

The Revit Dirty Dozen:

12 Things to Not Do in a Revit File and How to Fix It

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About the speakers



Maria Fox Montgomery

- Licensed Architect who joined Atlanta Perkins&Will office in 2014.
- Received her undergraduate architecture degree from Clemson University and Master of Architecture degree from the University of Tennessee.
- Specializes in higher education and laboratory design.
- Along with being a USGBC LEED Accredited Professional in Building Design+Construction, she is a Design Technology Leader and the only WELL Accredited Professional in the Atlanta Perkins&Will office.



Jason Diamond

- Design Applications Manager for Perkins&Will Atlanta office
- Licensed Architect with 20 years experience in AEC industry
- 15 years of support and training staff in Revit on large-scale architectural projects
- Focus on computational design and data visualization
- Revit Certified Professional

Why is it important to have a Healthy Revit Model?

TIME
is important!

CONSISTENCY
is important!

TEAMWORK
is important!

**THE PROJECT/
CLIENT**
is important!

THE REVIT DIRTY DOZEN

#1

Do not select all and move.



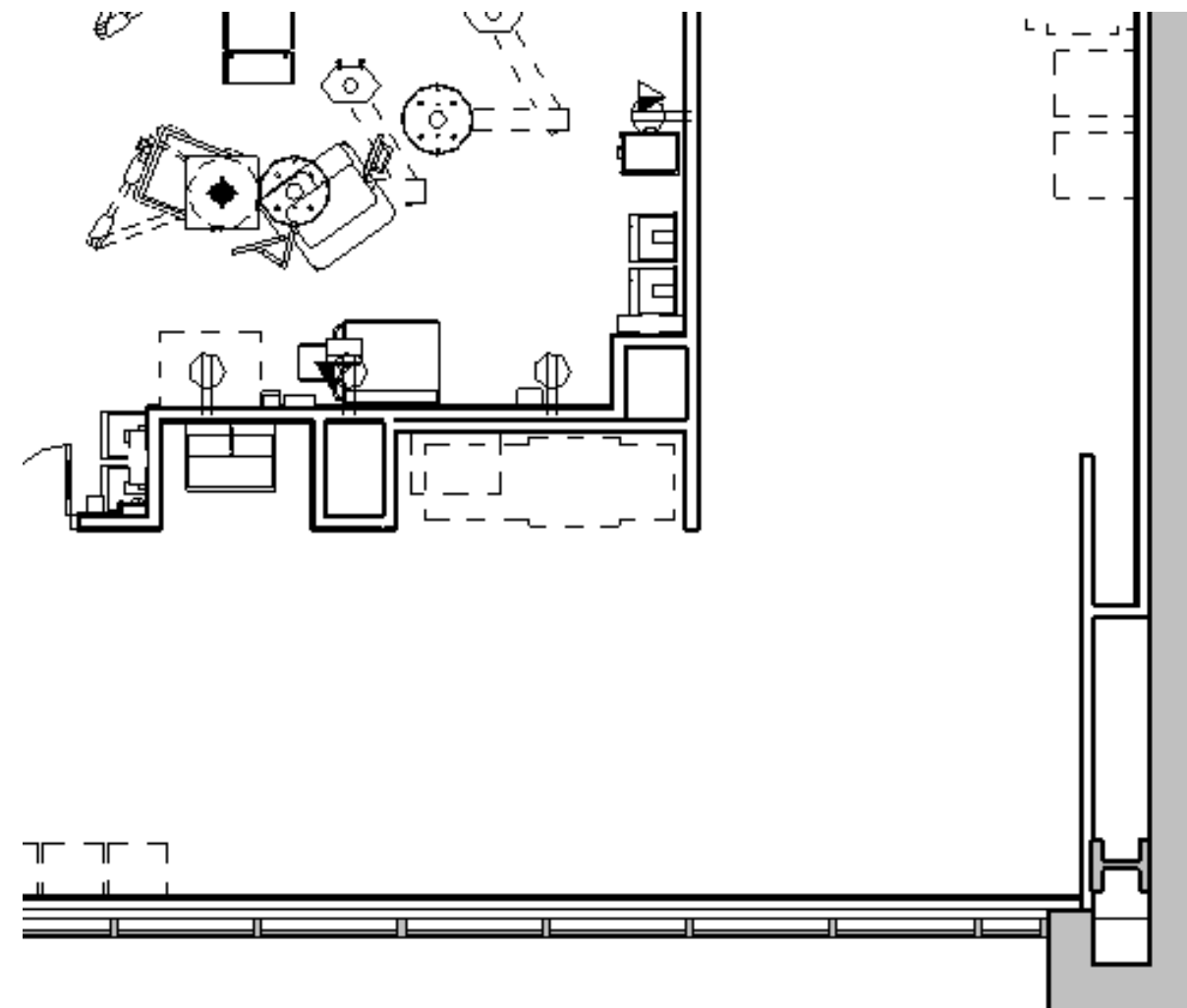
Do not select all and move.

PROBLEM:

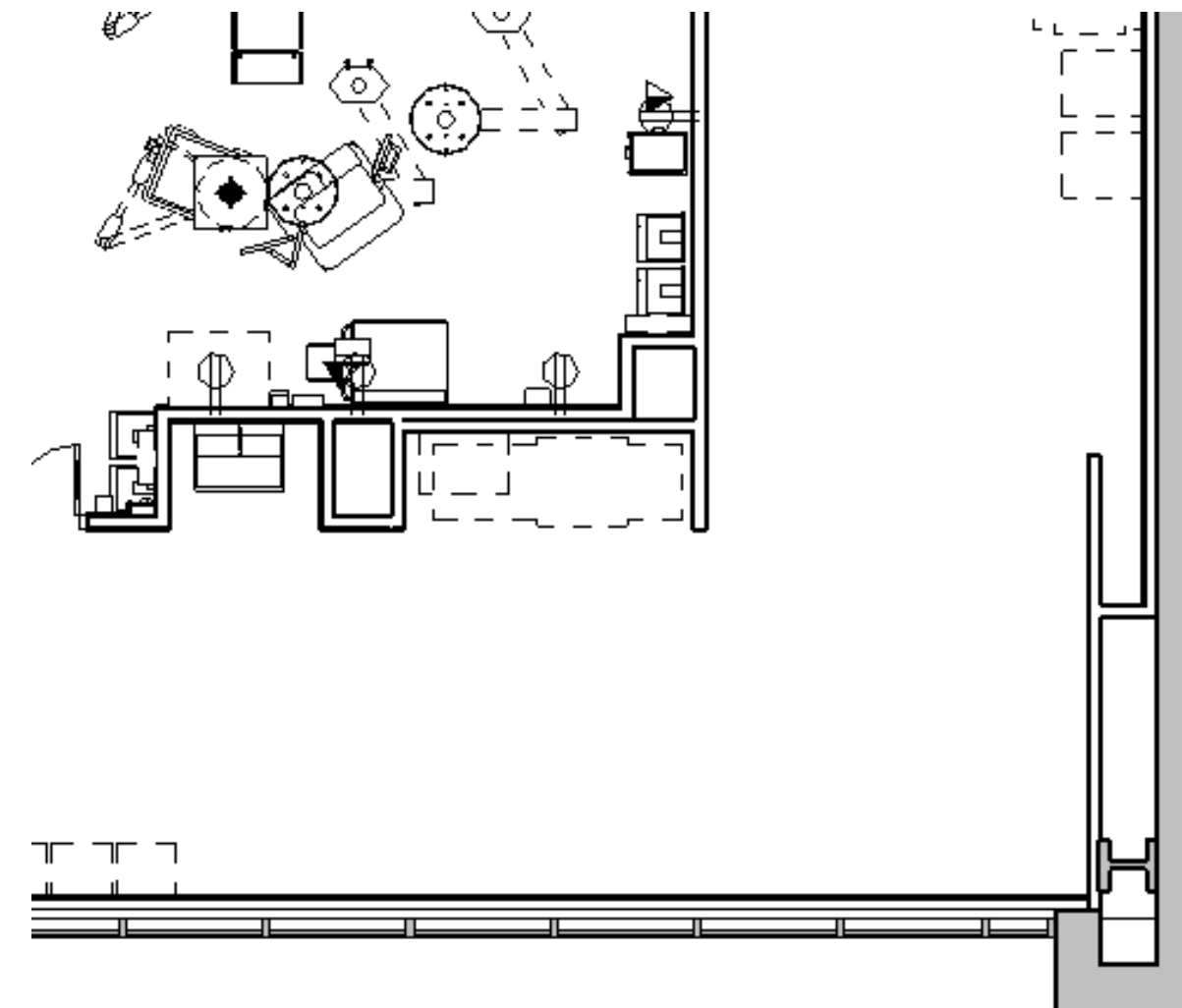
Window selection can include unexpected objects to be moved, copied, deleted, etc.

TIPS:

Window select (drag right):
only selects elements inside the window



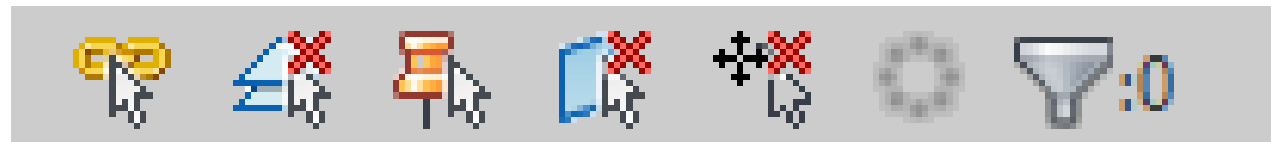
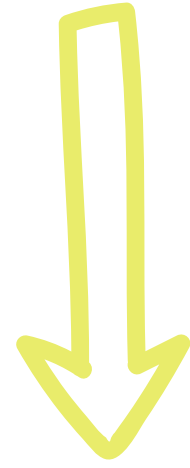
Crossing window (drag left):
selects elements inside AND intersecting the window



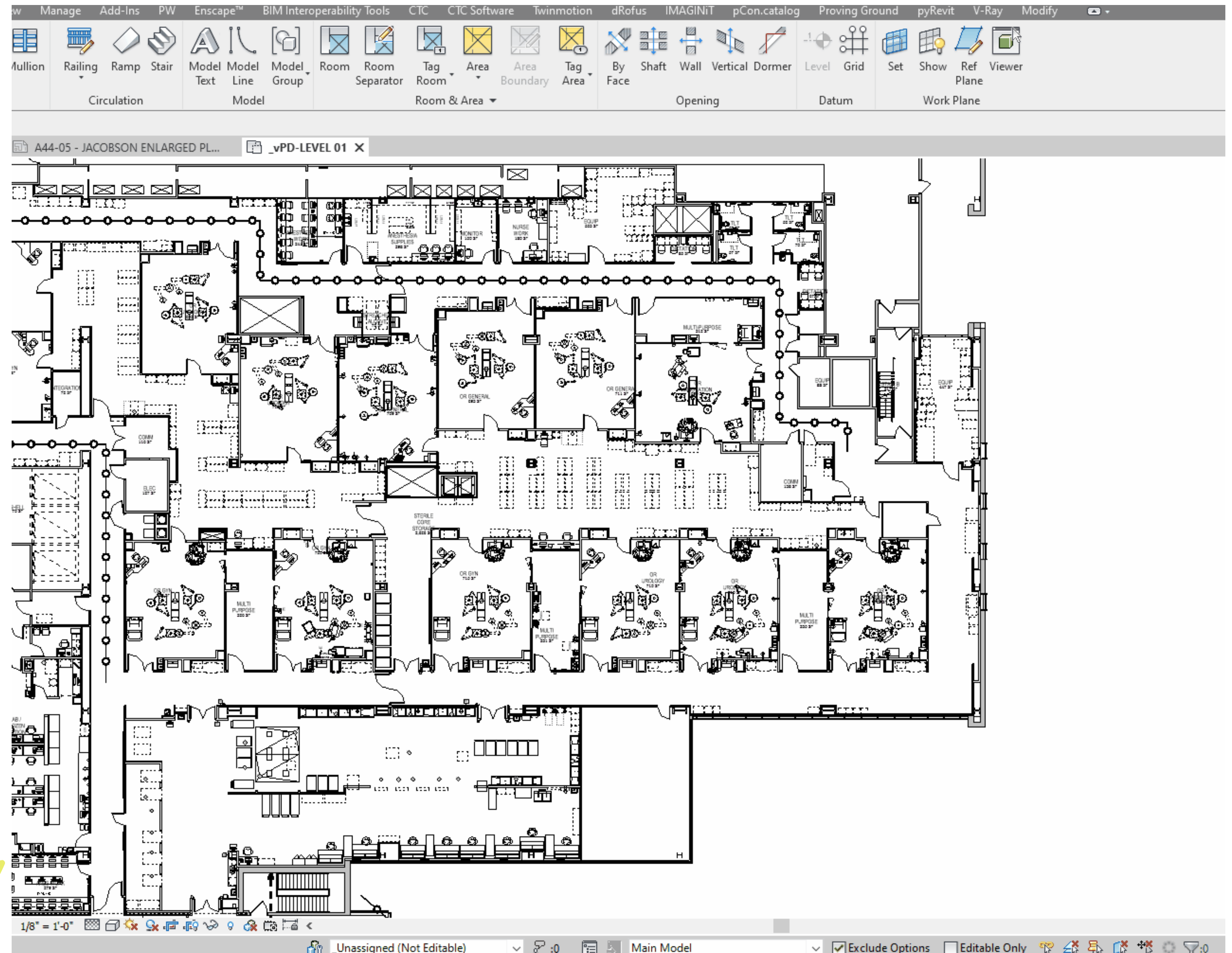
SOLUTION:

Using selection toggles at the bottom of Revit:

- Disable link selection
- Disable pinned element selection
- Disable underlay selection
- Disable element selection by face
- Disable drag elements on selection



Using the filter tool to add/remove categories from selection.



THE REVIT DIRTY DOZEN

#2

Do not import or explode CAD files.



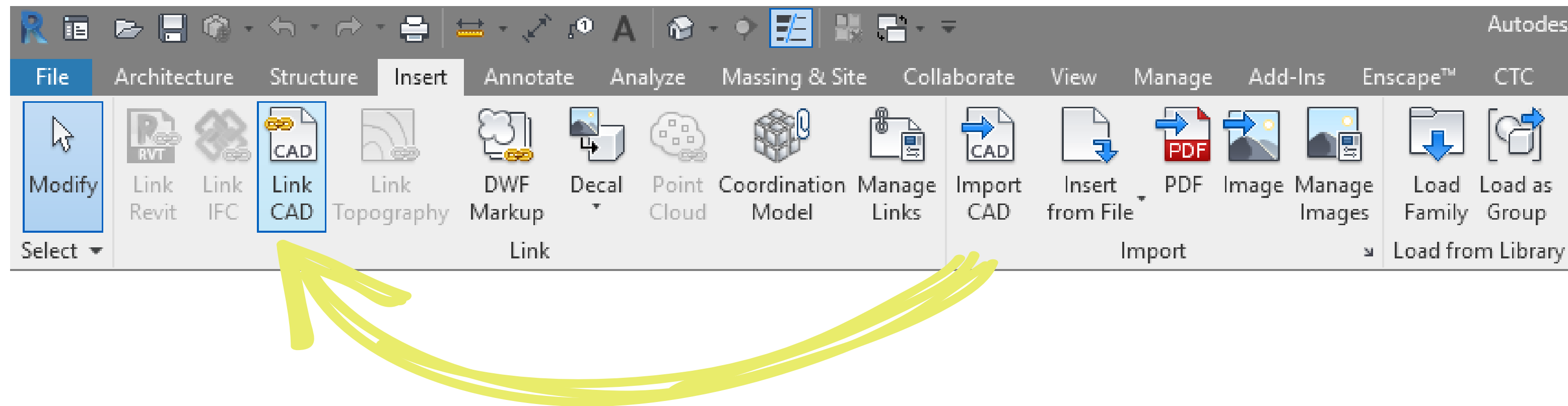
Do not import CAD files.

PROBLEM:

- Imported CAD files can be difficult to find
- Can slow down performance
- Users have the ability to explode imported CAD files.

TIPS:

Use Link CAD instead of Import CAD.

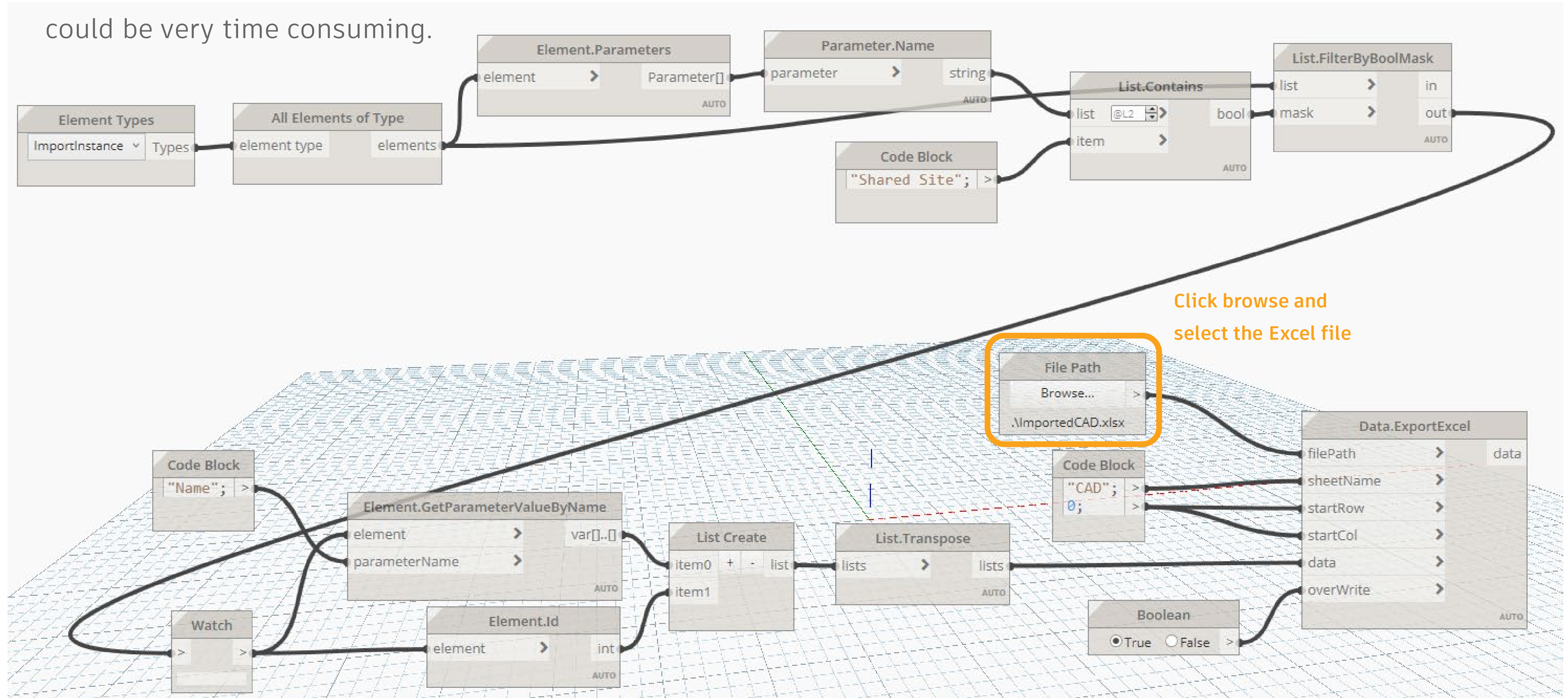
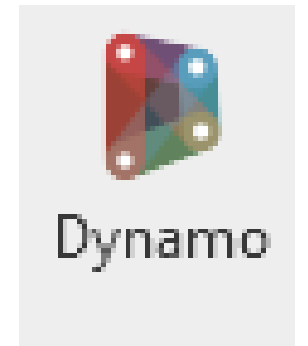


SOLUTION:

If you imported CAD files, then you will need to find it to remove it. There currently is not a tool within Revit that helps with this. You would need to find this in a view in order to delete it and this could be very time consuming.

ADVANCED SOLUTION:

Use Dynamo (Manage tab) to help find imported CAD files in your views. The Dynamo script (INCLUDED IN DATASET) will give you the element ids of the CAD files to help you find them.



ADVANCED SOLUTION (CONTINUED):

Select element by ID

	A	B	C
1	GSU - Building Section - Longitudinal.dwg	735229	
2	GSU Club (3) Notated.dwg	5558930	
3	GSU Club (3) Notated.dwg	5558931	
4	Civil CAD Surfaces.dwg	7792121	
5			
6			
7			
8			
9			

IDs of Selection

Select by ID

Warnings

Inquiry

Select Elements by ID

ID - (use semicolon for multiple IDs):

5558930

Show OK Cancel

Example A

Properties

Import Symbol
Civil CAD Surfaces.dwg

Civil CAD Surfaces.dwg (1) Edit Type

Constraints

Base Level LEVEL 02 - CONCOL

Base Offset -1023' 6"

Dimensions

Instance Scale 1.000000

Identity Data

Workset XX_Civil Topography

Edited by

Design Option Main Model

Name Civil CAD Surfaces.d...

Shown in all 2D/3D views

Example B

Properties

Import Symbol
GSU Club (3) Notated.dwg

GSU Club (3) Notated.dwg (1) Edit Type

Dimensions

Instance Scale 1.000000

Identity Data

Workset View "Drafting View: ...

Edited by

Name GSU Club (3) Notate...

Other

Draw Layer Foreground

Imported by 'current view only'

Do not explode CAD files.

PROBLEM:

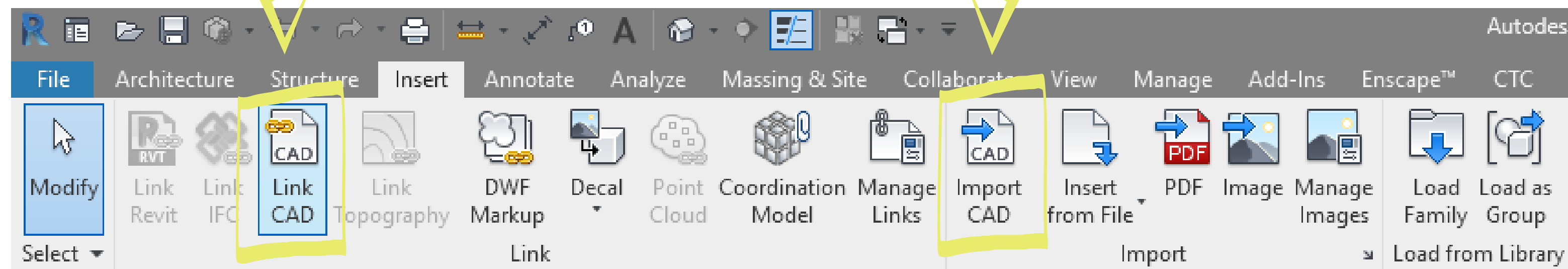
Exploding CAD files within your Revit file litters your project with a GREAT number of filled regions, line patterns, text styles, dimension styles and much more. This can ultimately impact the size of your Revit file and the consistency of line styles, text styles and dimension styles used on a project's documentation.



TIPS:

LINK CAD: won't be able to explode

Import CAD: can explode if fewer than 10k elements



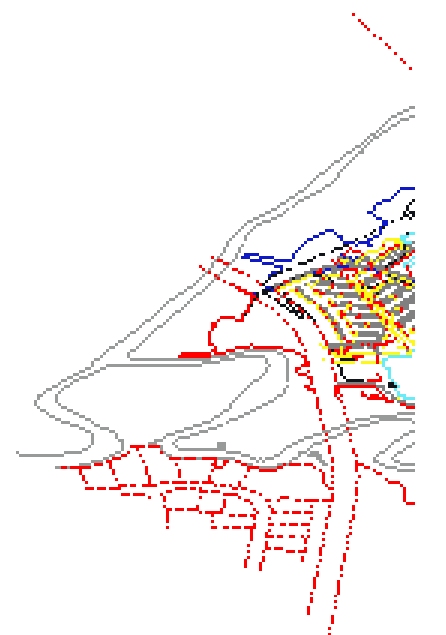
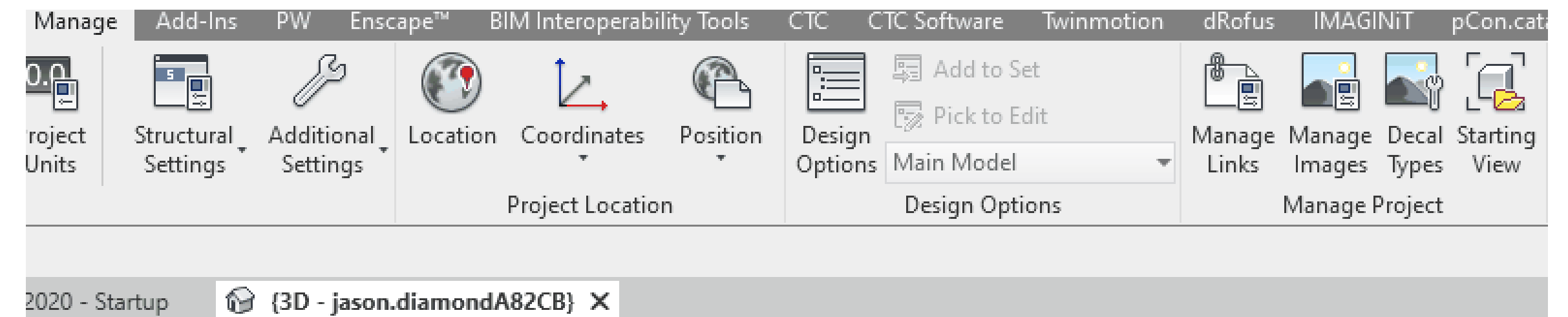
SOLUTION:

Steps for deleting Line Styles:

1. Click Manage tab>Additional Settings>Line Styles.
2. In the Line Styles dialog, select the line style name.
3. Delete.
4. When prompted to confirm the deletion, click Yes.

Q: Will that delete the existing lines using that style?

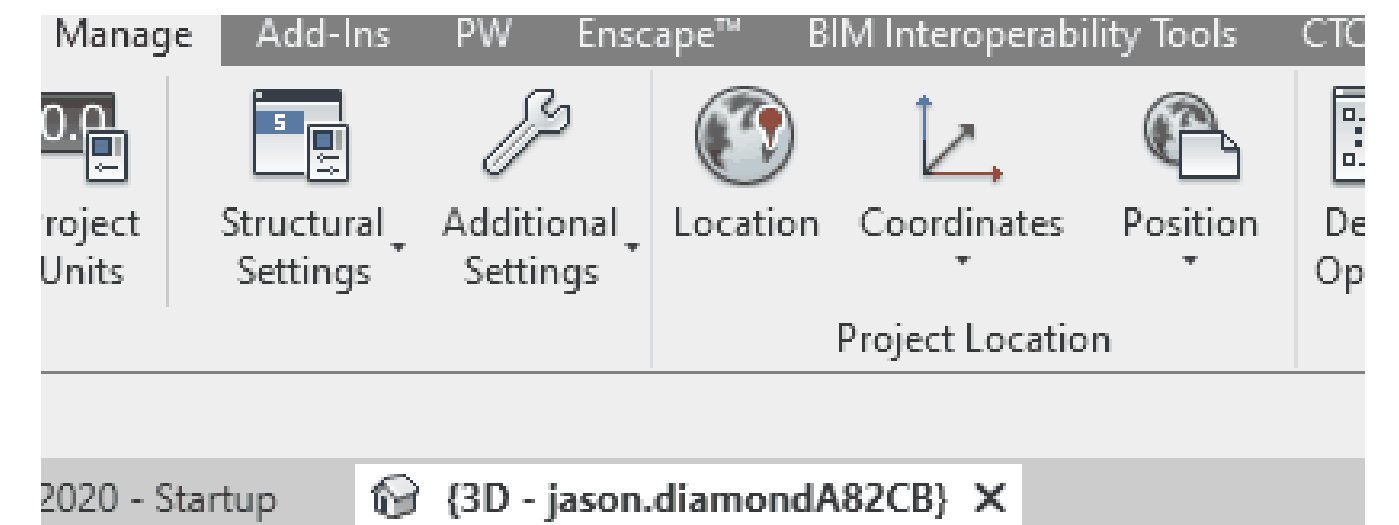
A: No. It will automatically assign those lines a different line style.



SOLUTION:

Steps for deleting Line Patterns:

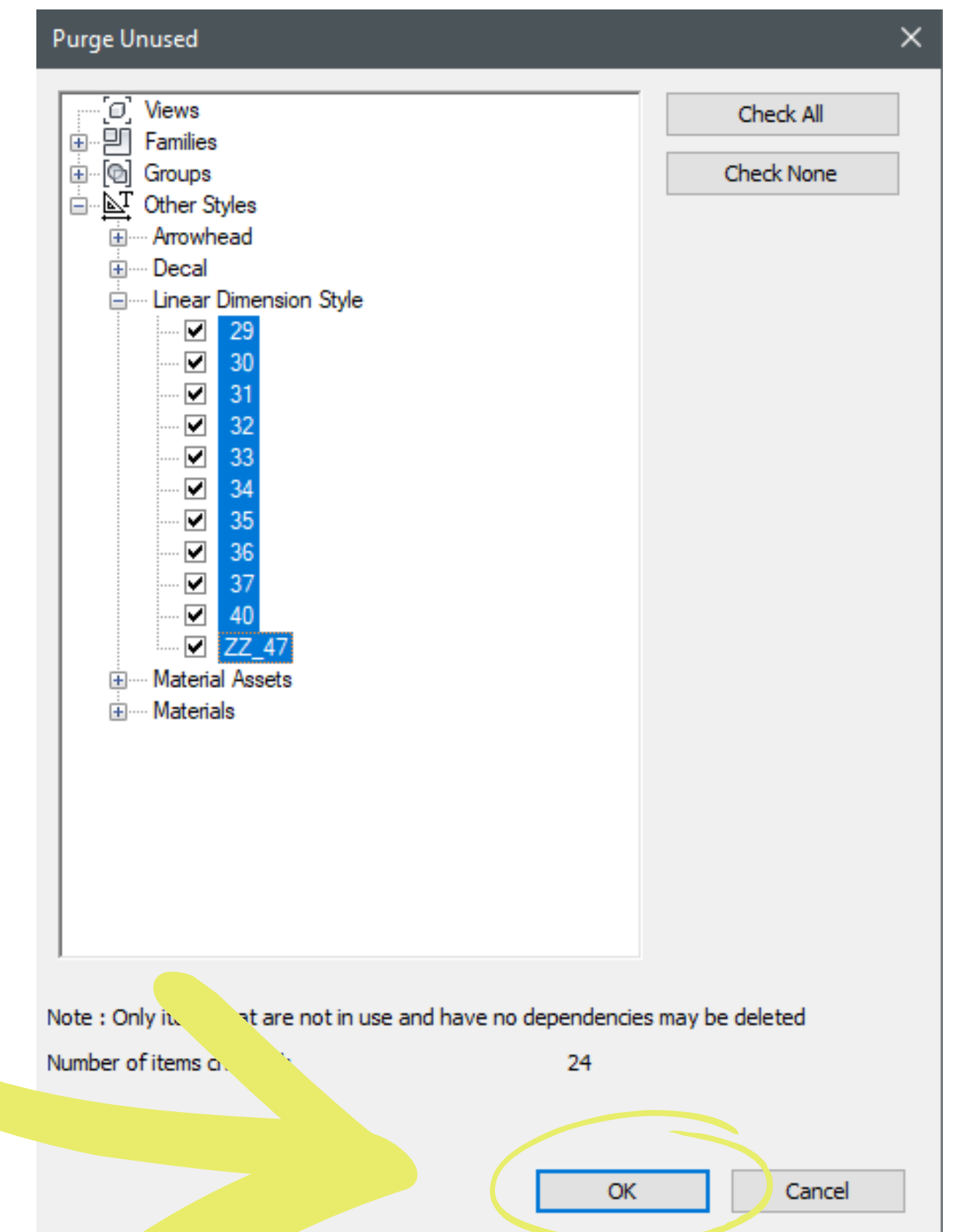
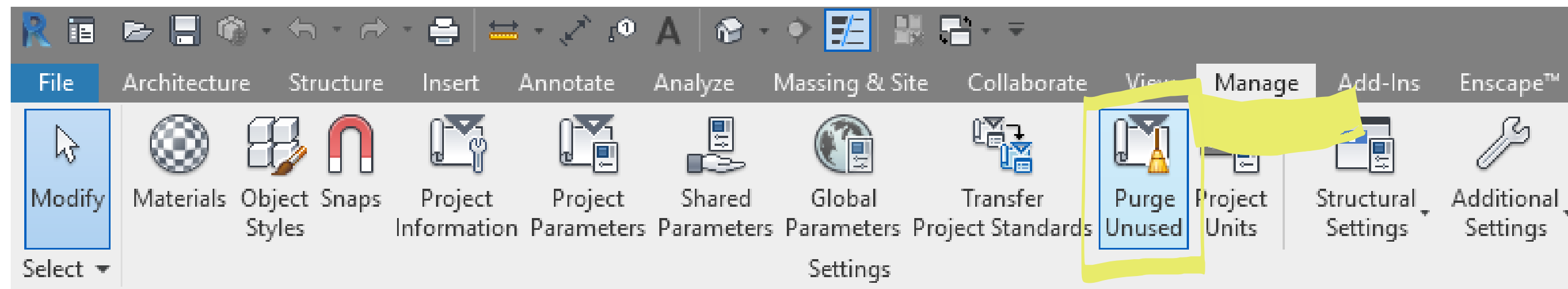
1. Click Manage tab>Additional Settings>Line Patterns.
2. In the Line Patterns dialog, select the line pattern name.
3. Delete.
4. When prompted to confirm the deletion, click Yes.



SOLUTION:

Use Purge Unused to delete:

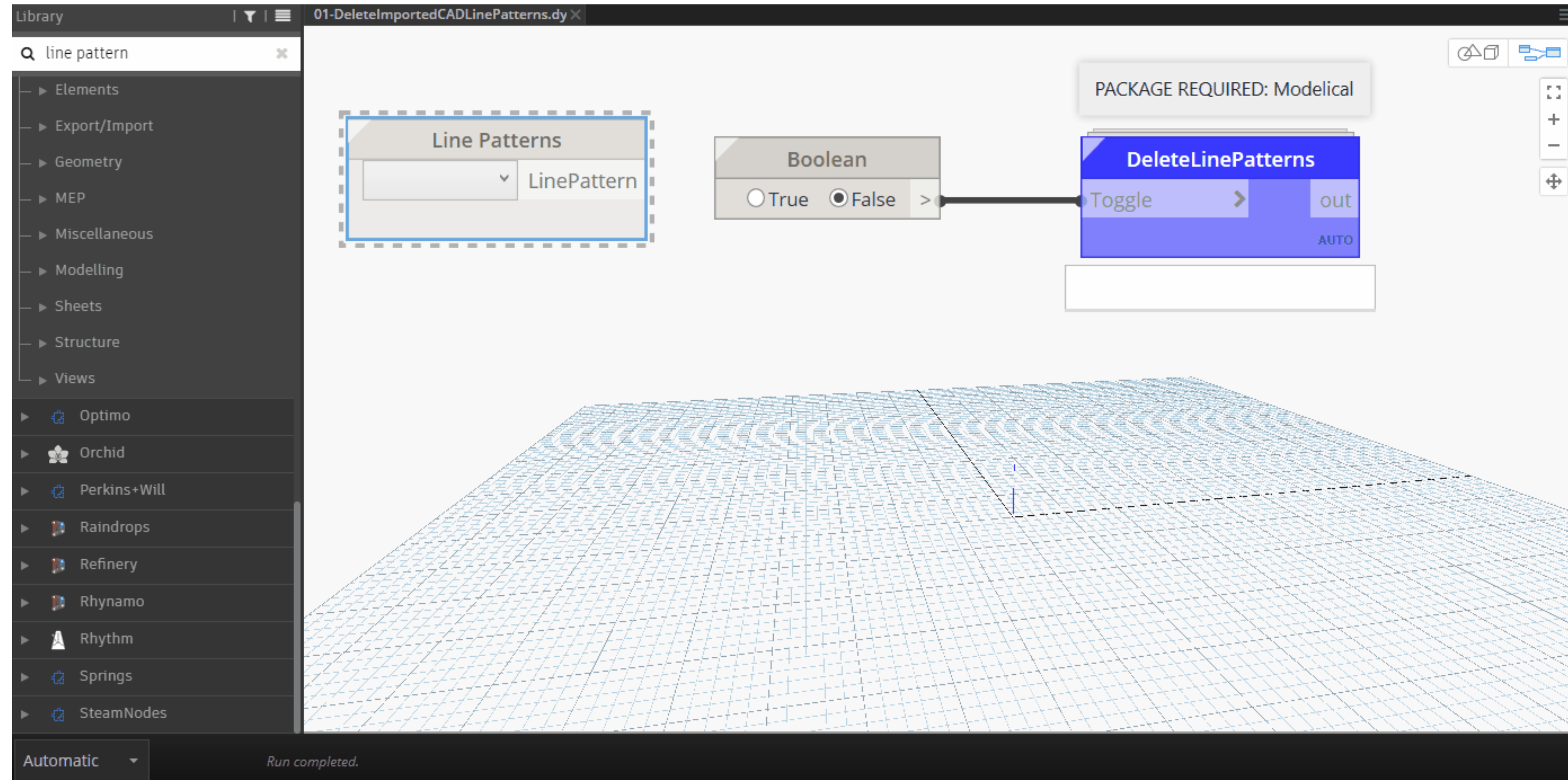
- Text Styles
- Dimension Styles
- Filled Regions



ADVANCED SOLUTION:

Line Patterns: Dynamo can search line patterns beginning with "IMPORT-" (see DYN)

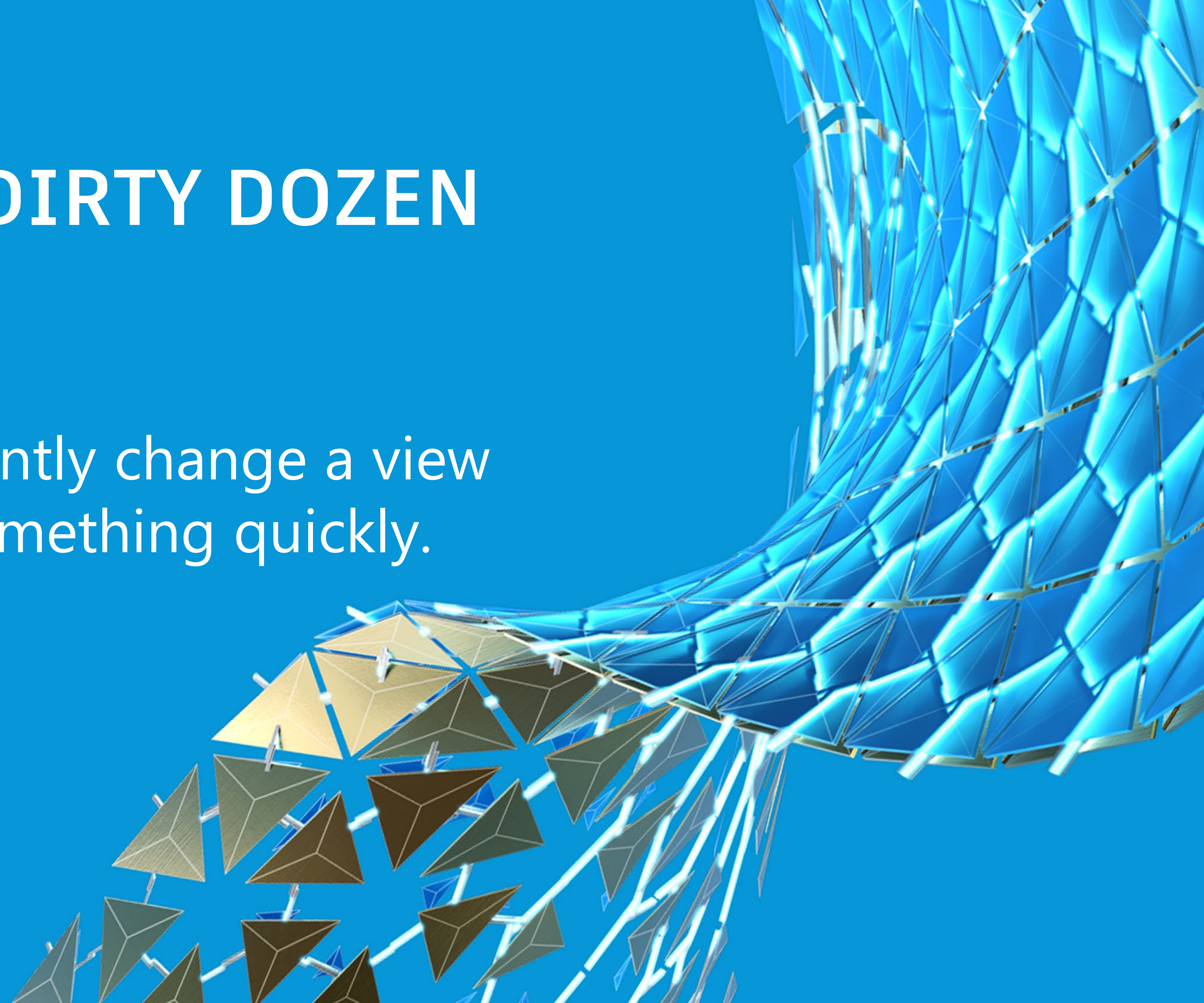
Line Styles: In-progress dynamo



THE REVIT DIRTY DOZEN

#3

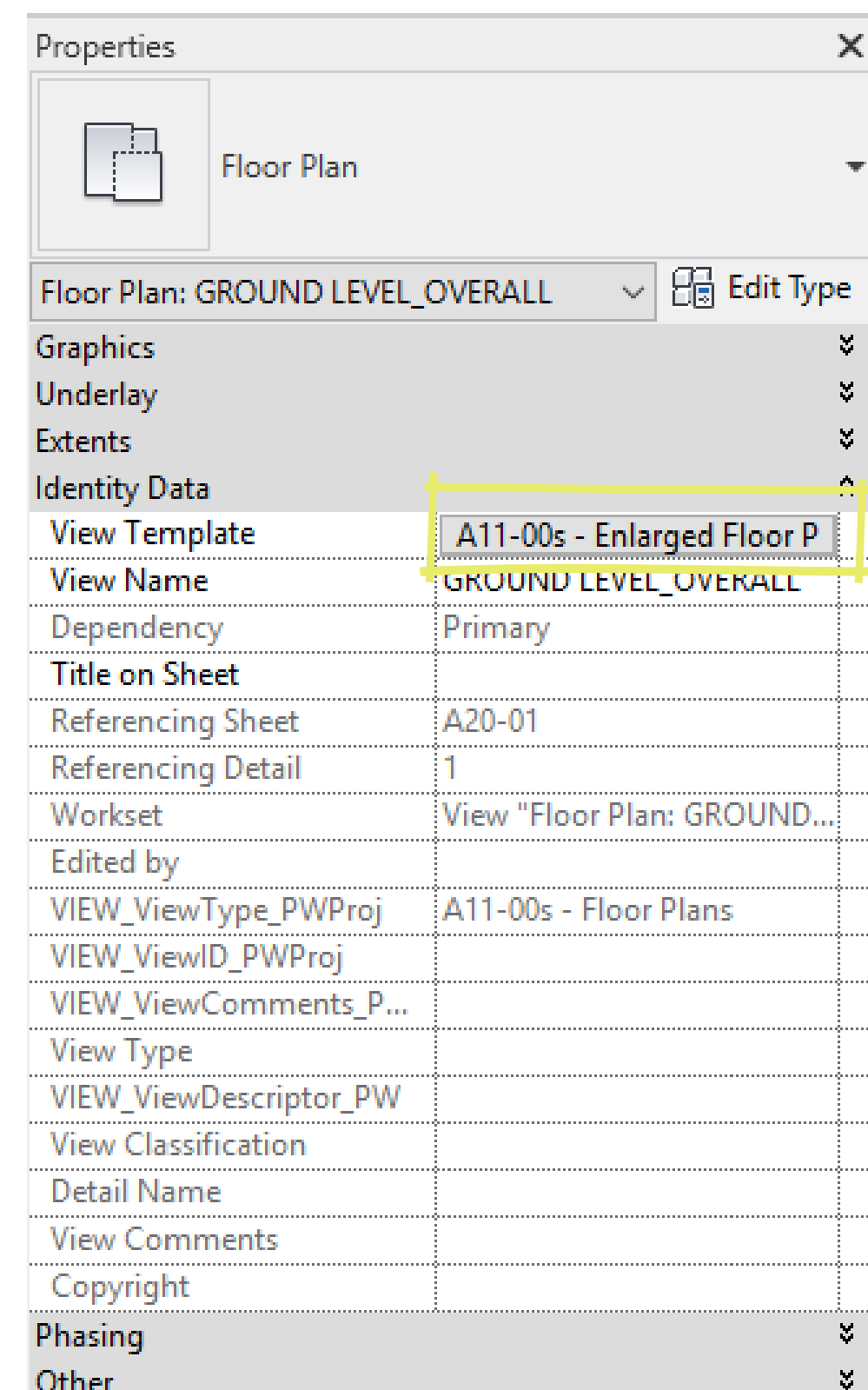
Do not permanently change a view setting to see something quickly.



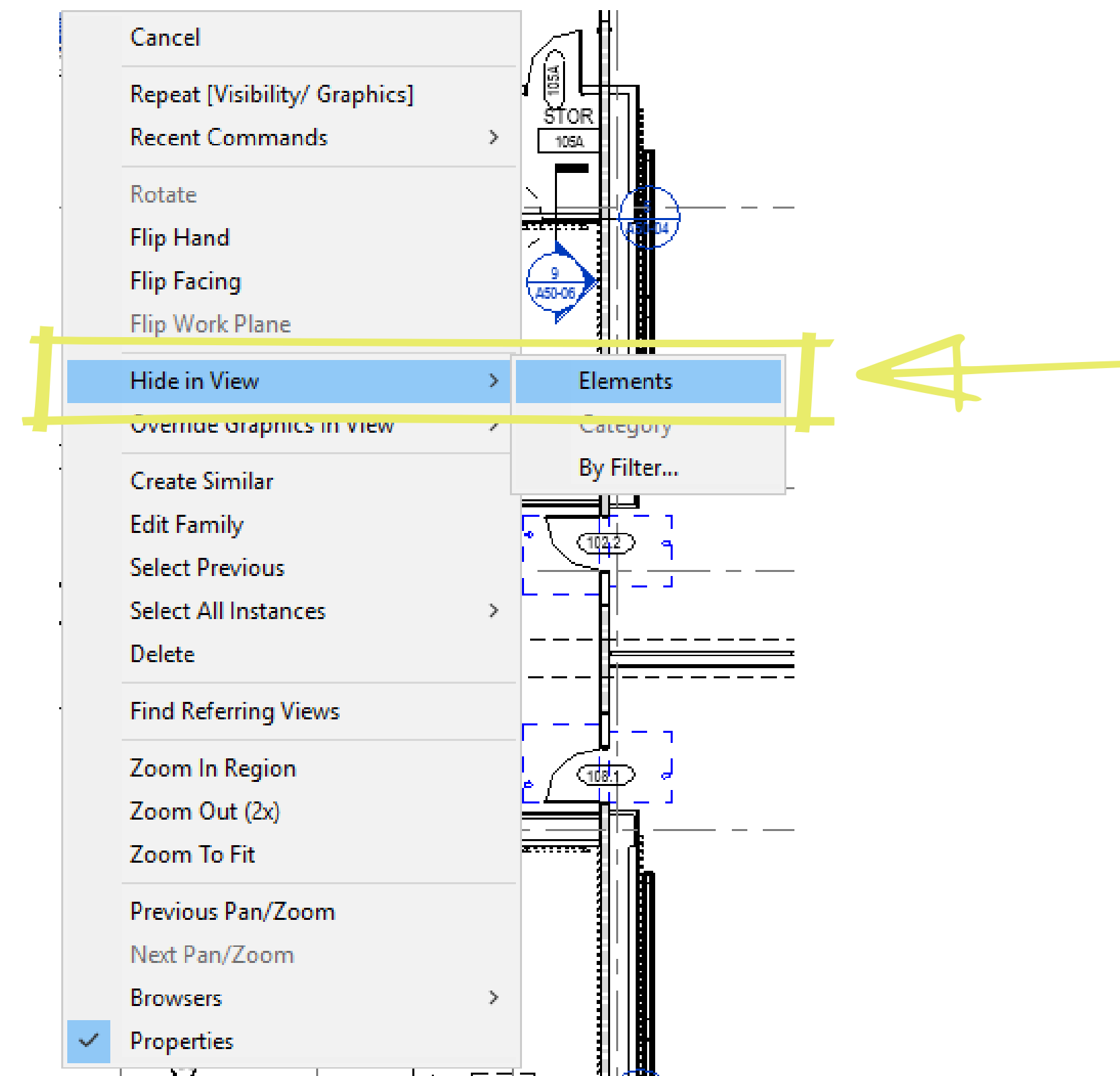
Do not permanently change a view setting to see something quickly.

PROBLEM:

Do not alter view templates to try and see something quick or hide something specific in a view.

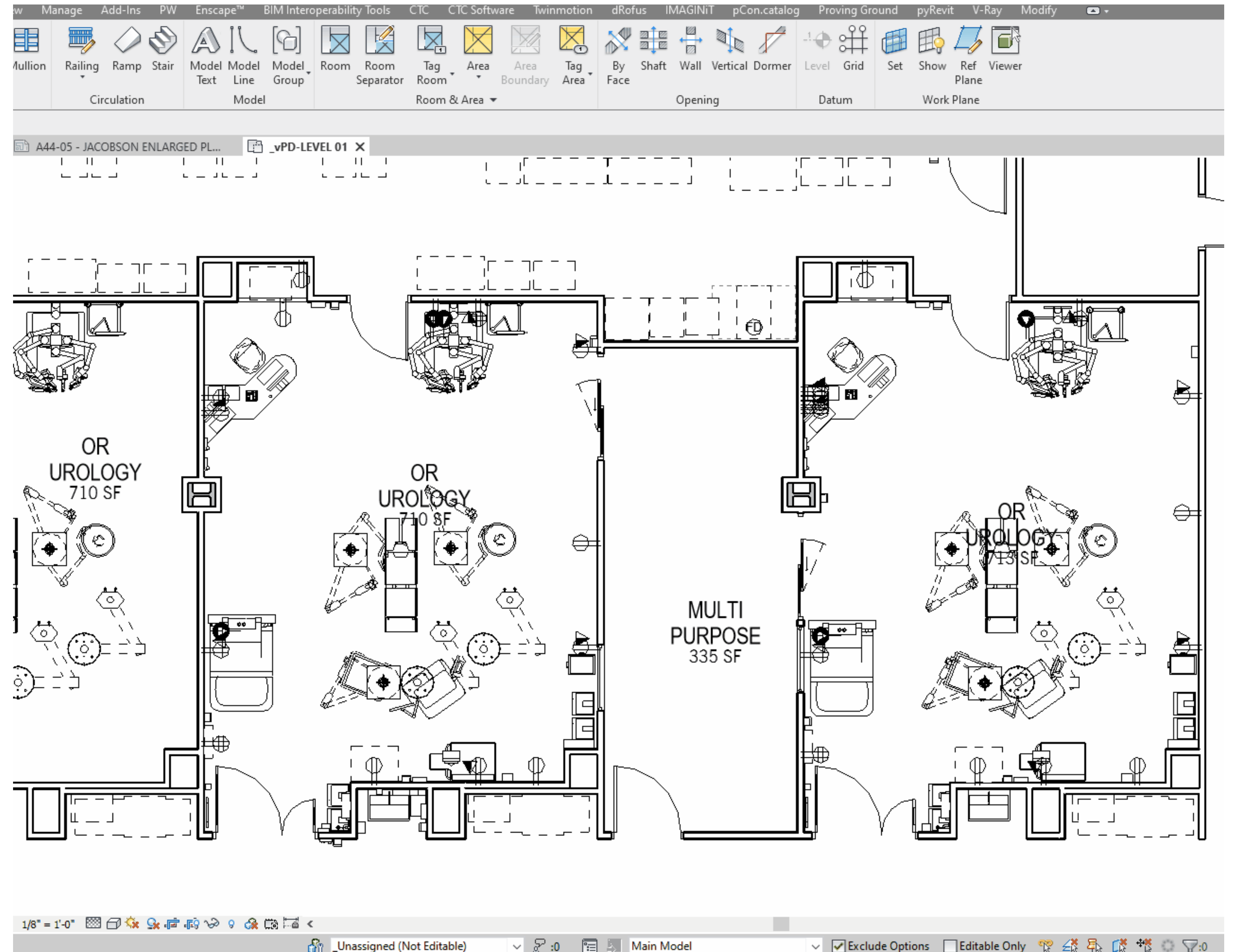
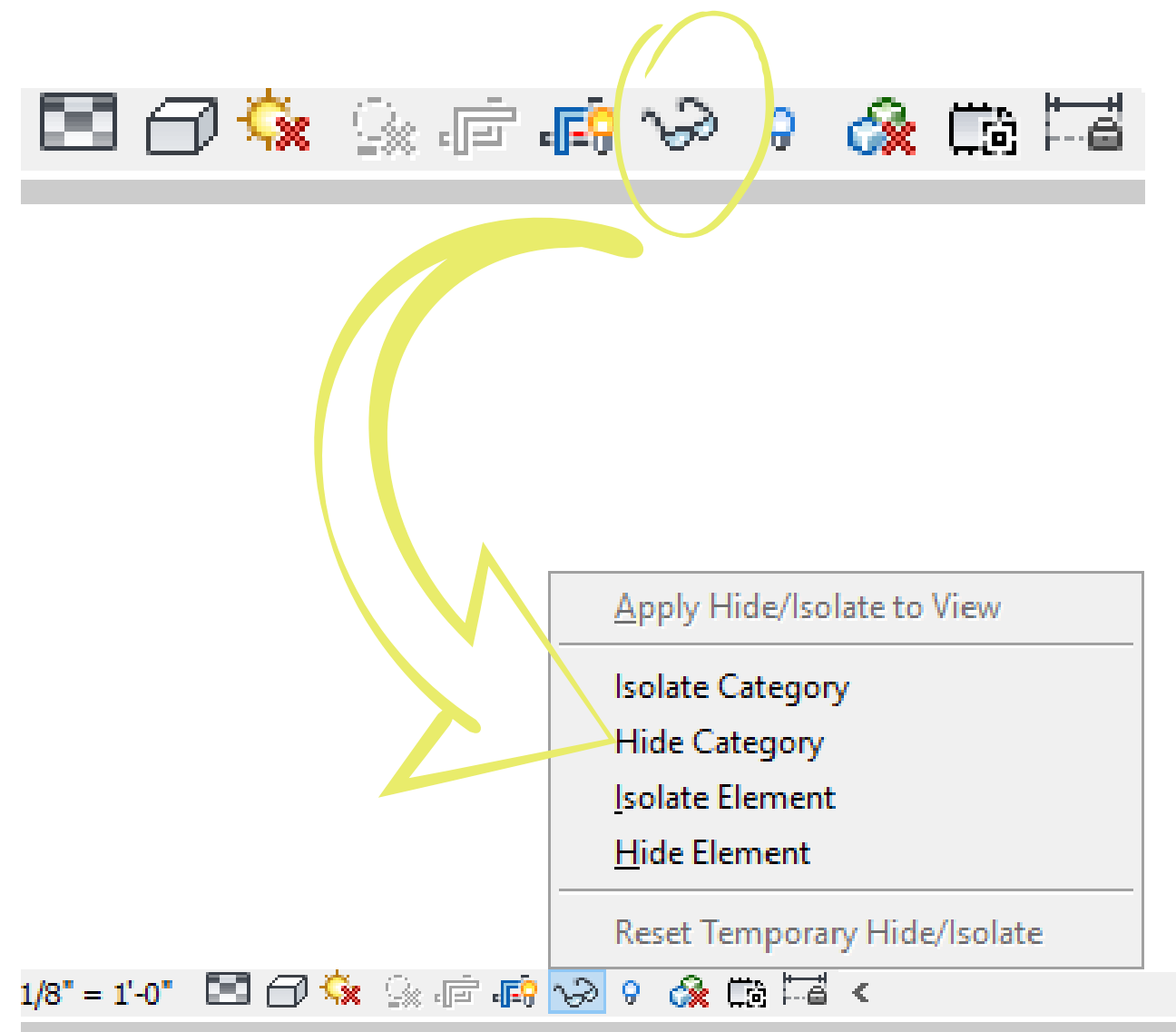


Do not right click on an element and select hide in view in order to see something quick and temporarily.



SOLUTION:

Using temporary hide/isolate in view.



SOLUTION:

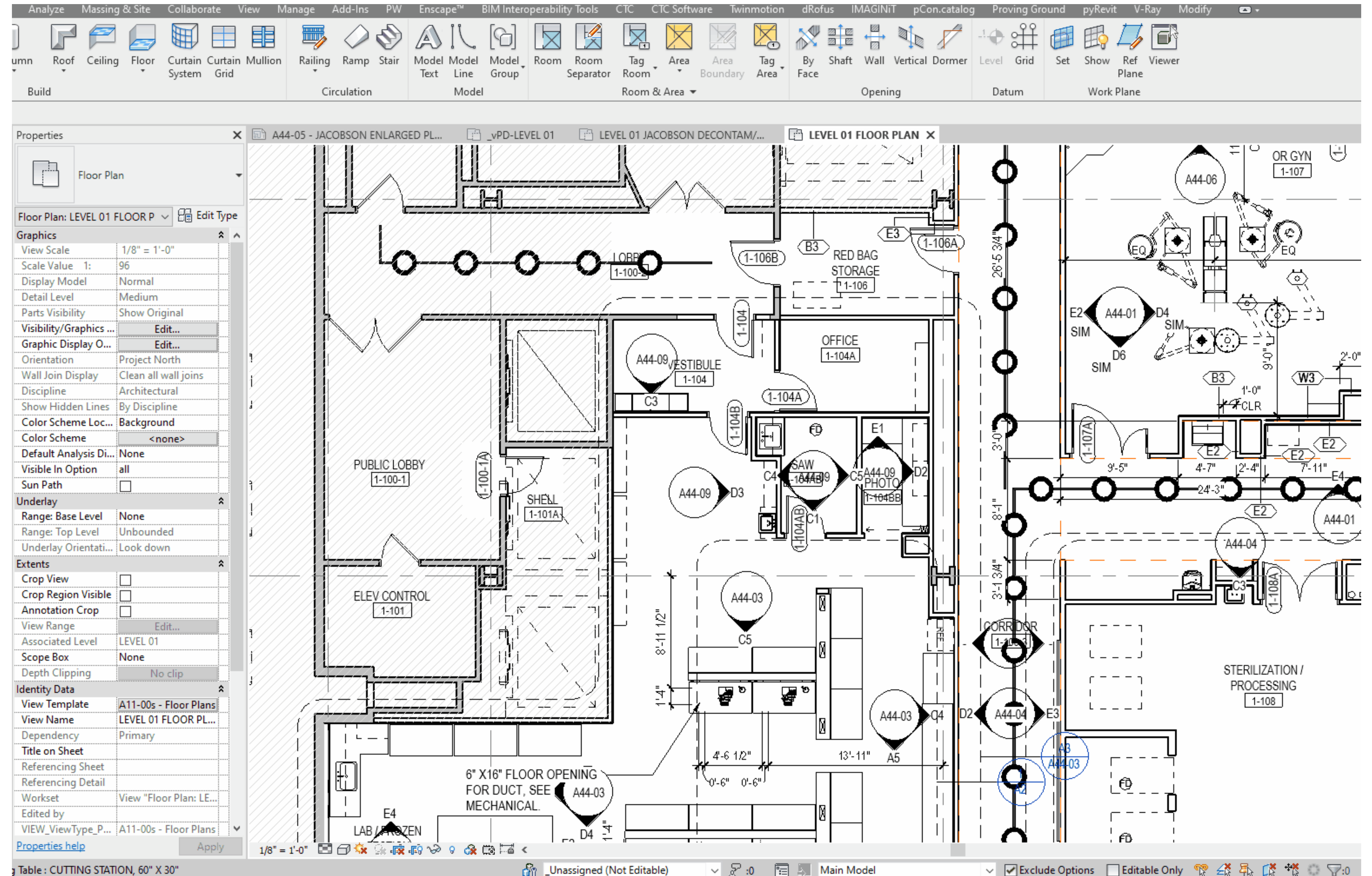
Using temporary view properties to keep from changing multiple views on multiple sheets.



Enable Temporary View Properties

Temporarily Apply Template Properties...

Restore View Properties



THE REVIT DIRTY DOZEN

#4

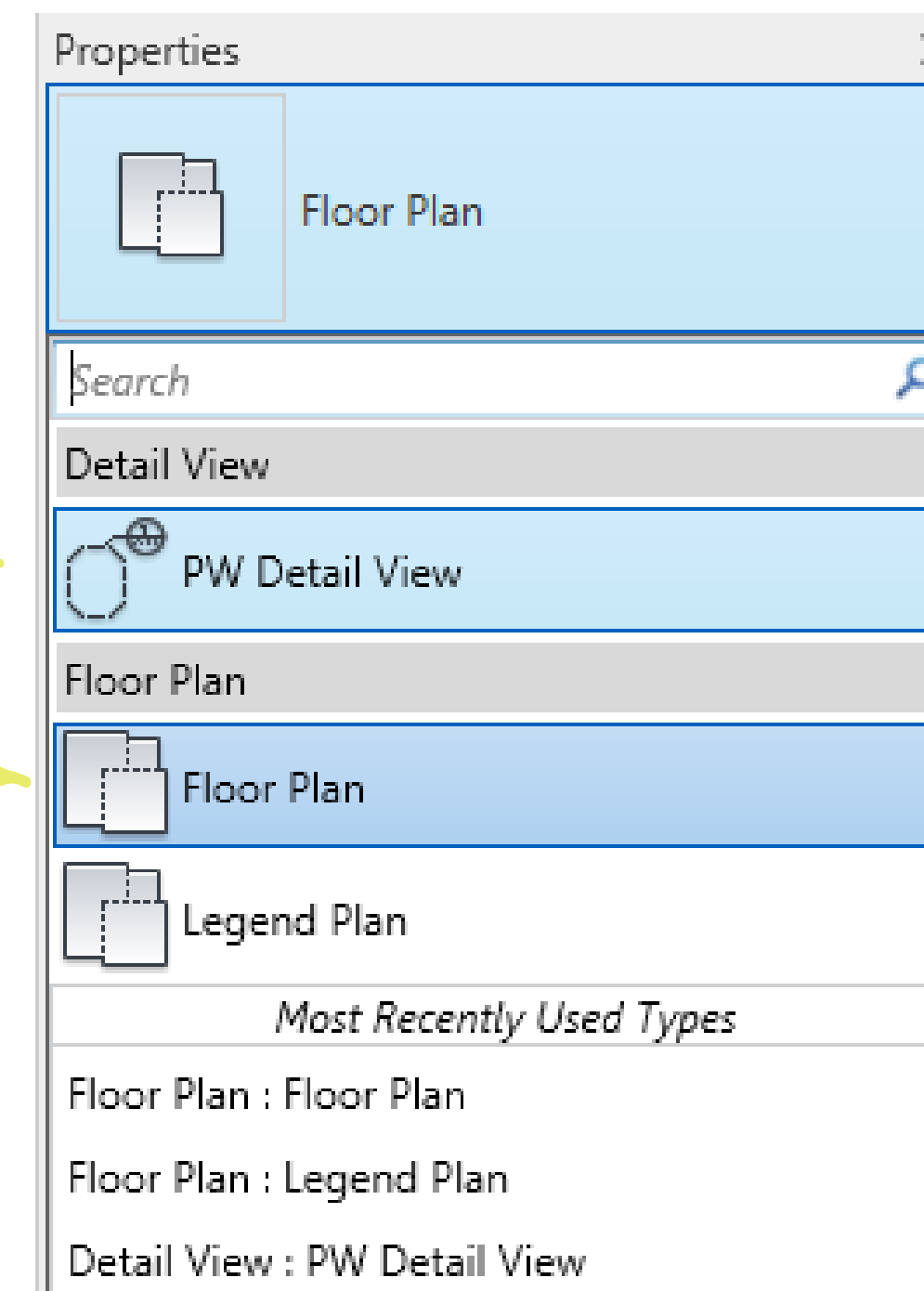
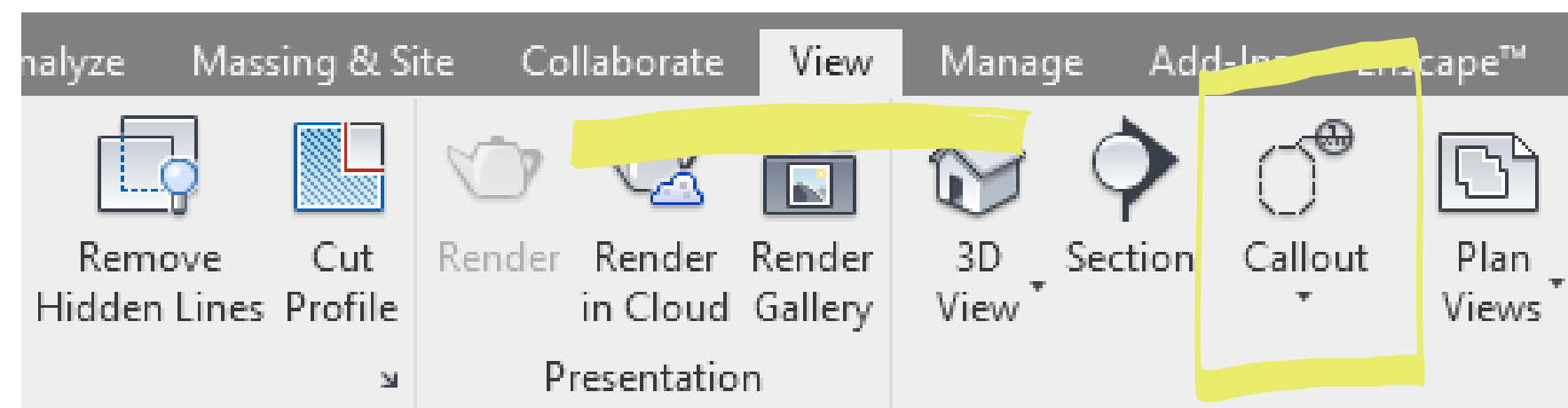
Do not confuse floor plan with detail view callouts.



Do not confuse floor plan with detail view callouts.

PROBLEM:

Be conscious of using a floor plan callout or a detail view callout depending on the reasoning for creating the view. Each view gives you different options in the properties panel and there is no way of changing one to the other AFTER THE CALLOUT VIEW HAS BEEN CREATED.



DETAIL VIEW CALLOUT SELECTION

FLOOR PLAN CALLOUT SELECTION

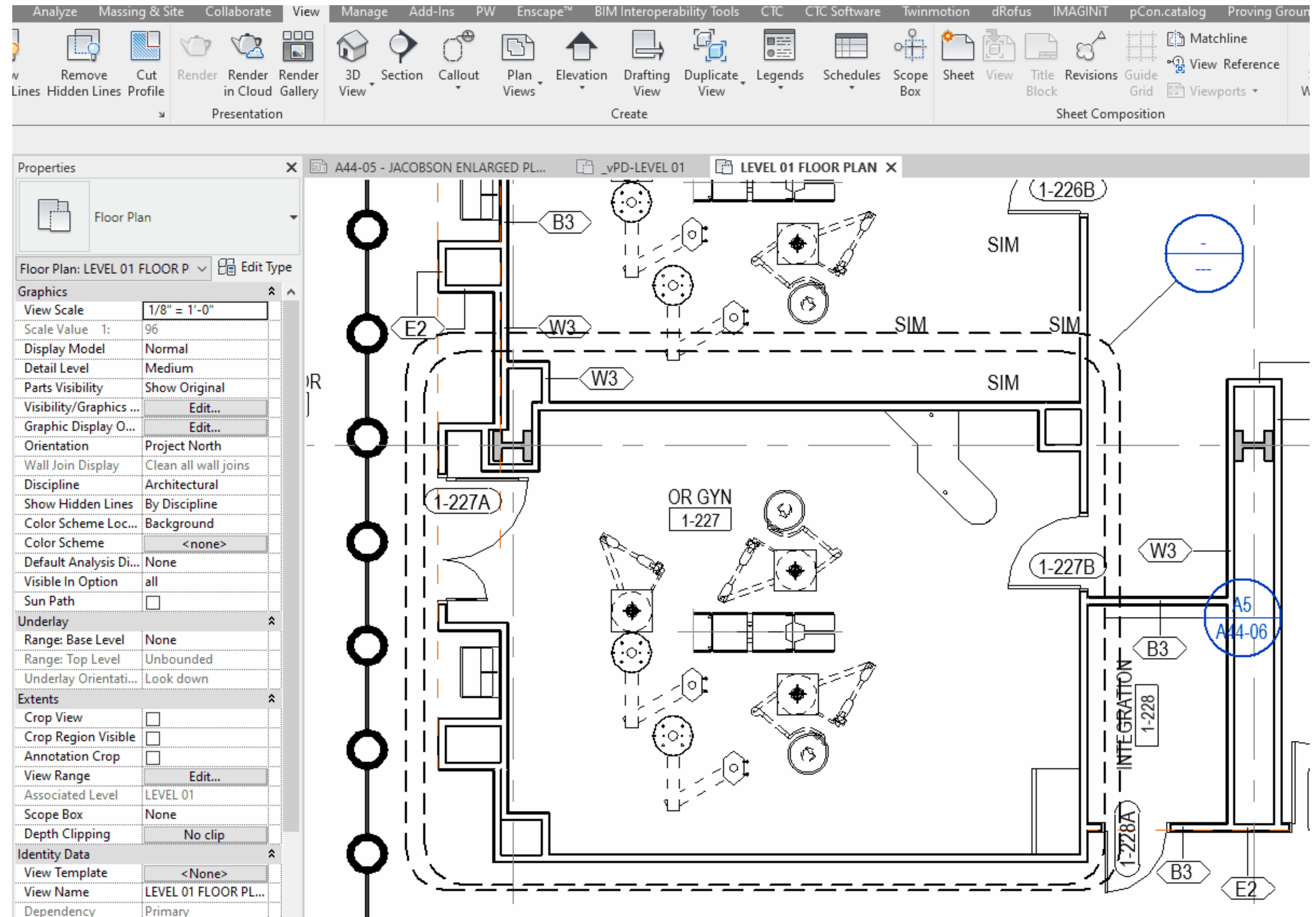
TIPS:

FLOOR PLAN CALLOUT

- Provides view range and underlay options
- Callout is not dependent on parent view properties.

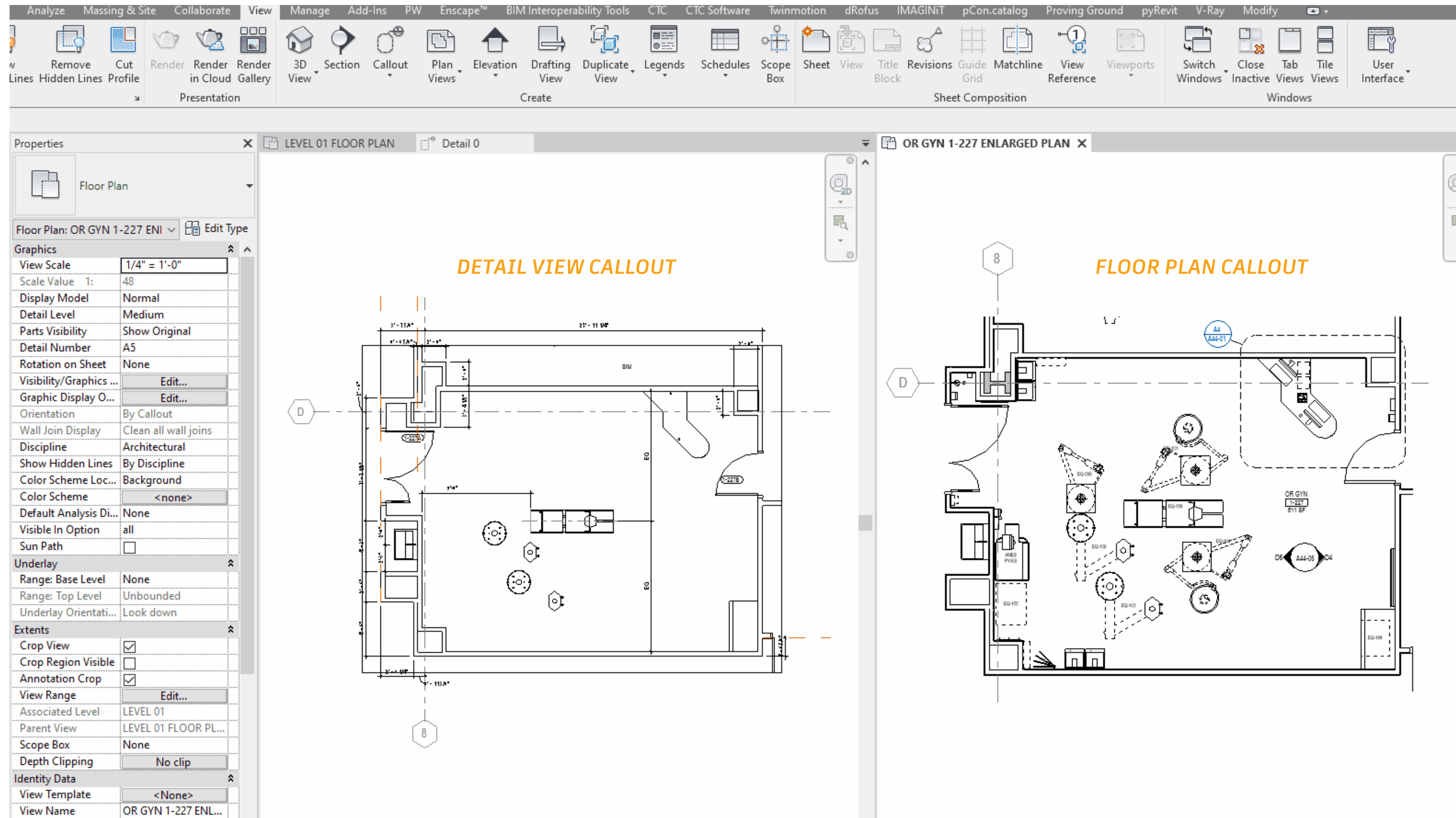
DETAIL VIEW CALLOUT

- Provides far clipping options and the option to show in *parent view only* or *intersecting views*.
- If you choose *intersecting views*, you have the option to *hide callout in scales coarser than*.



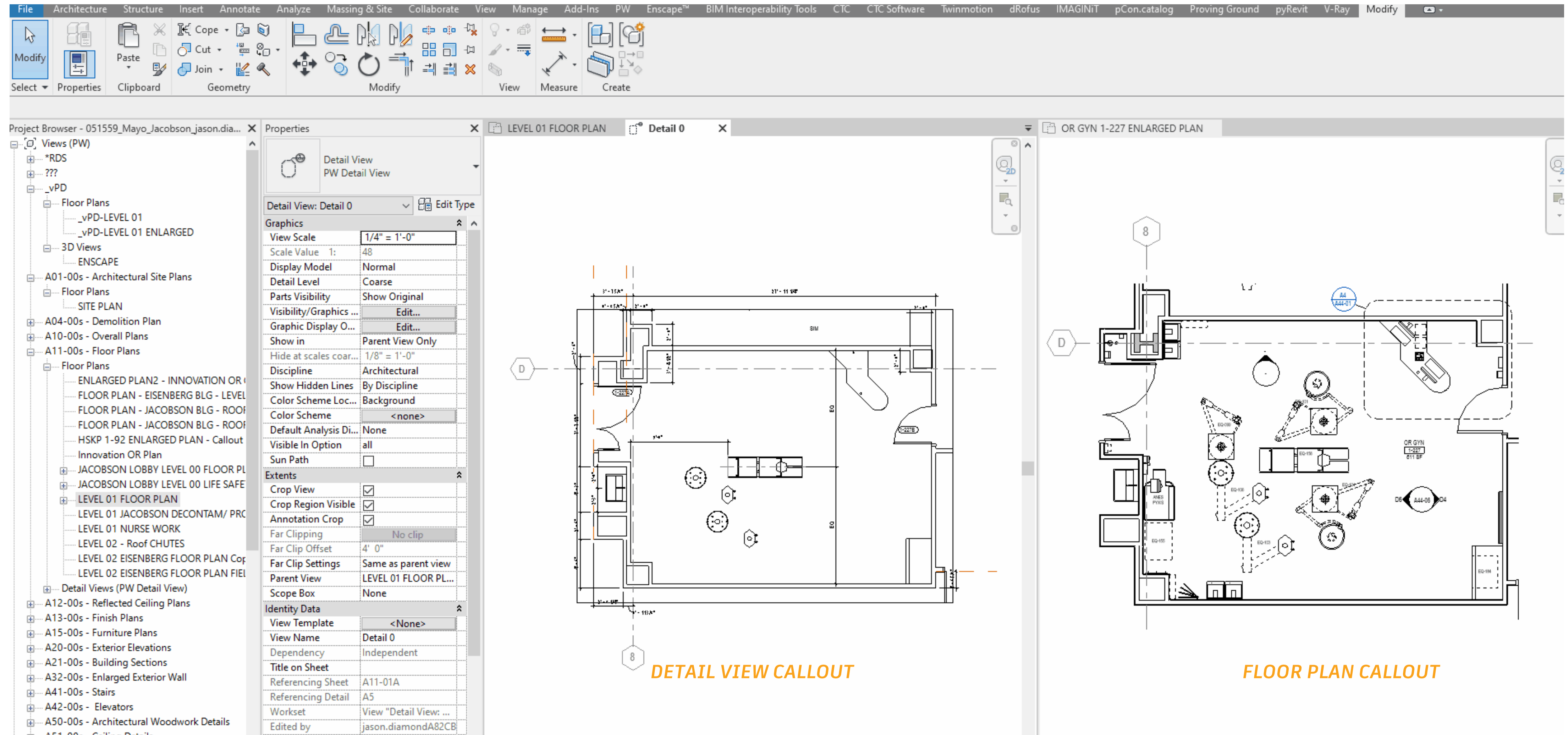
TIPS:

Elevation views cannot be placed in a Detail View Callout.



SOLUTION:

Recreate the proper callout and paste align any view specific elements (text, dimensions, tags).



THE REVIT DIRTY DOZEN

#5

Do not overuse Levels.



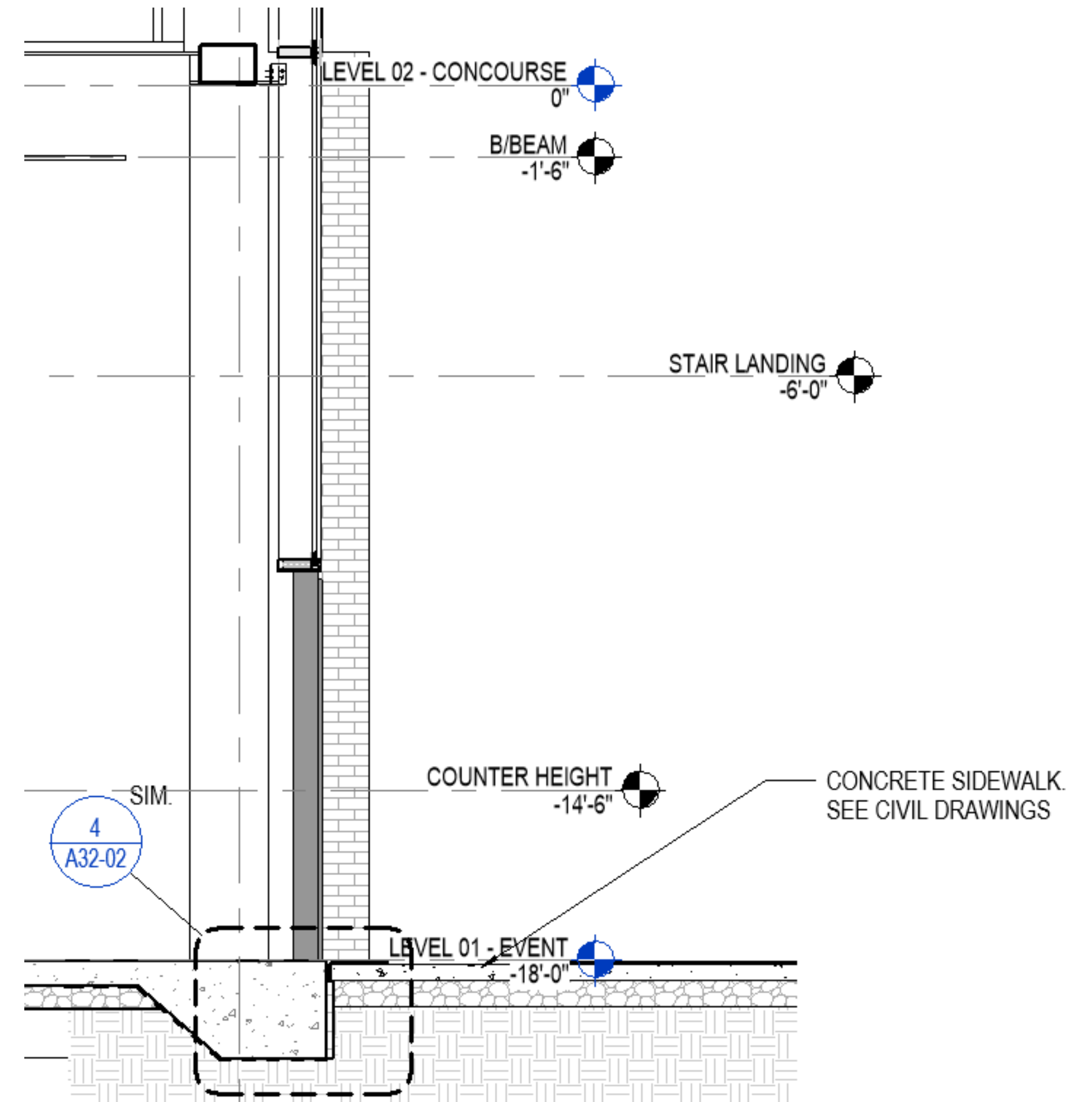
Do not overuse Levels.

PROBLEM:

- Users add Levels for 'ceiling', 'top of counter', 'stair landing', etc.
- Families or views can unintentionally be hosted to these levels.
- Elevation and section views can be littered with unnecessary Levels that will need to be hidden.

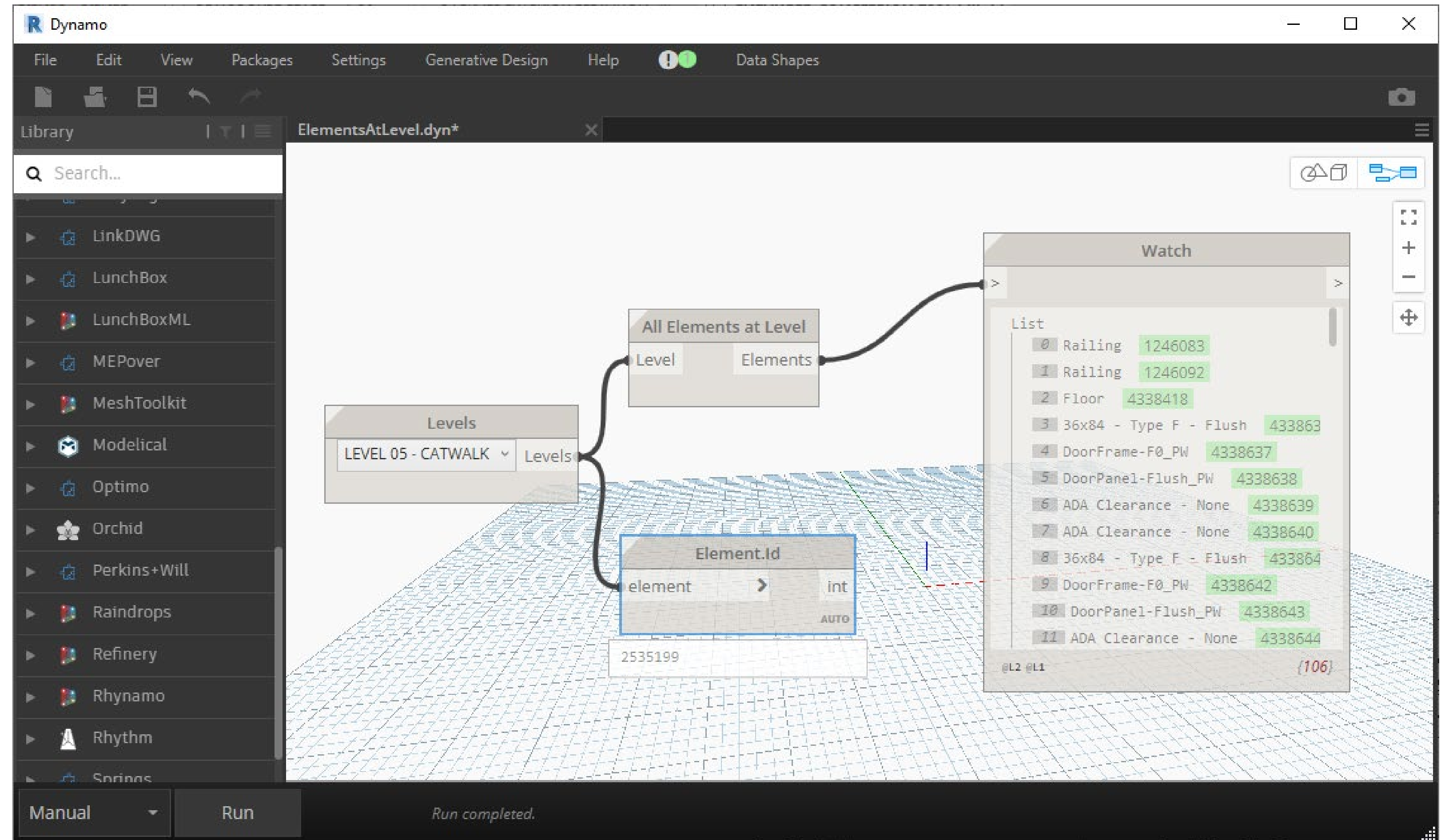
TIPS:

Just use Levels for the main slabs and roofs.



SOLUTION:

- When Levels are deleted from a project, any elements or views hosted to that level are deleted.
- These elements need to be rehosted before deleting the level.
- Dynamo makes this process less painful



DYNAMO SCRIPT

No custom packages needed

Levels within your project

Elements (with ID) hosted on that Level

Element ID of the Level (in case you can't find it in views)

Watch

List

0	Railing	1246083
1	Railing	1246092
2	Floor	4338418
3	36x84 - Type F - Flush	433863
4	DoorFrame-F0_PW	4338637
5	DoorPanel-Flush_PW	4338638
6	ADA Clearance - None	4338639
7	ADA Clearance - None	4338640
8	36x84 - Type F - Flush	433864
9	DoorFrame-F0_PW	4338642
10	DoorPanel-Flush_PW	4338643
11	ADA Clearance - None	4338644

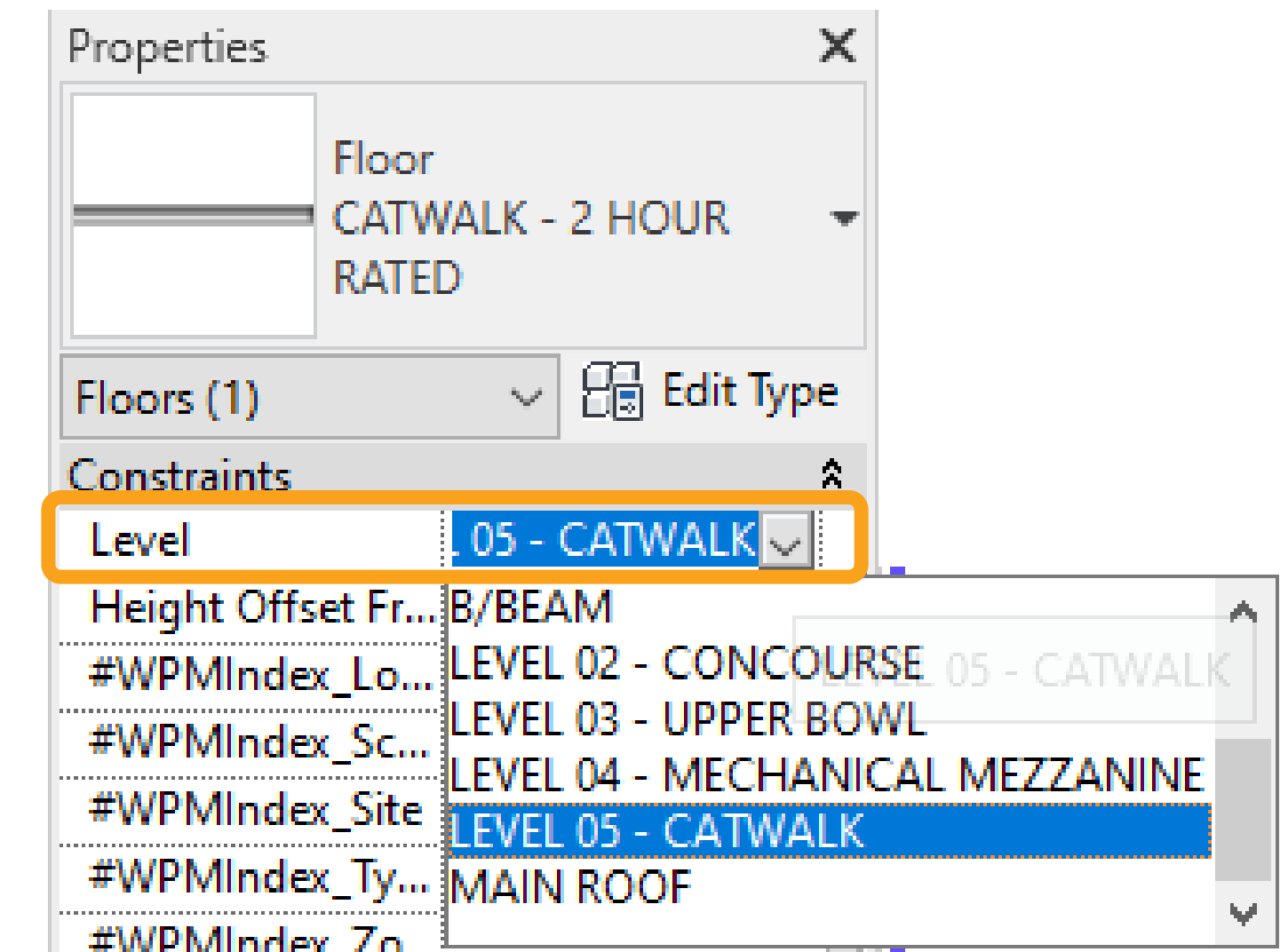
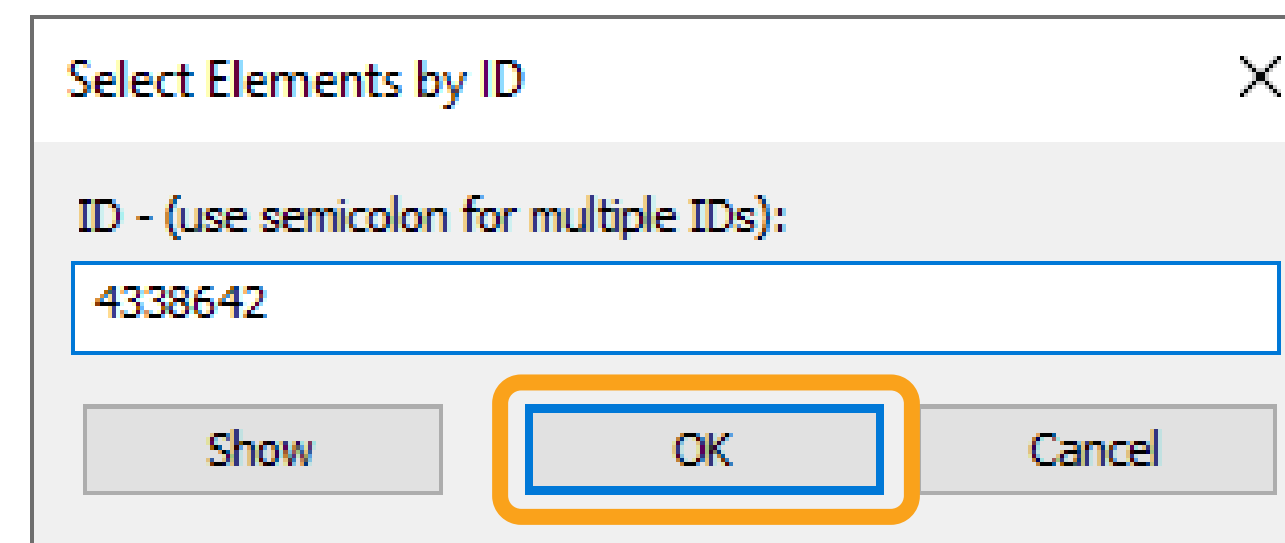
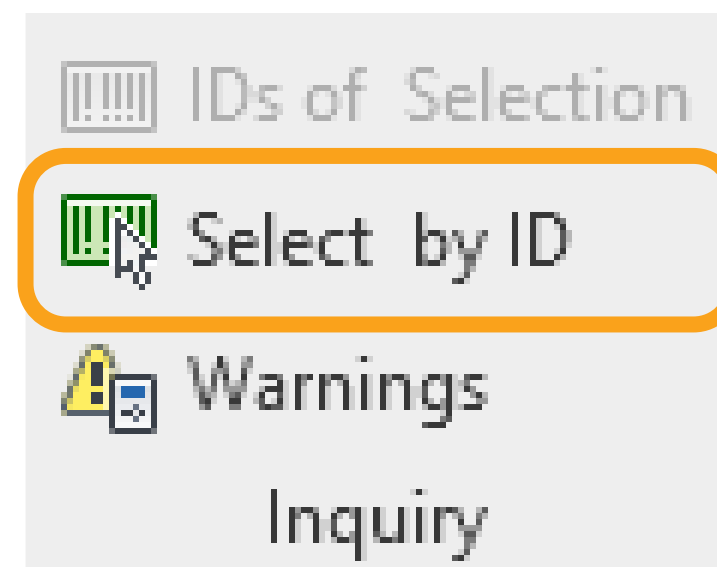
@L2 @L1 {106}

Run completed.

SOLUTION:

Follow the steps below:

1. Select element by ID
2. In properties, change the level
3. Repeat until there are no more elements hosted
4. Delete the level with confidence



THE REVIT DIRTY DOZEN

#6

Do not nest groups within groups.



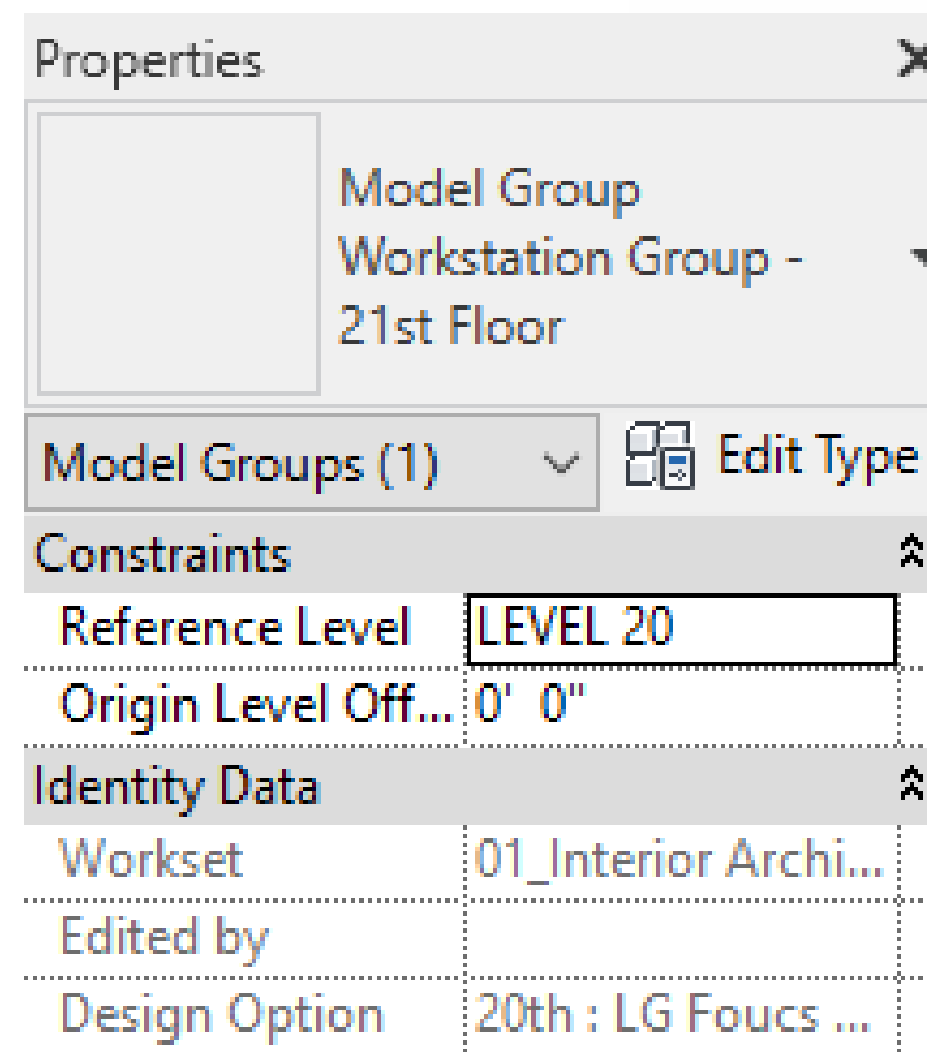
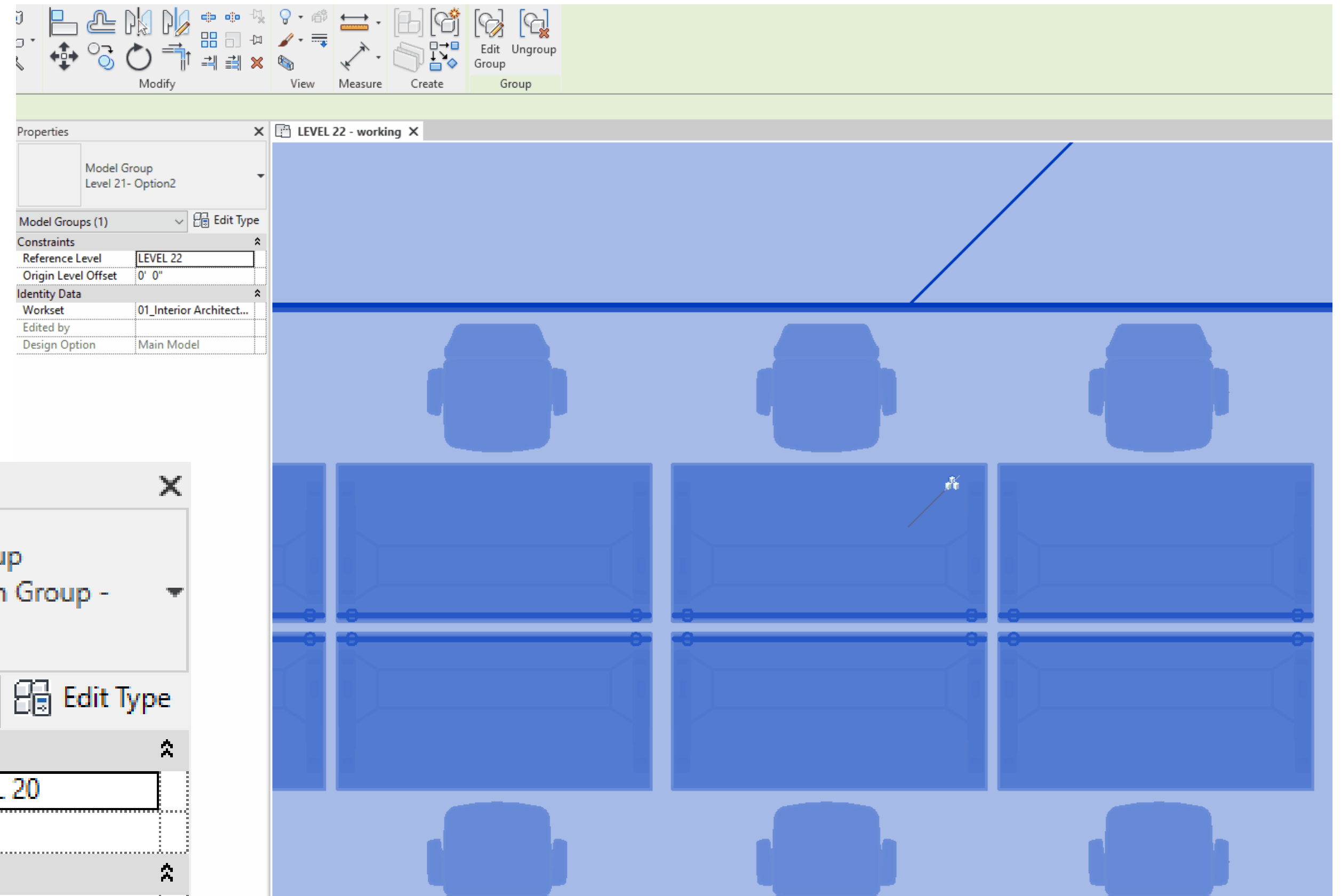
Do not nest groups within groups.

PROBLEM:

- Nested groups make the project file overly complex and slow.
- In a family file, it is usually the source of corruption.

TIPS:

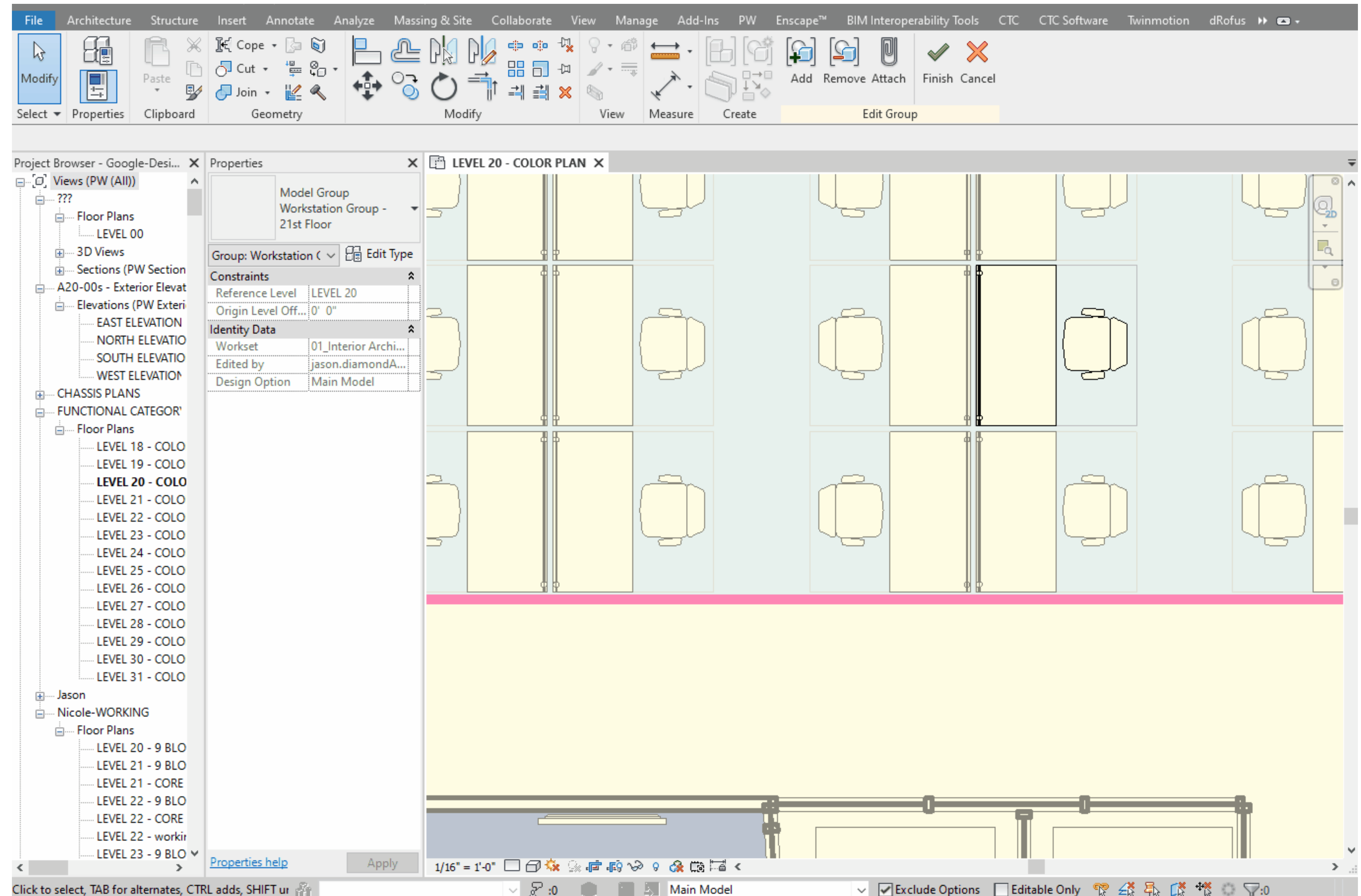
Use nested families whenever possible. Do not host elements in the group to an element outside the group. In this example, the workstation furniture families are in a model group.



SOLUTION:

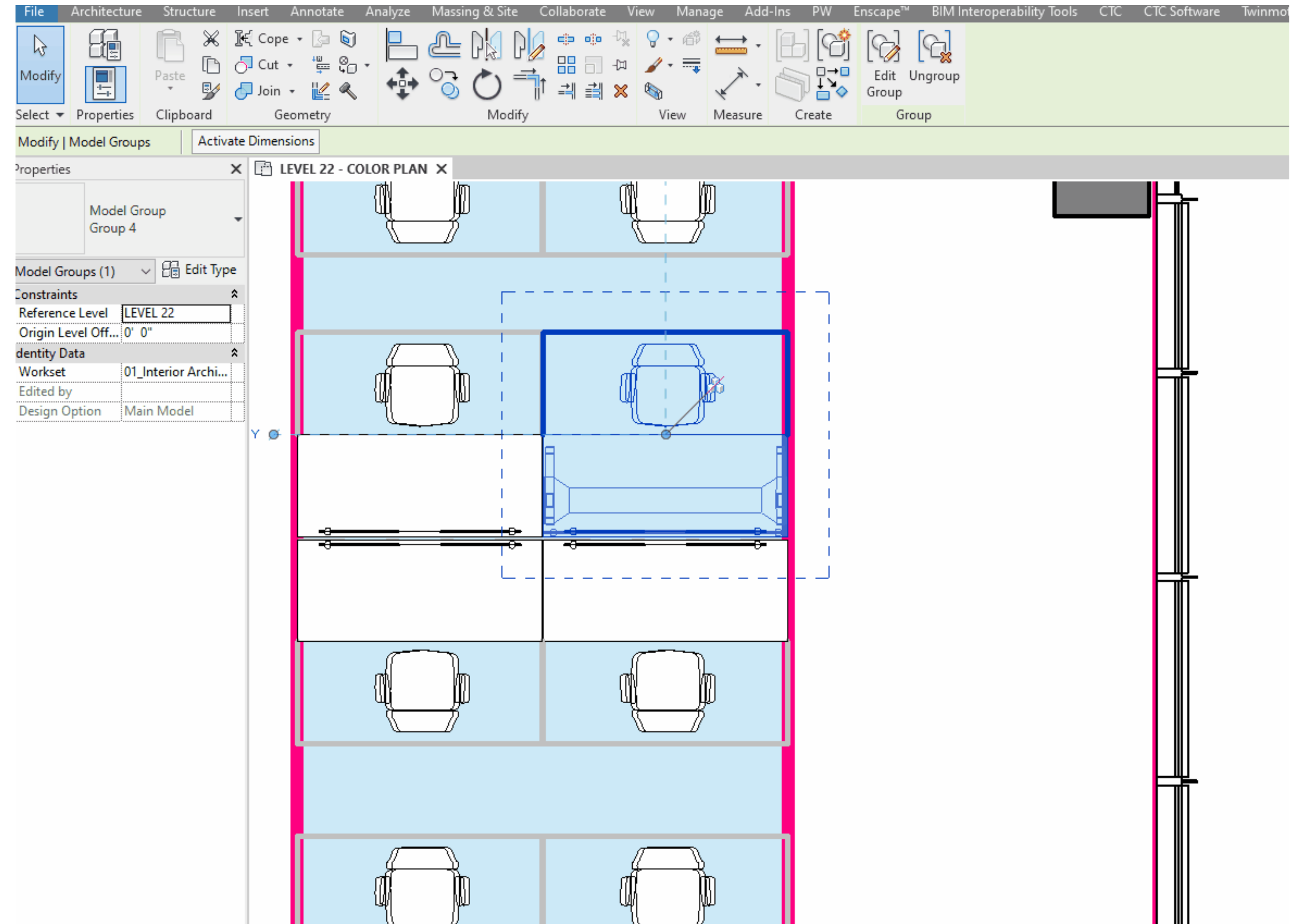
Follow the steps below:

1. Edit the nested group.
2. Open all families in the group and load each into the desk family, placing in the proper location in plan and elevation.
3. Load the nested desk family back in project.



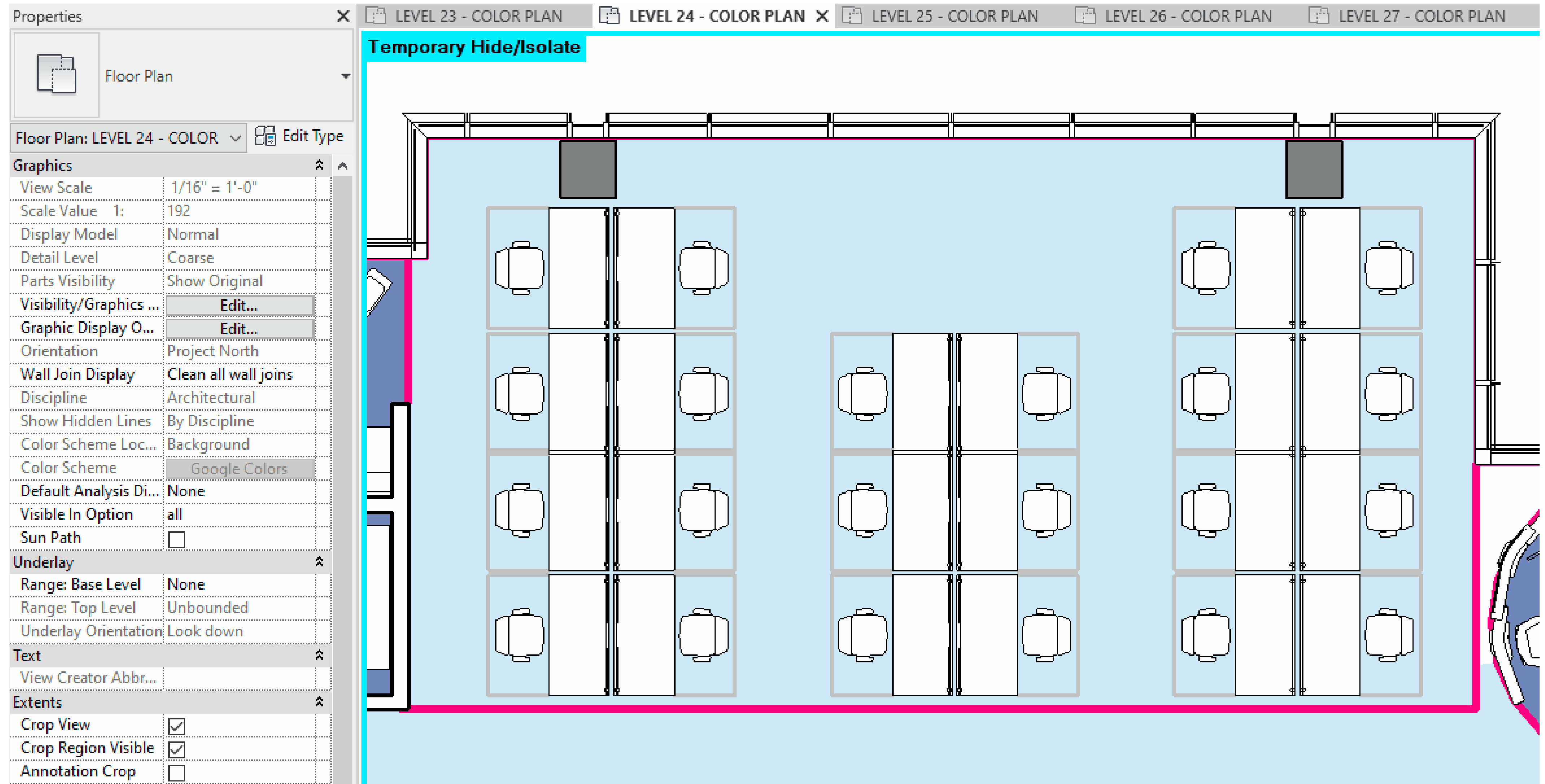
SOLUTION:

4. Delete the separate chair and divider family that are duplicated in the original group.
5. Finish changes to the group.
6. Now that the only item in the group is the nested family, select all instances of the group in entire project by right clicking on the group in the project browser, select all instances in entire project.
7. After they are all selected, click the ungroup button.



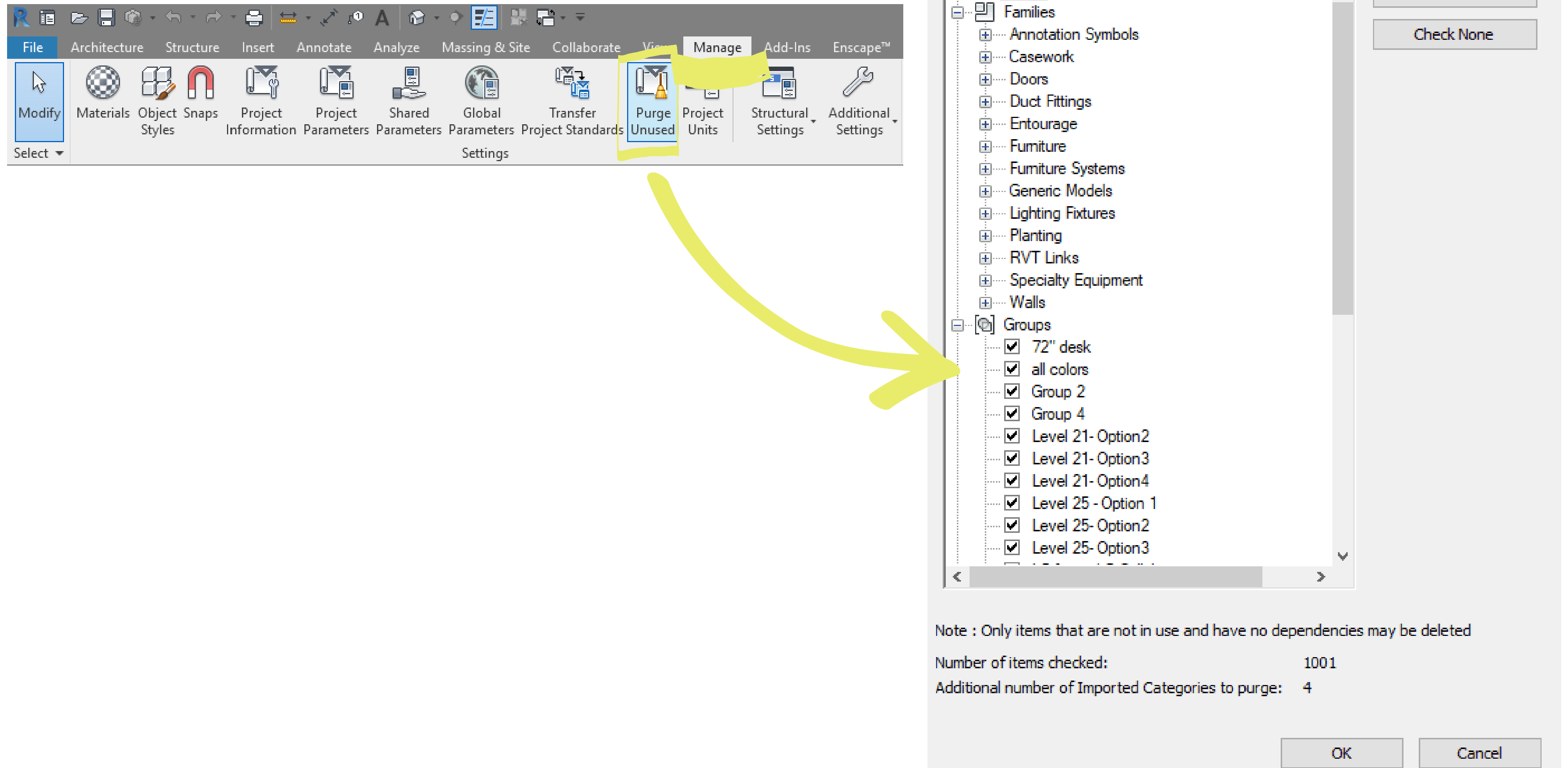
SOLUTION:

8. The only thing now in the Revit file is the nested family.



SOLUTION:

9. Purge Unused to remove the model groups from the file.



THE REVIT DIRTY DOZEN

#7

Do not let warnings accumulate.



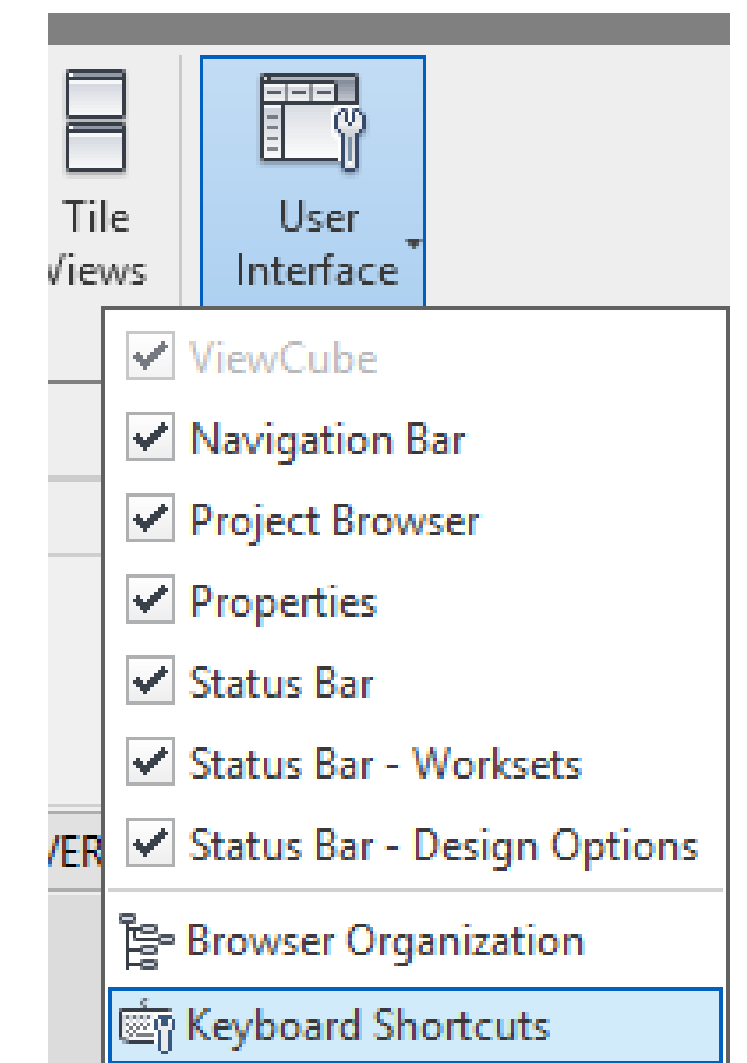
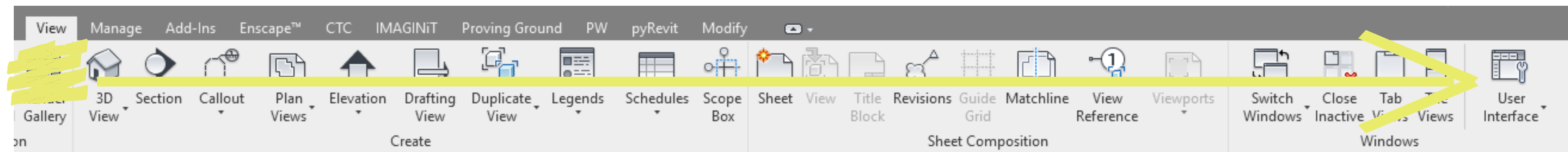
Do not let warnings accumulate.

PROBLEM:

- Excessive amount of warnings will increase open and save times.
- At some point, the file will become corrupt.

TIPS:

To streamline the process of resolving warnings, set keyboard shortcuts for Review Warnings (RW) and Select by Id (RE) commands. Export the warnings to HTML file for easy copy and paste of the element ids.

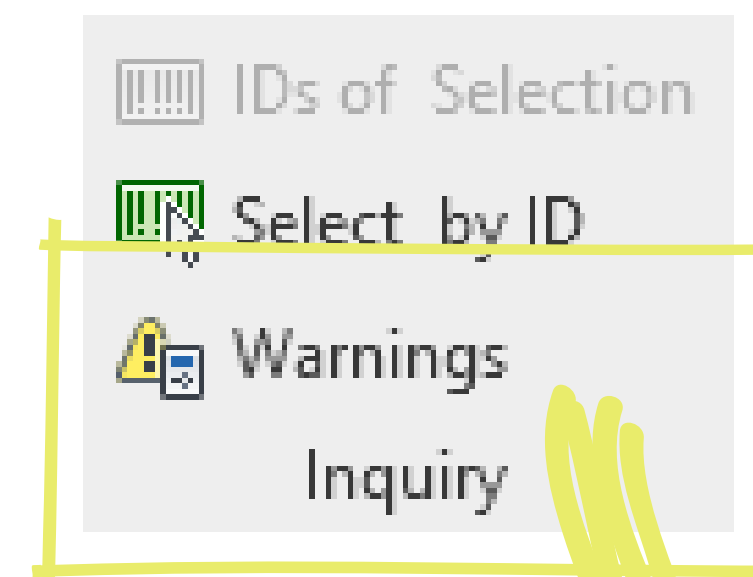
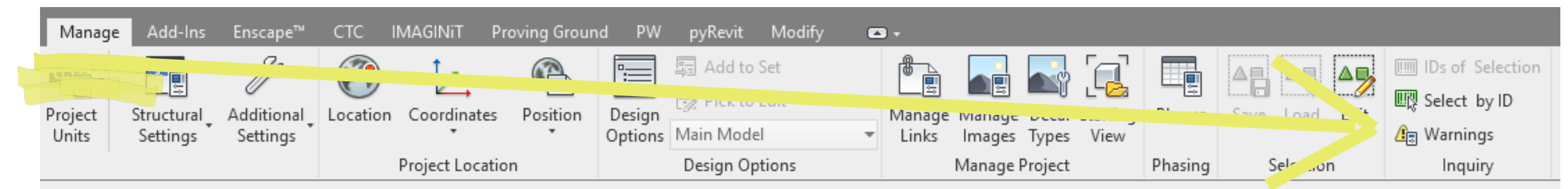


SOLUTION:

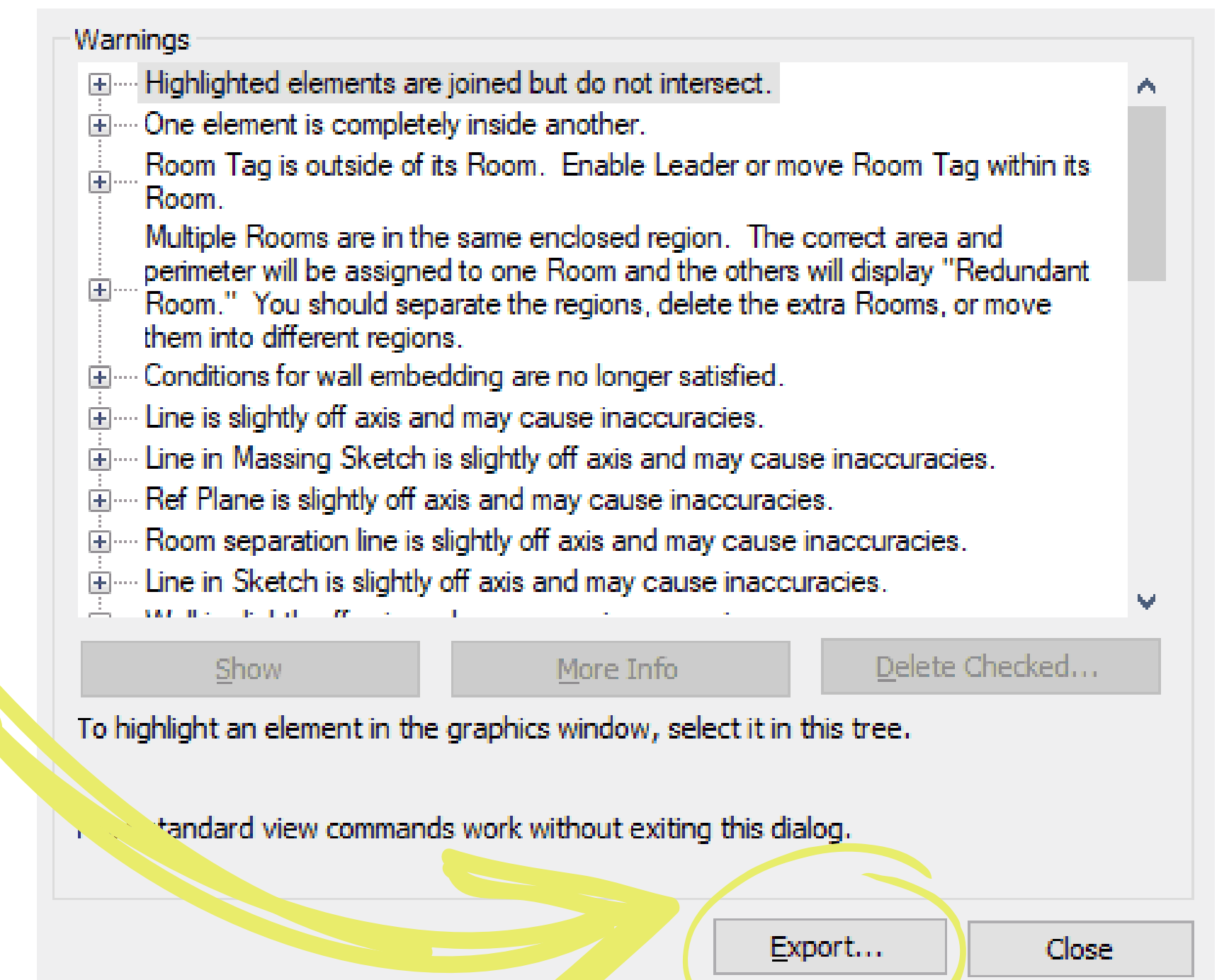
Resolving warnings should be a team effort. Make time to resolve warnings, even if for just an hour each week. Know how and why warnings happen so you can avoid creating them if possible.

STEPS

1. Select Manage > Open Warnings Dialog.
2. Export warnings to HTML file.



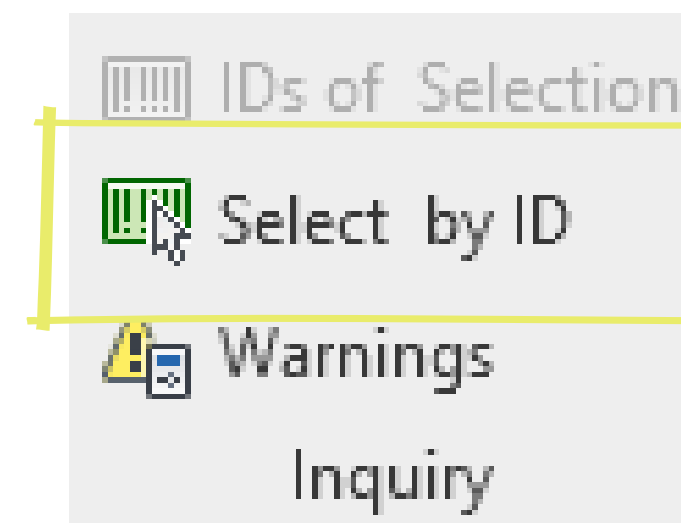
Autodesk Revit 2020



SOLUTION:

3. Open HTML warnings report.
4. Pick a warning to resolve. Double-click the element id number to select, then copy to clipboard.
5. In Revit, click on the select by id command (Manage tab>Inquiry panel).
6. Paste the element id and click OK. This selects the element.

Error Report (10/17/2020 11:44:15 AM)	
Error message	Elements
Highlighted elements are joined but do not intersect.	01_Interior Architecture : Walls : Basic Wall : B81 - Unbalanced GWB - NFR - STC-54 - 6" Stud : id 6475074 01_Interior Architecture : Walls : Basic Wall : B81 - Unbalanced GWB - NFR - STC-54 - 6" Stud : id 6937025
Highlighted elements are joined but do not intersect.	01_Interior Architecture : Walls : Basic Wall : G-Core 2ndary : id 16799269 01_Interior Architecture : Walls : Basic Wall : G-Core : id 16799290
Highlighted elements are joined but do not intersect.	01_Interior Architecture : Walls : Basic Wall : G-Core 2ndary : id 16799270 01_Interior Architecture : Walls : Basic Wall : G-Core : id 16799290
One element is completely inside another.	01_Interior Architecture : Walls : Basic Wall : C81 - Double Layer GWB - NFR - STC-58 - 6" Stud : id 5032331 01_Interior Architecture : Walls : Basic Wall : A31 - Single Layer GWB - NFR - STC-39 - 3-5/8" Stud : id 7121800
Room Tag is outside of its Room. Enable Leader or move Room Tag within its Room.	View "Floor Plan: LEVEL 18 - NEIGHBORHOOD PLAN" : Room Tags : Annotation-Room Occupancy Tag : Annotation- Room Occupancy Tag-in progress : id 8832908
Room Tag is outside of its Room. Enable Leader or move Room Tag within its Room.	View "Floor Plan: LEVEL 23 - working" : Room Tags : Room Tag : Room Tag : id 17056559
Room Tag is outside of its Room. Enable Leader or move Room Tag within its Room.	View "Floor Plan: LEVEL 23 - working" : Room Tags : Room Tag : Room Tag : id 17056886
Room Tag is outside of its Room. Enable Leader or move Room Tag within its Room.	View "Floor Plan: LEVEL 27 - 9 BLOCK -SM Collab REV 1" : Room Tags : Room Tag : Room Tag : id 17058392
Room Tag is outside of its Room. Enable Leader or move Room Tag within its Room.	View "Floor Plan: LEVEL 27 - 9 BLOCK -SM Collab REV 1" : Room Tags : Room Tag : Room Tag : id 17058394
Room Tag is outside of its Room. Enable Leader or move Room Tag within its Room.	View "Floor Plan: LEVEL 23 - CORE WALLS" : Room Tags : Room Tag : Room Tag : id 17135338
Room Tag is outside of its Room. Enable Leader or move Room Tag within its Room.	View "Floor Plan: LEVEL 23 - CORE WALLS" : Room Tags : Room Tag : Room Tag : id 17135374
Room Tag is outside of its Room. Enable Leader or move Room Tag within its Room.	View "Floor Plan: LEVEL 27 - CORE WALLS" : Room Tags : Room Tag : Room Tag : id 17135490



Select Elements by ID

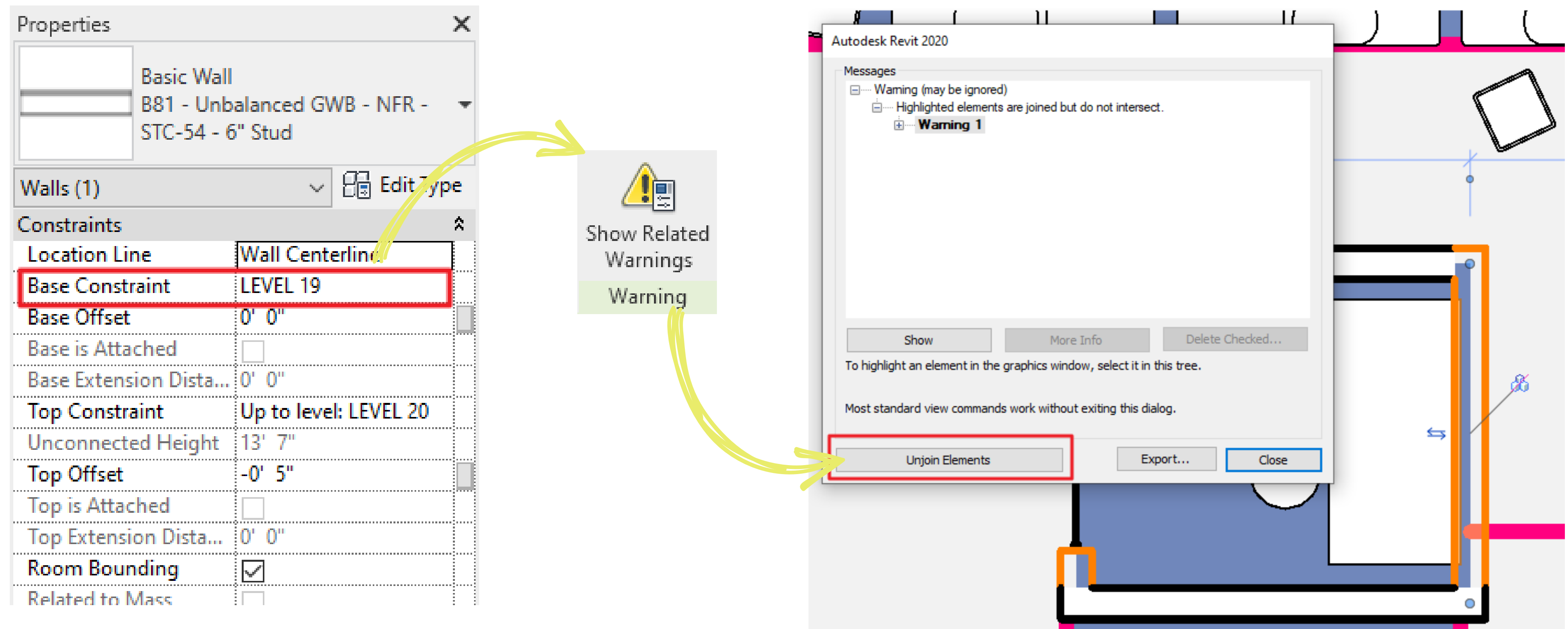
ID - (use semicolon for multiple IDs):

6475074

Show OK Cancel

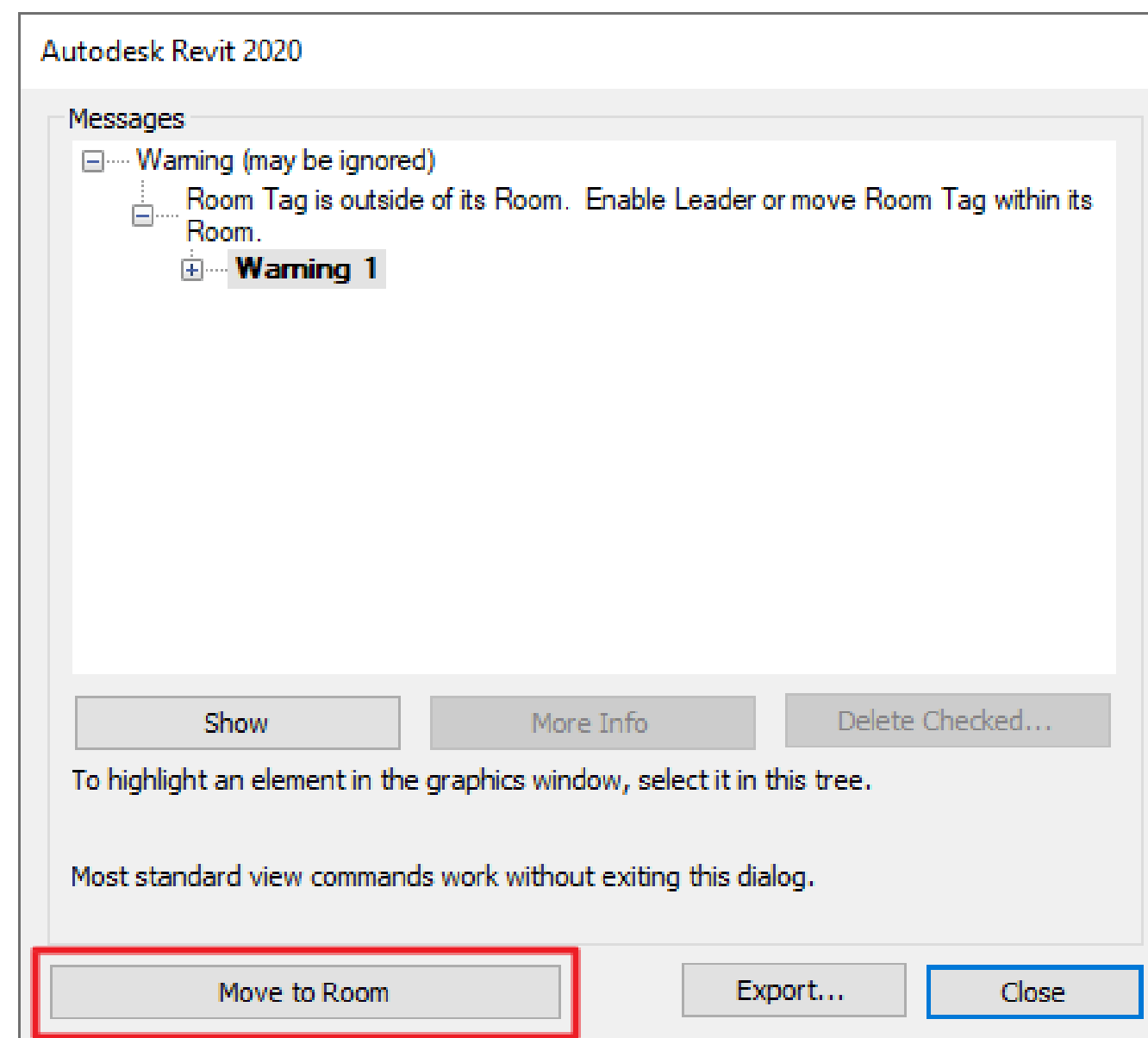
SOLUTION:

7. To locate the element, use the hosted level listed in properties. Open a plan view on that level to find where the selected element is.
8. With the element selected and located on the plan, click the Show Related Warnings button. This warnings dialog will only show the 2 elements in conflict, and there is a convenient button to 'Unjoin Elements' which will get rid of the warning for us.



SOLUTION:

9. The next type of warning is a room tag outside of its room. These are the quick and easy warnings to resolve. Getting rid of these will not take much time.



10. Warnings involving unenclosed rooms should be a high-priority for 2 reasons. These warnings will slow down the file more than other warning types because it can't compute the area. Also, not having an accurate area for the rooms will cause errors in your documentation, such as room tags not being able to display the area and errors in life safety calculations.

Multiple Rooms are in the same enclosed region. The correct area and perimeter will be assigned to one Room and the others will display "Redundant Room." You should separate the regions, delete the extra Rooms, or move them into different regions.	01_Interior Architecture : Rooms : Room : LNG-O 2063 - Number 2063 : id 2946767 01_Interior Architecture : Rooms : Room : MK 2091 - Number 2091 : id 2981724
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2 possible solutions:

- Missing room separation boundary. Adding the missing boundary will resolve the warning.
- One of the rooms is no longer needed and can be deleted.

THE REVIT DIRTY DOZEN

#8

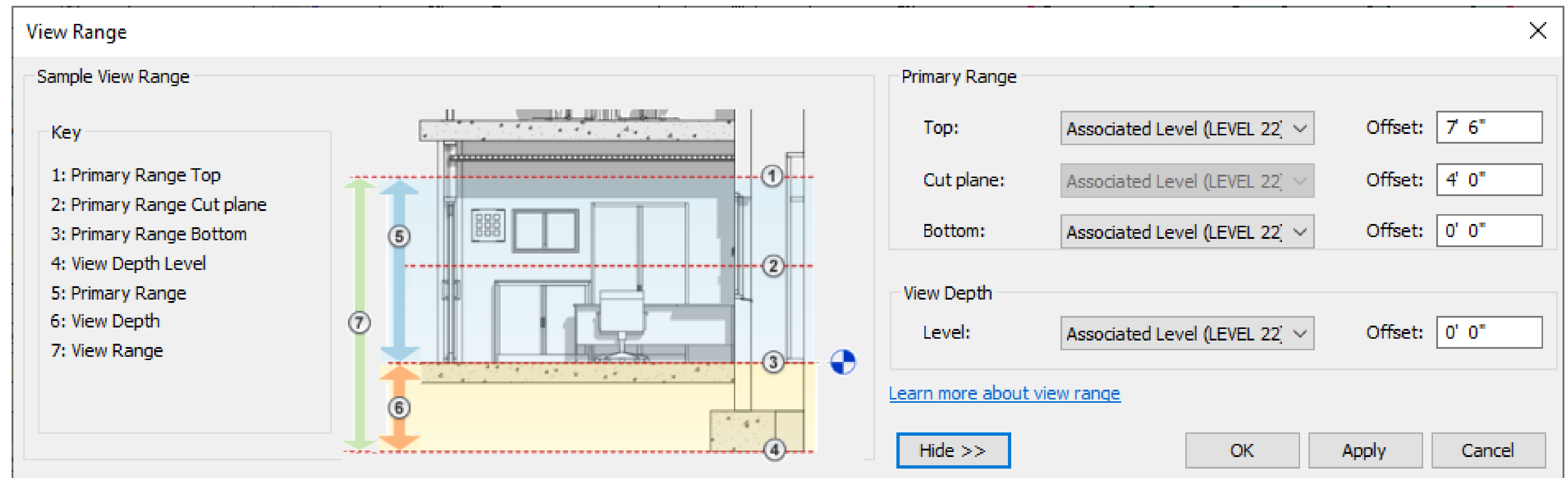
Do not update view ranges freely.



Do not update view ranges freely.

PROBLEM:

Updating the view range will impact the overall plan, and in most cases will cause another problem in a different area of the plan.

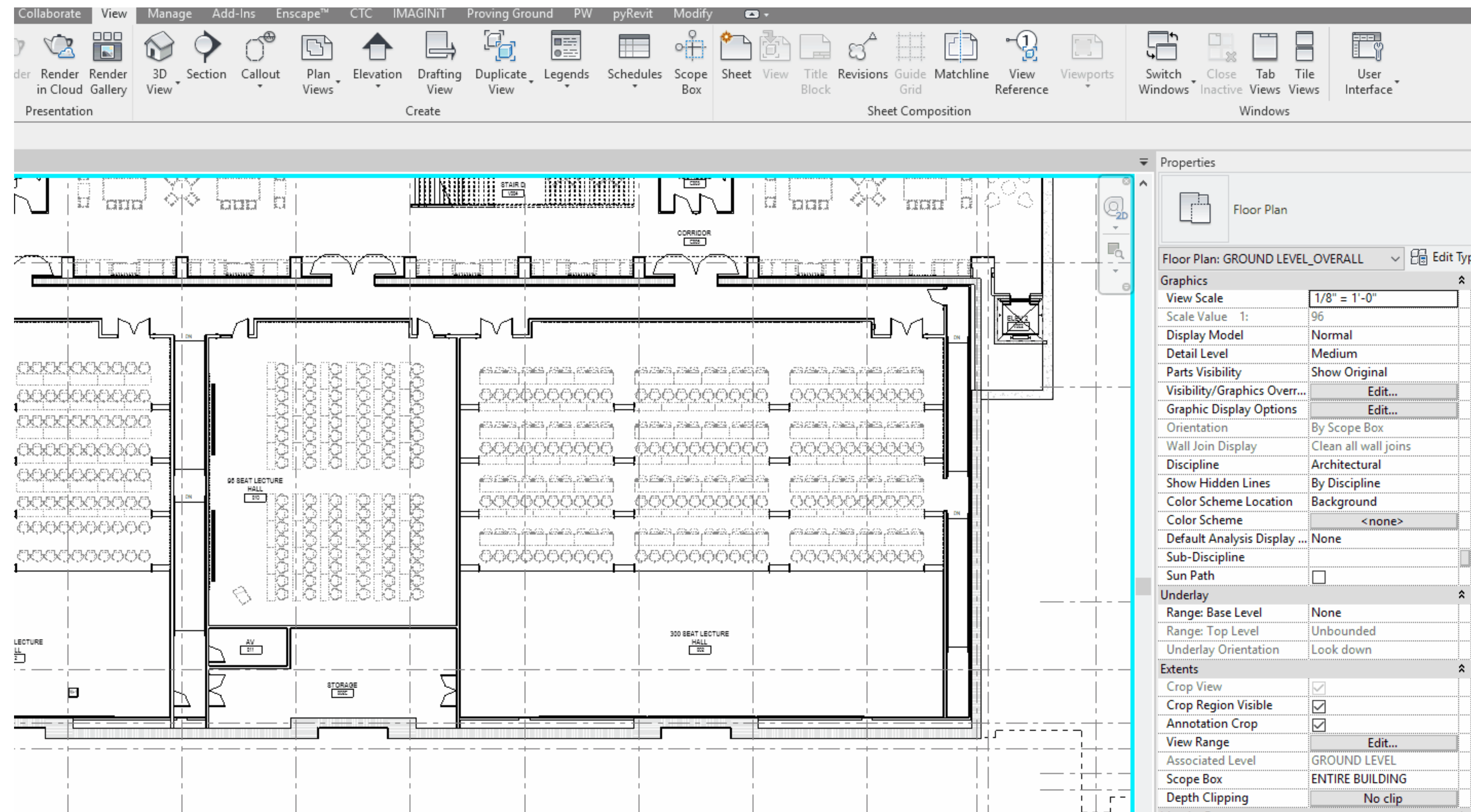


NOTE:

It is important to understand view range extents.

SOLUTION:

If a specific portion of the plan is at a different elevation than the rest of the floor but needs to be seen properly on the drawings, try to keep the default view range settings and use a Plan Region.



NOTE:

Plan Regions

- Are view specific
- May need to be copied to other views accordingly.
- Outlines will export and print if they are visible in a view.
- Cannot overlap one another.

THE REVIT DIRTY DOZEN

#9

Do not move 3D extents of column grids.



Do not move 3D extents of column grids.

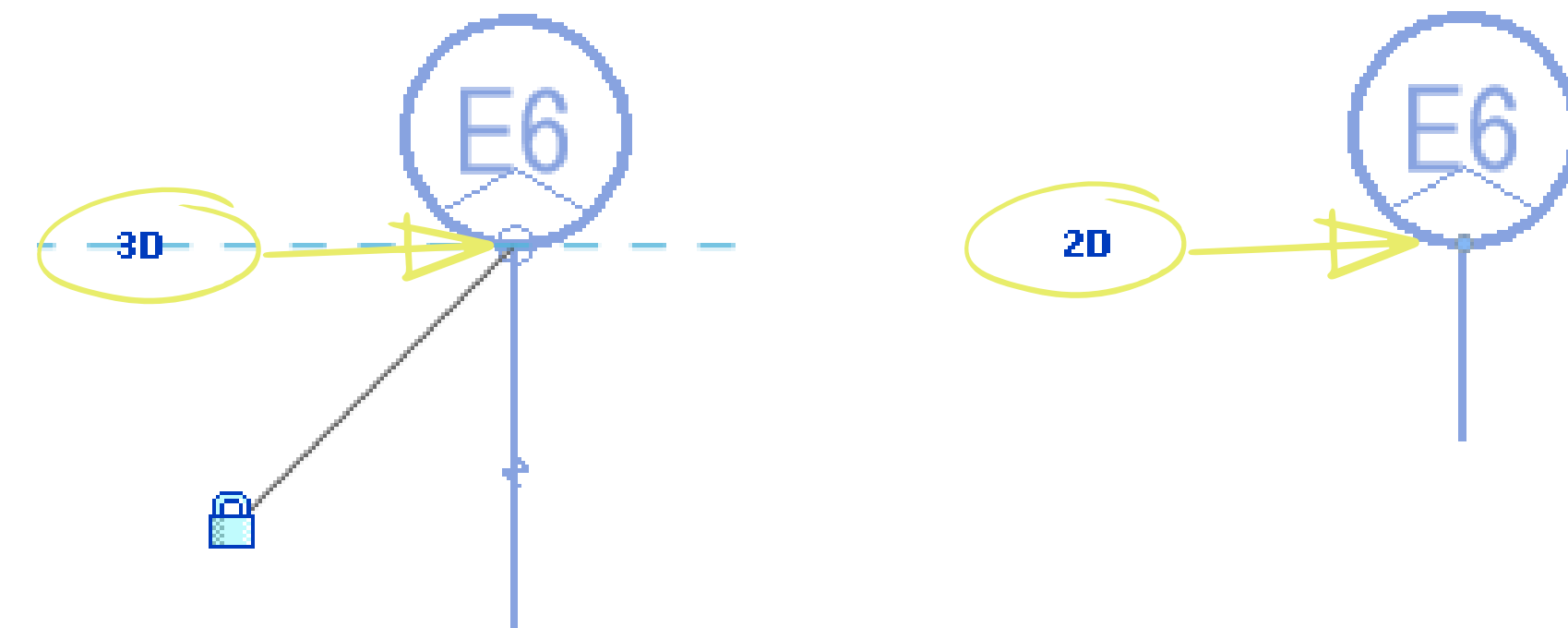
PROBLEM:

Moving the 3D extents of grids in plans or sections can cause those grids to not show up or move in other views. Grids are considered datum elements in Revit, along with Levels and Reference Planes. They are essentially planes slicing through the model.

TIPS:

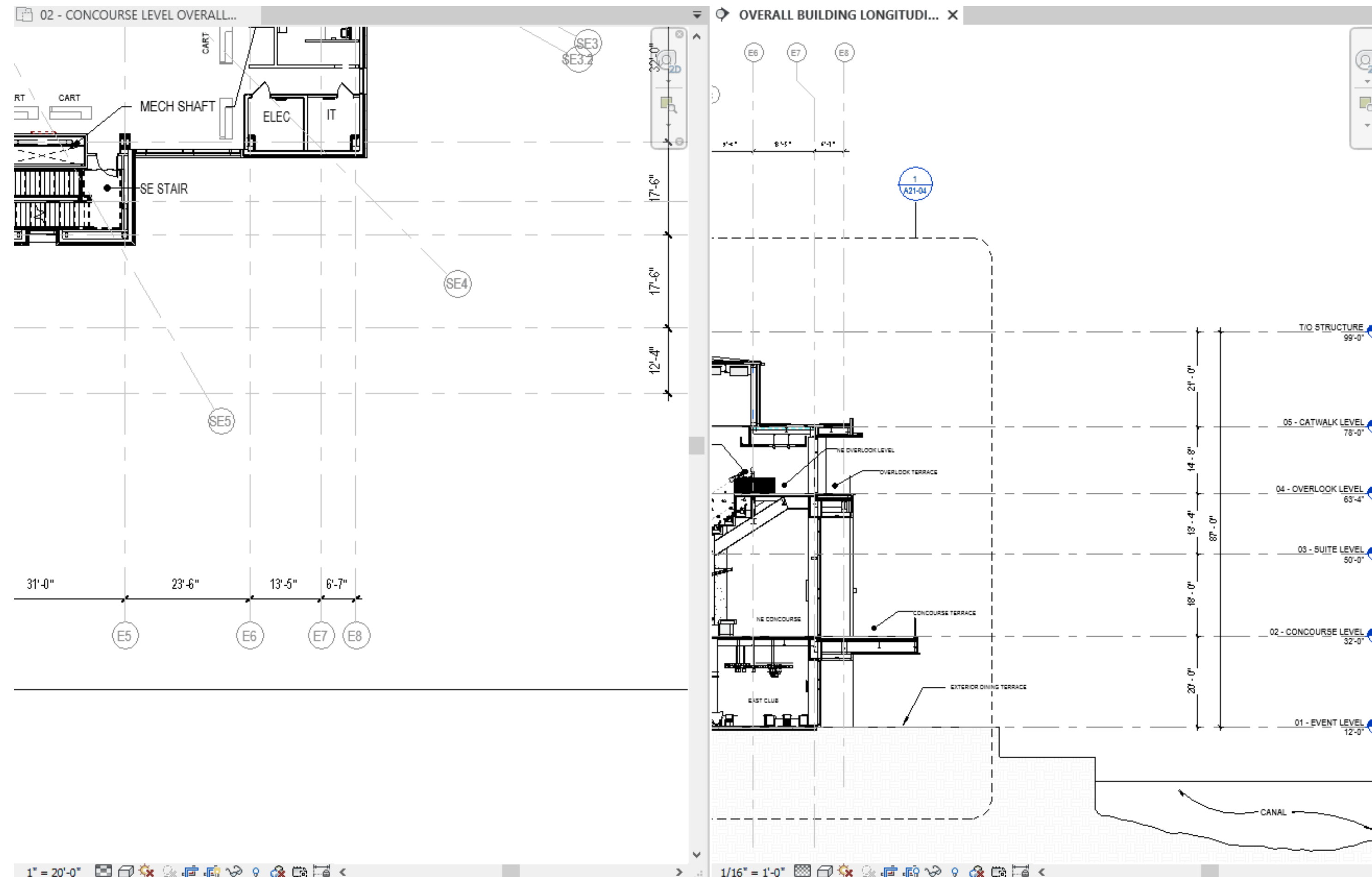
When the grid is selected, it displays 3D extents with '3D' near the grid endpoint which is a hollow blue dot. If the grid is set to 2D it will display '2D' near the grid endpoint with a smaller solid blue dot.

Use scope boxes to control extents, levels and reference planes.



SOLUTION:

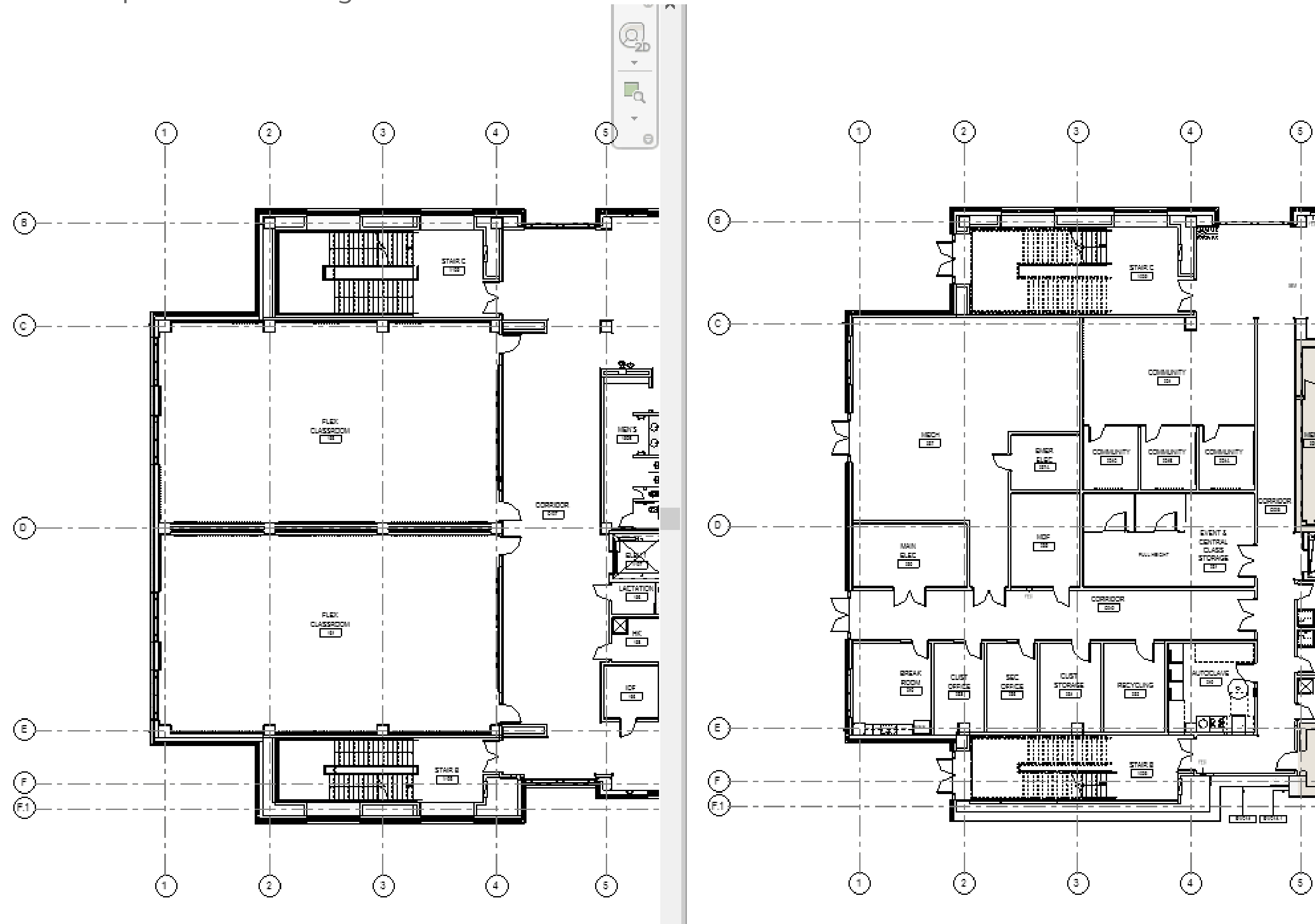
If the 3D extents have been moved incorrectly, set them so they are showing in the necessary views. Toggle to 2D extents if you want to change it for a certain view.



NOTE:
Moving the column grid bubble while in 3D extents will update the location of that bubble throughout the entire project.

SOLUTION:

When moving a column grid bubble in a plan, section or elevation, switch to 2D extents prior to moving the bubble.



NOTE:
The 2D extents controls the visual display of the line itself in that view only.

THE REVIT DIRTY DOZEN

#10

Do not highlight and move the entire elevation tag in plan.



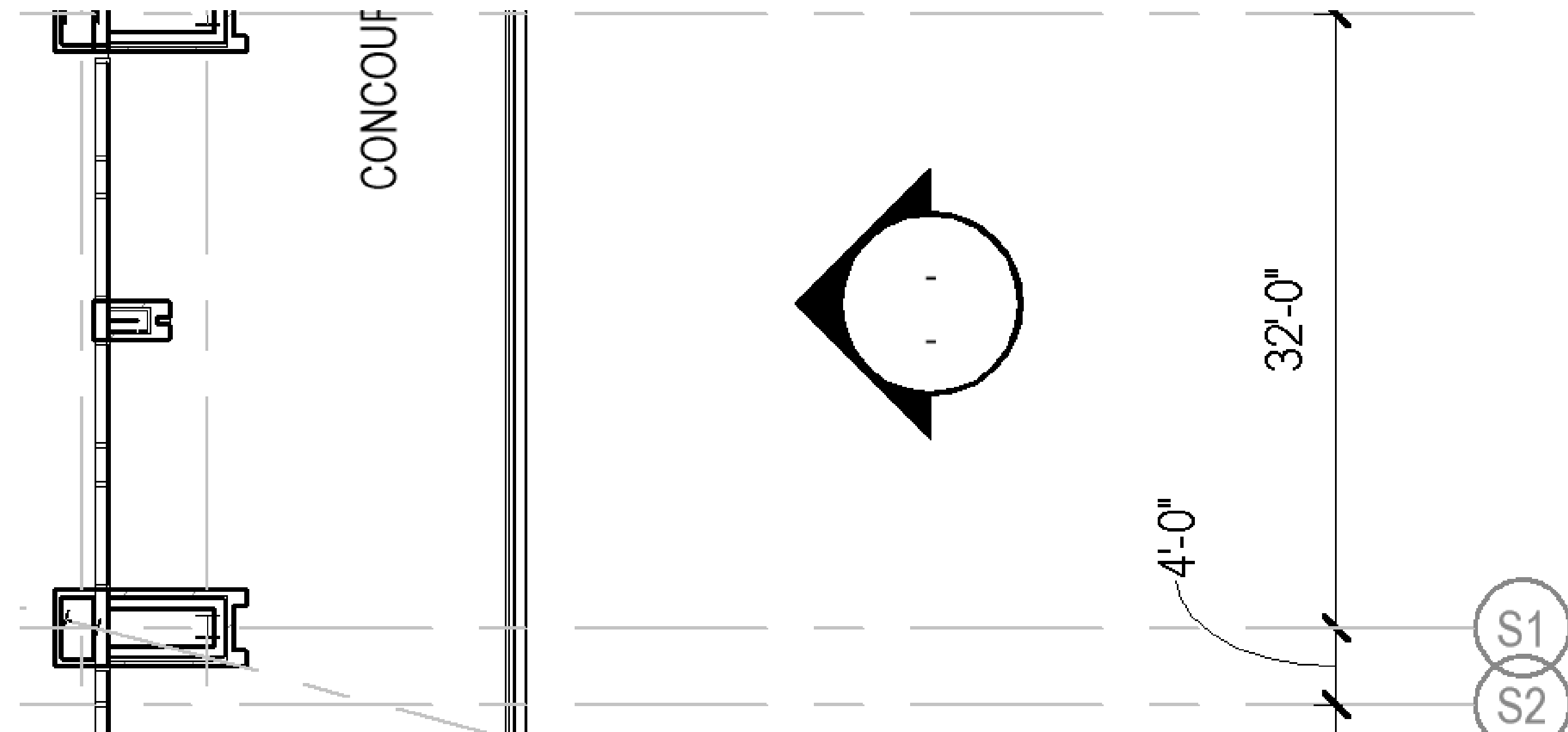
Do not highlight and move the entire elevation tag in plan.

PROBLEM:

Moving the entire elevation tag (circle and triangle) also moves the cut plane for the elevation, causing the view to display incorrectly.

SOLUTION:

Just select the circle ONLY and move it. The triangle will come with it but your original elevation cut plane stays intact.



THE REVIT DIRTY DOZEN

#11

Do not continue to place a family you cannot see in view.



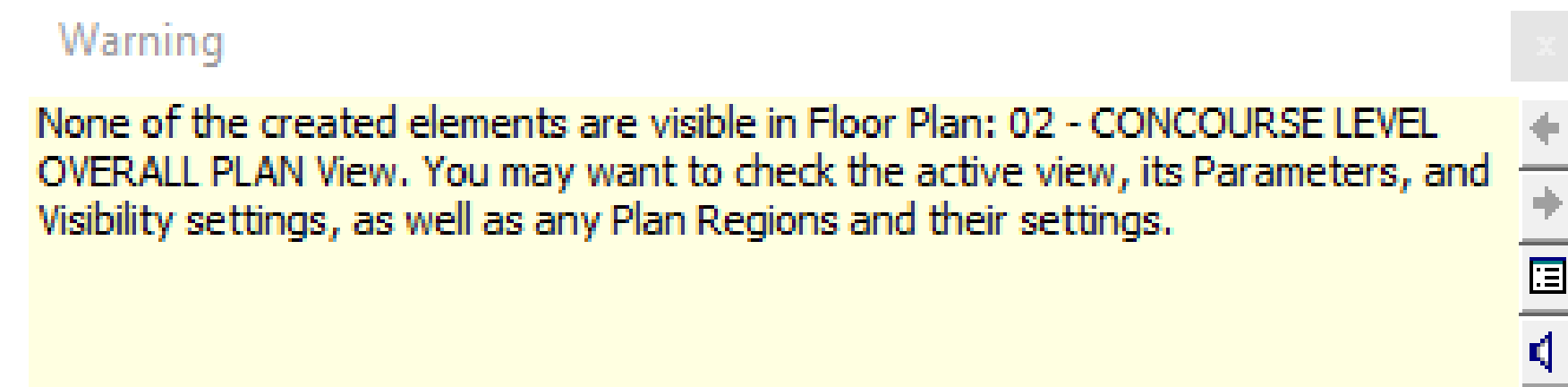
Do not continue to place a family you cannot see in view.

PROBLEM:

Multiple instances of the same family get placed in an area because a view setting was causing the family not to display, and the user kept clicking in the hopes that it would eventually display after many attempts.

TIPS:

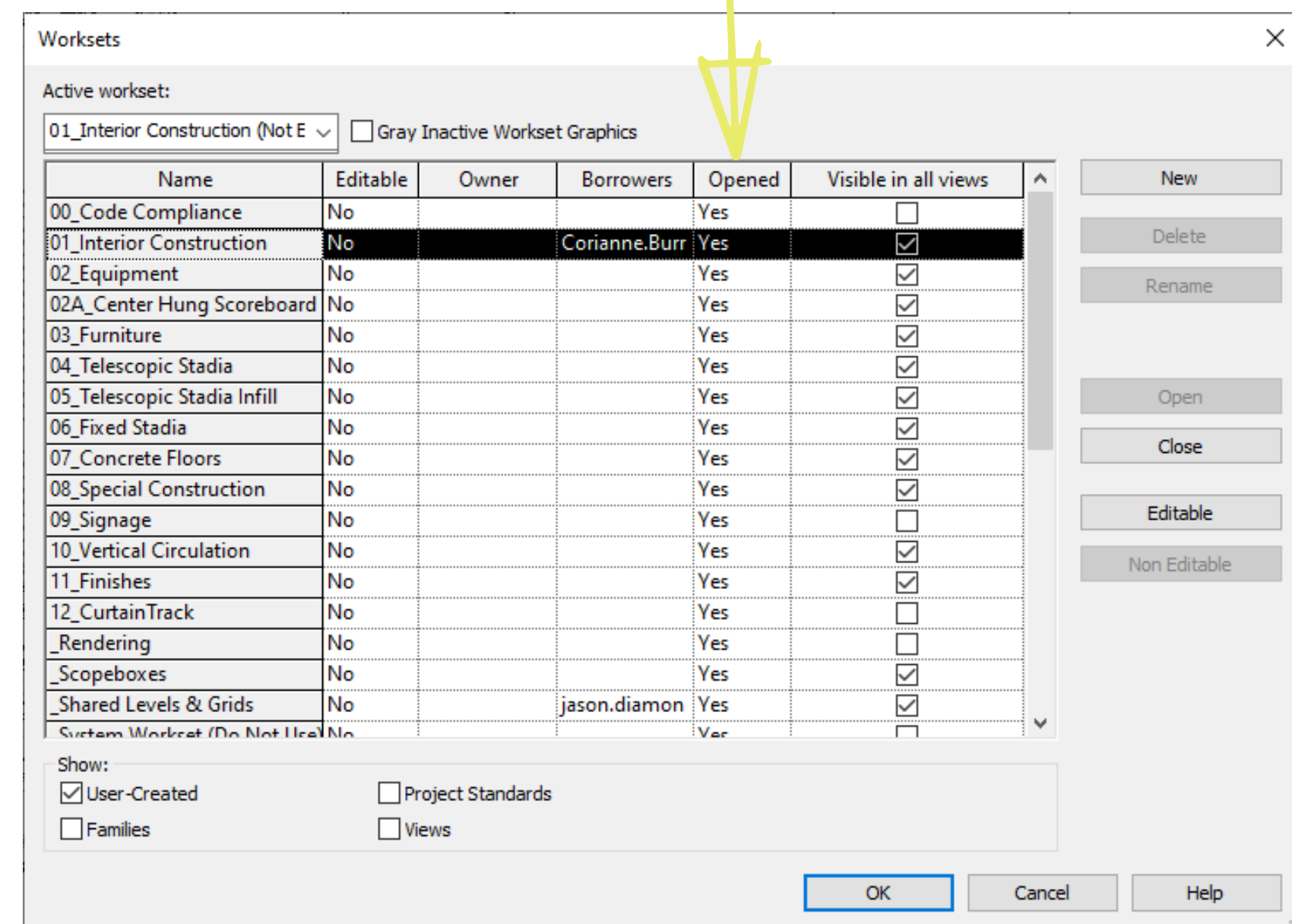
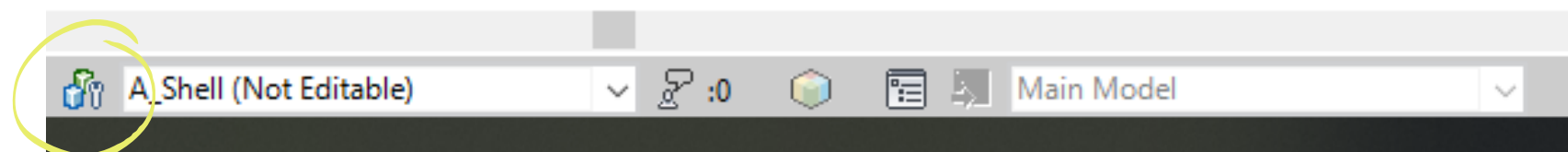
When you see this box, STOP CLICKING!



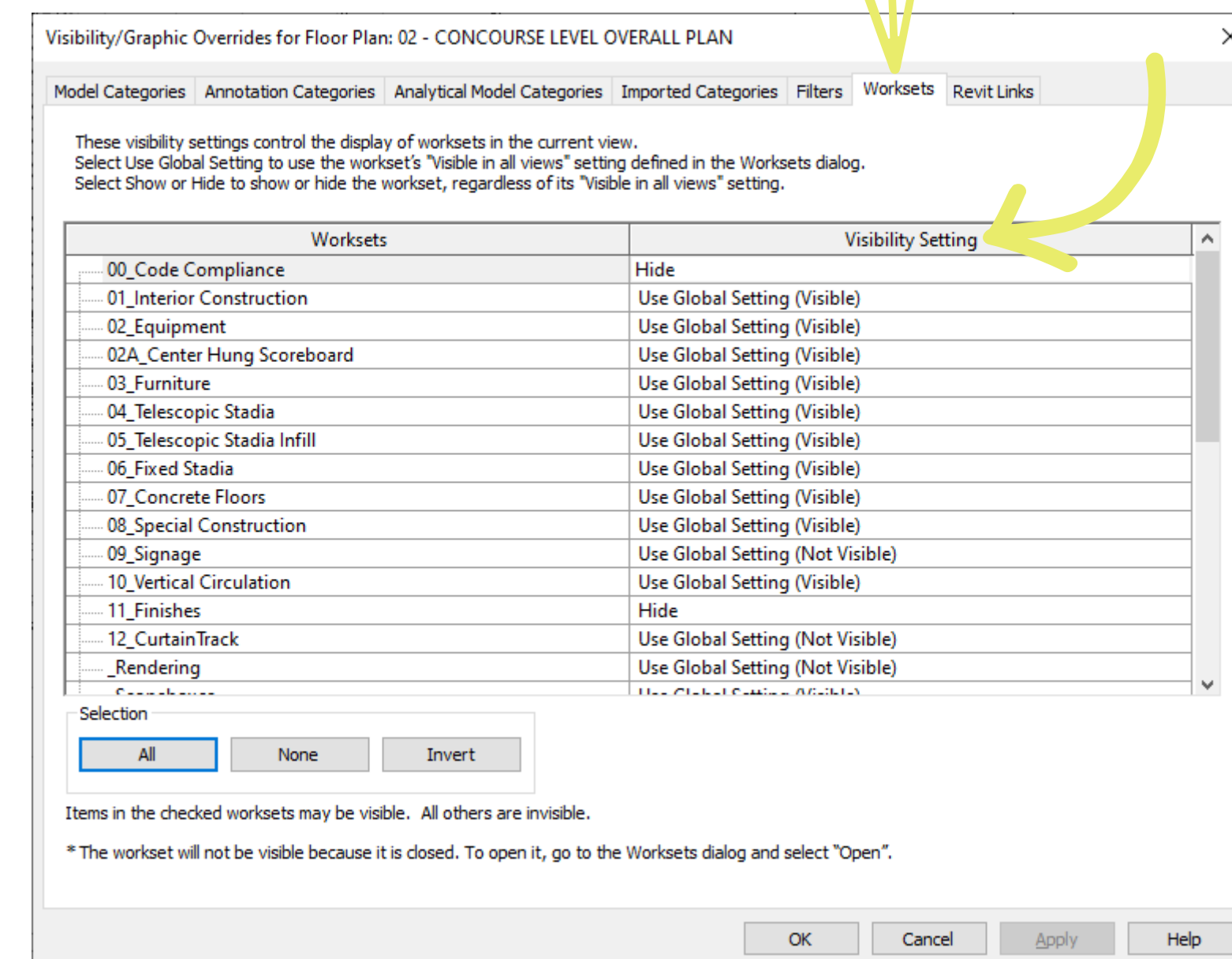
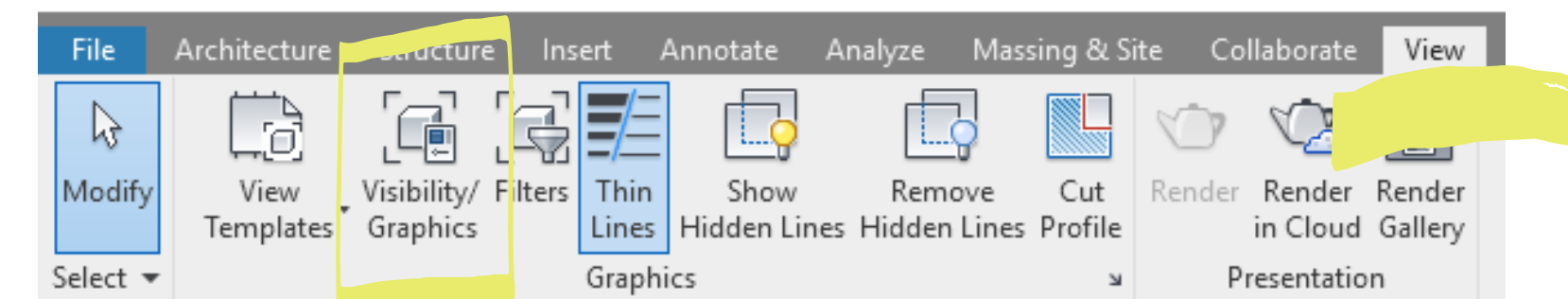
SOLUTION:

First, stop clicking. Second, investigate why this element is not showing in the view.

Check your active workset and confirm that workset is open in your Revit file.

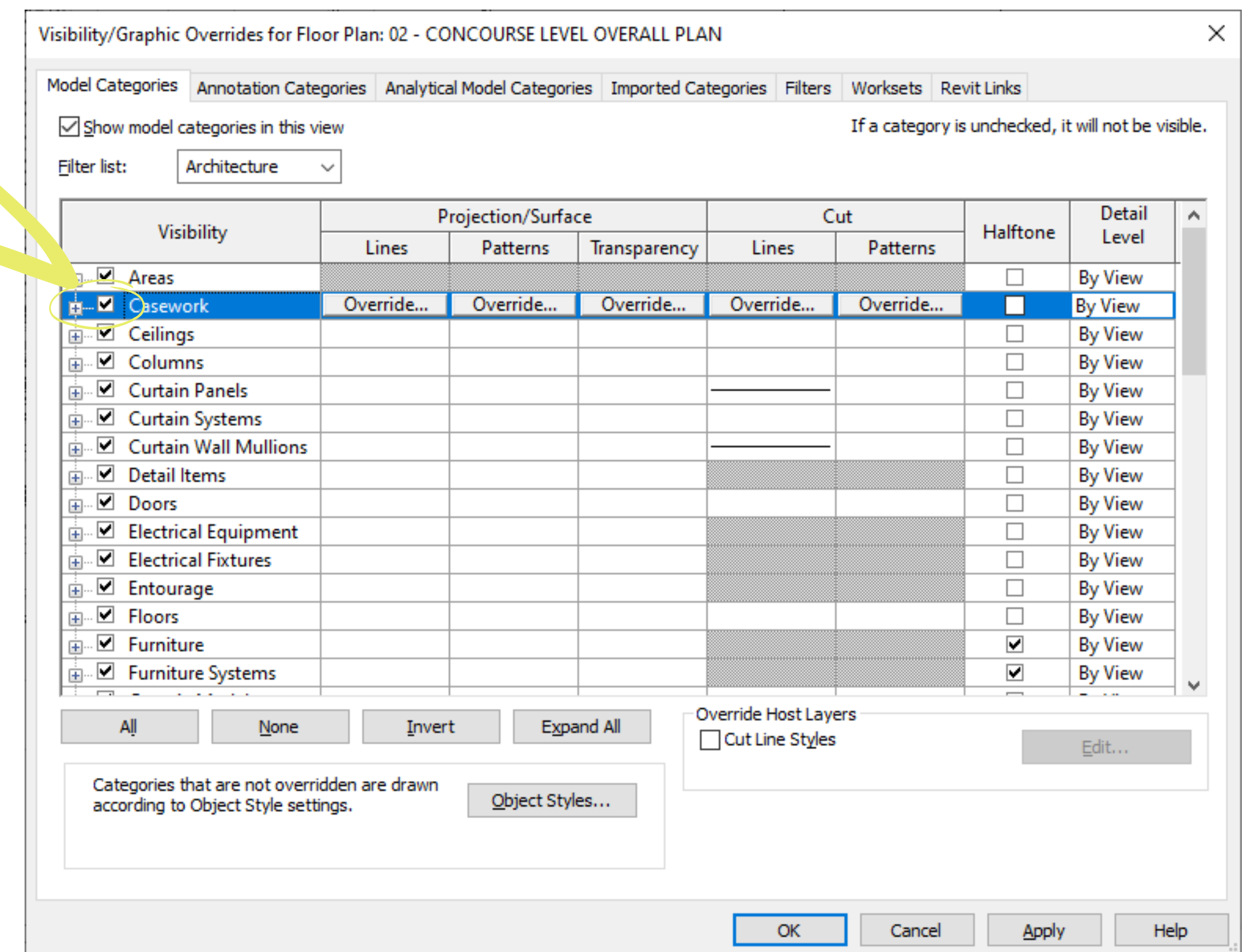
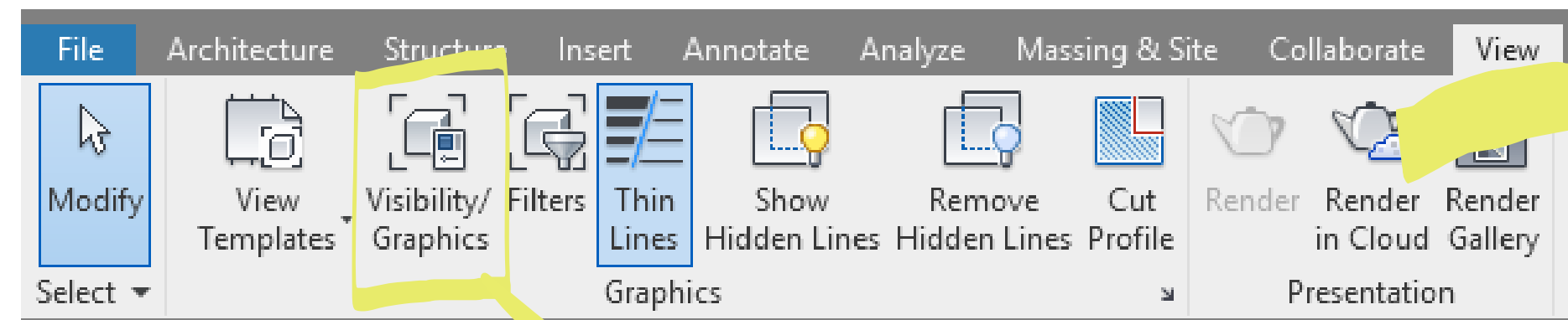


Confirm that workset is visible in the view you are working in by checking Visibility/Graphics.



SOLUTION:

Then check the category of the element you are trying to place. If you were trying to place a Casework family, check Visibility/Graphics to see if the Casework category is turned on.



90% of the time:

- Category or Workset is the cause.

10% of the time:

- Phasing settings. Check the Phase Filter of the view.
- View filters in Visibility/Graphics.
- Element is placed outside of the view range of the view (higher than the cut plane or lower than the bottom plane). Look at a section view of the area.

THE REVIT DIRTY DOZEN

#12

Do not just delete lines/elements from families you do not want to see.



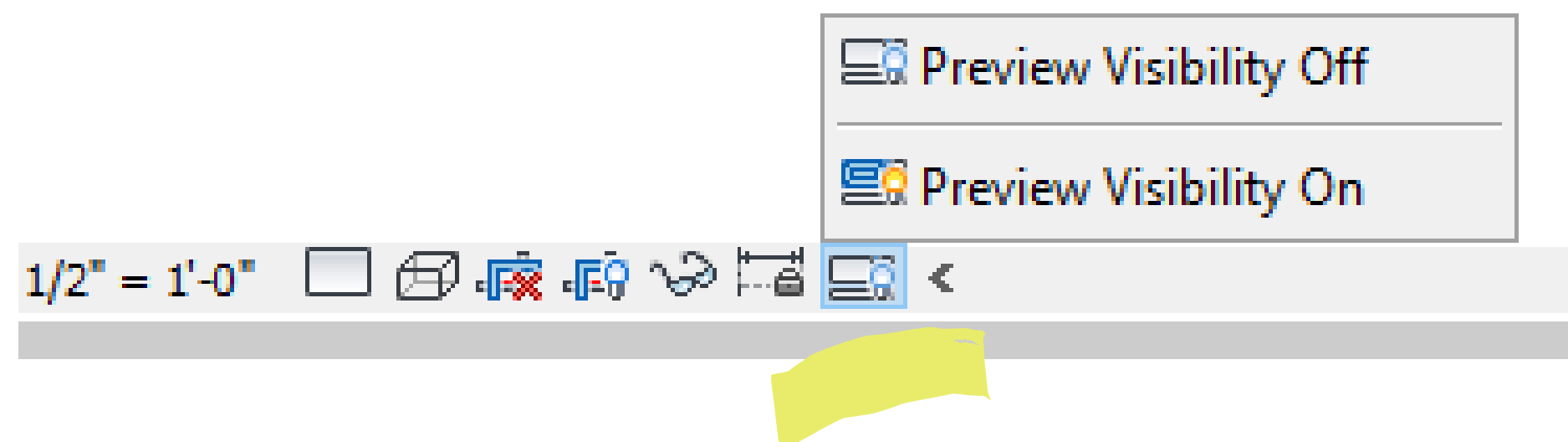
Do not just delete lines/elements from families you do not want to see.

PROBLEM:

There are times you have a specific line or element embedded in a family that you do not want to see in your Revit view. Your first thought may be to just delete that line or element but that could potentially cause an issue later down the line.

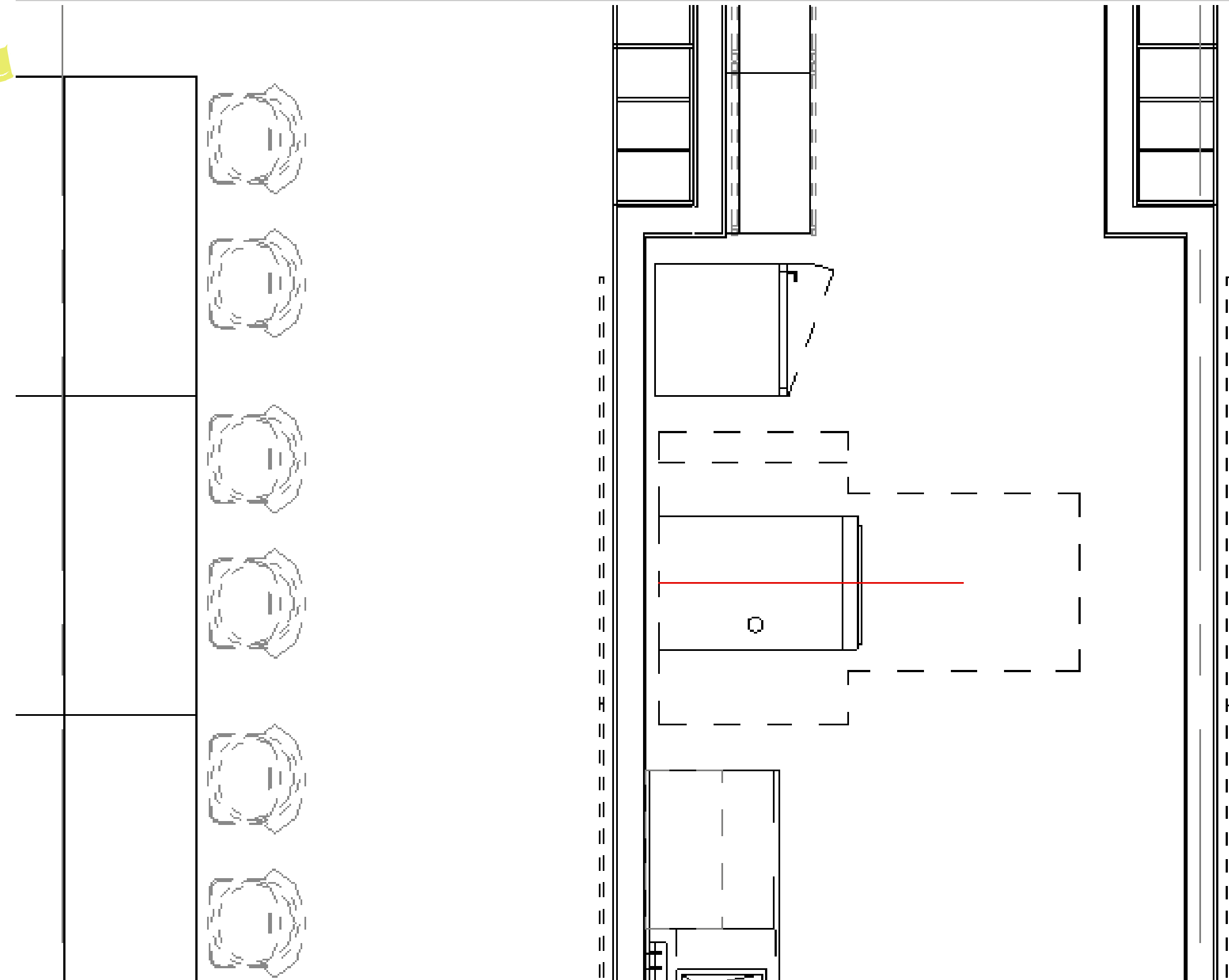
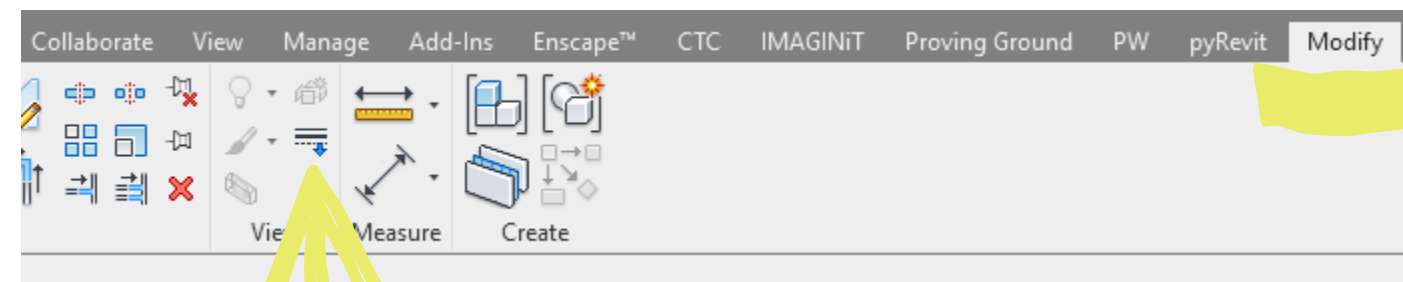
TIPS:

It is sometimes difficult to perceive what you will and will not see once you bring the family into the Revit File. The Preview Visibility Tool within the family will give you the opportunity to see what you will see in the Revit file.



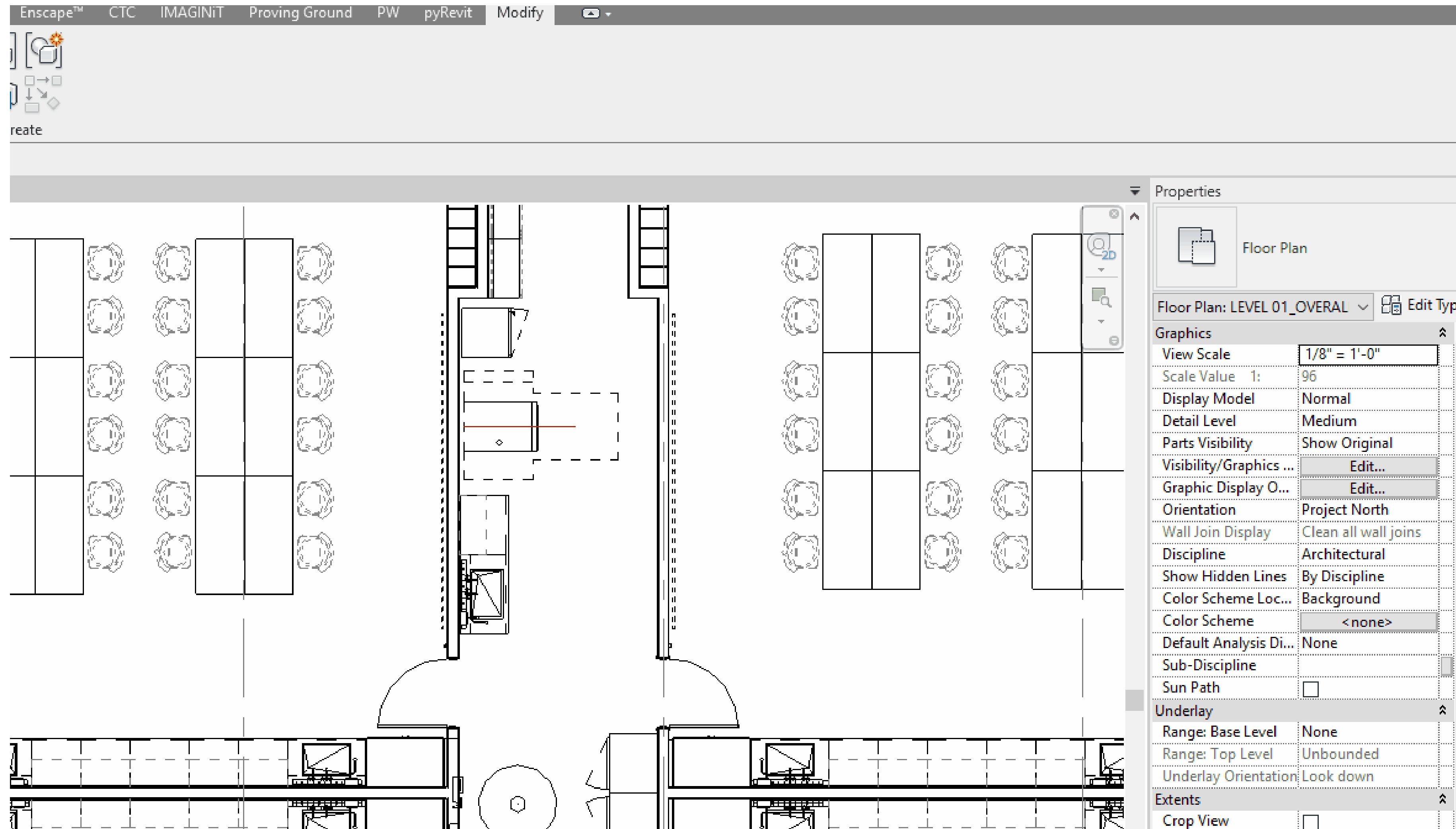
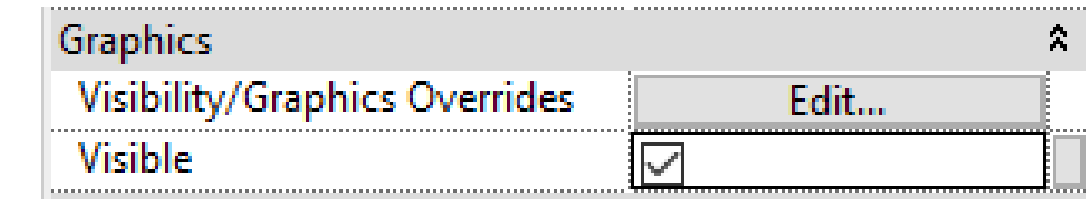
SOLUTION:

You can use the Linework tool within your Revit file that overrides the line style for a selected line in an active view only.



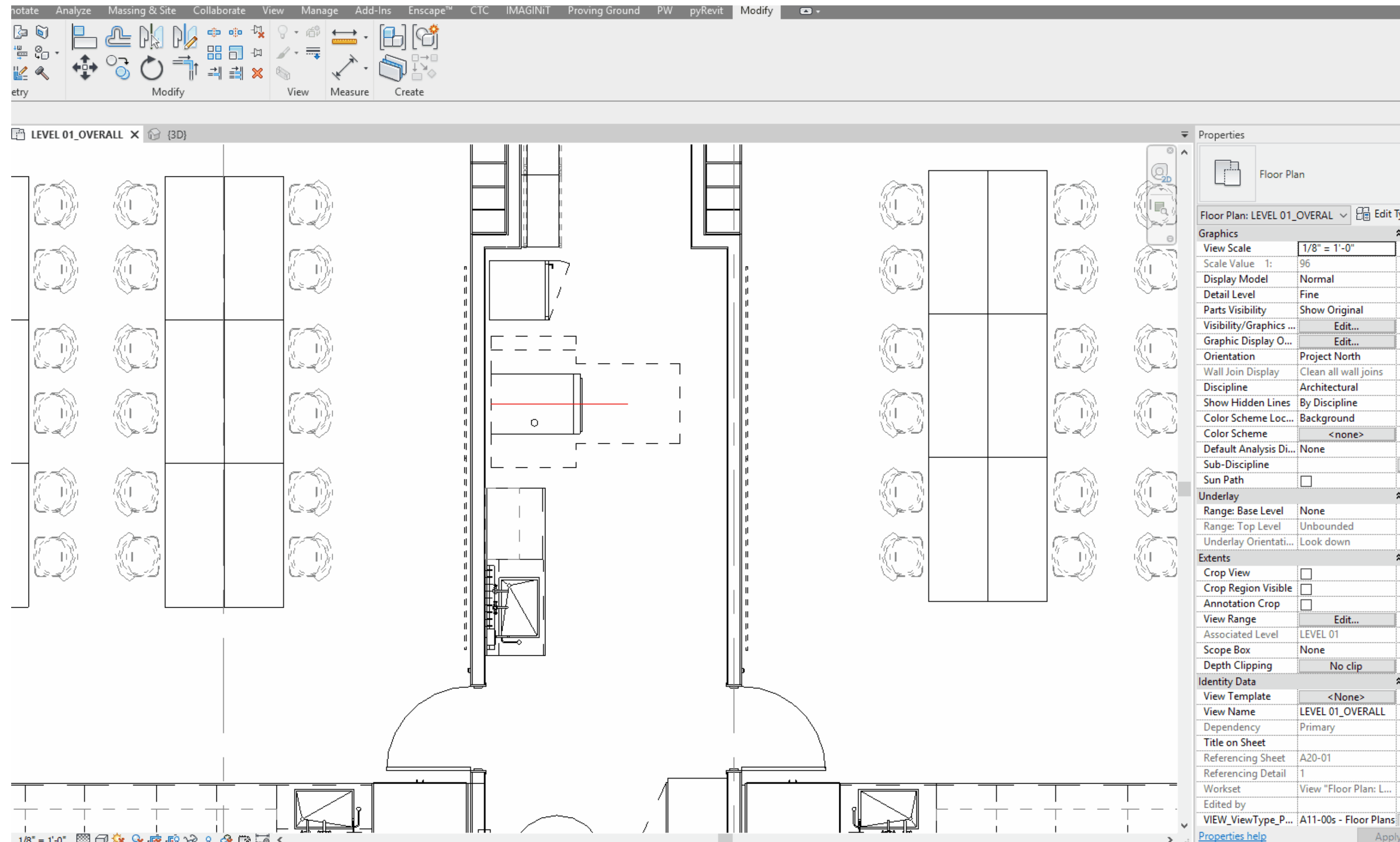
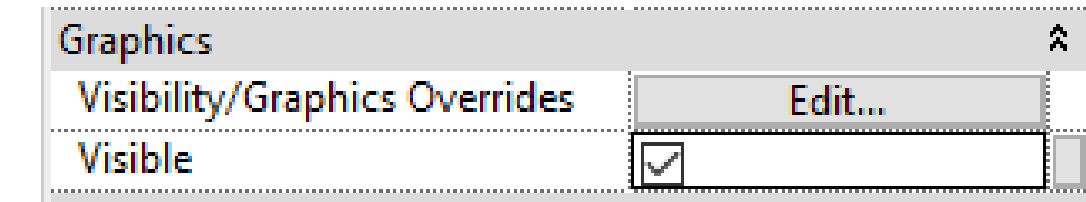
SOLUTION:

You can update the VISIBLE settings within the family, which could make the line/element visible or not throughout the entire Revit project.



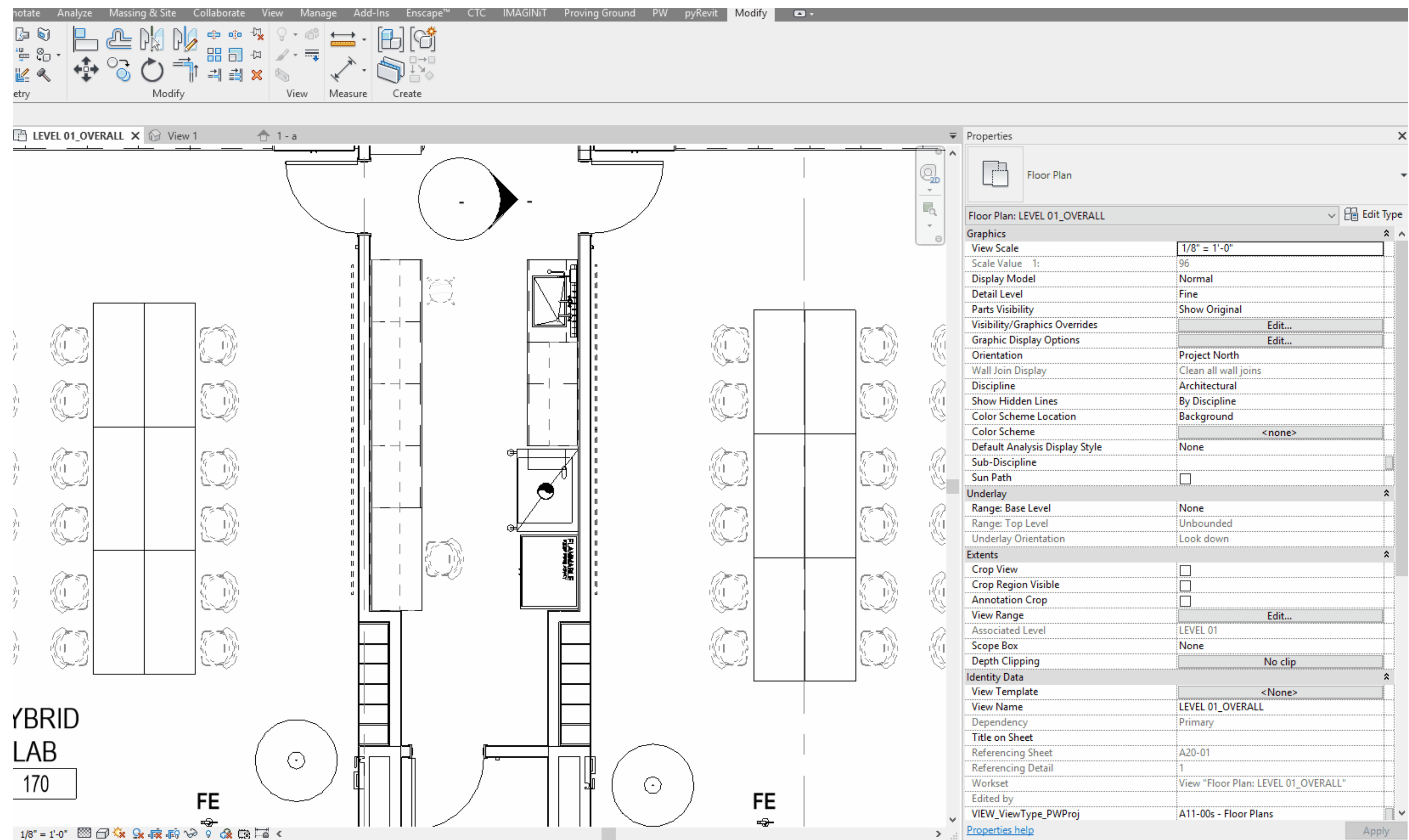
SOLUTION:

You can update the VISIBILITY/GRAPHICS OVERRIDES within the family, which can control the visibility of the line/element depending on the detail level of the view.



SOLUTION:

With modeled elements within families, you have the additional option to control the visibility of the element depending on the view type (plan, elevation, section).





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