

Layers

The layers all start with 000 because when you import a CAD file (dwg, etc..) it brings in all it's layers too and using 0001 keeps them all at the top. By using the template file all the standard layers have already been created, but you can still expand upon this with your own additional layers.

IMPORTANT - Layer 0 is always present and all drawing initially happens on this layer. Item are then grouped and moved to the correct layer. Do not draw directly onto the correct layer.

If you hide a layer, any geometry originally created on that layer that has been grouped will be hidden as well, regardless of which layer the group currently resides on.

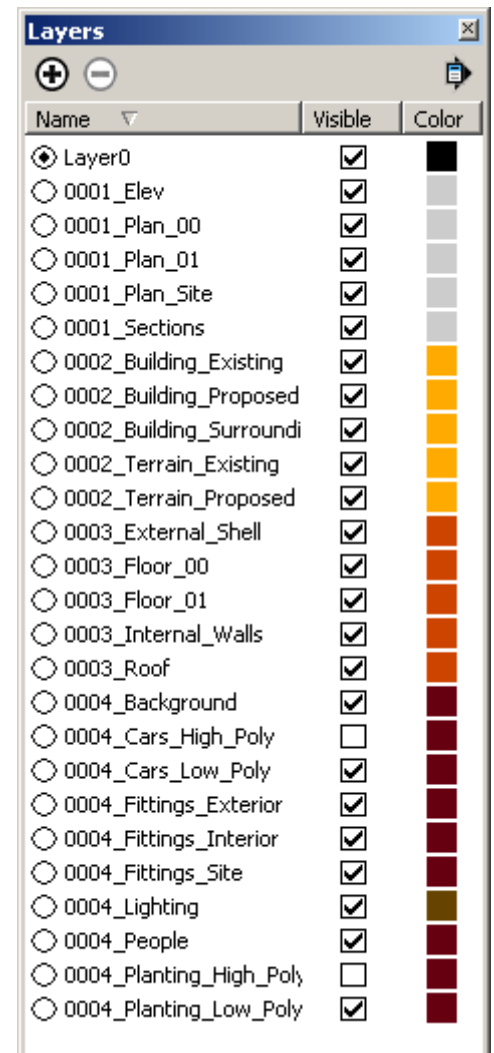
The easy answer is to always leave Layer0 selected as the active drawing layer. Use 'Entity Info' to move grouped objects to their correct layer.

The layers are separated into four sections:

- 0001 = imported reference drawings (OS or existing dwg files)
- 0002 = masterplanning scale (entire buildings, terrain)
- 0003 = building structure (walls, floors, roof)
- 0004 = scenery (furniture, cars, people, trees)

Always add objects in 0004 layers last, as they slow they model right down if introduced too early and waste time.

Item	description
Layer0	The active drawing layer
0001_Elev	Imported CAD only - elevation
0001_Plan_00	Imported CAD only - ground floor
0001_Plan_01	Imported CAD only - first floor
<i>0001_Plan_02</i>	<i>Additional floor layers to be created by user</i>
0001_Plan_Site	Imported CAD only - siteplan
0001_Sections	Imported CAD only - sections
0002_Building_Existing	Masterplanning - existing primary building
0002_Building_Proposed	Masterplanning - proposed building
0002_Building_Surrounding	Masterplanning - surrounding building
0002_Terrain_Existing	Masterplanning - existing terrain
0002_Terrain_Proposed	Masterplanning - proposed terrain
0003_External_Shell	External walls
0003_Floor_00	Ground floor
0003_Floor_01	First floor
<i>0003_Floor_02</i>	<i>Additional floor layers to be created by user</i>
0003_Internal_Walls	Internal walls
0003_Roof	Roof
0004_Background	Layer for background scenery images
0004_Cars_High_Poly	High detailed cars
0004_Cars_Low_Poly	Low detailed cars
0004_Fittings_Exterior	Fences, guardrails exterior furniture.
0004_Fittings_Interior	Interior furniture, etc.
0004_Fittings_Site	Streetlights, signage etc.
0004_Lighting	Lighting elements
0004_People	People
0004_Planting_High_Poly	High detailed trees and shrubs
0004_Planting_Low_Poly	Low detailed trees and shrubs

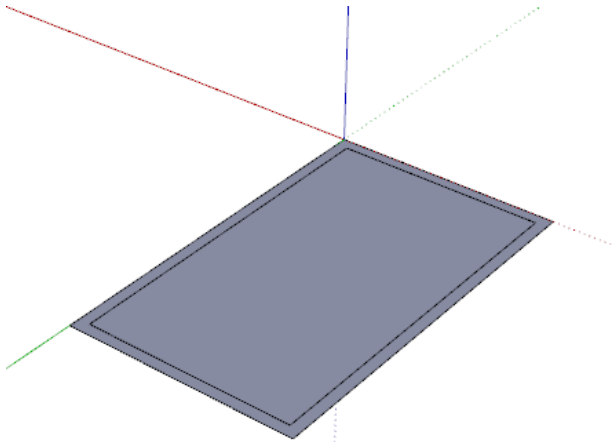


If you do not have this layer structure in SketchUp, go to Window > Preferences > Template and locate the RGP_Default template file.

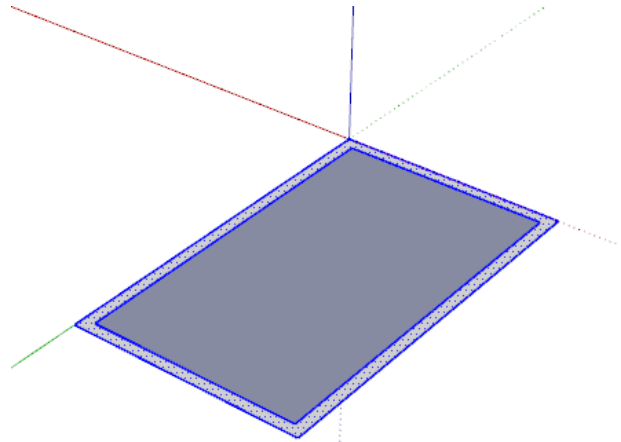
Model Structure

To efficiently work with the introduced layer structure it is essential to stick to a certain code of model organisation, which has been optimized to give you good control during modelling process and makes it easy for others to reuse the model later on.

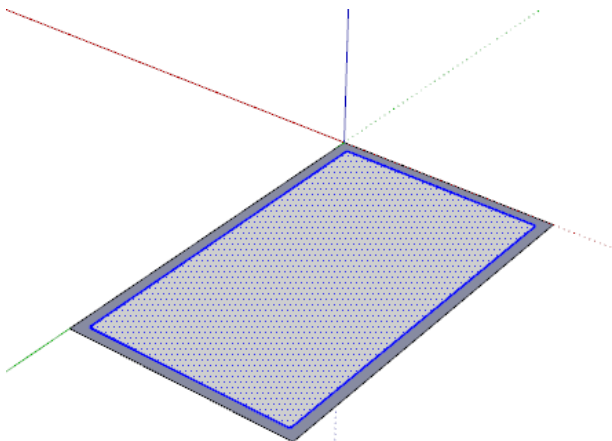
Use groups to isolate elements for quick and accurate selection, for example:



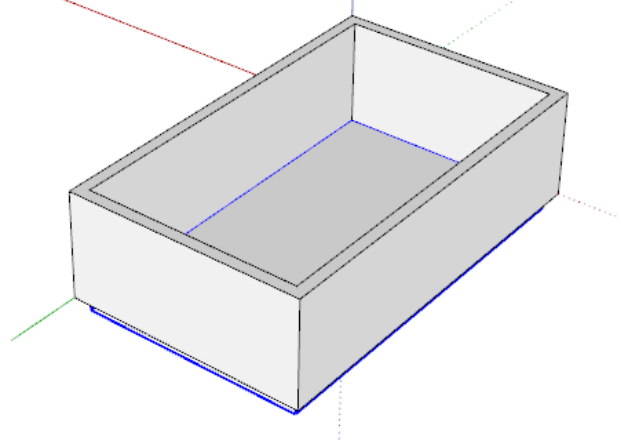
1) Basic floor with offset walls.



2) Double-click the face of the walls and 'make group'.



3) Double-click the face of the floor and 'make group'.

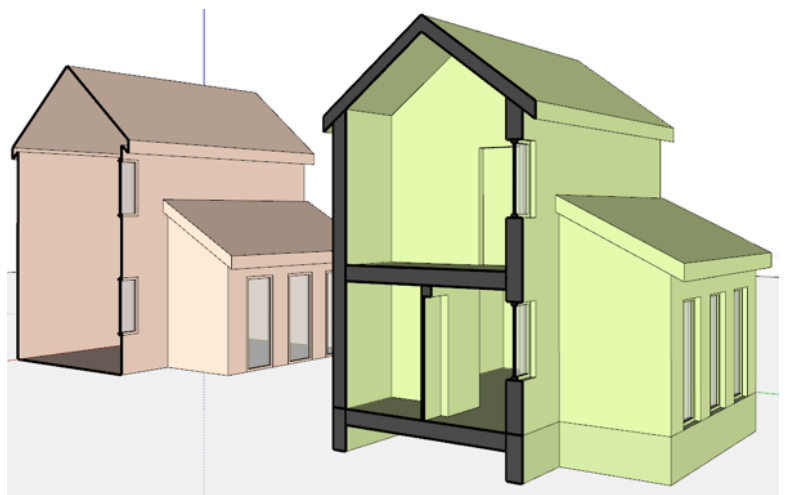


4) Both floor and walls are easily selected.

SketchUp is not really designed to be used as a solid modeller as it is primarily a face modeller, though it does lend itself to become a solid modeller through a little bit of extra work. Face modelling is the preferred method for masterplanning / massing models and IES environmental analysis. Working in solid models gives you more precision with interiors, sections are accurate and greatly helps with rendering and animation.

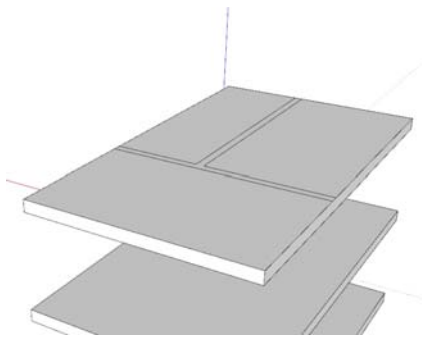
There will still be times when a quick face model is all that is required, but with practice your solid models can be generated just as quickly and will not need extra work if the model needs to go to the next stage.

The fundamental building block to working with solid models is 'groups' - which must be created at the earliest opportunity. It is better to create one group too many and explode it again, rather than try to separate complicated geometry later on.

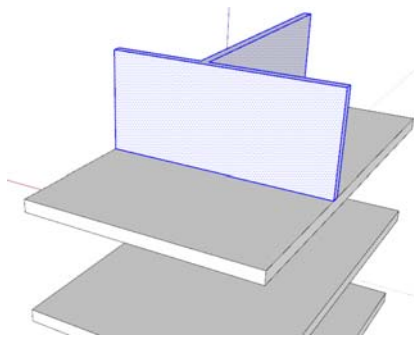


Model Structure - continued

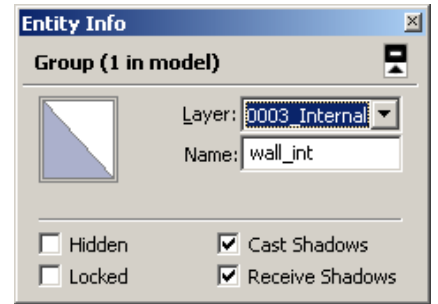
A building consists of several groups. One group for external walls, one for the roof and for each floor



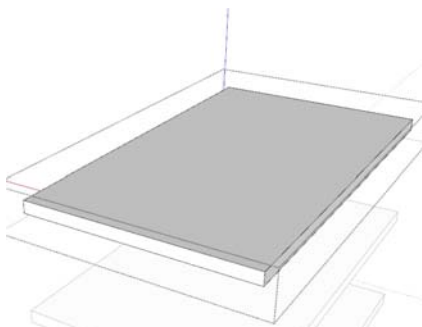
1) Draw the outline of the inner walls outside the floor group to handle it as separate element.



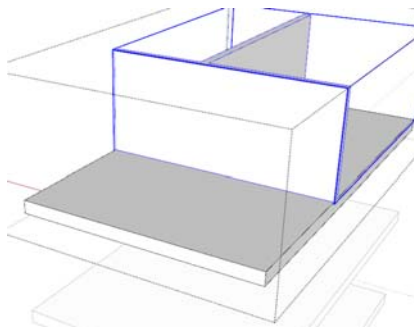
2) Then extrude the face and immediately make it a group.



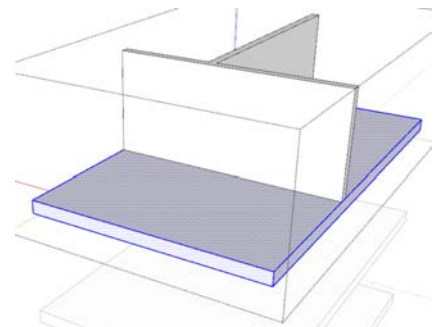
3) Name it in the Entity Info window and assign it to the right layer (Internal_Walls)



4) But if you now switch off the floor layer, the internal walls are still visible. Therefore cut them...



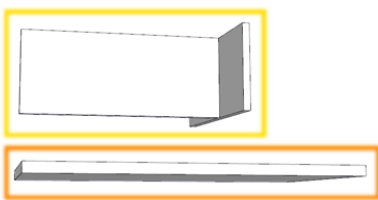
5) ..., enter the group of the floor and use 'paste in place' to move them into the group.



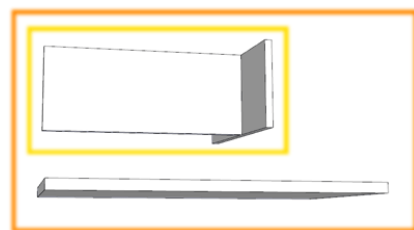
6) Within this group the walls are one element, but the floor is not. So group the floor again for easier selection.

If you switch off the layer for Internal Walls, the internal walls will disappear. If you disable the layer of the floor, the inner walls will vanish as well. Why? Because they reside within the group that is on the floor layer. Therefore the group – and everything within it – will disappear. The outermost group's sole purpose is to make everything that is placed on this floor (walls, the floor plane, furniture, people) disappear when the layer is switched off, while they all are affected by their personal layers (layers for inner walls, furniture, people...)

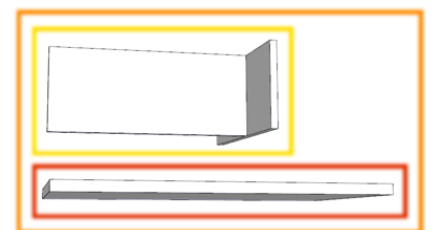
Understanding this is essential for the whole structuring system. Let's look at it in a shorter, diagrammatic way:



Two groups on separate layers
Group floor02 is on layer floor02
Group walls is on layer walls_int

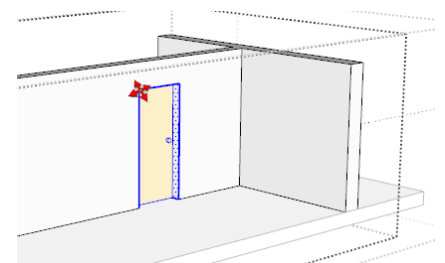


Walls cut and floor02 group opened and walls pasted in place. Both floor and walls are part of a group, but floor is no longer a separate group.



Floor is selected and regrouped. Hiding floor layer will now hide the walls as well. Hiding wall layer only the walls.

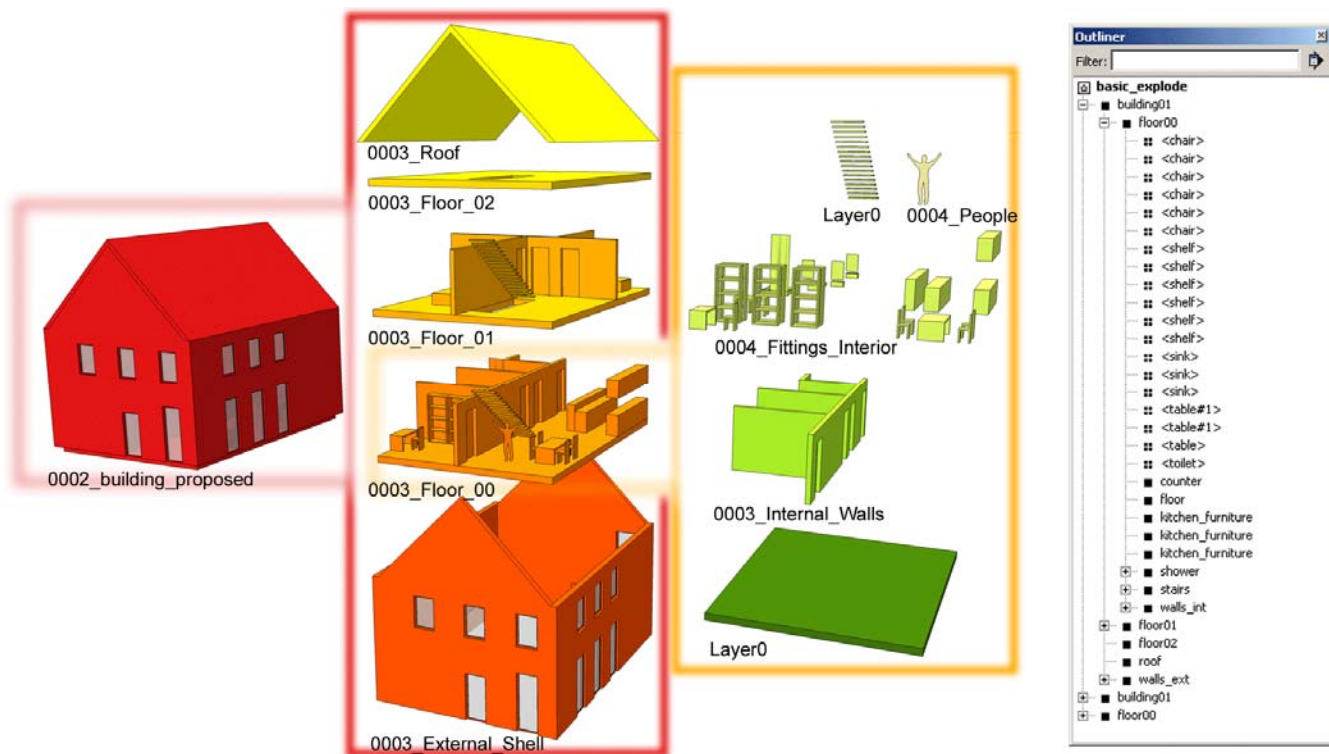
Doors and windows are usually components, as they are repeated a lot. Place them within the group of internal walls or external walls. Thus, when the adjacent layers are switched off, the windows/doors disappear as well. Leave the geometry of the walls within the wall-group ungrouped, this is so that you can easily select the component, as well as the hole in the wall to move them around. When selecting components and the opening, make sure you don't select more than you want (using the X-Ray face style can be helpful).



Model Structure – continued

The typical organisation of a building will look as follows:

- The whole building as a group or component on layer 0002_Building_Proposed
 - Within this group there are grouped elements for External_Walls, Roof and Floors, each on the adjacent layer (0003_External_Shell; 0003_Roof; 0003_Floor_00; 0003_Floor_01...)
 - Within External_Walls and Roof you find the raw geometry plus groups/components for windows/doors
 - Within each Floor group you will find a grouped element for the floor (Layer0), for Internal_Walls (0003_Internal_Walls), furniture (0004_Fittings_Interior) and maybe other elements, like people (0004_People)
 - The grouping may go even deeper (doors within the Internal_Walls, elements of doors, grouped elements within furniture components...)

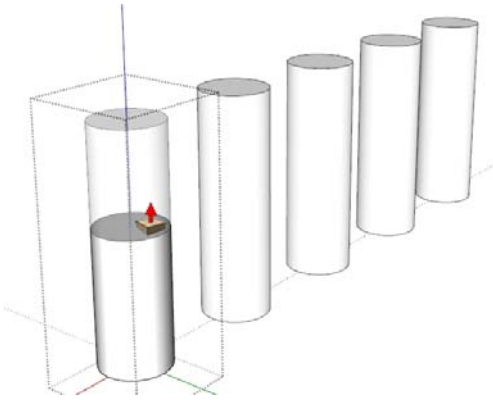


Sometimes you may have to add additional layers; if you want to switch internal doors on/off separately for instance. This is not a problem, as long as you stick to the given structure. Add any layer following the existing number coding. Elements in masterplanning scale ought to be placed in the 0002 section, additional floors go into the 0003 section and smaller elements belong to the 0004 section.

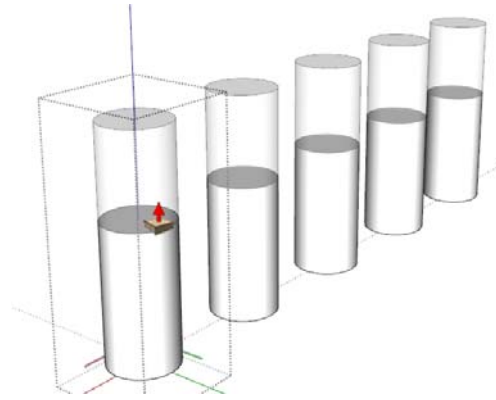
IMPORTANT - when you explode a group that was assigned to a layer, any geometry within that still was on the default layer (Layer0) will be moved to the layer of the exploded group. So be careful, that exploding a group doesn't mess up your layer assignment.

Using Components

There are two different ways of grouping elements – Groups and Components.



Groups combine a selection of elements to a single entity. Any copy of it will behave as a completely separate entity.



Copies of Components are linked. Any changes you apply to one of them, will affect all the other copies in exactly the same way.

Components not only speed up your workflow (change one window-component and all the others will be changed automatically), it also reduces file size, because SketchUp instead of saving the geometry information for each component copy merely remembers each position, orientation and transformation. Therefore as soon as an element is used more than once in a model, create a component instead of a group.

The components used in a model are sorted by name within the Component Window. Rather than keeping their default name, name components systematically. You can introduce several levels of definition; an internal door may be called *door_int01*, an external one *door_ext01*. Thus you will find all doors at one place in the Component Window, separated into internal and external doors.

Unfortunately most of the component library only works on single faces. When you use them on walls that have the correct depth (i.e. two faces) they cut the outside face, but not the one on the inside. This is because the components only cut into one face, so to use them in a solid model; you will first need to cut out the correct outer shape of the component.