

The background of the image is a photograph of the Melbourne Convention Centre at dusk. The building's modern architecture is highlighted by warm interior and exterior lighting. A prominent red sign on the right side of the building reads "MELBOURNE CONVENTION CENTRE". The sky is a deep twilight blue.

DETAIL MEASURE EVALUATE

BIM Equity

BIM Workflow Guide

DETAIL MEASURE EVALUATE

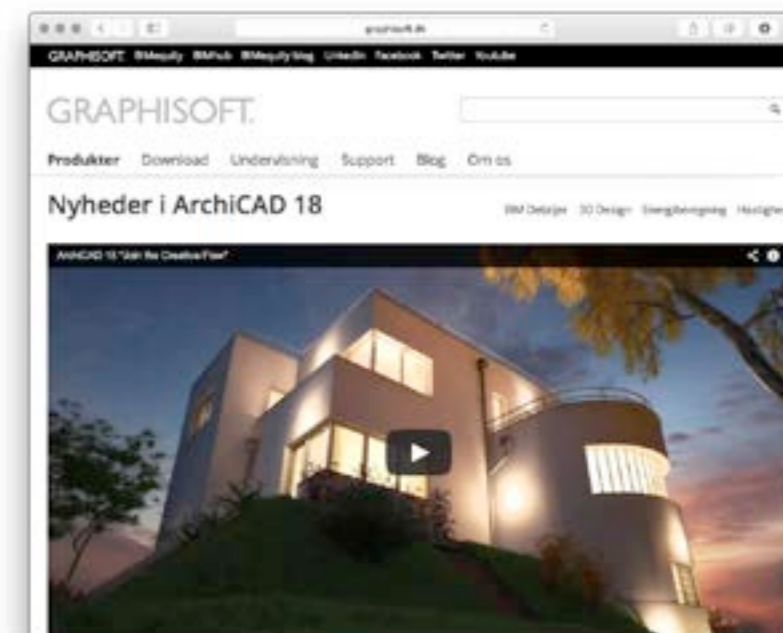
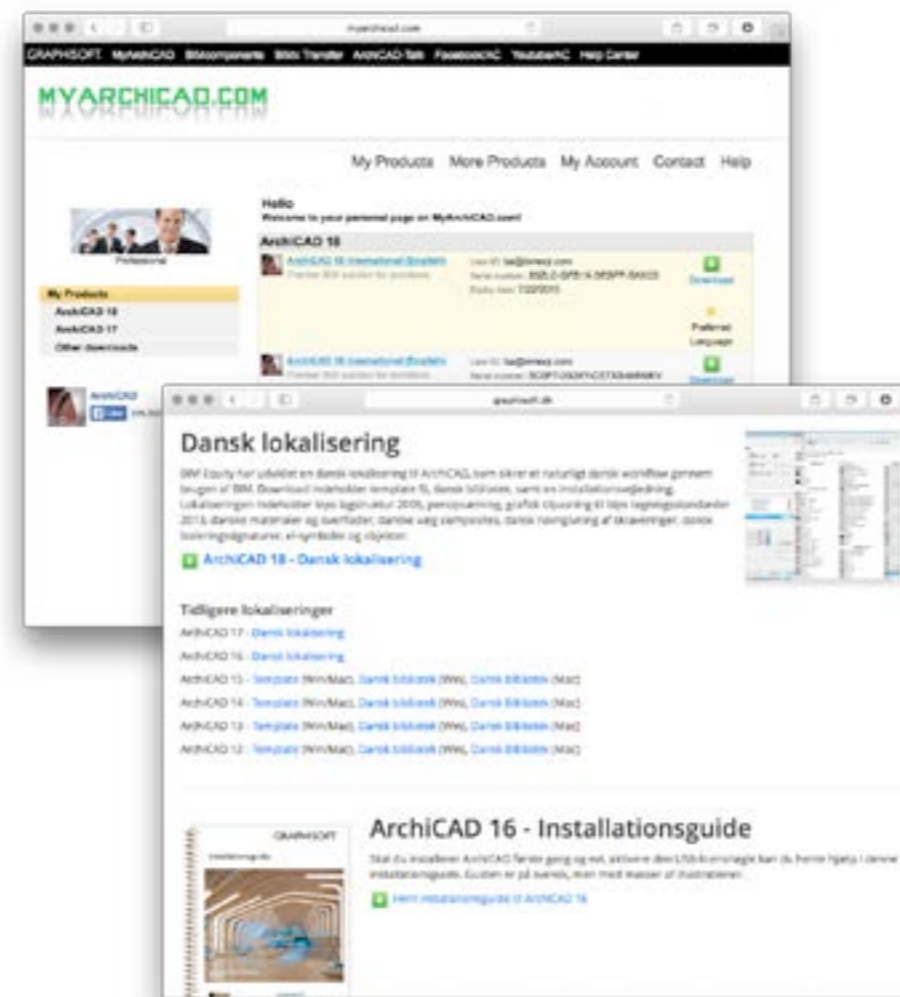
Introduction


Welcome to book 2 in the BIM Workflow Guide
This guide will train you in creating more detailed models and documentation using ArchiCAD and various add-ons.

The guide can be used both for new users for their first trainings and as a summary of the training activities.

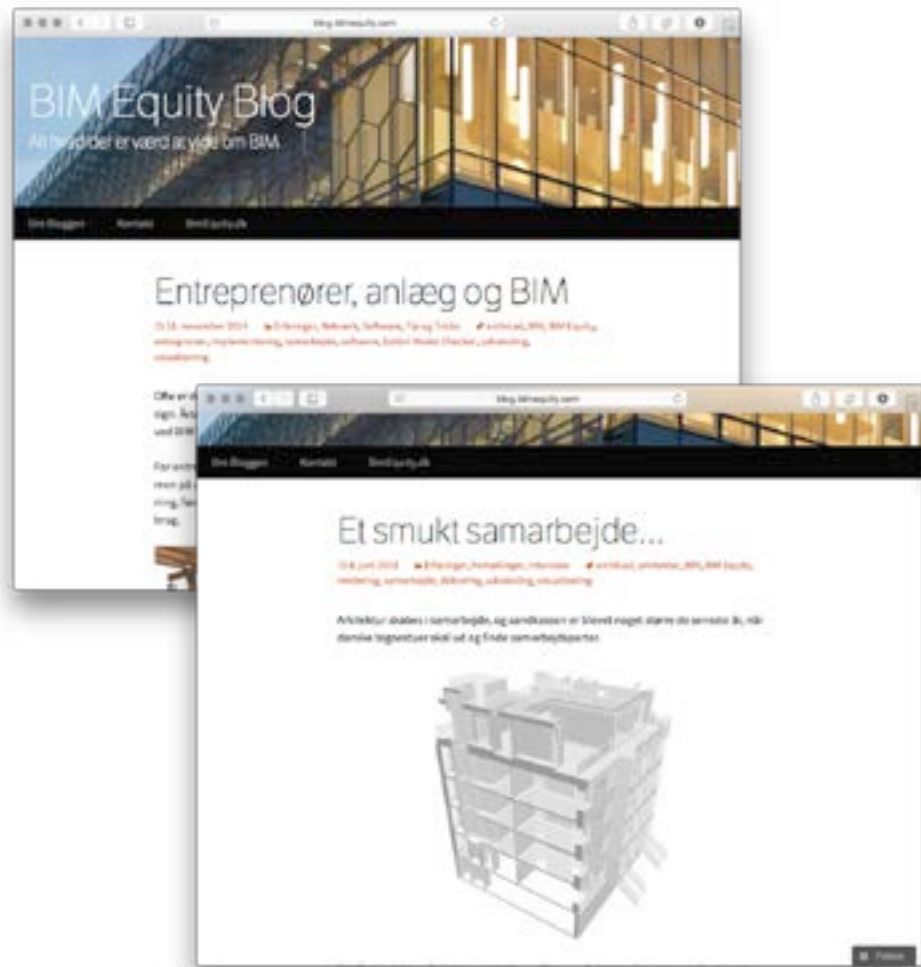
Happy BIMing!

Cover image: Melbourne Convention Centre / Woods Bagot



 BIMEquity BIM WORKFLOW GUIDE

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WELCOME TO THE ARCHICAD WORKFLOW GUIDE PART I

Tools, objects, add-ons and techniques to add detail and realism to the project are covered in this section.

CONTENTS

- 1.1 Building Materials 8
- 1.2 Composites 10
- 1.3 Priority Based Junctions 12
- 1.4 Detail Drawings 14
- 1.5 Explode a PDF 16
- 1.6 Tags: Structural Function and Position 18
- 1.7 Partial Structure Display 20
- 1.8 Renovate 22
- 1.9 Objects and detailing 24
- 1.10 MEP Modeller 26
- 1.11 ArchiFrame 28
- 1.12 Eptar Reinforcement 30

1.1 Building Materials



Imagine building an actual house brick by brick, having access to a vast selection of materials to create the finished building from.

In ArchiCAD the process is not so far from the reality, when moving from the design phase to the detailing and documentation phase ArchiCADs Building Materials really starts to shine.

By using Building Materials we create the groundwork that ArchiCAD uses for generating junctions between building elements, details, calculations and 3D Documents.

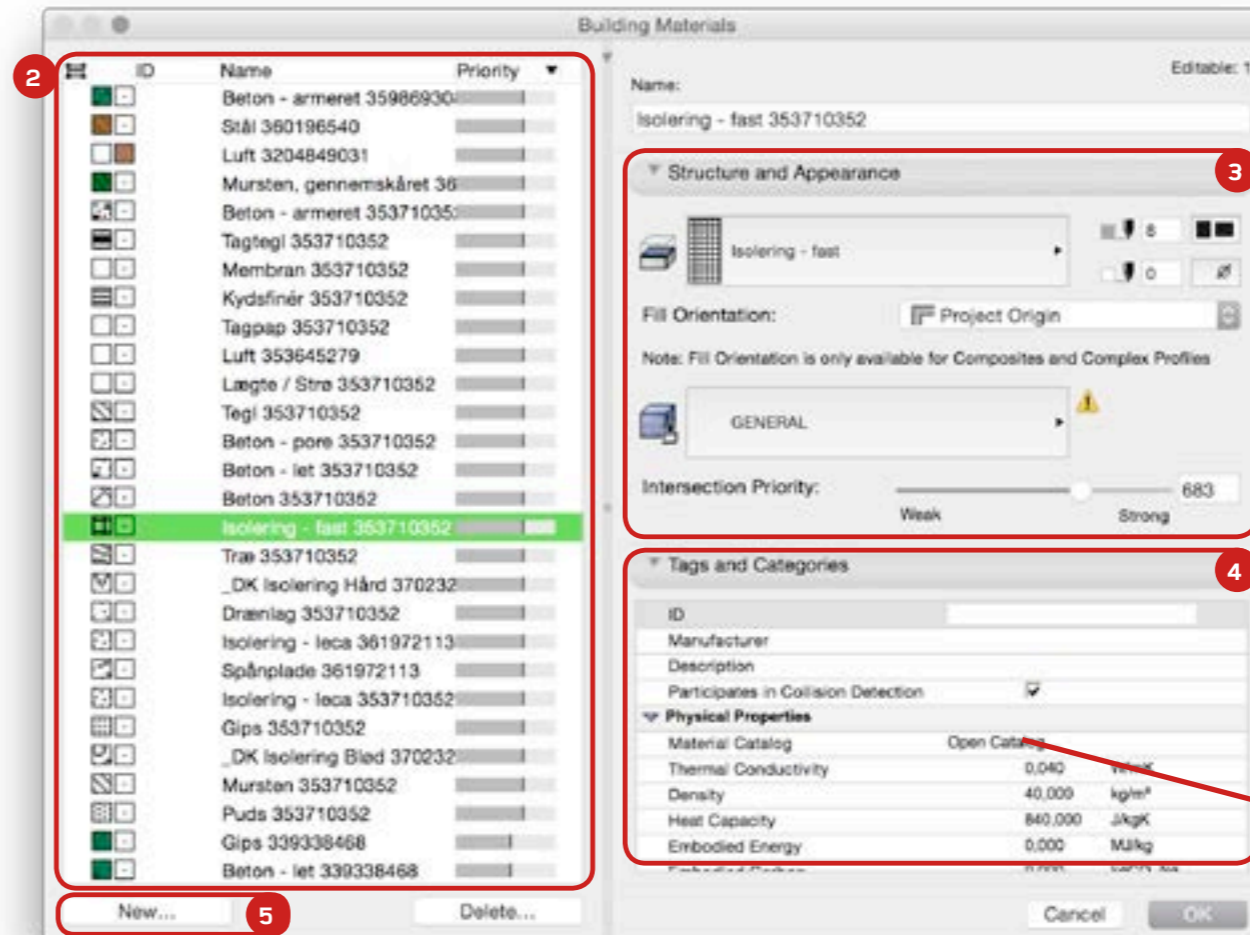
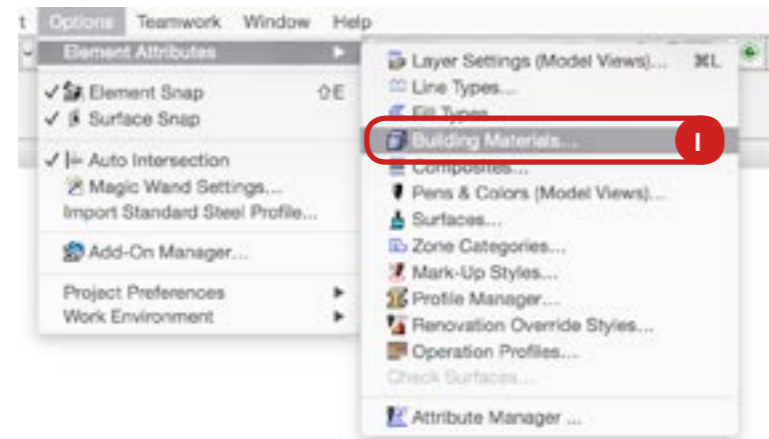
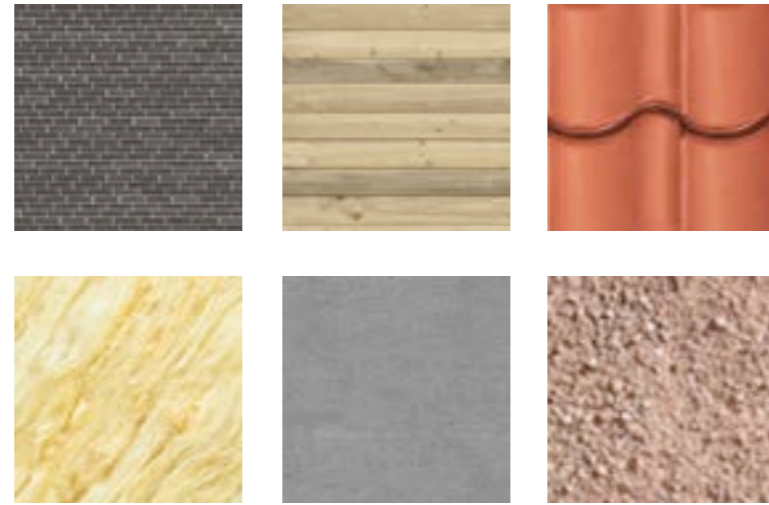
Open the Building Materials window from “Options > Element Attributes > Building Materials...” (1)

The window is divided in to three parts;
A material browser (2) that makes it manage materials, click the icons on top to sort by ID, Name or Priority (more on Priority in the next section)

Structure and Appearance (3)
This is where the hatch style, orientation and texture can be defined for the Building Material.

Tags and Categories (4)
Set useful information as Manufacturer and Description, determine if the material should cause clash errors when checking the model (air cavities should for instance not have this option enabled)
Most useful is perhaps the “Open Catalogue...” here it is possible to browse for physical properties as thermal, density and heat capacity. These are used extensively when doing energy analysis of the model.

Select any material and the window will show it’s properties. Try adding a material by clicking the “New...” button, (5) note that it is possible to start from scratch or copy an existing material.



DETAIL

1.2 Composites



Having defined the projects building materials it is now possible to start combining them into what in ArchiCAD is called Composites.

A Composite is a set of Building Materials that are put together, these layers of materials are called Skins and can have different thicknesses, linetypes, hatches and structural properties.

First open the Composite window through “Options > Element Attributes > Composites...” (1). note that the menu entry is placed logically directly below the Building Materials menu entry.

Top most the Composite options window shows the currently selected composite (2), options to create a new composite, duplicate the current, rename it or delete it (3).

The next area is the “Edit Skin and Line Structure” (4) This is the main area for configuring the composite. Click “Insert Skin (5) to add a new layer to the composite, select what Building Material the skin is made of,(6) set the thickness (7), the separator lines between the adjoining skins (8) and the end lines of the skin, these will show when the composite is intersected by a door or window (9). Visual feedback is provided in the area to the right.

Now Type parameter, determine if the skin is a load bearing “Core” element, a “Finish” or “Other” kind of material. It is important to consider this for later use. (10)

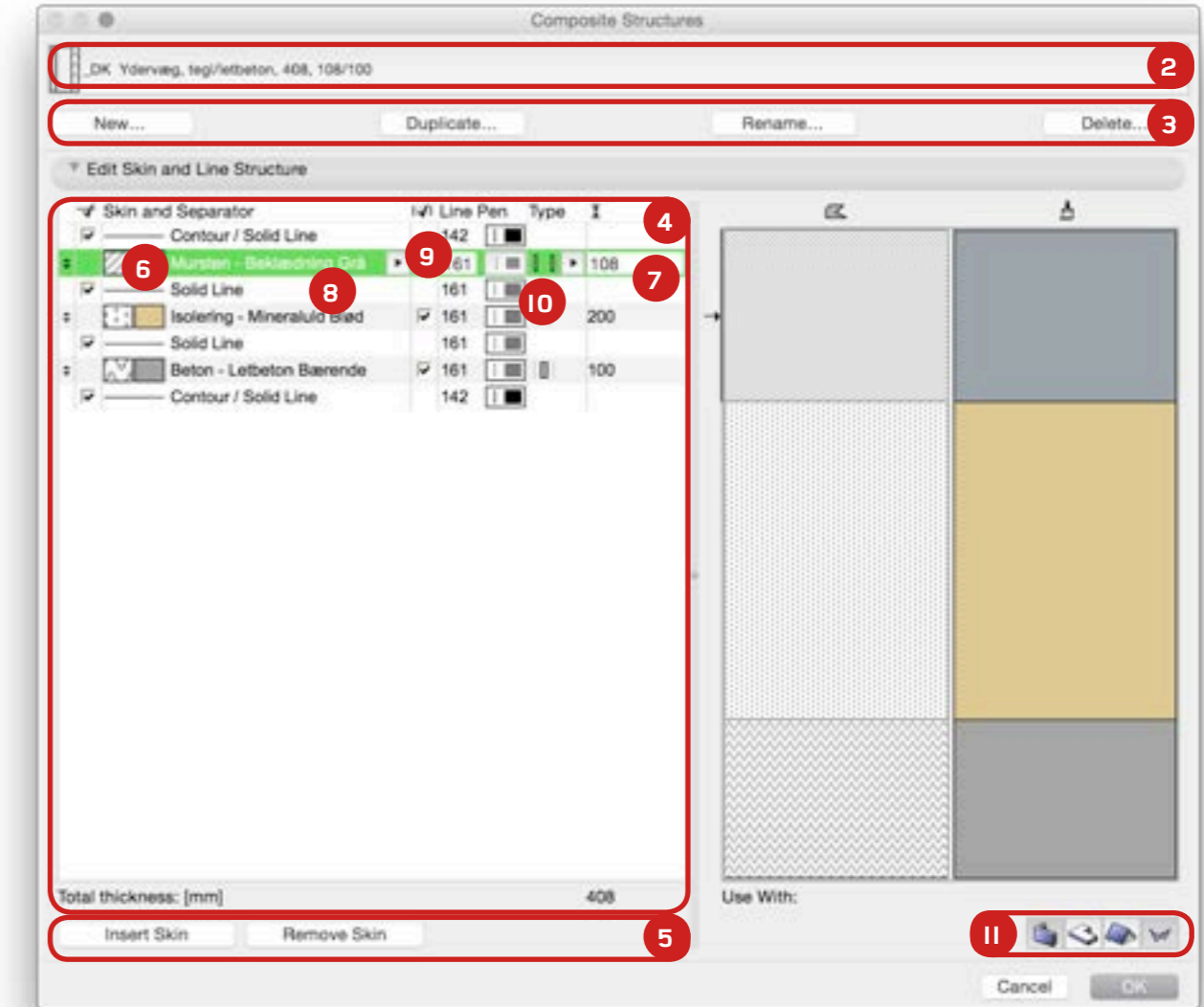
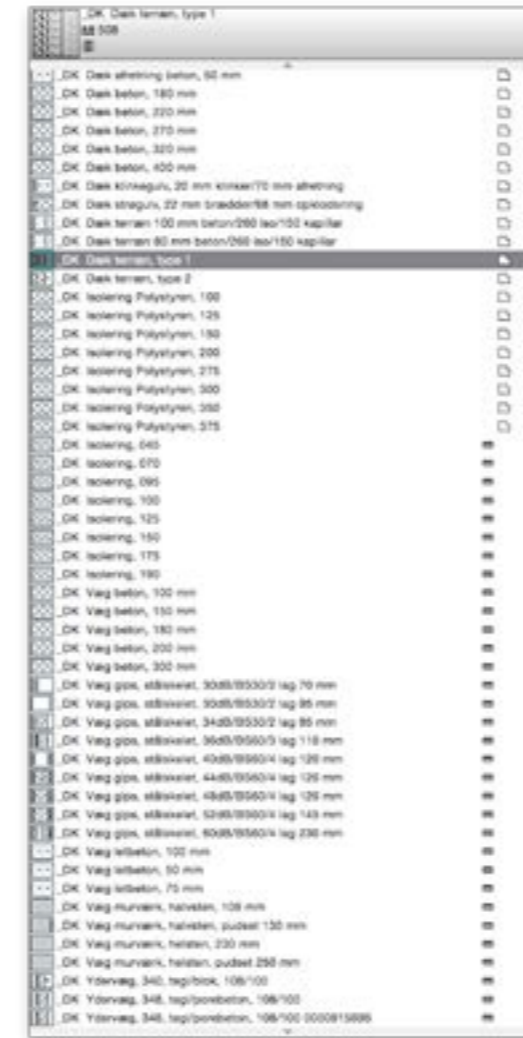
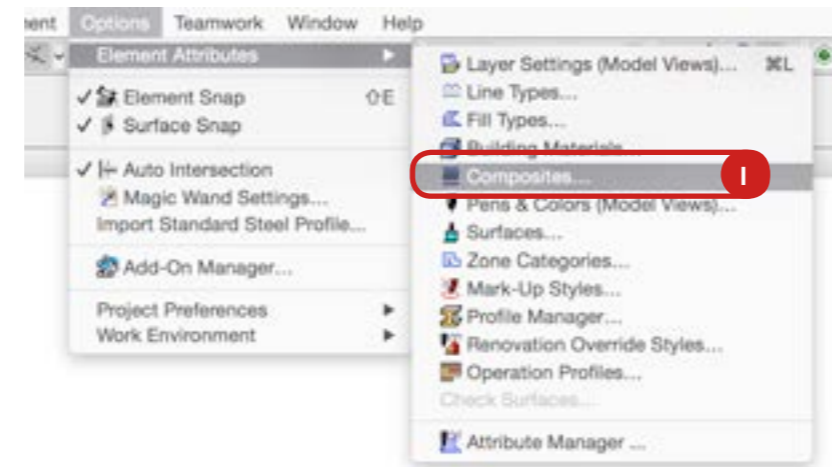
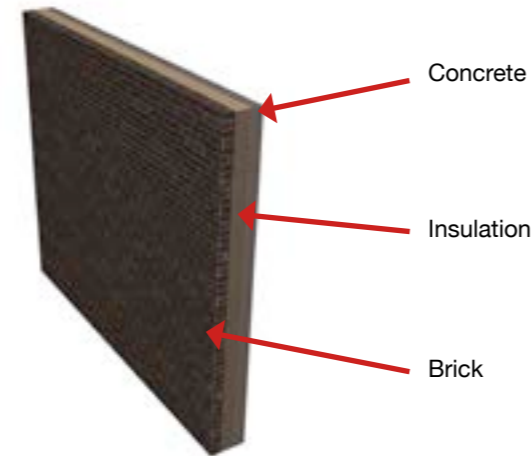
Finally set what kind of building elements the Composite can be used with (11)

Press “OK” to save the Composite.

Now select the wall tool with the “Structure” setting set to “Composite”, select the newly created Composite and draw the wall. It is now a simple matter of selecting the walls from the design phase and adding Composites as required.

Switching to 3D will also show the updated walls with materials and thicknesses.

Using the “Composite” option also enables more options in the “Reference Line Location” dropdown - now the wall can be drawn using the skin or skins set to “Core” as a reference.



1.3 Priority Based Junctions

Now that the project are being created using proper Building Materials and Composites it is time to see how these interact when intersecting and automatically creating junctions.

As mentioned in the previous section on Building Materials, there exist a parameter called "Priority" re-opening the Building Materials window and looking in the scrolling list of materials click the text "Priority" to sort the list by this (1). The list now reflects how materials intersect - the bar represents the "Intersection Priority" also found to the right (2).

Making the Intersection Priority higher will make the material "stronger" enabling it to cut through other and weaker materials automatically creating correct sections, details and more.

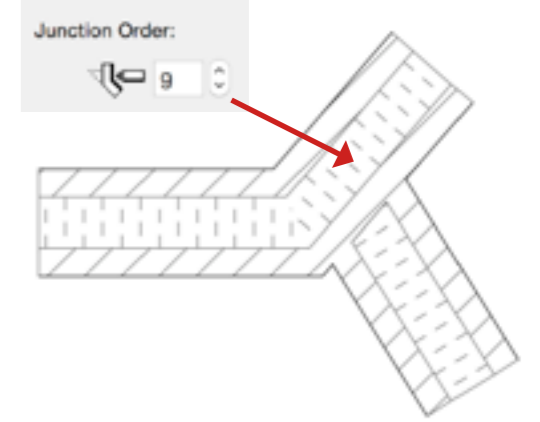
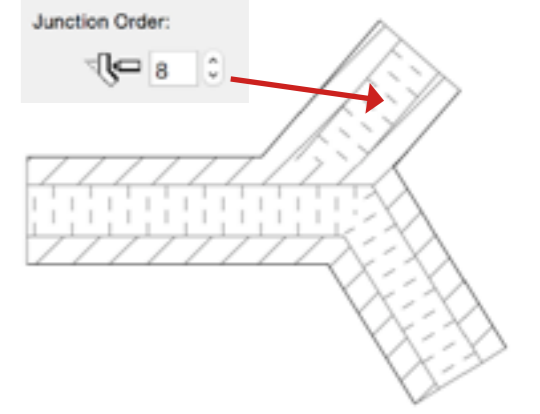
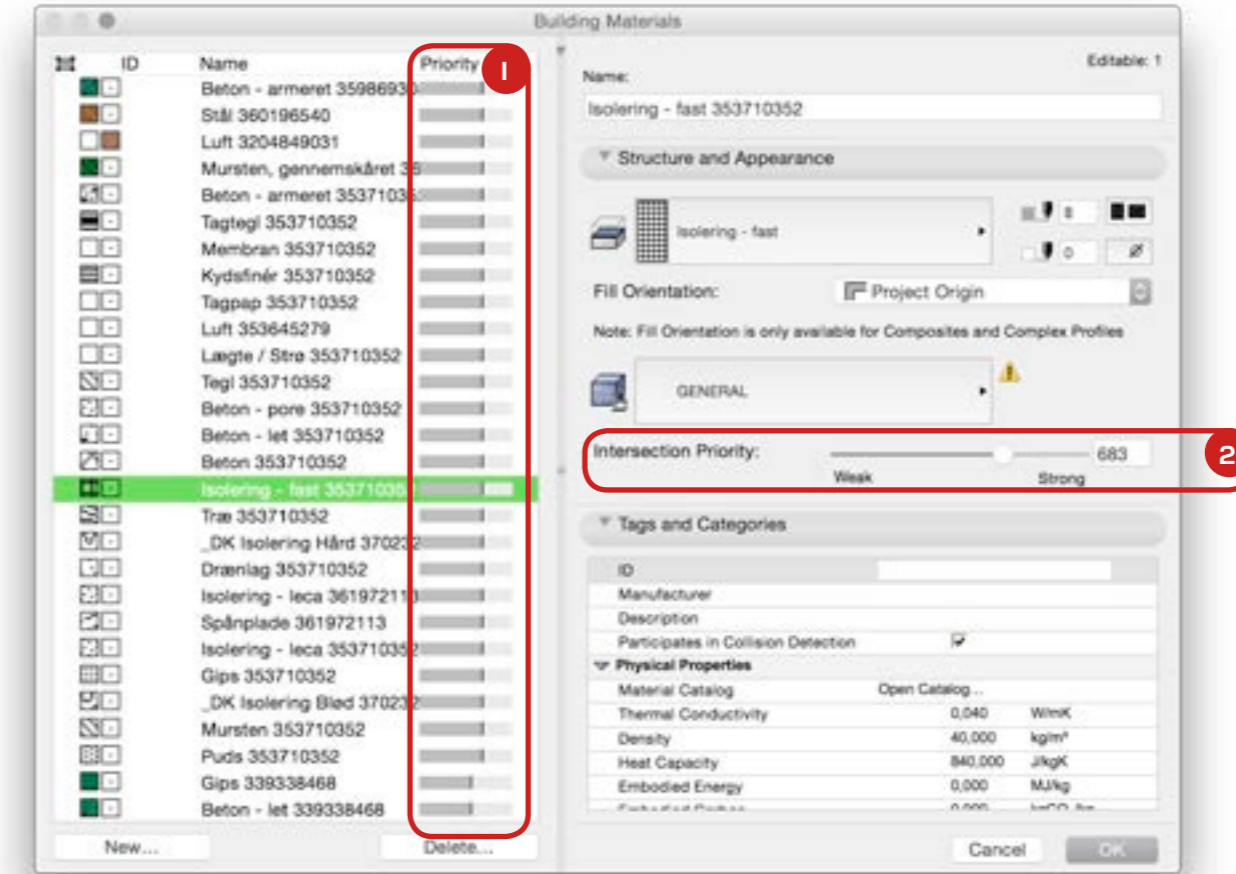
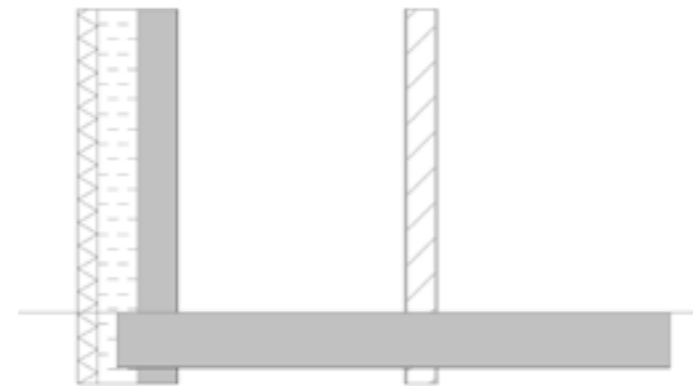
The index goes from 0 to 999 so there should be ample room for custom materials.

Dragging a material in the list will also change it's Intersection Priority, making the process of renumbering other materials a nonissue.

Notice that the currently active Composite will have it's Building Materials highlighted in green in the list in Building Material window making it easy to locate and edit them.

Try drawing walls with different composites and see how they interact.

If walls do not connect as expected, use the "Junction Order" option in the wall tool settings, giving the wall a higher number will give it "right of way" enabling it to cut other walls, the same way a material can have a higher Intersection Priority.



DETAIL

I.4 Detail Drawings



When reaching a certain point in a project details start to matter. ArchiCAD has a dedicated tool for this aptly named the Detail Tool.

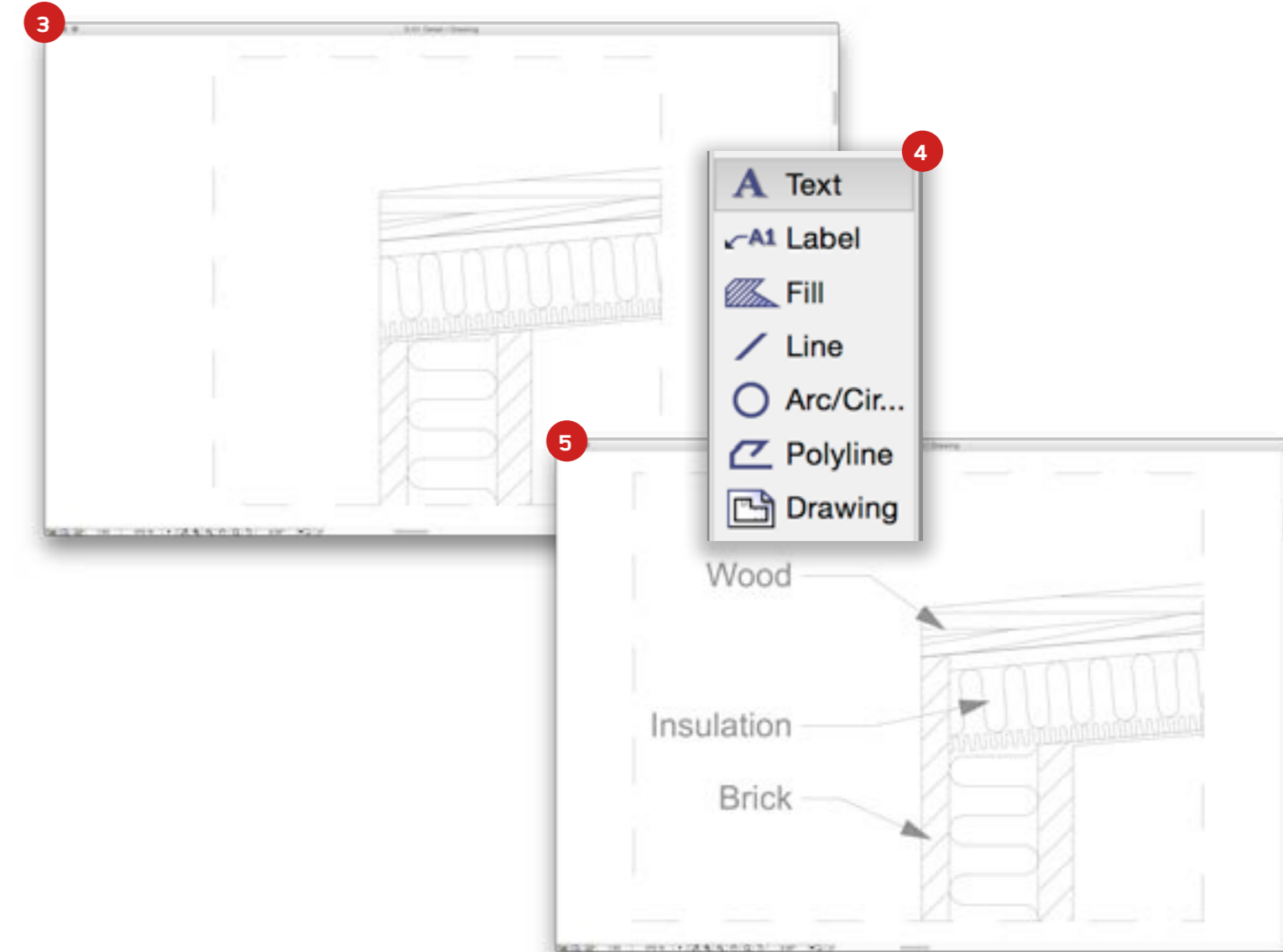
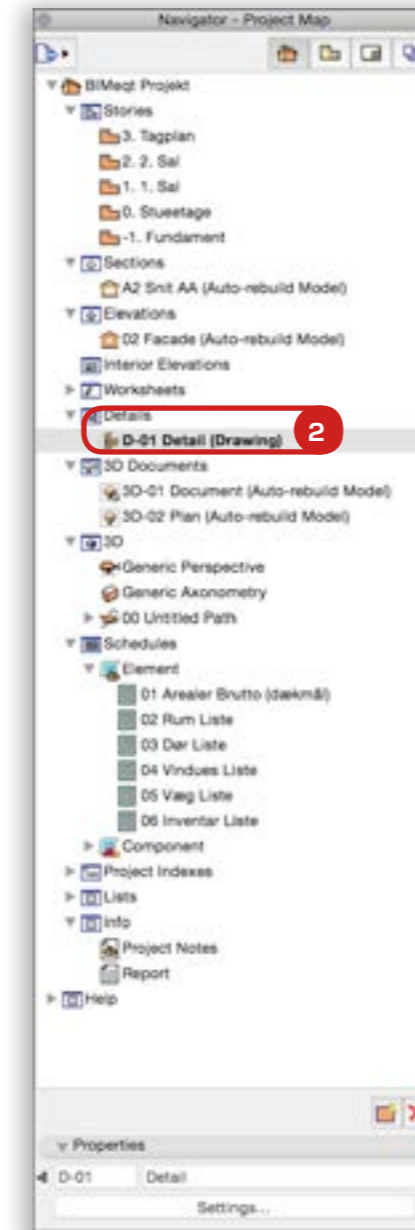
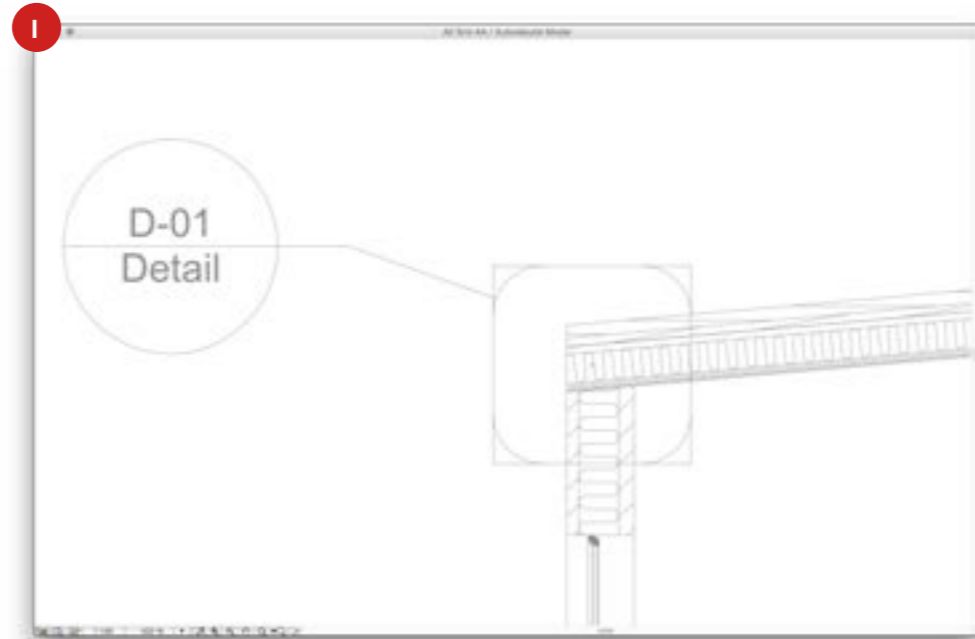
Activating the tool from the Tool Box palette changes the cursor to a crosshair and the tool tip in the Status bar asks you to “Enter First Corner of Rectangle Detail Polygon”. Clicking in a plan, section or elevation starts drawing the area from which the detail will be created. Drag the rectangle to the desired size and click again. The third click places the marker of the detail drawing. (1)

In the Navigator a new drawing has been added to the Project Map in the “Details” folder (2). Double clicking the detail drawing will open it and show you the part of the model defined by the detail marker. Note that the objects shown is not 3D but 2D since details are usually easier to read in 2D. (3)

Now the detail drawing can be refined even further using the 2D tools from the Document part of the Tool Box eg. fills, lines and drawings. (4+5)

Detail drawings are not automatically updated from the main project, this is because the main project usually changes more than single details and updating them automatically would potentially break the changes made manually with the 2D tools. If for some reason updating is needed for a specific detail, right clicking in the detail windows and selecting the command “Rebuild from Source View” will update the detail drawing. Note that any added fill or lines will be put in the back of the updated geometry.

It is also possible to drag in a PDF from a manufacturer and “explode” it into lines and fills for use in the detail drawings, this will be demonstrated in the next section.



DETAIL