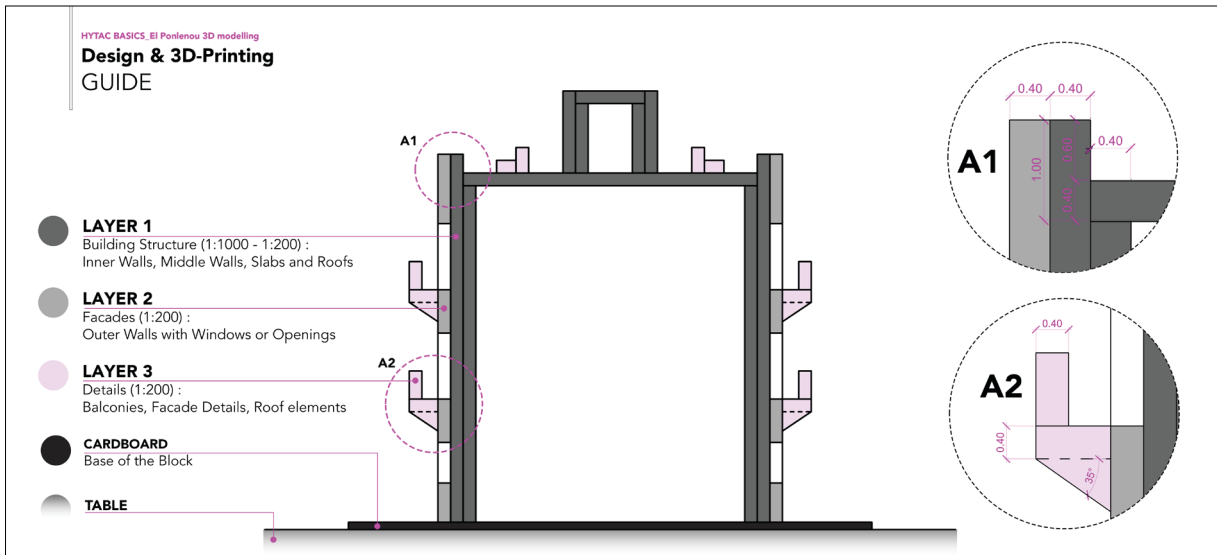




HYTAC Basics SS 23 _ Workflows

01 _ Design Guidelines

Before this Workflow take the
3DJony Course
W-1a: Modeling for
 Architecture Design
W1-1e: 3D Documentation
 from 3D Model for
 Architecture Design



The **3d-model** of each Block in Archicad must follow certain **Design Guidelines** to be:

1. A Realistic Representation

- The design should be based on:
 - 1.1.** The information from the **Reference Situation Plan** of El Pobleu District.
 - 1.2.** The morphology of the buildings as captured in **Google Earth** 3d View Images.

2. 3D-Printable

- 2.1.** The buildings of each block: should be designed mainly with **Walls** and **Slabs** with a minimum thickness of **0.4m**. Morph elements are accepted only in specific cases.
- 2.2.** Each building-shell should consist of **3 Walls**:
 - a)** The **inner wall** (0.4m) provides support for the roof and facilitates the assembly of the 3d printed parts.
 - b)** the **middle wall** (0.4m) is a volumetric representation of the facade and
 - c)** the **outer wall** (0.4m) is designed with openings and facade details.

3. Adjustable in different Architectural Scales and detail levels.

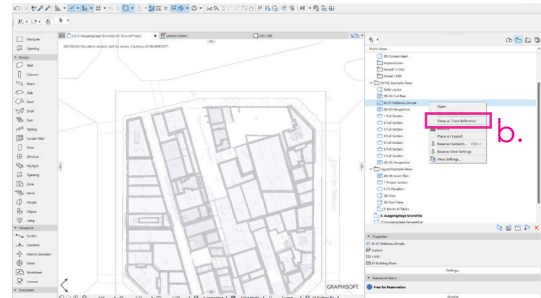
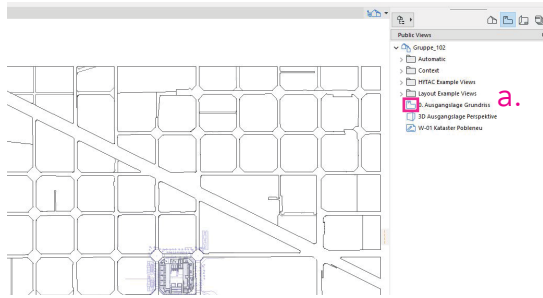
- All the 3D elements should be arranged in **3 Layers**:
 - 3.1.** The Layers are named with the number of each block
e.g. "**0XX Group XXX Layer 1/2/3**"
 - 3.2.** The elements are arranged according to the structure below:
 - Layer 1:** Inner Walls, Middle Walls, Slabs and Roofs
 - Layer 2:** Outer Walls with Windows or Openings
 - Layer 3:** Balconies, Facade Details and Roof elements.



HYTAC Basics SS 23 _ Workflows

01_ Model Check: Realistic Representation

1



a. Run Archicad and open your block using **TeamWork** (Workflow 00).

Select the "**Ausgangslage Grundriss View**" from the **Public Views Menu**.

b. If the **Reference Situation Plan** is not visible, go to the "**Hytac Example Views**" folder, right-click on the "**W-01 Poblenou Simple**" view, and select "**Show as Trace Reference**".

The **Reference Situation Plan** includes information about the i) **outline** and the ii) **height** of the buildings and the streets of each Block. Check carefully if the existing 3D-model follows these references.

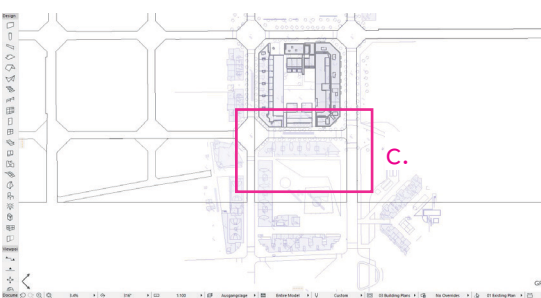
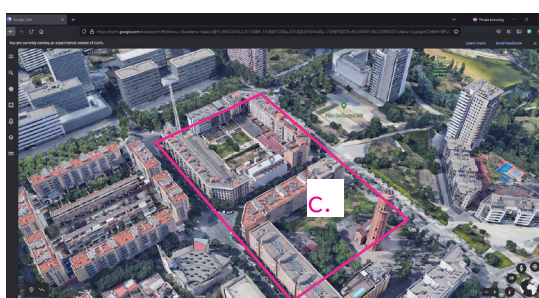
2



a. Visit Google Earth <https://earth.google.com/>, and use the **Search Tool** to find "El Poblenou, Barcelona, Spain". In Google-Earth, click on the **2D View** and adjust the **North orientation** to preview the blocks as in the Screenshot above.

b. Try to find your block. You can use the **Street View** mode to preview the current state of the buildings.

c. Compare your ArchiCAD model with the block in Google Earth. Evaluate if the buildings are correct and if there are missing parts in the block that need redesign. In case your block is **incomplete** or empty, you will need to re-model it from scratch, following the instructions in the Document "**02_Design Workflow**".

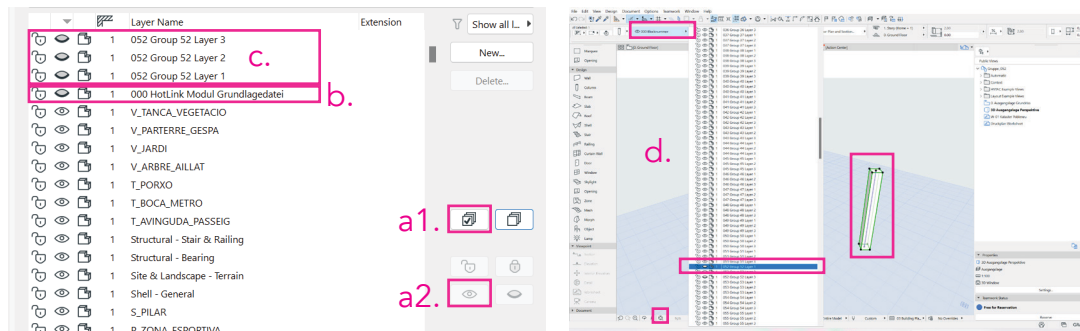




HYTAC Basics SS 23 _ Workflows

01_ Model Check: Design Adjustments

3



To check and evaluate the state of all the 3d elements of your Block, you should make sure that all the design parts are visible and distributed to the correct layers.

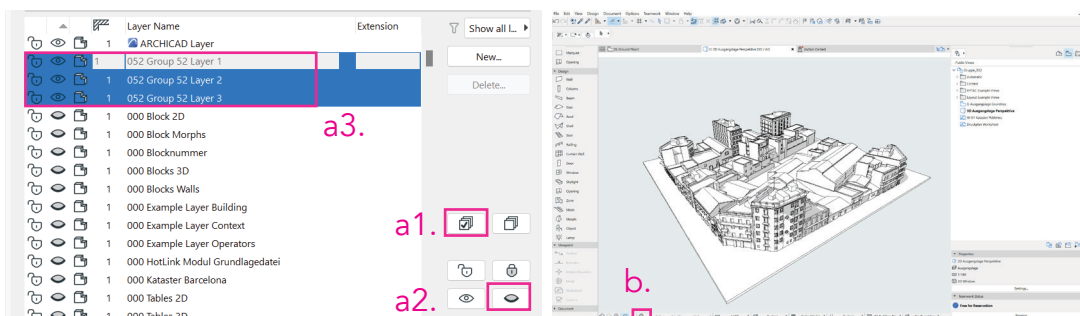
a. To do this, in Archicad, go to the **Perspective View** and open the **Layout Window** with **Ctrl/Cmd+ L**. Turn on all the layers by pressing the two icons shown at the screenshot above.(a1, a2).

b. Find and Hide the Layer "000 HotLink Modul Grundlagedatei". This Layer contains information about all the blocks and cannot be edited.

c. Find and Hide the **3 Layers** that correspond to your Block and are named by the Block number e.g. "XXX Group XXX Layer 1/2/3". All the elements should be arranged in these 3 Layers. In this step we are hiding them to check if there are design parts assigned to other Layers.

d. Click "OK" to close the layer window, click on the "Fit in Window" icon to center the view and click **Ctrl/Cmd+A** to select all the visible elements. If there are no elements, go to the next step.If there are, select each one of them and move them to the Layer "XXX Group XXX Layer 1".

4



The 3dmodel of the Block, should be designed with Walls and Slabs. If the buildings are objects or morphs (except of some cases listed below), they should be redesigned.

To evaluate the type of your Block's design elements and make corrections:

a. Go to the **Perspective View**, open the **Layout Window** with **Ctrl/Cmd + L**, select and turn off all the (a1,a2). Then, find the **3 Layers** that correspond to your Block and turn them on (**Open-Eye Icon**) (a3).

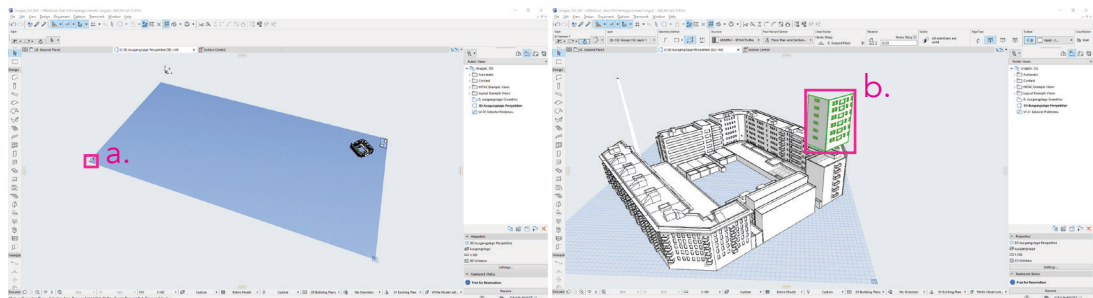
b. Click "OK" to close the Layer window and click on the "Fit in Window" icon to center all the element in the view.



HYTAC Basics SS 23 _ Workflows

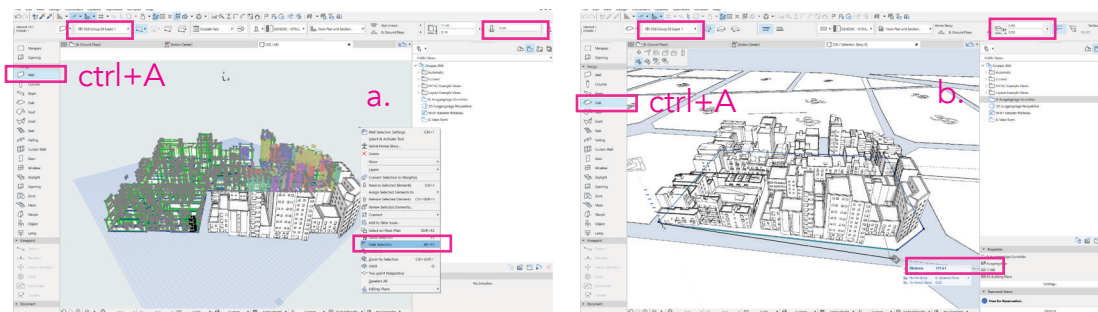
01_ Model Check: Design Adjustments

5

**Delete or Move random Elements:**

- a.** If there are random elements outside your block boundaries, **Delete** them. (Del or Backspace)
- b.** If there are parts that are away from their true location, select them and **move** them (**Ctrl+D**) to their correct position. **Check all the block carefully.**

6

**Evaluate and Correct the different types:**

- a.** To check the **Wall-Elements**, select the **Wall Tool** and press **Ctrl/Cmd + A** to select all of them. While all the Walls are selected, change the Layer of the elements to "**XXX Group XXX Layer 1**" from the dropdown menu at the **Properties Bar** on the top-left of your screen. Press **Alt+F5** or right-click and select **Hide Selection**, to hide the updated elements.
- b.** Follow the same process for all the Slab-Elements. Select them all with **Ctrl/Cmd+A**, change the Layer to **Layer 1** and the thickness to **0.4m** and press **Alt+F5** to **Hide Selection**.
- d.** The rest of the elements that are still visible are designed as **Morphs, Objects** or include **Solid Element Operations**. You can double-check that by selecting the **Morph** or the **Object** tool and pressing **Ctrl/Cmd + A**, like before. **These objects don't meet the Design Guidelines and need to be re-modeled as walls and slabs.**

You can keep or create **Morph** elements **ONLY** for the cases listed below.(step 7 & 8)

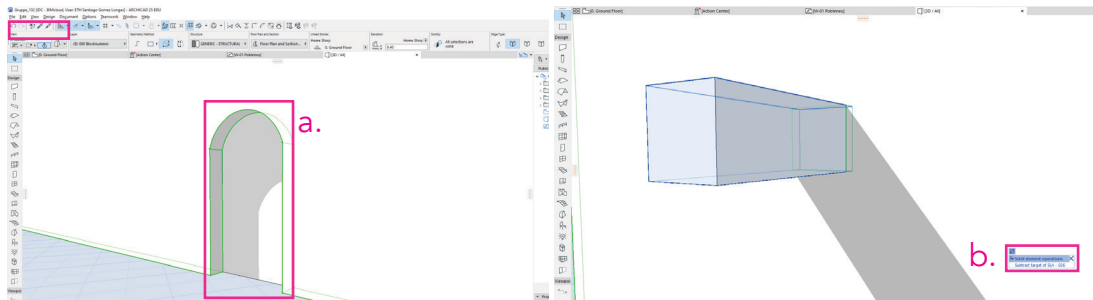
>> In case re-modelling is necessary, please follow the steps and instructions in the Document "02_Design Workflow".



HYTAC Basics SS 23 _ Workflows

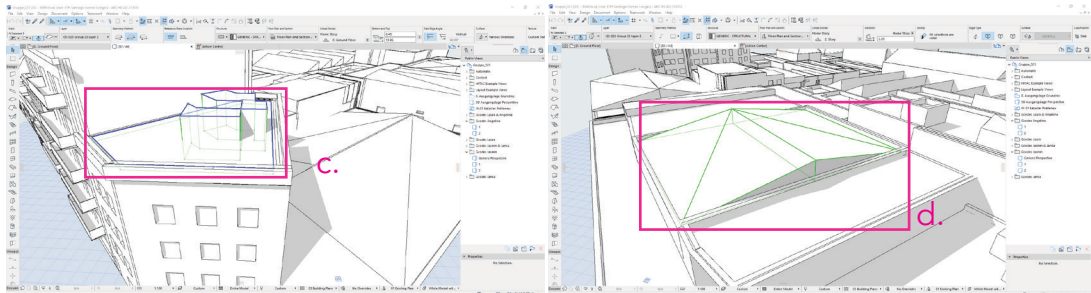
01_ Model Check: Design Adjustments

7

**Exceptions: When a morph is necessary:**

a. If the morph is a wall that contains **irregular openings or complex features**, you can keep it as a morph. Change the Layer of the element to "**XXX Group XXX Layer 1**".

b. In case a wall has **Solid Element Operation**: 1) if the openings are simple, you should redesign this element as a wall with openings 2) if the openings are irregular, convert the element to **Morph** and change its Layer to "**XXX Group XXX Layer 1**".

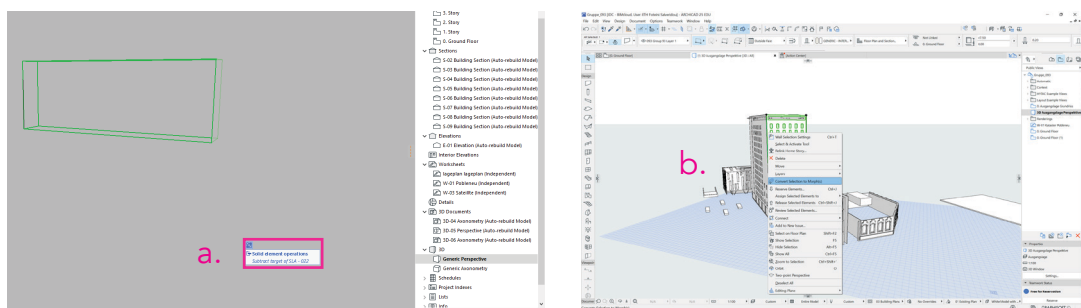


c. If a roof or slab have a simple design, they should not be a morph and must be redesigned

d. The **Morph** is accepted if the roofs or slabs are irregular or tilted.

e. In case a roof or slab have **Solid Element Operation** convert them to Morphs.

8

**Solid Element Operations:**

a. When you select the wall or an element that contains a solid element operation an **Icon with four squares** will appear. By clicking it you can see any additional information of the **Solid Element Operation**. To find the Operator you should search in the **Hidden Layers**.

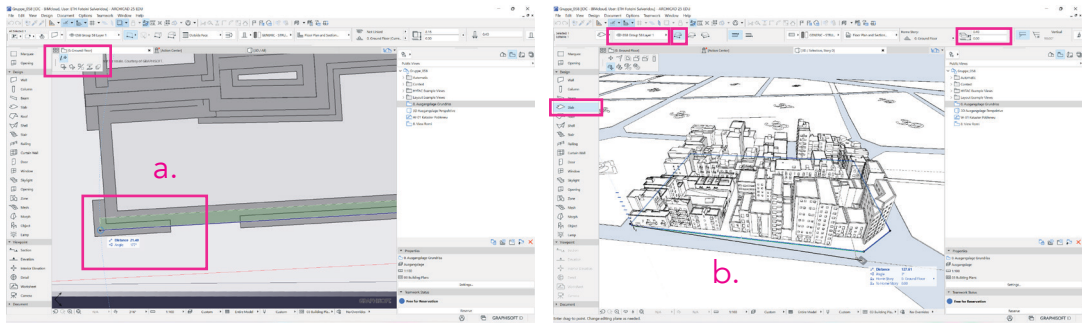
b. If the design is simple, redesign the element as wall or slab with openings. If the design is too complicated, select the element, right-click and **convert it into a Morph**.



HYTAC Basics SS 23 _ Workflows

01_ Model Check: Design Adjustments

9

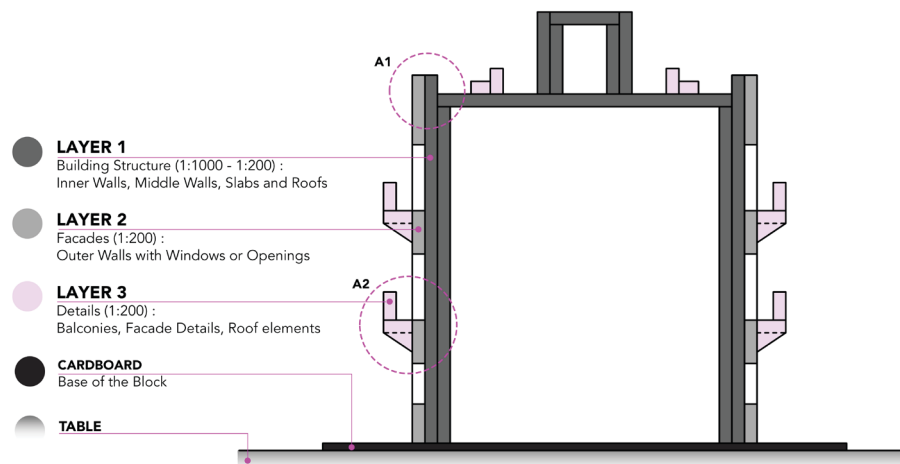
**Model Corrections:**

Even when re-modeling is not necessary, you need to refine and correct the 3d-model of your Block.

- a.** Carefully check all the elements for possible **overlaps and misalignments**. Especially after adjusting the walls' and slabs' thickness to 0.4m, make sure that you move and stretch the elements to create a proper 3-layer structure like in the diagram on the first page.
- b.** Create the base of your Block. If the Outline of your Block is not visible, open the **Layout Window** with **Ctrl/Cmd+ L** and turn on a the Layer "**000 HotLink Modul Grundlagedatei**" or the "**000_Blocks 3D**" to preview the El Poblenou Site plan. Using this Layer as a reference, shape the base of your Block using the **Slab Tool** and the **Polygonal Method**, set the thickness to **0.4m** and the Layer to "**XXX Group XXX Layer 1**".

01_ Model Check: Layers

10



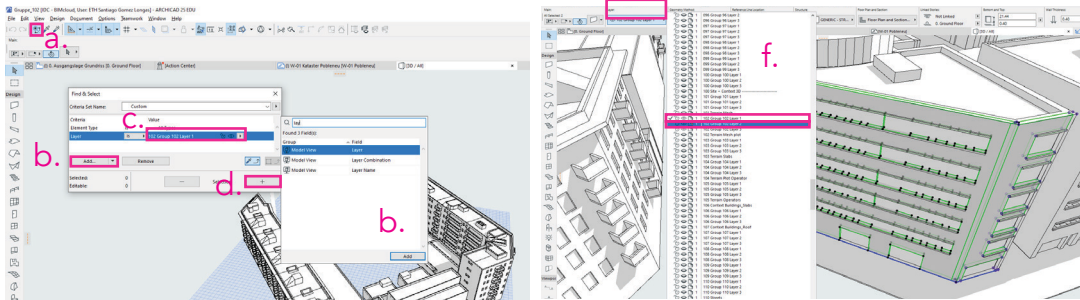
According to the **Design Guidelines**, all the elements of the 3d model should be arranged in the **3 Layers** named by the number of each Block. e.g. "**XXX Group XXX Layer 1/2/3**" This distribution is done in order to easily adjust the **Detail Level** of the 3d model. By simply changing the visibility of each Layer, drawings and 3d-printed models in different **architectural scales** can be generated.



HYTAC Basics SS 23 _ Workflows

01_ Model Check: Layers

11



In the previous steps, we assigned all the elements in **"XXX Group XXX Layer 1"** .

a. To check if there are still elements in Layer 2 and 3 you can use the **"Find & Select"** Tool from the toolbar on the top-left of your screen.

b. Click **"Add"**, select **Model View/Layer** on the pop-up window and press on **"Add"** .

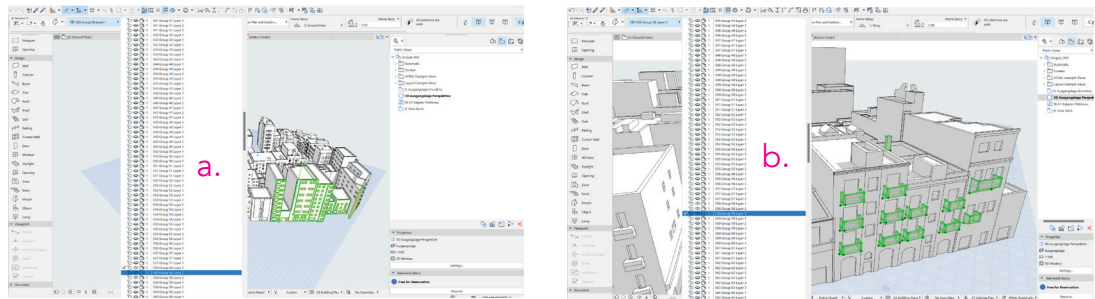
c. You can now **select which layer** you want to check using the dropdown menu.

d. Press the **"+"** button to make the selection and **evaluate** the elements distribution.

e. You can also do this using the **Layout Window (Ctrl/Cmd+ L)** . Hide all the Layers and turn on only Layer 2 or Layer 3 .

f. Assign all the found elements to **Layer 1** . To **change the Layer** of an element, select it, click on the Layer name in the **Properties Bar** and **select** the new layer name.

12



Layer Distribution The elements should be arranged according to the structure below:

Layer 1: Inner Walls, Middle Walls, Slabs and Roofs (0.4m thickness)

Layer 2: Outer Walls with Windows or Openings (0.2-0.4m thickness)

Layer 3: Balconies, Facade Details and Roof elements.

a. Select all the Outer Walls, and from the **Properties Bar** change their Layer to **"XXX Group XXX Layer 2"** . The Outer walls should have 0.4m thickness. You can check this at the Properties bar on the top of your screen. In case the thickness is 0.2m, you can leave it as it is. Make sure that the walls are aligned and the corners are designed correctly.

b. Select all the balconies, facade details and small roof elements and assign them to **"XXX Group XXX Layer 3"** .

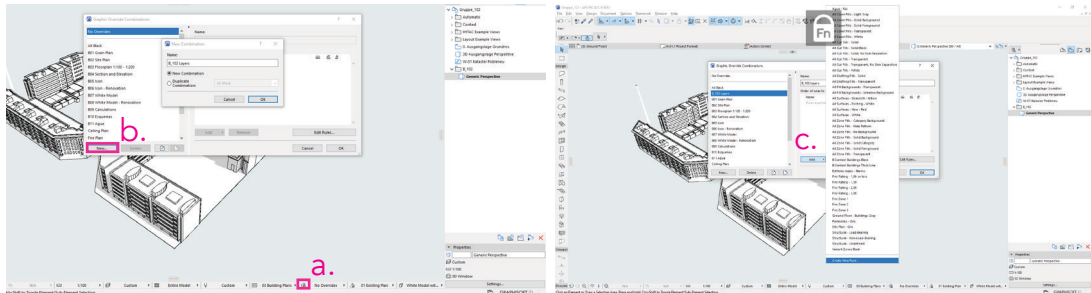
c. To check if you have followed the previous steps correctly, using the **Layout Window (Ctrl+ L)** hide all the Layers **except of Layer 1** . You should now see only the Inner Walls and Slabs. All these elements should have a thickness of **0.4m** . If they don't, change it from the **Properties bar** . Move and Stretch the walls to fix the corners and overlap issues.



HYTAC Basics SS 23 _ Workflows

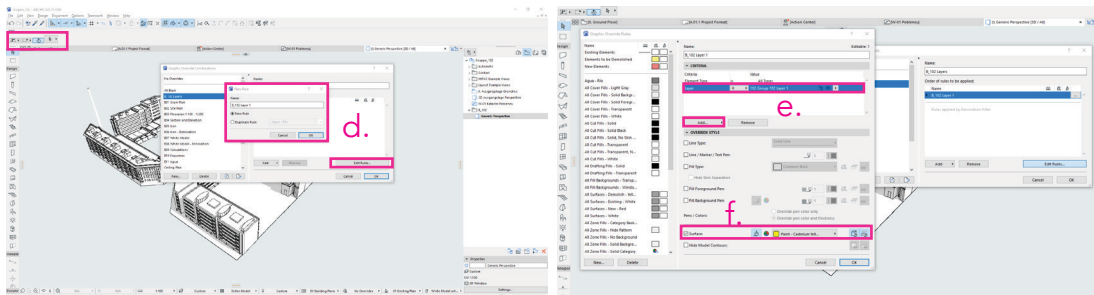
01_ Model Check: Layers

13



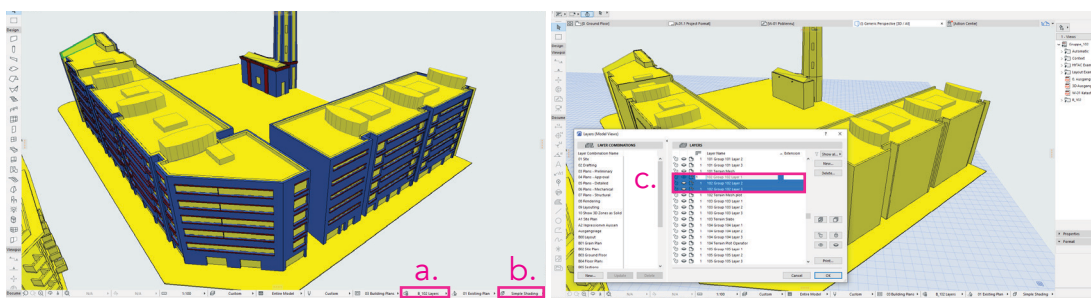
To check if the Layers are distributed correctly, you can create a **Graphic Override Combination**.

- Click on the **"Graphic Override"** icon at the bottom of your screen.
- Click on the **"New.."** button and create a **New Combination** named after the number of your block.e.g. B_102 Layers. Press **"OK"**.
- Click on **"Add"** and **"Create New Rule..."**



- Name your Rule after the number of your block e.g. B_XXX_Layer 1 ,Click **"OK"** and then select **"Edit Rule"** .
 - Go to the **Criteria Table**, click on **"Add"** and select **Layer**. Then, from the dropdown menu, find and set the first layer of your Block e.g. **"XXX Group XXX Layer 1"** .
 - Check the box of **"Surface"** and define a color/Material e.g. Paint - Cadmium.
- Create two more rules for the other two layers.** (steps c,d,e,f)

14



To preview the layers of your model using the rules created above:

- At the bottom of your screen, select the **Graphic Override Combination** you created
- Set the **3D Preview Style** to **"Simple Shading"** .
- From the **Layout Window (Ctrl/Cmd+ L)** you can Hide and Show the Layers 1,2,3 to check the Layer distribution.