



REVIT PURE PRESENTS
PAMPHLETS



ISSUE #25 / SUMMER 2022

GROUPS

PART 1



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by: Nicolas Catellier, Architect

PAMPHLETS COLLECTION



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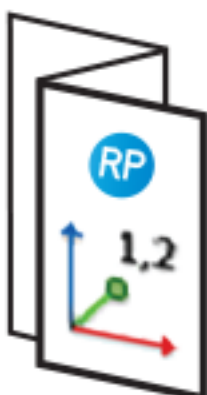
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WHAT IS THIS “PAMPHLET”?

Revit Pure Pamphlets are published 4 times a year by email. Each edition covers a particular Revit theme. We like to pick themes that are complex and confusing. Our job is to make these topics simple for you.

WHY TALK ABOUT GROUPS?

Model groups in Revit have a bad reputation. Many users avoid them completely. Indeed, they can be buggy.

However, they are still the best option when it comes to modeling repetitive interior layouts like apartments. This post starts with an overview of the tool. Then, you will get tips to have a smooth experience using groups.

This is the first pamphlet in our series about group. Next issue will explore advanced workflows using Dynamo.

Let's get started!

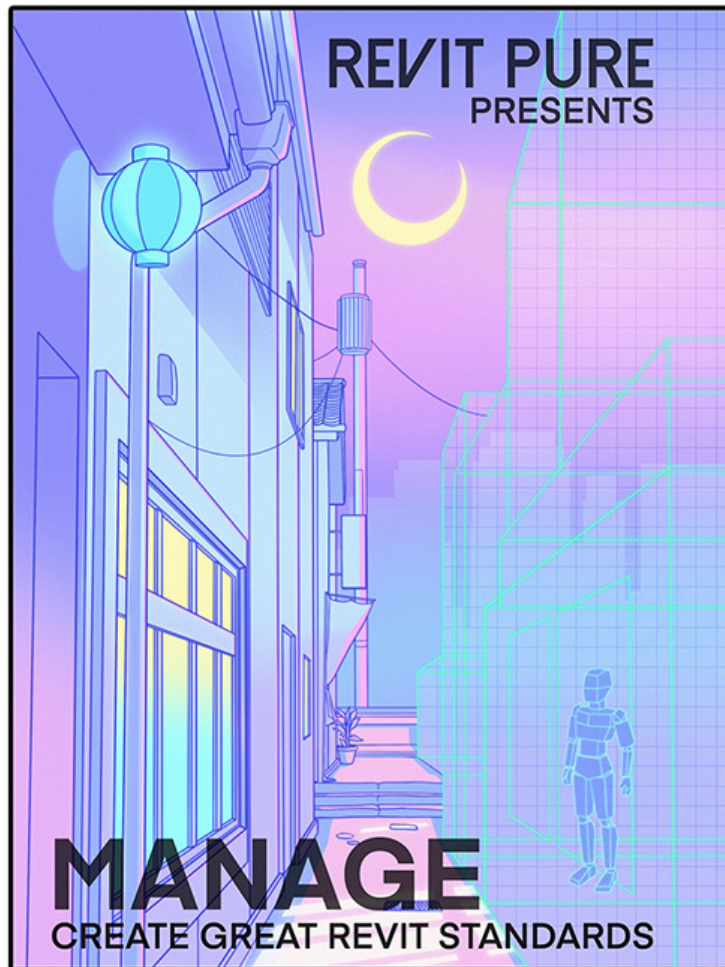


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MANAGE LEARNING PACKAGE

We've recently released a new course dedicated to BIM managers who want to become Revit masters. [Click on this link](#) to get the entire course.



[LEARN MORE](#)



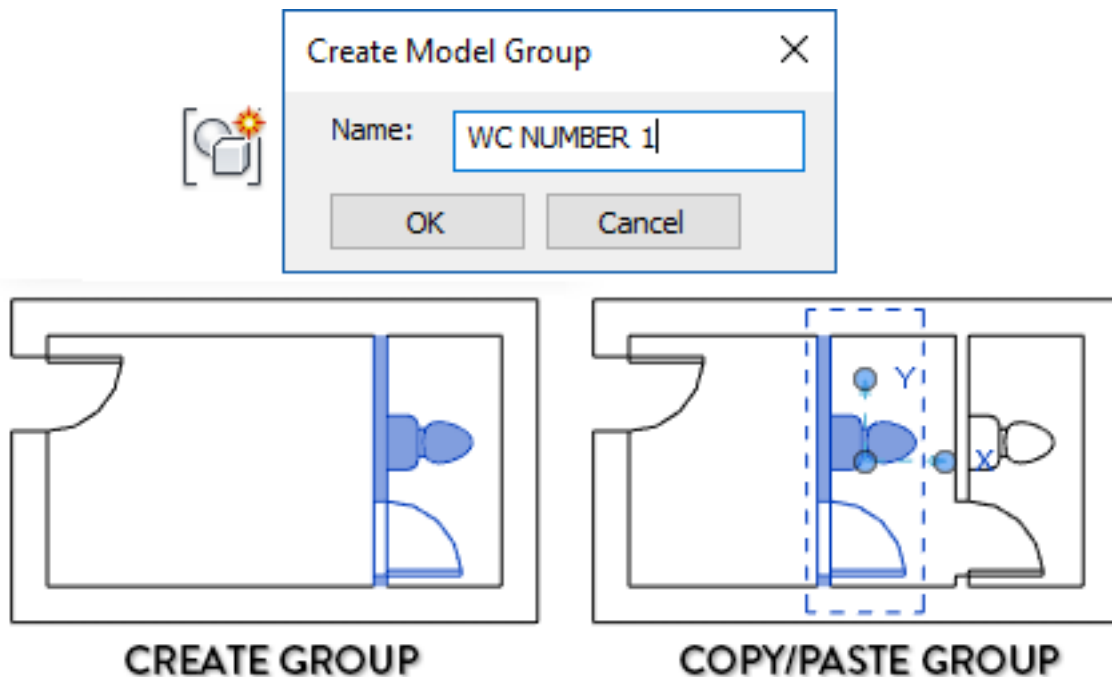
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BASIC PRINCIPLES OF CREATING GROUPS

CREATING A GROUP

Select multiple elements. In the Modify tab, select the “Create Group” tools. Set a name to the group. You can then copy and paste the group.

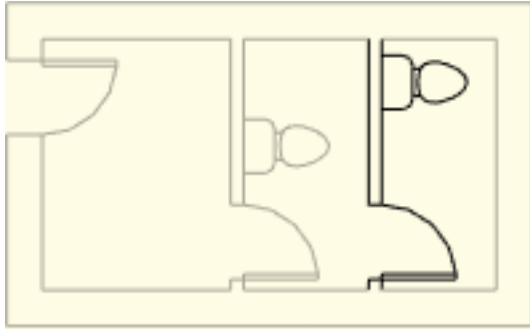


To modify a group, select it and click the  Edit Group icon. The group has a yellow-ish tint around it. When you are done, click the green check to complete.

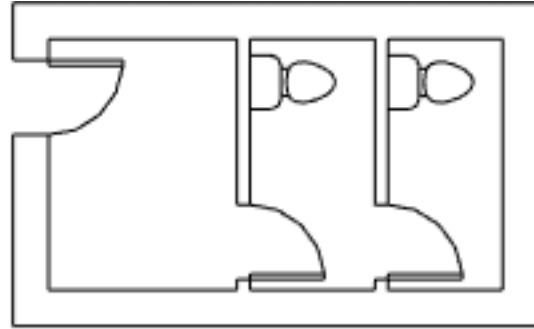


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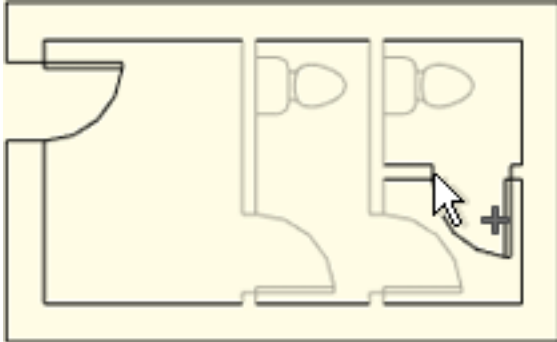
 **EDIT GROUP**



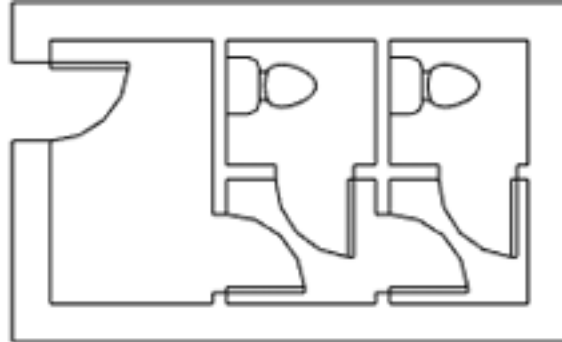
Use the ungroup tool to make the elements independent.



Use the Add/Remove tool once inside a group to add and remove elements to the group.



ADD ELEMENTS TO GROUP



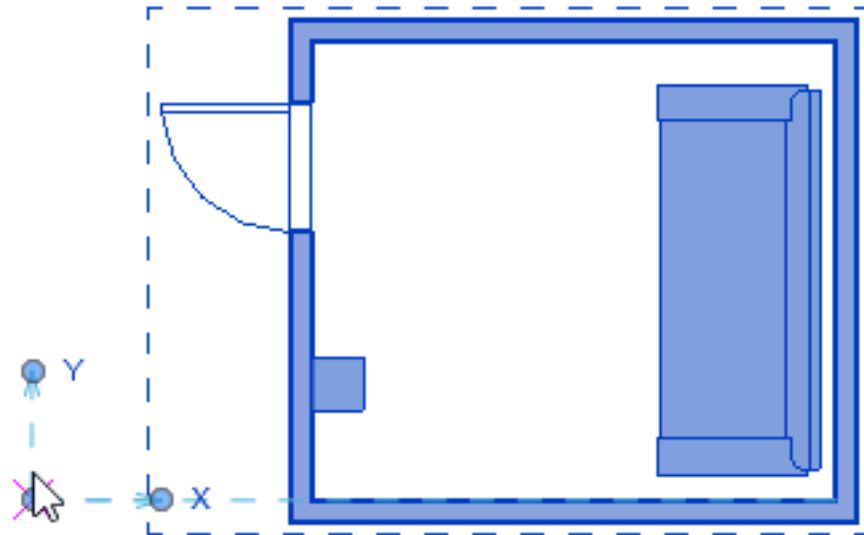
SETTING THE ORIGIN

Each group has an origin represented by a blue dot. This origin can be moved. Typically, you should place it located at the intersection of important walls or grids.

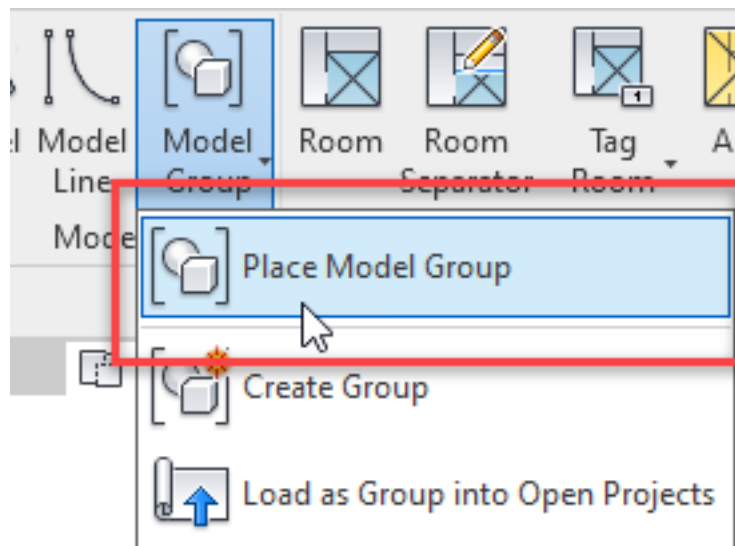


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This origin can be used when creating a model group. Although most people create groups with the copy and paste tool, it can also be placed from the Architecture tab.

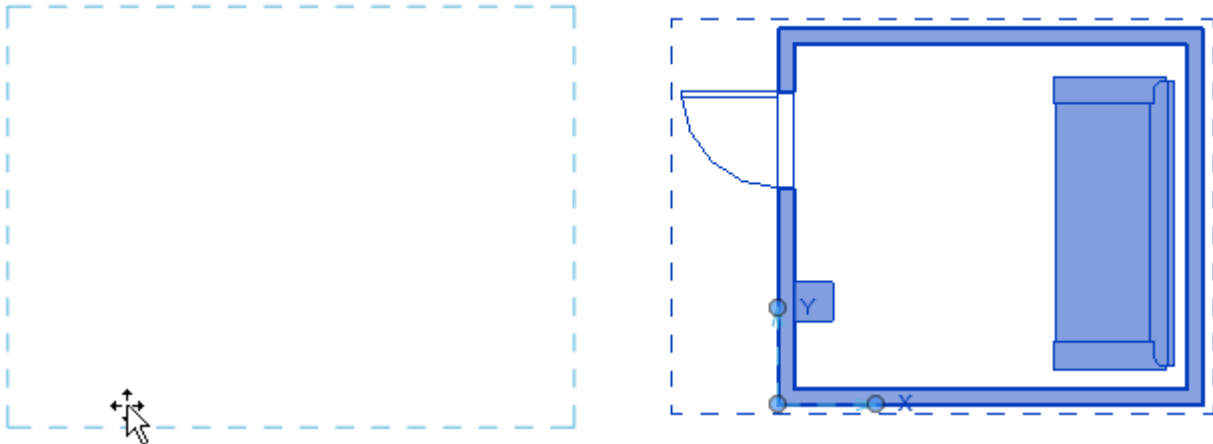


Select a type. The placement will be based on the position of the group's origin.



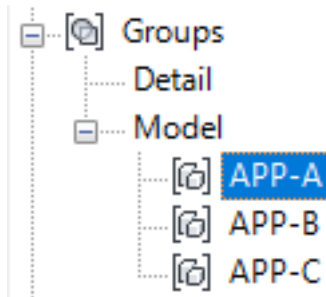
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GROUPS IN THE PROJECT BROWSER

There is a whole part of the project browser dedicated to groups. You can drag and drop a group from here to create a new instance.



It is also possible to Edit a group from here by using the right-click menu. This is different from opening the group by selecting one in the model. This opens a different Revit file that you need to save.

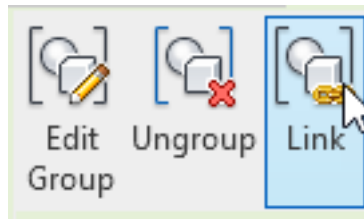


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CONVERT GROUPS TO LINK

It is possible to convert a group to a Revit link. Click this tool in the ribbon:



You will need to enter a name to the linked Revit file. The reverse is also possible. Once a Revit link is in the project, you can Bind Link to convert it to a group.

This process might cause a few issues, so be careful.

ATTACHED DETAIL GROUPS

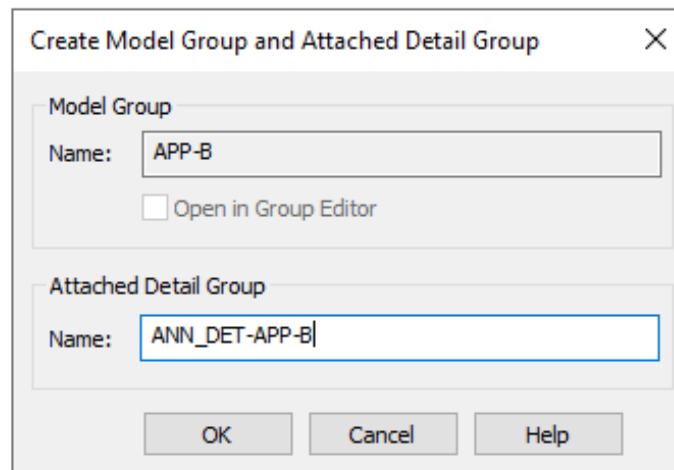
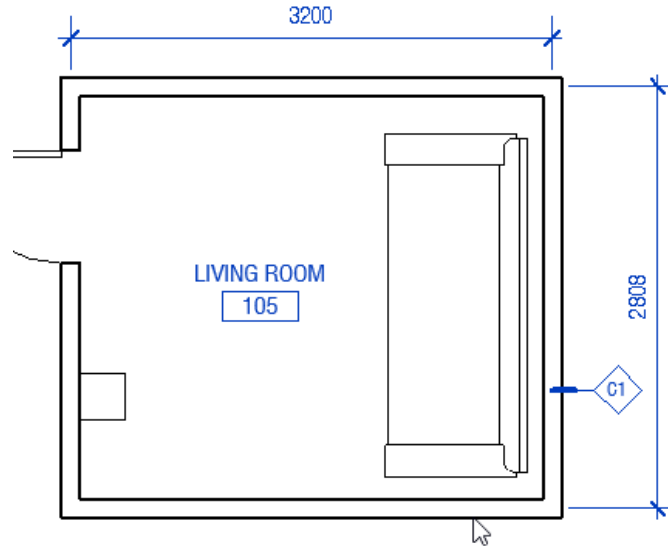
There are two group types in Revit: model groups and detail groups. Model elements cannot be part of a detail group and vice-versa.

However, you can attach a detail group to a model group. In this example, we create dimensions, a wall tag and a room tag referring to elements from group B. When grouping the annotation elements, Revit asks us to create an attached detail group. Name it consistently.

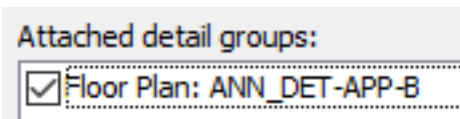
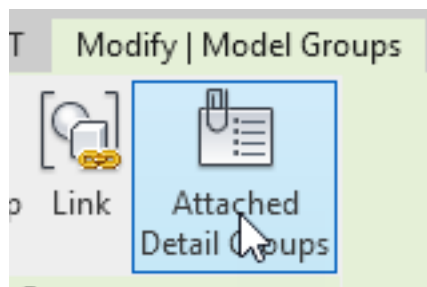


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Then, select a different instance of this model group. You should now see the “Attached Detail Groups” icon in the modify tab. Click it and select the correct detail group to attach.





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19 TIPS TO AVOID ISSUES WITH GROUPS

1- NEVER USE DATUM ELEMENTS INSIDE GROUPS

Datum elements include:

- Grids
- Levels
- Reference Planes
- Scope Boxes

Having a level inside of a group is probably the worst thing.

2- AVOID IN-PLACE FAMILIES INSIDE GROUPS

In general, you should avoid in-place families. Inside of groups, they are even more dangerous. Avoid them.

3- BE CAREFUL WITH NESTED GROUPS

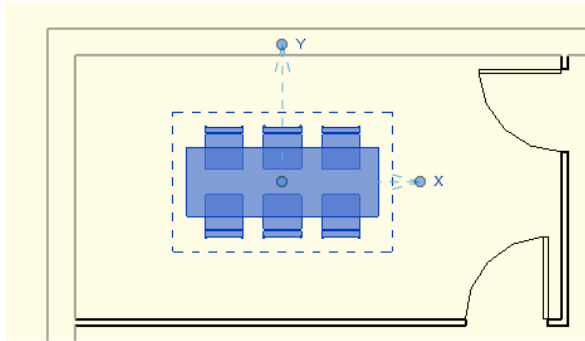
Nesting groups (groups inside of groups) isn't a problem by itself, but you must be thoughtful about how you use this feature.

Avoid nested groups that could be nested families instead. For example, if you need a table + chairs, create a nested family instead of creating a small nested group with these components.

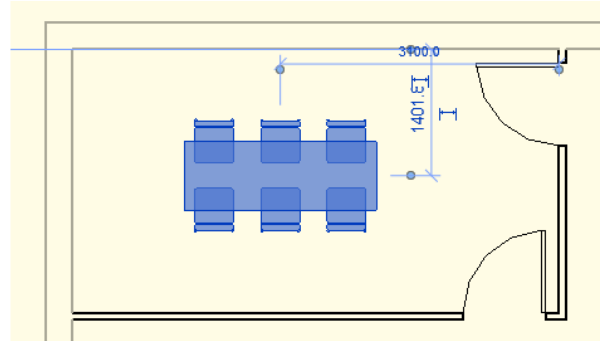


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**NESTED GROUPS FOR TABLE AND
CHAIRS = BAD**



**NESTED FAMILY FOR TABLE AND
CHAIRS = GOOD**



A few other principles of nested groups:

- Don't go more than 2 levels deep (a group within a group, not a group within a group within a group).
- Consider unnesting the groups as the project progress.
- Ask yourself if it's worth it. For example, if part of a group is only shared with a single other group, the time saved by nesting group might not be worth it.
- It might complicate the use of scheduling and Dynamo automation.
- My workflow: I prefer not to use nested groups.



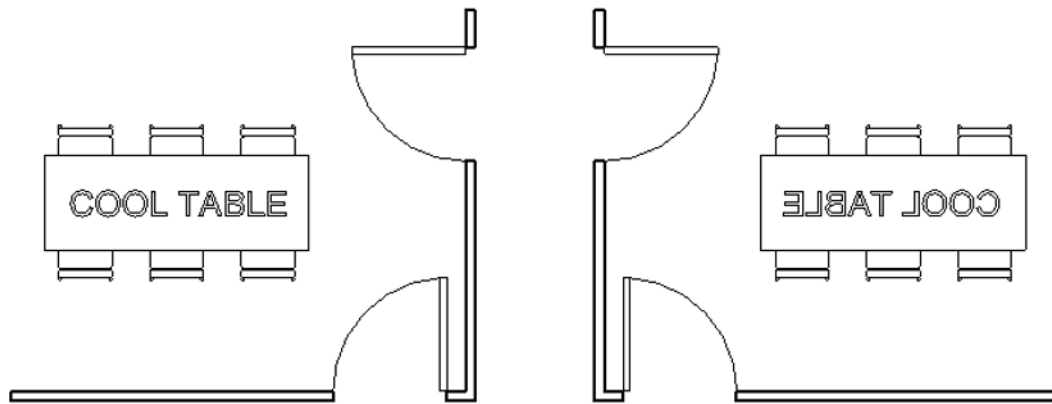
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4- BE CAREFUL WITH MIRRORING GROUPS

Contrary to popular belief, mirroring the groups will not cause corruption or break the groups.

However, some elements will be “reversed” even if they shouldn’t be.



For example, plumbing hot water vs cold water will not be in the right position. Be careful with liability!

To be extra safe, it might be better to have right and left variants for each group.

If you still decide to mirror groups, explore and verify them first to ensure nothing is broken.

Some people (ahem, Revit Cat) think you should never mirror anything because it messes up the ElementID and causes problems with hosted families. [Link here](#).



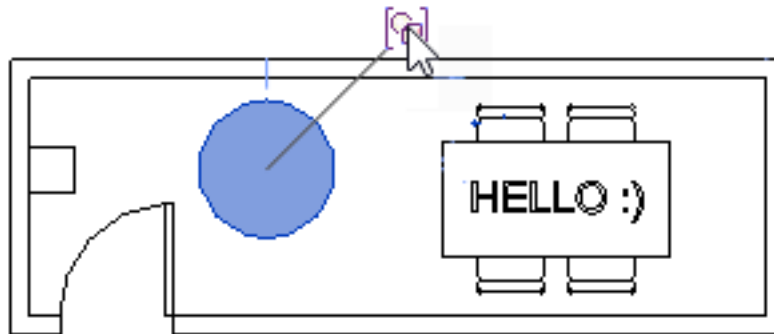
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5- BE CAREFUL WHEN EXCLUDING ELEMENTS

The “exclude element” tool allows you to remove elements in a specific group instance.

In theory, it is helpful. In practice, it makes me a little nervous. Was the element deliberately excluded? Is it a mistake or a bug?



Excluding elements can be automatically done when there are host/hosted elements issues. It might indicate there are problems with the group.

My workflow: I generally avoid using “Exclude Element”.



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If you decide to exclude elements from a group instance to reduce the number of group types in the project, document the process and let users know it has been a deliberate decision.

My workflow: I avoid using “Exclude Element”.

6- NEVER USE THE “FIX GROUPS” OPTION



The “**Fix groups...**” tool doesn’t fix groups at all. Instead, it will either ungroup the group or duplicate the group with a new name.

When you get that warning, click cancel and manually fix the problem.

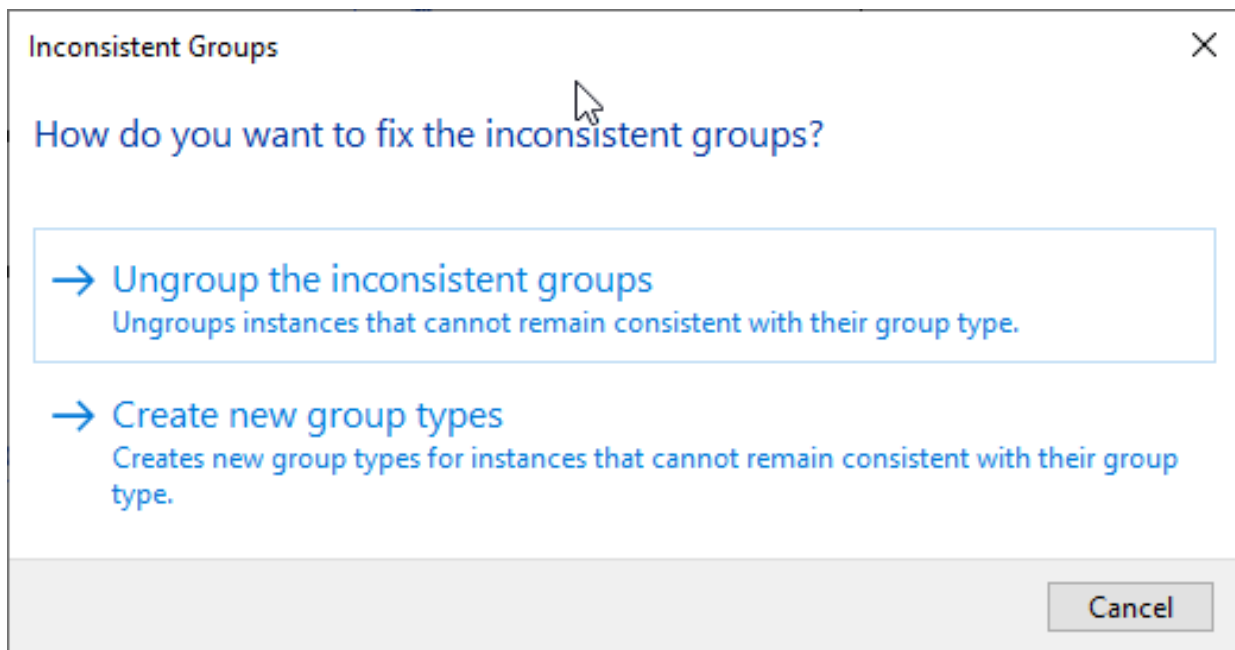
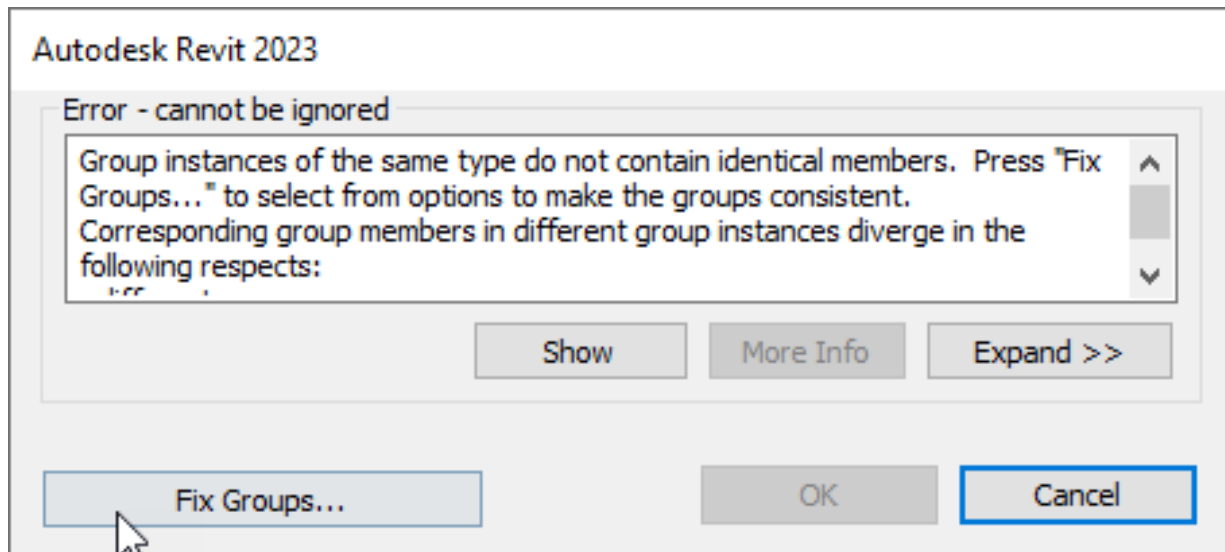
You often get the problem with hosting/hosted elements getting separated.



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As you can see below, the possible “fix groups” options won’t fix your problem at all.



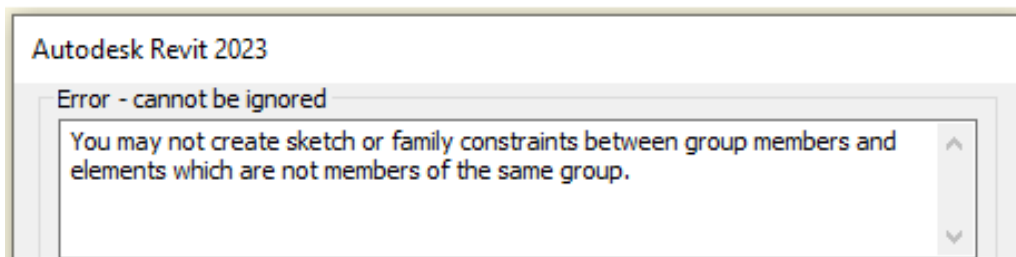
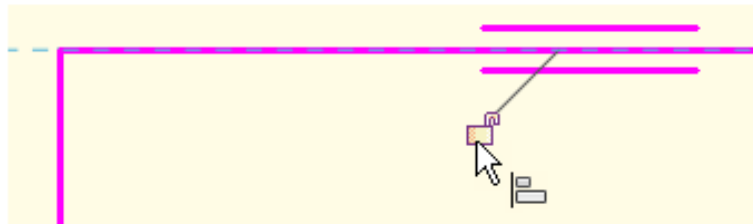


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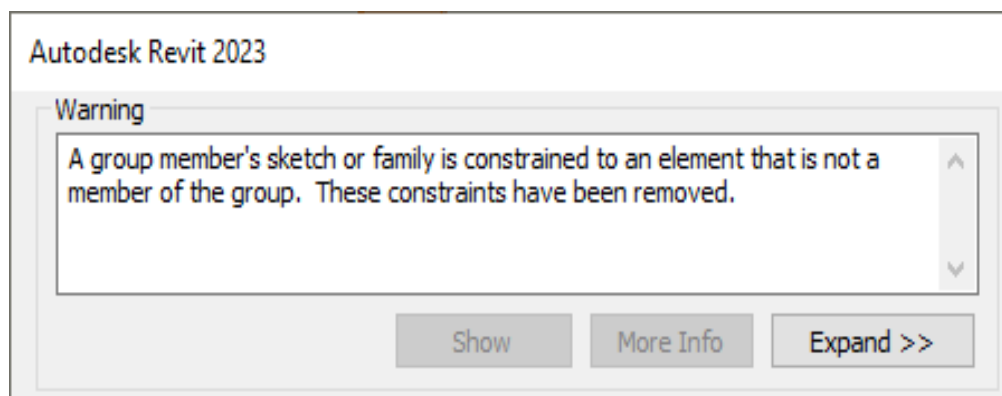
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7- NEVER LOCK SKETCH-BASED COMPONENTS INSIDE GROUPS

If you try to constrain a sketch-based element (floors, ceilings or roofs) to an element that isn't inside a group, you will get a warning that prevents you from doing it.



If you try to add a sketch-constrained element to a group after it is created, you will get this warning:



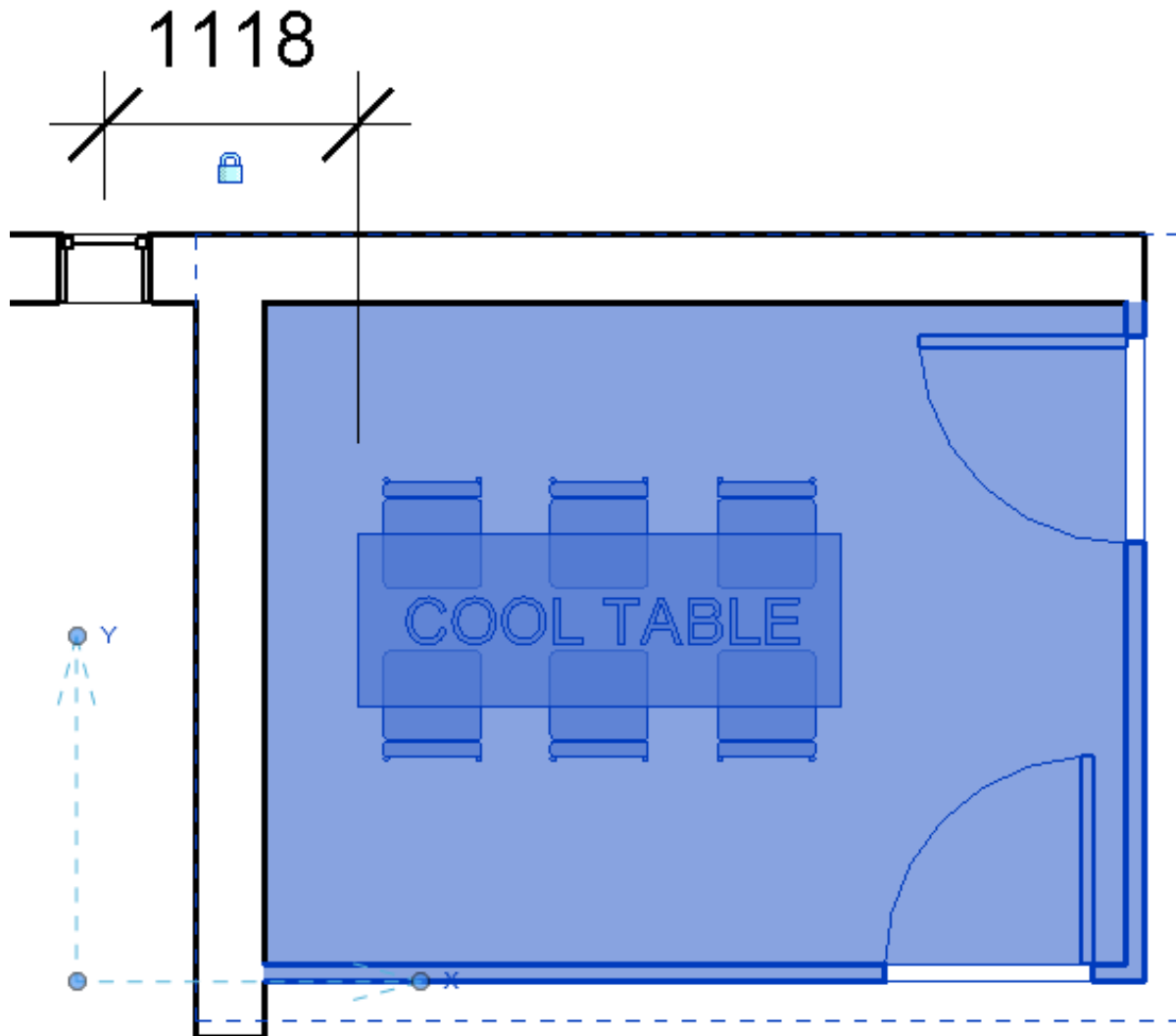


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8- DON'T LOCK AND CONSTRAIN A GROUP TO AN OUTSIDE ELEMENT

In the example below, a user constrained a group to a window that is not part of the group. This is a terrible idea! If you move one of the elements, you will likely get a warning and cause potentially cause problems in your model.





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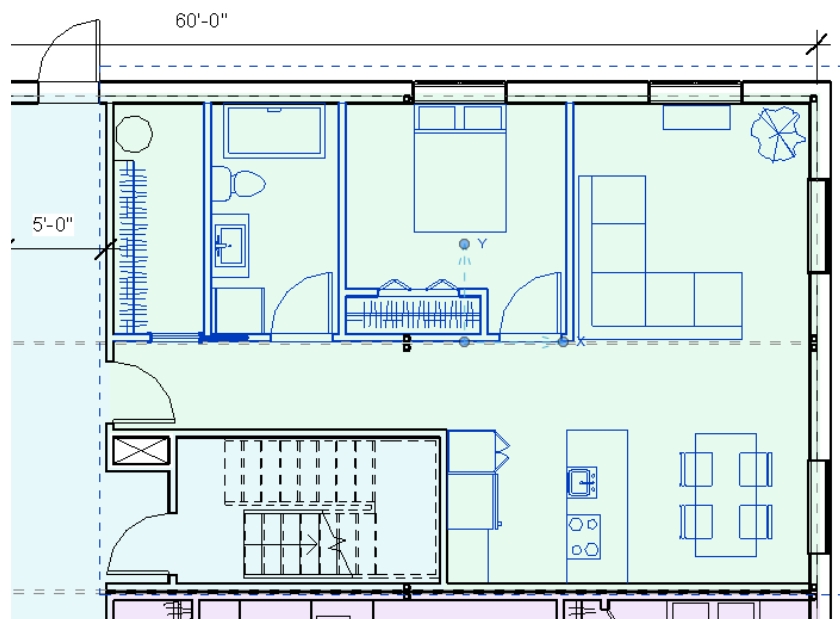
9- DON'T INCLUDE EXTERIOR ELEMENTS, CORRIDORS AND PARTY WALLS

Don't include exterior elements in a group created for repeating interior parts like hotel rooms, apartments, patient rooms, etc. Exterior and interior don't mix well in the same group.

Party walls, corridor walls and corridor doors shouldn't be part of a group.

You cannot include elements in a group that are hosted on party or corridor walls. Instead, replace them with non-wall-hosted elements.

The exception to these rules is modular construction. The content of a group should reflect the actual components of the module. The elements built directly on site and that are not part of a module should not be included in groups.





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10- SET THE TOP OF THE WALLS TO "UNCONNECTED"

Inside groups, only a single level should be used as a constraint. The top of the wall should always be **unconnected**.

Basic Wall Interior - 79mm Partition (1-hr)	
Walls (1)	Edit Type
Constraints	
Location Line	Wall Centerline
Base Constraint	Level 2
Base Offset	0.0
Base is Attached	<input type="checkbox"/>
Base Extension Distance	0.0
Top Constraint	Up to level: Level 3
Unconnected Height	4000.0
Top Offset	-1100.0

**TOP CONSTRAINT SET TO
OTHER LEVEL**



Basic Wall Interior - 79mm Partition (1-hr)	
Walls (1)	Edit Type
Constraints	
Location Line	Wall Centerline
Base Constraint	Level 2
Base Offset	0.0
Base is Attached	<input type="checkbox"/>
Base Extension Distance	0.0
Top Constraint	Unconnected
Unconnected Height	4000.0

**TOP CONSTRAINT SET TO
"UNCONNECTED"**

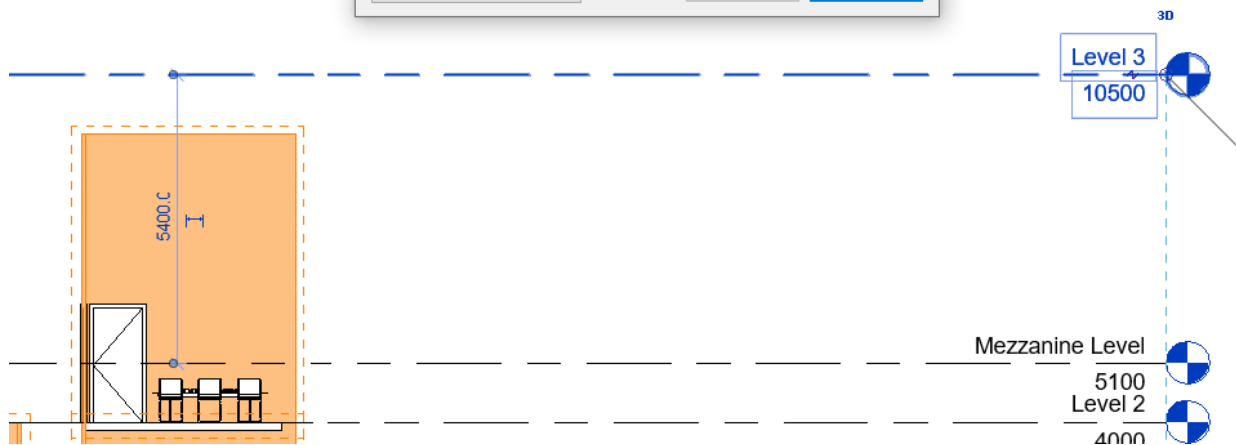
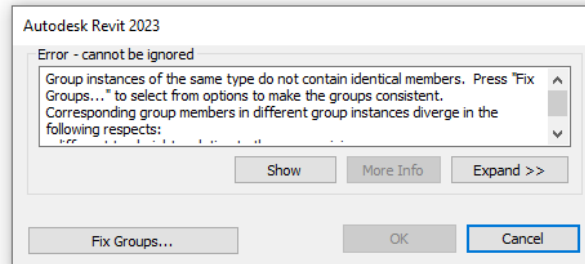


If the top of the wall has a level constraint, you risk causing issues. For example, moving a level will cause the annoying "Fix Groups" warning.

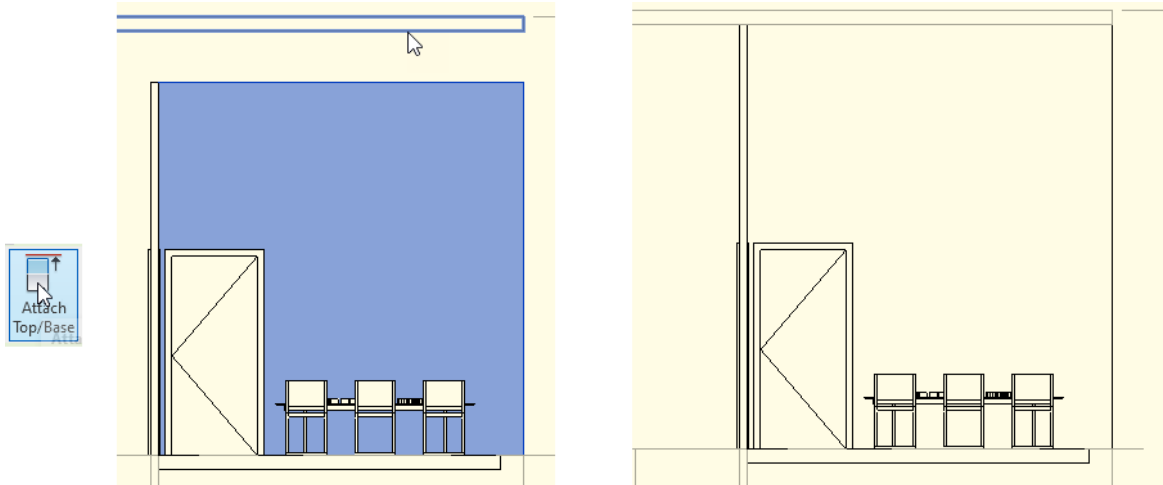


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If you want to use the same group for levels that might not have the same distance between them, you can use the **Attach Top/Base**. Using this tool only affects specific instances of the walls and will not cause “fix groups” issues.



ATTACH TOP OF WALLS INSIDE A GROUP INSTANCE TO FLOOR



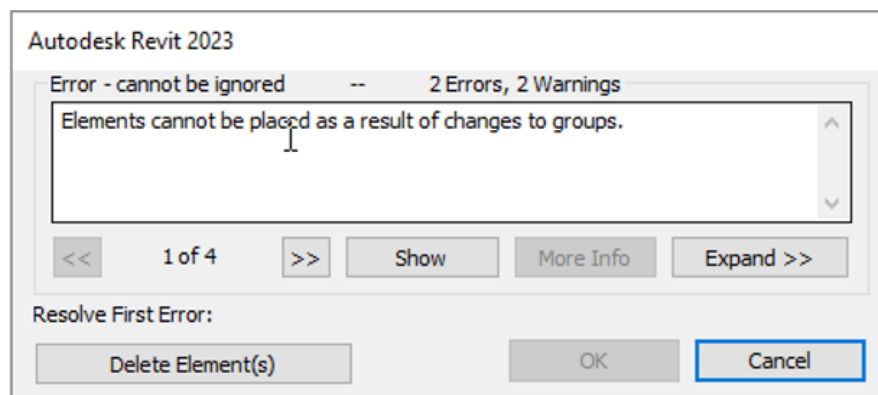
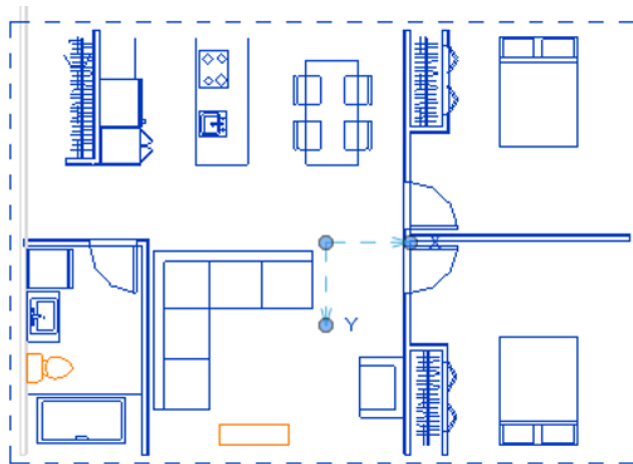
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11- INCLUDE BOTH THE HOSTING AND HOSTED ELEMENTS IN THE GROUP

Always include both the hosting and hosted elements in the group. Else, you'll get warnings, bugs and chaos.

In the example below, a toilet is part of a group, but not the hosting wall. If you copy and paste the group, the corridor wall-hosted "toilet" is excluded from it. If you try to unexclude the element, you'll get a warning.



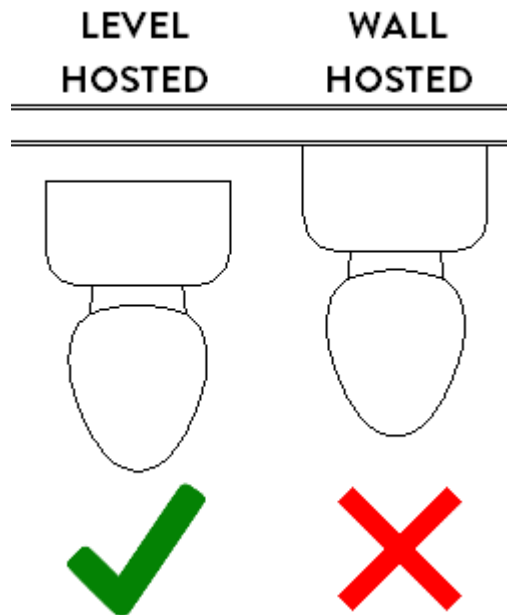


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12- IF HOSTING ELEMENT CANNOT BE INCLUDED IN A GROUP, DON'T USE A HOSTED FAMILY

It might be an excellent strategy to completely avoid hosted families to avoid issues with hosting/hosted elements. For example, pick a toilet placed on a level instead of a wall-hosted one.



13- ELEMENTS IN A GROUP SHOULD BE HOSTED/ CONSTRAINED TO A SINGLE LEVEL

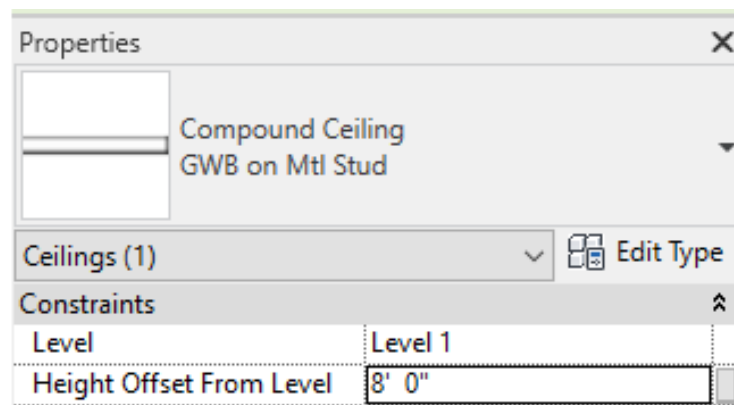
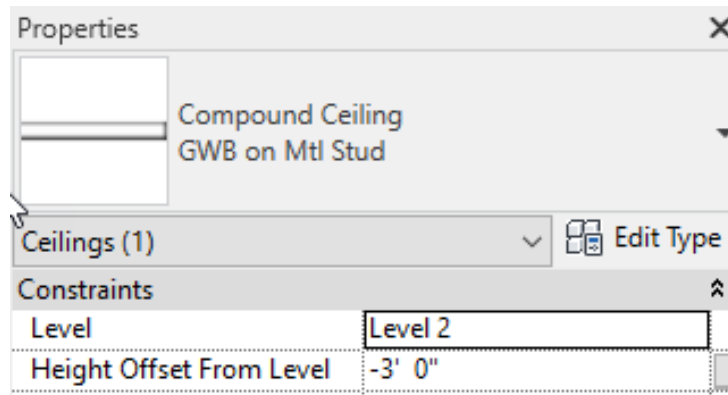
Make sure all elements in a group are hosted or constrained to a single level. We've already established that walls should not be top constrained to a top level but should use "unconnected height" instead.



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Let's use another example: ceilings. Make sure to set the ceiling height from the bottom of the floor, not a negative offset from the level above. Example: set a 2410mm offset from Level 1, not -500mm offset from Level 2.

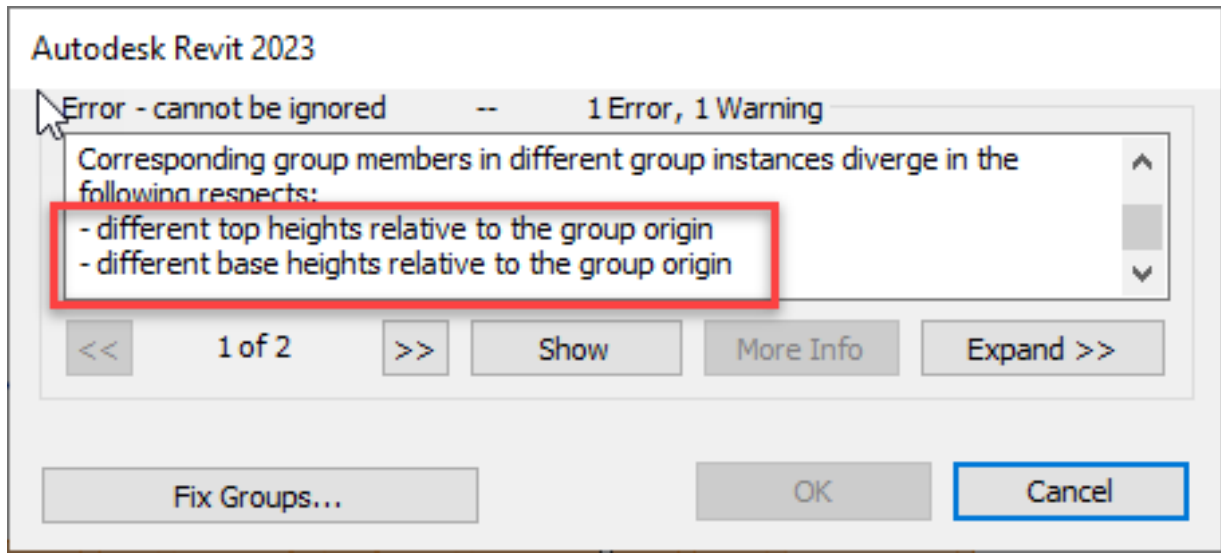




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If you don't do so, you might get this warning... with the nasty "Fix Groups" again!



In addition to walls and ceilings, follow this rule for all other components, including furniture, plumbing fixtures, lighting fixtures, floors, etc.

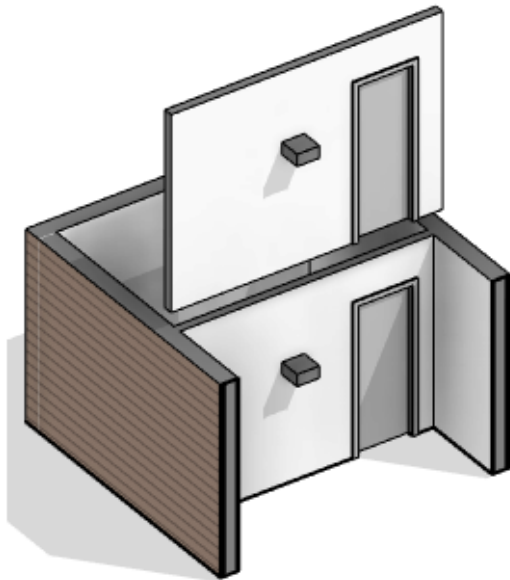


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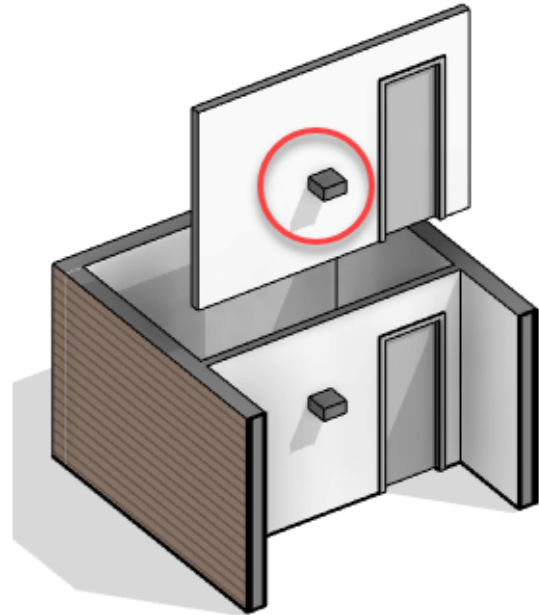
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14- AVOID FACE-BASED FAMILIES INSIDE GROUPS

Face-based families behave weirdly inside groups. For example, if you offset a whole group, everything moves except the face-based families. Better to avoid them completely.



Constraints	
Reference Level	LEVEL 2
Origin Level Offset	0.0



Constraints	
Reference Level	LEVEL 2
Origin Level Offset	500.0



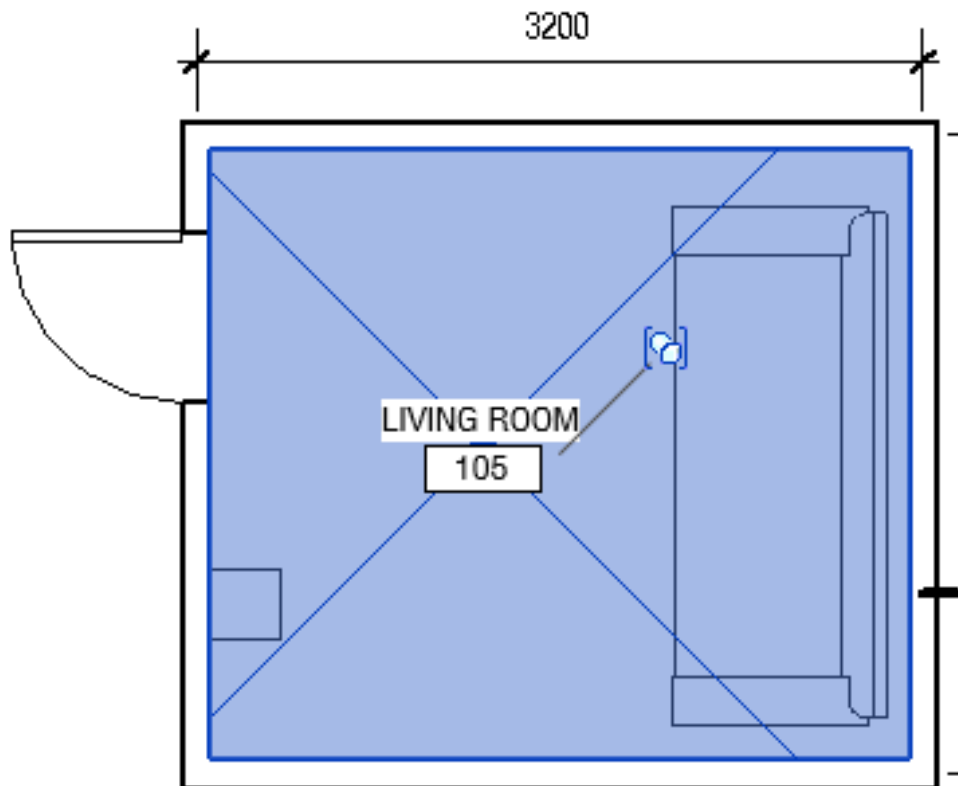
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15- USE ROOMS INSIDE GROUPS

Don't hesitate to use rooms inside groups. The room name cannot vary from one group instance to another, but the room number can. Revit will automatically create a new room number for a new group containing a room. You can adjust this number.

Identity Data	
Number	105
Name	LIVING ROOM
Image	
Comments	





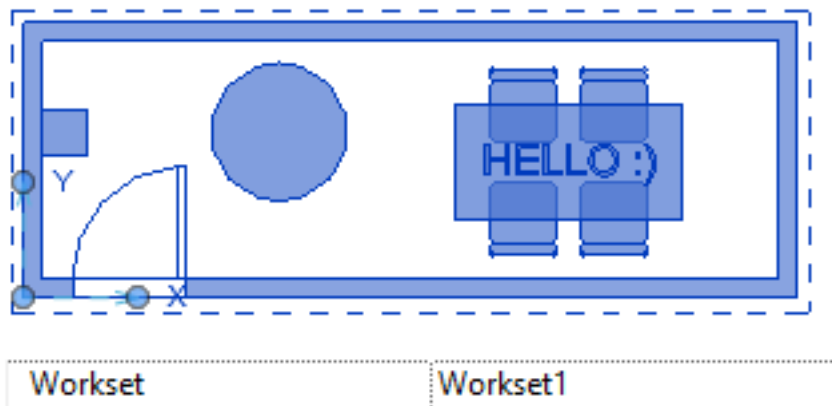
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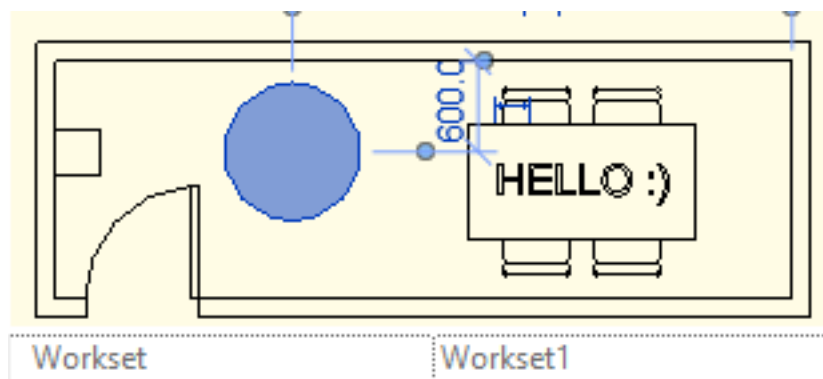
16- ALL ELEMENTS INSIDE A GROUP ARE THE SAME WORKSET

Elements inside groups all belong to the same Workset. This Workset is assigned directly to the group.

However, each group instance can have a different Workset. It is generally easier to keep all instances of a group type in the same Workset. In the image, you can see the Workset of a group can be changed.



However, the individual Workset of elements inside the group can't be changed. The parameter is grayed out.





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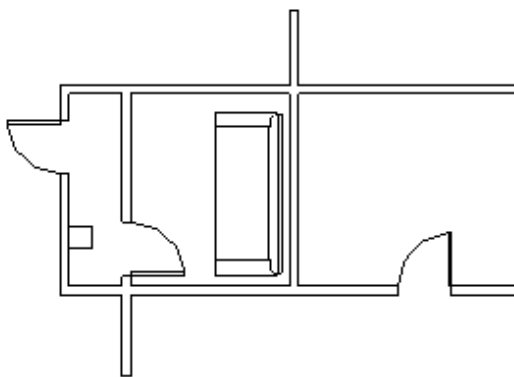
17- ELEMENTS INSIDE GROUPS SHOULD HAVE SAME PHASE SETTINGS

Model groups don't have "phase created" and "phase demolished" parameters. However, each element inside the group does have these parameters.

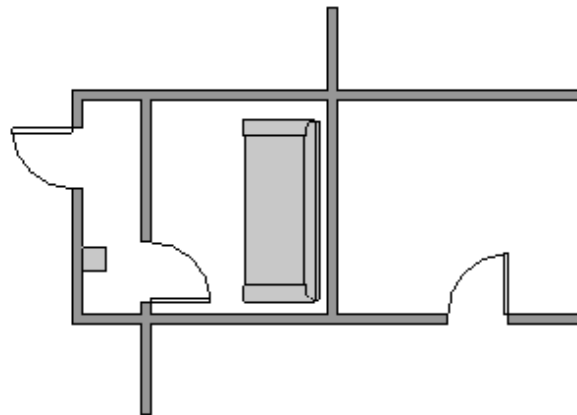
When you create a group instance, the elements will have the same "phase created" as the view the group is created on.

For example, you could create a new apartment type group in a "new" view. When you paste the group in an "existing" view, the elements inside are set to phase created = "existing".

The best workflow is to make sure all elements inside group have the same "phase created" and "phase demolished" settings. This way, you'll avoid potential confusion.



GROUP IN "NEW" VIEW



GROUP IN "EXISTING" VIEW



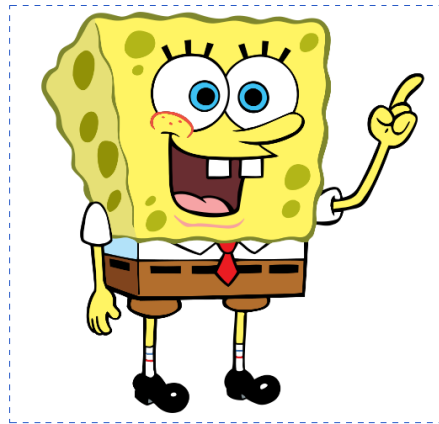
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18- DON'T MAKE GROUPS TOO LARGE

Only a single user can modify a group at the same time. The more elements your group includes, the more complicated it will be to collaborate. You will fall into permission hell. Don't make a group for an entire floor. Instead, create a group for each apartment or for each module.

19- GROUPS CAN BE POROUS: DISALLOW JOINS



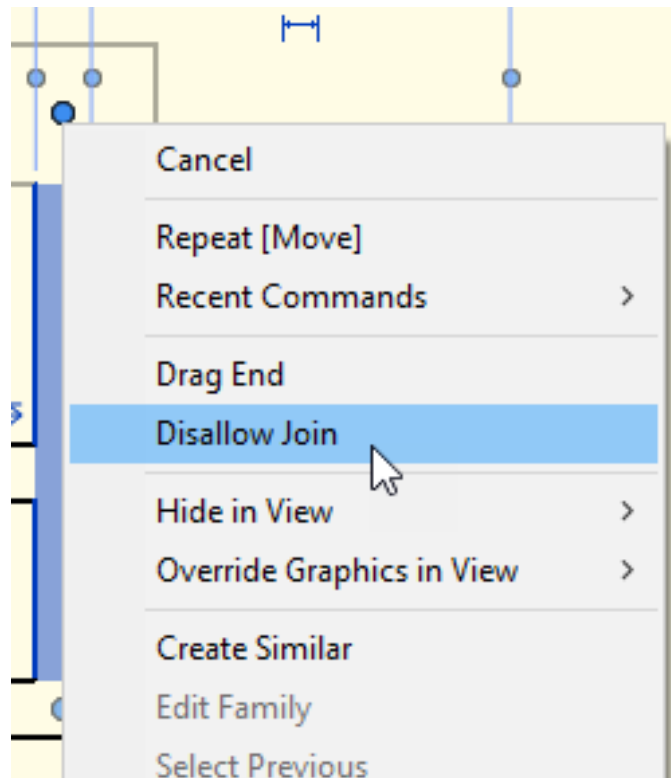
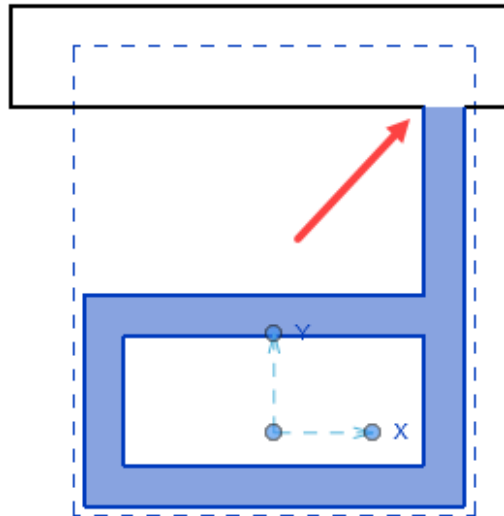
Elements in groups can have a “porous” behavior. For example, walls inside groups will try to join with surrounding walls that are not part of the group. While that might be a desirable outcome in some instances, it is not the case in modular construction.

If the porosity is an issue, use the “Disallow Join” tool.



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CHECK OUT OUR MANAGE COURSE

Did you enjoy this pamphlet? Make sure to check out our MANAGE learning package, which will help you create great standards and keep healthy Revit models. [Click here](#) to learn more about the MANAGE course.



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THANKS FOR READING!

As always, send your thoughts to nick@revitpure.com. I read and answer all emails. Let me know what theme you want explored for the next edition.

ACKNOWLEDGMENTS

This pamphlet wouldn't be possible without the great content from the BIM community. Here are some resources that have been helpful:

Niall Kelly – 8020 BIM – “Revit Groups are Awesome! How to Make and Edit Revit Groups”

<https://www.youtube.com/watch?v=-OfkWekWf2I>

Niall Kelly – 8020 BIM – “22 Tips for Mastering Revit Groups”

<https://www.youtube.com/watch?v=rRpoDSg5dPE>

Aaron Maller & Jeffrey Pinheiro – TheRevitKid – “Revit Groups vs Links”

<https://www.youtube.com/watch?v=yKW1tdyZ8lk>

Nivin Nabeel – CanBIM (Building Transformations) – “Big Team, Big Project, No Time”

<https://www.youtube.com/watch?v=l76M5c0S7fE>

Belinda Carr – “Groups vs Nested Families”

https://www.youtube.com/watch?v=-iKFCIlg_lmw