



Support Article:

Lifting and Moving Existing Buildings

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While there are a couple of other ways to undertake this process, this is one way that we have found to be successful, and still maintain a single existing building model that can be adjusted, all in one file.

Before undertaking a lift and/or move, you will need to model the existing building. Try to ensure that your existing building is complete and correct. This process over the next few pages to show a building undergoing relocation involves copying the existing building, pasting the copied building to the new location, and demolishing the existing building.

The essential trick to all this is Grouping the building and then copying it into a later phase, after 'demolishing' it in a mid-way phase.

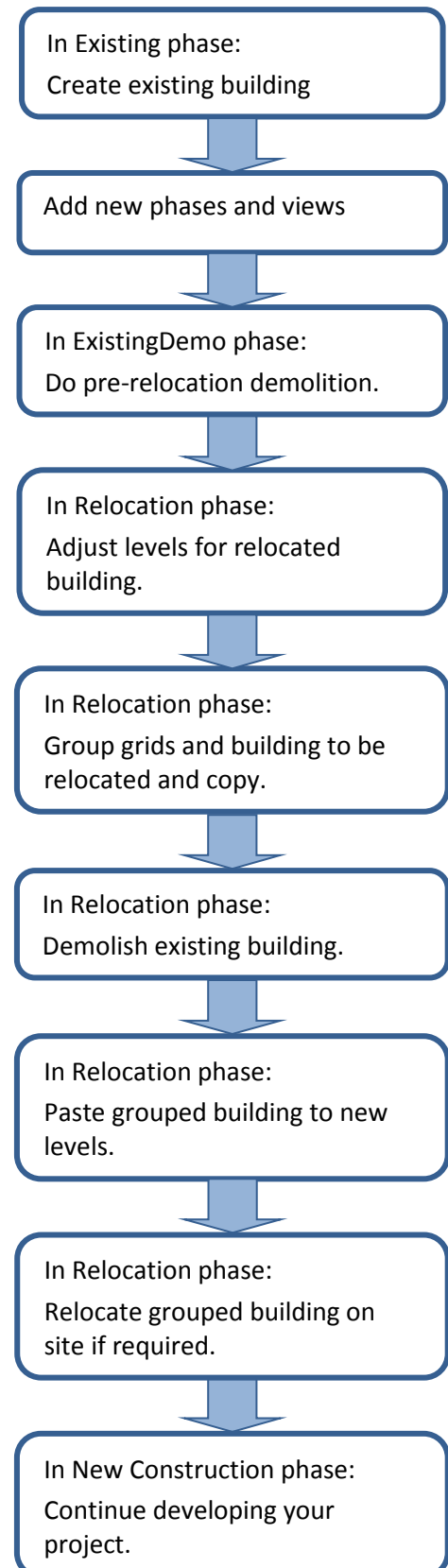
Use the existing levels which are prefixed with *e* to model your existing building.

Make sure, when modelling the existing building, to have all elements hosted by the correct levels. This is very important when the model is copied to new higher levels. Do not have elements hosted by or related in any way to a level that will not be used in the 'lifted' model.

Credit:

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Editors – Jayne Hackett, Colin Roe



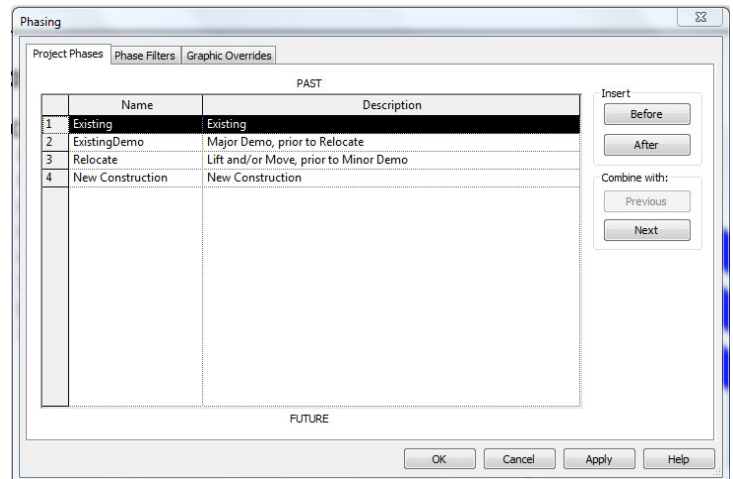
Add phases and views:

You will need to add two extra phases to the QARC ARChetype Template - *ExistingDemo* and *Relocation*.

This is done under the *Manage* tab ► *Phases*.

ExistingDemo will be used for demolition of building parts such as stumps and posts that would be demolished before a building is lifted and/or moved.

The *Relocation* phase is the phase in which you will relocate the building.



Create views to be used within these phases. As a minimum we recommend you duplicate (with detailing)

3D 1.1 *Exist* view to create - 3D 1.2 *ExistDemo* with Phase = *ExistingDemo*; and

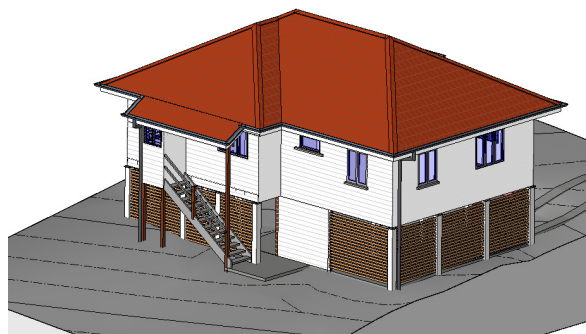
3D 1.3 *Relocate* with Phase = *Relocate*;

at least one existing working plan to be a working plan in the *Relocate* phase; and

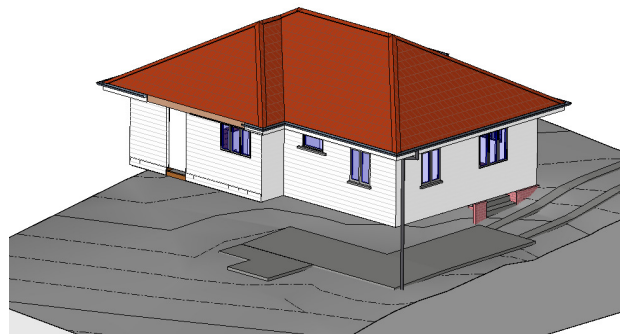
at least one existing working elevation to be a working elevation in the *Relocate* phase.

ExistingDemo Phase:

In this phase you will demolish all parts of the building that would be demolished before the building is actually relocated. On a house this would include items such as stumps and posts under the building, and decks and stairs that are not being retained. By doing this in the *ExistingDemo* phase you will have the opportunity to show this major demolition separate to the minor demolition that occurs after the relocation.



Before demolition in *ExistingDemo* phase.



After demolition in *ExistingDemo* phase.

In case you are not familiar with demolition in Revit, there are two ways to do that.



Use Revit's Demolition Hammer. In this instance, be in a view set *ExistingDemo* phase. Ideally a 3D view. Just go over the model, 'hitting' elements with the hammer, and hey presto, they get demolished.

The other way is to select an element or several elements, and in Properties switch Phase Demolished from *None* to *ExistingDemo*.

Relocation Phase:

The following steps must be completed as written in the order explained. Otherwise, you may lose your entire retained building. During the actions you take, the building is placed into memory, by using Copy/PasteAs.

In this phase you will 'demolish' the remaining existing building and place a copy of the existing building and grids to the new location. You have to demolish the remaining building, otherwise Revit gets very confused by it still being around, as elements can conflict. As you'll read below, grouping the building is the key. But first you need to prepare a couple of things.

Adjust Levels:

Move and rename the proposed levels in the ARChetype as required. In the example the building is being raised 1200mm. That is, *Level 1* is 1200mm above *e 1st level* and *roof top plate* is 1200mm above *e top plate*. Check that existing level constraints are reflected in the proposed levels -

e 1st level to *e top plate* = *Level 1* to *roof top plate* = 2685mm in this example

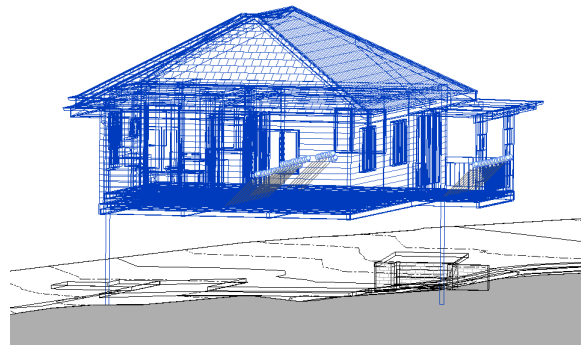
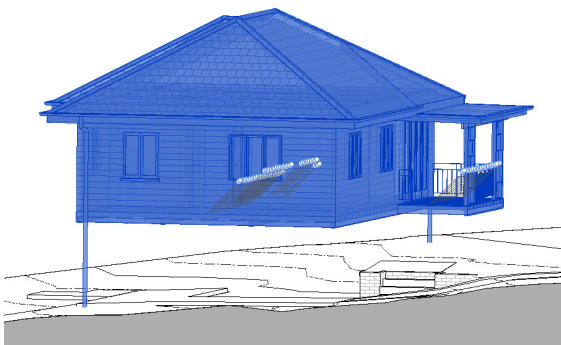
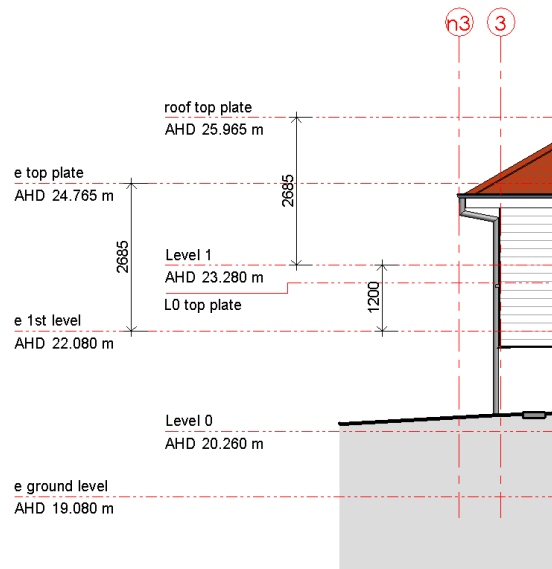
There are a number of levels which must never be deleted from an ARChetype project as aspects of ARChetype rely on their existence. These levels are *roof top plate*, *Level 0*, and *Zero level*, and where existing structures are in a project, *e roof top plate* and *e Level 0*.

These levels can be renamed and their dimension adjusted but ARChetype expects that *Zero Level* will remain at 0m AHD, *Level 0* and *e Level 0* will be located at ground level or the lowest structural level of the project, and *roof top plate* and *e roof top plate* will be the top most structural levels of the project.

Group grids and building:

This whole method we are explaining depends on grouping the retained building. Open a 3D view and a plan, all with the phase set to *Relocation*. You have created these views as explained above, by duplicating existing views and changing the Phase.

In the 3D view select the building. This is best done with a selection box dragging the cursor from the left. If you are having difficulty selecting only the building parts, it may be necessary to hide some items such as topography and vegetation that will not be relocated. Placing the 3D view in Wireframe can also be useful in detecting if you have selected only those parts required.

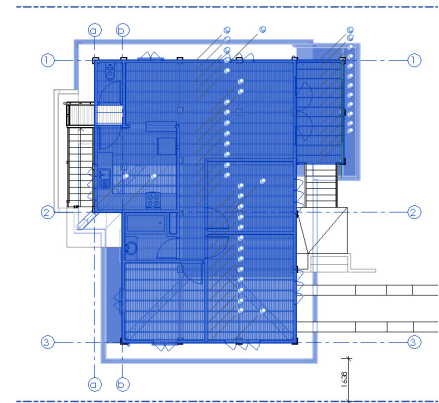


In the plan view, use *Ctrl* and *Click* to select the grids. You should at this stage have the building and grids selected.

At this point we recommend grouping the selected parts. **This is the key to the whole technique.**

On the *Modify* tab ➤ select *Group* to create a group.

Placing the existing building and its grids in a group enables you to make changes later, which will be reflected in your relocated copy of the building. If the relocated building is a simple copy of the existing building, any changes you make to the existing building (after the relocation) will not be replicated in your copied (relocated) building.




Note that you will need to use the *Edit Group* option to make changes to the existing building once the group has been created if the changes are to be reflected in the relocated copy. Inevitably, there will be something that needs adjusting in the existing building later on.

Select your group and *CopyToClipboard*.

Demolish existing building:

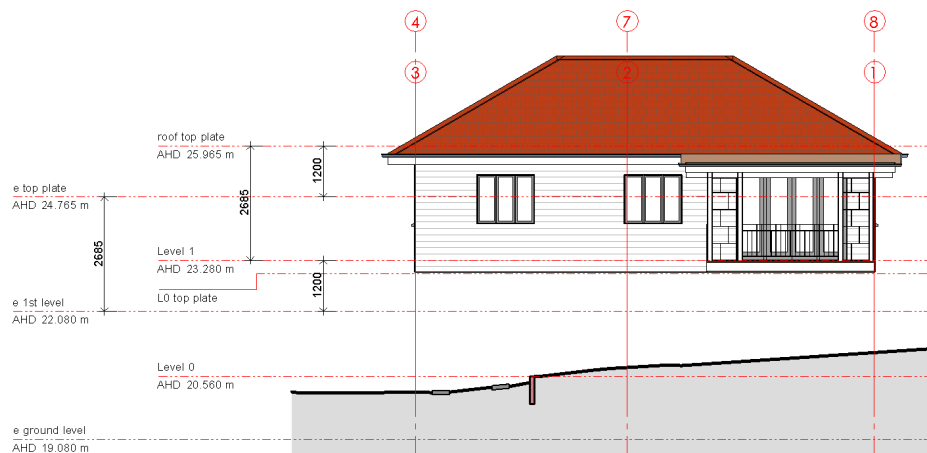
Before pasting the grouped building to the relocated level, it is necessary to remove (demolish) the original grouped building. Unfortunately, a group does not have a demolished phase allocated to it so the individual parts must be demolished. DO NOT do this demolition in the *Edit Group* mode as the demolition will affect all copies of the demolition. So . . .

In the 3D view that has its *Phase* set to *Relocate*, use the *Demolish*  *Hammer* to demolish the parts or tab to select an item *right-click* ➤ *Select All Instances* ➤ *Visible in View* and set the *Phase Demolished* to *Relocate*. This process can be a little tedious, but we have not yet come up with a better option. As already stated, do this demolition from 'outside' the grouped building, very important!

Paste to new Level:

To place the building at the new level, open an elevation view in *Relocation* phase and extend the view crop to reveal all levels if necessary. Click on *Modify* tab and choose drop down menu for *Paste*. Choose *Aligned to Picked Level* or *Aligned to Selected Level*.

Pick or select the level that the building is to be relocated at. In our example, the lowest level associated with the grouped building is *e 1st level*. All parts of the building below *e 1st level* such as stairs and stumps were demolished in the *ExistingDemo* phase.



As we want the building raised by 1200mm, we choose *Level 1* which we have set at 1200 above *e 1st level*. If you choose the wrong level, *undo* the paste and try again with the correct level.

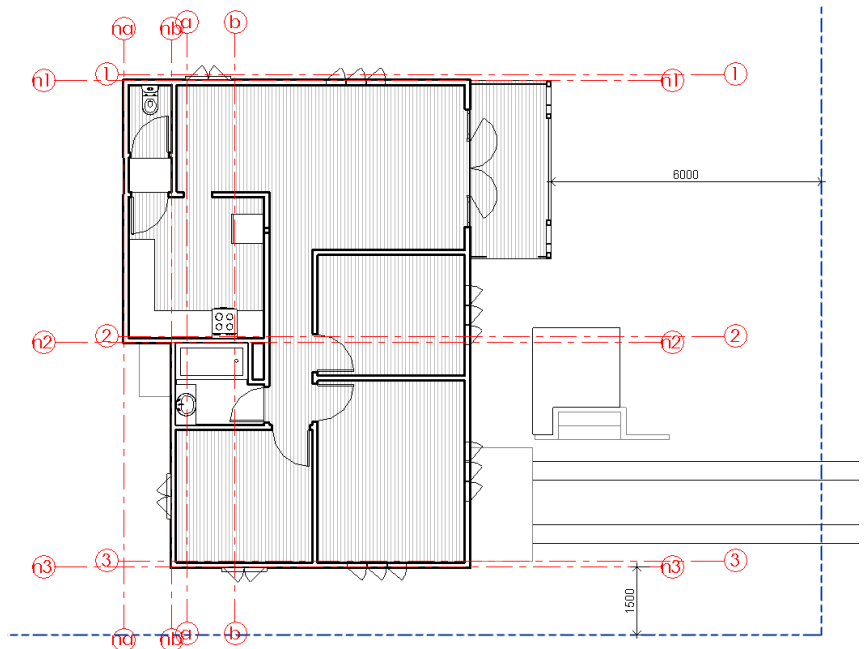
Relocate grouped building on site:

The relocated building is now in the same location in plan and raised 1200mm. To relocate the building on plan, select the group and move to the required position. In this case 1500mm from the side boundary and a front setback of 6000mm. This required a move to the left of 1000mm and a move down of 100mm.

Rename the new grids as required. We recommend adding 'n' to the grid names so you and everyone can relate original grids to the new grids.

Existing grids should be hidden in views by selecting the group they are part of and hiding the whole group.

We suggest creating a view that shows the original and new grids, so you can dimension the move.



New Construction Phase:

You can now continue on with your project in the *New Construction* phase.

As mentioned above, you will need to demolish parts of the retained building, as part of your proposed works. We have found the best way to safely do this is to use the demolition hammer. BUT, only do this from outside the grouped building. **DO NOT do this demolition from 'inside' the group!** If you *Edit Group* and then do demolition, you will edit every version of that group in the file. You only want to demolish items in the copy of the group that has ended up in the *Relocate Phase*. It will make sense the first time you follow the procedure.