thing is that Structural Framing visibility is defined by where the analytical model is. I personally do not agree with this at all. Plan representation (in my opinion) should not be dictated by where an engineer decides he/she wants the analytical model to reside, but it should be purely based upon geometrical location. So make sure to either "touch" the Start/End Level Offset as described above if you're only using the **z-Direction Offset value**, or use the other offsets instead!