ARCHLine.XP® 2019

INTERMEDIATE COURSE
INTERIOR DESIGN

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What is ARCHLine.XP®?

We highly recommend the Intermediate Training Tutorial to our potential and current ARCHLine.XP® users who successfully completed the ARCHLine.XP Preliminary Courses.

The course contains seven workshops:
Importing architectural plans, Save and manage large-size projects, KBB - Modelling and furniture design, Upholstered furniture, Stairs and railing, Roof design, Visual design.
After accomplishing these workshops, you will be able to execute more challenging and advanced design tasks.

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Start your design and work with ARCHLine.XP®

This training material is a guidance to help you to become familiar with the typical interior design examples, and enables you to create more complex designs. To get the most out of the tutorial, run the ARCHLine.XP® program and the appropriate YouTube video to try those features and tools which can be found in this training material.

To complete tasks please download **WORKSHOP PROJECT – INTERMEDIATE** from our website and install to your computer. This contains all projects for Intermediate workshops.

https://www.archlinexp.com/education/workshops/workshop-application-intermediate

Workshop 1: Importing architectural plans

1. Workshop: Importing architectural plans

During this workshop we look through all options how we can import an architectural floor plan into ARCHLine.XP then create a 3D architectural model on that basis. The time to complete the model depends on the imported file type. Going down on the list below the time significantly lessens.

We can get the floor plan in the following formats.

- image as .jpg, .png format
- raster image as PDF format
- geometry as PDF format
- as DWG drawing
- as IFC model

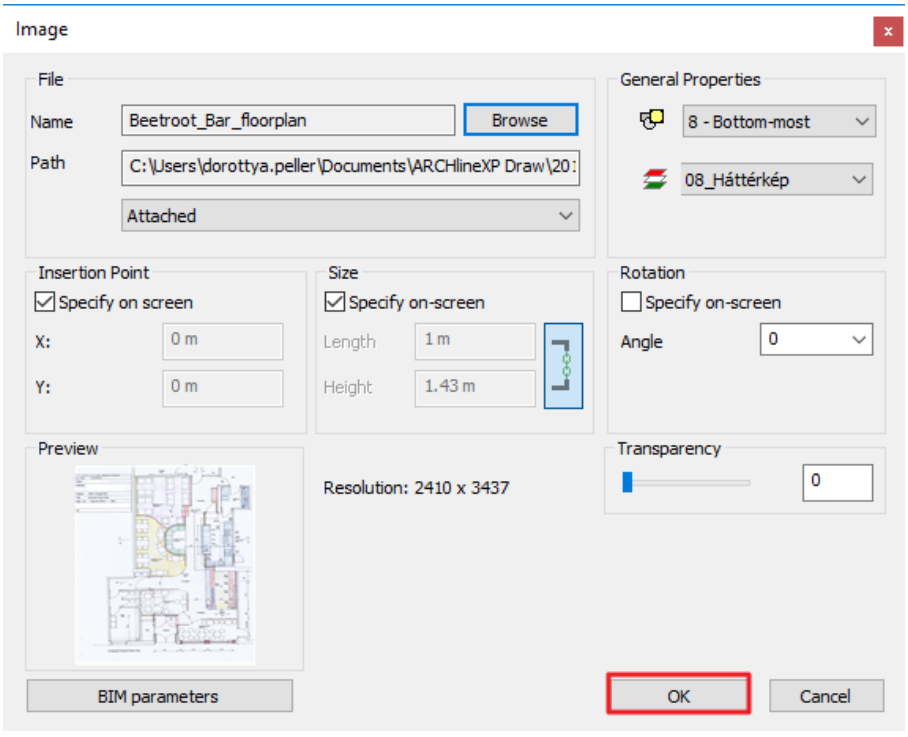
Open your browser and watch the following Video tutorial:
www.archlinexp.com/education/tutorial-videos/archline-xp-level-1/import-level-1

1.1. Import floor plan as image

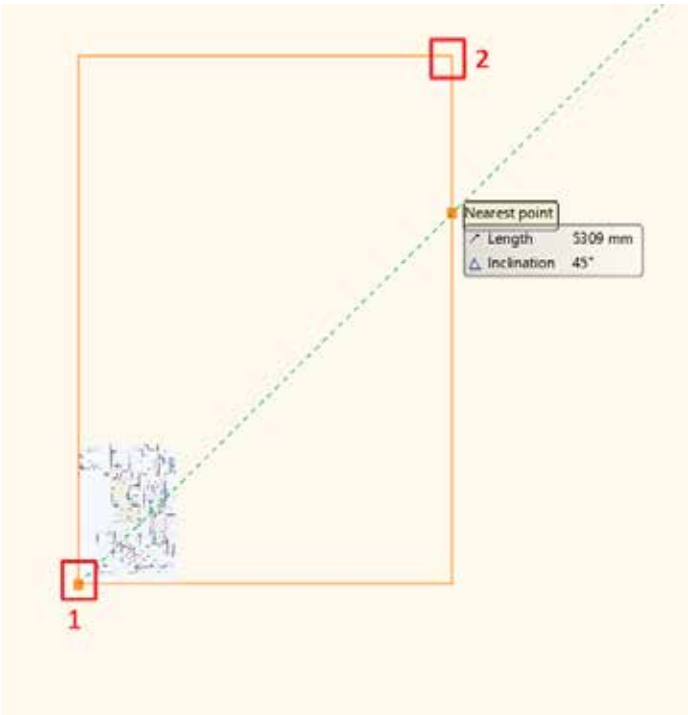
In many cases we usually start working on an existing floor plan, therefore an architectural design process is needed.

We can get the floor plan in different formats. Let's look at the simplest case when the floor plan is available as raster image.

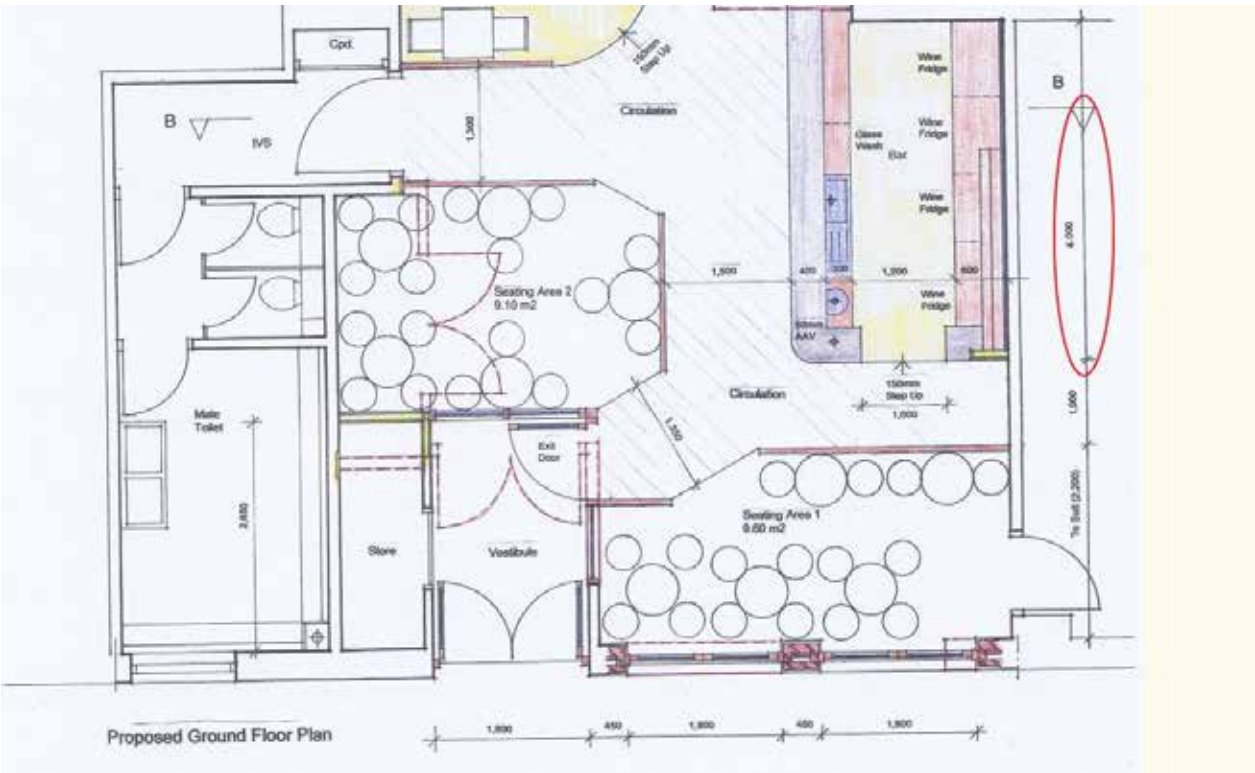
First import the previously saved raster image. Select **File / Import / Raster image** command.
Choose the folder …*ARCHlineXP Draw\2018\Course_Intermediate*\1_Importing architectural plans\JPEG and the file **Beetroot_Bar_floorplan**.jpg-
Now the Image Property window appears:



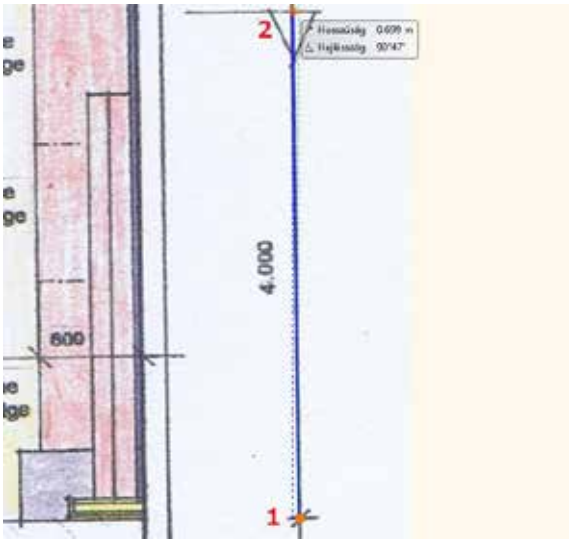
Click on "OK" to close the dialog, then place the image by defining two corner points.

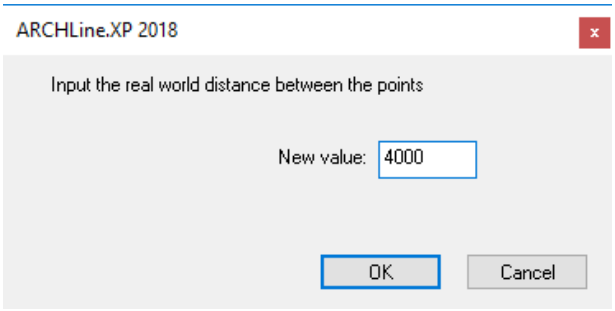


Then it is recommended to use “Zoom All” command.
The imported image is not scaled. Now we have to calibrate the drawing. On the image there are dimensions such as wall length.
Use the shown wall length for calibration:

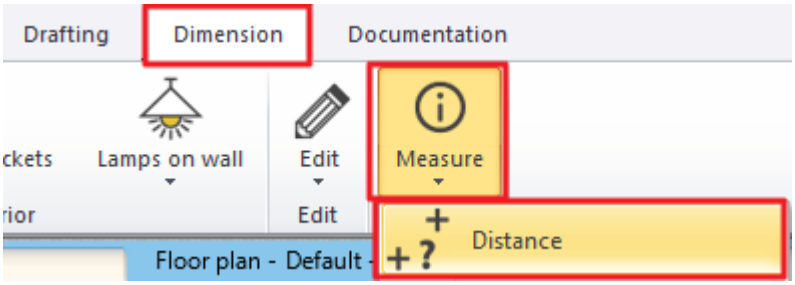


Click on the image, then choose “Calibrate” from the local menu.
Now define end points of the selected wall and enter the actual size (**4000 mm**).

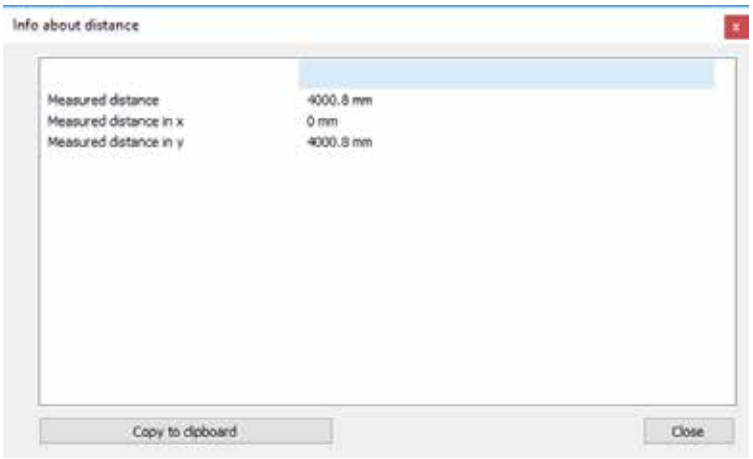




Now use the “Zoom All” command again.
It is advisable to check the accuracy of the calibration. The quickest way is going to **Ribbon menu / Dimension / Measure** and select **Distance** tool.

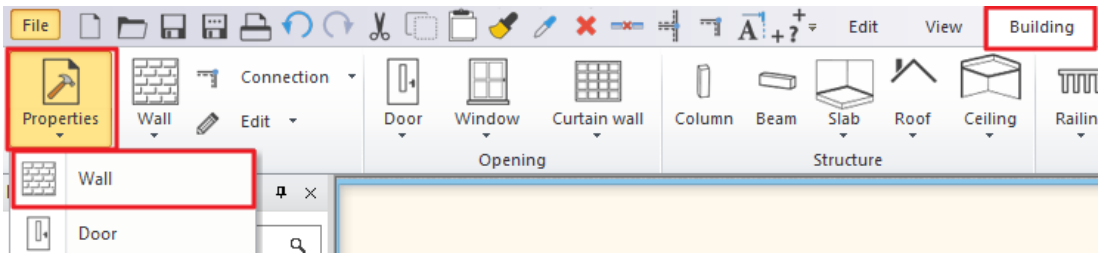


As you can see the “Measured distance” is 4 000 mm, so the calibration was accurate. Now we have properly scaled floor plan.

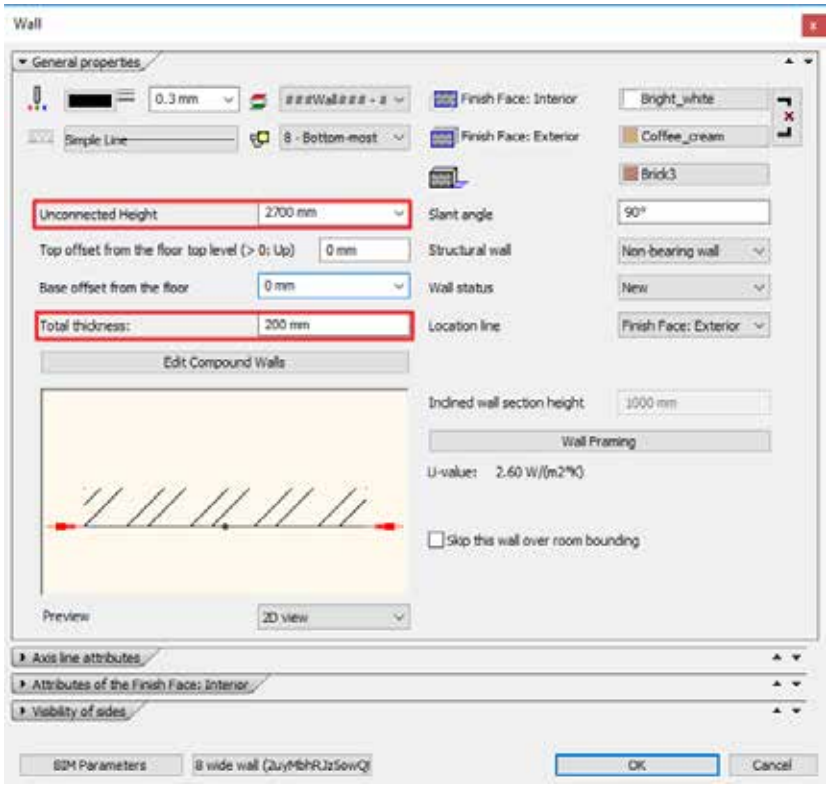


Next step is to draw walls.

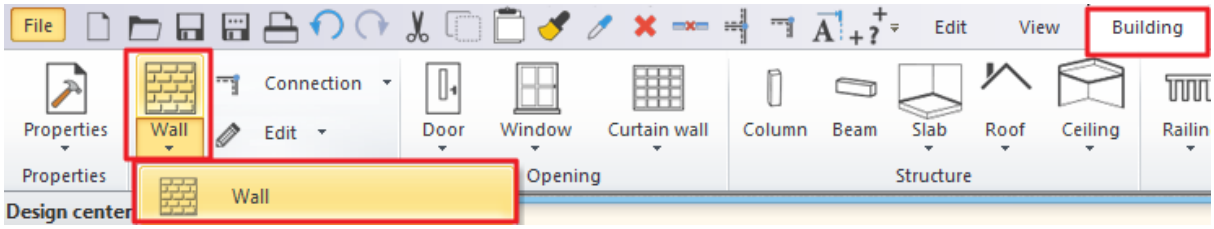
First set the wall properties. Go to **Ribbon menu / Building / Properties** and choose **Wall**.



Set the wall “Total thickness” to 200 mm, and “Unconnected height” to 2700 mm.



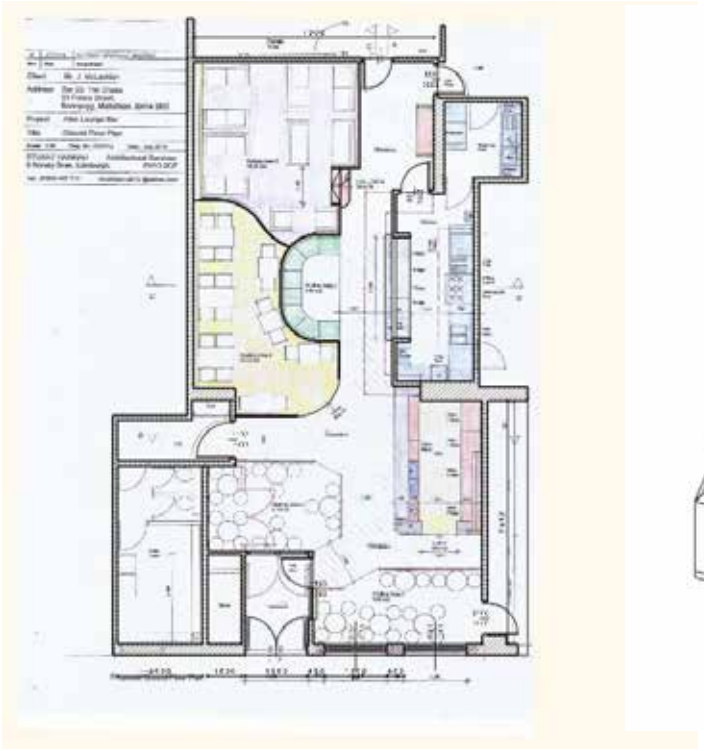
When you finished close the dialog window by pressing “OK”, let’s draw walls by choosing **Ribbon menu / Building / Wall** command.

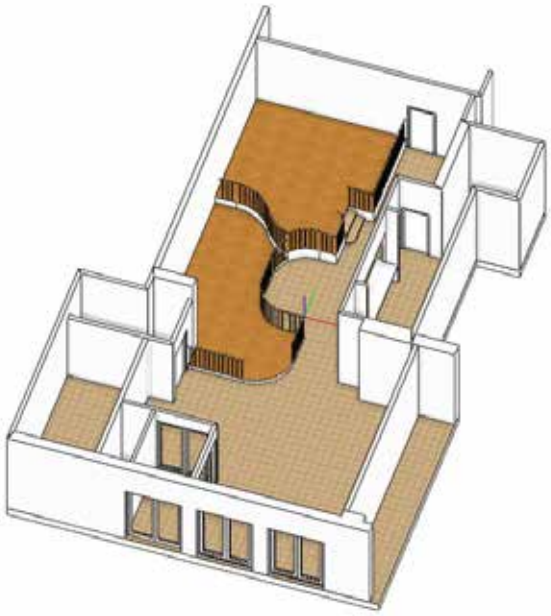


It is not necessary to set the wall properties in advance, but also you can choose a style instead and then you can start drawing walls.

To redraw walls, you have to give the starting and end points. Be careful the wall thickness should fall to the adequate side of the reference line.
From the floating menu choose “Right side” then click on the wall end point. Now follow the image and draw all walls on the floor plan.

To complete the entire model, you can use other ARCHLine.XP tools such as door, window, slab.





1.2. Import floor plan from raster image as PDF file

In the next example we received the PDF file as raster image.

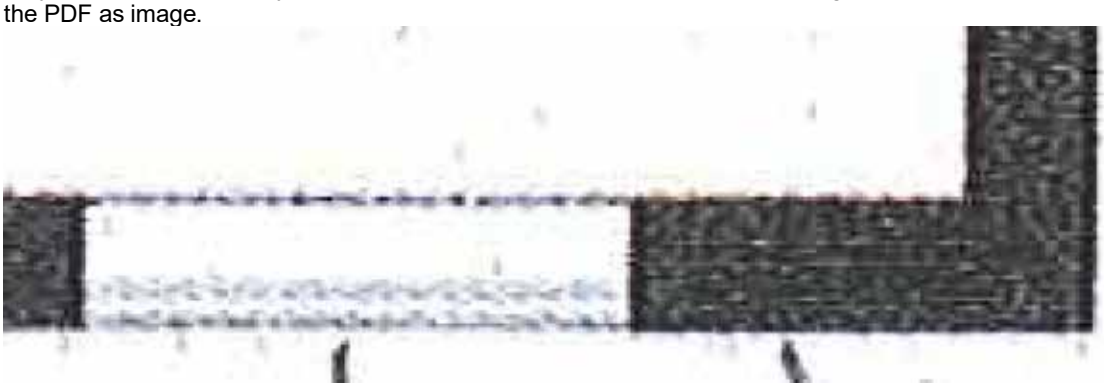
There are two types of PDF file:

- The PDF file content is real raster image
- The PDF file content is a geometry drawing.

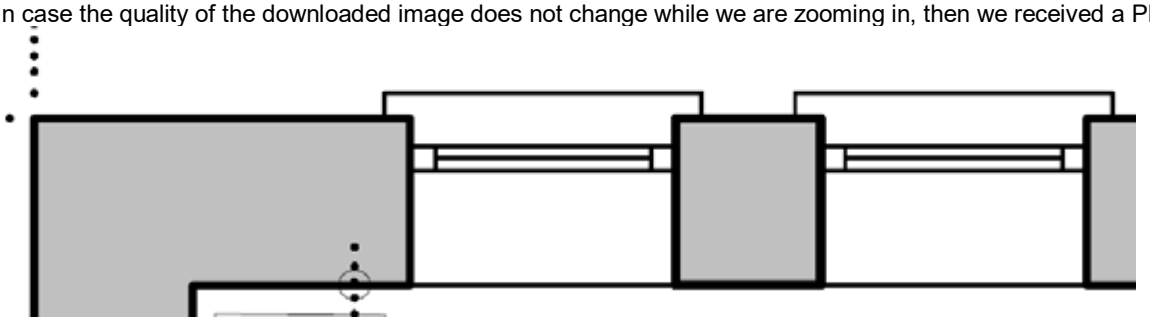
How can we How can we decide which type of PDF file we received?

Before importing the image open from File Explorer and zoom out the floor plan.

1. As you can see the more you zoom in, the more pixelated and blurrier the image will be. Therefore, we need to download the PDF as image.



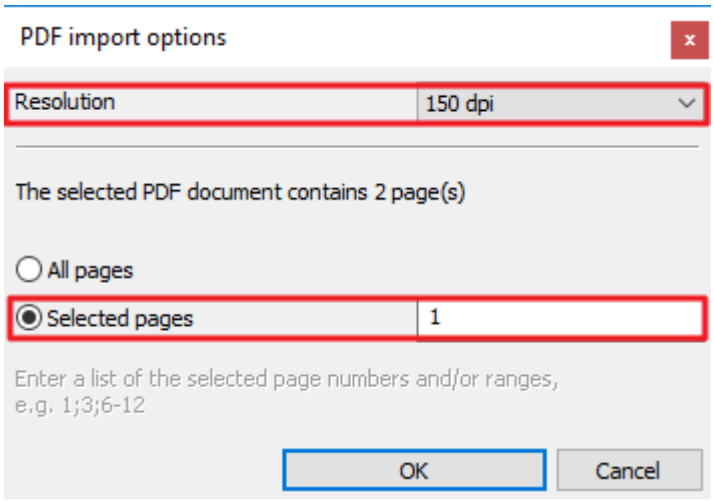
2. In case the quality of the downloaded image does not change while we are zooming in, then we received a PDF geometry.



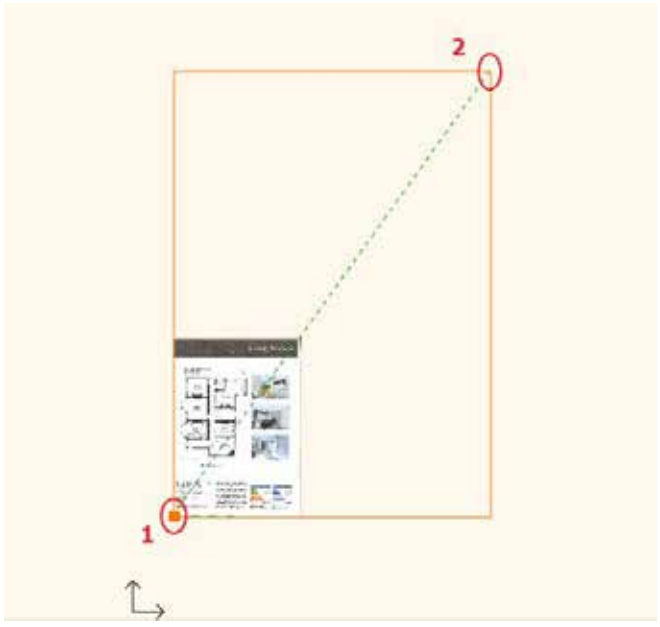
Now we will deal with first case.

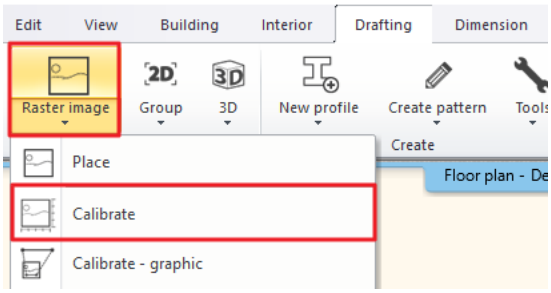
We received the floor plan as raster image in PDF file.

Select from **File menu / Import / PDF as image** command.
Choose the folder …*ARCHlineXP Draw\2018\Course_Intermediate\1_Importing_Architectural_Plans\PDF* and the file *Charleville Mansion.pdf*.
From the appearing dialog window set the “Resolution” and select the pages from the PDF file you want to work on.



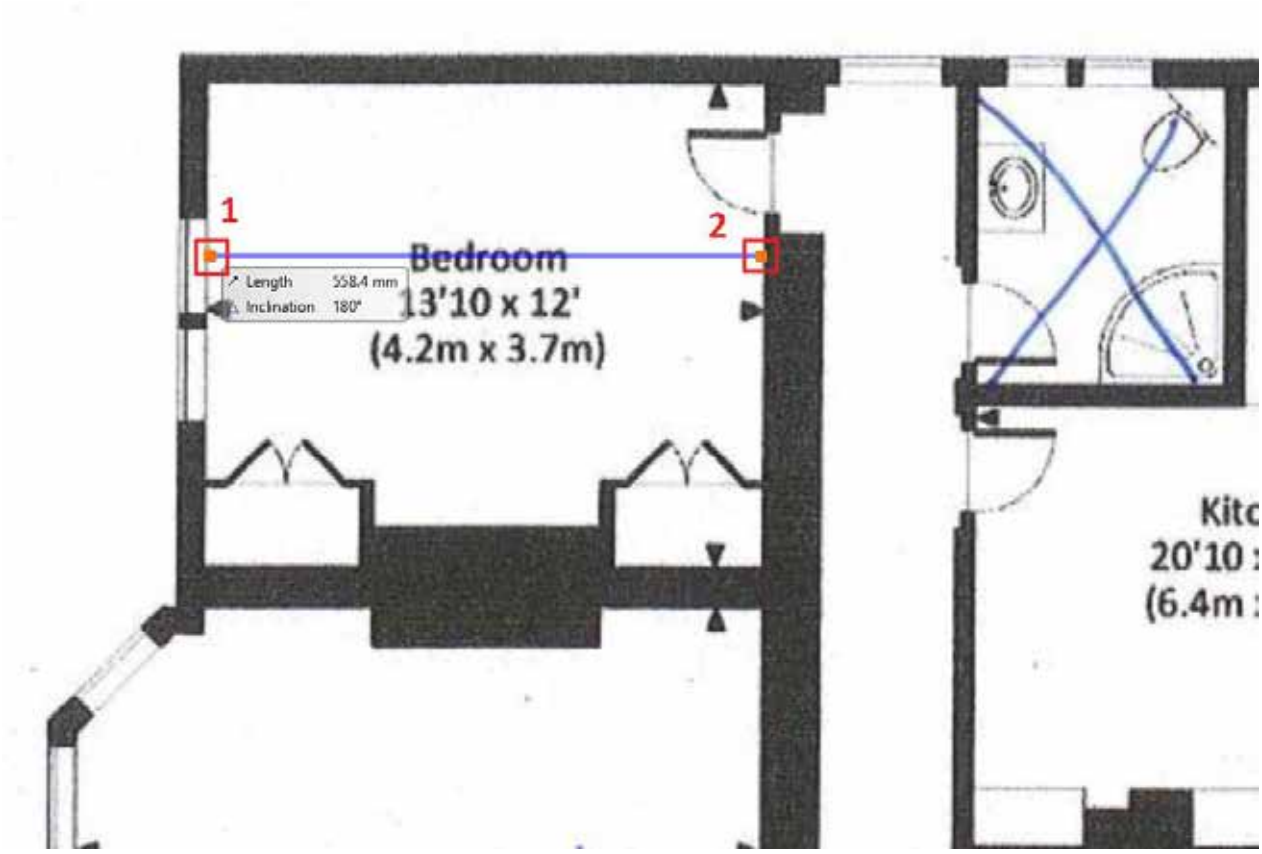
Place the first corner point on the floor plan window, then pull other corner point as far away from the first point you like to extent the image.



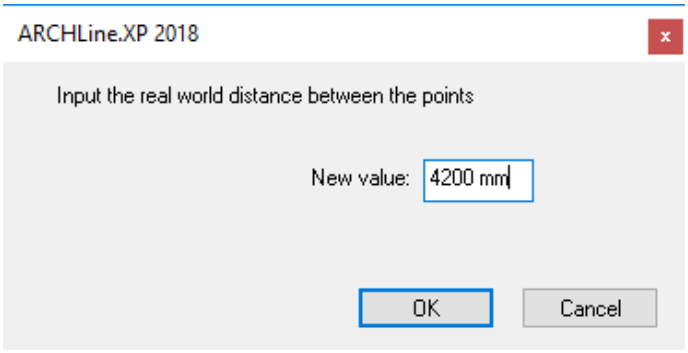


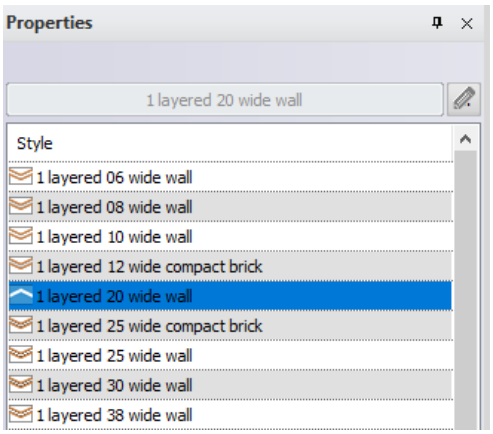
Zoom in the image by using “Zoom All”.
The raster image is not scaled; therefore, we have to calibrate.
Zoon the raster image in and select a wall which has a dimension value.

Go to **Ribbon menu / Drafting / Raster image** and select **Calibrate** tool and then the image.
Select the first point (1) then the second point on the parallel wall (2).



In the appearing dialog window enter the dimension given by the imported floor plan **4,200 mm**.



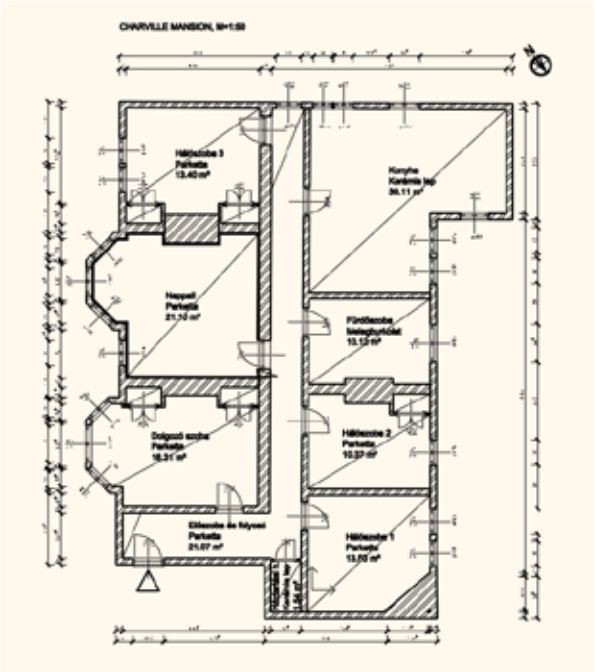


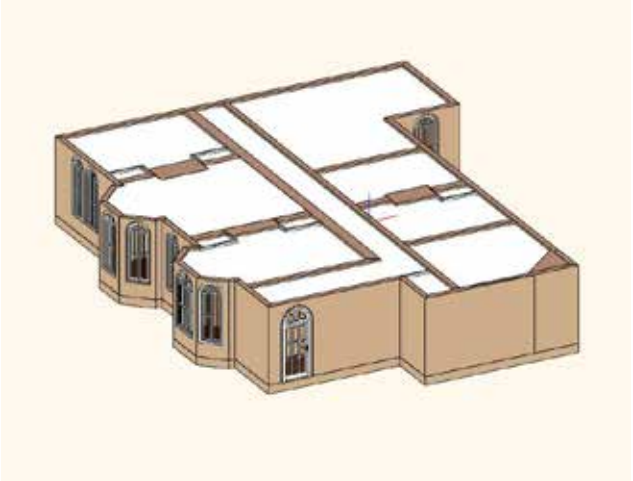
Now images are scaled. Use the “Zoom All”.
Create a new wall style with 200 mm width. (See the Foundation workshop from the Preliminary workshops.)
Clicking on **Ribbon menu / Building / Wall** option, on the left side under properties wall styles will come up.
Choose the previously created 200 mm wide wall style from the appearing list and start to redraw the external walls.

When it is done, you can see other walls of different thickness on the floor plan.
Under properties you can easily swap between different wall thickness without exiting from the drawing command. Choose “1 layered 38 wide” wall, and draw the last wall.

Now open “Layers Properties Management” and turn off “Raster image PDF” layer, this way only the newly drawn floor plan will be visible.

Now we completed the floor plan. This method helps us to reproduce quickly and precisely the existing architectural floor plan.



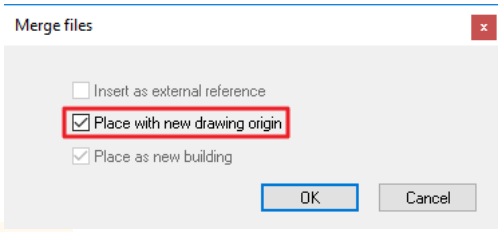


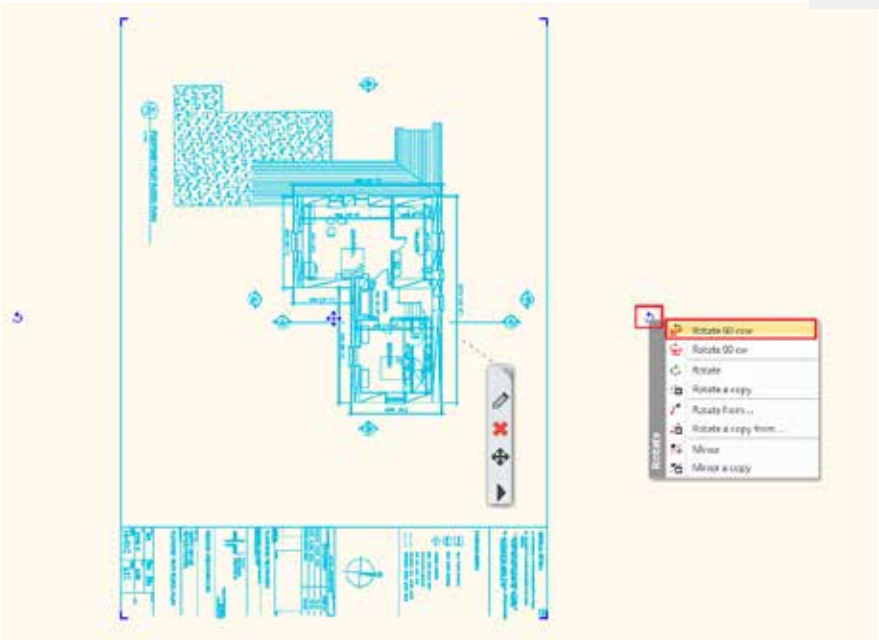
1.3. Import floor plan geometry from PDF file

In case of architectural design process, as we have already seen, the floor plan can be obtained in different formats. Let's see an example when the floor plan is available in PDF geometry.

Before importing open the image from File Explorer and zoom in. The more you zoom in, the lines still remain lines, it won't be pixelated as we have seen in the previous example. Therefore, you have to import it as PDF geometry.

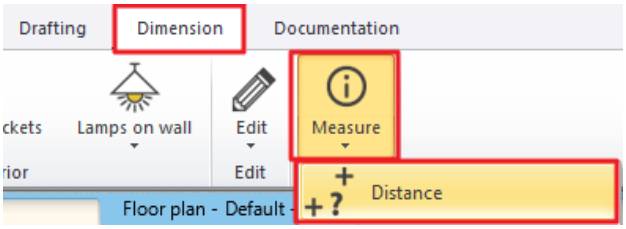
Now select **Ribbon menu / Import / PDF geometry.**
Choose the folder …*ARCHlineXP Draw\2018\Course_Intermediate\1_Importing_Architectural_Plans\PDF* and the file **Happy House first floor**.pdf.
In the popup window select "Place with new origin" and place on the floor plan close to the origin.
Now rotate +90° ccw.

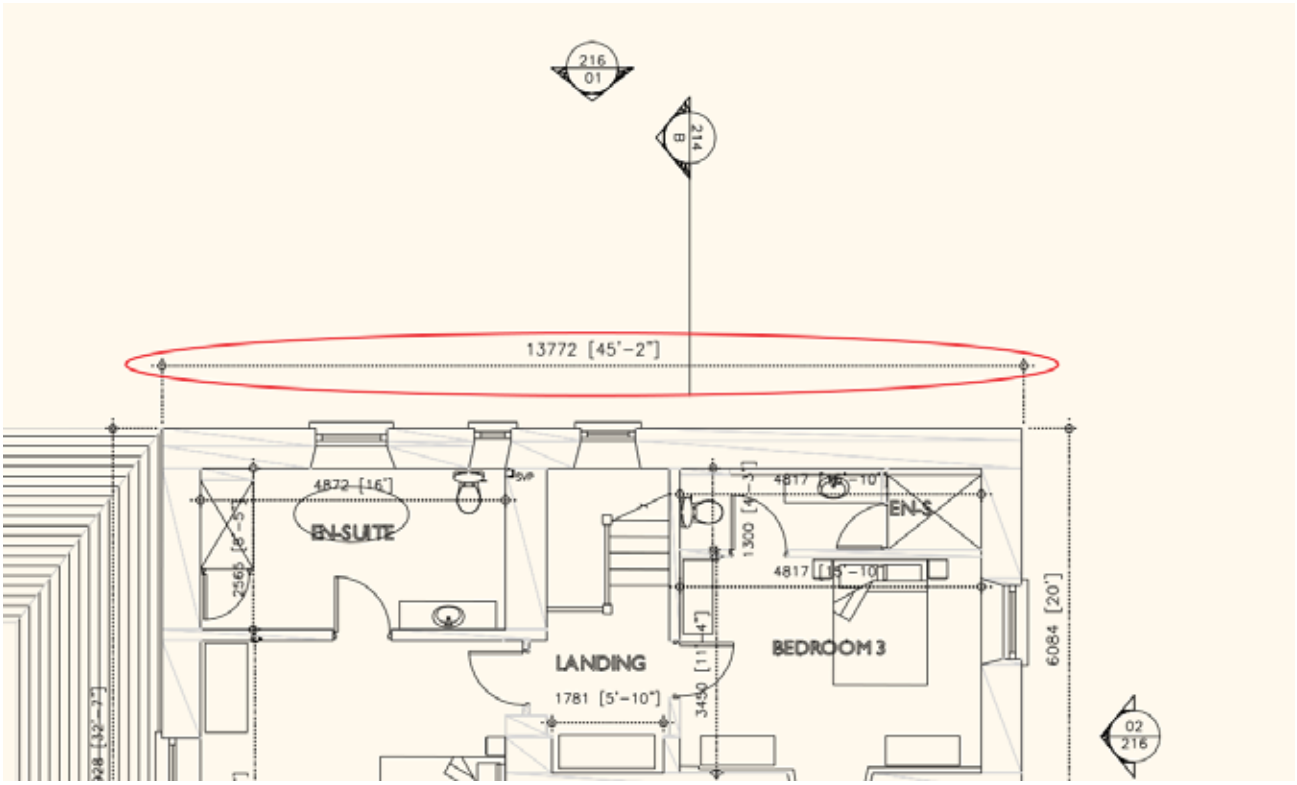


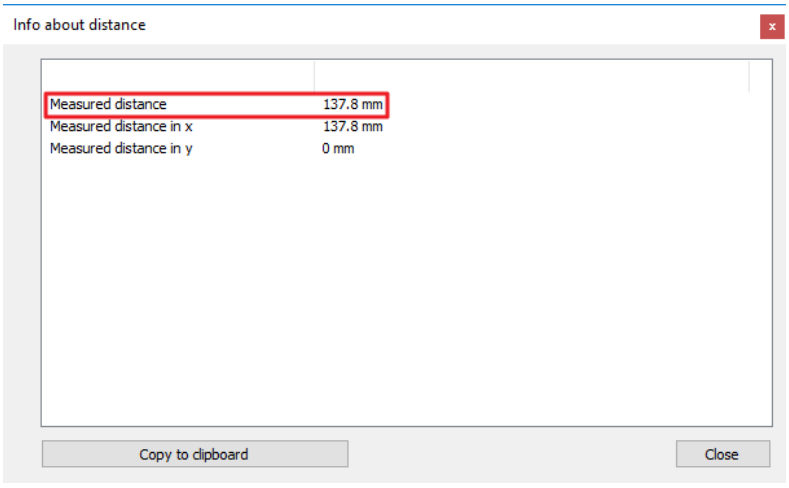


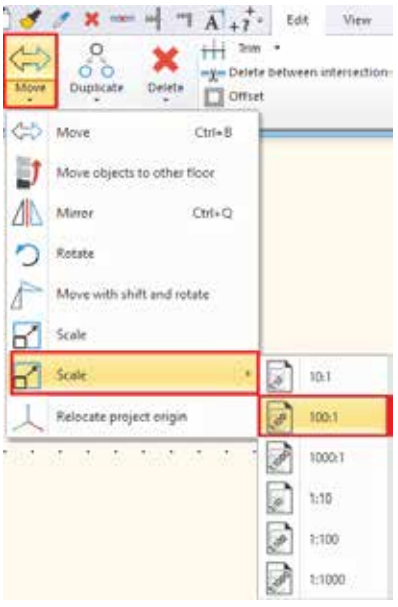
As you can see on the PDF letterhead, the scale is 1:100.

Now check if the drawing is scaled. There is a 13,000 mm length wall, go to **Ribbon menu / Dimension / Measure** and choose **Distance** tool.



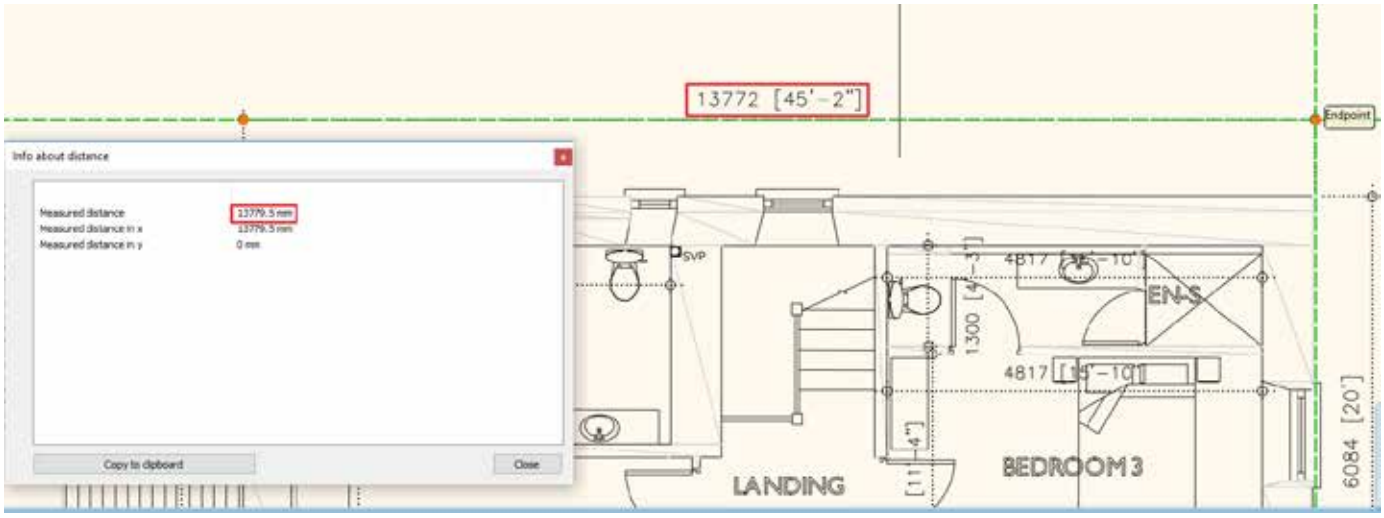






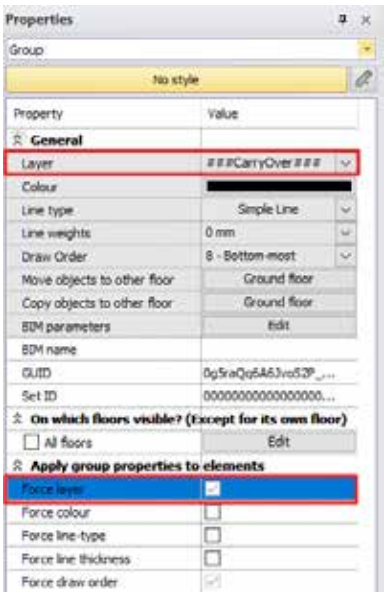
This is around 130 mm.
This means we have to scale the PDF file up to 100 according to the given scale factor.

We can enlarge the following way. **Ribbon menu / Edit / Move / Scale** and select 100:1 scale factor.
Now select the PDF as a group and use “Zoom All”.
Now let’s check if the floor plan is now scaled accurately. Go to **Ribbon menu / Dimension / Measure** and use **Distance** tool.



The result is 13 773 mm. So, the plan is now accurate.

The imported PDF file is appearing now as a group, let's check group properties.



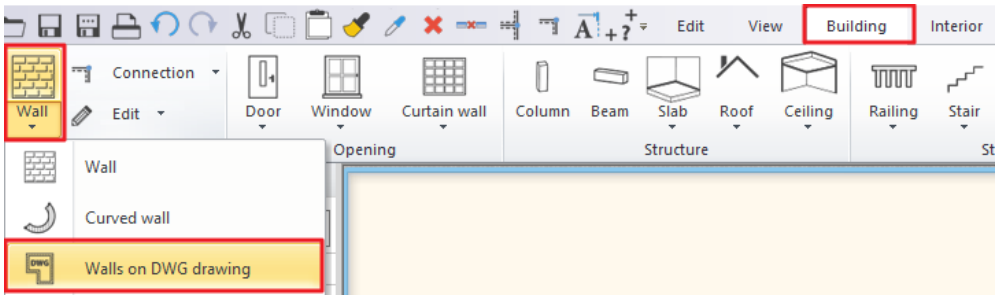
Now we place the group layer to "Carry Over" layer.
Activate "Force layer" so all group item be placed to "Carry over layer".

Now open Layer Manager and close "Carry Over" layer. This way when you click on the floor plan the group will not be selected.

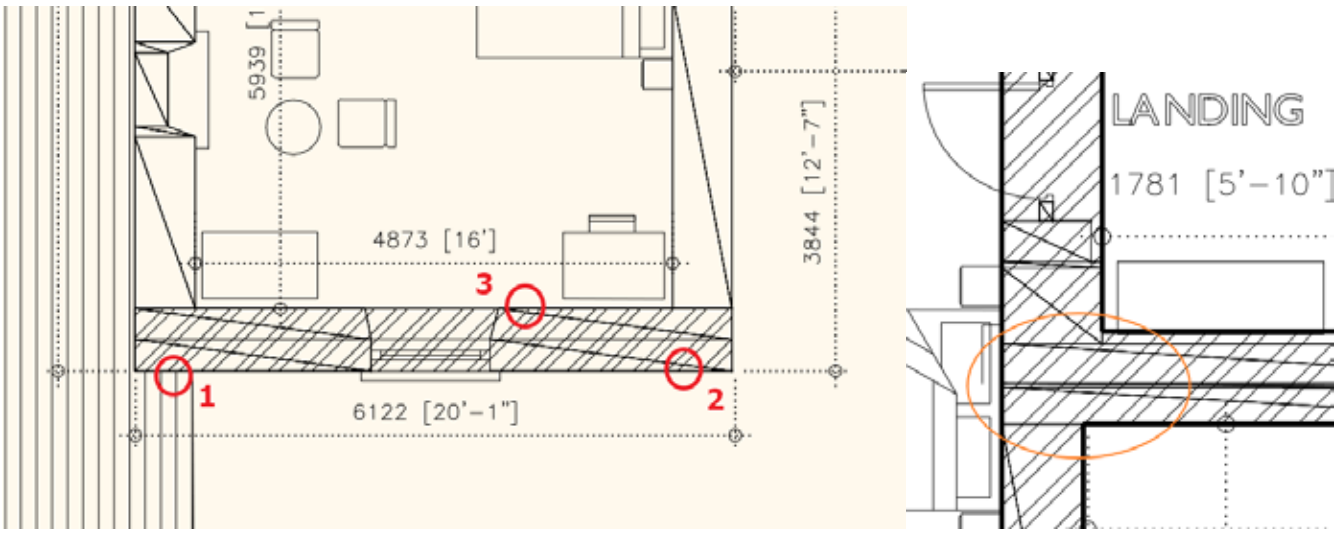
1.3.1. Draw walls on DWG floor plan

Let's continue our work with drawing walls. First set the properties.

Set the height to 2,700 mm.
Select **Ribbon menu / Building** / **Walls on DWG drawing** command.



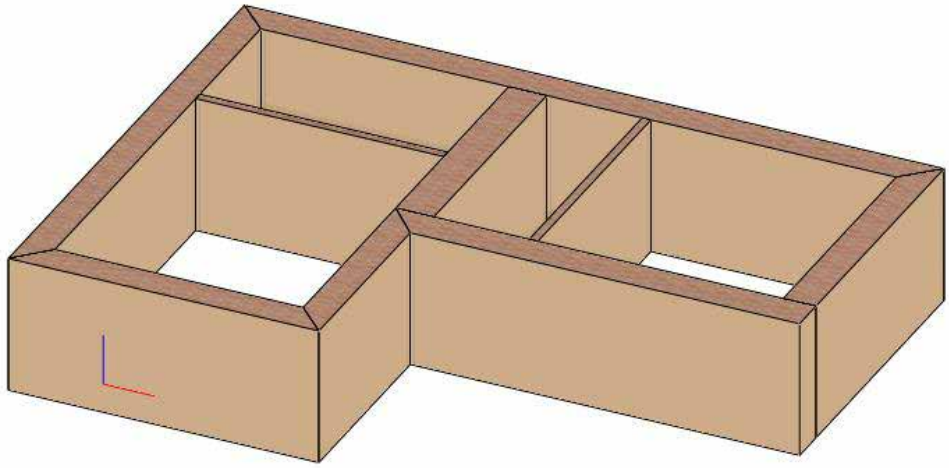
By using this command, we can easily draw a wall without knowing wall width. The technique is the following. Frist click close to starting point (1) and then the end point (2), finally click on the opposite side of the wall (3).



Now redraw the entire floor plan.
As final step it's worth to connect the main wall into an already existing L connection. Click on Toolbar there you can find wall connection commands, find T connection and then specify the wall to be connected and select the already connected walls.

The partition walls are still missing. Draw them by using **Walls on DWG drawing**.

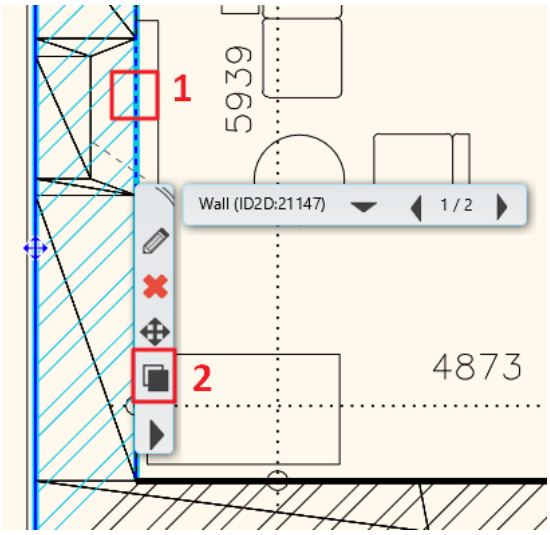
Now we finished. If it is necessary, we can improve on wall connections by using L or T connections.

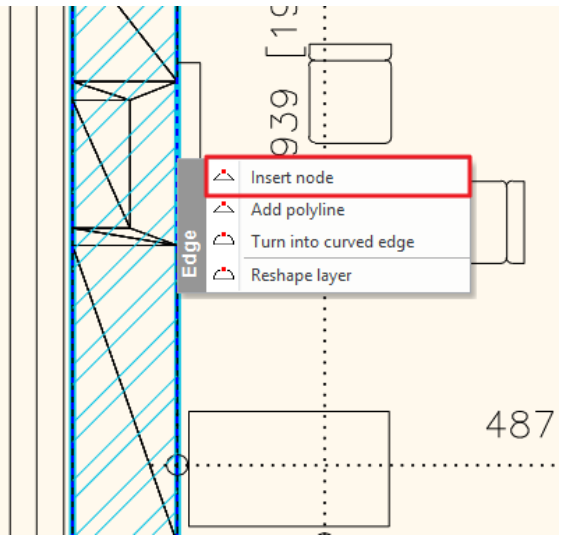


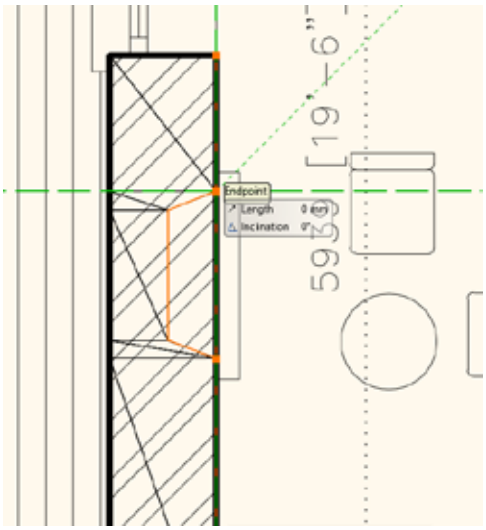
1.3.2. Creating niche

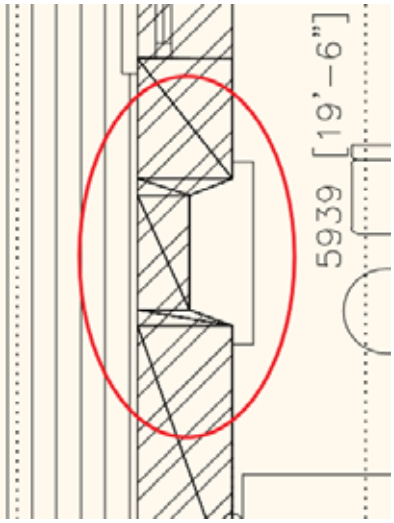
Next, we are going to create a niche:

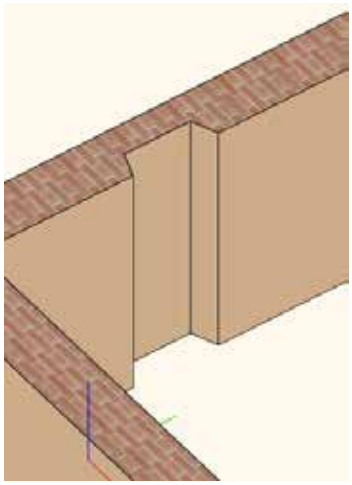
When you click on the wall (1) click on Component mode (2).
Activating this command now you can edit only one side of the wall.
Click on the inner side of the wall and choose "Add polyline", now you can cut a niche here.









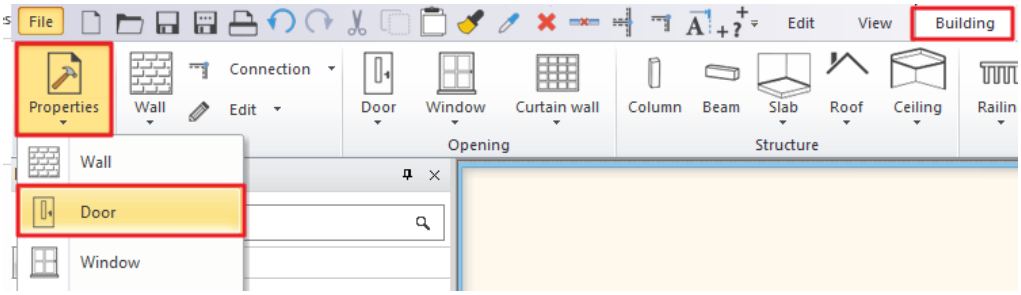


1.3.3. Place openings

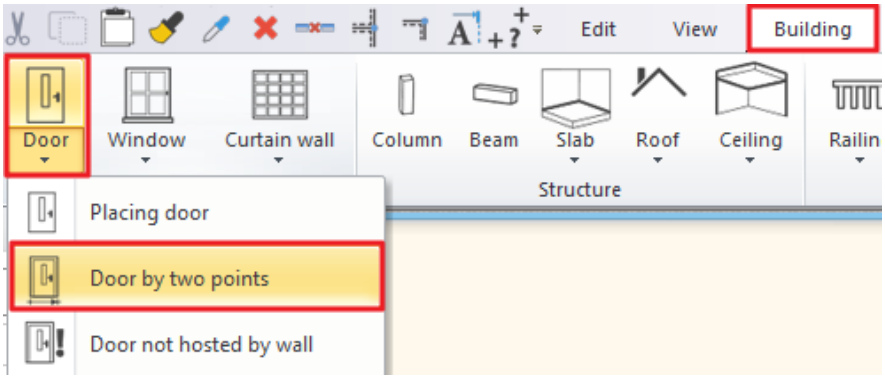
Let’s continue the work with placing openings.

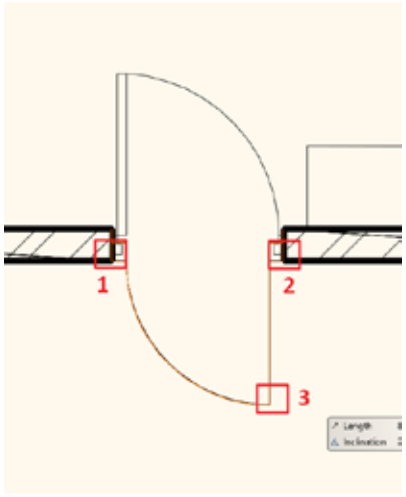
Doors

First set the door properties.



Select “Normal door” and set its distance from the wall line to 0.
Now from Ribbon menu / Building / Door / Door by two points command.





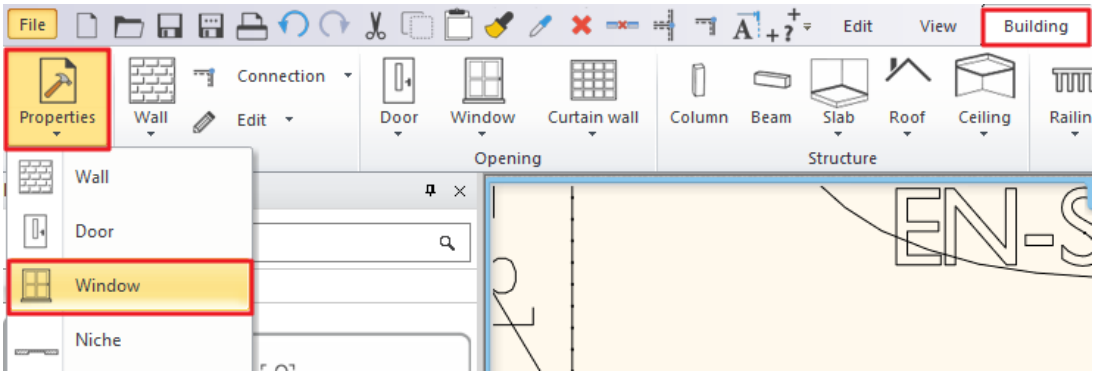
Give the door first (1) and second point (2) on the floor plan and finally the opening direction (3)
Repeat these steps for placing other doors.

If is necessary we can modify its distance from wall line under properties retrospectively.

Windows

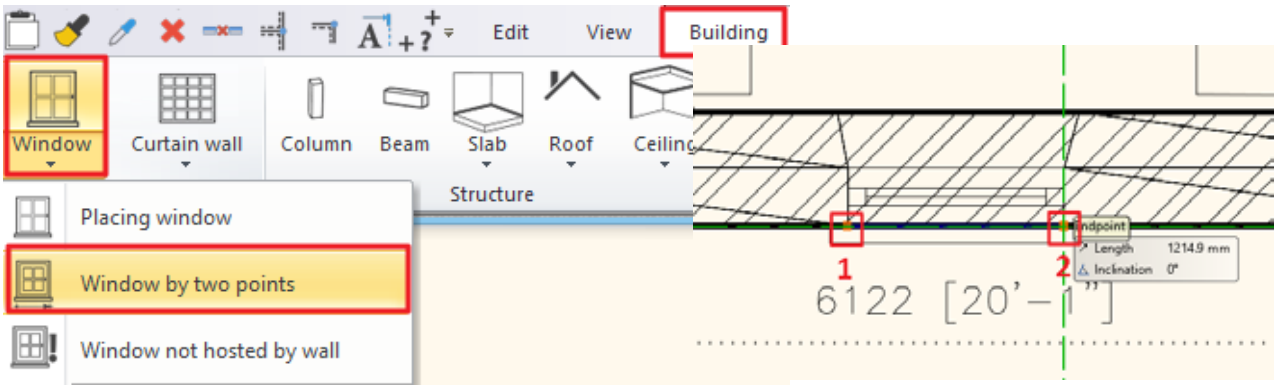
Now place windows.

First set the windows properties.



Now select the Normal Window and set the distance from wall line 400 mm.

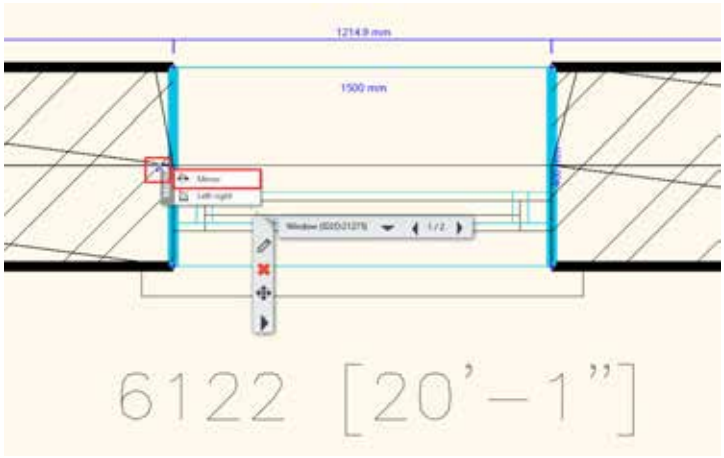
Now select from Building / Window / Window by two points



Now give the window starting and end point on the floor plan. Now the window is placed.
Repeat the same to place other windows.

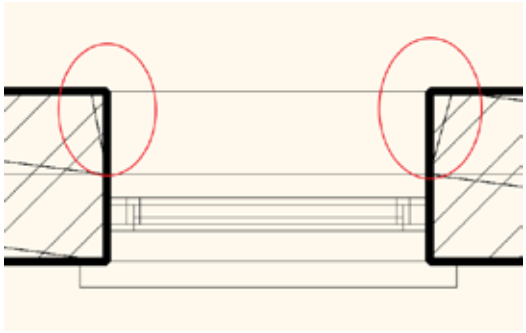
In case you place the window on the outer side of the wall, then it is necessary to mirror it.

Select the window and by clicking on the “Mirror” marker choose “mirror” command.



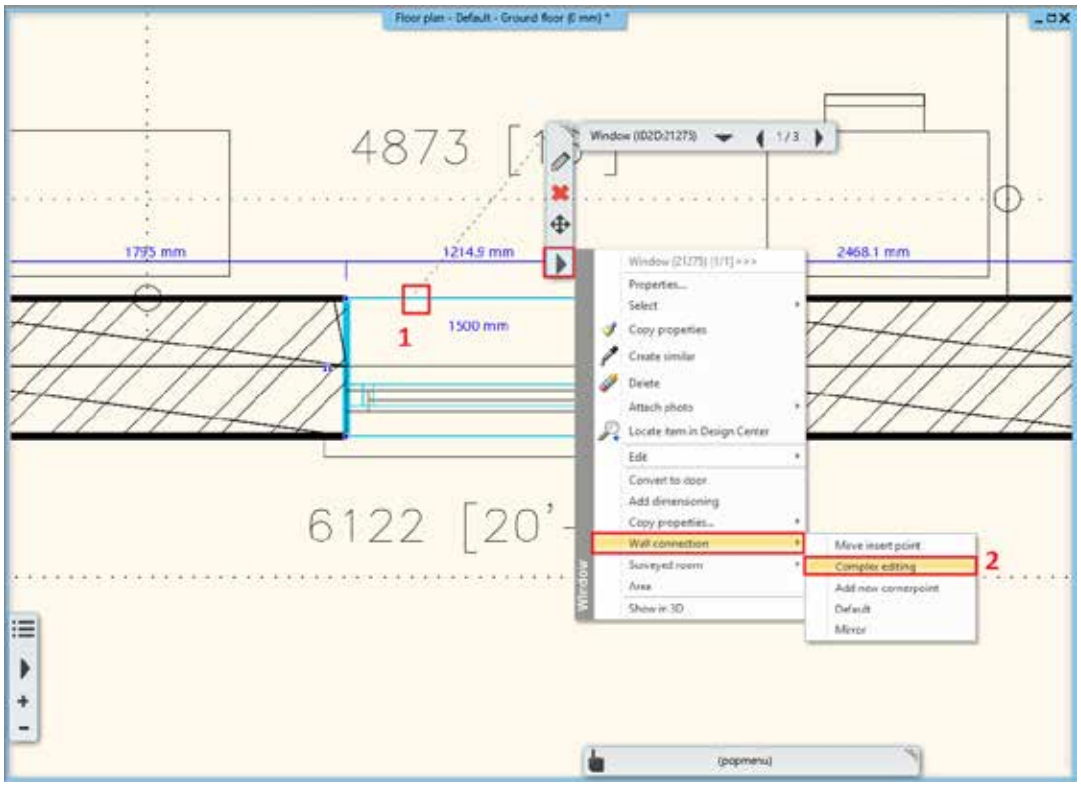
Originally the distance from wall line is 100 mm, now modify this value to 400 mm.
Now mirror other windows and change the distance from wall line too.

1.3.4. Create window chamfer

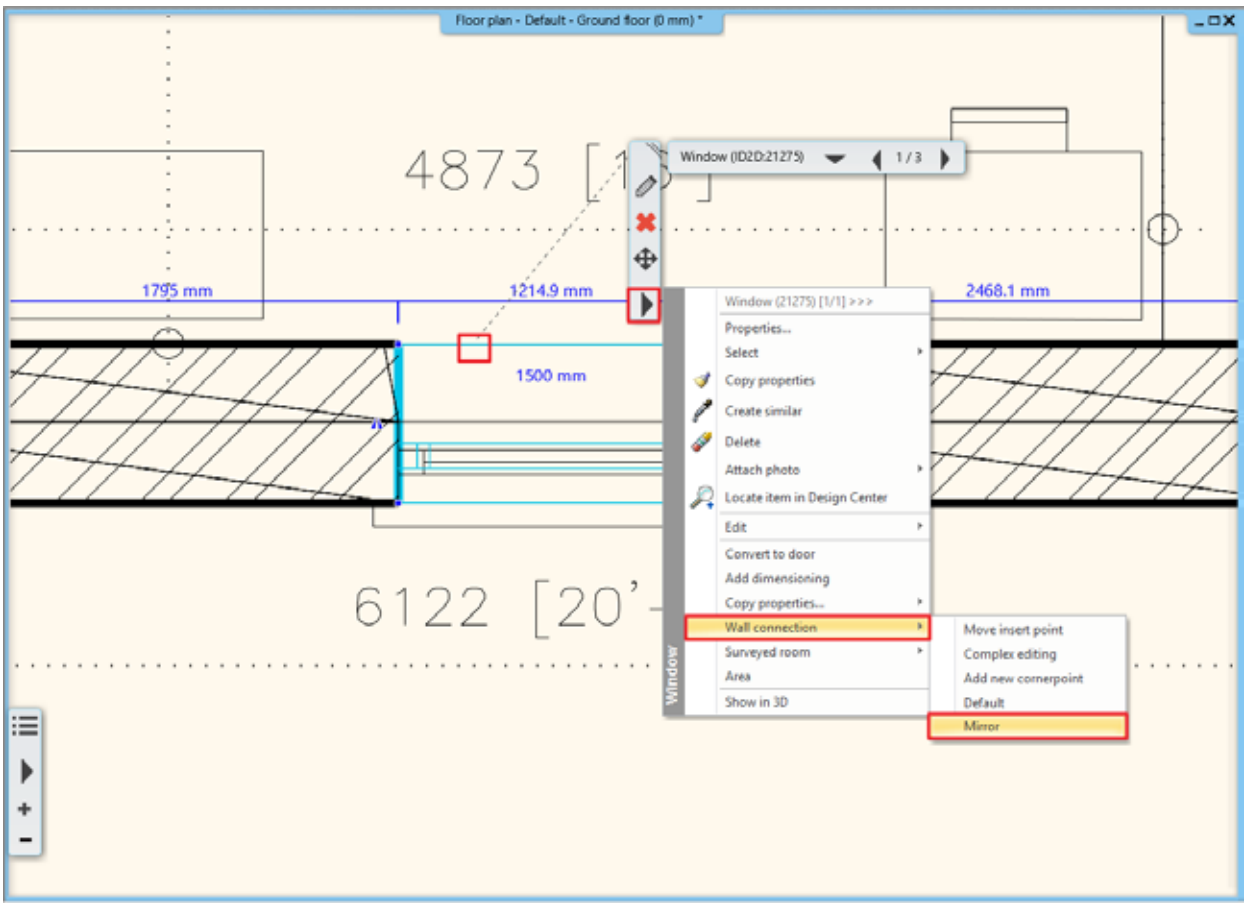


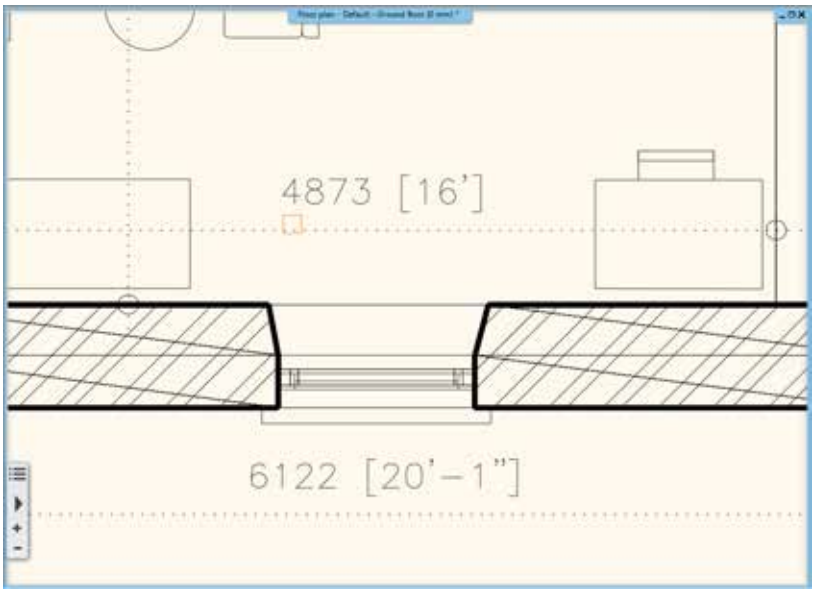
If you zoom in on the floor plan you can see that the connection between window and wall is slightly sloping, therefore a chamfer is needed.

In order to create chamfer, click on the inner side of the wall (1) and choose from the local menu Wall connection / Complex editing (2) command.



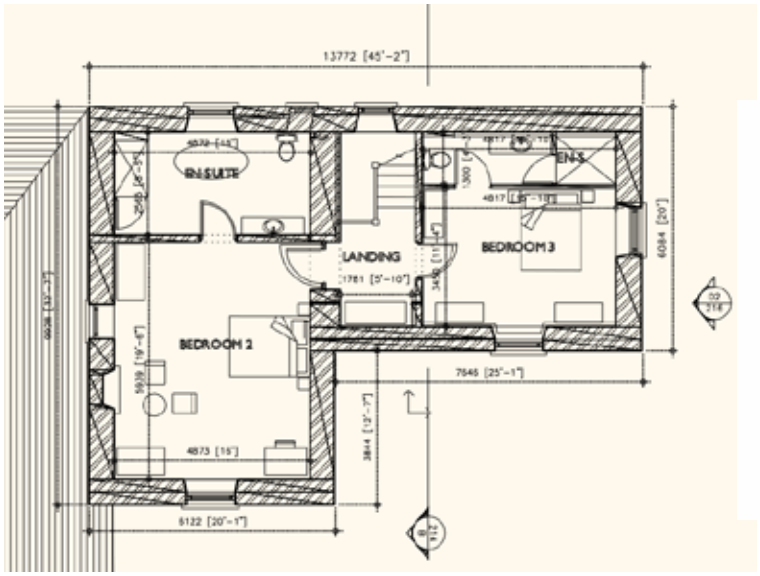
Since this is not just an oblique chamfer, as the wall goes straight for a while and then it becomes slope. Therefore, we have to insert a node.
Click on the marker and choose Insert node command and place it.
The chamfer ending point can be placed by Move node command. Hit Enter to finish.
Finally click close to the left inner side of the window and from the local menu choose **Wall connection / Mirror** command. This way the chamfer can be easily copied to the other side.

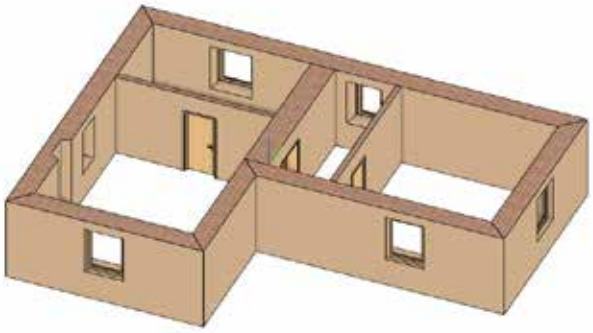




Now repeat these steps on other walls.

When these are done, you completed importing the floor plan and architectural design process.



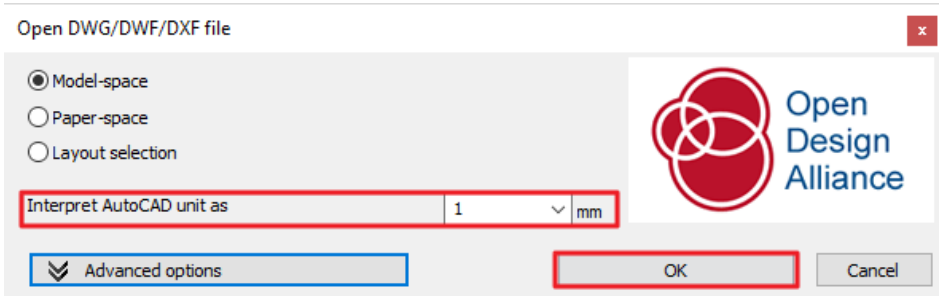


1.4. Importing DWG drawing

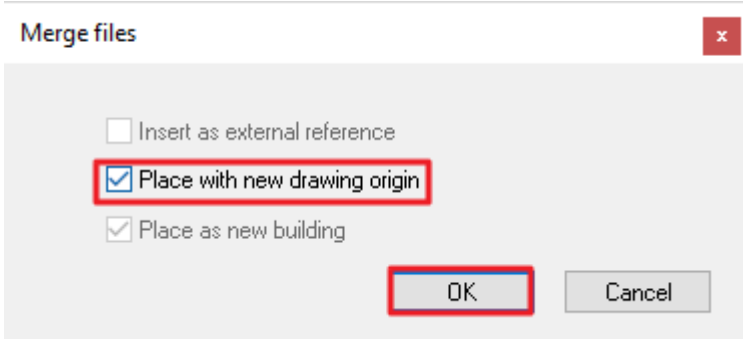
In this example we are going to import a DWG drawing. This also means a geometry import, so as a result we get a calibrated drawing, which contains lines, polylines, curves, notes, hatches, dimensions in other words 2D elements. These items after importing can stay on the original layers or all item can be place on one single layer. Based on this DWG drawing we will now create a two-level building.

Choose from Ribbon **File menu / Import / DWG** command.
Choose the folder …*ARCHlineXP Draw\2018\Course_Intermediate\1_Importing_Architectural_Plans\DWG* and the file **Scholtz_Gabor_E-Invest_Bp_XXII_plan_03_DWG-Ground floor**.dwg.

If you click on “Open” the following window will come up:

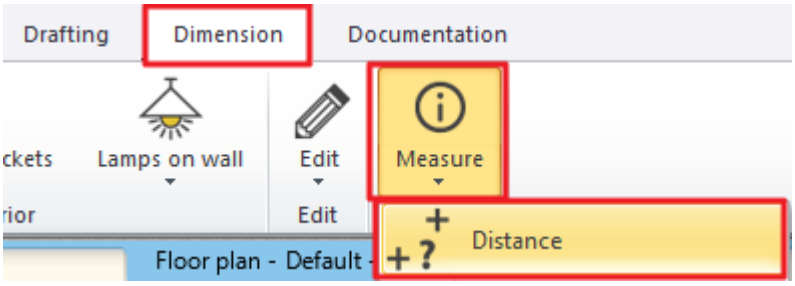


Select a unit of measurement from the drop-down list. Selecting the correct unit helps ensure that your imported drawing is accurately sized.
By pressing “OK” import the file.
In the appearing dialog window choose “Place with the new origin” option. When this is unchecked, it is imported to the same location as it was drawn in the original application.

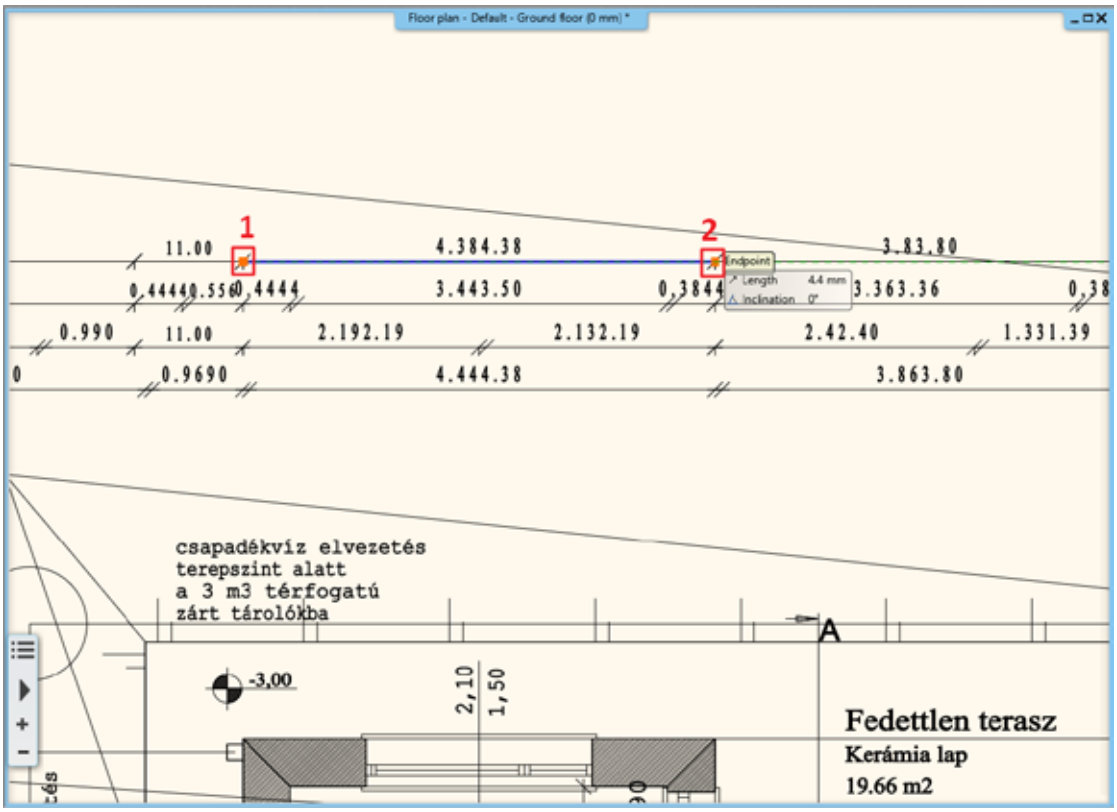


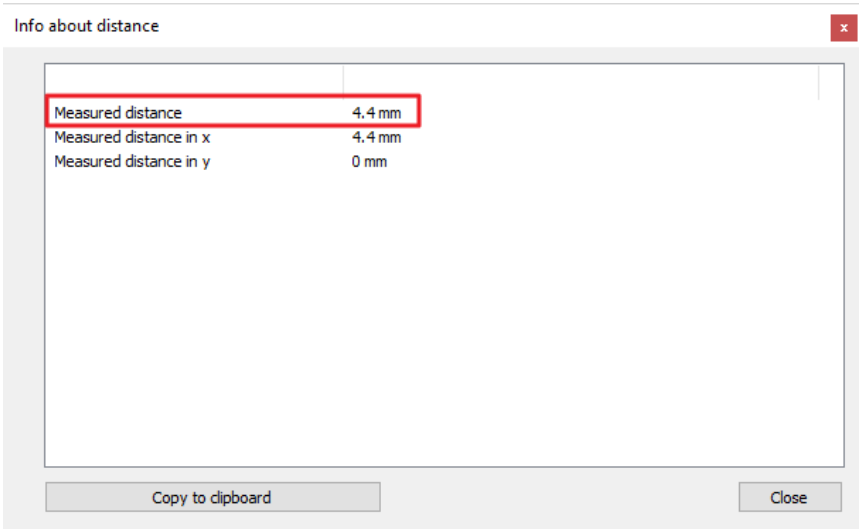
Now check if you gave the correct scale unit.

To do this choose **Ribbon menu / Dimension / Measure/ Distance** command.

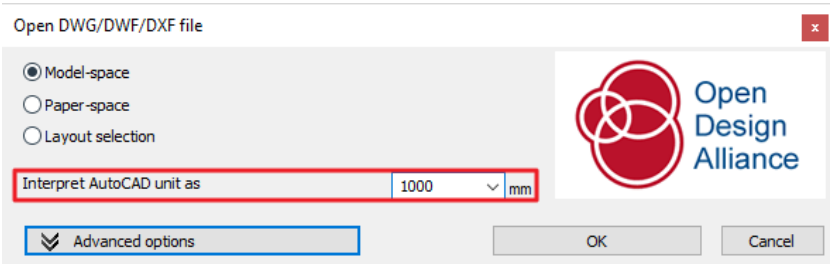


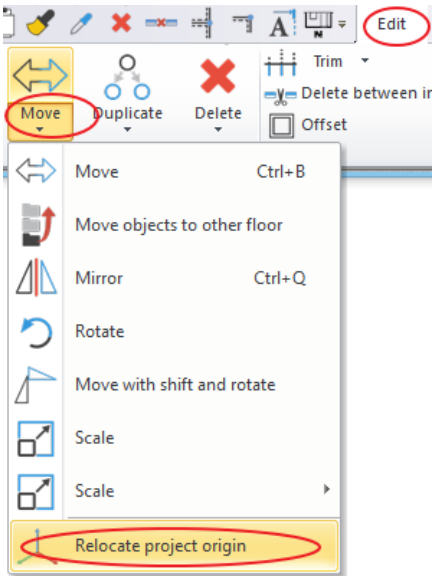
Click on the shown dimension line (1,2) and measure it.





If the file being imported was drawn at a scale other than 1:1, you see the measured distance with the given scale factor is not right.
Click on Undo to withdraw the previous step. The imported drawing will disappear from the screen.
Start over again the import but now choose “1000” as the scale unit.



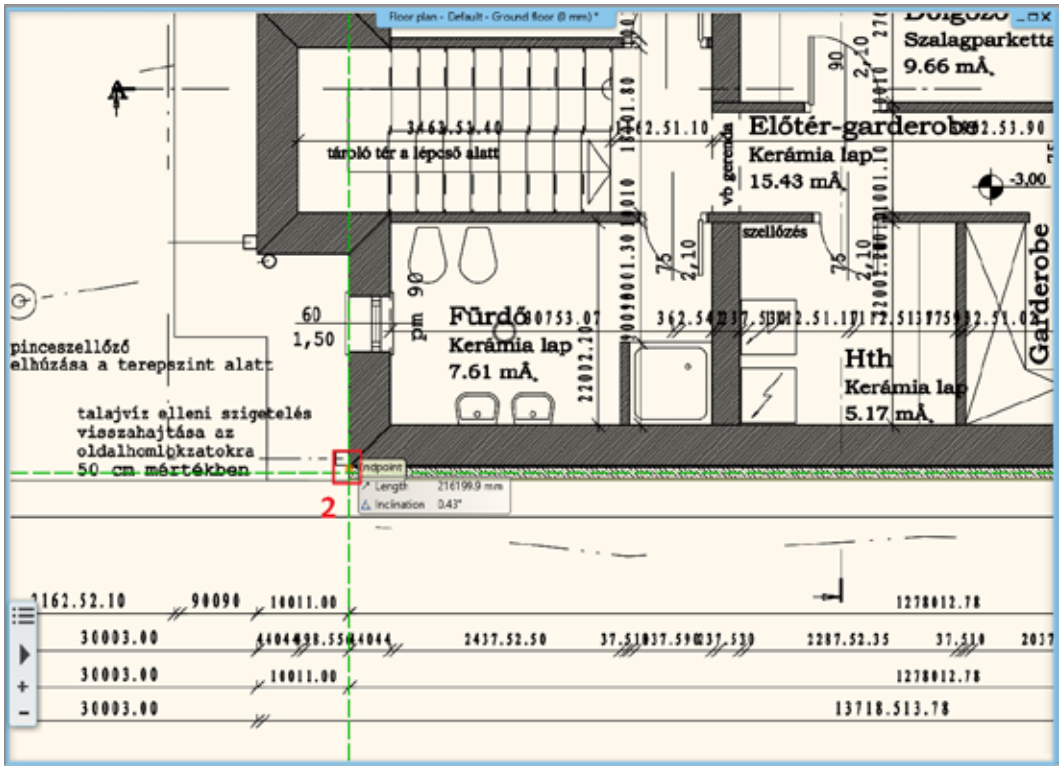


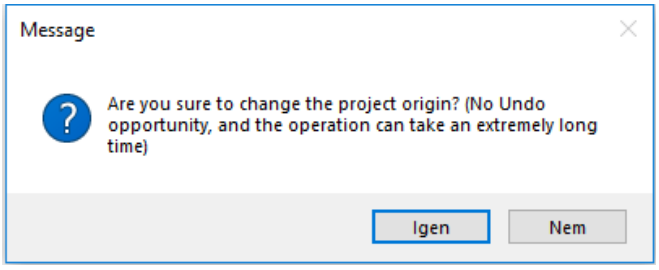
Place the drawing with new origin.
If you do not see your imported drawing, select View > Zoom All, as it may have been placed at a location not currently visible on screen.

Importing a DWG drawing we get a good quality floor plan. Imported CAD objects can be selected and edited just like any 2D objects that were drawn in ARCHLine.XP. In DWG format the program automatically recognizes the dimensions, notes, these can be easily adjusted or removed from the floor plan.

Now place the left corner point of the floor plan to the origin. You can do this the following way:

Select from Ribbon menu Edit – Move – “Relocate project from origin” (1) command.
Select the left corner point of the supporting wall (2), then click on he Yes in the dialog.



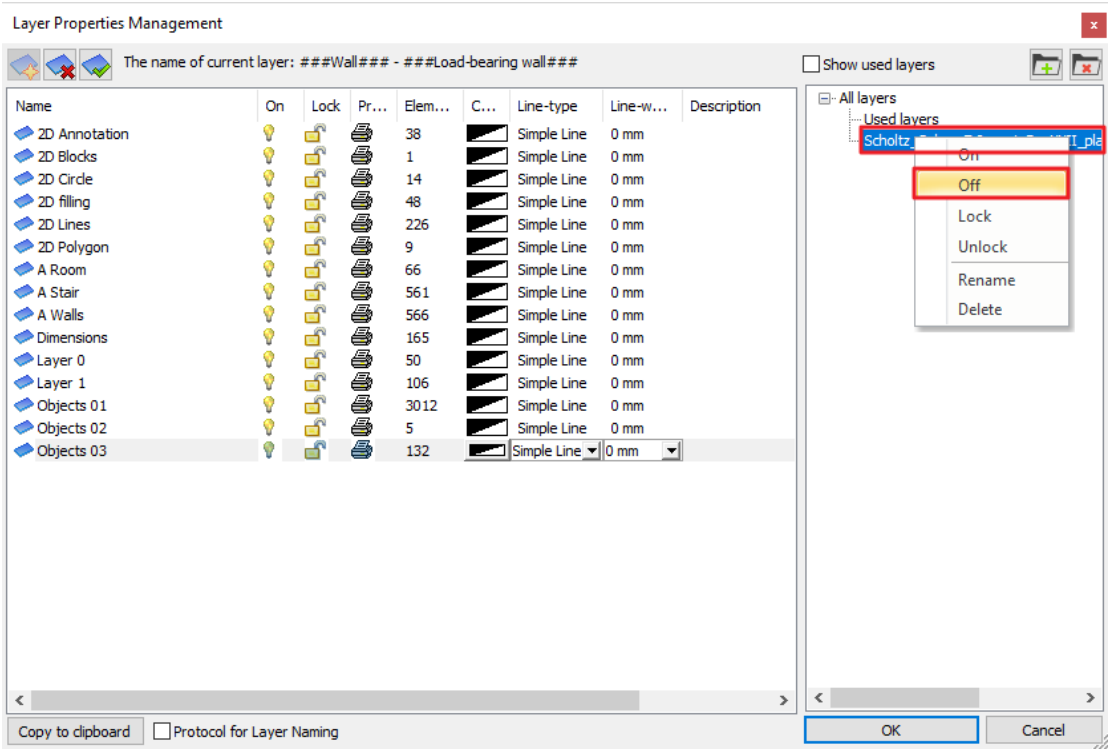


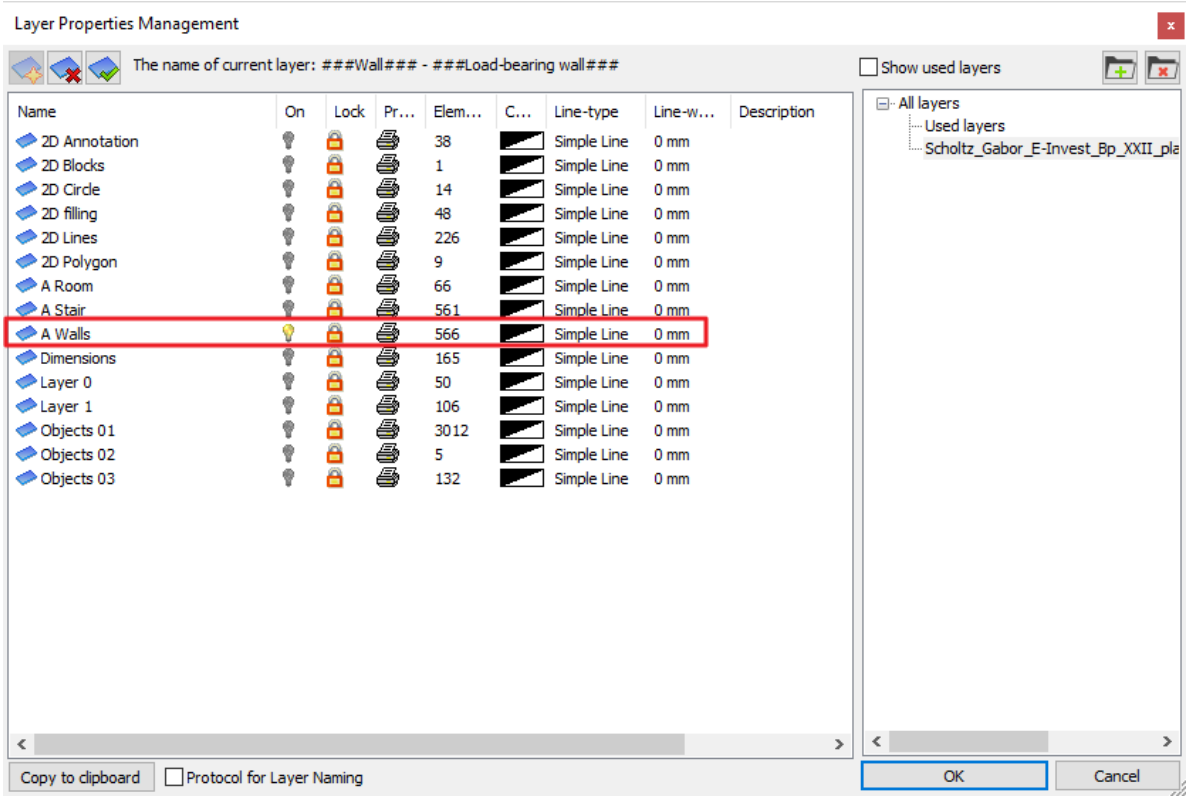
Use “Zoom All”, then you can see that the selected corner is now in the origin.

In the followings step in the Layer Manger”, let’s look through layers.

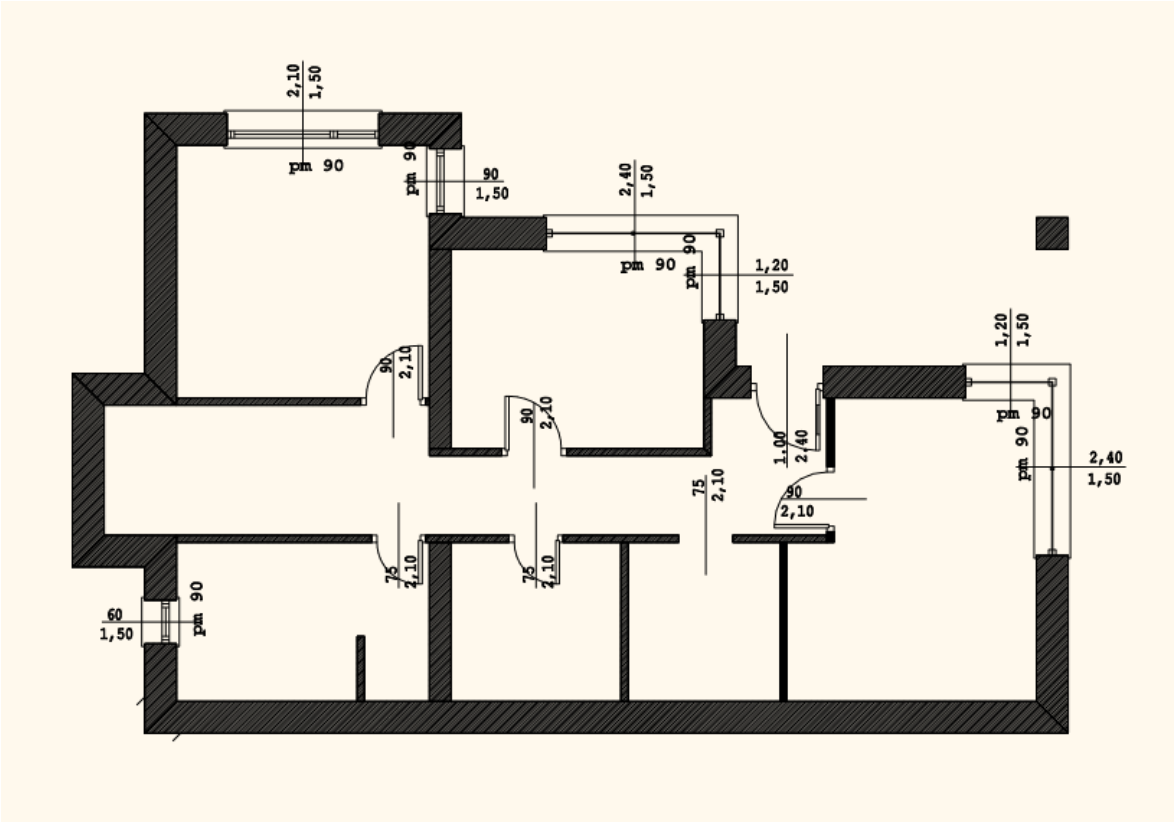
We are going to draw walls again; our work becomes easier if we leave only the corresponding layers turned on.

Under “Used layers” you can find a new group with the original DWG drawing file name, select and turn it off (1). With one single click all layers in the group are now turned off. Now we have to turn back on only those layers which belong to walls, since there are many drawing elements on the floor plan which are not needed for redrawing walls (2).





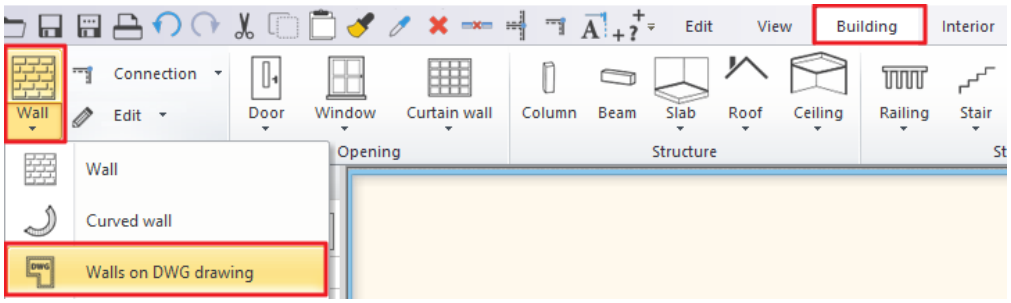
Close the window with “OK” so now only walls and openings are visible on the floor plan.



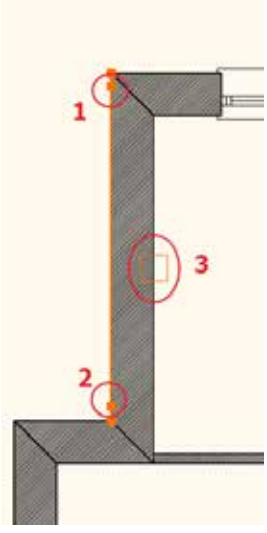
1.4.1. Drawing walls on DWG floor plan

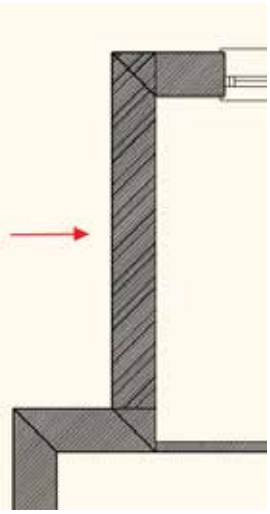
Let's draw walls again.

Select **Building / Wall / Walls on DWG drawing** command.



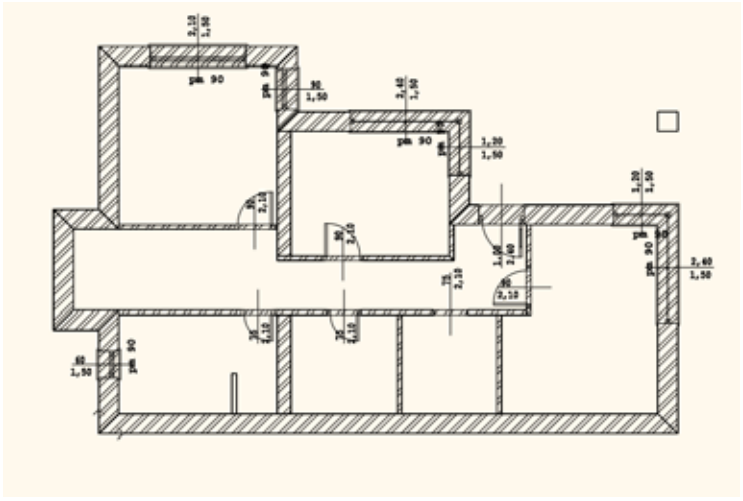
You can set the wall properties in advance or you can select from the pre-defined walls on the left side.
Choose "1 layered 38 wide wall.
Click close to the wall starting and end point, then on the opposite side of the wall. The wall immediately appears in 3D window.

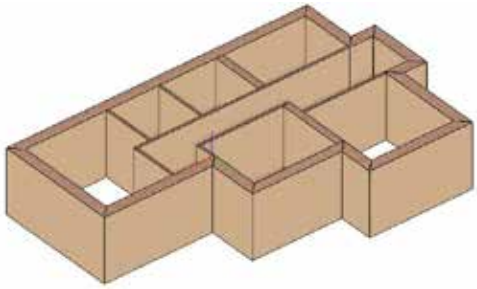




Use this method to draw all walls.

In case the 3D model seems incomplete choose from the upper toolbar, L or T wall connection options and join the wall sections.

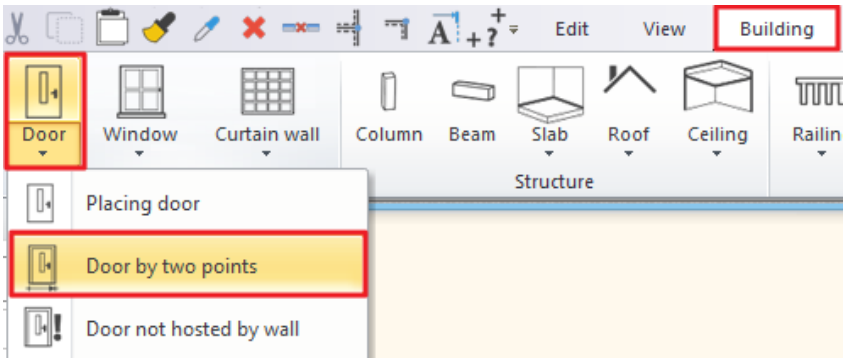




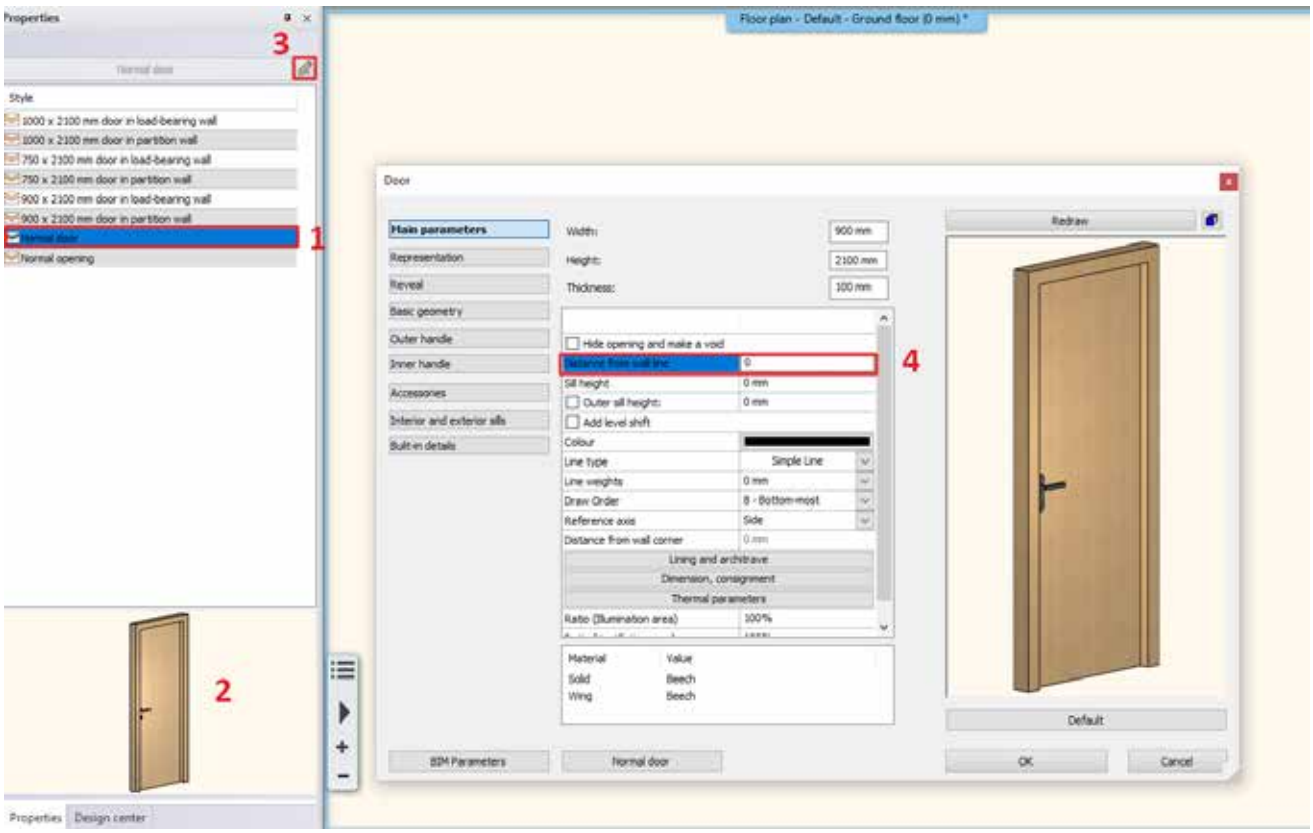
1.4.2. Place openings on the DWG floor plan

Let's start with doors. We will place doors according to the DWG drawing, so the door width will be defined by the DWG drawing.

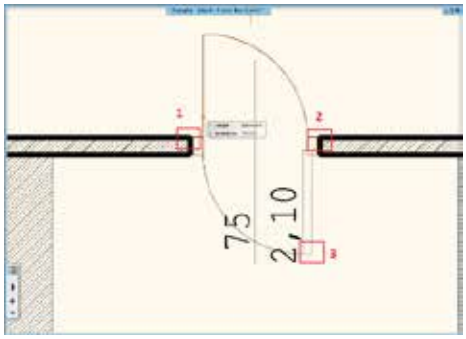
Select **Building / Door / Door by two points** command.



You can set door properties in advance or use pre-defined doors from the left side. (1)
You can view the "Normal door" below the list (2) and also you have an option to see its detailed properties and change those if necessary (3).
In this case modify the "Distance from wall line" to "0" (4) because those will be inserted into 100 mm wide partition walls.

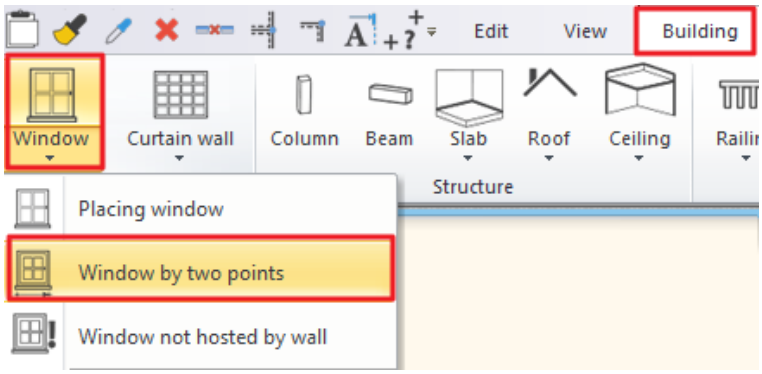


Close the dialog by pressing “OK”.
Now set the first and second point of the door and then the opening direction.
Use this method to insert other doors.



Let’s place windows.

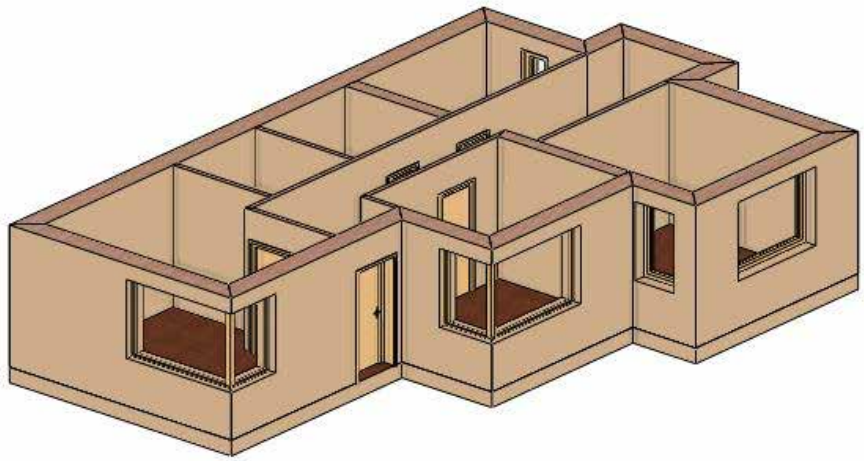
Select from **Ribbon menu / Window / Window by two points** command.

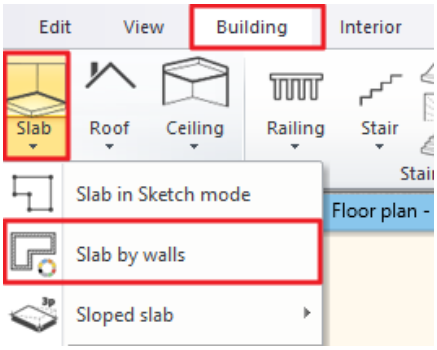


Choose “Single window”.
Select two corner points of the window by clicking on the inner side of the wall.
Place all windows.

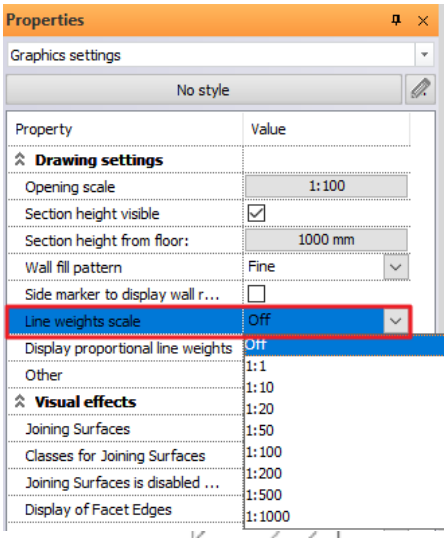
When we finished by placing openings, let’s continue our work with placing slab.

Select **Building / Slab / Slab by walls command**. Press Enter and the slab is ready.





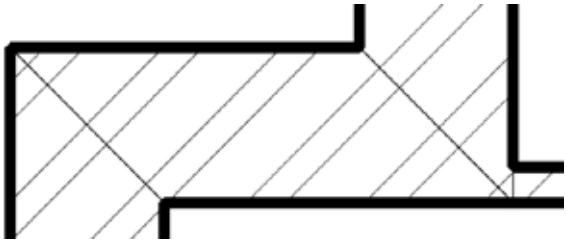
Display line weights on the screen

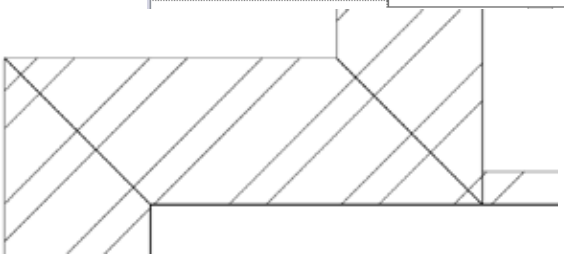


As detour its worth to review the **line** weights on the screen.

If the floor plan is not active and there is no selected item, click on Properties on the left side.

Here you can find “Line weights scale”.
Currently it is switched off, which means the line width on the floor plan is represented by zero-line width. Later if you want to print out the plan at a scale of 1:100, and you want to see on the screen the corresponding line width then you can use this scale factor as Line weights scale too.
The difference can be seen immediately.





Turn off this option as this makes easier to edit.

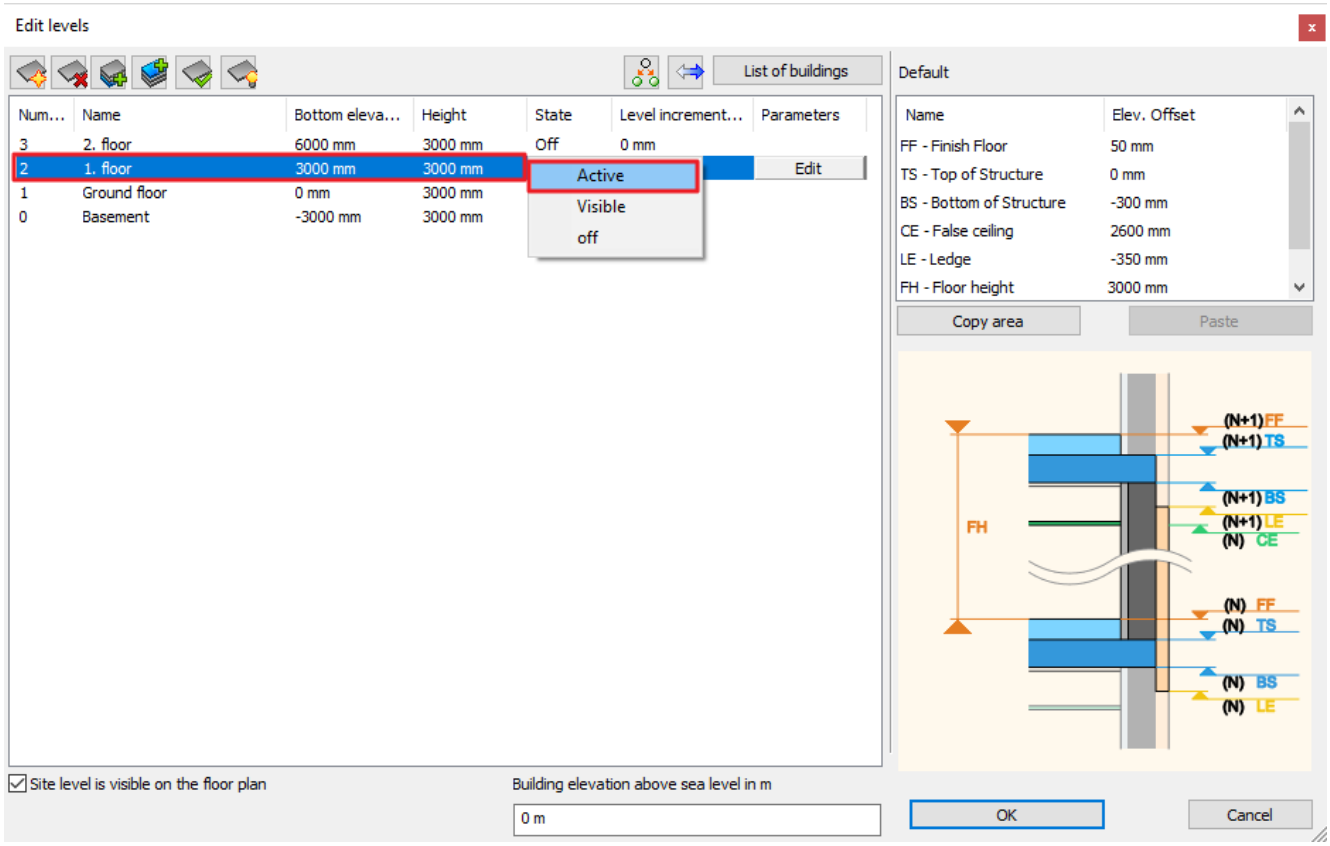
Even if the line weight scale is turned off, the lines will be printed out as they *are on the screen now.*

1.4.3. Create First floor

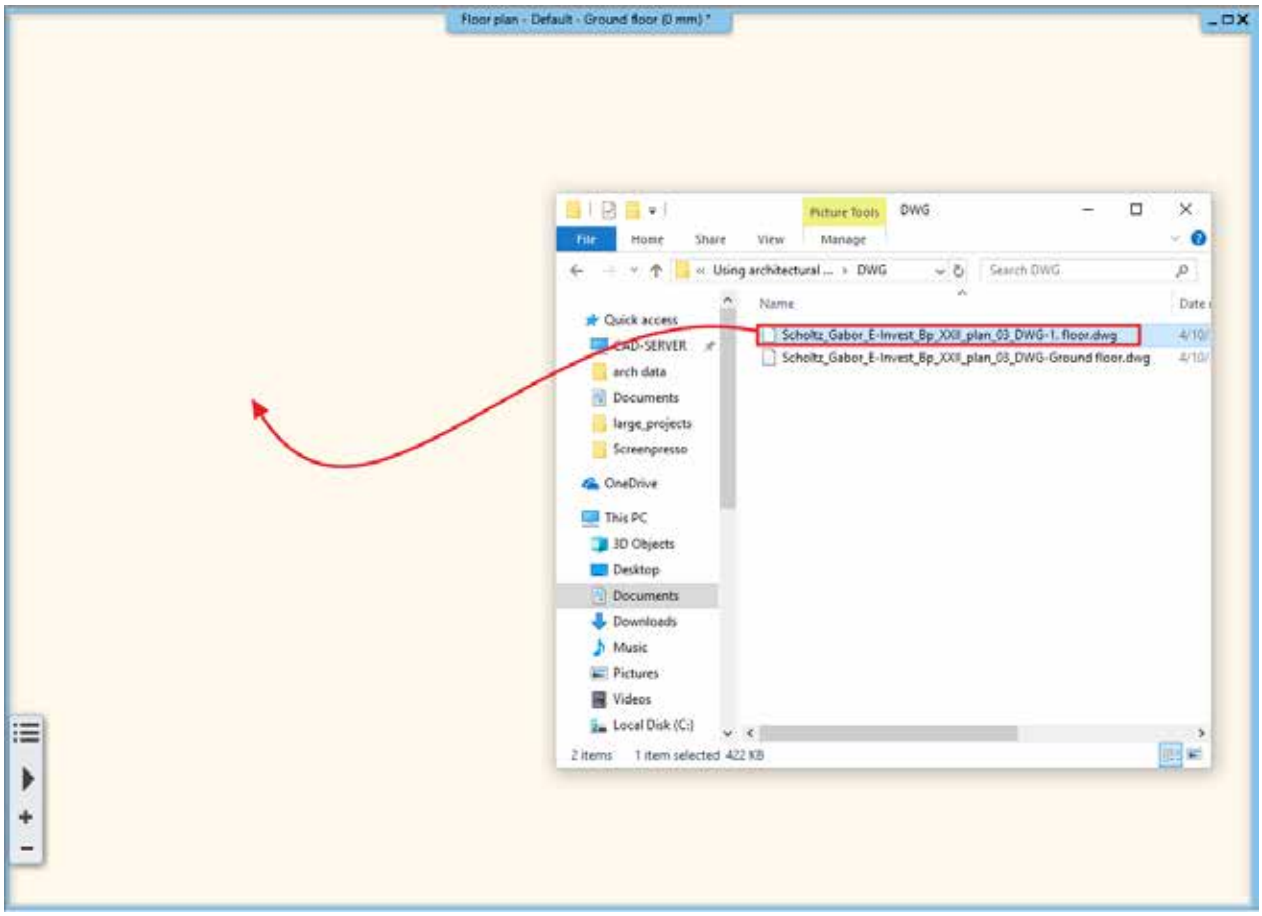
We have already seen before that we are currently working on a 3-level building. We have already finished with the ground floor. Next step is to create the 1st floor.

For this click on “Ground floor” button on the Status bar, now the “Edit Level” dialog window appears.

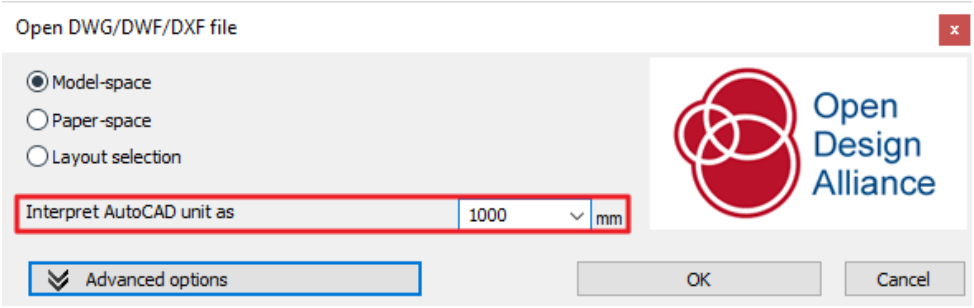
Now activate the first floor, then close the dialog by pressing “OK.



We will import the DWG drawing of the first floor to this level. You can do this not only by using File/ Import command, but by opening the File Explorer we can simply drag and drop the floor plan into the program.



In the pop-up window interpret AutoCad unit as 1000 mm and press “OK”.



Place the drawing with new origin.

First change the coordinate system from “Relative” to “Global”, by clicking on this icon , then select the floor plan.

Select the floor plan, choose the Edit menu – Move – Move command and select the left corner point of the supporting wall. Type 0, space, 0, finally hit Enter.

Using “Zoom All”, you can see that the corner point was placed into the origin.

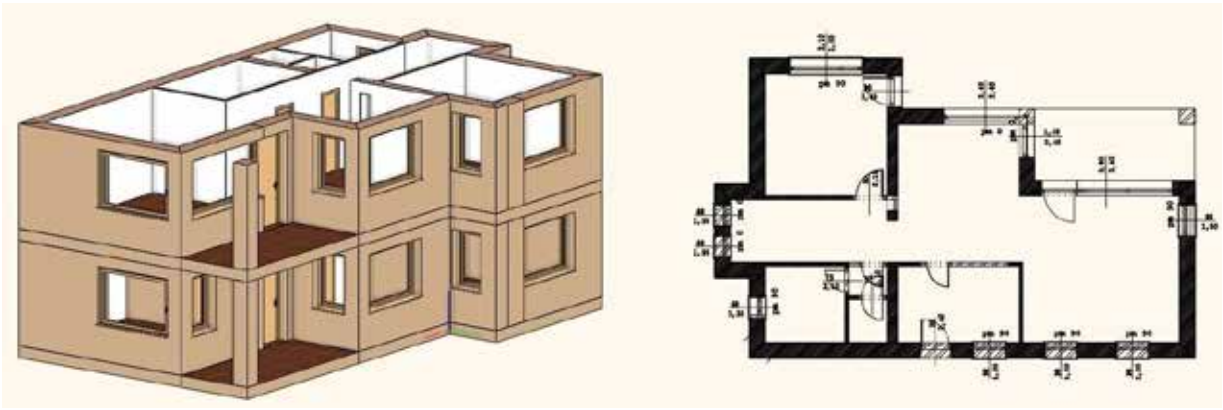
Shift levels with blue arrows you can move between Ground floor and First floor, it can be also seen that two DWG drawings are precisely overlaps each other.

In this case, it is not worth drawing the walls on the first floor, as main walls in buildings are the same at different levels. These have been previously created on the ground floor,
Now go to ground floor, select the entire floor plan and copy it to the first floor.

For this open Edit level dialog window and use “Copy objects to other floor” command . In the pop-up window select 1st floor.
Close the window by pressing “OK” walls were copied to the first floor.

Now the walls, openings, slab are copied to the first floor which is nicely represented in 3D view.

Based on the original floorplan we have to modify the walls. Delete those which are non-existent on the first floor. Move existing walls to the previously drawn place, then use L and T wall connection tools.



If we completed the first floor, import the 2nd floor DWG drawing. Finalize the model.

This how easy and fast you can create a multi-level building based on DWG floor plan.

1.5. Importing IFC model

Architects can provide us the floor plan in many formats during architectural design process. These can be .jpg, .png, raster PDF, PDF geometry, DWG drawing or IFC model.

ARCHLine.XP is IFC Coordination View 2.0 Import certified design software. Thanks to this we can get floor plans and 3D models at a higher standard from designer using other software like ARCHICAD, Revit, Allplan….

Importing IFC allows us to download real walls, slabs and other elements from a co-designer using another software, then edit them as real walls, slabs, and other elements. Finally, we can pass on the completed plan as an IFC file to co-designers, so they can work on it with convenience using other software.

Now let's see the case when we get the project as IFC model.

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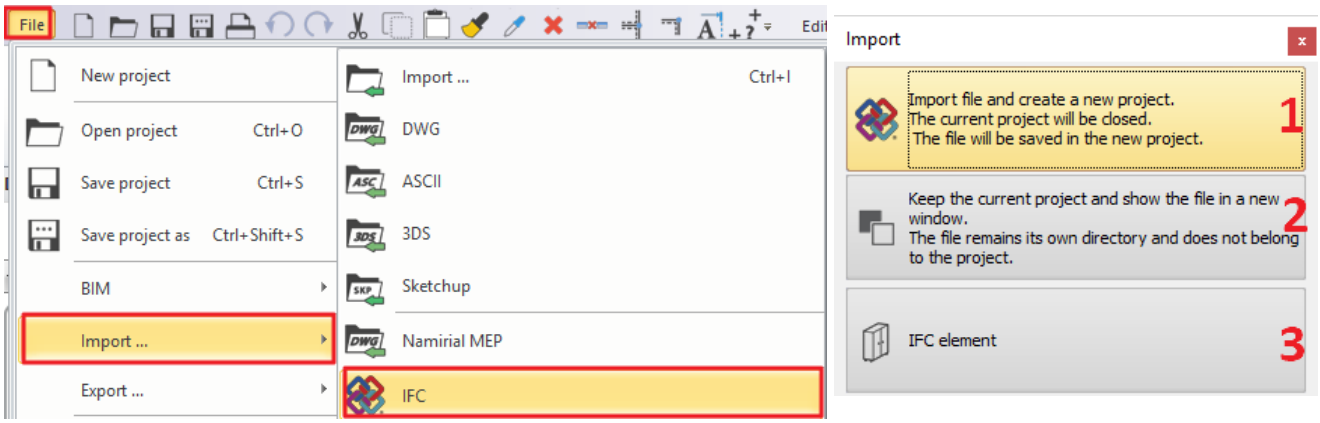
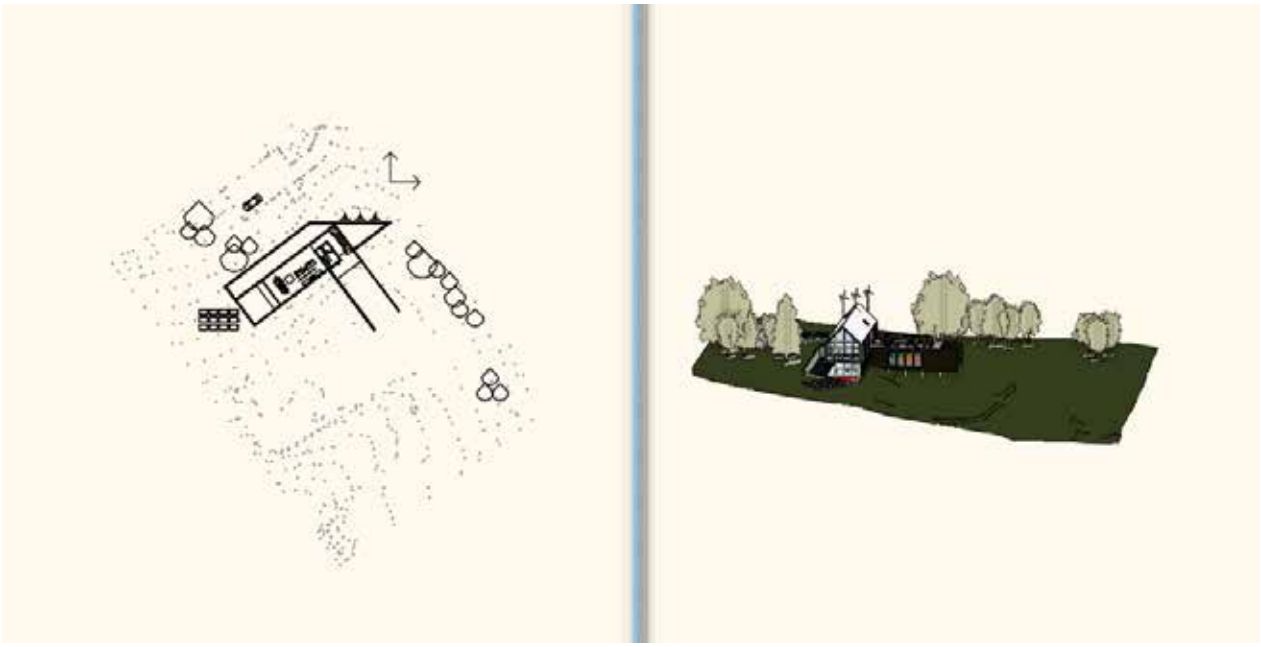
First import IFC file.
Click on **File/ Import / IFC** command. Now you have three options:



Choosing **fist** option, we open a new project file and IFC model will be imported here, then we can work on it.
The **second** option is recommended to use if we are working on a project and we want to open a new window where to import the IFC model. As later on we want to use or copy some of its part onto the currently opened floor plan.
Using the **third** option we import the object as IFC element.

In our case we want to import a floor plan as IFC, therefore we choose the first option.

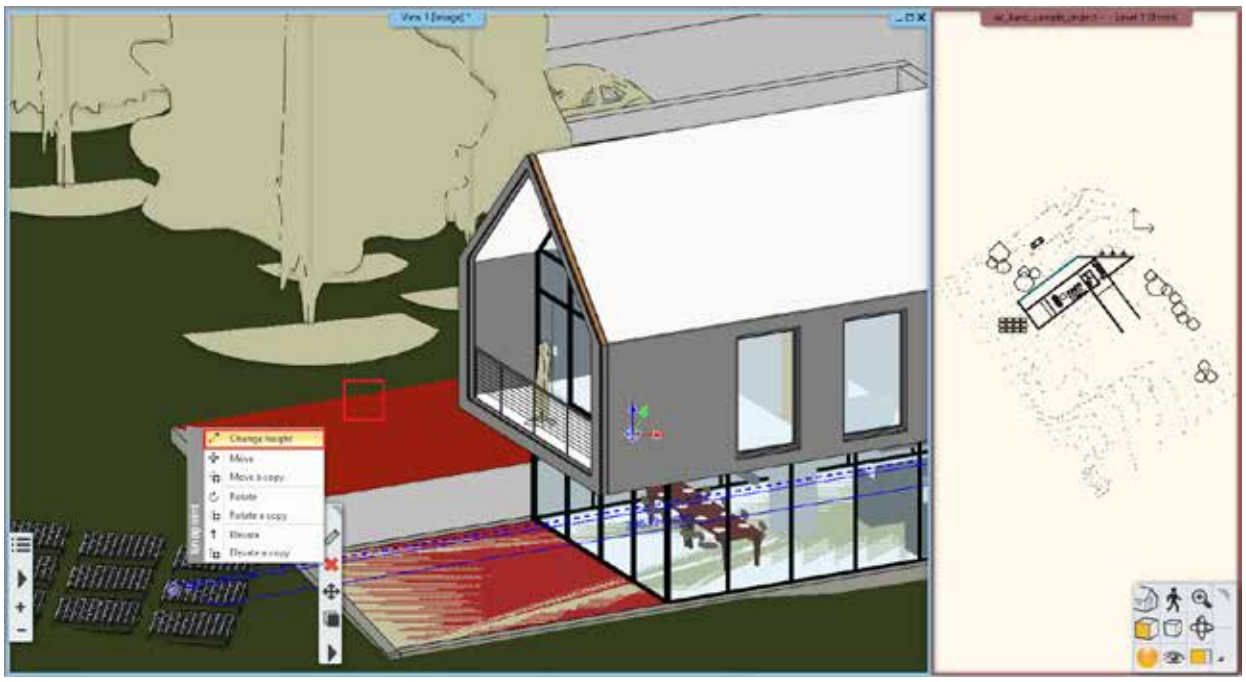
Now choose IFC file and click on "Open". In the previous examples we demonstrated how much work is to process an architectural floor plan. In case of IFC the architectural design process will be the fastest.
We got the entire floor plan and 3D model during the import, but IFC model does not contain drawing elements such as dimension or labels.



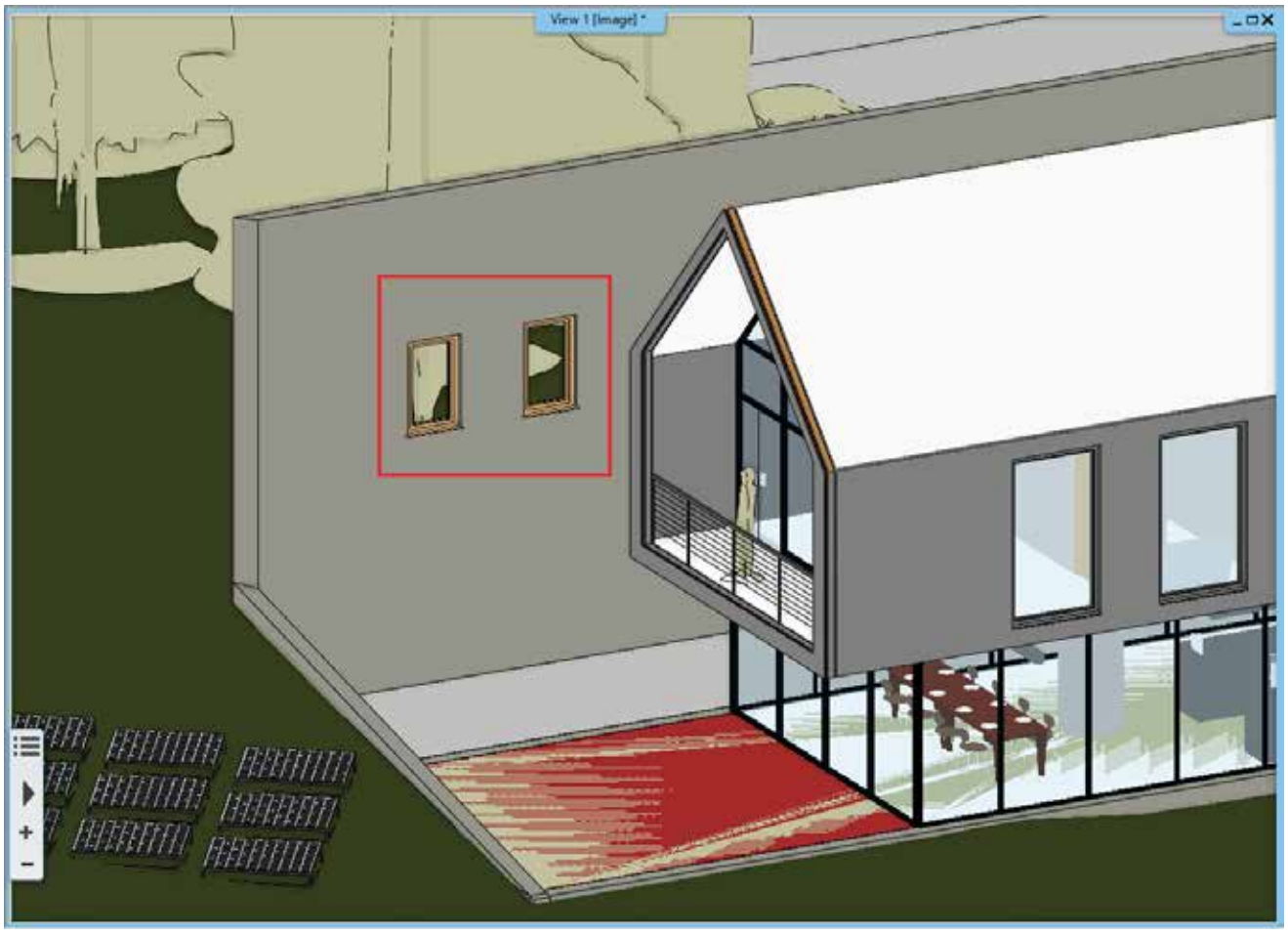
During IFC import the model keeps its original level structure. We can check this by opening the Level Manager.

Now let's see the 3D model. The terrain, other objects and the building are included in the 3D model. We can modify them.
Now delete trees to make easier to see through the model.
Now let's examine the building closer.
Click on one of its items, e.g. a wall. On the left side under Properties you can see that it was brought in as a wall in the model. These items not only correspond to ARCHLine.XP's item classification, although these can be adjusted/modified.

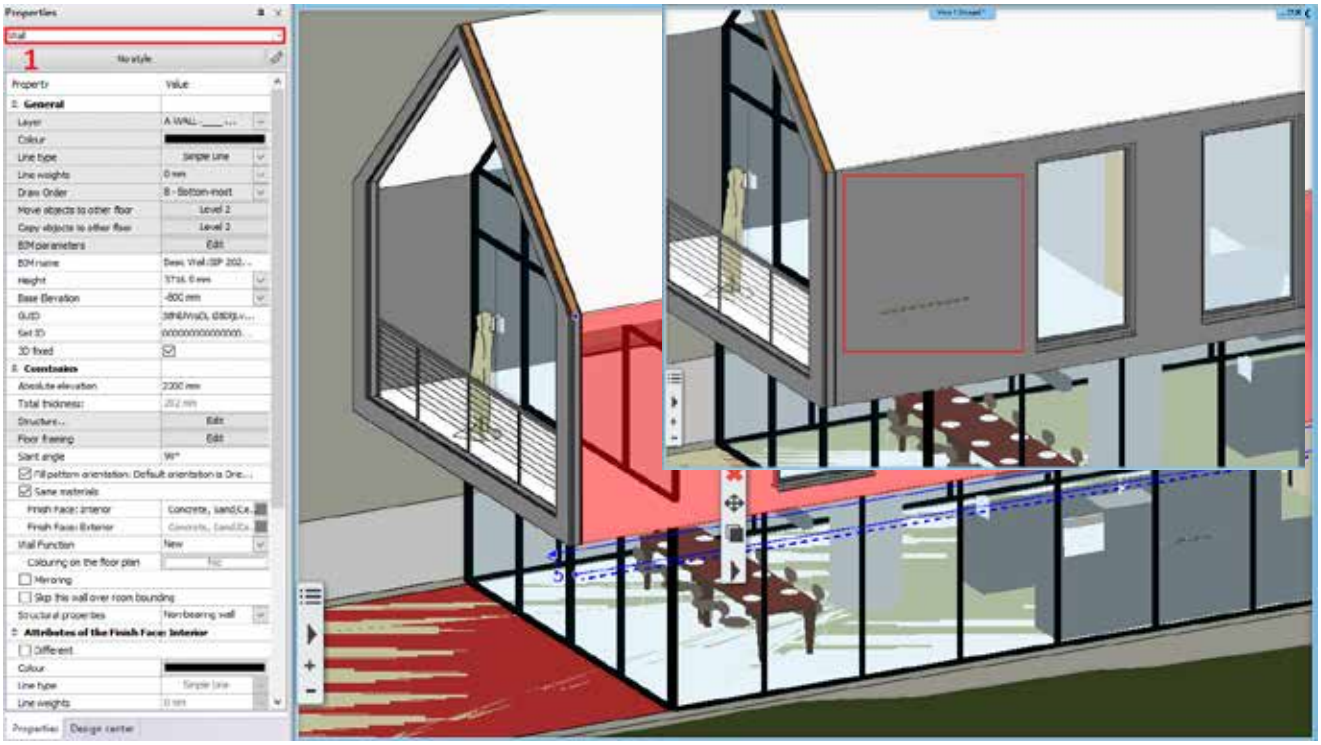
Now click on a wall and change the height. Now click on the wall and increase the height.



This is wall still remained a wall so we can place opening there. For example, place some windows.

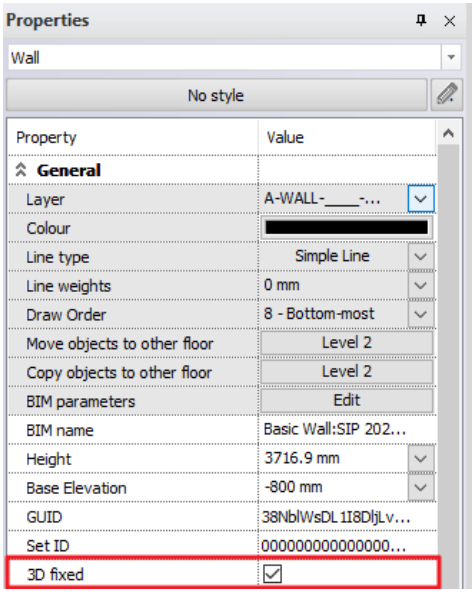


Not all walls conduct this way. Let’s check this wall with windows. The program shows at two places that this is a wall.

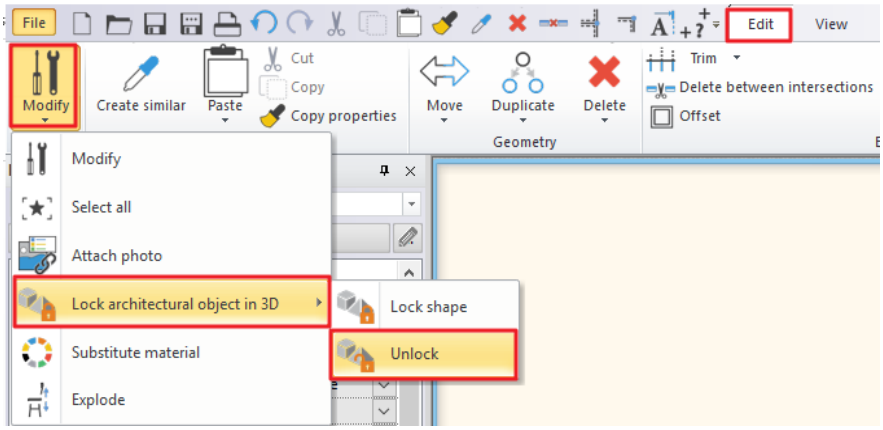


Now place a window on this wall. As a result, you can see that the window was placed, but it is not visible.

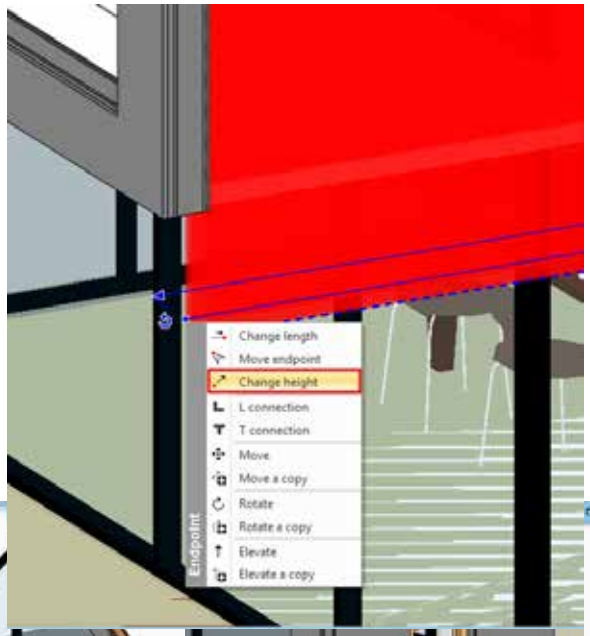
This happens when the software imported the item is 3D fixed. This can be checked on the side menu too. In this case we have to unlock fixation in order to execute any modification.



We have to do the followings:
Go to **Ribbon menu / Edit / Modify / Lock** architectural object in 3D command.



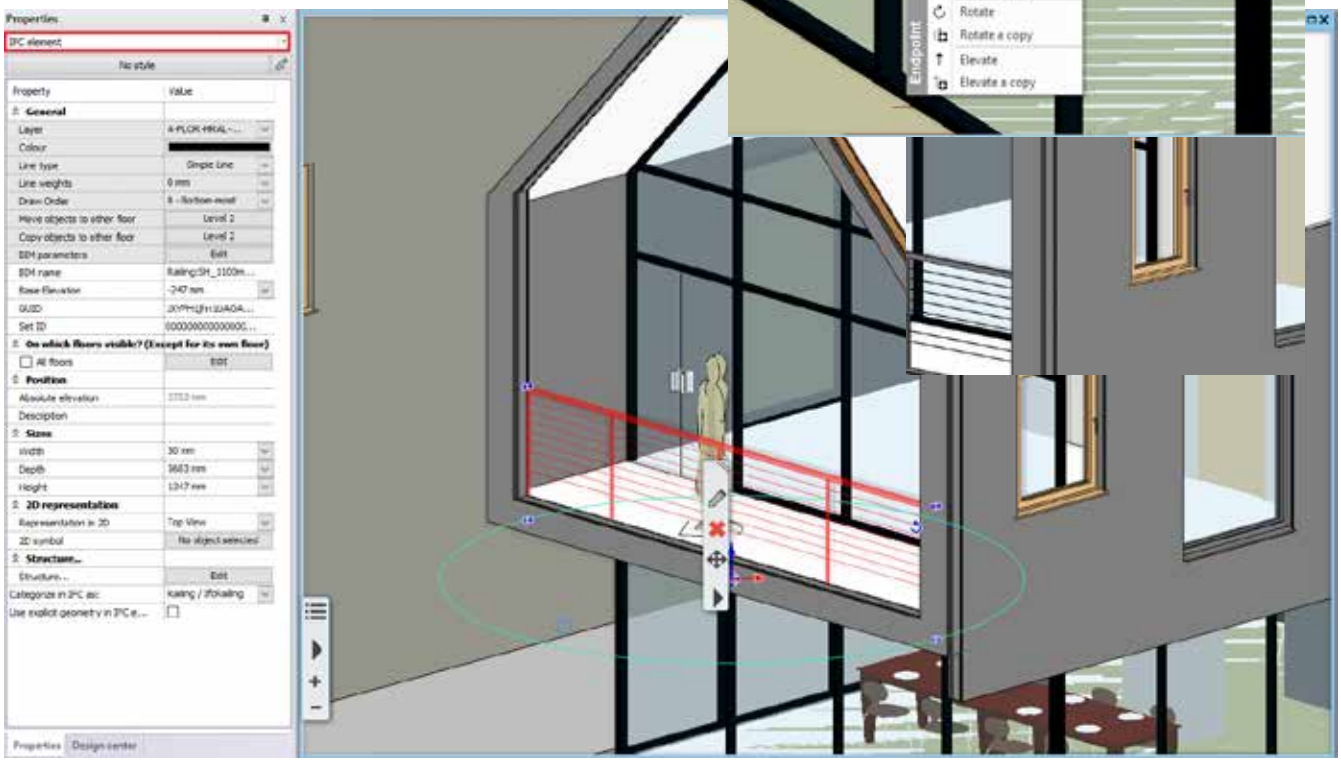
After resolving the fixation, the previously placed window now appears on the wall.
The wall dimension has also changed, the bottom is now much below. Change the height back to the original position.
Now click on the wall, in the appearing pop-up menu choose “Change height” command.



Align to the next wall end point.
Now remove previously placed window, as there will be no need for it during our work.

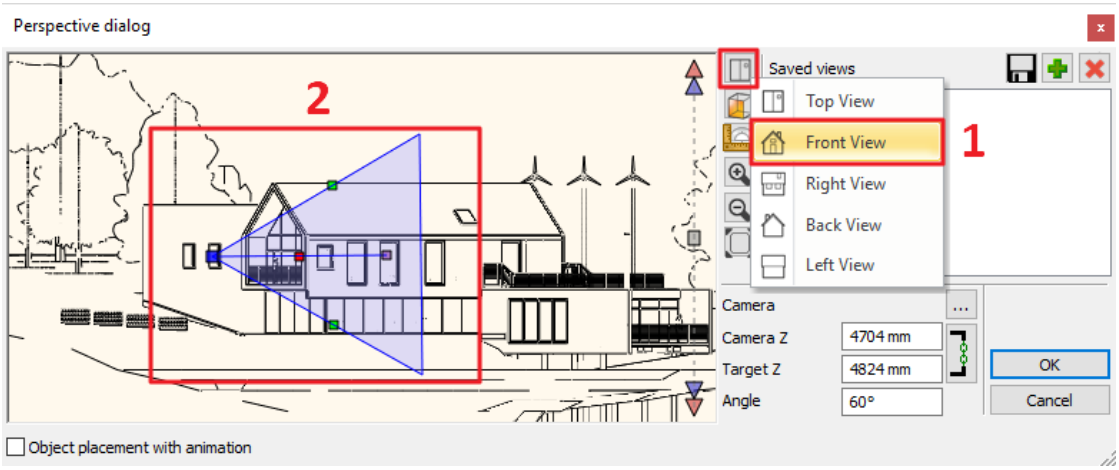
The imported items can be architectural item such as walls, slab.

Now click on the hand rail. As you can see this is an IFC element.

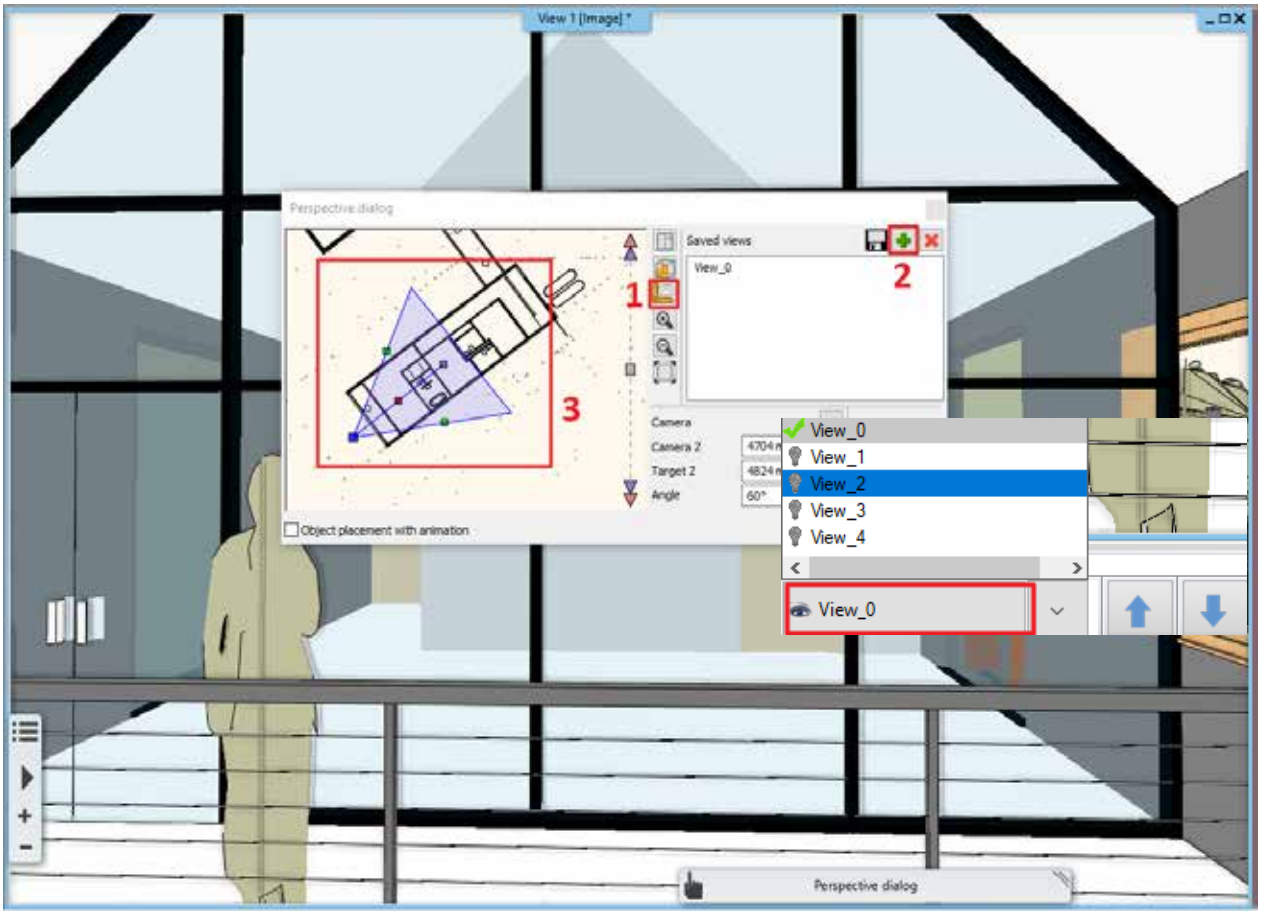


Now let’s start our work, the task is to furnish the room on the first floor facing to the balcony.

For this we have to create a perspective view.
In order to set the correct height of the view choose front view (1) option in the appearing pop-up dialog window. Now move the camera point to the shown position i.e. to the first floor (2).



Set 2D view. (1)
At the first view set the perspective to look the room from outside. (2)
If the preferred view is set, press green cross to add to the list of the saved views.



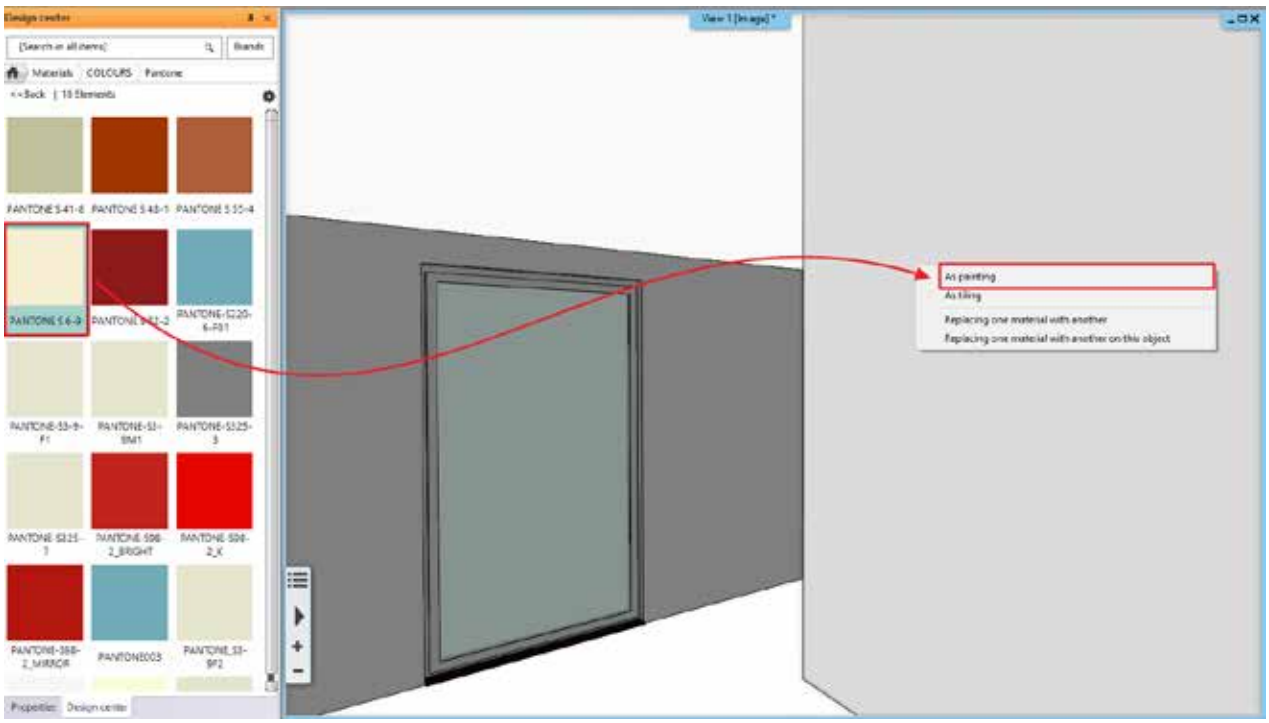
Add 3-4 more views, this way you can practically view around in the given room.
Press OK to close the dialog window.

Start from “View 0” and delete the man standing on the balcony.

Shifting between views we can gradually look around in the room.

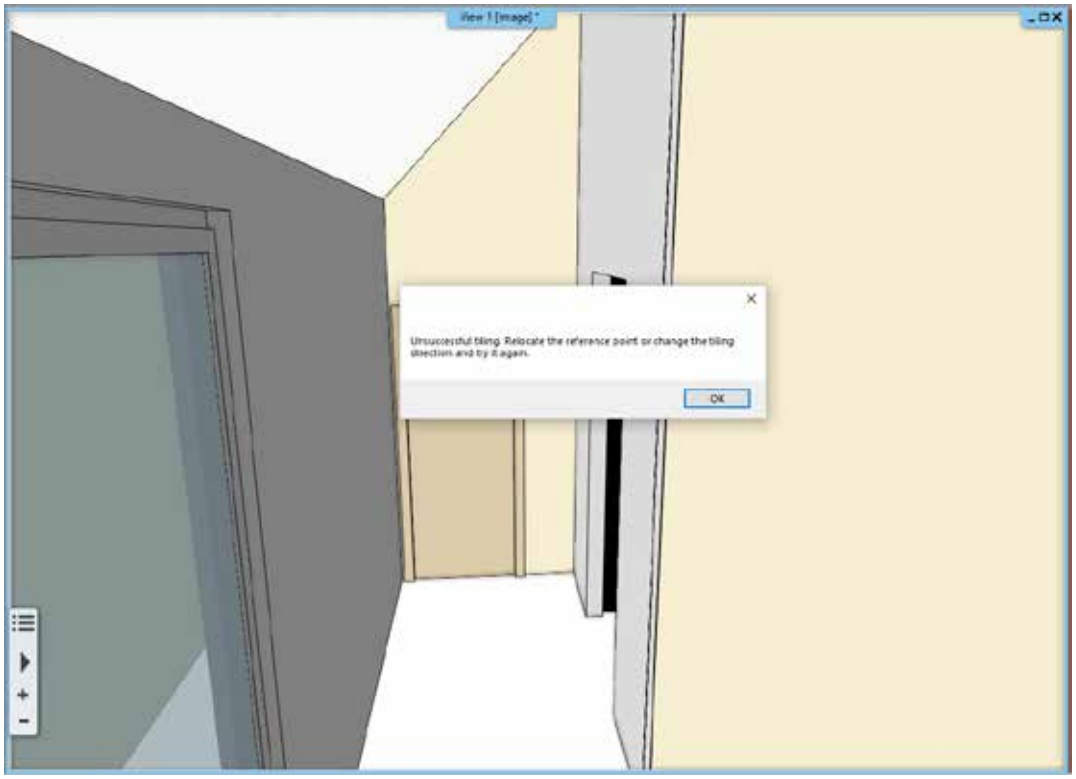
Let’s see some examples how to work in an IFC model. Obviously, the workflow is the same as we had built the model in ARCHLine.XP using architectural elements.

First, we put colours on walls.
Therefore, we have to go to Design Center then Catalog / Materials and here you can choose a colour.
Use drag and drop to place the chosen colour on the wall and then from the appearing menu choose “as painting” option.



Click on the second wall, a waring comes up, as we cannot apply the paint on the selected wall. The reason for this that this had been previously 3D fixed.
Now unlock it.
Try again to place colour on this wall.
Apply colours on other walls too.

In case of the wall show below you have to also unlock the 3D fixation.

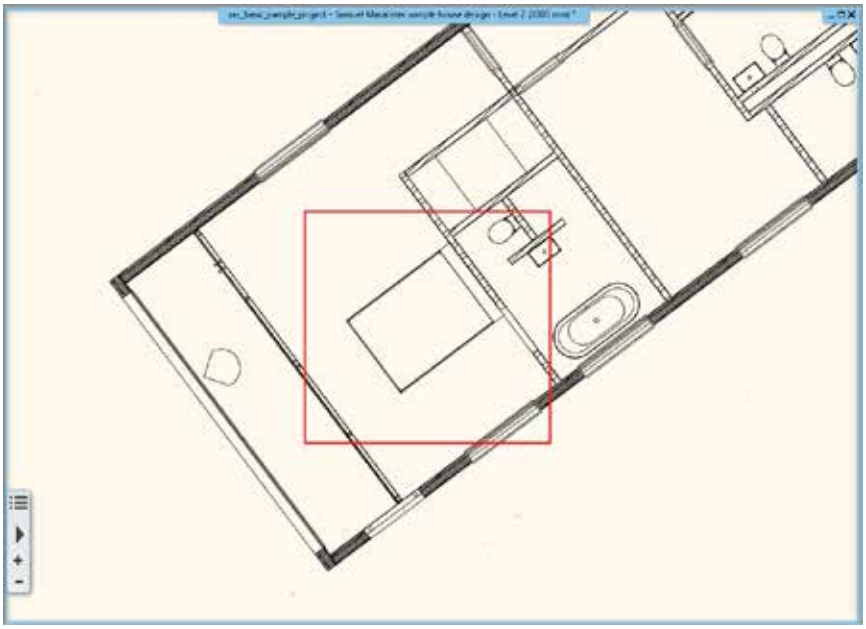


Now modify the floor material and put a carpet there.
Select a carpet from Catalog / Material / Fabrics / Carpet folder and then choose a colour. Place it “as painting” on the carpet.

Continue the design the same way.

You can also place here furniture, let’s see an example.

From Design Center / Catalog / Objects / Bedroom library select a bed and place it on the floor plan. Activate the floor plan and place the bed as it is shown on the picture.



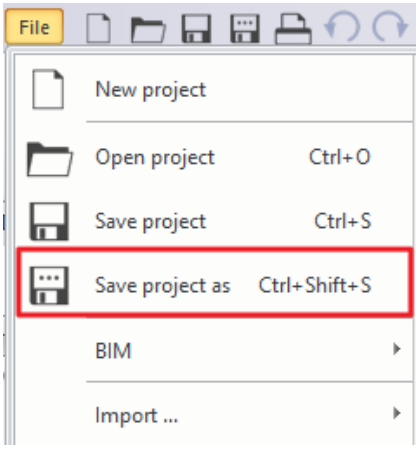
Finally set the bed relative height to zero.

We demonstrated a few methods how to dress up a room in order to create the interior design plan.

Workshop 2: How to save and manage large-size project

2. Workshop: How to save and manage large-size projects

This tutorial explains how to save project files in different ways, and also gives you essential guide how to manage large size projects.



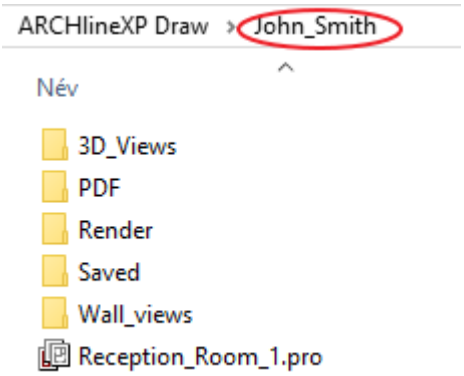
- Save Project
- Backup archive
- Automatic save
- Project management
- Large size project management

Open File Explorer and watch the following tutorial videos on this topic:
www.archlinexp.com/education/tutorial-videos/archline-xp-level-2/organized-modelling-level-2

Choose the folder *…ARCHlineXP Draw\2018\Course_Intermediate\1_Importing_Architectural_Plans* and the file **Reception_Room_1.pro**

2.1. Save Project

Before starting your work on the project, save it under a new name.
Select Ribbon menu / File / Save Project as command, then name the project and select the folder where to save it.



Categorization

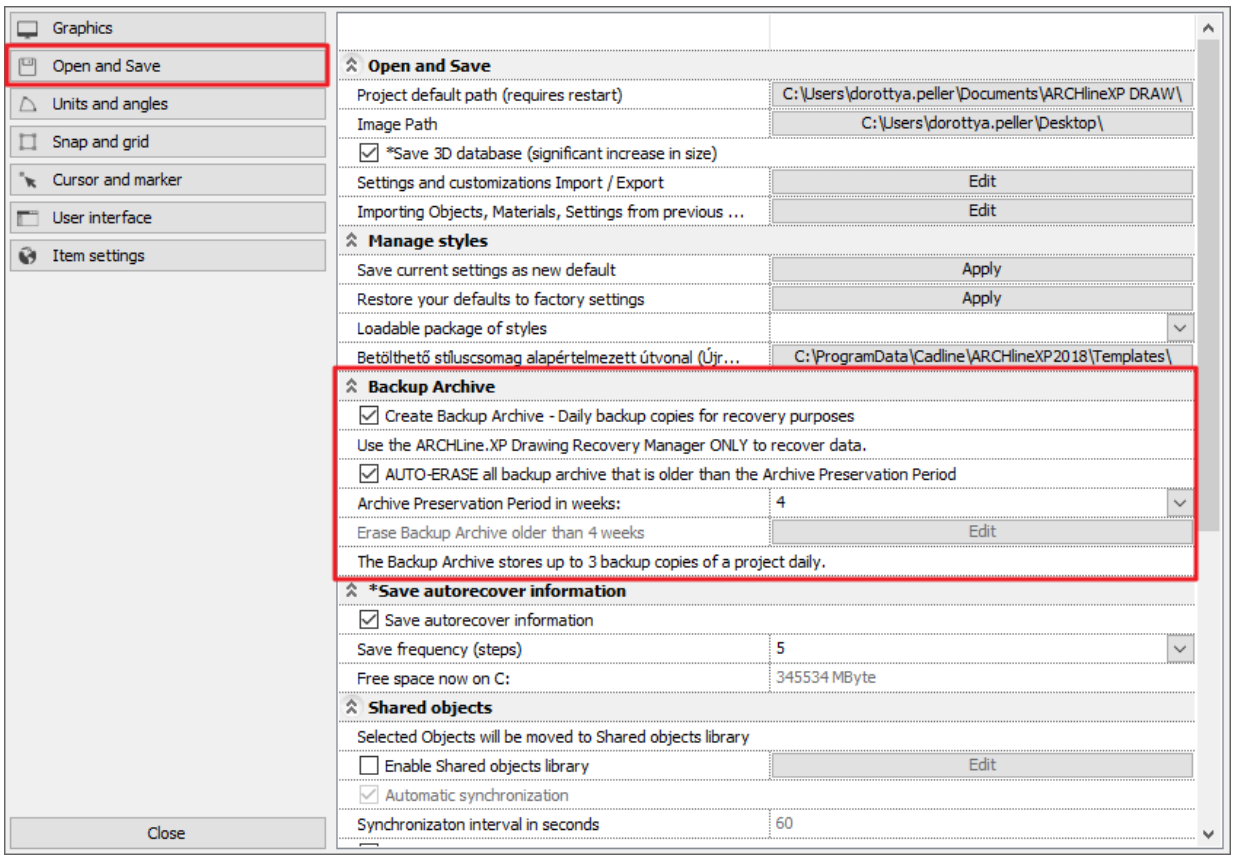
- Now save the project under the folder with the name of the customer:
  ARCHLineXP Draw\Customer_name\project_name.pro,
  Here we can create sub-folders for different documentations:
  Pl. PDF, Render, 3D_Views, Wall_views

2.2. Backup archive

In ARCHLine.XP there is a Backup Archive function, this can help us to restore a project at a previous stage. It is important to know this does not replace Save and does not contain the latest version. The backup archive help us to restart our work on the project due to an unexpected computer crash, when the operating system, stops functioning properly and exits. Every day the program always makes a copy when opening a project. During the daily work another two can be created, altogether three *.pro* extension flies can be stored under ARCHLine.XP Draw /2018 folder, in a hidden subfolder dated on that day. Backup archive properties can be set manually

Click on the cogwheel in the left bottom corner and find Backup Archive under „Open and Save”. Here we can set the followings:

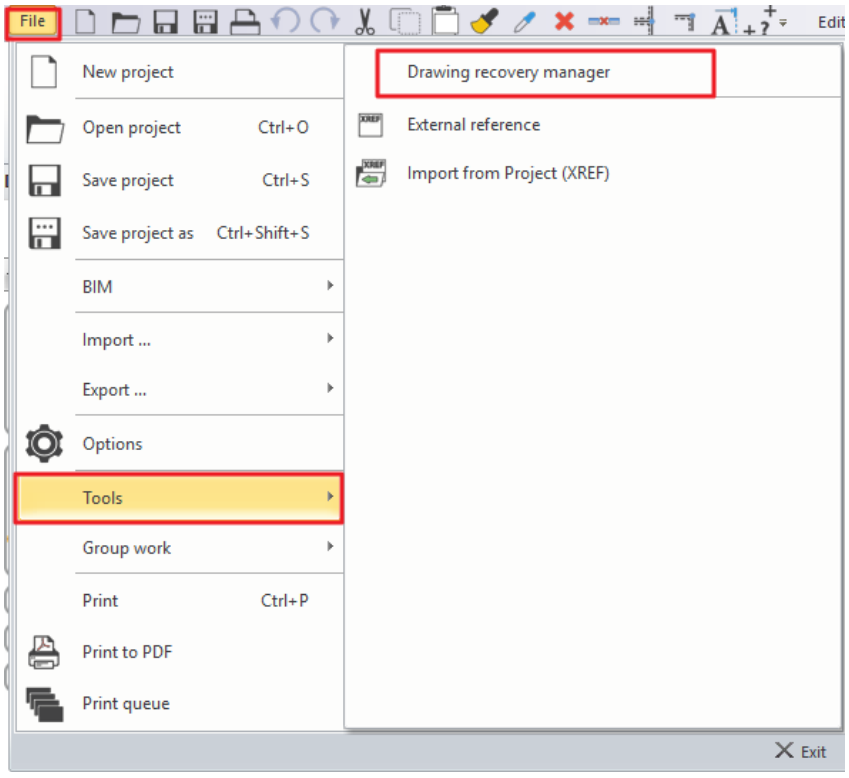
- Create Backup archive
- Delete backup file that is older than the given time interval.
- Set the interval of archiving.



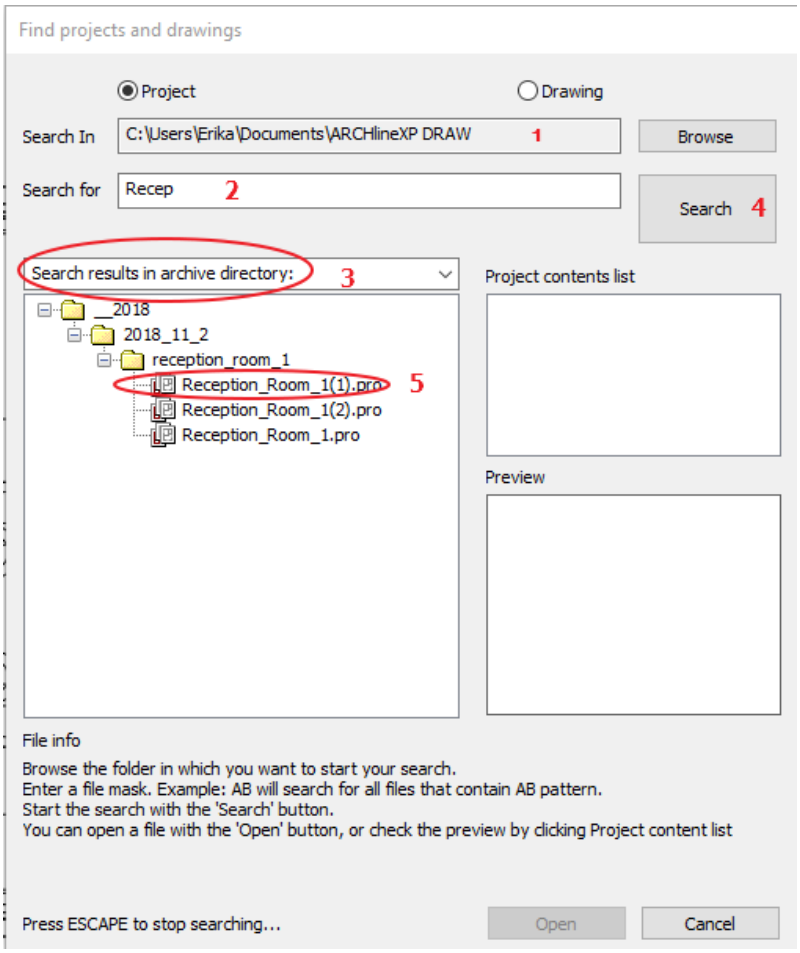
Please note switching off the auto-erase function means that archived files will use your PC memory. Deleted archive files go to Trash.

2.2.1. Recover Backup Archive

It is very easy to recover files from Backup Archive. Click on File / Tools / Drawing Recovery manager.



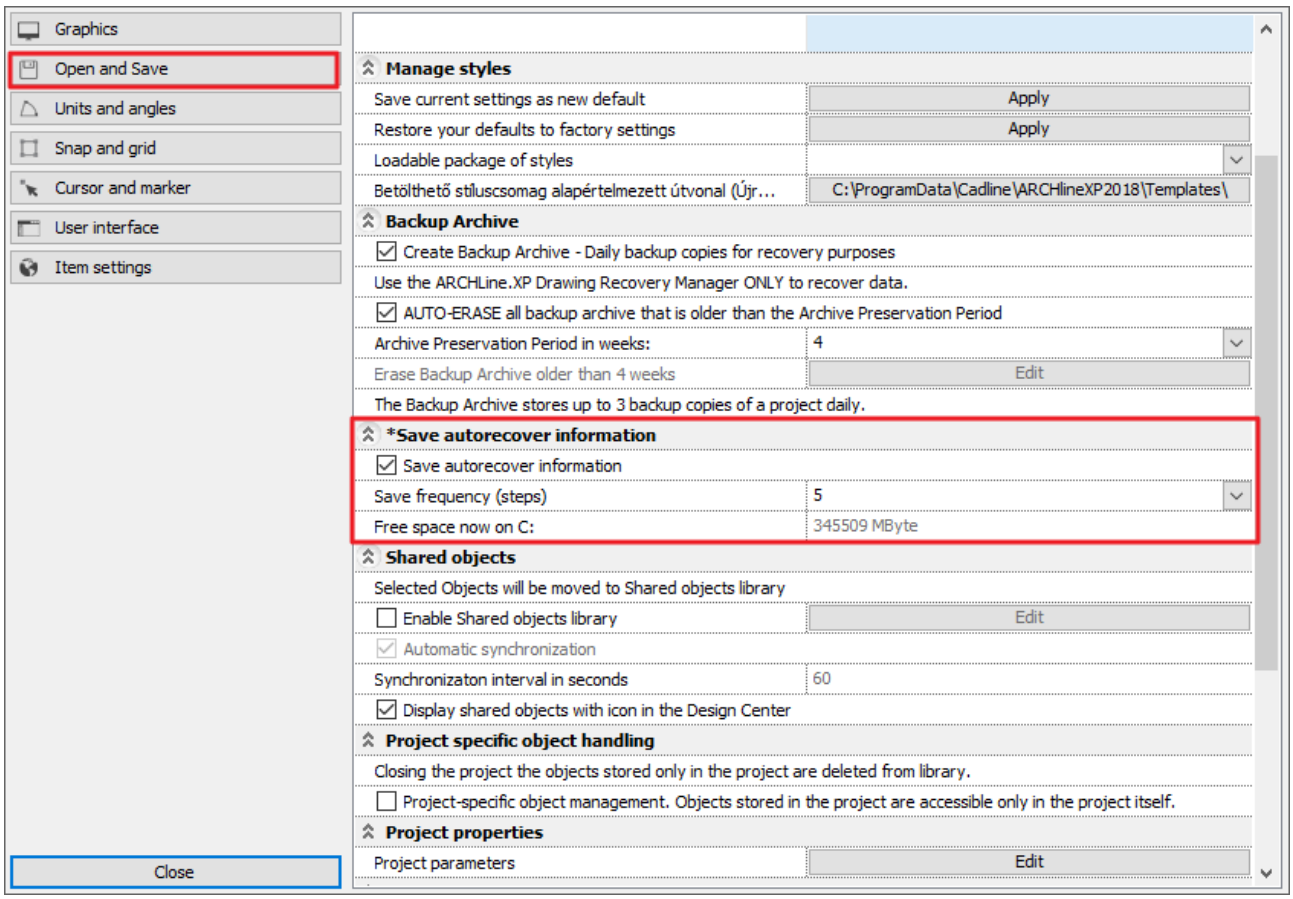
In the appearing dialog window select the folder you want to search through, by default it is the ARCHLine.XP Draw folder. (1)
Than enter the key word in your project name (2), select the „archive directory" option from scroll down menu, the program will run a search in here (3).
Click on „Search" (4) and the program lists the results.
If you find the requested file (5) by clicking on „Open" you can download it.



2.3. Automatic save

The automatic save helps in the recovering a project with a little loss due to unexpected system failure. We call this function "Save Autorecover".

Click on the cogwheel icon in the left bottom corner.
Under „Open and Save" find Save Autorecover information. Here you can modify the default properties.
You can activate the autosave function and set the frequency of autosave.



It is important this function does not replace Save. When you turn off the computer in the normal way, this file automatically deleted, and if you choose „Exit without save" and you rely on only Save Autorcover function you will lose all modification on the project you done since the last save.

In case of large-size projects it's worth increasing the frequency (number of steps). It can be bothering saving a large content after every five steps which may take seconds.

2.4. Organizing projects

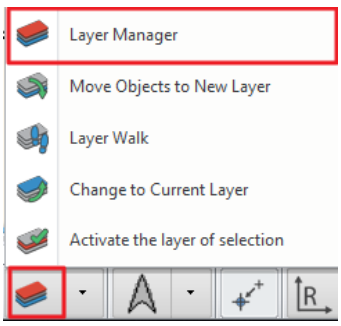
Choose the folder *…ARCHlineXP Draw\2018\Course_Intermediate\2_Project_management* and the file **Reception_Room_2_layers.pro**

Proper organization is needed for well-ordered, self-explanatory and easy to use projects. We have to do two important things.

- Handling and organizing layers properly
- Setting and naming views correctly

2.4.1. Organizing layers

The consistent layer management is necessary to see our project through easily. Layer management helps to handle objects, walls, and furnishing of other rooms in groups.

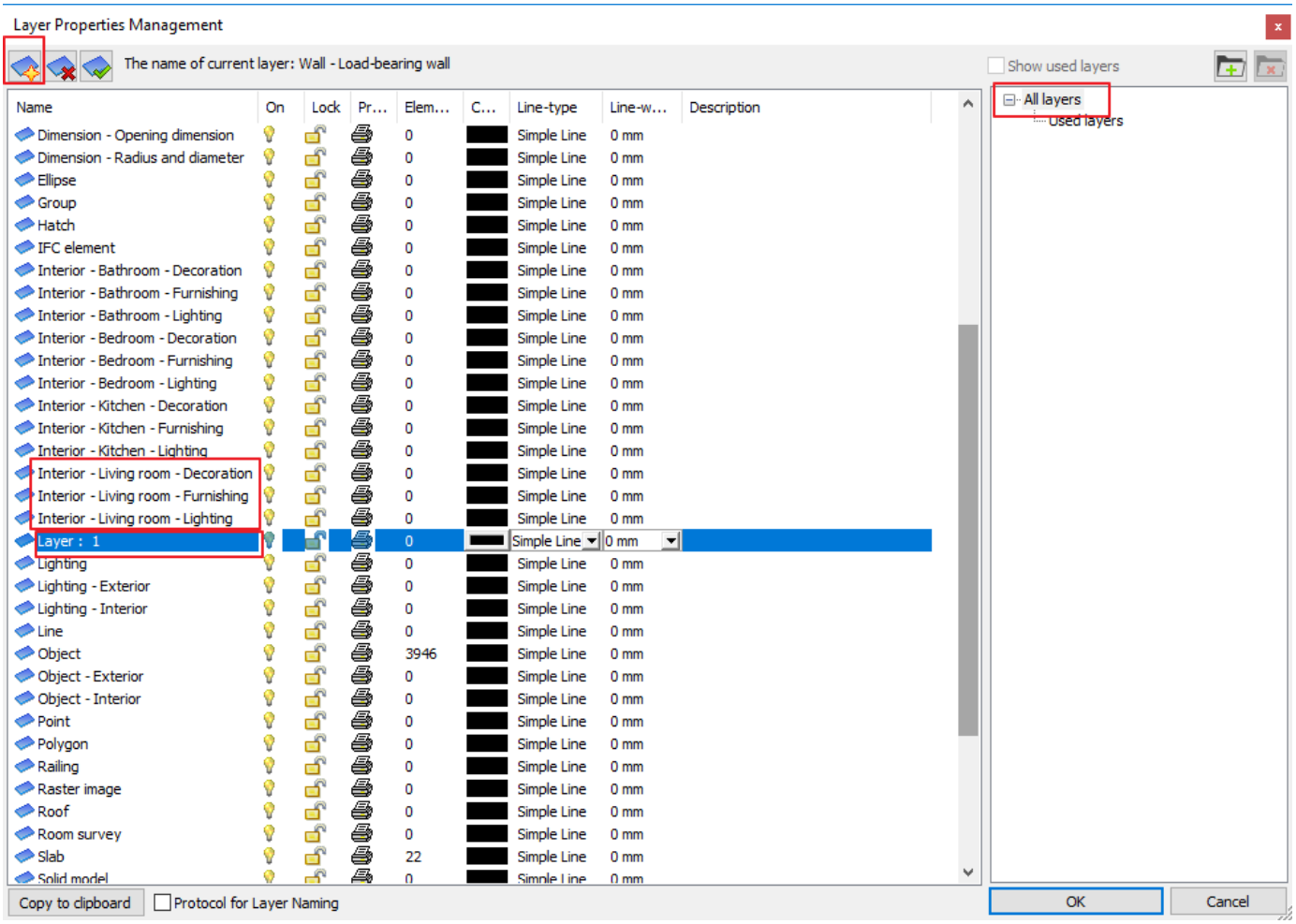


Open "Layer Manager". In the appearing dialog window, you can find layers.
Go to All layers group and create a new layer by clicking on "Add new layer" button.

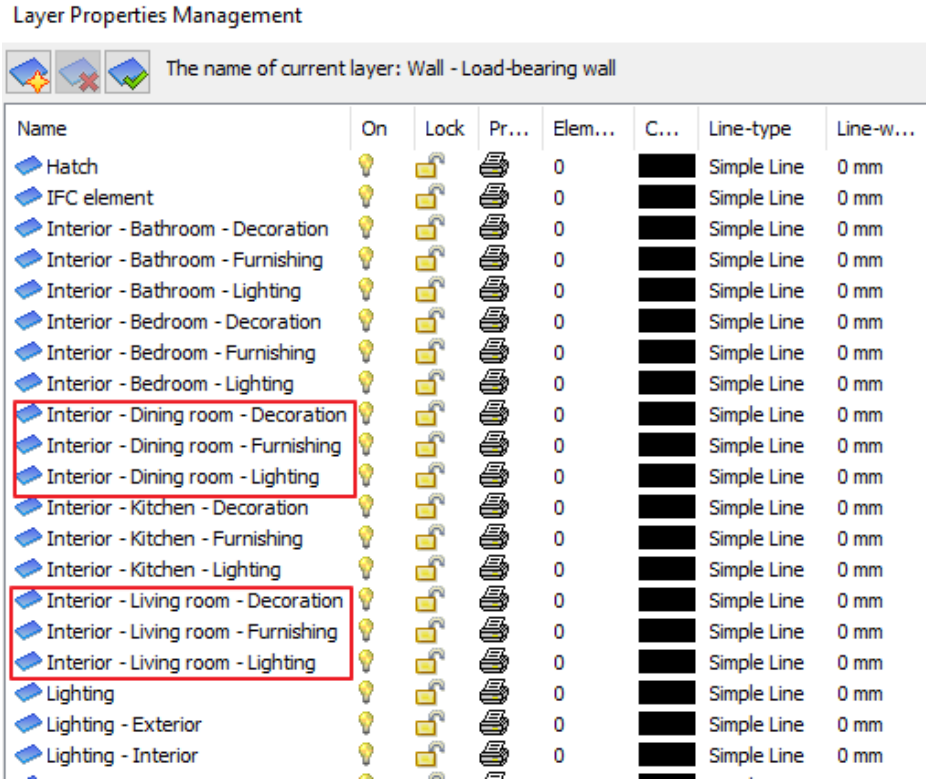
In the project there are two „rooms": Living room and Dining room.
Now create 3 layers only for the Dining room, such as:

- Interior -Dining room -Decoration
- Interior -Dining room -Furnishing
- Interior -Dining room -Lighting

.

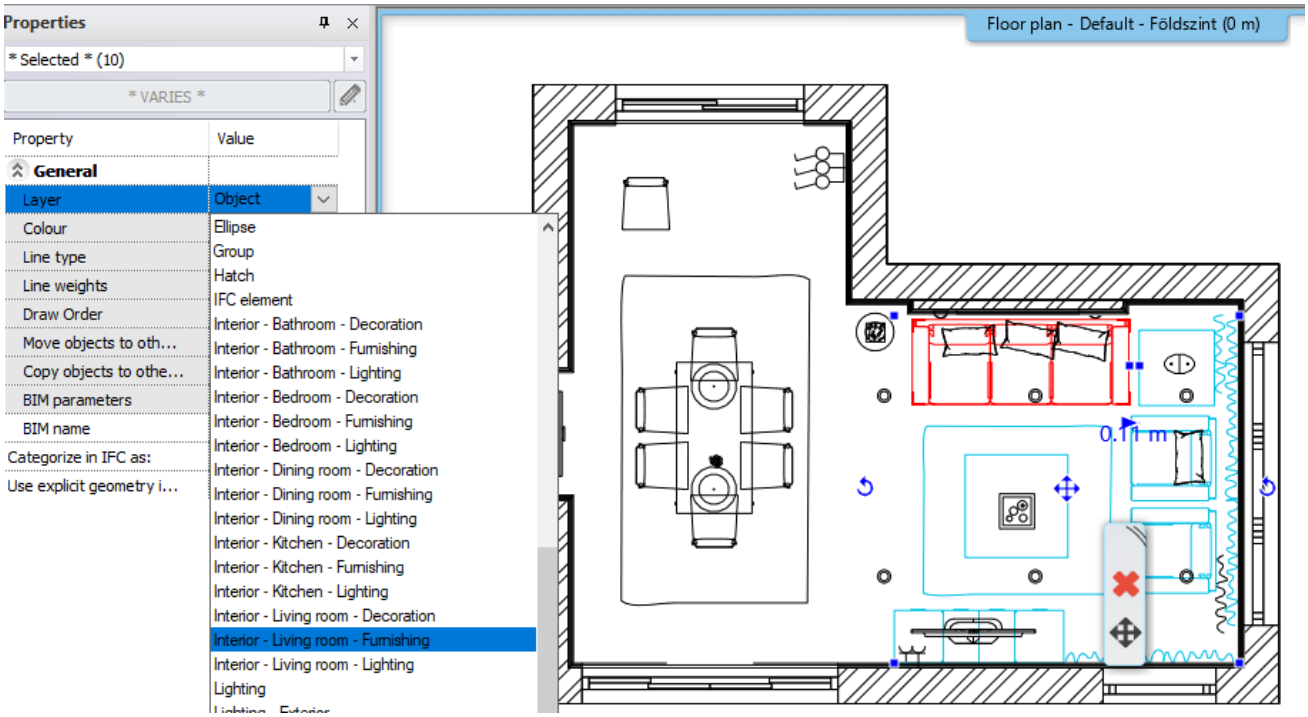


Entitle the ***Layer:1*** as follows: ***Interior -Dining room -Decoration***
Now repeat these steps in case of other two categories.



When you finished close the dialog window by pressing “OK”.

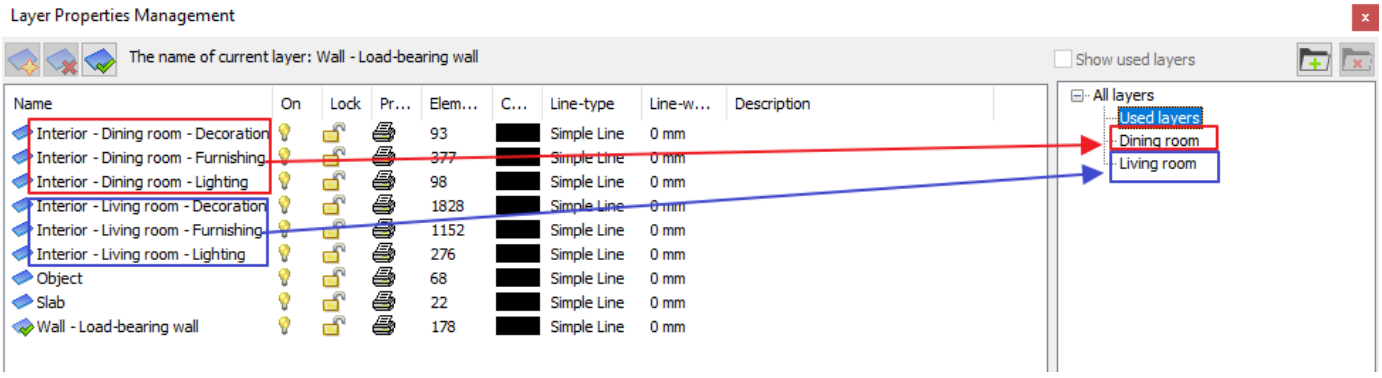
Now select all furniture in the living room area.
Go to Properties and select *“Interior – Living room - Furnishing”* layer from the dropdown layer menu.



Then select all furniture in the dining room area.
Go to Properties and select “Interior – Dining room - finishing” layer from the dropdown layer menu.
Continue for the decoration and the lighting objects

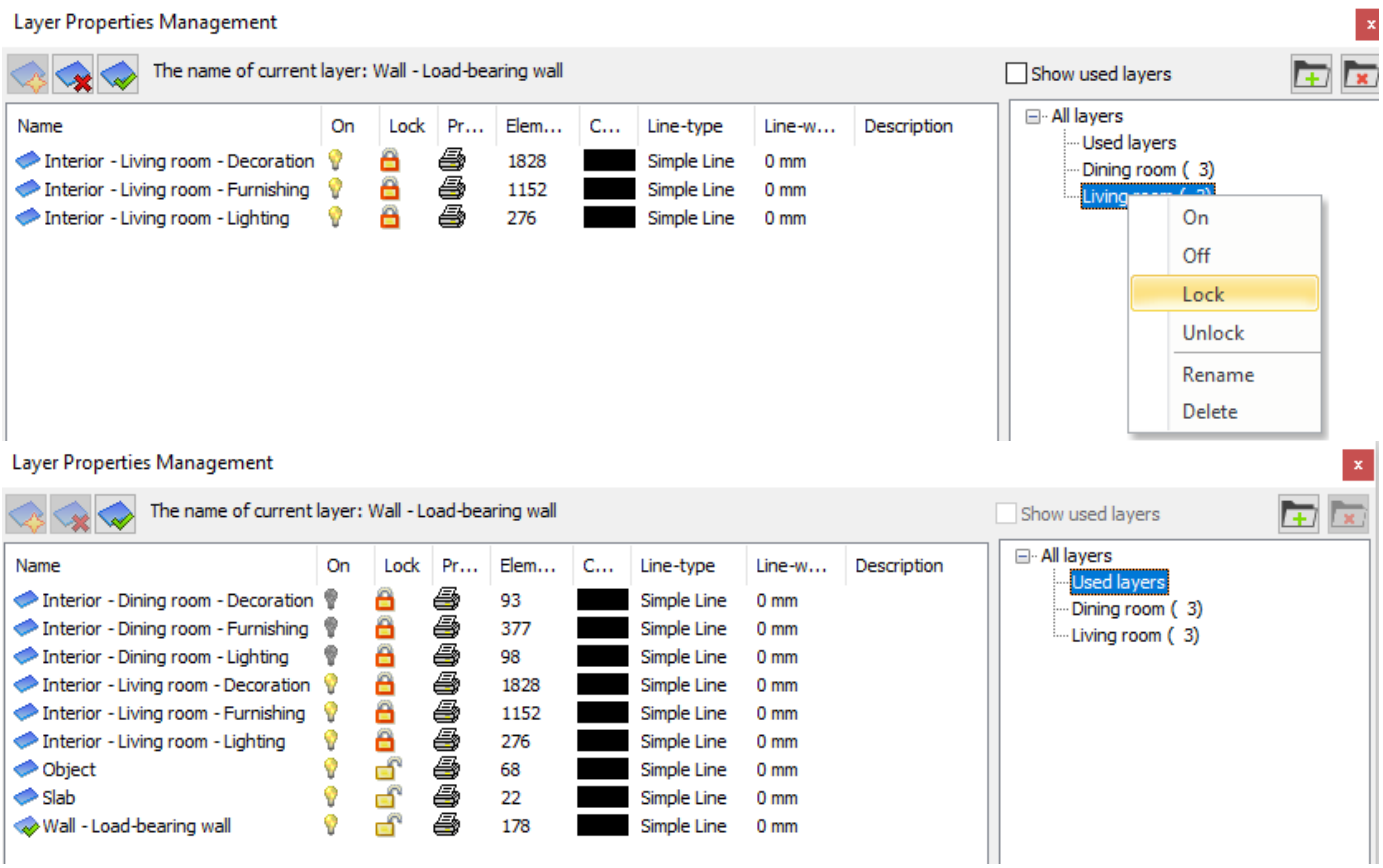
Now create two main layer groups, one for Living room and one for Dining room.

Open Layer Manager.
In the appearing dialog window click on the “Used layer” category on the right side.
On the right top corner click on create new group icon, then create one for Living room and one for Dining room.
When these are done, select 3-3 corresponding layers, and use “Drag and drop” to move them under the Layer Group.



Within a group you can handle layers at the same time. You can easily turn on and off, lock and unlock them.

Lock the Living room layer group. This is indicated by a closed padlock.
Now turn off the Dining room layers group by clicking on the bulb icon. When it turns to grey, the layer is switched off.
Close the dialog window by pressing “OK”.



Items of switched off layers cannot be seen on the floor plan. Although locked layers can be seen. You can refer to these items, but you cannot adjust, modify nor replace them.

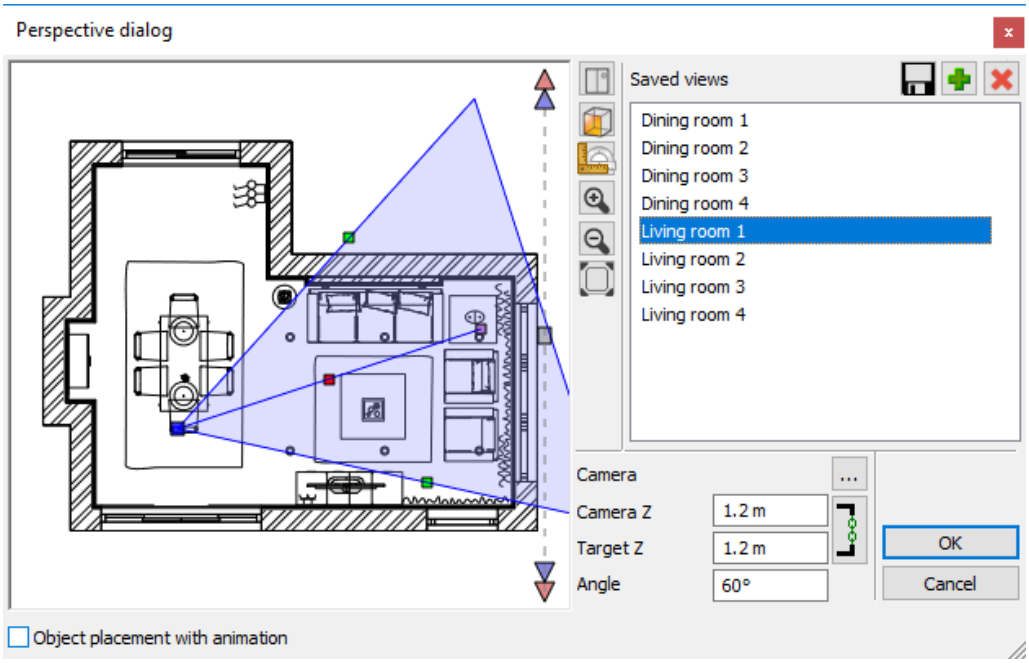
Now go to 3D window and rebuild the model. None of the items on locked or turned off layers will appear in the 3D window.
Open Layer Manager and turn on and unlock each layer group.
Rebuild the model in 3D window.

2.4.2. Settings and labelling the perspective views

The other essential part of the project organization is setting the views properly in the well-ordered projects. If you consistently follow the same logic (even clockwise), to set perspectives in the 3D window and name them appropriately, it will be easier to navigate through them.

In case of multilevel buildings, it can be useful to put numbering before the name of the perspective views. This way we can easily distinguish from the ground floor: 0_bathroom_ view_01 to first floor: 1_bathroom_view_01.

Now move to 3D window.
From Navibar select the right bottom “Perspective dialog” icon.
The program automatically will put all views in alphabetical order. Always put serial number after the name of the consecutive perspective views.



If you follow the instructions above perspective views always will be orderly arranged in your projects, which makes easier and more transparent your work and project.

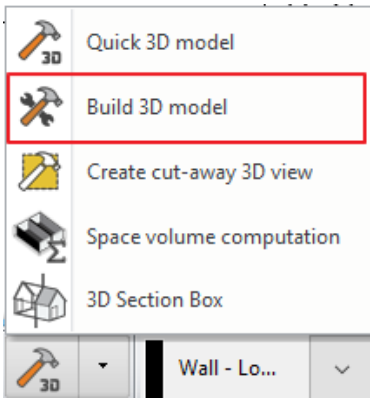
2.5. Managing large-size projects

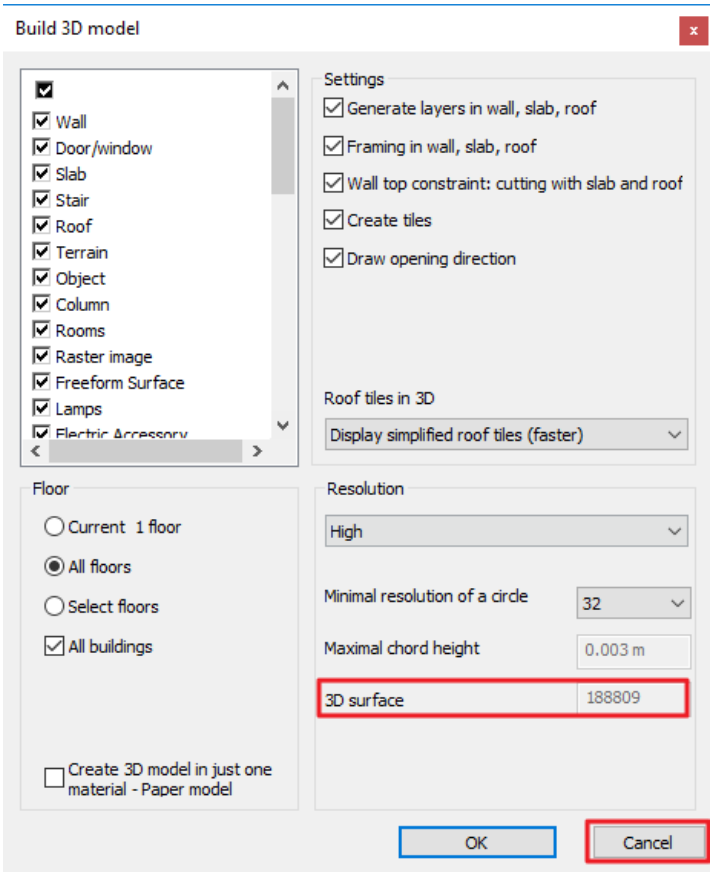
Choose the folder *…ARCHlineXP Draw\2018\Course_Intermediate\2_Project_management* and the file **Reception_Room_3_3Dsolid.pro**

The size of a project can significantly increase while we are working on it. It's worth spending some time to clear the project that can reduce its size. This contains three steps:

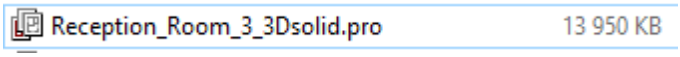
- Remove superfluous 3D solids
- Delete too large objects and
- Delete those contain too many materials.
- Delete unused materials in your project

Use 3D Build tool on the Status bar – Build 3D model to check number of 3D surfaces.
In the popup dialog window, you can see that the project contains 188 809 3D surfaces. This number will decrease after clearing. Close the dialog by pressing "Cancel".





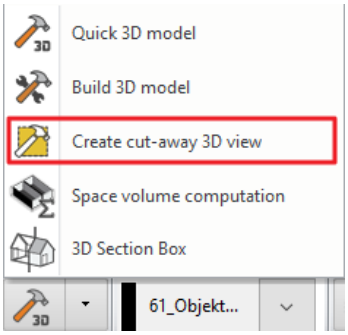
Now check the size of the saved project on your computer.



Currently the size is 13 950 KB. This also will be decreased after clearing.

2.5.1. Delete superfluous 3D solids

There might be 3D solids in the project that were temporarily used during 3D modelling, we did not create an object and accidentally remained in the project.
3D solids only appear in 3D, they do not have a floor plan symbol.
These unnecessarily increase the project size; therefore, we have to delete them.

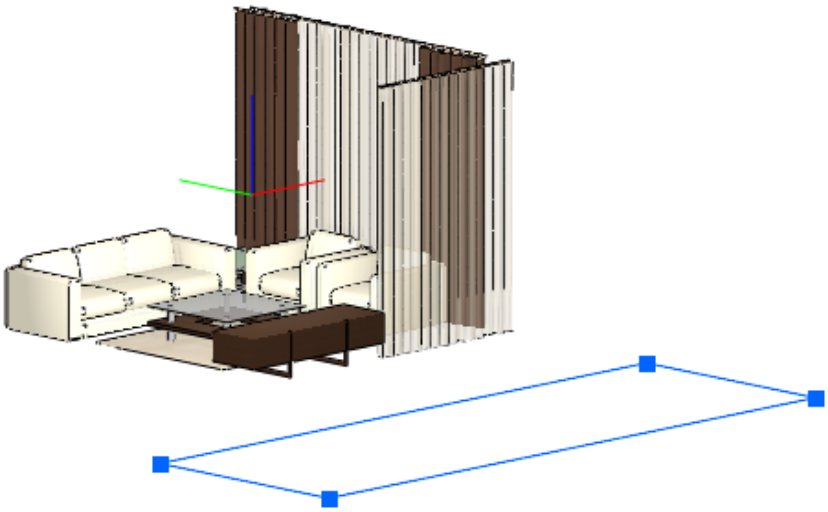


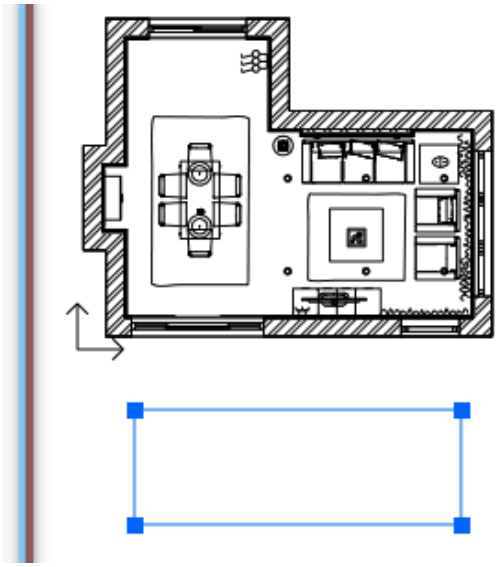
How can we find quickly these 3D solids and delete them from the model?

Now select from Status bar the “Create cut-away 3D view” option. The software automatically switches to floor plan view.
Select an area on floor plan view which length is the same as the drawing and doesn’t contain any 2D items.

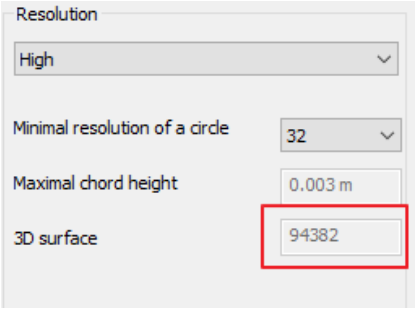
Based on the blank area, the program builds the 3D model up, so we must get a blank model.
If there is an item in the 3D window, then those are 3D solids, or maybe 2D drawing elements.

Select the Axonometric view for the view representation.





Select objects in 3D window and delete them.
Rebuild the 3D model.
Now click again on 3D build tool – Rebuild 3D model. As you can see the number of surfaces decreased from 187 407 **to 94,382.**



This technique helps to reduce the number of 3D surfaces in the project. In a larger project, this number can considerably increase, and it is worth paying attention to it, and reduce the number of unnecessary surfaces by using this method.

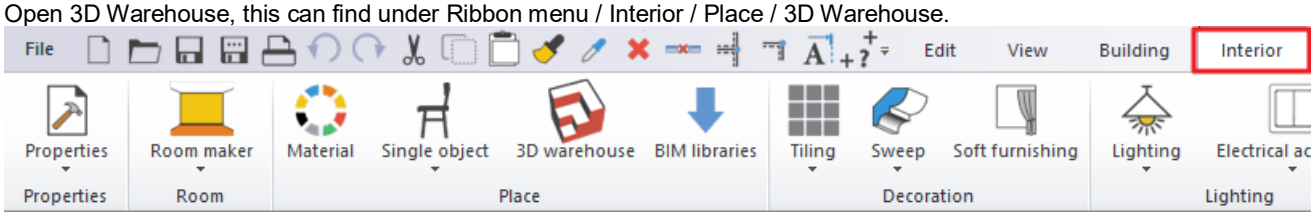
2.5.2. Delete too large objects and those contain too many materials

It might happen the we download objects from the 3D Warehouse which are too large or contain too many materials. These objects can greatly slow down the operation of the program. The program warns us in the following three events:

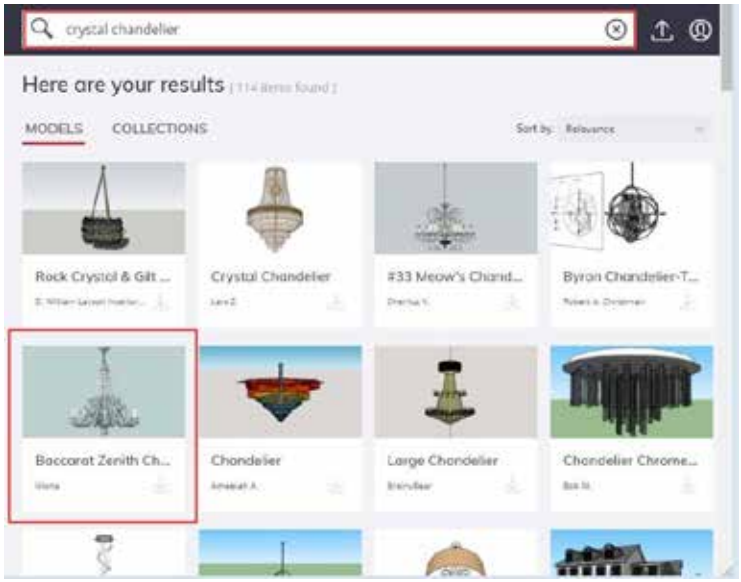
- When the object is too large, so it contains more than **50 000 polygons**
- When the object contains more than **50 materials, or**
- When the physical extension is larger than **100 m**

Now let's look at an example of too large objects.

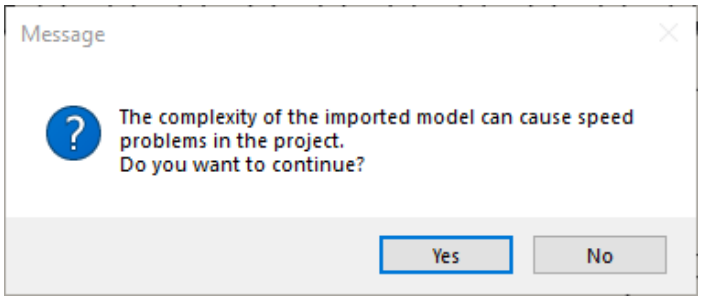
Open 3D Warehouse, this can find under Ribbon menu / Interior / Place / 3D Warehouse.



In the search field type "crystal chandelier".
Select "Baccarat Zenith Chandelier crystal". By clicking on the object, we can see its properties on the right side. Here we have to pay attention to the polygon number which is 60 405 in this case.
Download the object and place it on the floor plan.



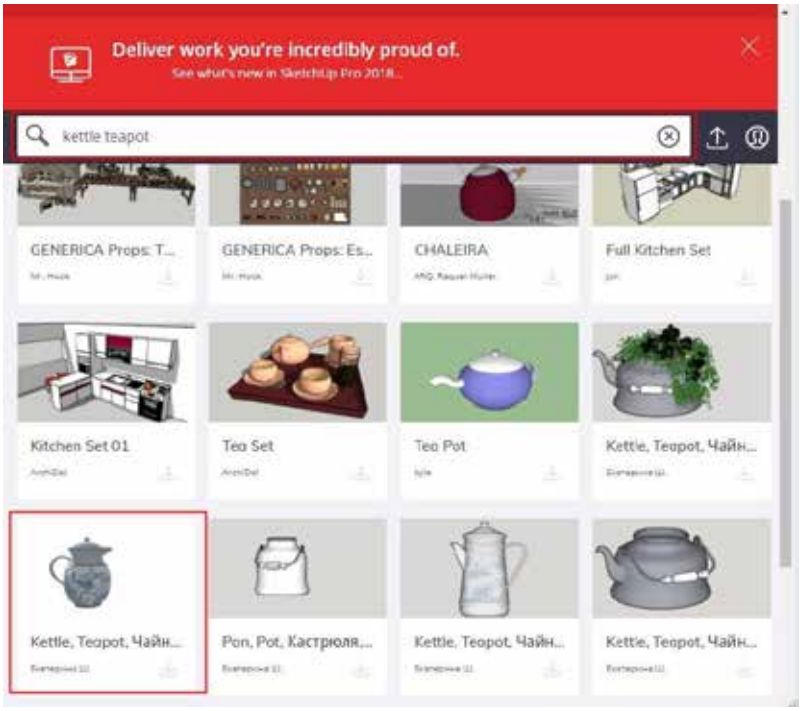
Now a pop-up warning message will appear. If you click No, the object will not be downloaded. Now select "yes".



Place the object on the floor plan.

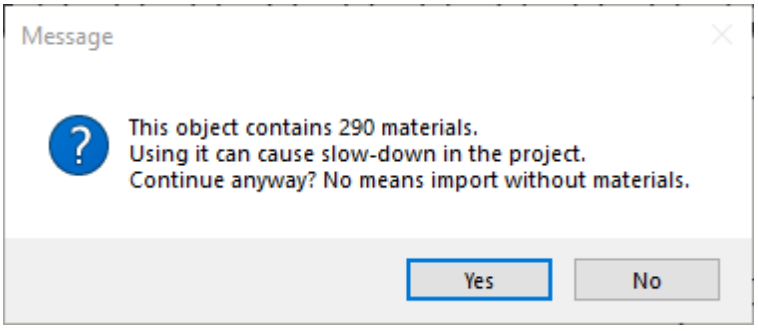
Let's look at an example when the object contains too many materials.

Open 3D Warehouse again.
Type “Kettle teapot” in the search filed.
Choose one and download it.

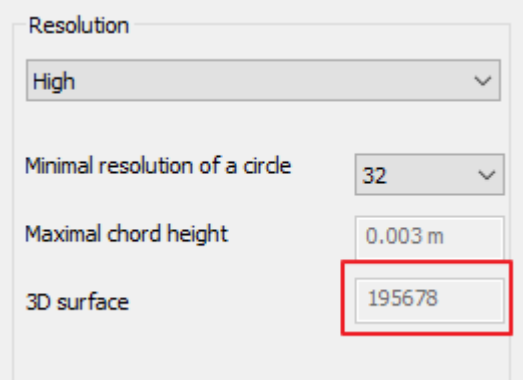


Place it on the floor plan.

The program indicates in a popup message how many materials this object contains. The amount of materials under 50 can be considered normal and easy to use in the program. In this case there are 290 materials. In the pop-up window, we opt for “Yes” the object will be downloaded which might take longer and slows down the work on the project. If in the pop-up dialog window, the answer is No, the downloading happens without materials. Later we can assign any materials to this object.



Now check the number of the surfaces by using 3D Build tool after placing the two objects. Now there was an increase from **to 94,382** to 195,678.

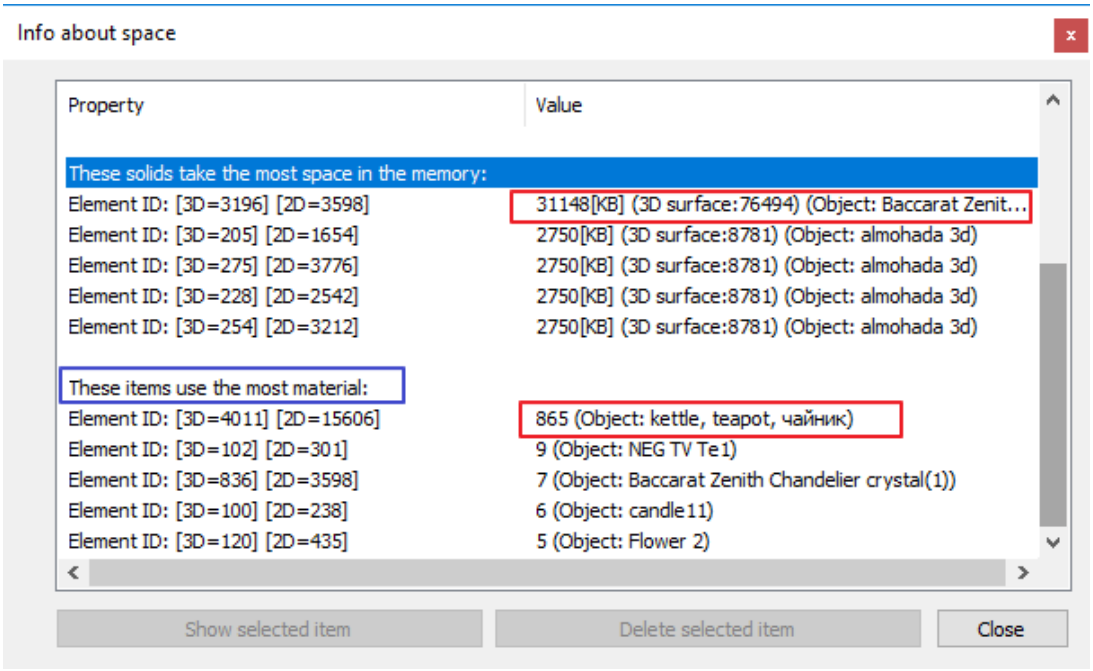


Now save the project under the name Reception_Room_4_Large.pro.

In order to reduce the project size, we have to delete superfluous, large objects and those contain too many materials. The complex objects can be easily found and deleted.

Activate 3D window.
Go to **Ribbon menu / Dimension / Measure** and click on “**List of elements**”.

In the pop-up dialog window, we can find the 5 objects take the most space in the memory and the 5 items use the most materials. Here you have an option to “Delete selected item” straight away. In case you cannot identify the item, you can use “Show selected item” command. Last two downloaded objects are the largest in both categories. Delete them.



Now check again the number of surfaces by using 3D Build tool. By deleting these two large objects the number decreased to **94,382**.

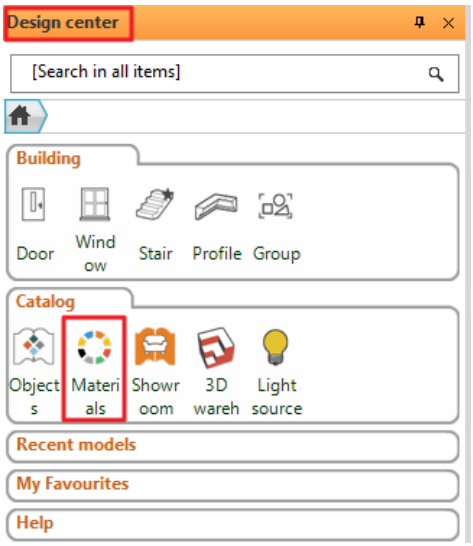
Save project under a new name Reception_Room_4_Large_deleted.pro, use “Save project as... “command.

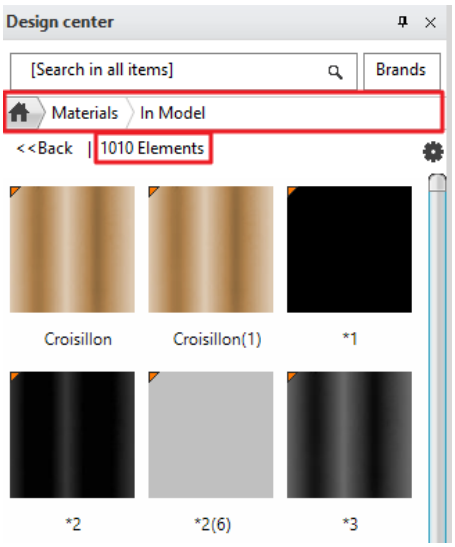
For average PC it is recommended to keep the model under 1 000 000 surface area!

2.5.3. Delete unused materials in the project

When we delete the large-size objects, the linked materials will stay in the project. There might be hundreds or thousands of materials in a large-size project which significantly increases the project size and slow down the operation. Mostly these materials are not used, so we have to remove them.

Select under **Design Center / Catalog / Materials / In Model**, here you can see that the project contains 1100 materials.





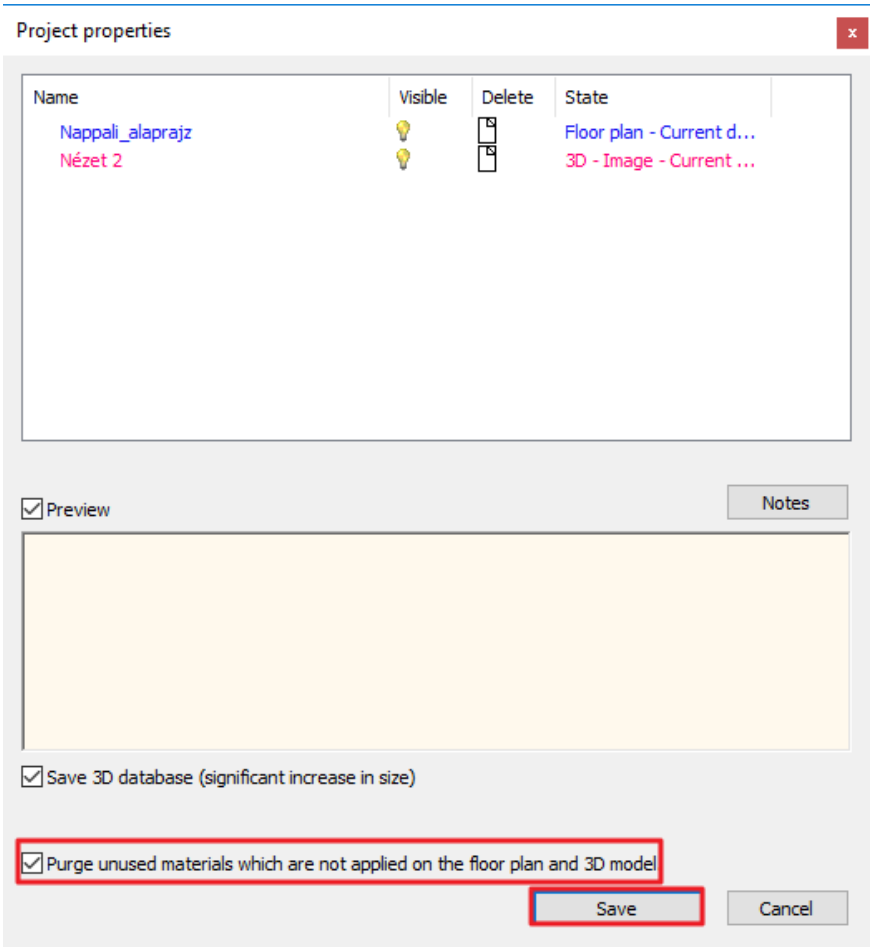
Now delete not used and superfluous materials in the project.
The deletion is carried out by Removing Materials. To do this, YOU HAVE TO BE EXTRA CAUTIOUS:

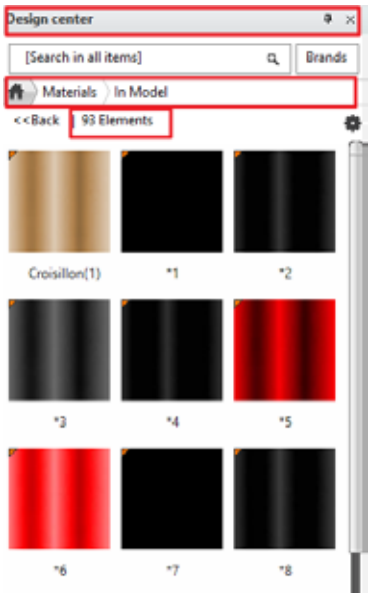
Open all layers
Build up every item in 3D
Save Project under the original name,

After these safety actions, delete unnecessary and unused materials from the project.

Save the project under a new name, by using Save project as... command.
In the pop-up dialog window and activate "Purge unused materials which are not applied on the floor plan and 3D model".
Finally click on Save.
The new project name is: Reception_Room_5_Cleaned.pro

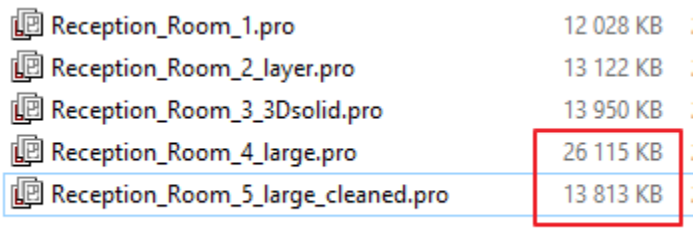
You have to save the project under a new name in case we made a mistake we can easily upload the original project:





Check the number of materials.
Click again on **Design Center / Catalog / Materials / In Model.**
Now the number of the materials decreased from 1010 to 93 items.
Deleted materials increased the project size necessarily.

After all these steps it can be seen that our project size significantly decreased from 41 423 KB to 12 876 KB. Thanks to clearing more storage place is left on our computer.



If you follow instructions above described your projects will be transparent, traceable and you can work faster without any disruptions.

Workshop 3: KBB, Modelling and furniture design

3. Workshop: KBB - Modelling and furniture design

During this lesson you can learn how to use the furniture design tools available in ARCHLine.XP.

- Using different front on the same cabinet
- Creating fronts with hidden handles
- Creating a custom shaped, curved cabinet
- Creating a custom shaped, curved countertop
- Creating an Excel list

Open your browser and watch our tutorial videos:
https://www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-2/kbb-furniture-design-interior-level-2

Refresh

In order to understand this lesson completely, the basic knowledge of the furniture design tools is required. Before starting this workshop, it is recommended to repeat the preliminary level Kitchen design workshop. This project can be found among the files of the Preliminary course files.
The tutorial videos can be found here: https://www.archlinexp.com/education/workshops/workshop-application-preliminary

Open the following project: *…ARCHlineXP Draw\2018\Course_Intermediate\3_KBB-Modelling_and_furniture design\01_KBB_Modelling_and_furniture_design.pro*

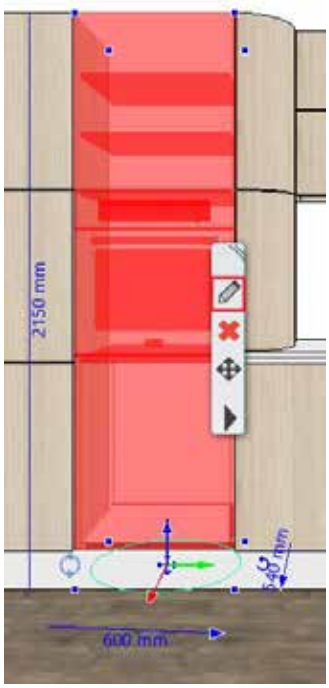
Save project as…

Before starting the work save the project file with another name.
Choose **File / Save project as…** command and specify the name and location.

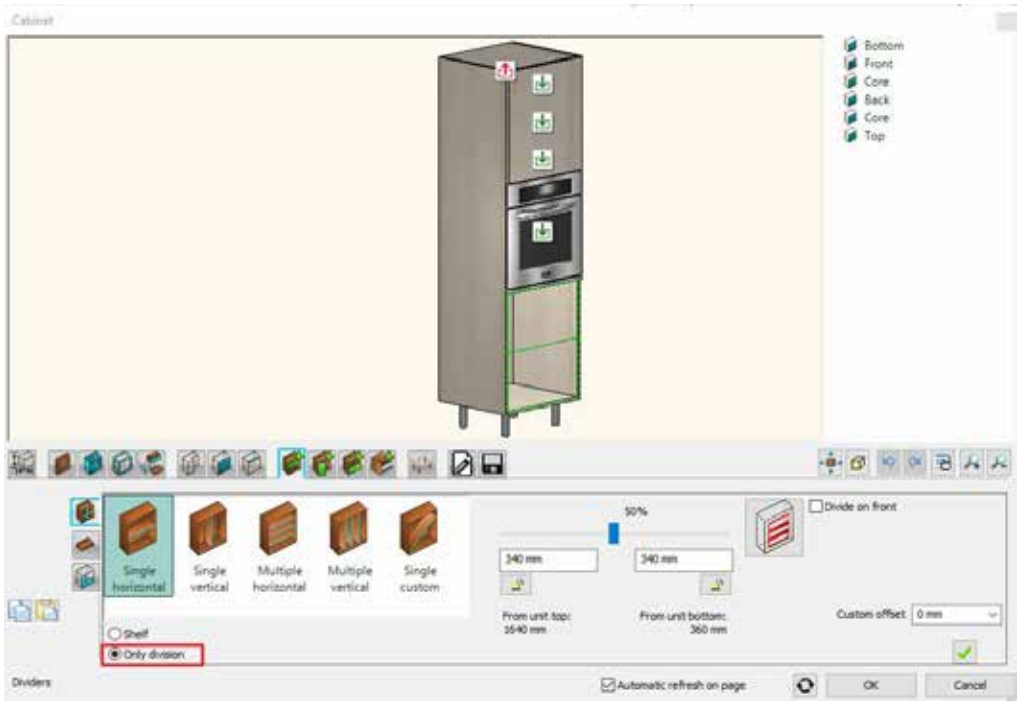
3.1. Adding drawers, changing fronts

During this workshop we will modify the kitchen in the opened project.

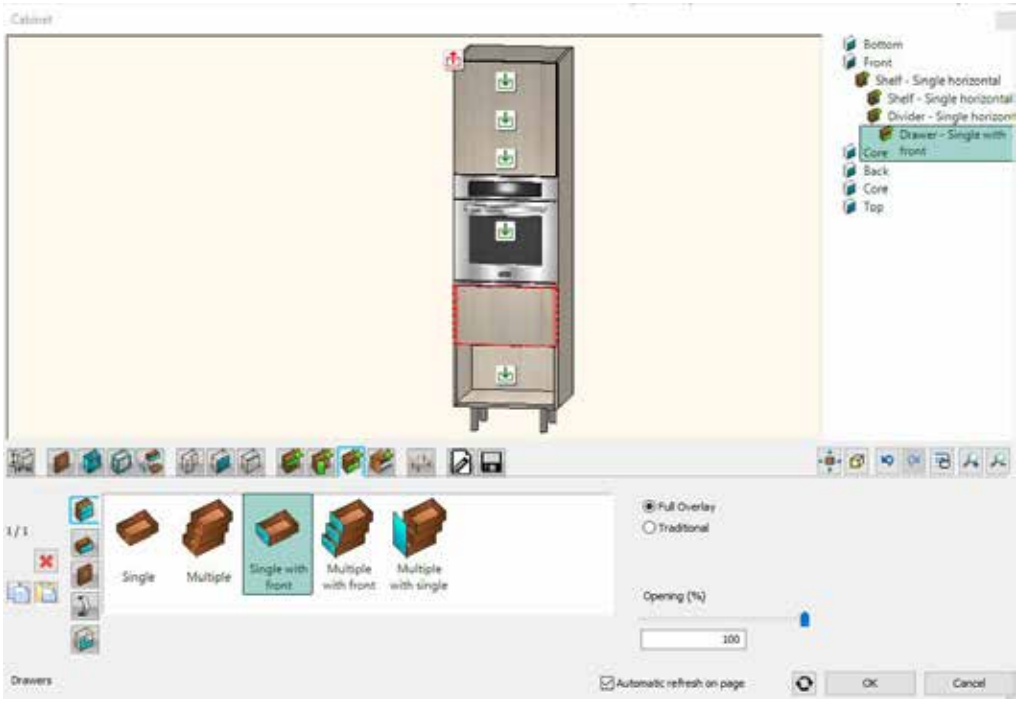
Click on the high cabinet from which the drawers are missing and open its properties.



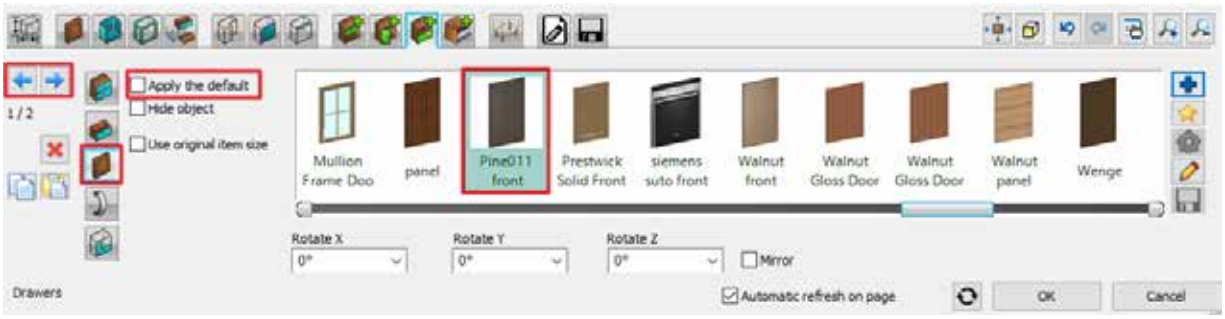
In the dialog click on the Dividers tab and add a Single horizontal divider. Before placing the divider with the green tick, activate the *Only division* option.



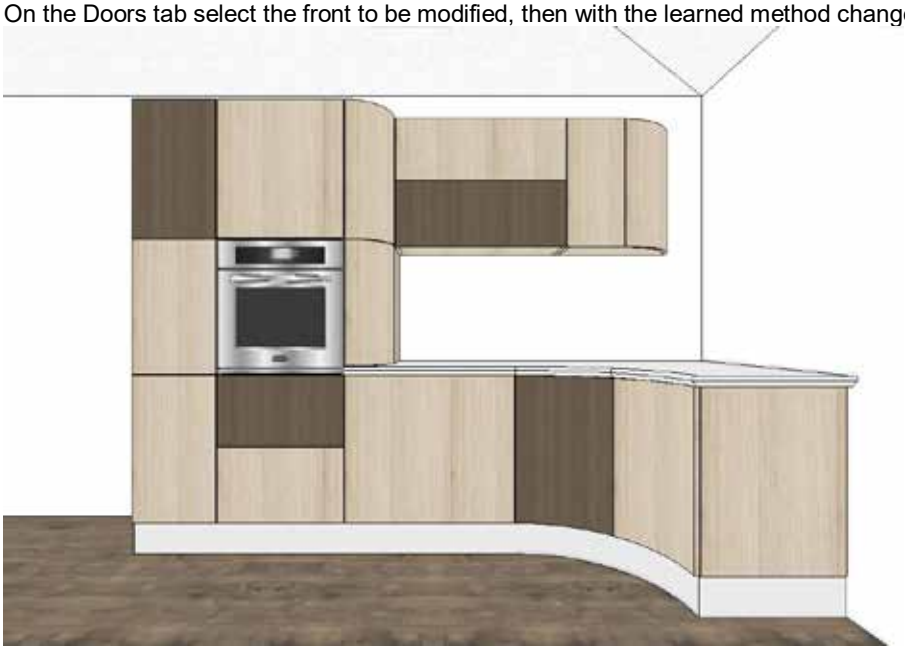
Click into the upper division and add a Single drawer with front, then repeat this step in the other division.



Select the newly added upper drawer using the blue arrows on the left and on the third tab on the left deactivate the *Apply the default* option.



Using the blue plus on the right, search for a front named *Pine011 front* in the library, then close the dialog with the OK button.
Change the one front of three further cabinets to the *Pine011 front*. To do that select the cabinet and open its properties. On the Doors tab select the front to be modified, then with the learned method change its front to the desired one.

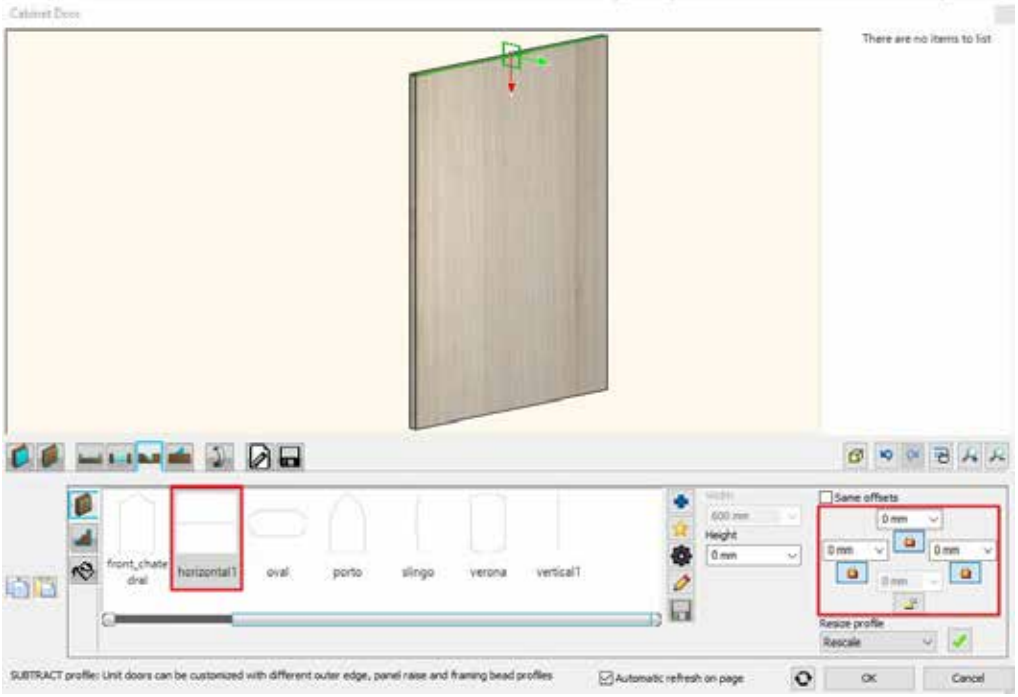


You should have a similar result as the picture above.

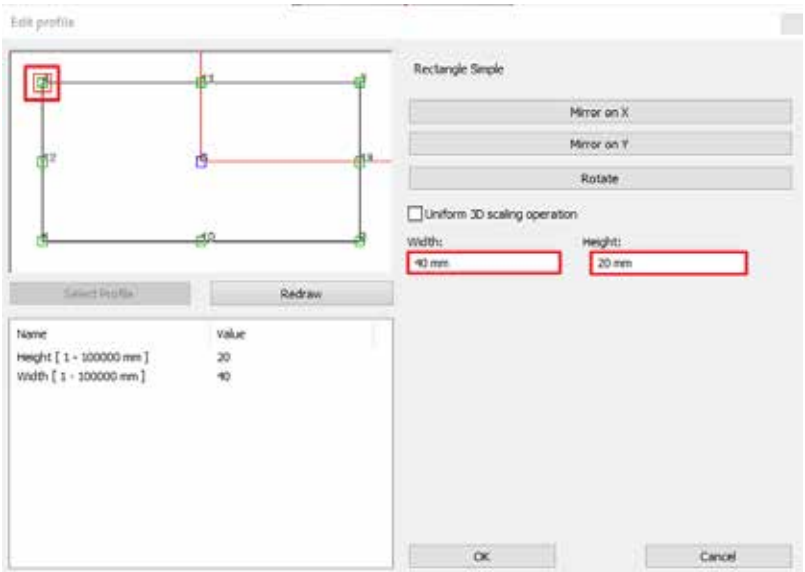
3.2. Creating a front with hidden handles

In modern kitchens non-traditional solutions are often used at the handle design. With the handy tools of ARCHLine.XP you can easily create alternative variations.
The Cabinet door command is an extremely flexible tool with which you can define the shape of the front, insert or extract profiles in order to create more unique pieces.

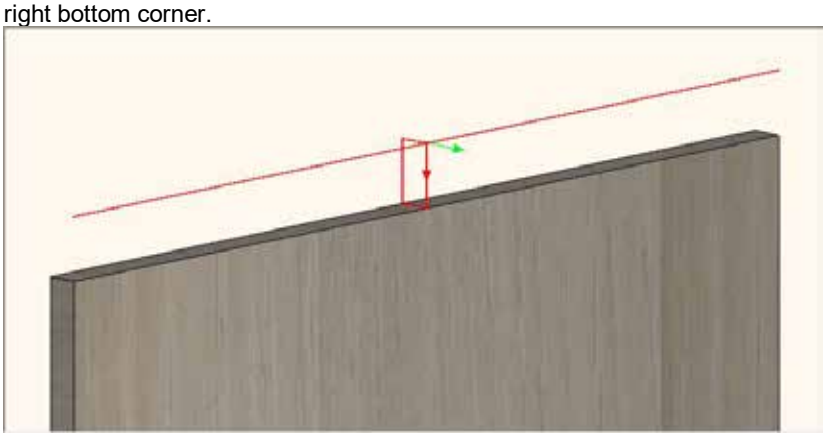
Start the Cabinet Door command from the **Ribbon bar / Interior / KBB** group.
Select *Old_Ashtree* as the material of the front.
Select the fifth tab from the left, the Subtract profile tab. With this option we can define a frontal profile (on the first vertical tab on the left) along which the section profile (chosen on the second vertical tab on the left) will be drawn.
Select the profile named *horizontal1* as the frontal profile.
The four values on the right indicate the distance of the profile from the edges of the front. Rewrite the upper value to 0, then deactivate the Same offsets option and open the bottom lock. By fixing the two side values we can assure that the front fits on cabinets of all sizes and the handle does not end after a specific length but adjusts to the cabinet size.



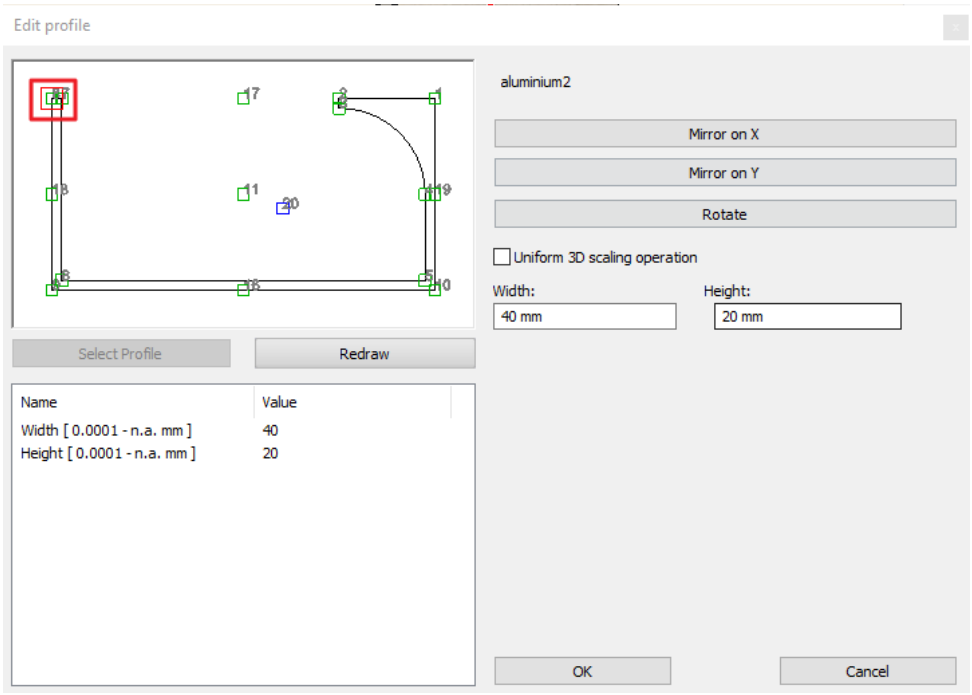
After this select the section profile. This will be a simple rectangle. After selecting it, click on the cogwheel icon on the right to access its properties. Here set the dimensions: width: 40 mm, height: 20 mm. Select the upper left corner as a reference point. This defines the point with which the section profile is connected to the route drawn by the frontal profile. (The appropriate point is different in every situation, so it is possible that you will not find it at the first try.) This profile operation is important because first we will subtract a profile from the front, then add another, which will be the handle. In order to place the handle 'inside' the front and not 'on' it, we have to subtract a handle profile size part of the front to have space for the other profile (handle) and to prevent it from overhanging.



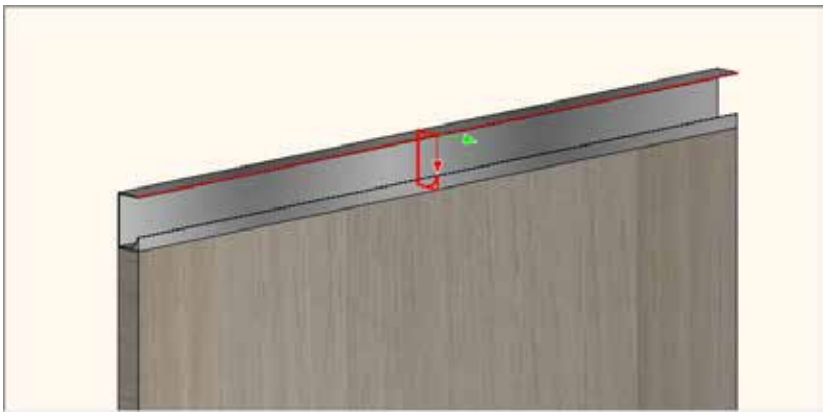
Close the profile properties and make sure that both green profiles are inside the front, then click on the green tick in the right bottom corner.



Click on the sixth tab from the right, the Add profile tab. This option operates on the same principle as the Subtract profile option with the difference that here a profile will be added not subtracted.
Select the profile named *horizontal1* as the frontal profile and set its distance from the front edges the same way as the at the subtracted profile.
After this, on the second vertical tab on the left select the profile named *aluminium2* as the section profile. Click on the cogwheel icon to access its properties. Its dimensions do not require further modifications, just select the upper left corner as the new reference point of the profile.



On the third vertical tab set a custom material for the profile, then click on the green tick.

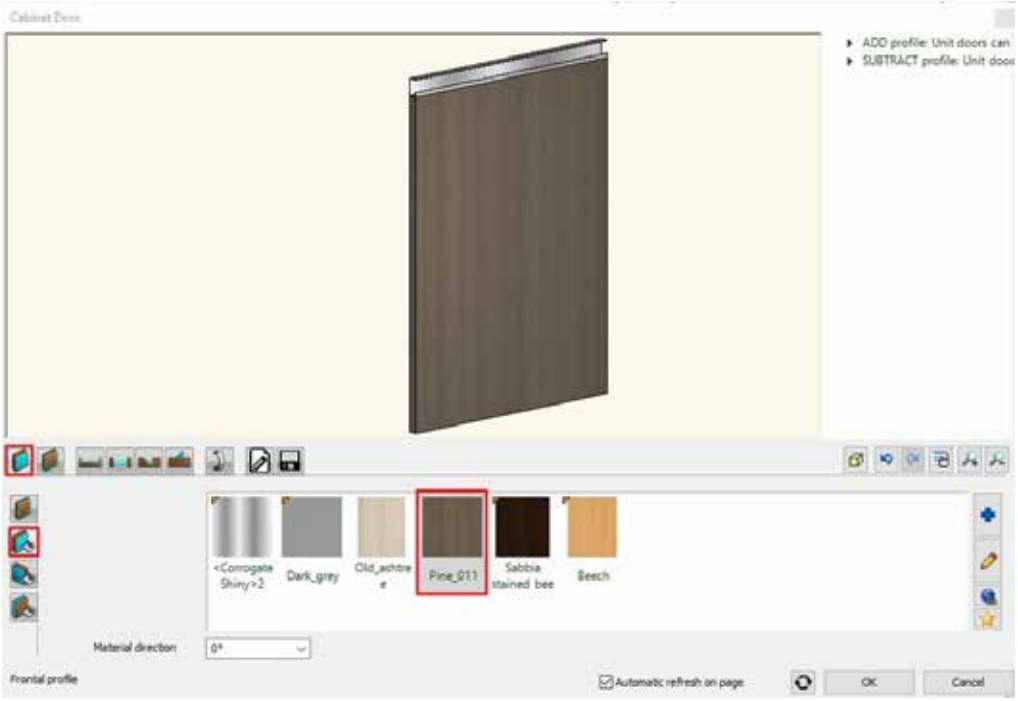


Save the front on the last tab with another name: *front with hidden handle 01 - ashtree*.

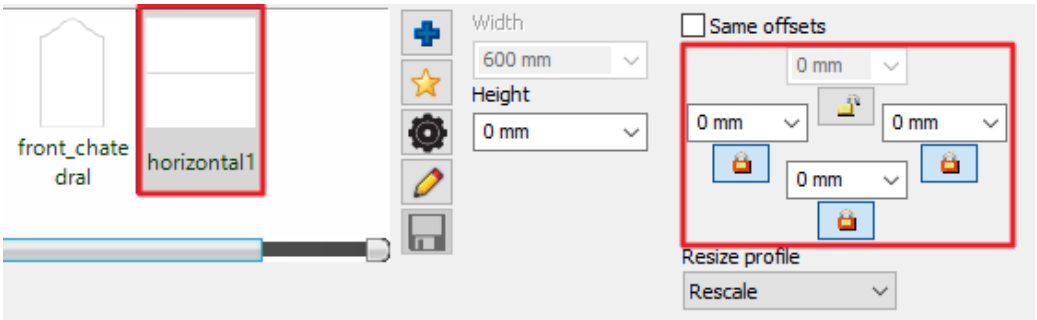
3.2.1. Creating alternative front variations

In order to vary the handle positions and front colours in the kitchen we need to create alternative variations from the front created previously.

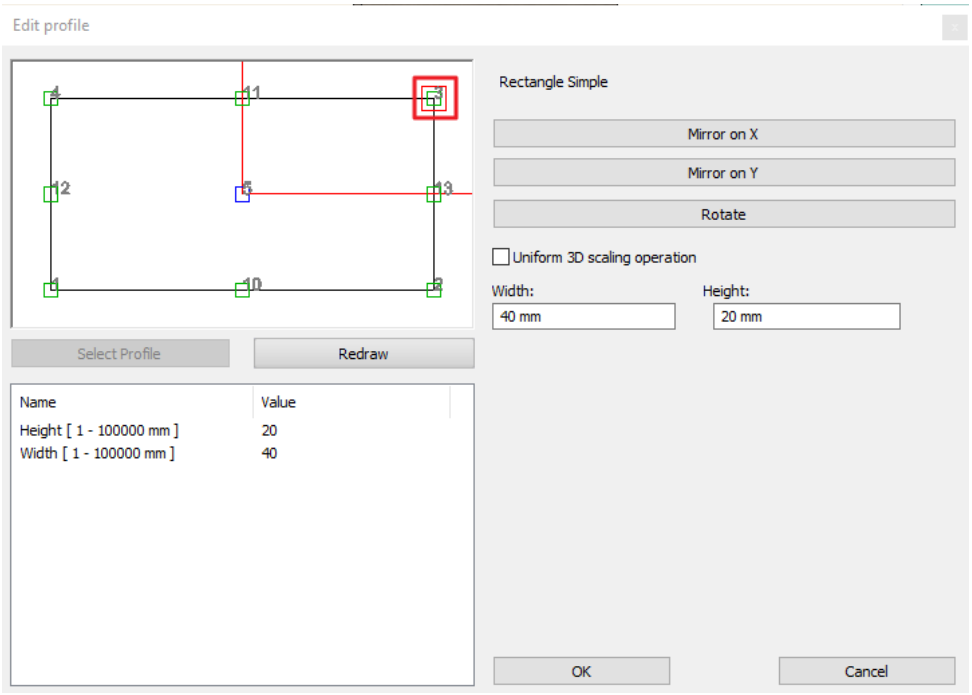
Let's create the front with the *Pine011* material. It can be done by selecting the second vertical tab on the first tab and here the *Pine011* material.



After this save it with another name: *front with hidden handle 01 - pine*
Let's create the other two alternatives. It will have the handle at the bottom of the front. The easiest way to do so is to modify the position of the subtracted and added profiles.
Click on the Subtracted profile tab and open the upper lock and close the one at the bottom.



After this modify the reference point of the section profile to the upper right corner by clicking on the cogwheel icon on the second vertical tab on the left.



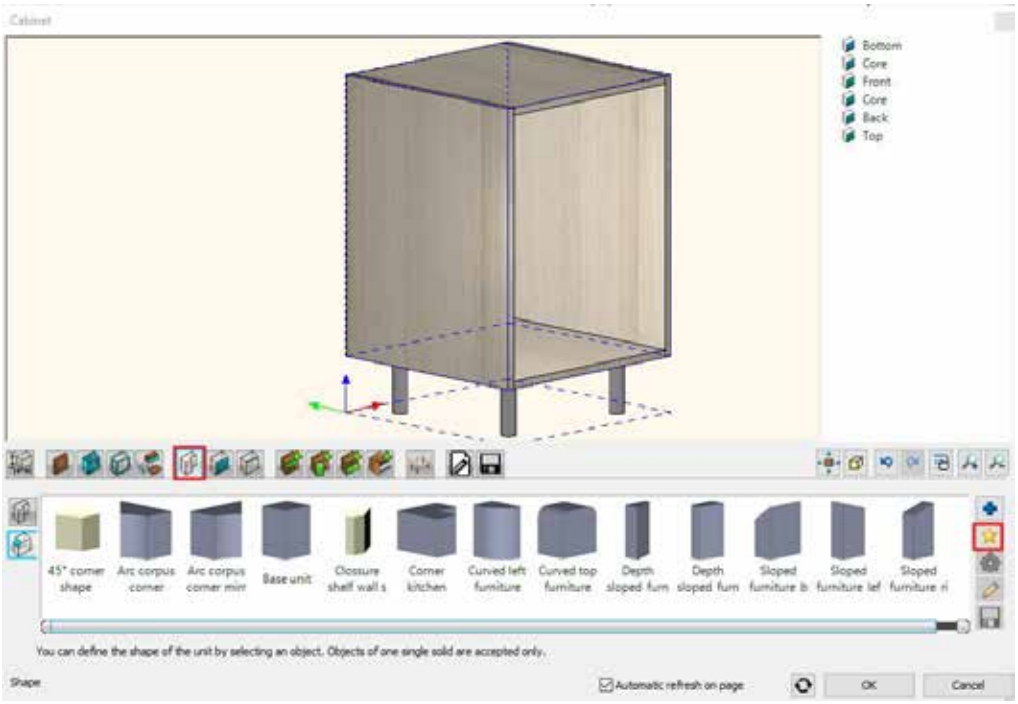
Repeat these modifications on the Added profile tab.
Save this front with another name: *front with hidden handle 02 - pine*
After this modify the material to *Old_Ashtree* on the first tab, then save it with another name on the last tab: *front with hidden handle 02 - ashtree*.
As a last step change the fronts on the cabinets to the appropriate one. This can be done by selecting the front in the Design Center and with the drag and drop method drag it to the cabinet. This method, however, will only modify the default fronts of the cabinet. If you would like to modify a front which is not a default one, you can do it by selecting it in the Cabinet dialog.

3.3. Creating a curved cabinet

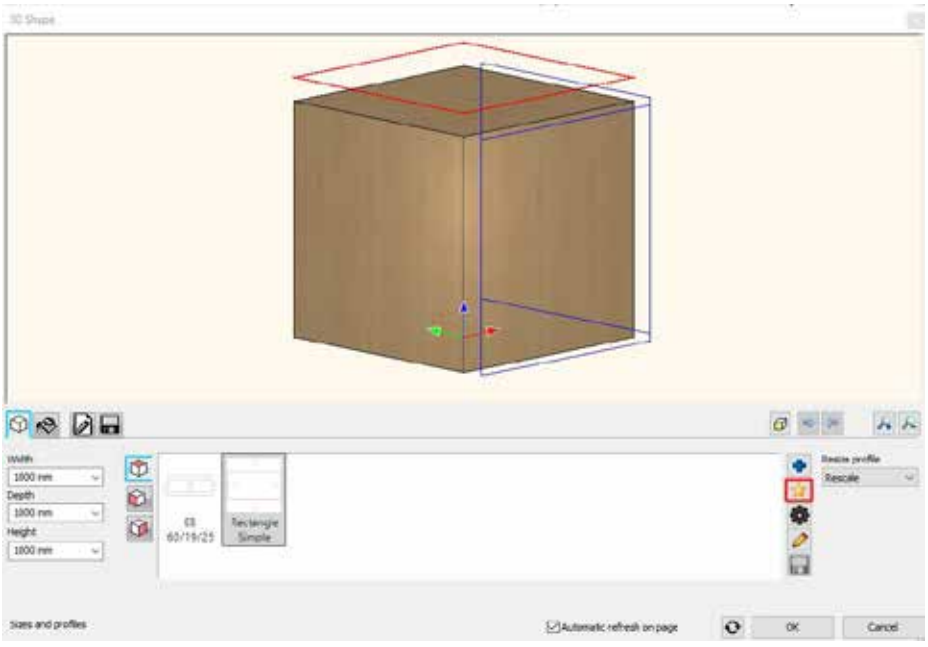
In ARCHLine.XP you can create bespoke furniture. In this example we will create a custom shaped, curved cabinet to the place marked with blue lines on the layout.

Start the Cabinet command from the **Ribbon bar / Interior / KBB group.**
First, set the default front of the cabinet on the second tab. This will be the *front with hidden handle 01 - ashtree.*
Hide the default handle since the chosen front already has built-in handles. This can be done on the second vertical tab on the left.

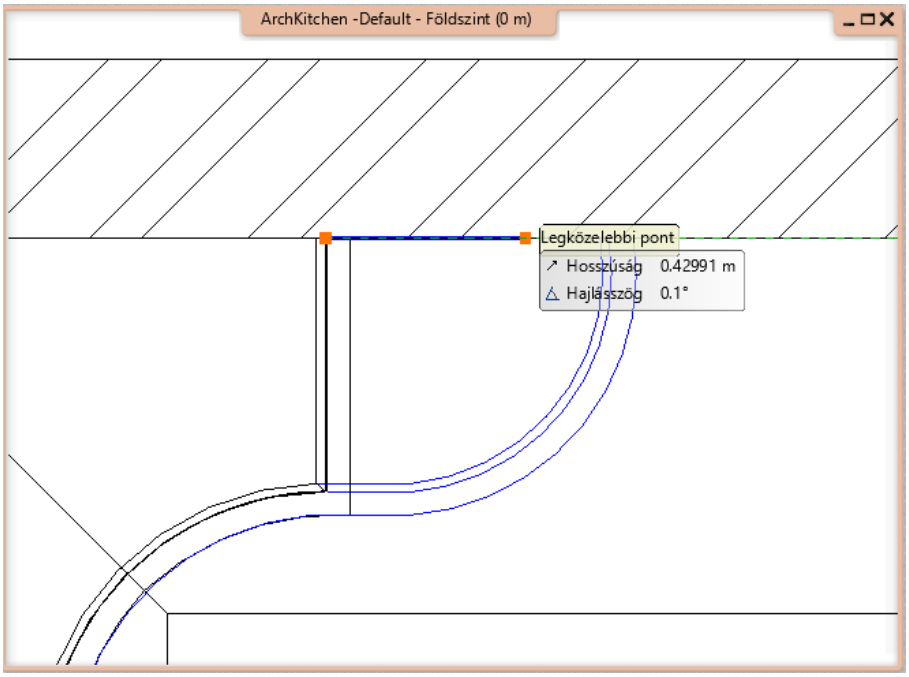
Set the default side panels of the cabinet on the third tab. This will be the *Old ashtree front*.
On the sixth tab you can select the shape of the new cabinet. Choose the custom option here. On the appearing tab click on the star icon on the right to create a new shape.



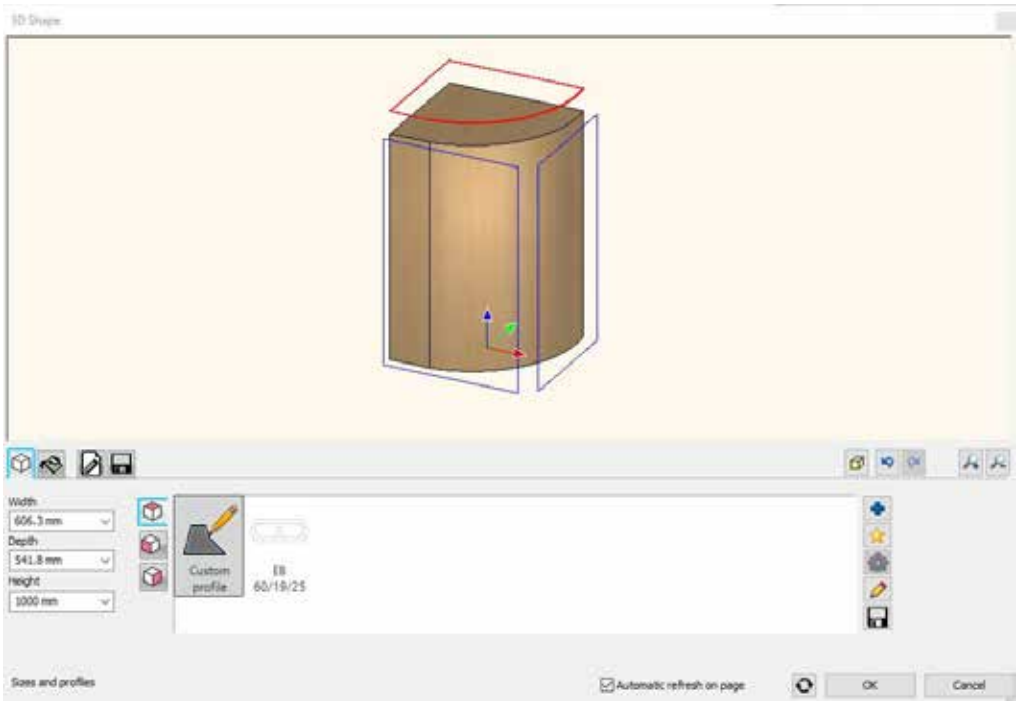
We will create the new shape of the cabinet using the 3D shape tool. You can edit the base cube with the help of its three projected profiles. The active profile is always the red one. In this case the top profile should be the active one. Click on the star icon to define the profile.



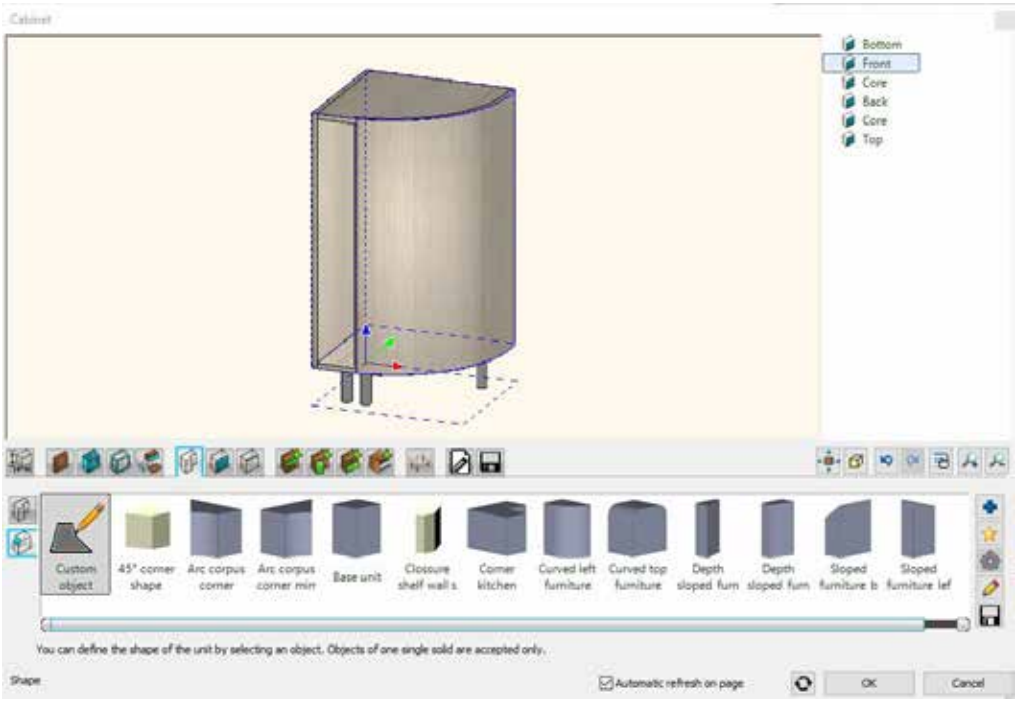
The command automatically activates the 2D layout, where you can draw the shape of the cabinet along the blue line.



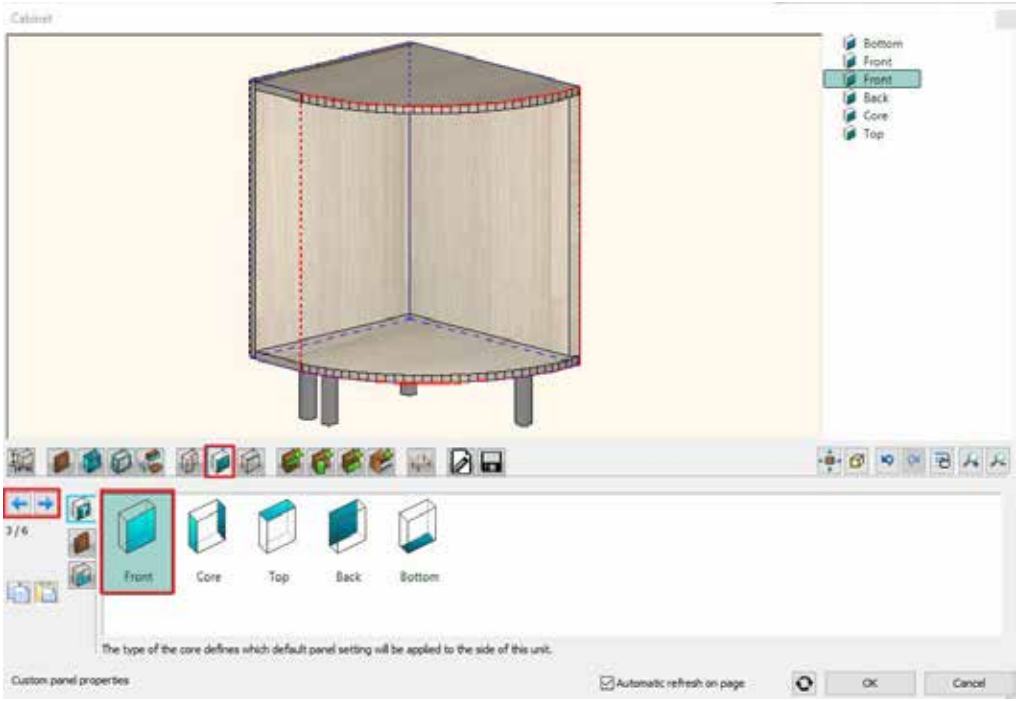
When you have finished drawing, click on the Close button on the Ribbon bar. The program cuts the shape into the basic cube to modify it to the desired shape.



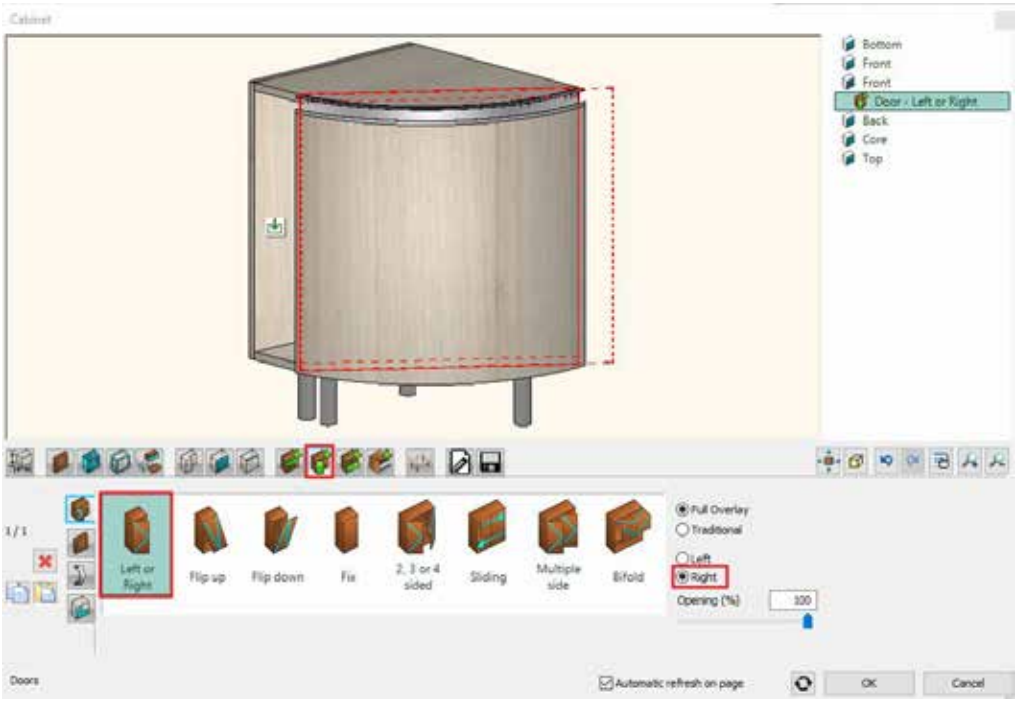
Press the OK button and the program switches back to the cabinet dialog, where the cabinet is created from the shape.



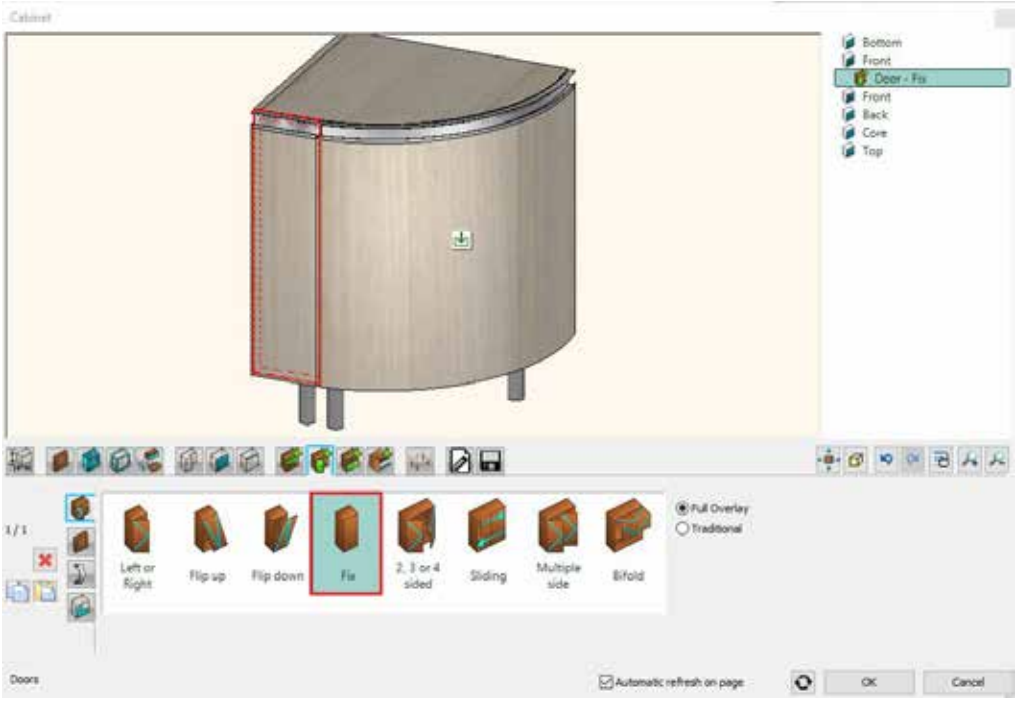
Click on the first tab and set the dimensions. The total height of the cabinet is 850 mm, the carcass height is 700 mm, and the space for legs is 150 mm.
On the seventh tab you can set custom panel properties. This means that you can flexibly change the type of the panels, so a side panel can become a front or the top panel can become a back panel. This is useful in situations like this one, because in the next step we will modify the curved side panel of the cabinet to a front so a door can be assigned to it. Navigate with the blue arrows on the left side until the colour of the contour of the curved panel is marked with red. After this, select the type front from the options below.



Click on the Doors tab and assign a door to the curved part and set its opening direction to the right.



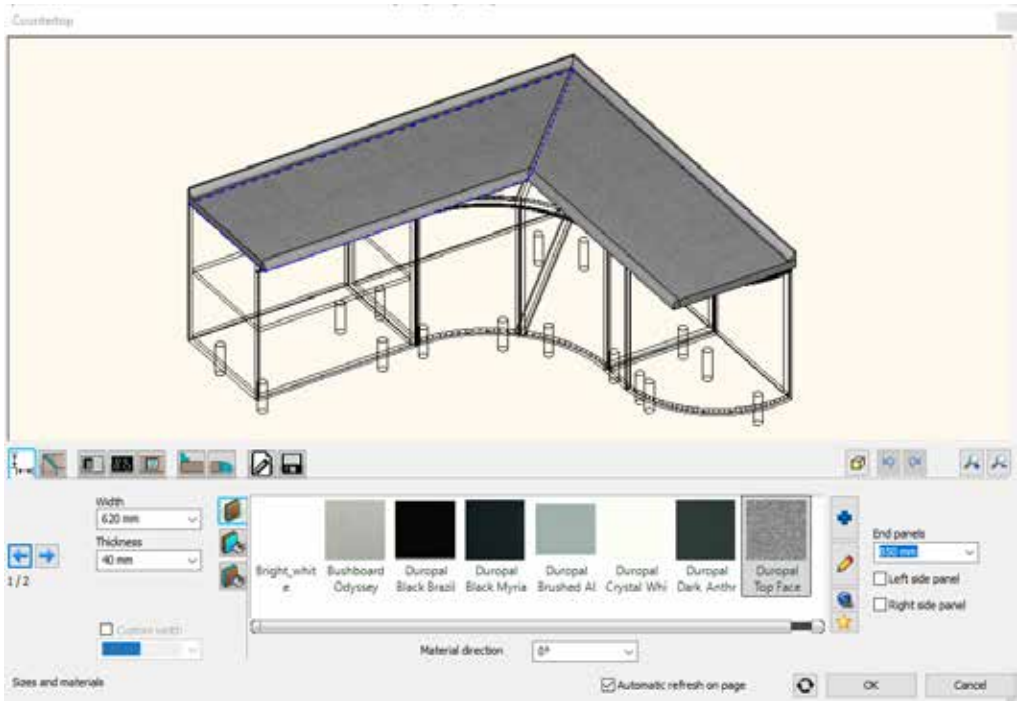
After this, click on the other front and add a fix door.



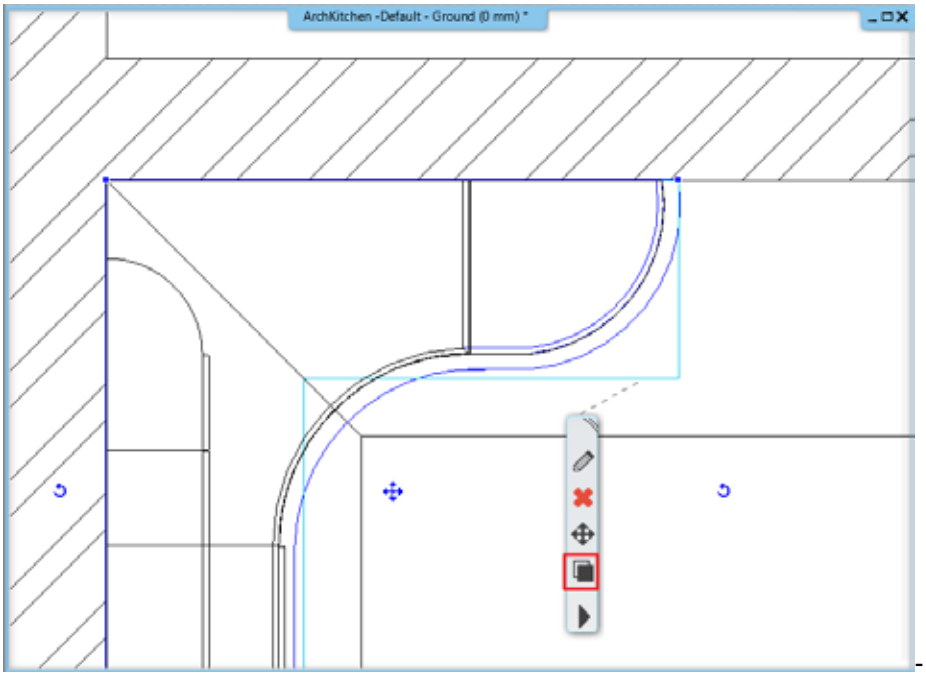
On the penultimate tab, switch off the automatic dimensioning.
As a last step, save the cabinet to the library.
Close the dialog and place the cabinet.
You should have a similar result as the picture below.

3.3.1. Creating a curved countertop

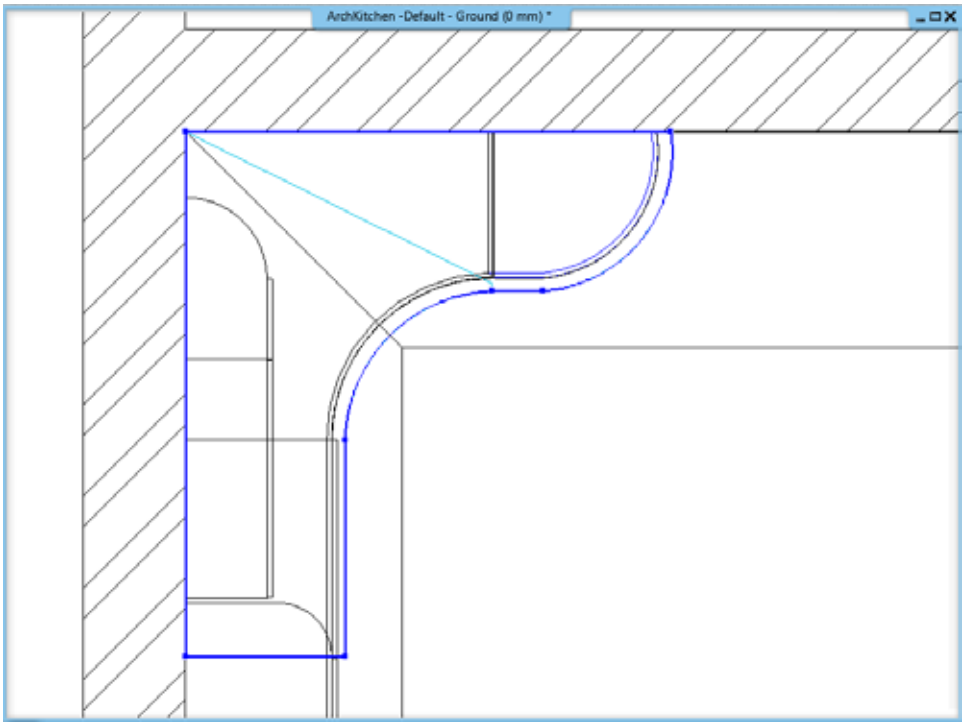
In the following, we will create the countertop. In order to fit to the kitchen cabinets, you have to turn few of its edges into curved ones.
First, delete the existing countertop.
After this activate the 2D layout and start the **Ribbon bar / Interior / KBB / Countertop / Countertop by profile** command.
Draw the countertop on the 2D layout. When you are done, close the command with the green tick on the Ribbon bar.
In the appearing dialog it is clear that the countertop does not follow the curves of the cabinets so further modifications are needed. Close the dialog with the OK button.



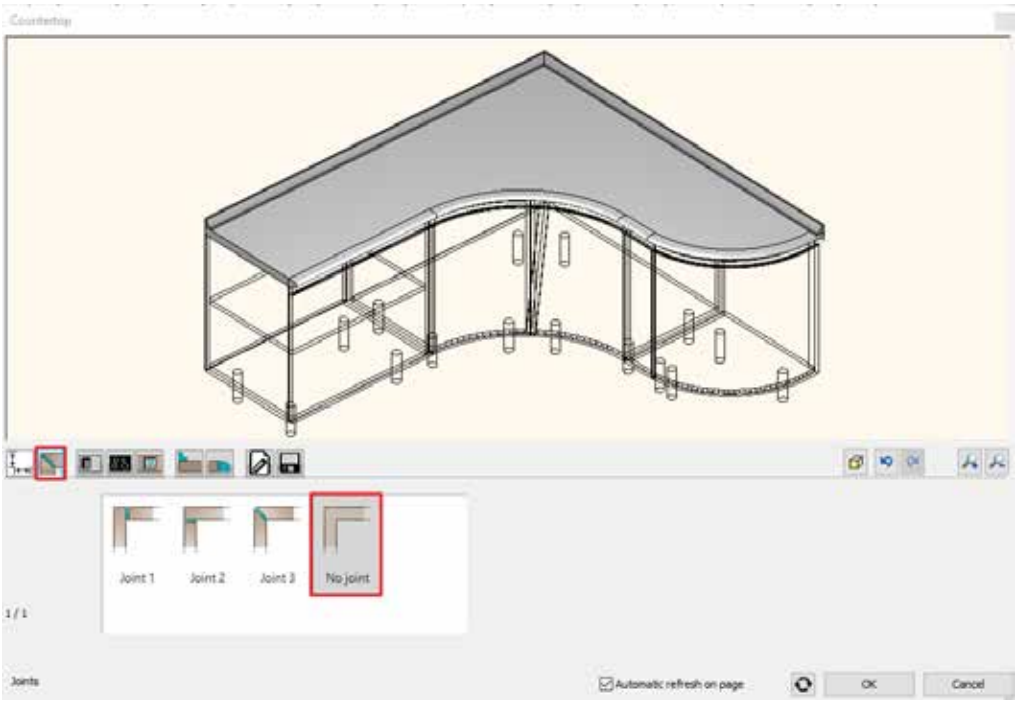
Select the countertop on the 2D layout and from the Local menu, start the Component mode. The Component mode allows you to flexibly edit every edge of the countertop, move nodes or insert new ones.



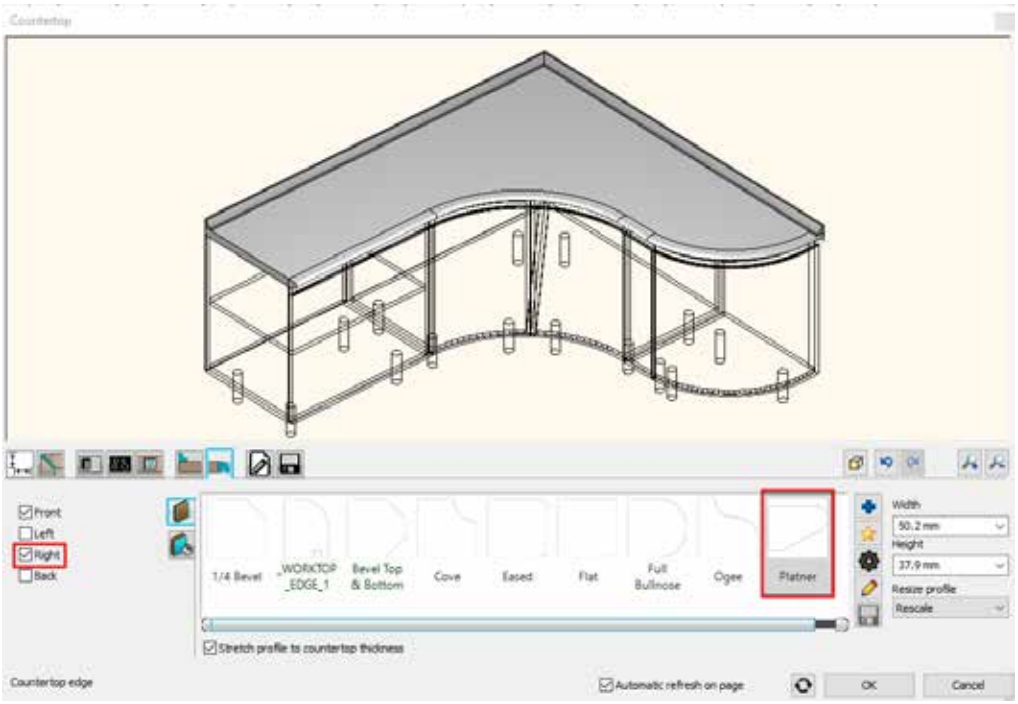
In Component mode by moving and inserting nodes, and turning edges into curved ones adjust the contour of the countertop to the blue line. You should get a final result similar to the picture below.



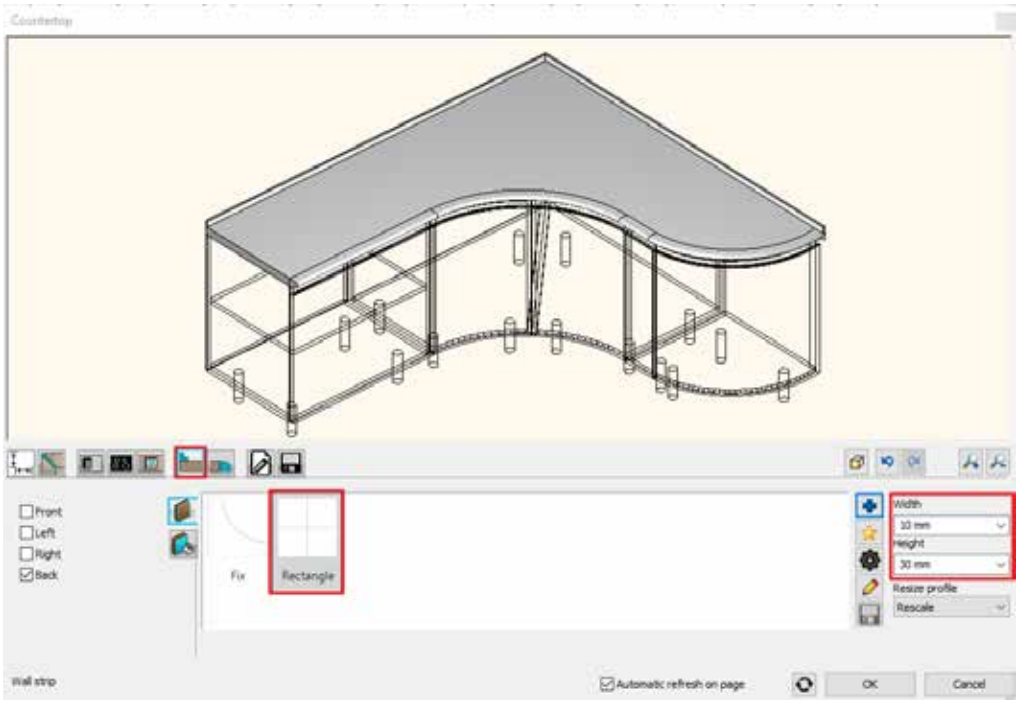
Click on the countertop and open its properties.
On the first tab set the colour of the countertop: a colour named *g110*.
On the second tab select the No joint option. With this option the countertop will appear in one piece.



On the seventh tab activate the Countertop edge on the right side as well, then select the profile named *Platner* as the edge profile.



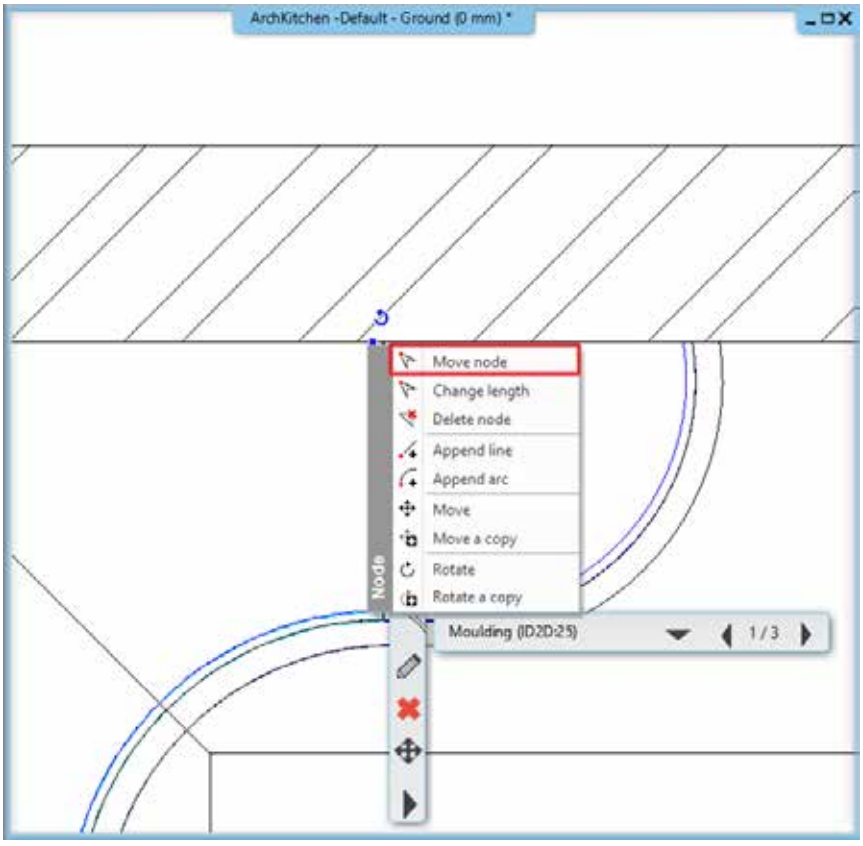
As a last step add wall strip to the countertop on the sixth tab. Search for the profile named *Rectangle* in the library and set its dimensions: width: 10 mm; height 30 mm. On the second vertical tab select the colour of the wall strip: *g110*.



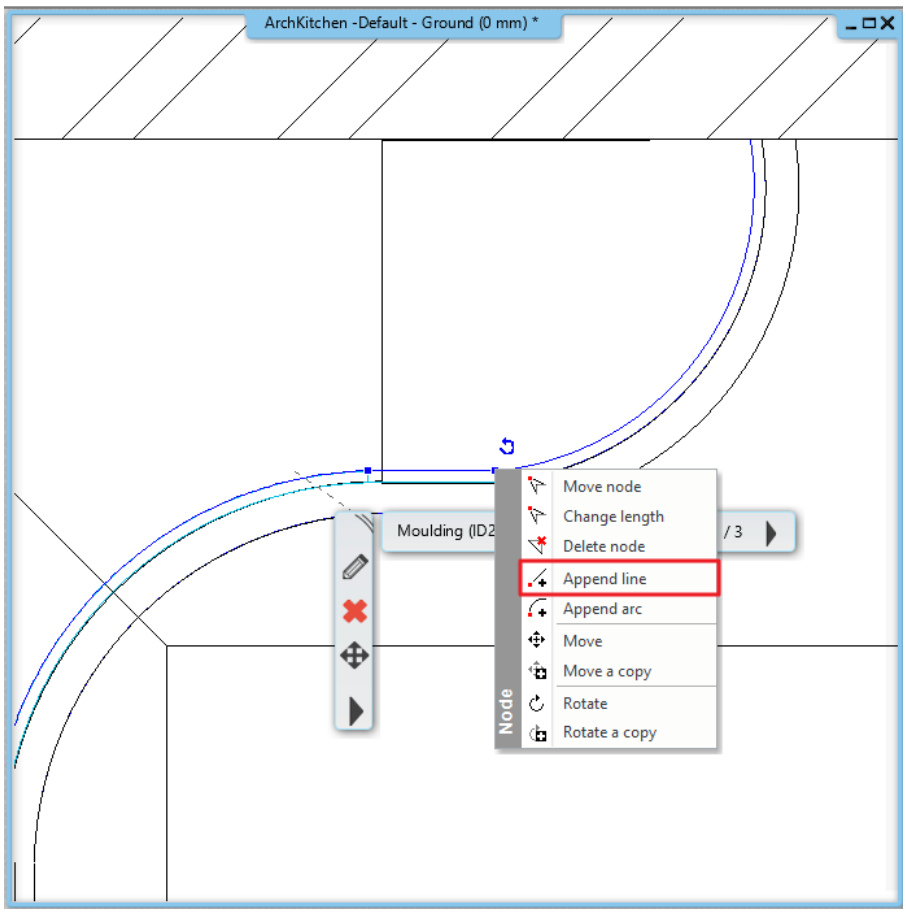
3.3.2. Modifying the plinth

In the next step we will adjust the plinth to the curved cabinet.

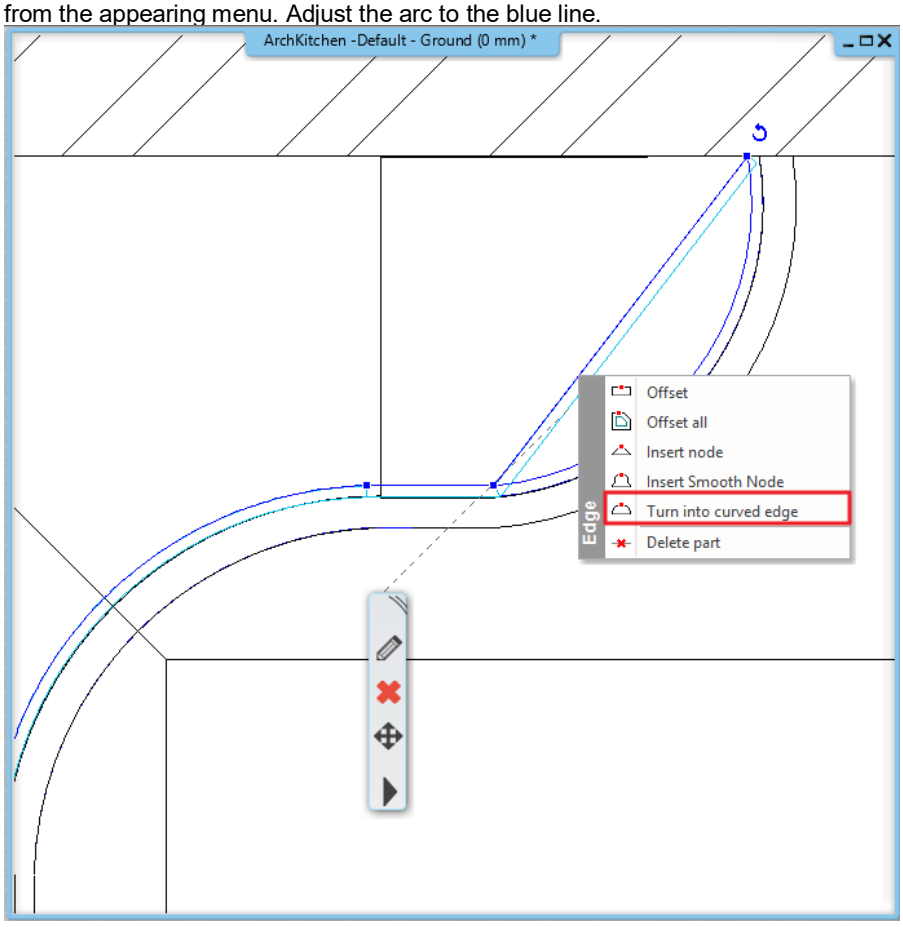
Activate the 2D layout.
Click on the last node of the plinth and in the appearing edge menu select the *Move node* option.



Move it to the beginning to the curved part, then click on it again and select the *Append line* option from the appearing menu.



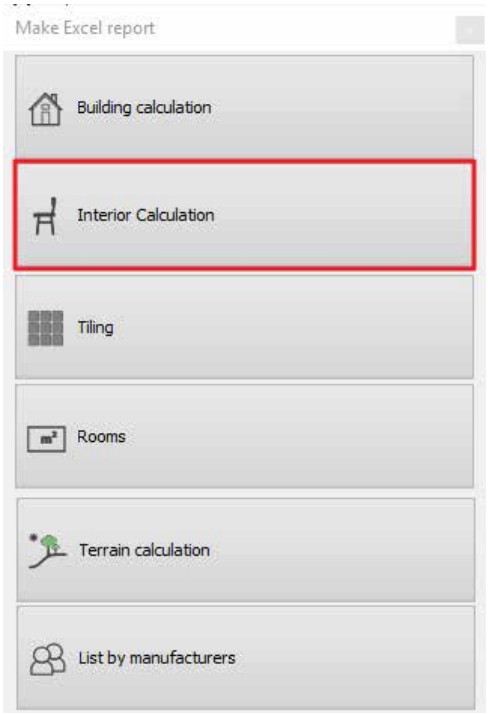
Adjust the endpoint to the end of the curved part, then by clicking on the new part select the *Turn into curved edge* option from the appearing menu. Adjust the arc to the blue line.

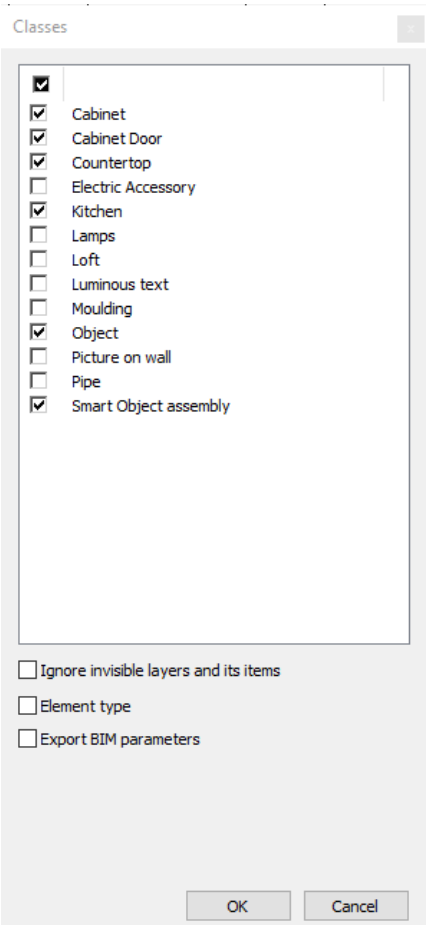


3.4. Creating an Excel list

At the end of the work we can create the Excel file, which is necessary for the production of the cabinets, with a few clicks.

Start the **Ribbon bar / Documentation / Quantity take-off / Excel list** command.
In the appearing dialog select the Interior Calculation option.





From the appearing list select the types to be listed: *Cabinet, Cabinet door, Countertop, Kitchen, Object, Smart object assembly.*
As a last step, save the Excel list, which opens automatically if Excel is installed on your computer.

For more practice and interesting tutorials please visit our website:

www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-2/kbb-furniture-design-interior-level-2

Workshop 4: Upholstered furniture

4. Workshop: Upholstered furniture

In this tutorial you can learn how to assemble furniture by using ARCHLine.XP tools, this way you can easily design customized upholstered furniture.

- Creating Esmeralda pouf components
- Assemble Esmeralda pouf
- Drawing profiles for Marseille chair
- Creating components of Marseille chair
- Assemble Marseille chair

Open your browser and watch the video tutorial here:
https://www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-2/upholstered-furniture-interior-level-2

Start

Start ARCHline.XP software on your computer.
Click on New project button.

Save project

Before starting your work save it under a new name.
Choose File / Save project command and enter your project name and save it under your preferred folder.

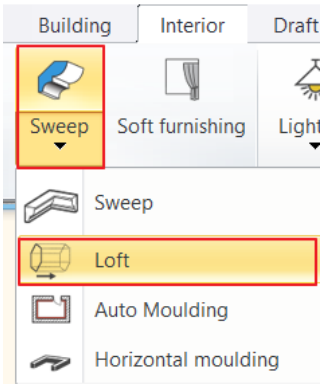
4.1. Esmeralda pouf

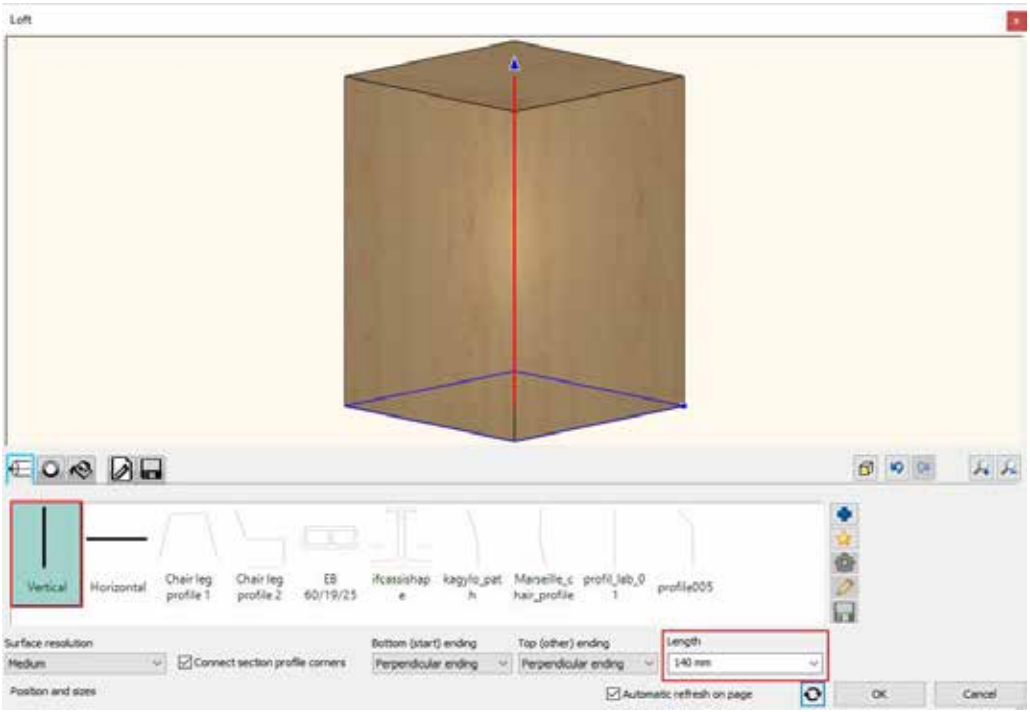
During this workshop first, we will create Esmeralda pouf is shown the picture below. Before doing anything, let's check how many parts the pouf has. There are three components such as legs, the base and cushioned seating. After analysing the furniture, you can start the design.

4.1.1. Creating Esmeralda legs

First, we will create legs.
As you can see these are special legs, not a regular cuboid. Profiles on the top and at the bottom are different and the whole 3D shape is inclined.

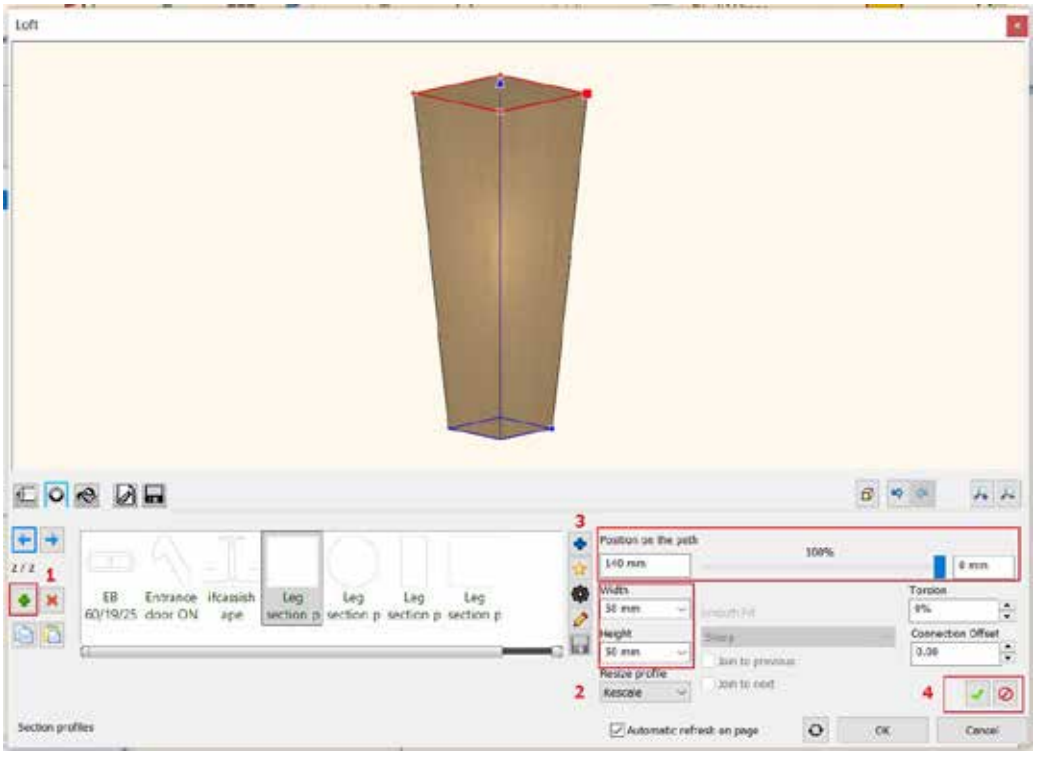
Select from Ribbon menu / Interior / Sweep / Loft command. Now we use the contour tool to draw the profile along a specified path.
In this case that will be a vertical profile. On the first tab set the height to 140 mm.





Next, we set section profiles.

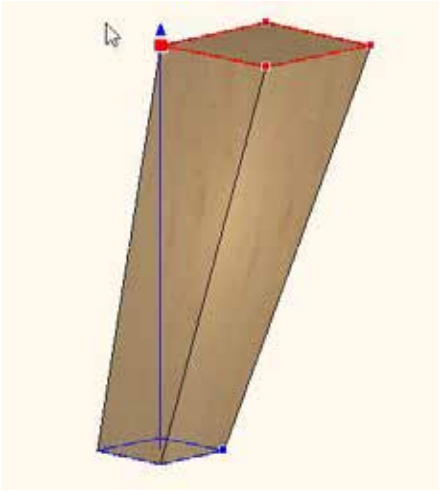
The bottom profile is 30x30 mm rectangle. Width and heights fields should be filled with the new dimensions. Click refresh button to see the changes.
Now add the top section profile. First click on the green cross (1) and enter the values 50x50 mm (2). Now set the position, you can either enter the new value 100% or move the slider to the right side (3). Click on green tick to apply changes (4).



When we thoroughly checked the leg, we saw that he basic shape is a truncated pyramid, which has two vertical sides and two inclined sides.

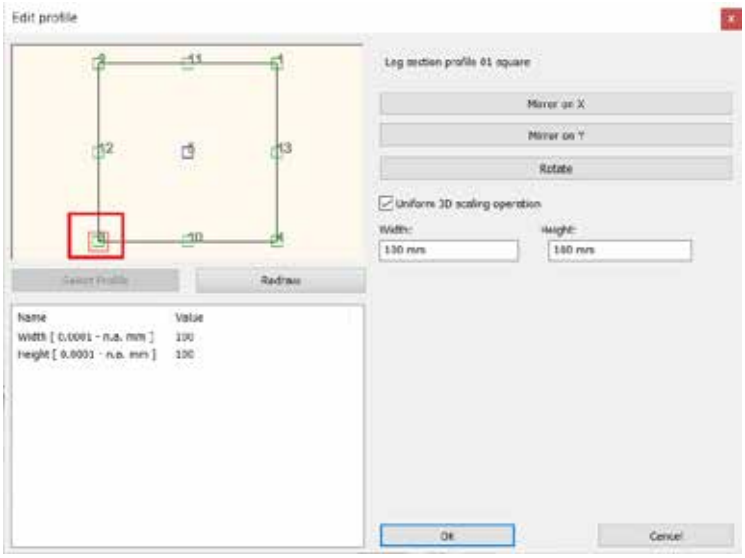
Now the top profile is active as it is marked with red. So, if you click on the cogwheel, in the appearing “Edit profile” window you can set the new reference point. That should be the left bottom corner. Now lick on “Ok” to accept changes.

Now in the “Loft” window you can see that the centre of the bottom profile is connected with the reference point of top profile.



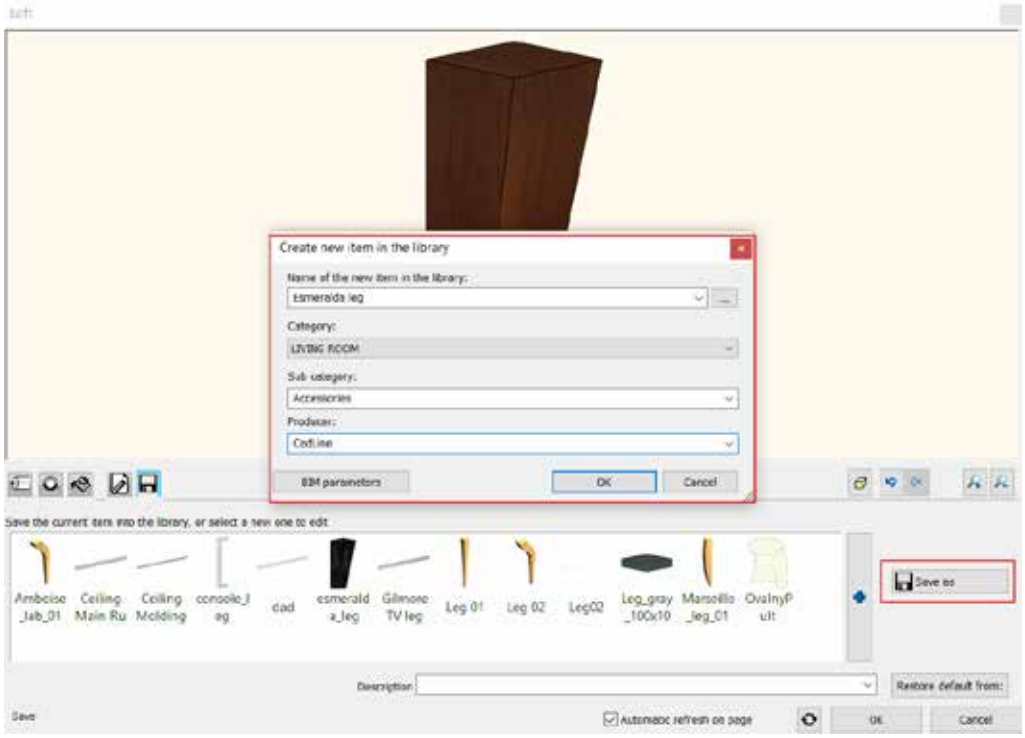
Now change the bottom reference point. Click on the blue arrow to swap between profiles, the selected profile is activated and marked with red.

Click on the profile properties and set the reference point. Here this should be also the bottom left corner point.



Now the 3D shape of the leg is appropriate, two sides are vertical, others are inclined.

On the next tab select the material. We use “Ash” for legs.
On the next tab under “General settings” set the type of the representation in 2D. We recommend to use the simplified version.
Finally save the leg. On the last tab by clicking on the “Save as “command you can give the name, category, sub-category. In this case we recommend to use Living room as main category, and accessories for sub-category. Components and other furniture parts are good to save under this section. If you like you can also enter the producer name here too.

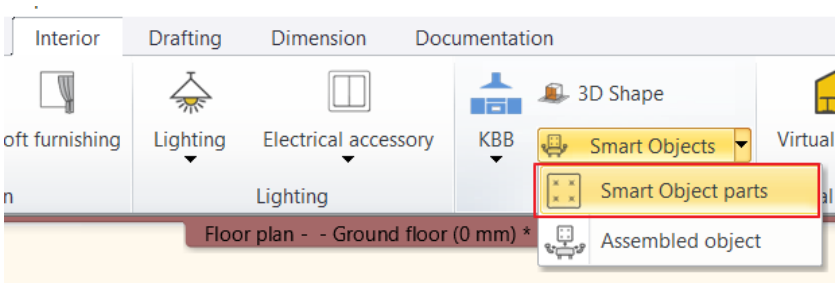


Finally place the leg on the floor plan.

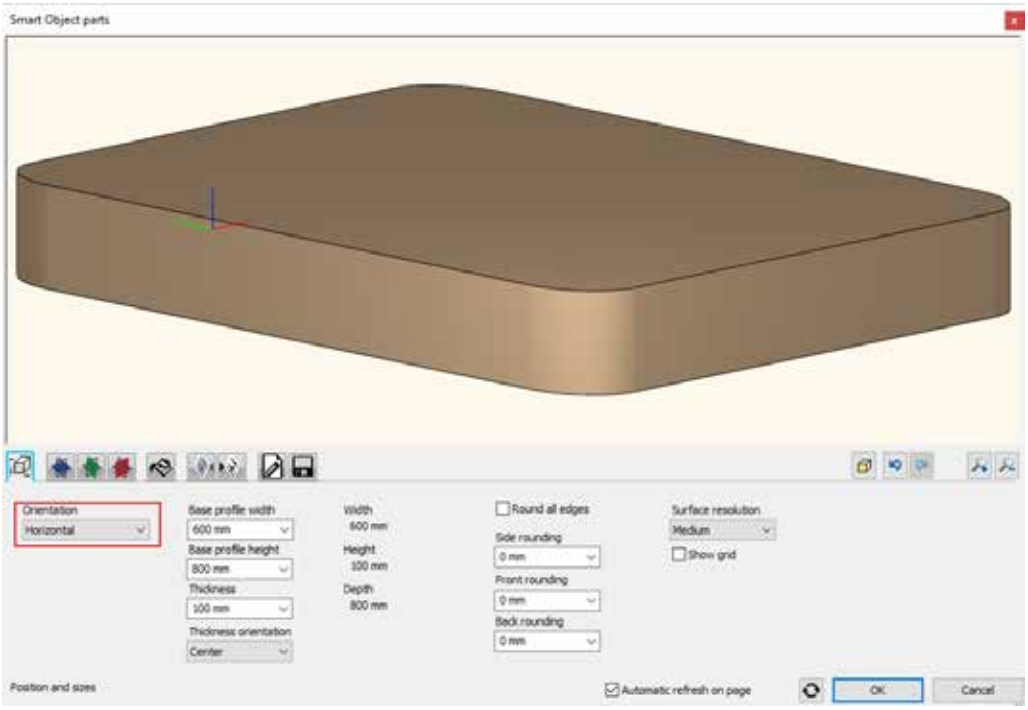
4.1.2. Create the base for Esmeralda pouf

The next session is about to create the base of the pouf.

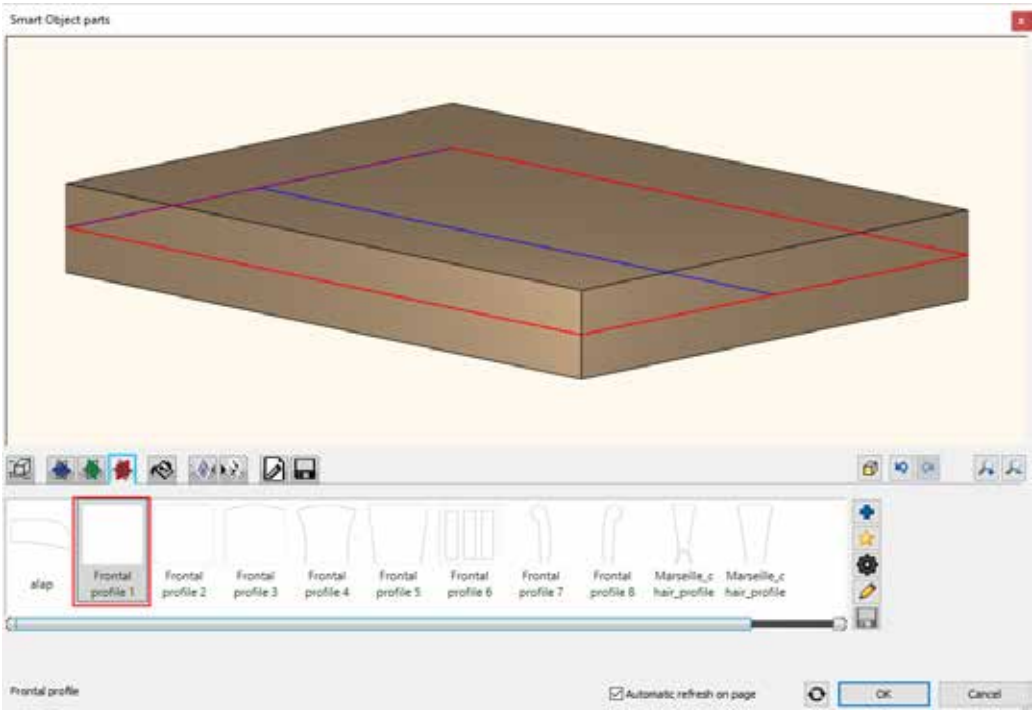
For this use Ribbon menu / Interior / Smart Objects and choose Smart Object parts command.



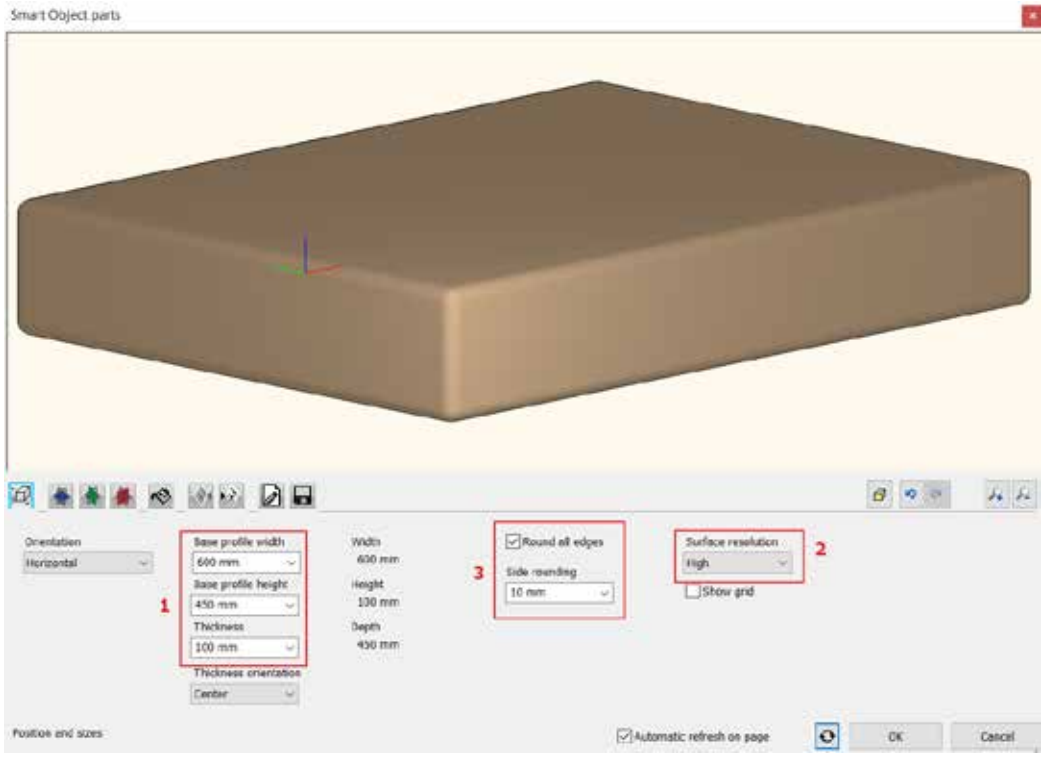
In the appearing dialog set the horizontal orientation.



On the fourth profile you can set the frontal profile, select from the list “Frontal profile 1”. There are two main profiles one with rounded edges, the other one without these.



Now go back to the first tab, under position and sizes set the width to 600 mm, depth to 450 mm and height to 100 mm (1).
Set the surface resolution to high (2).
Round all edges to 10 mm (3).

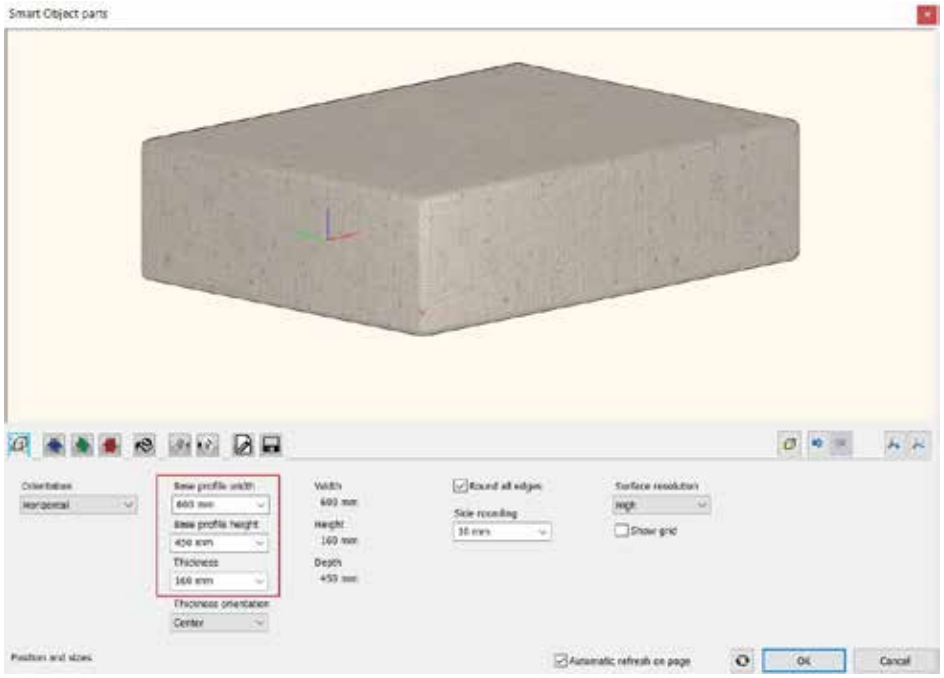


On the fifth tab you can select materials from the library, now choose “Textil_linen 2.
Finally save the base by clicking on the last tab “Save as “ command. The category should be Living room, for sub-category we recommend not to use pouf, but use accessories in order to save the base. Any components are recommended to save under this folder. Now enter the producer name, which could be the model manufacturer.
Now place it on the floor plan.

4.1.3. Create Esmeralda seat cushion

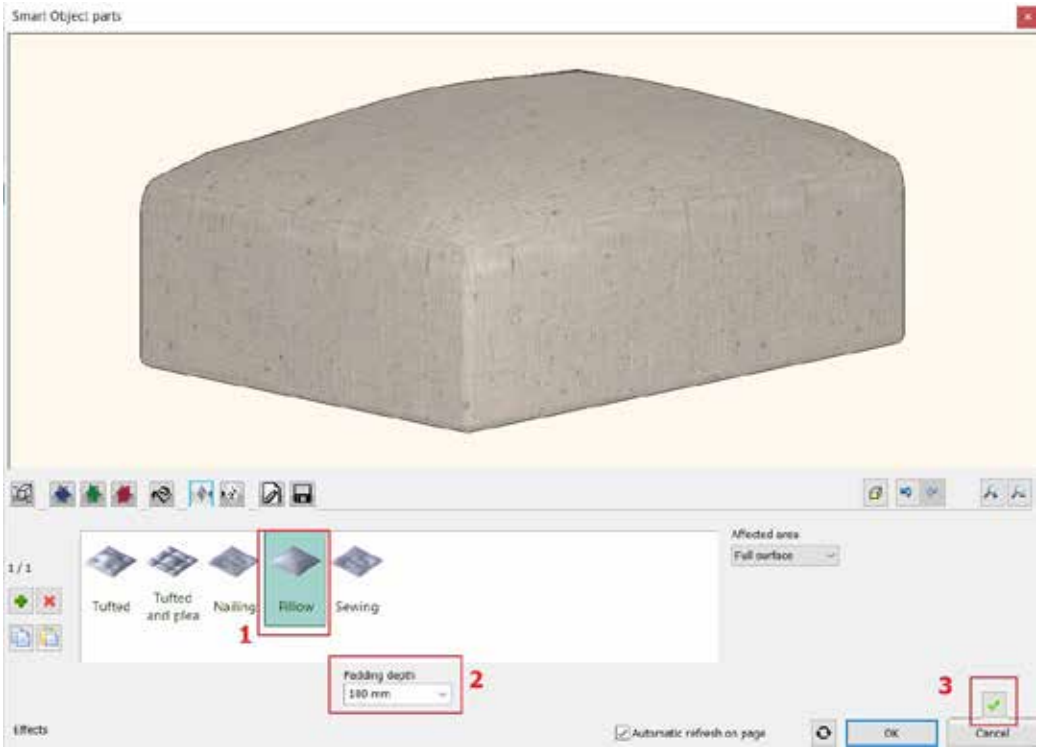
Let’s continue our work on the seat cushion.

Go to Ribbon menu / Interior / Smart Objects and select “Smart Object Parts” command.
The seat cushion is similar to the base, therefore open it. Got to the last tab and select the Esmeralda base from favourites then save it under a new name.
Next under “Position and sizes” tab set the new parameters. The depth and width remain the same, but change the height to 160 mm.
Edges are rounded, keep the value at the same value: 10 mm.



Two tabs next to material settings are for decoration effects. You can place decorative effects on the top on horizontal 3D shape or to the front on vertical 3D shape by using tools on the first tab. Tools on the second tab are for placing effects to the bottom and back panel in case of vertical 3D shape.

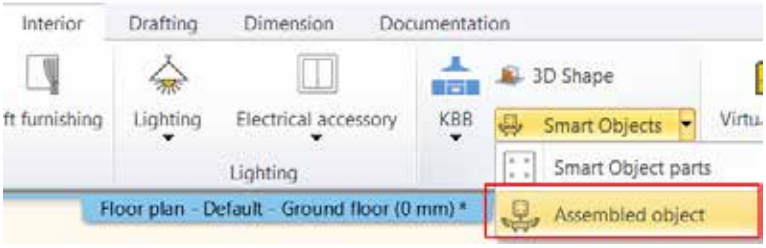
Pillow affect is added to the cushion, you can create it the following way. Select the first decoration effect tab, which adds effects to the top side.
Select “Pillow” effect (1) and set the padding depth to 100 mm (2). This value indicates how much the pillow effect will rise from the top of the item. To apply changes, click on green tick (3).



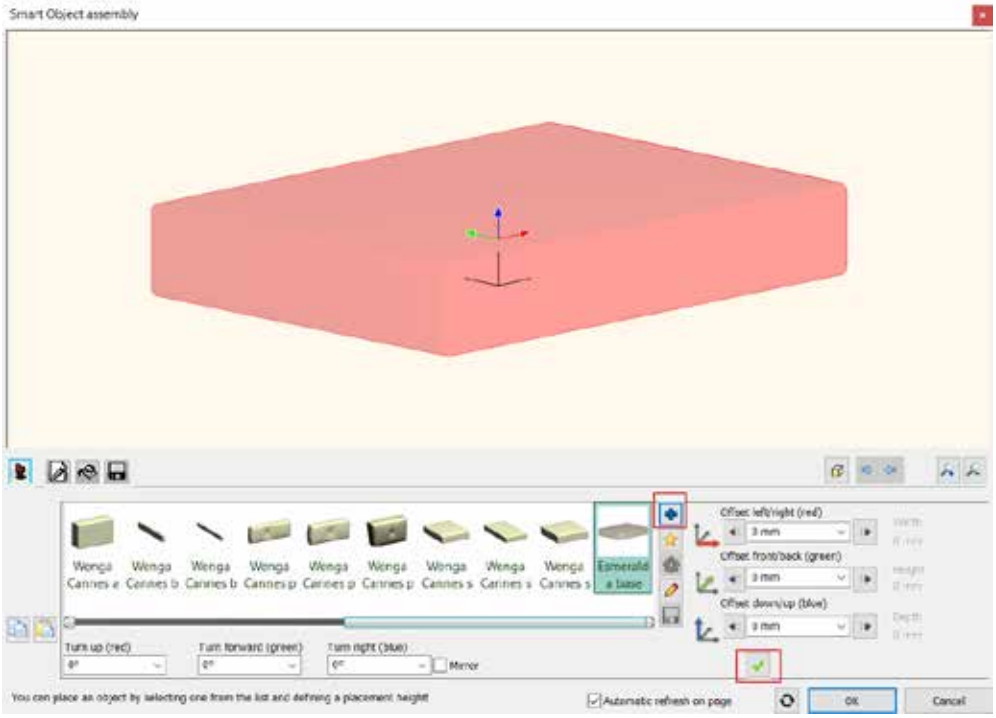
Save the changes on the seat cushion, go to last tab and press “Save”. Overwrite the changes on Esmeralda seat cushion.

4.1.4. How to assemble Esmeralda pouf

As we have created all three components of Esmeralda pouf, now the next step is to fit them together.
Open “Assembled objects” command from Smart objects group.



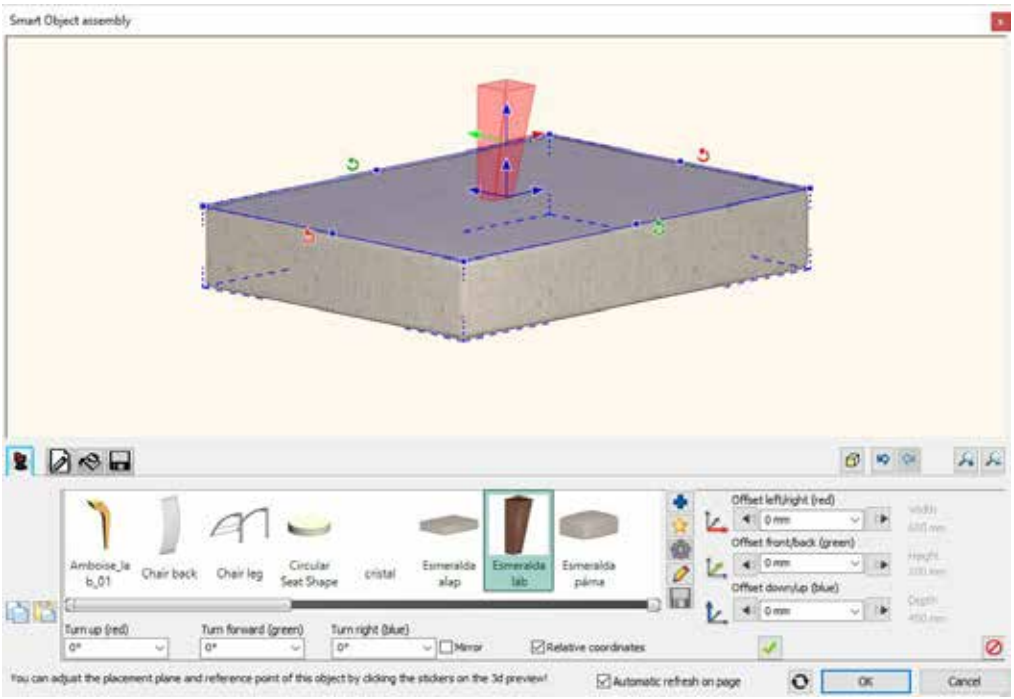
First select Esmeralda base. Select the new item from the library by pressing the blue cross.
The selected item appears. As long as the selected item is red in the dialog window that means that it has not been created yet, therefore click on the green check mark.



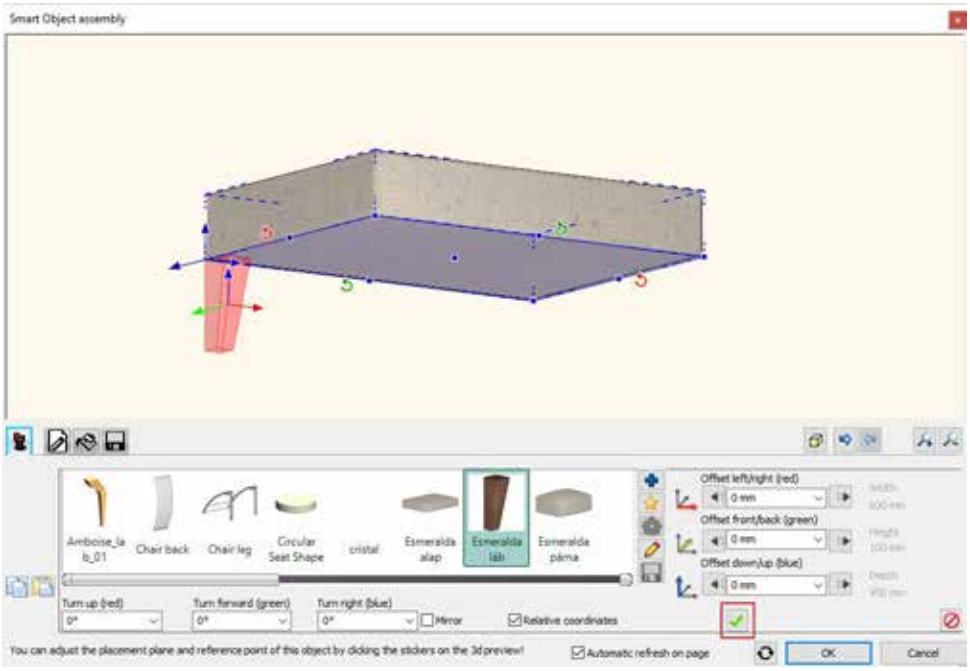
If we choose another item now, then we will adjust our existing item, this is indicated by the red borderlines which refers to its the selected status. Place the legs at the bottom of the base.

Now let's add legs to the bottom of the Esmeralda base.

Now click on the green cross icon. By default, the new item will be placed on top of the previously created base. Now select from the library Living room / Accessories / Esmeralda leg.

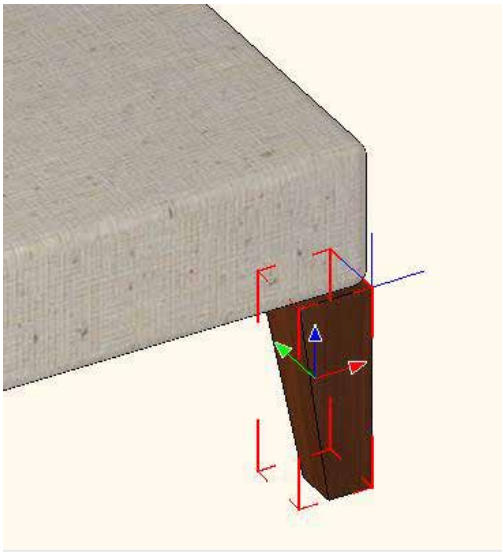


You can see that the program has placed the new item in the middle of the base with the leg centre point. Click on any surface to specify the side of the base where the leg should fit. You can also click on any corner points to place the leg. Now you can see that the leg is fitted with its corner point. Click on green tick to create leg.

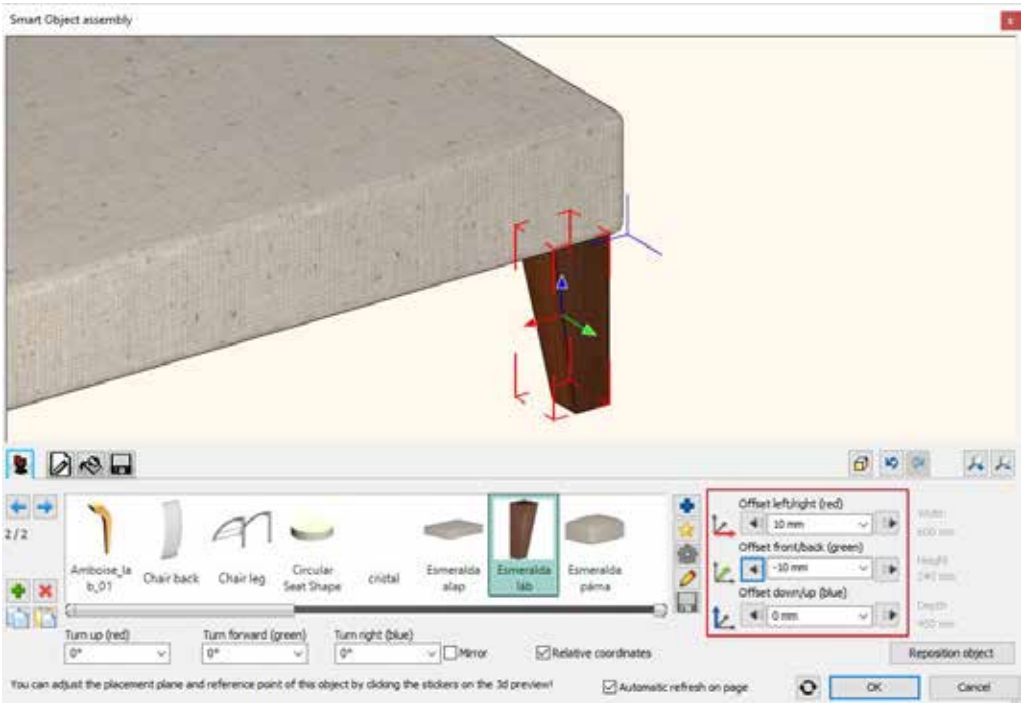


Follow these steps to place all four legs. Click on green cross, select the bottom side of the base, click on any corner points. Finally create it by pressing the green check mark.
When all done, you can see that not all legs are positioned correctly. The leg correct position is when two vertical sides are outside. We have to adjust these legs accordingly. Select the leg and set the value “Turn right (blue)” to 90, 180 or 270 degrees.

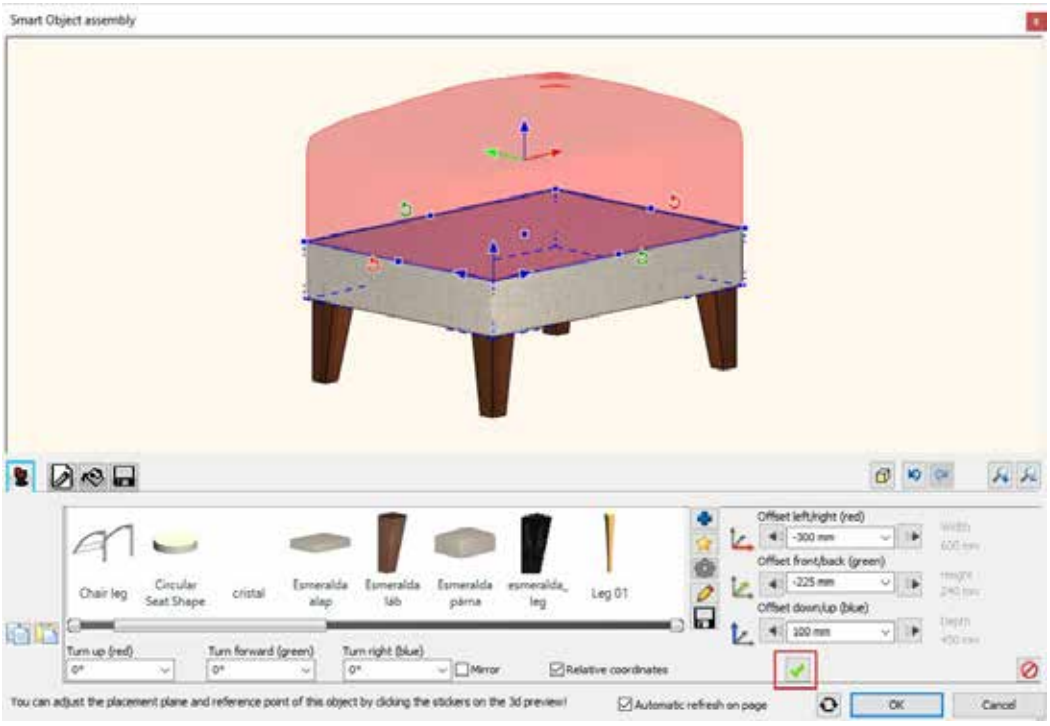
If you zoom out you can see that we still have to make some adjustments as the legs are stretching over the base. This happened because we set rounded edges for the base. So, we have to push legs inside a bit. This is when the colour coordinate system can help us. The red, blue, and green arrows define the coordinate system, these can be found in the dialog window. We have to be aware of the direction of the arrows.



This leg should be adjusted to left by 10 mm, so change the value on the red axis in positive direction.



The next one should be adjusted on green and red axis in positive direction.
The third one on the green axis in positive direction and on the red axis in negative direction.
The last leg should be moved on both axis in negative direction. This is how you can fit the legs precisely all four legs.
The final task is to place the seat cushion on top of the Esmeralda pouf. For this select the base then add the seat cushion from the library / Living room / Accessories category. The software automatically will place it in the middle, finally click on green check mark to create it.



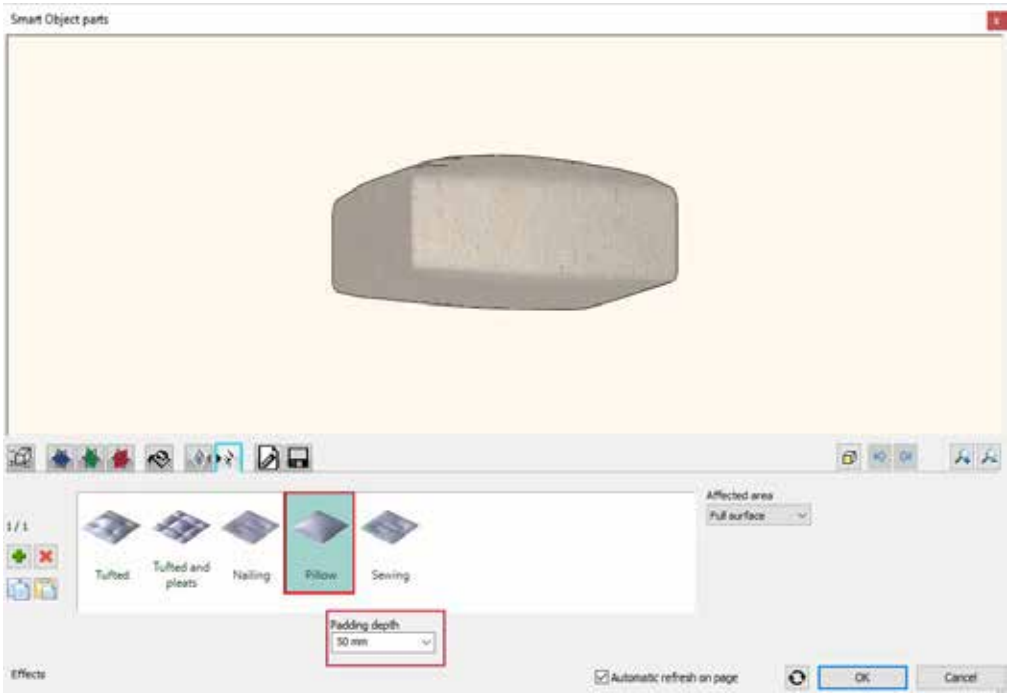
Now the Esmeralda pouf is assembled together. As a final step save it in the Library on the last tab. Click on “Save as” button, don’t forget to give the producer name.
Finally place it on the floor plan.

4.1.5. How to modify assembled object?

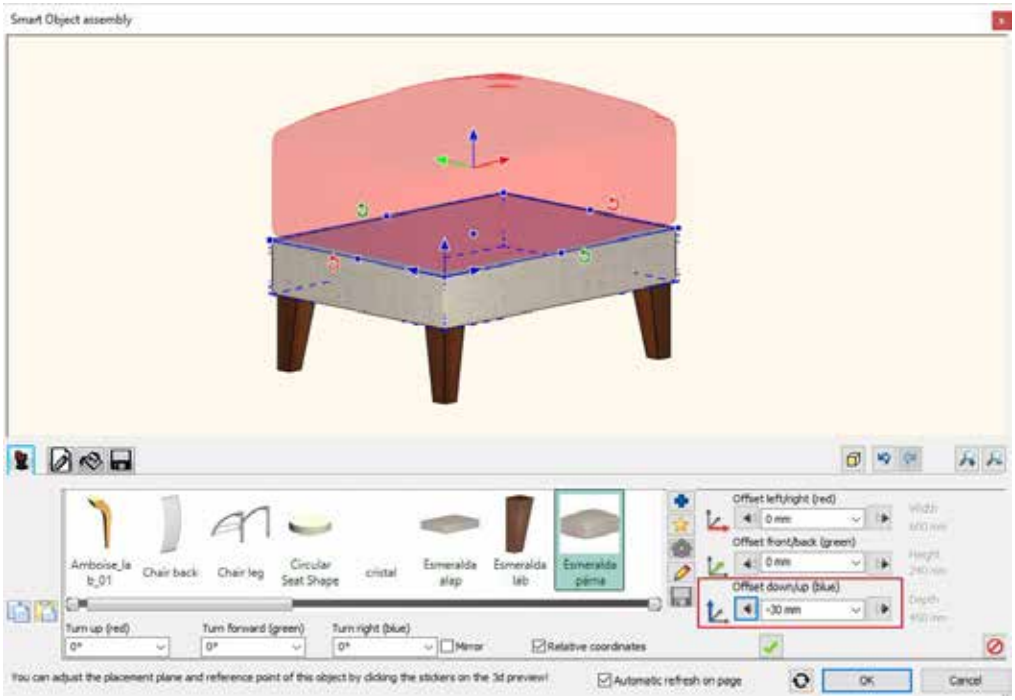
Let’s check the difference between the original and the newly created Esmeralda Pouf. There is a tiny dissimilarity. Between the base and the cushion seat there is a little more space at the original one. The aim is to adjust this gap without making it too large so we could see through between them. For this we have to modify the newly assembled furniture.

Whenever we create a new furniture by using the “Smart object” tools, by selecting the created item on the floorplan we can open up again the “Smart Object Assembly” dialog window and here can modify any parts of it. In this special case we will adjust seat cushion.

Select the cushion in the Smart Object Assembly dialog window, then click on the pencil icon. This way you can go back to the Smart Object Parts dialog window.
Here you can see that the pillow effect was only added onto the top side and not to the bottom. If you click on the second tab for effects there you can add padding depth to the bottom. It is visible now that the pillow effect nicely appears.



Save the changes, then go back to Smart Object Assembly dialog.
the distance is zero, that means that the bottom of the seat cushion will be placed right on the base. Now change Offset Down/Up to minus 30 mm, this way the pillow effect will nicely pushed into the base.



Now save the changes and close the dialog window.

Whenever you want to use the newly created pouf, simple find it in the Library under Living room / Armchair sub-category.

4.2. Marseille chair

The following example will be more exclusive chair. We will show how to create Marseille chair. We have found it on the internet and we have only three parameters such as the depth, height and length. Also, we found three photos see below them.

The photo of the back of the chair will be very useful for us later on. Using the above-mentioned parameters let's start our work. First let's analyse the chair that means we have to know the number of components such as back chair, seat, legs. We have to know also how these parts are built-up.

Start

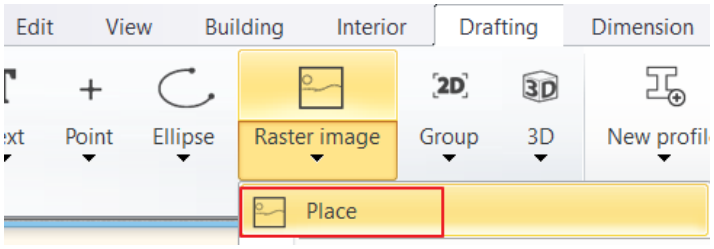
Open the project which has already includes the ready model and profiles before you start the work. Here you can find the project:
…ARCHlineXP Draw\2018\Course_Intermediate\4_Upholstered_furniture\ Marseille_chair.pro

4.2.1. Drawing profiles

The profile of back of the chair

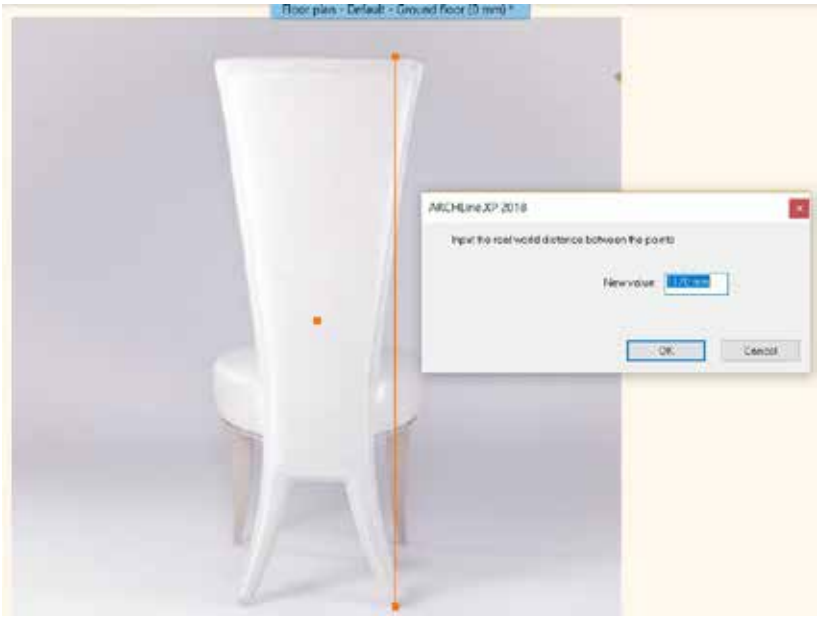
Now let's see the profile of the back, how it can be created.

Import the previously mentioned photo of the back chair:
…ARCHlineXP Draw\2018\Course_Intermediate\4_Upholstered_furniture\Photos
From **Ribbon menu / Drafting / Raster image** choose "Place command.



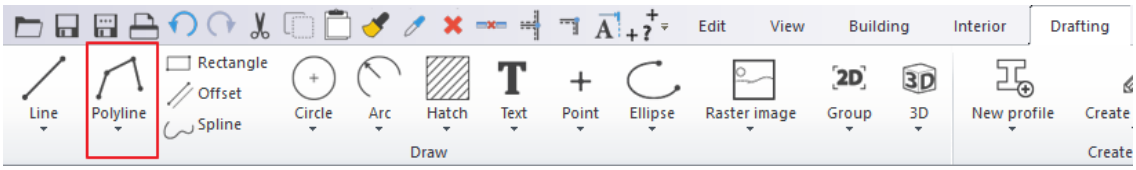
The photo is not scaled, but suitable for picking the profile of the back. In order to work with a scaled back chair first we have to calibrate it.

Let's calibrate it, click on the chair and from the local menu choose "Calibrate" command. The height of the chair is 1,170 mm, using this value you can calibrate the chair. Draw a straight line starting from the bottom of the leg to the top of the back. Holding Shift down you can easily draw vertical line. In the pop-up dialog window enter 1,170mm the height of the chair.

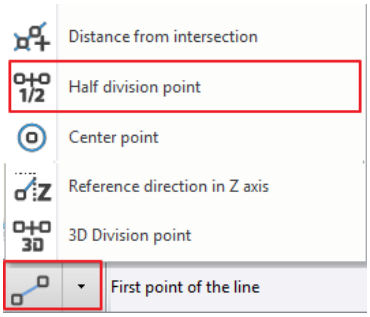


This is not a perspective view, so we cannot get more information about the chair. Our aim is to get the profile of the back chair. This photo is now scaled, only we have to do is to redraw the back.

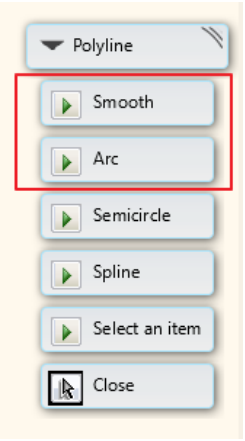
Use polyline command from Ribbon menu / Drafting.



We are going to draw the half profile starting from the top. For this we have to select a special point which is in this case the “Half division point”. The command can be found on the bottom tool bar.

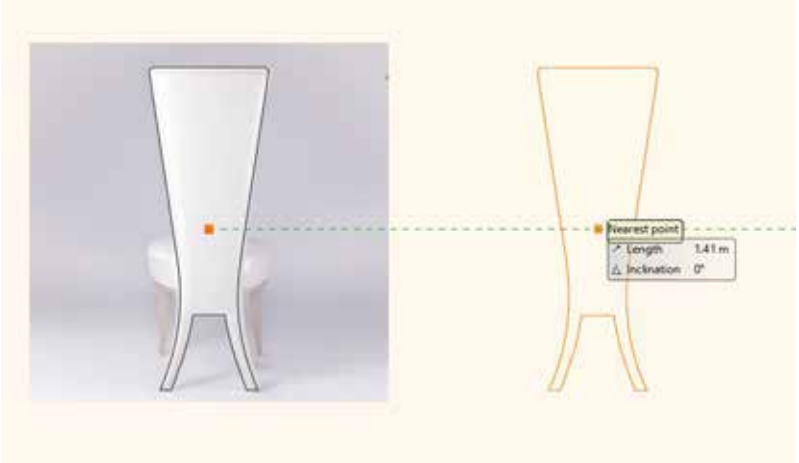


Now draw a line on the top edge, after placing it the software will place the starting point of the polyline in the half division point. From here you can start to draw the profile.



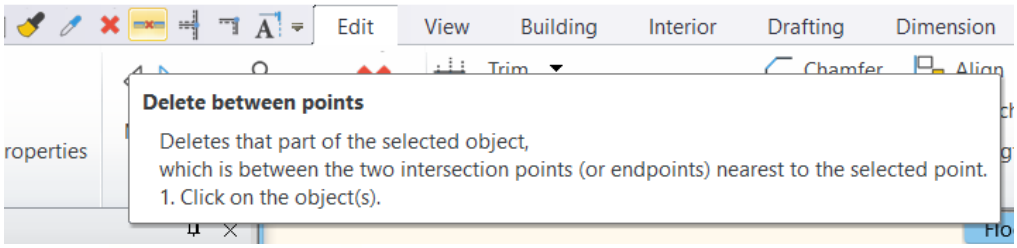
First draw a line then an arc. You can draw an arc by using three points. The first is already given then select the end point, finally a middle point which helps to define arc.
Continue the drawing with a line and a smooth arc. To draw the arc, select option from the pop-up menu, first select Smooth then Arc option.
For the next line select “No smooth” command.

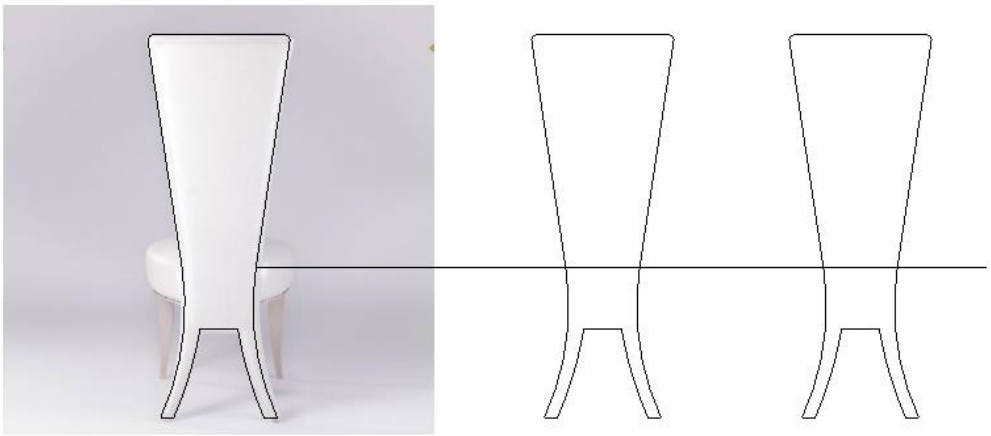
Next is an arc.
Draw the last line until perpendicular projection of the half division point. Close the drawing command, the half of the profile is now ready. Select
Select the drawn profile and from the local menu choose “Mirror a copy” command.
This way the other part of the profile is created. Now the profile is completed. Now move it next to the photo.



Next, we have to draw the upper part of the back chair. It is necessary because it is not the same everywhere. If you check the model from a bit closer you can see that the pillow effect is smaller on legs, then on the other parts. So, reach this we have to create another profile.

Select the profile an create another copy of it.
Now find that point where the seat starts, and there draw a straight line.
Use Delete between point command from the top toolbar to remove unnecessary lines. The second profile is ready.





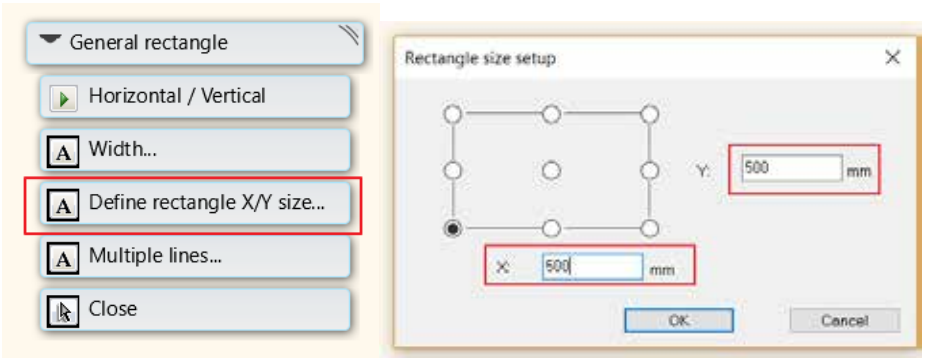
In order to complete the back chair, we need the front profile or a part of it. Also, the back chair has curved inclination. This will be a vertical base profile which will be used for modelling. This can be seen in the top row on, a 1,170 mm high curved profile.

Draw an arc which height is 1170 mm.
As you can see that the curve of the backrest leans a bit backwards, this is not a regular arc as this one is drawn here.
Lean backwards the profile by moving the endpoint.

Seat profile

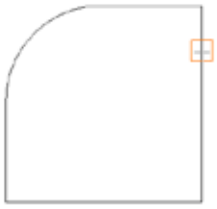
Let’s look at the next item, the seat. To create it we will use a rectangle.

From Ribbon menu / Drafting / Polyline start the “General rectangle” command. From the appearing local menu choose “Define rectangle X/Y size...” option and enter the sizes. Draw a 500 * 500 mm rectangle. We already know that the total length of the chair is 500 mm and depth 580 mm which includes the back of the chair. We assume this size of a rectangle will be enough for the seat.



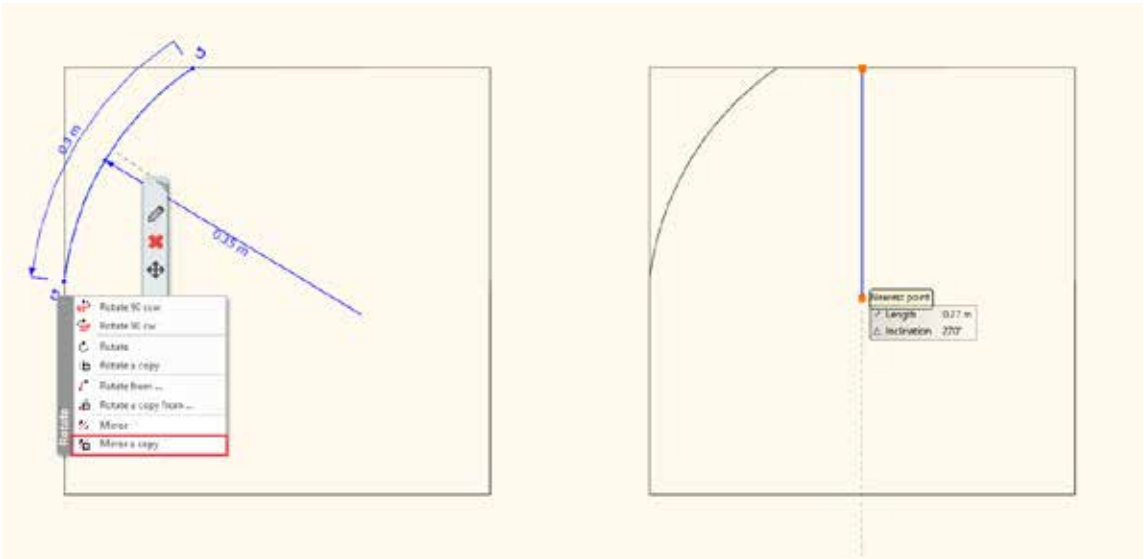
If you check the photos then you can see that we have to fillet edges. There are more options to do that.

From the local menu select “Edit” then “Fillet” command. From the appearing menu now, you can select how to round edges by using radius, diameter etc. Clicking on other side the selected method will be applied for rounding.



So, we can create seat this way. However, in our example it looks a little bit different, the arc is not fitting so nicely.

Now place again a rectangle and inside draw an arc from the half point until the quarter point by using the arc command.
Mirror the arc by using Mirror a copy command.

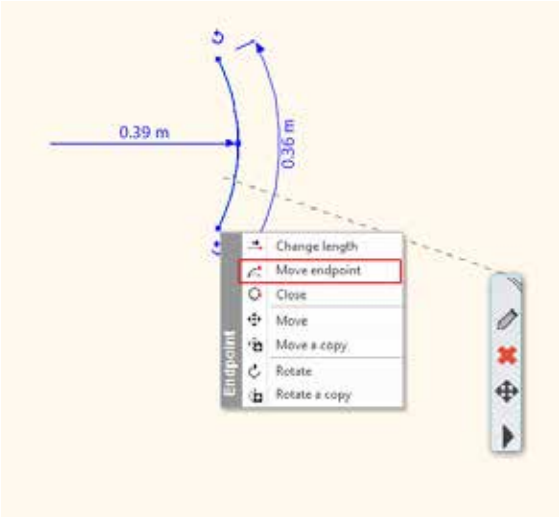


Then use “Delete between points” command to remove unnecessary lines. The top view profile of the seat is ready.

Leg profile

One more profile needs to be created for legs. Here we have to create arc again, the leg is 350 mm high and curved.

Draw an arc which is 350 mm high.
Lean it backwards slightly by moving the end points.

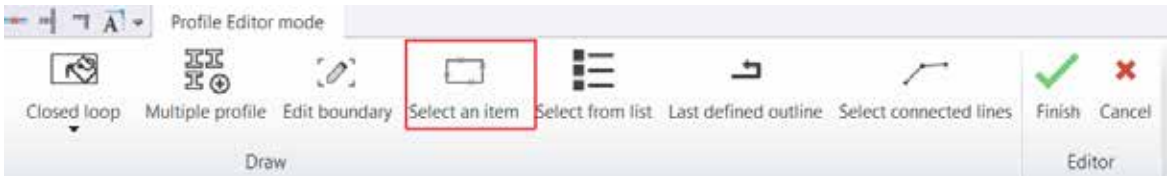


Now we created all profiles for the Marseille chair. Delete these items and use Smart Object commands to create the chair components.

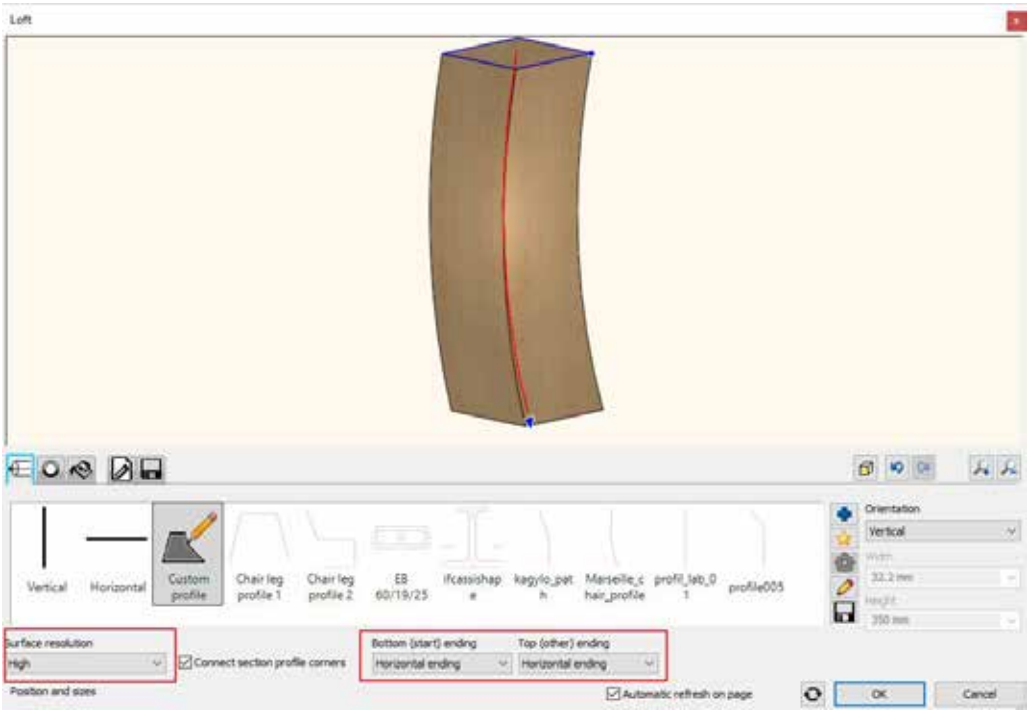
4.2.2. Creating Marseille legs

When we have all profiles, we could continue working on modelling the furniture, first we create the components. We need leg, back chair and the seat.

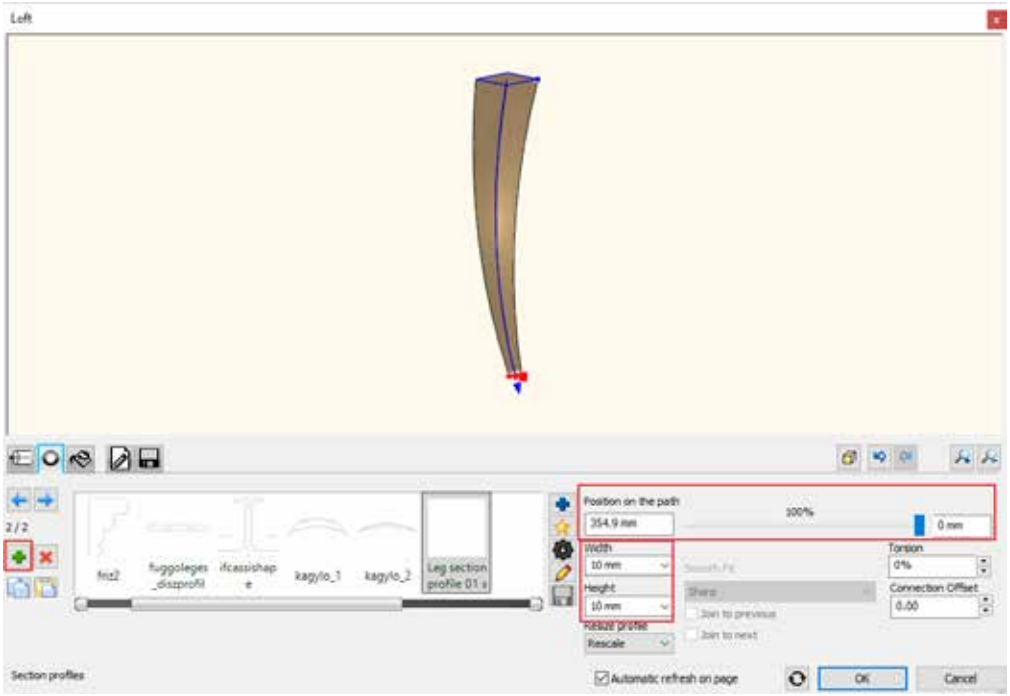
Select from Ribbon menu / Interior / Sweep then Loft command. This means we draw a profile along a selected path.
First select the path to use for drawing the profile. In this case this is a special one, therefore click on the yellow start icon and choose customize profile option. Here you can choose the previously drawn profile on the floorplan.
Now choose from Ribbon menu / Profile editor mode the “Select an item” command and select the leg profile with one click.



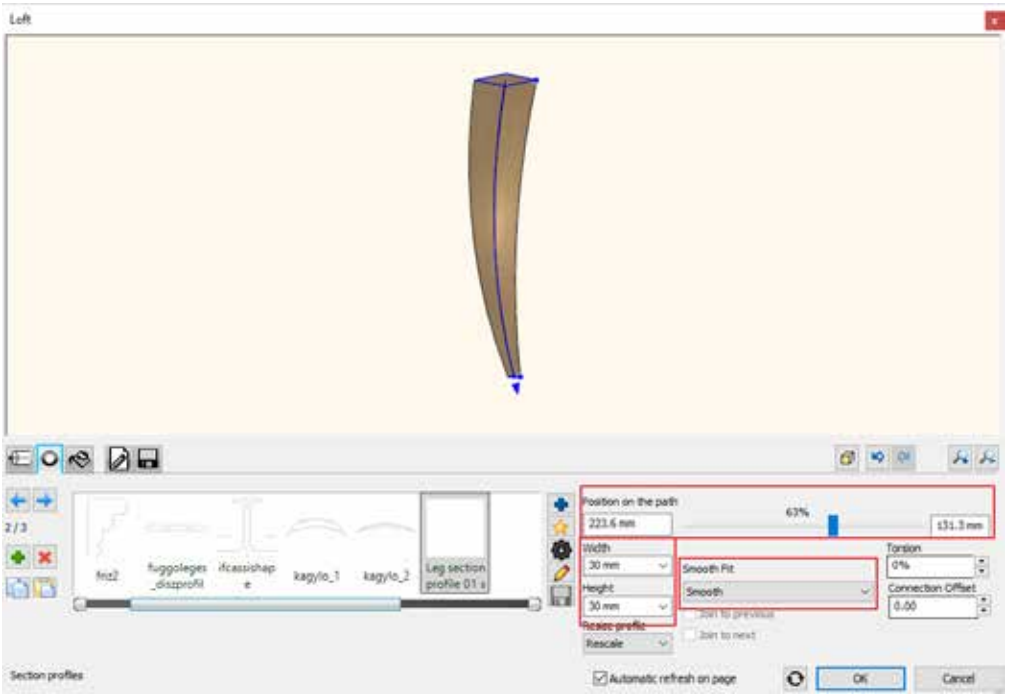
When the profile is selected then the software automatically brings up the 3D shape dialog window. It is recommended to set high resolution and set the leg ending too.



he next step is to set the size of the top profile on the top of the leg. This profile is a 50*50 mm rectangle. Set the parameters on the second tab.
Then you have to resize the profile on the bottom, that is a 10*10 mm rectangle. For this click on the green plus icon and enter the parameters. Now set the position on the path. When you finished apply changes by pressing the green tick.



It is optional to add a third profile which is a 30*30 mm rectangle. As you change the position of this profile on the path, the shape of the leg will also change. It is also recommended to set the “Smooth fit” to smooth.

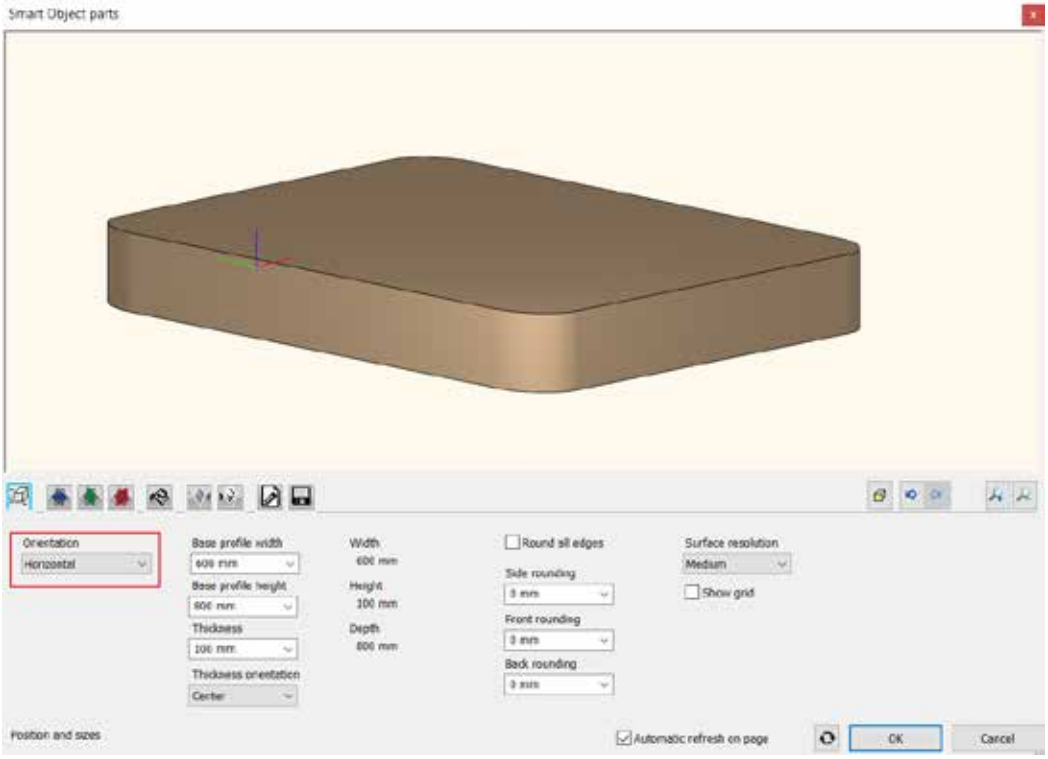


We select the material on the third tab.
Finally save the leg on the last tab. Click on “Save as...” first enter the name, then category. This should be Dining room, then we recommend to save the leg under Accessories sub-category. All furniture components should be saved here.
Finally enter the producer name, Wenga.
Now place the chair on the floor plan.

4.2.3. Create the seat cushion

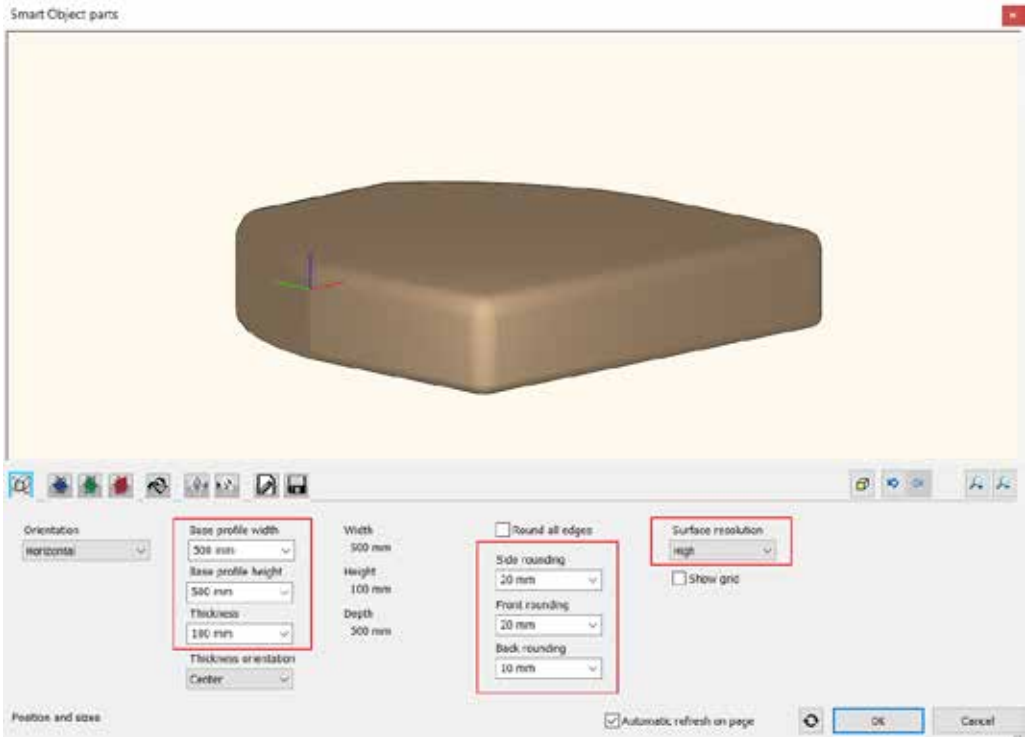
The next component is the seat cushion which we will create for Marseille chair.

Select “Smart Object Parts”.
Set the seat cushion position to horizontal.

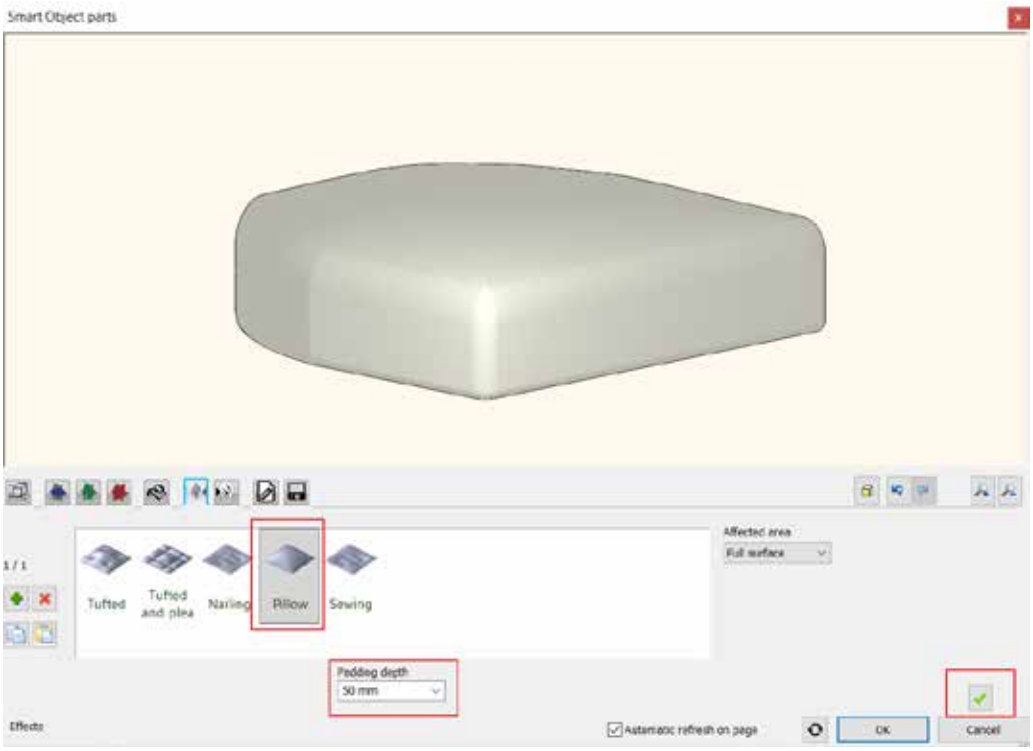


Set the frontal profile on the forth profile. Click on the yellow star icon and from the floorplan select the seat profile.

On the first tab set the parameters. The rectangle size is 500*500 mm, the height is 100 mm. The resolution should be set to high.
Now round edges, sides and front will be 20 mm and the back rounding will be 10 mm.



Now Set the material on the 5th tab. Choose Cream_01.
On the following next two tab you can add effects to the cushion. On the first tab you can set the top effects, on the second effects can be added to the bottom. Now we will add pillow effect to the top. The padding depth should be 50 mm.



Final step is to save the leg. On the last tab click on “Save as… “command, first enter the name and the category. This should be dining room, choose Accessories for sub-category. The producer name is Wenga.

It is important to save components before closing the dialog window. If we close the dialog without saving the component then always place it on the floorplan. If none of these happen then we could lose our work. In case we placed the item on the floorplan but that is still unsaved that we could do that anytime. Select the item on the floorplan, choose the properties, this will open the Smart Object Part dialog window, here you can save the item.

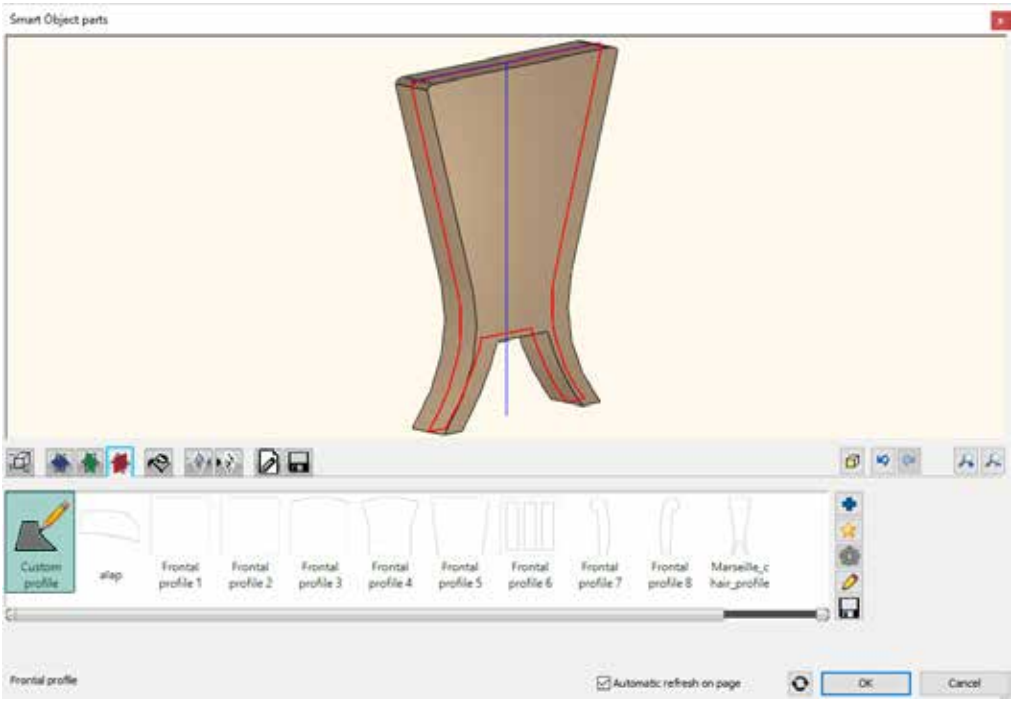
4.2.4. Create the back of Marseille chair

There is one more component is missing, that is the back of the chair. We will continue the work modelling this.

Select Smart Object Parts.
back is a vertical item, so this setting is correct.

On the fourth tab set the frontal profile. Select it from the floorplan, but now click on the yellow star icon. Here we have to use the “Closed Loop” command and click inside the profile.

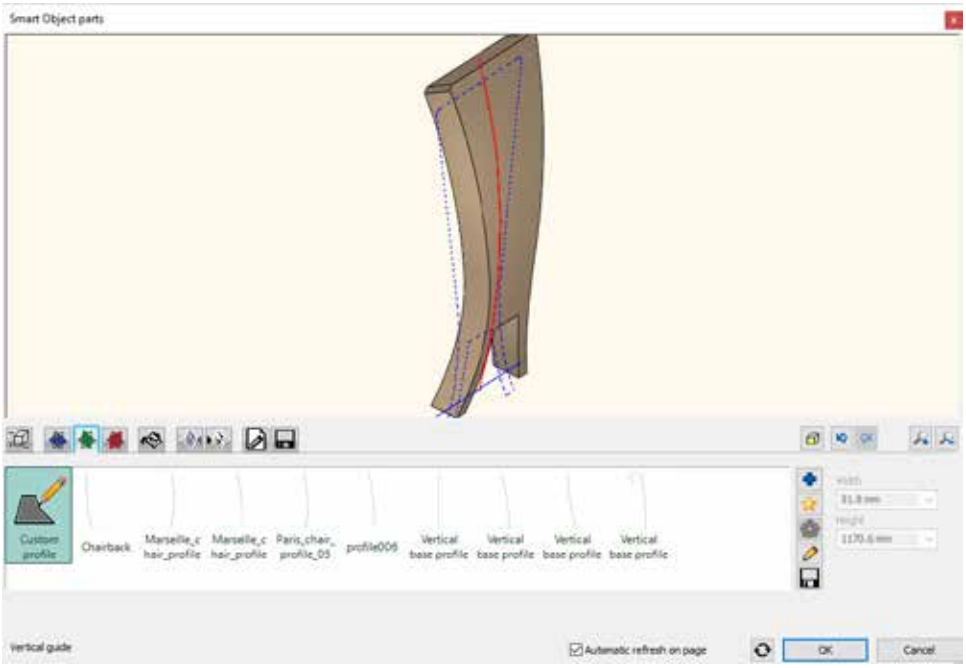
So now the back of the chair profile appears in the dialog, now we have to adjust the parameters.



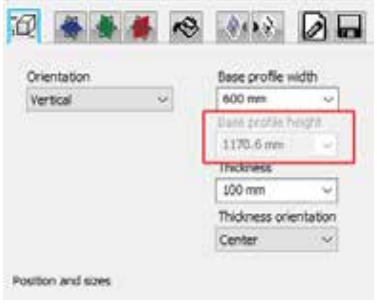
On the first tab we can set these parameters. Here we have to mention that so far there was no need to use the second and the third tab. These are for the vertical and the horizontal guide for base profile.

In case of the Marseille chair the vertical base profile is an arc. Select this arc from the floorplan, for this use “Select an item” command. Select the arc then define the reference point with one click.

Now the software will pull over the back-frontal profile on this vertical base profile.

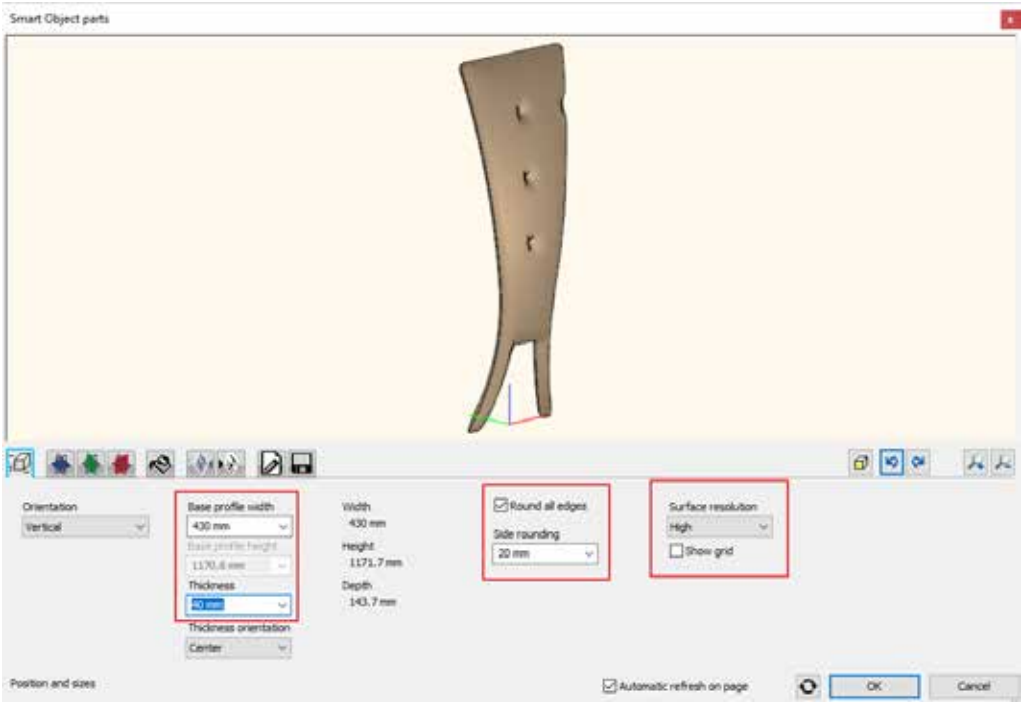


is important to note that the height of the back cannot be modified. This happens because the vertical base profile defines the height.

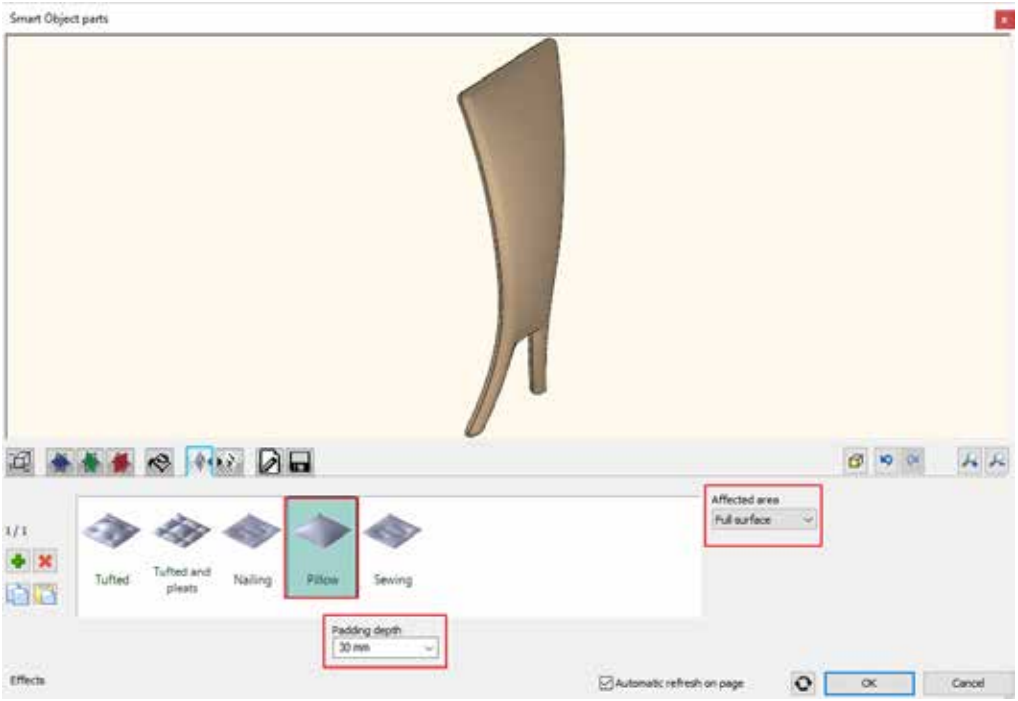


The above-mentioned works at the same way on the horizontal base profile. In our case we do not have to modify it. So, the width will not be defined by the horizontal base profile. Here we leave unchanged the horizontal line as base profile.
Now go back to the first tab, the vertical base profile defines the height, but we should set the length which is 430 mm and the depth is 40 mm. The resolution is high and the rounding is 20 mm. In case of the back of the chair the rounding value

cannot be more than this value.

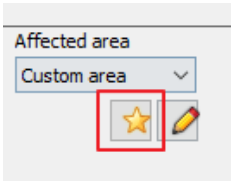


The next step we have to add pillow effect to the front. The padding depth should be 30 mm and affects the full area.

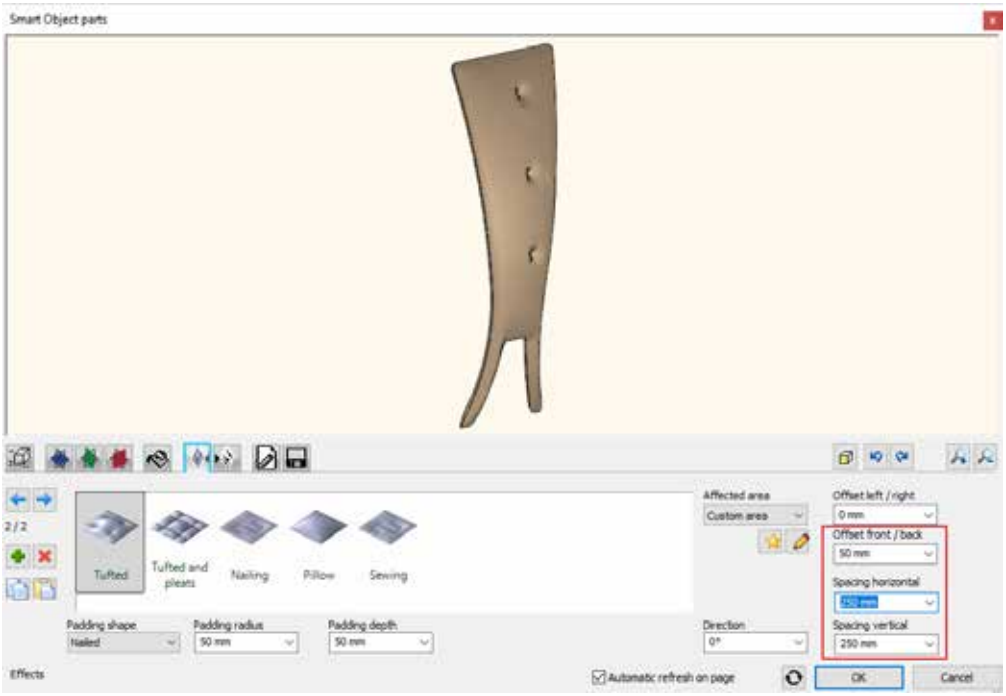


In this case the pillow effect is more significant on the backside. Therefore, we add another pillow effect and the affected area will be a customized area.

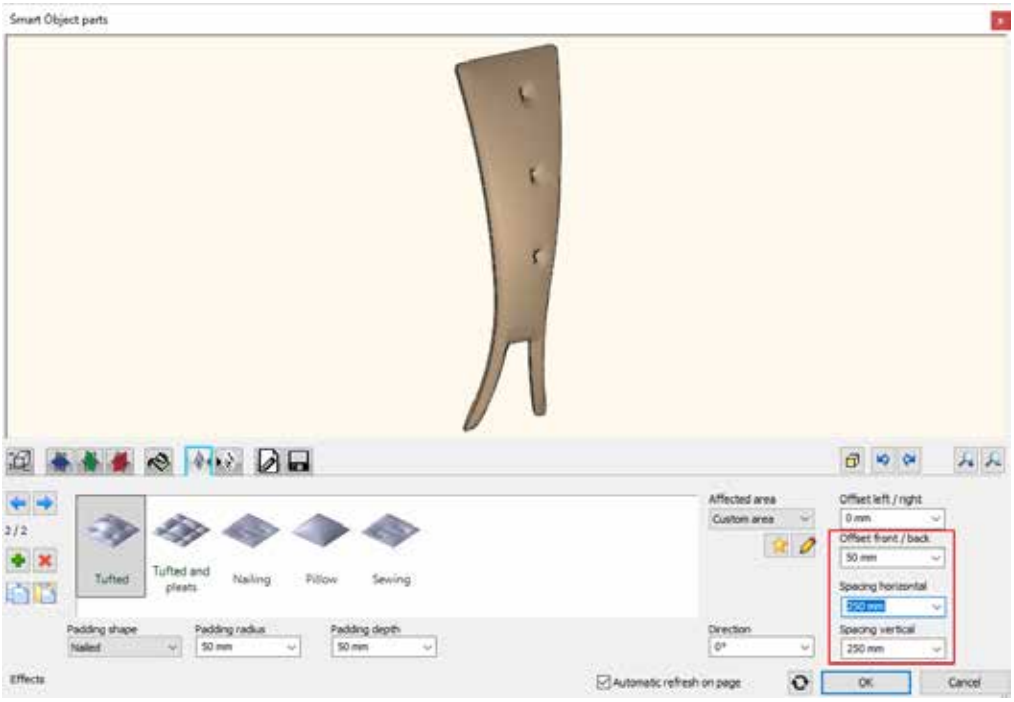
Click on the green cross. Now select from the drop-down menu the “Custom area” option.



The customized area can be given by using the yellow star icon. The program offers the back-chair profile. We have to fit it exactly on the smaller customized area. Then we have to use the “Closed loop” command to click inside top profile. As you can see the second pillow effect is created on the upper part of the back chair.
Add more effect, like “Tufted” nailed shape. The padding shape and padding radius should be 50 mm. Click on green tick to create the effects.



Now set the nailing properties, our aim to place the nailing effect in one row. You can reach this if you half the length 430 mm, so 215 mm will be the value for the horizontal spacing. The vertical spacing will be 250 mm. Finally set the front/back offset to 50 mm.

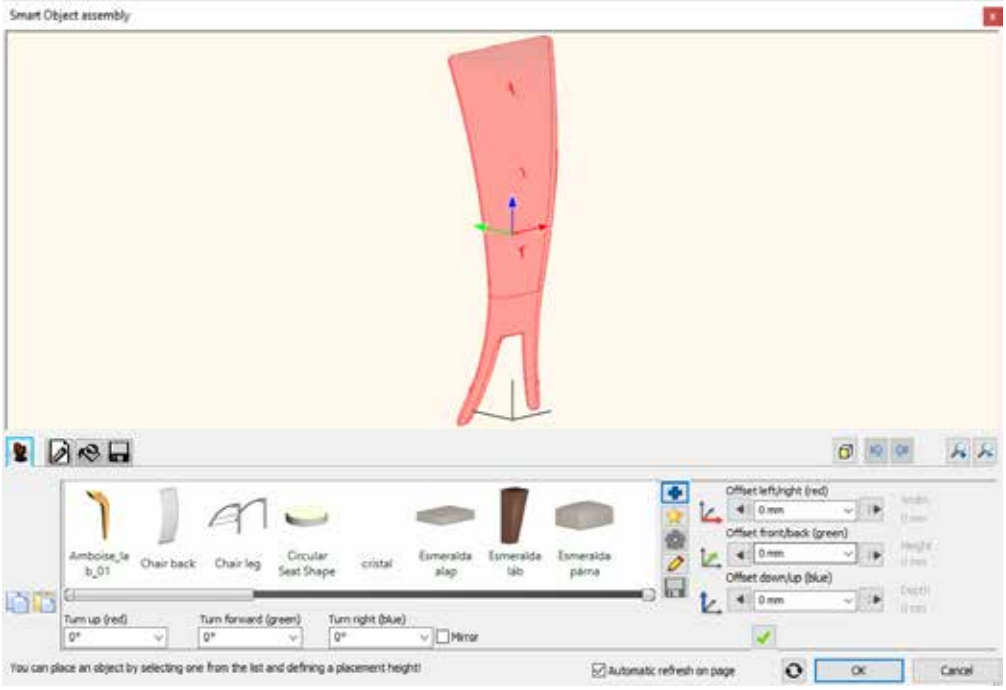


Finally set the material Cream_01.
The back chair is ready. You have to save it in the library. Use “Save as ... command, category is Dining room, sub-category is accessories, producer is Wenga.
Now place the back chair next to other parts.

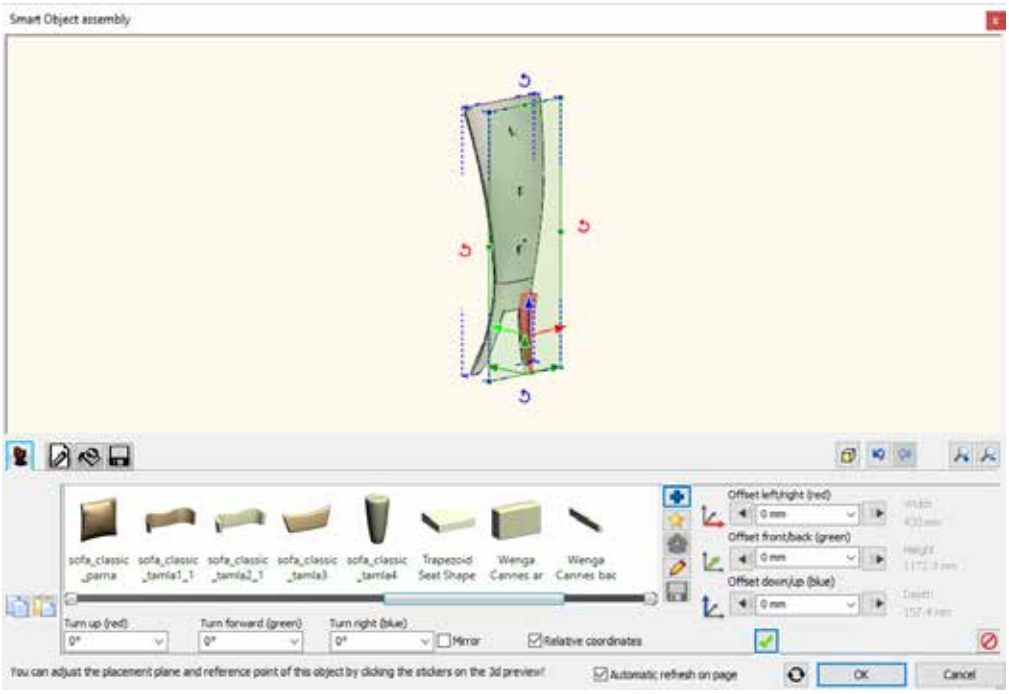
4.2.5. Assemble Marseille chair

The last task is to assemble the Marseille chair components.

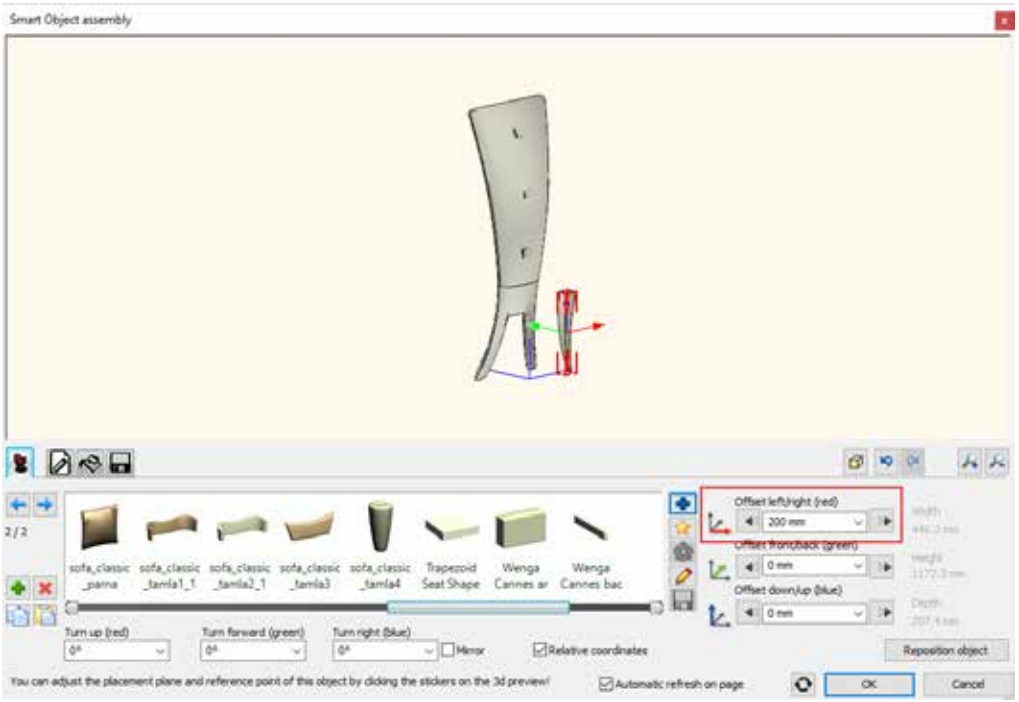
Select Smart objects / Assembled objects command.
First you have to select the components from the library. Place the back of the chair first. You can find this component in the Accessories subcategory of the Dining room category.
The component appears red in the dialog. This means that it has not been placed yet. Click on the green tick to do so.



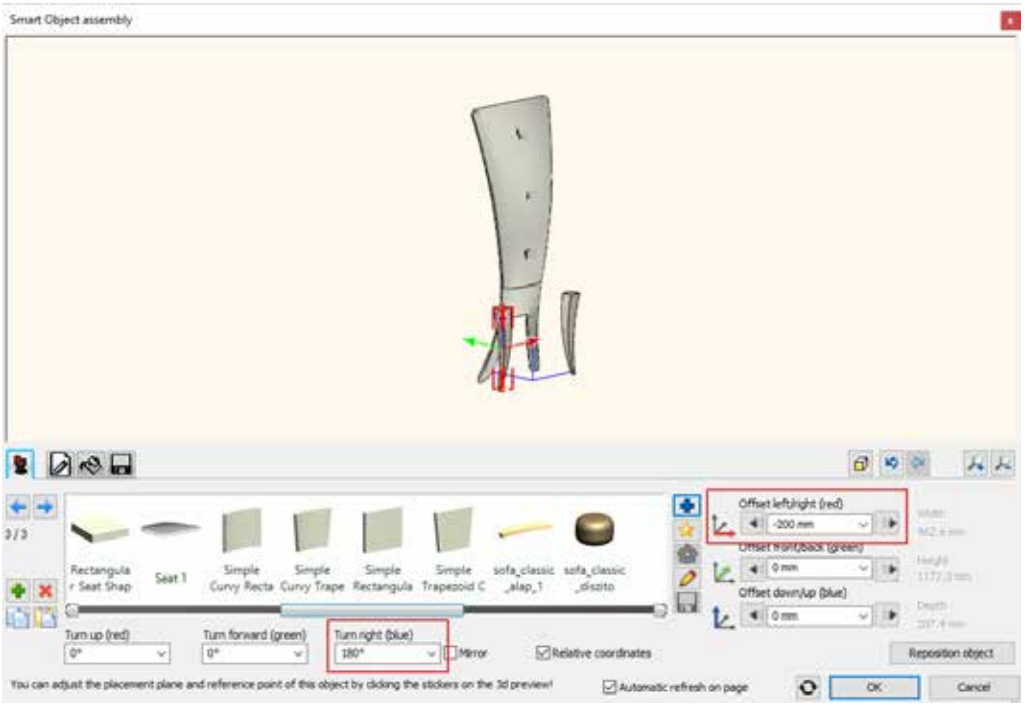
Add the next components: the legs. First click on the green tick.
Search for the items in the library
It is placed on the top of the back. Click on the front to select this plane and then select the lower middle point.



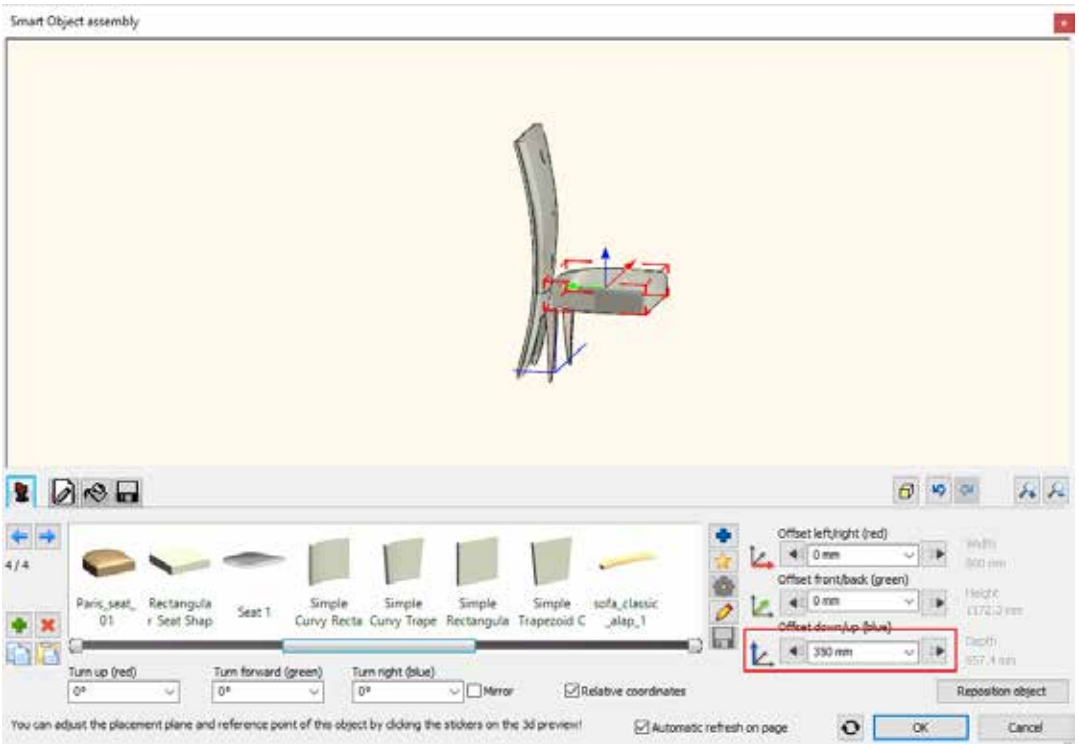
Place the leg with the green tick and the move along the red axis with 200 mm.



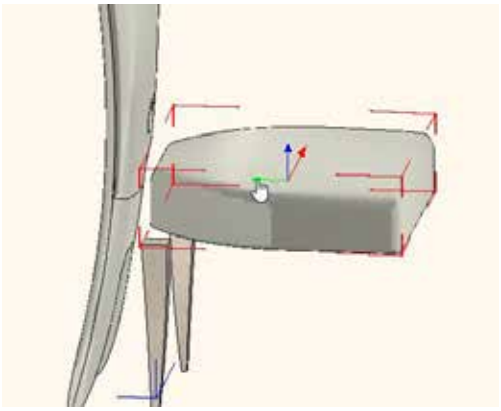
The next element that we place is going to be the other leg, so leave the leg selected below and click on the green plus. Click on the frontal plane of the back. Place the leg with the green tick.
Since the lower middle point was the reference point, you have to mode this leg along the red axis with -200 mm for the symmetry. The plus task with this leg is that you have to rotate it with 180 degree.



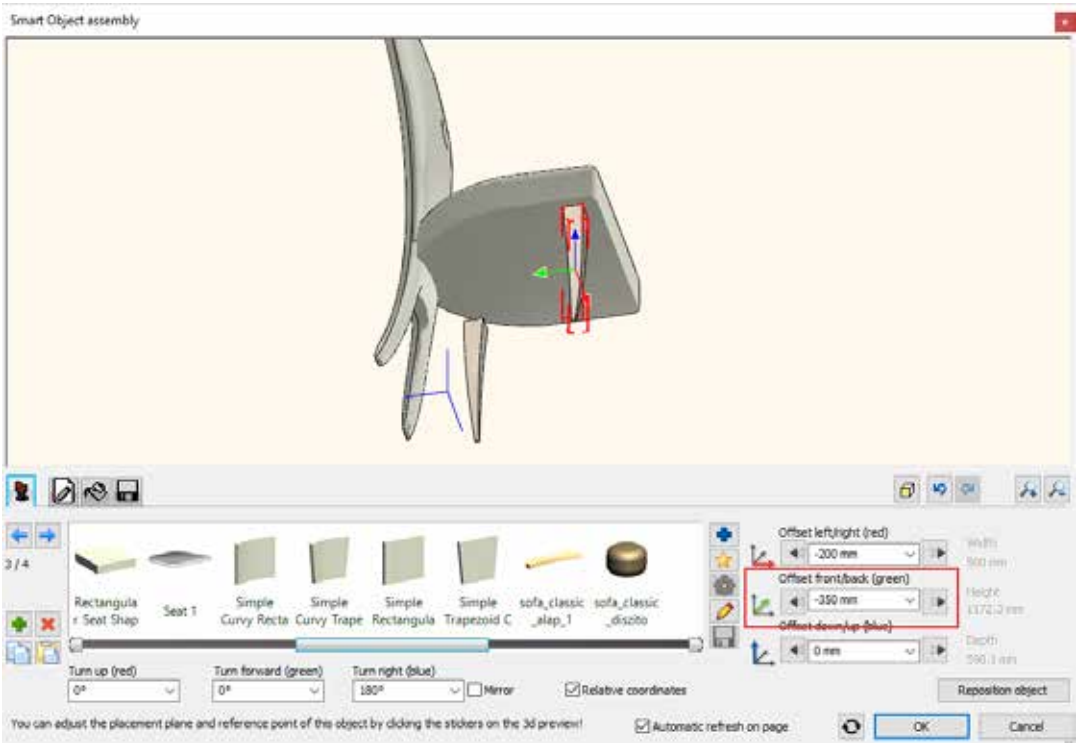
Let's place the seat cushion. Click on the green plus.
Select the seat cushion from the library.
Place this element also to the lower middle point of the back.
The seat cushion has to be placed 350 mm high, because that was the height of the legs. This means that you have to move it along the blue axis with 350 mm.



Move the seat cushion to create an overlap with the back.



The last task is to set the place to the legs. Select it by clicking on it, then move it along the green axis with -350 mm. If you do not know the exact distance, you can set the right position with the arrows.



Move the other leg to the right place too. Move it along the green axis with -350 mm.
The chair is ready. The last task is to save it. Give the name of the chair and save it to the Dining room category, Chair subcategory. Give the name of the producer and place it on the floor plan.

In the future the chair is available from the Design Center / Objects / Dining room / Chair subcategory, where you can find the original and your chair as well.

Workshop 5: Stairs and railing

5. Workshop: Stairs and railing

In this lesson, you can learn how to create stairs with different geometry and their railing.

- Placement and editing stairwell with U-shaped stairs and its expanded railing
- Creating a gallery
- Placement and editing of a Spiral Stairs
- Customized railing
- Customized stairs

Open your browser and watch the following video tutorial.
http://www.archlinexp.com/education/video-tutorials/foundation/staircase-and-railing

How to start

Start ARCHLine.XP software
Click on „Open Project" button
Open the following project file without any furniture *…\ARCHlineXP Draw\2018\Course_Intermediate\5_Stair_and_Railing \WORKSHOP_STAIRS_START.*

Save project
Before doing anything, first you must save the project under a different name.

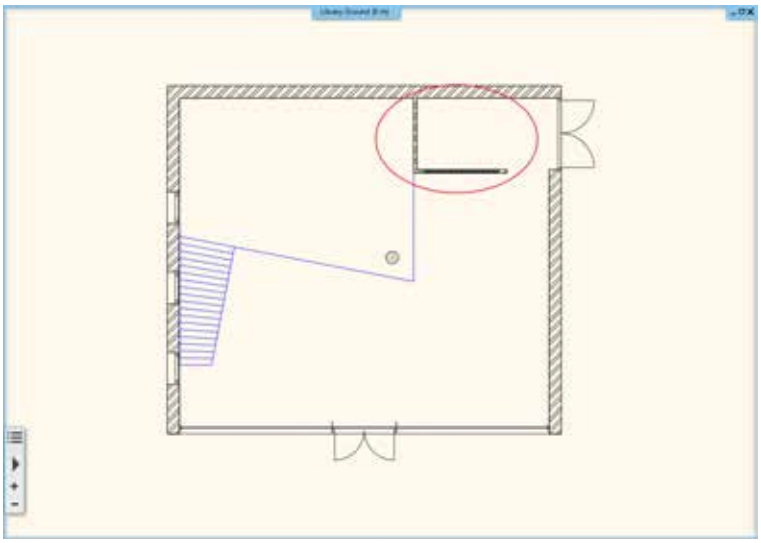
Choose „File menu / Save project as" command then you can give the new project name and location to be saved.

5.1. Placing stairwell and stairs

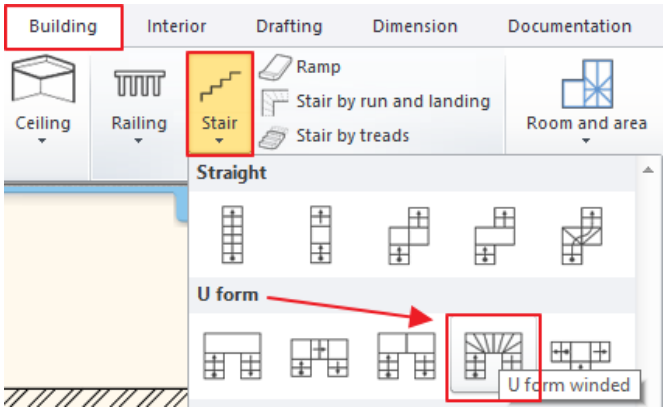
The first type of stairs we are going to create in the project will be a U-shaped stair with expanded railing in a stairwell.

Activate the floor plan window, then go to the Ground floor.

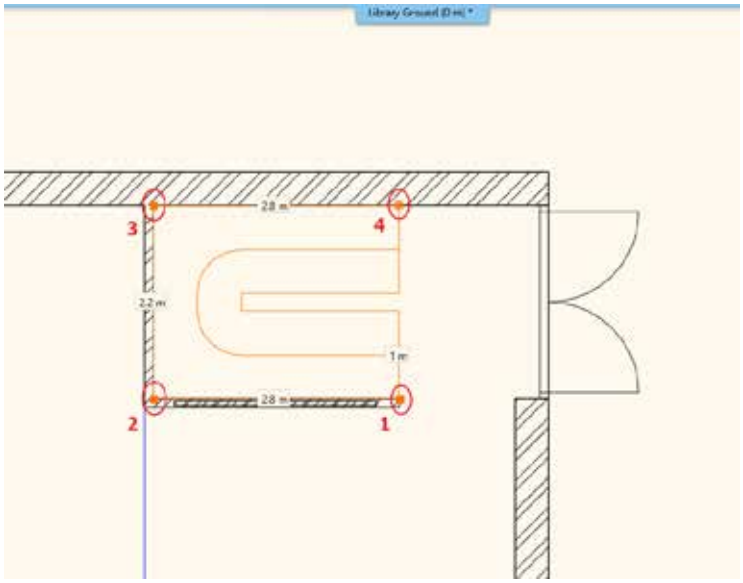
We will place stairs on this level:



Go to **Ribbon bar / Building / Stair**. Here you can find tools for creating and editing stairs.
Select U-form category and "U-form winded" option.



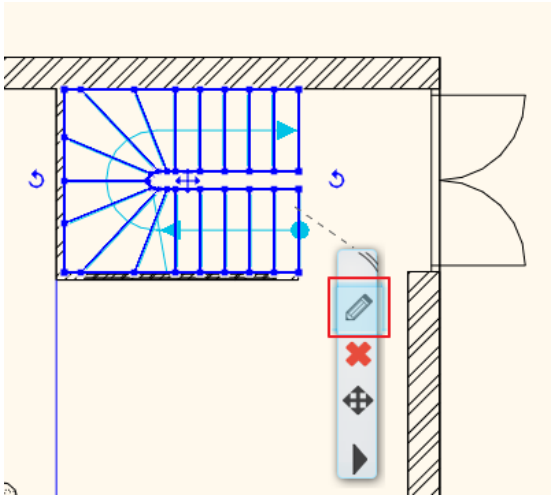
Move the cursor over to that area where you will place it, and define its four-corner point.



After placing the fourth corner point the stairs will be automatically created.

5.1.1. Modifying properties of the previously placed stairs

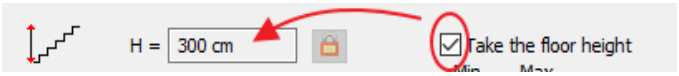
When you placed the stairs, modify its properties. To do this, click on any points of it, and select the pencil icon from the floating menu.



Now the “Stair and ramp” window will appear. Set the following values:

Floor height:

Activate the “Take the floor height” option, this value will be automatically overwritten as per the project to 300 cm.



Action and entry parameters:

Unchanged now, since these will be derived from the number of the steps. These parameters should fall within that range is defined by standards. If they don’t, the program will indicate in red. The stairs can be placed in the plan anyway.

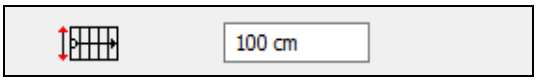
Number of the steps:

It can be changed here. Enter the new value 19.

- **n1, n2:** In the case of winded stair, the values of n1, n2 define the number of non-winded steps on the straight side. Both should be 6.

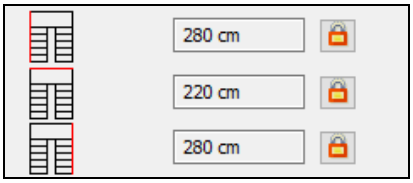
Width:

It is shown here, which is currently 100 cm.



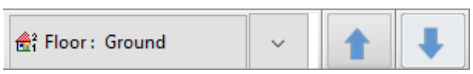
Side parameters:

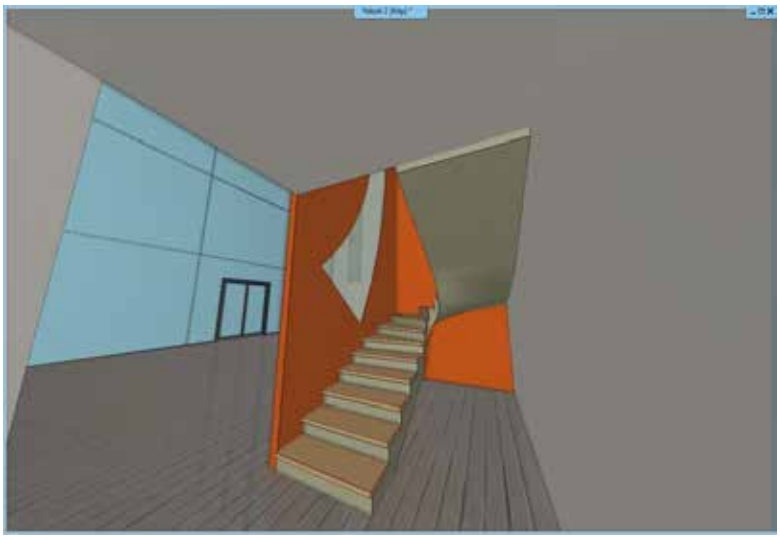
These three values show the length on each side of the stairs, shown below:



Rounded radius can be found at the bottom.

When you finished with the settings, close the dialog window by pressing “OK”. Now the program will create the stairs with the modified parameters. Active the 3D window, switch to that view point from where the stairs can be well presented.

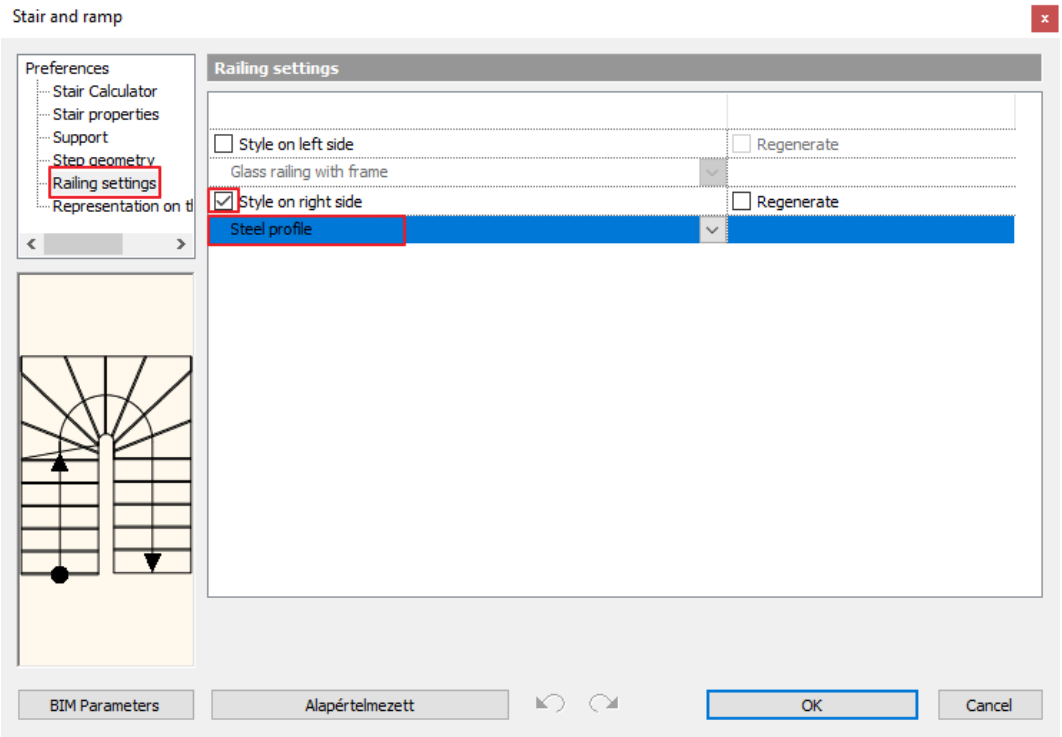




5.1.2. Create handrail

In the next few steps we will add railing to the previously created stairs.

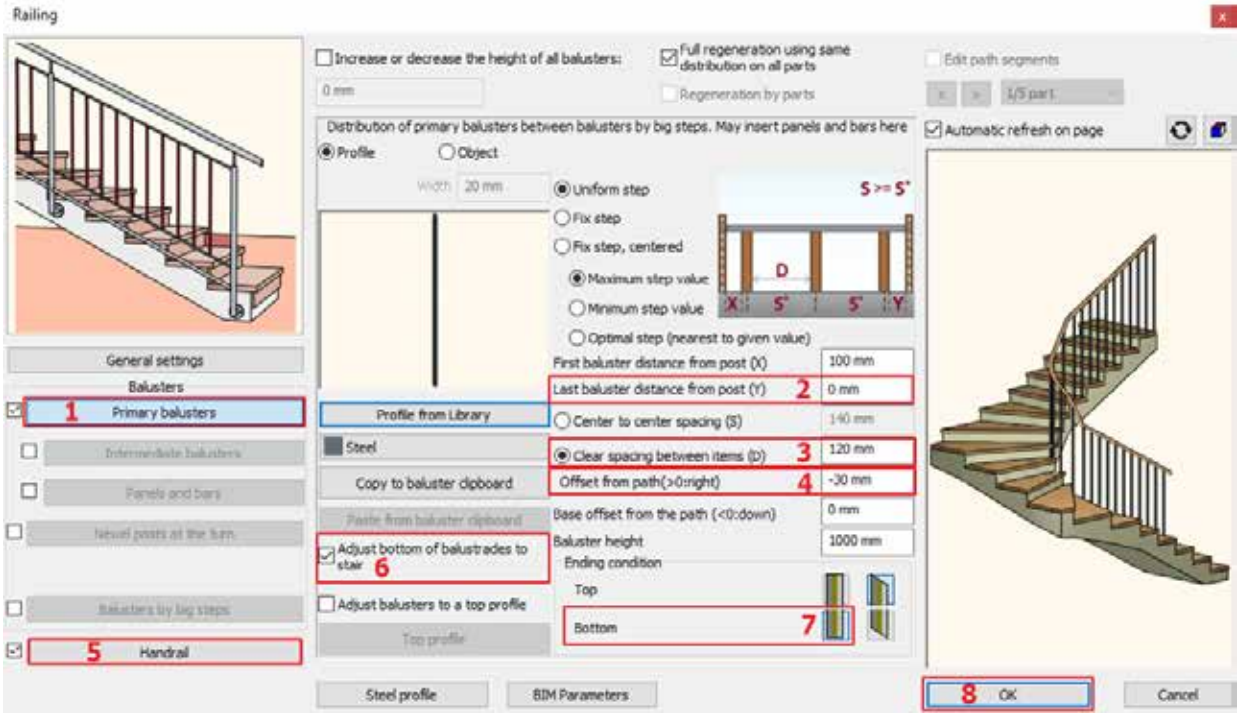
Select the stairs and open its properties.
Click on “Balustrade settings” tab.
Activate the “Style on right side”, and select the “Steel” profile type.



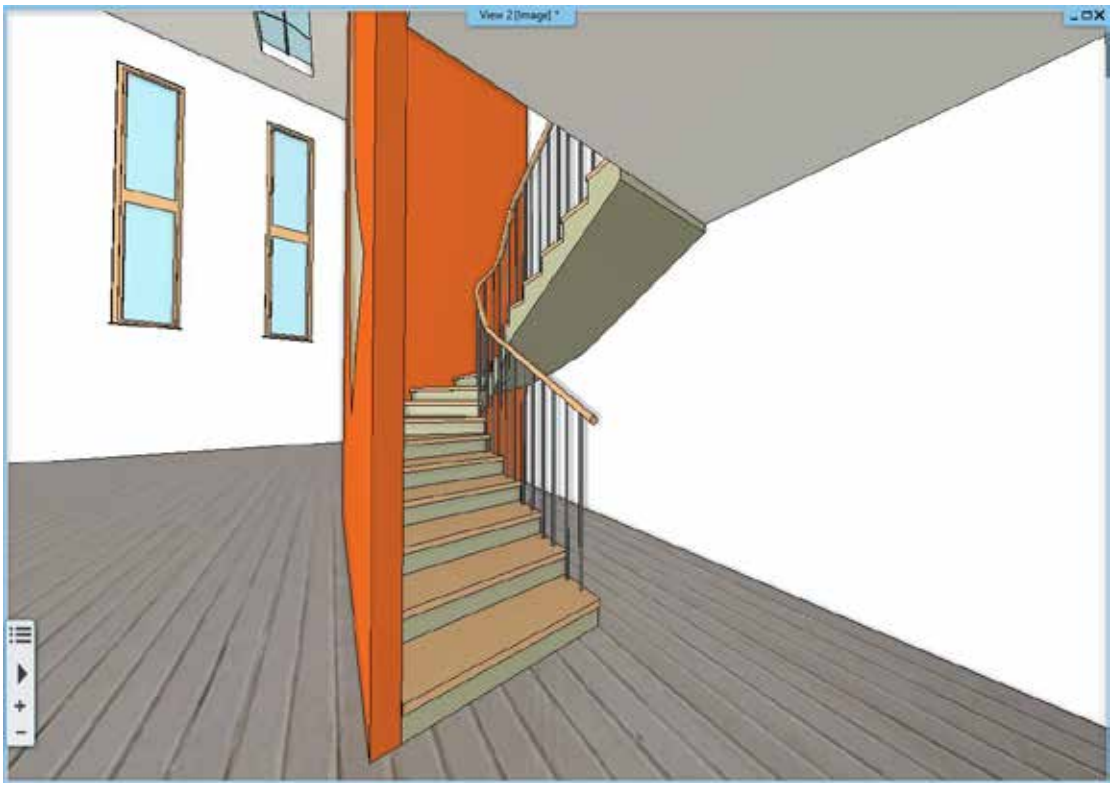
Close the window with OK, and the program creates the railing.

The railing follows the stairs’ line and goes up. The railing is a separate element, so the stairs and railing can be selected separately.
Further changes should be implemented to use this stair in practice.

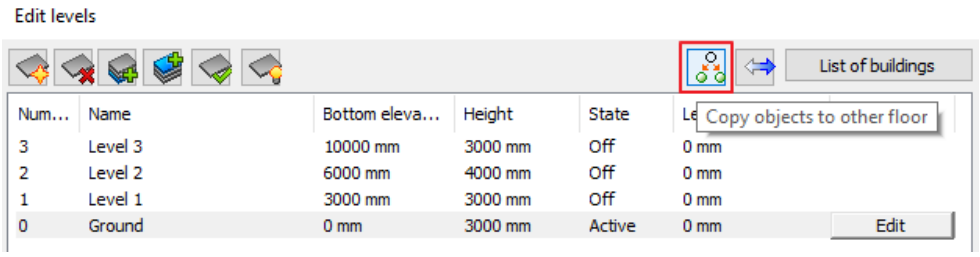
Select railing and open its properties.
Select Primary Balustrade tab and then set the followings (1):
The value of Last baluster distance from post will be zero (2),
Activate the **Clear spacing between items** instead of **Center to center spacing**, its value will be 120 mm. (3)
Offset from path will be -30 mm. (4)
Now go to **Handrail** option. Set Offset from path to -30 mm. (5)
Go back to Primary Balustrade and activate Adjust bottom of balustrades to stair, finally set the Bottom Ending condition to perpendicularly ending. (6,7)
Click OK to close the window, now the railing is finished. (8)



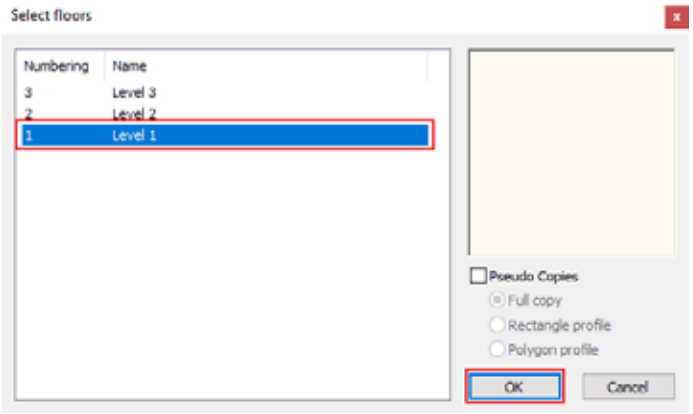
Since our building consists of several levels, the stairs should continue. The simplest way is to copy the existing stairs and railing to other levels.



Activate the floor plan window.
Select both, the stairs and the railing, holding down CTRL key, then open Edit levels dialog window.
Select Copy objects to another floor.



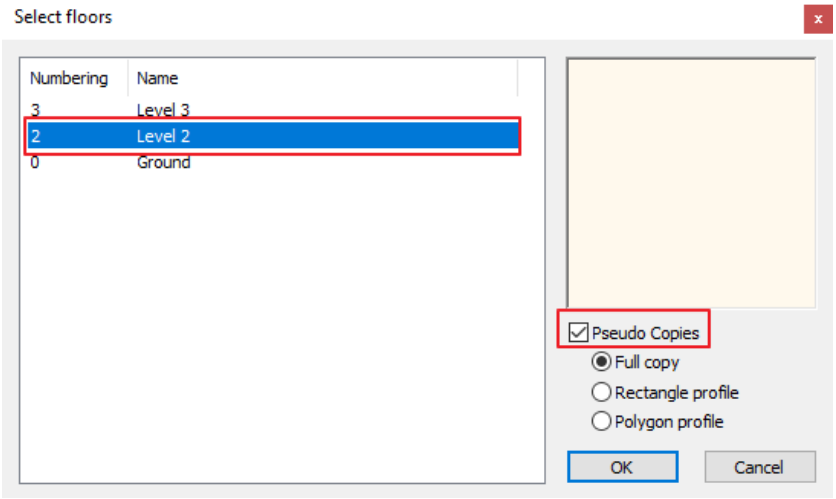
In the popup dialog window, select the first level, and then click OK to finish copying.



Finally let's create a Pseudo copy on the second floor. The bottom line is that the floor plan symbol of the stairs will appear only, which is not visible in 3D. Using this method, both the floor plan and the model will be unified.

The course is the following:

The floor plan window is active
Go to the first floor, and select railing, stairs by holding CTRL key down.
Now open Edit level dialog window and Select "Copy objects to other floor" command.
In the popup dialog window select second floor and activate Pseudo copies option.



Click on "OK" to finish.

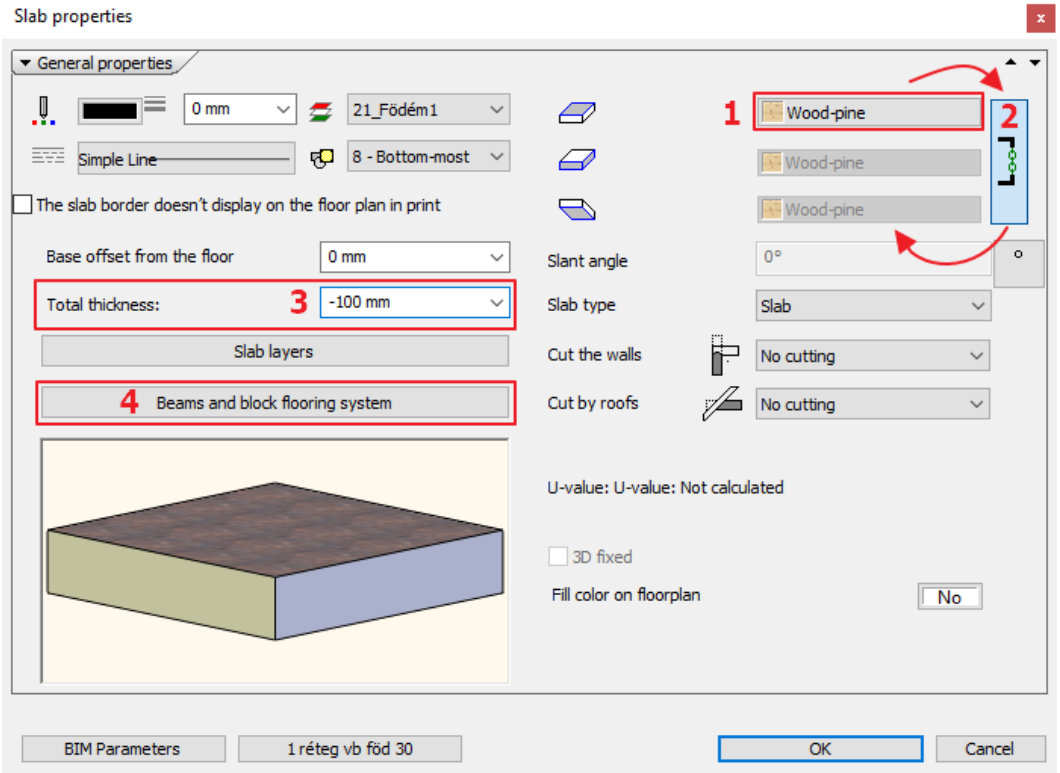
There is another faster and easier way to create a copy to other floor. Select items to be copied on the floor plan, then on the property grid next to "Copy to other floor" option, choose the requested floor. Click on OK to finish.

5.2. Create gallery

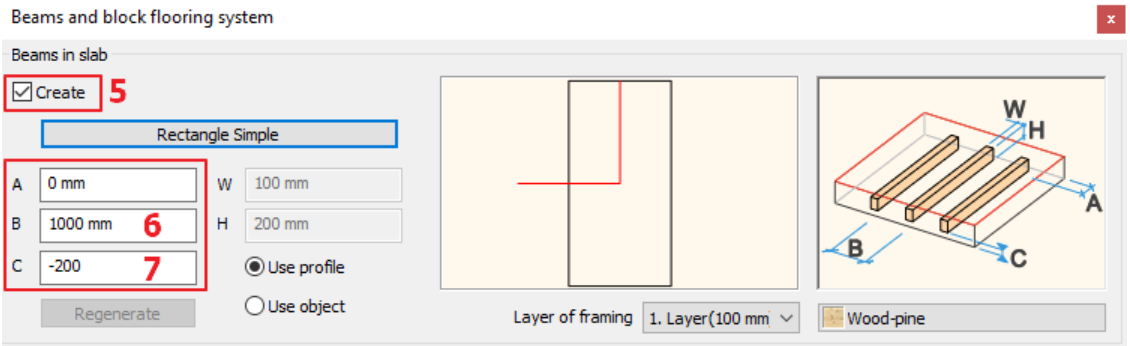
Before moving forward, now create gallery on both floors. These galleries will be made of timber slabs. Let's see how to create them.

The floor plan window is active.
Go to Ribbon menu / Building / Properties / Slab and set the followings.
First set the material “Wood-pine”. Click on the name of the current material, this will bring up the material library. Here go back to the core library by clicking on the house icon. Type “pine” in the search field.
From the appearing list select “Wood-pine”, then click on “OK” to close the window (1).

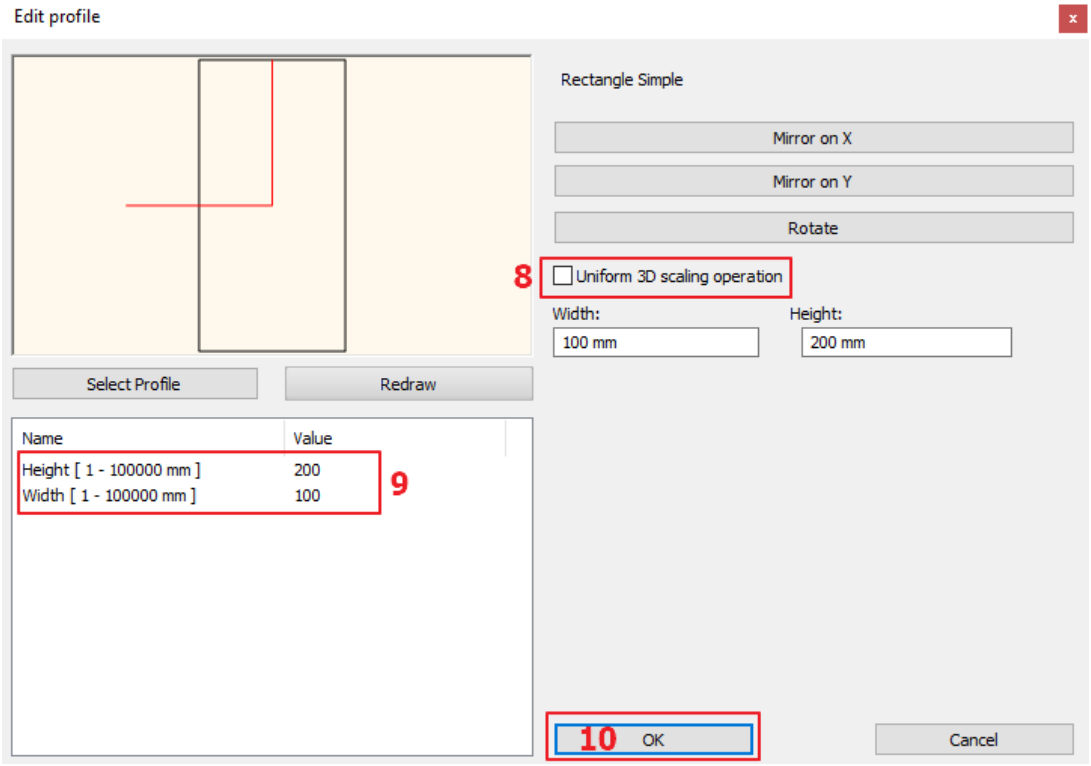
Set the new material for all sides (2).
Set the total thickness to 100 mm (3).
To set the structural properties click on “Beams and block flooring system” (4).



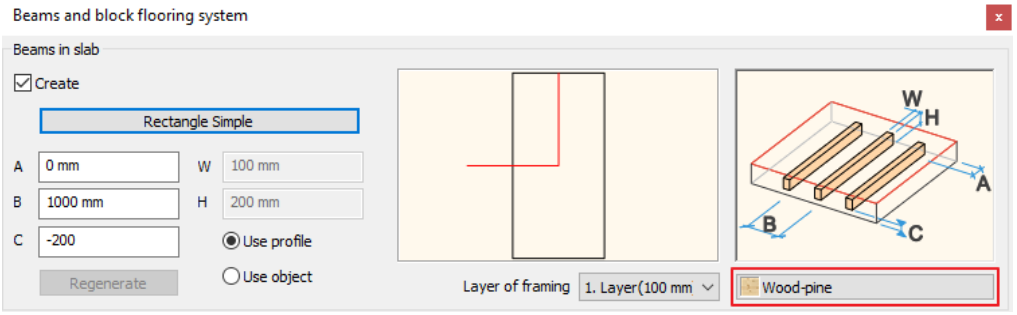
In the appearing dialog window under “Beams in slab”, activate “Create” option (5).
Select rectangle profile by clicking on E-24 style. This is the current profile.
In Edit Profile window click on select profile button and find rectangle.
After selecting it, set the main beam parameters. The value “A” defines the distance between the beam ends and the slab. Here can be set that the beam ends should be at a certain distance from the slab or be exactly next to each other.
“B” stands for the distance between beams. Now set this value 1,000 mm (6).
“C” defines that height we can raise beams against the lower plane of the slab. Overwrite this value to 200 mm, this way the beam is placed under the 100 mm layer of the slab (7).



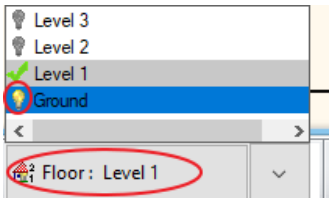
Now go back to Rectangle profile and overwrite parameters. Click on “Rectangle” label, then switch on “Uniform 3D scaling operation” (8).
Now set the height 200 mm and width 100 mm (9).



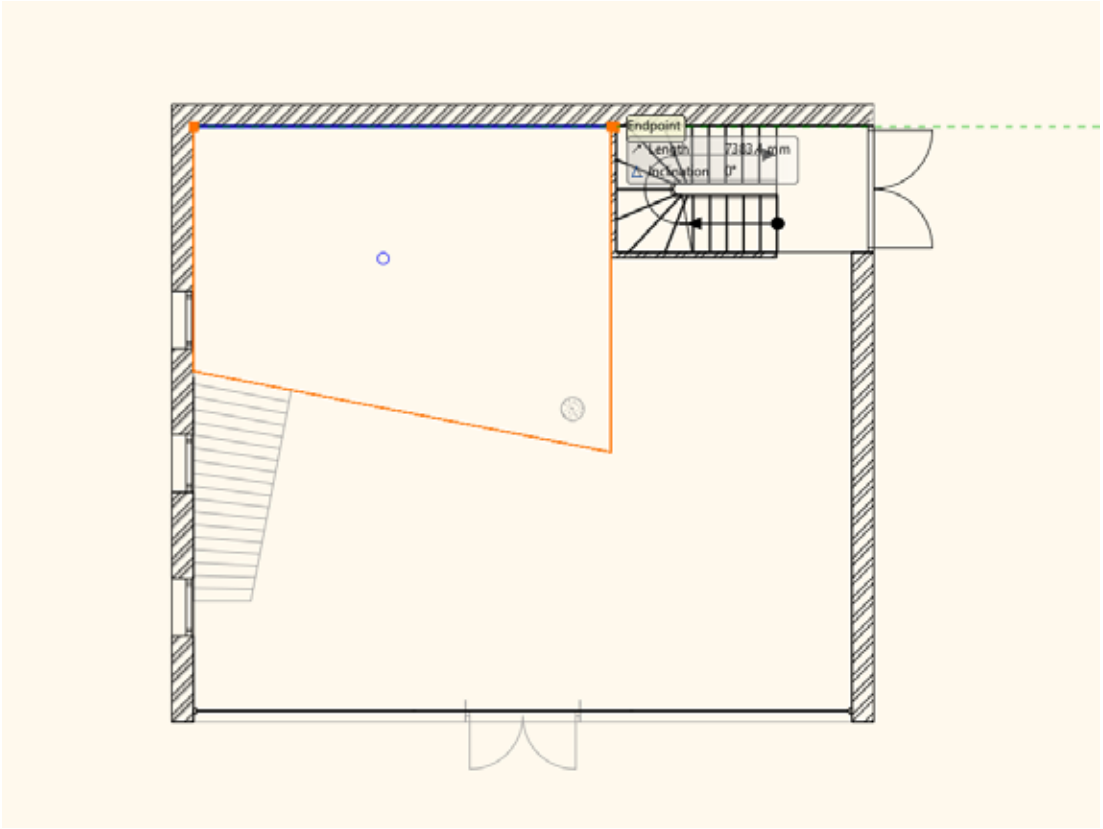
Finally set the material “Natural pine”.



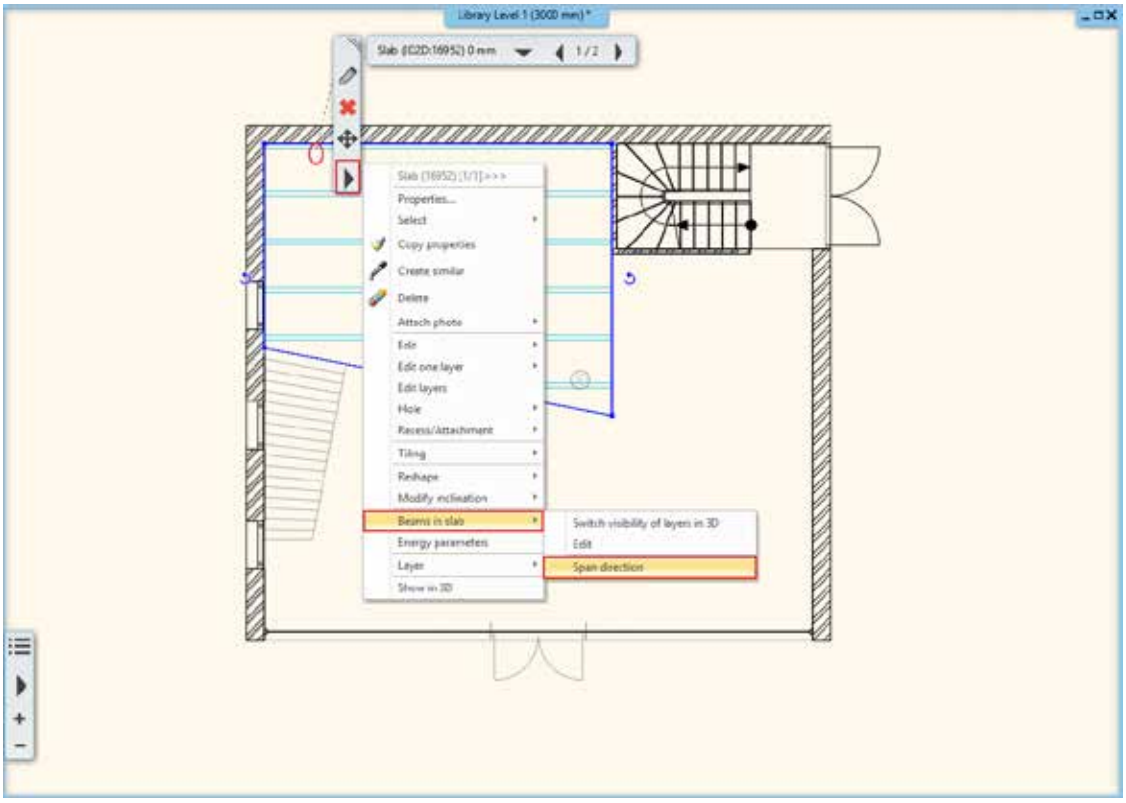
Close the window and draw slab by using polylines.
Go to First floor and make the Ground floor visible by clicking on the light bulb icon.



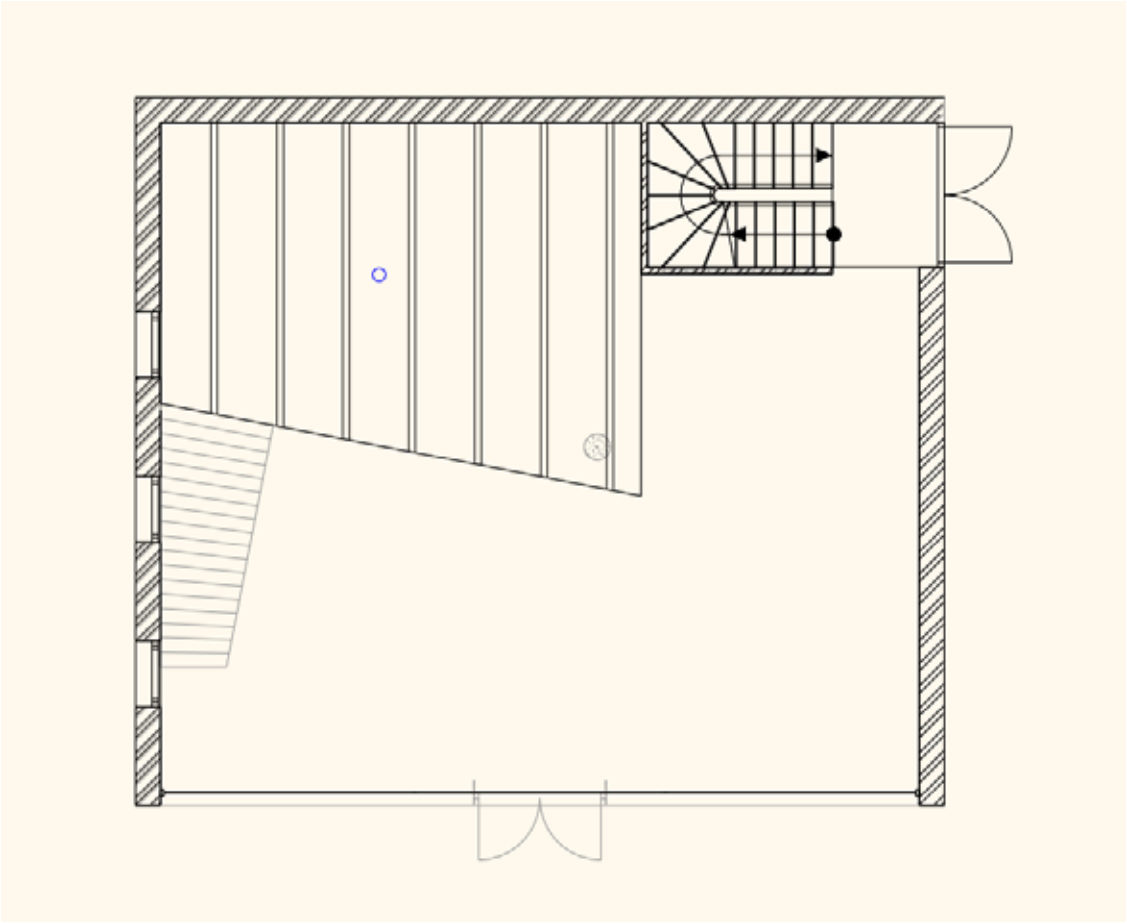
Go to Ribbon menu / Building / Slab and choose Slab in Sketch mode command. Draw around the slab by using polylines.



When you finished copy the gallery created on the first floor to the second floor. Now go to “Edit level”. Click on the Copy objects to another floor. In the appearing dialog window select second floor and click on OK. Now the copying has finished.
Finally modify the direction of the beams in Slab. Select the gallery and choose from the local menu Beams in Slab / Span direction.



Hold SHIFT button down and modify the direction by 90 degree. It is important to hold SHIFT key down, this will secure that we could modify the direction along a straight line.

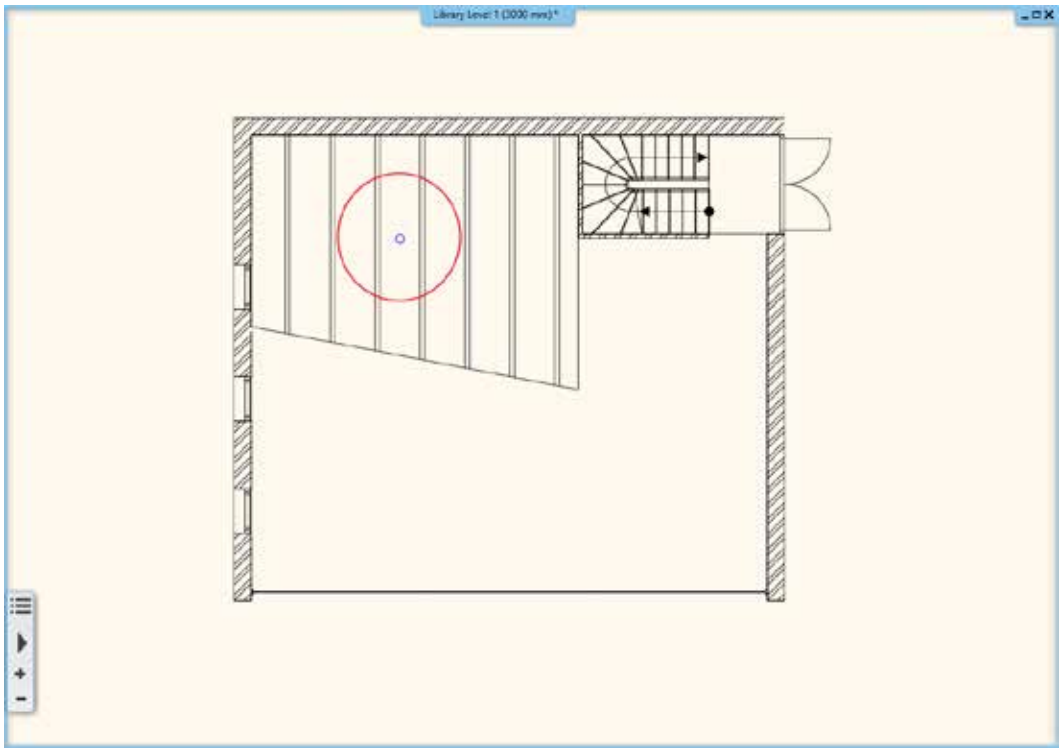


Now repeat this procedure on the second level.

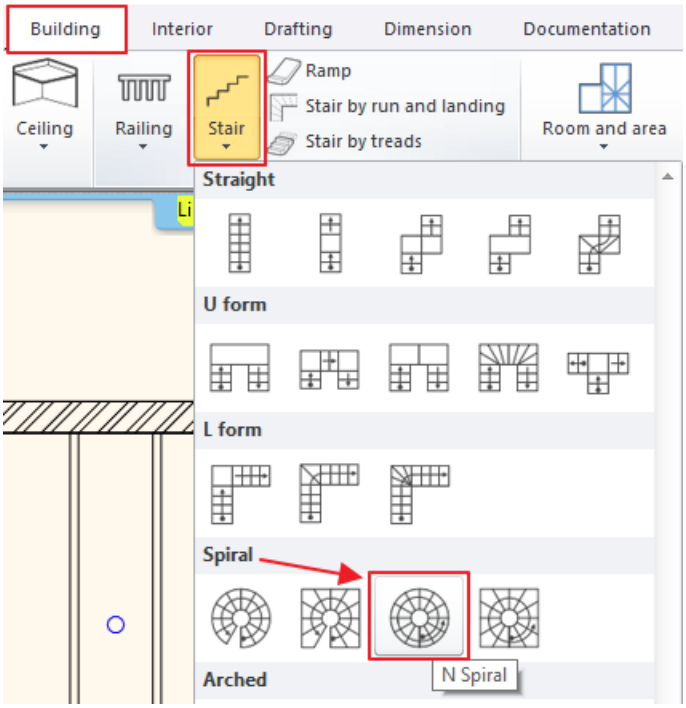
5.3. Placing Spiral Stair

The next step we will place a Spiral stair, which will be the passage between the galleries.

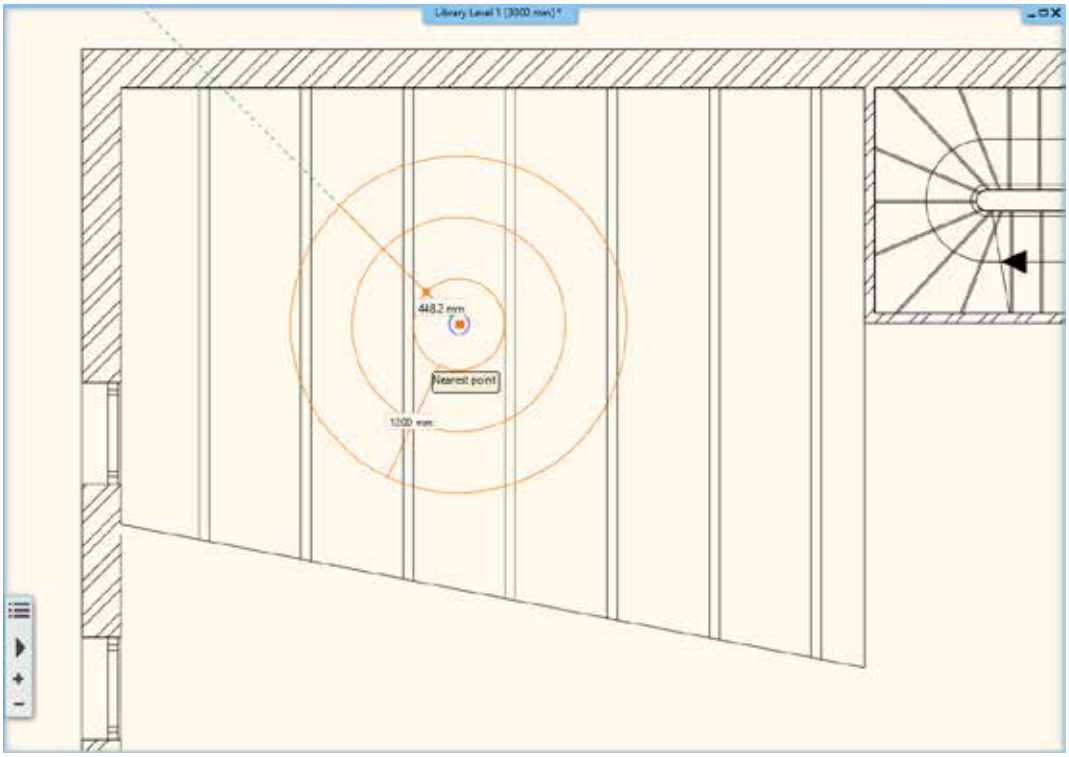
Activate the floor plan window.
Go to Level 1. We will place the spiral stair where blue circle is on the floor plan, let’s place the centre point here.



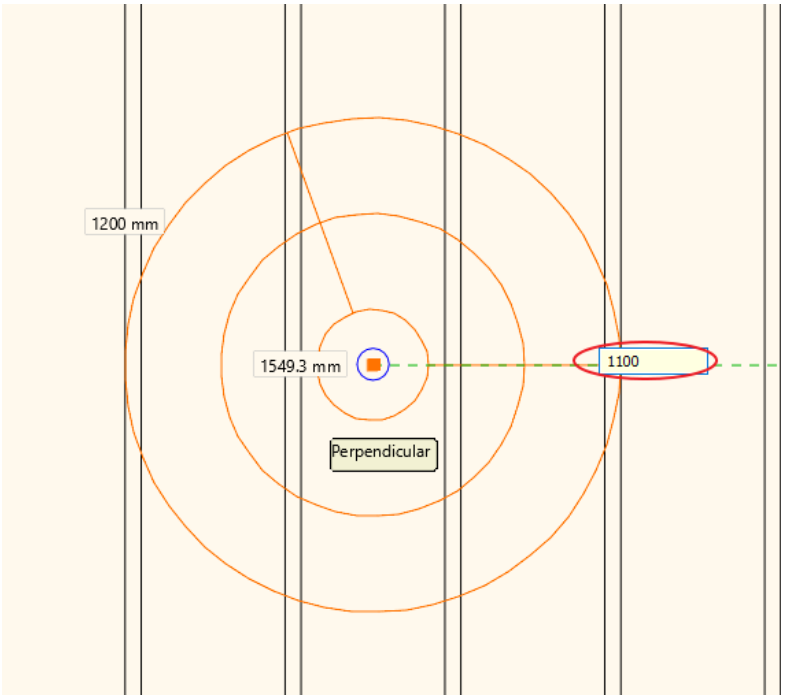
Go to Ribbon menu / Building / Stairs and select “N spiral” stairs from the list.

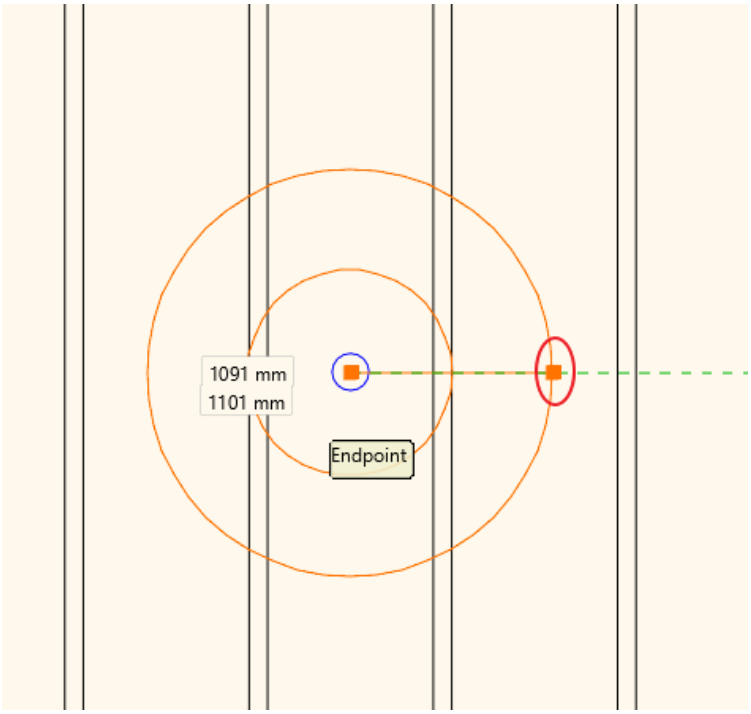


Place it in the middle of the pre-drawn circle.



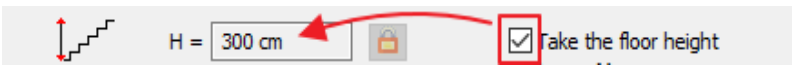
Give the starting point of the handrail. Here it is very important the distance and direction. Therefore, we have to choose from the top right menu “Right” option. This way our reference point will be placed on the external radial line.
Type the radius of the external circle which is 1100 mm, then hit Enter. Finally place the end point exactly onto the starting point.



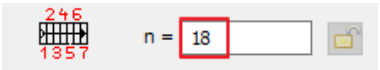


5.3.1. Modify Spiral stairs properties

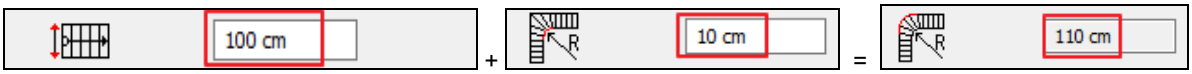
When the stairs are placed modify its properties. Click on the stair, then select “pencil” icon.
First activate “Take floor height” option. The previous value is updated to 3,000 mm.



The values for step in and step-up haven’t been updated.
Now modify the number of steps to 18.

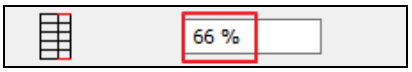


The stair width to 1000 mm and the radius of the stairwell is 100 mm. This is how we got 1100 mm which had been used at the first time to place the stairs.



The difference between the starting and end point is 360°. This means that the stair runs along a whole circle.

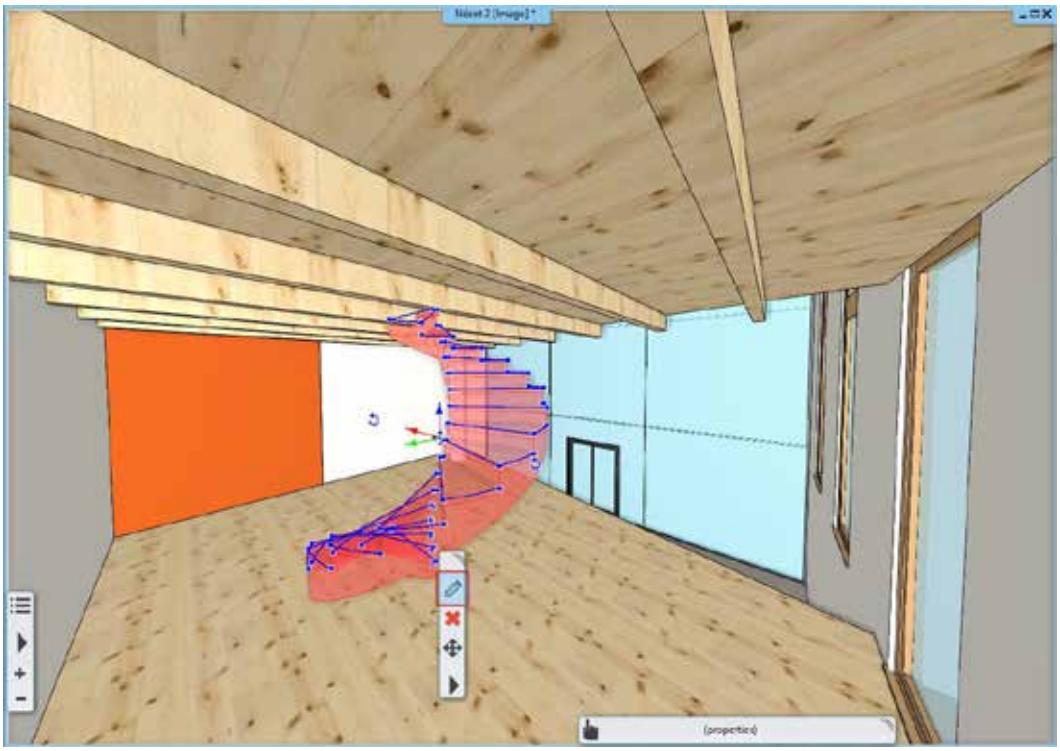
The last parameter helps to define the walk line. Along this line the program automatically calculates the values of tread and riser. The walk line of the spiral stair is not in the middle. This should be closer to the outer circle somewhere around the 2/3 of the total width. It means that the walk line will be 66 % away from the centre point and that way the tread will be wider outside.



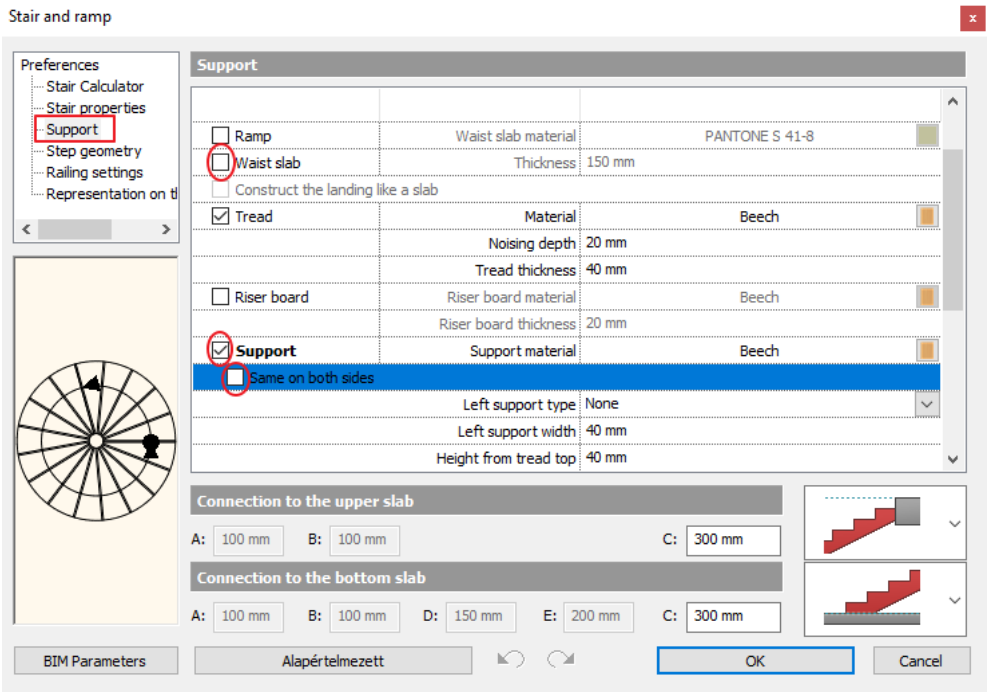
Now close the window by pressing **OK** and changes will be applied.

This stair is concrete we like some lighter structure instead. On the other hand, we have to cut the slab and place railing. Let's edit its properties.

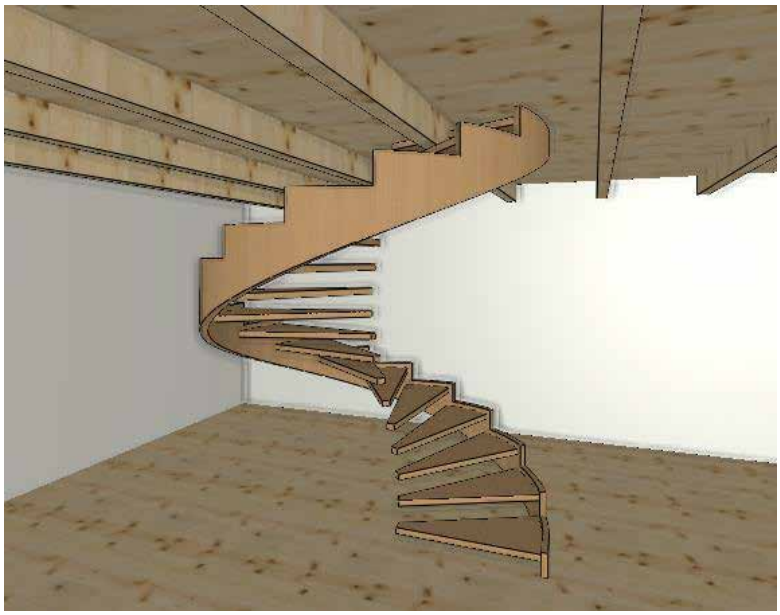
First, we modify the visual presentation in 3D. Activate 3D window and change the viewpoint from where the stairs look good.
Click on the stairs and check its properties.



In order to make changes on the structure click on Support tab.
Turn off "Waist slab" and switch on the "Support". This command refers to the support representation which follows the steps straight or the bottom edge of the steps.
Sides of stairs are different, so we will place a column inside. Therefore, switch off the "Same on both side" option.



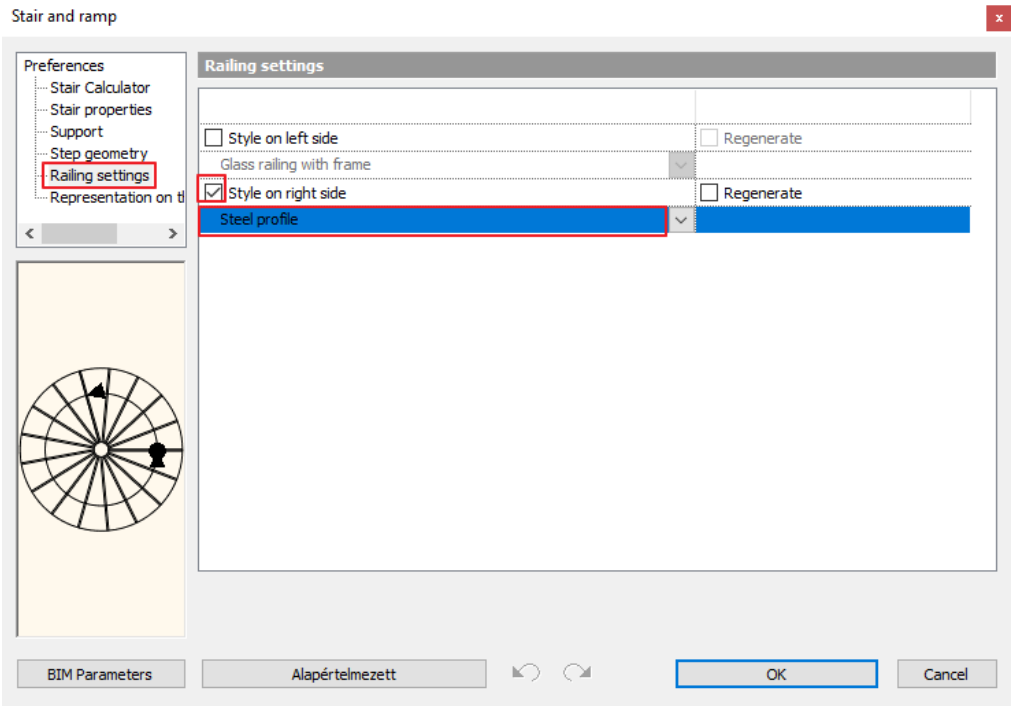
Go further down, then select Sharp from The Right support type.
Close the dialog by clicking on OK.



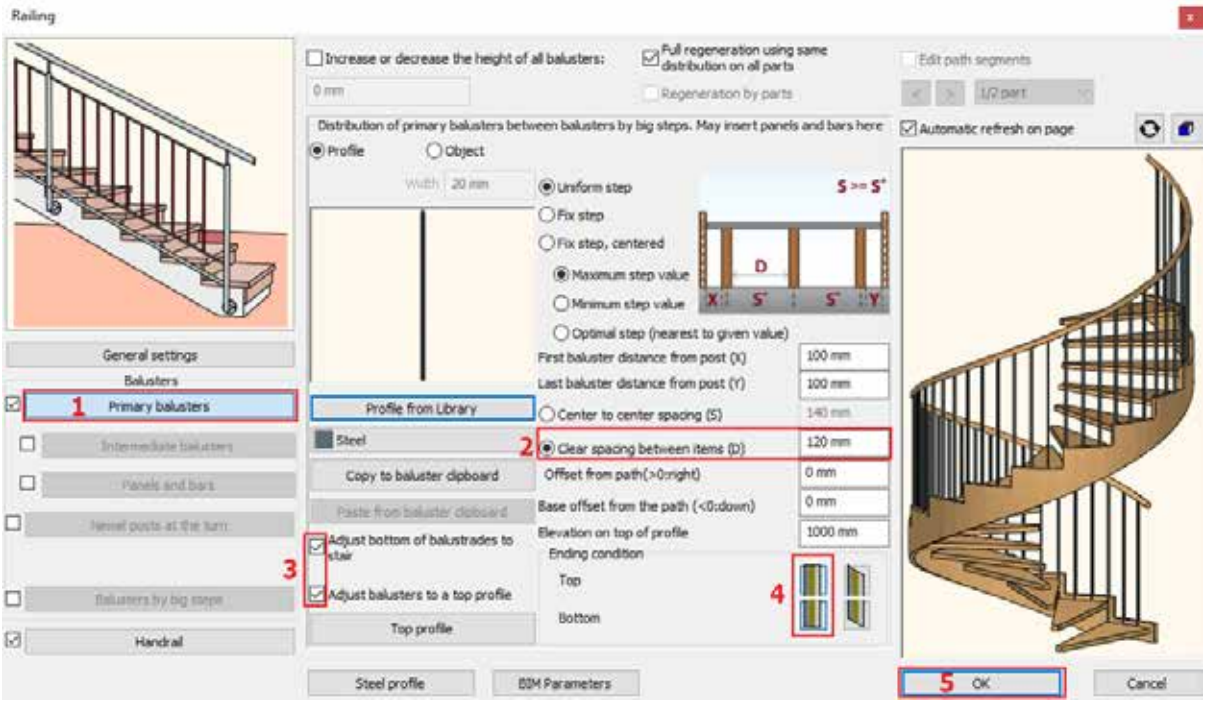
We still need to create the column in the middle, and ceiling cut, and railing.

5.3.2. Placing handrail

Now go back to the stair properties and select Balustrade settings. We set the style on the right side to Steel profile.



The railing is created but still not perfect. To modify further open its properties.
First click on Primary Balustrade tab (1) and activate Clear spacing between items to 120 mm (2).
Activate Adjust bottom of balustrades to stair and Adjust balustrades to a top profile (3), also select perpendicular ending condition on top and bottom (4).
Close the dialog by clicking on OK.

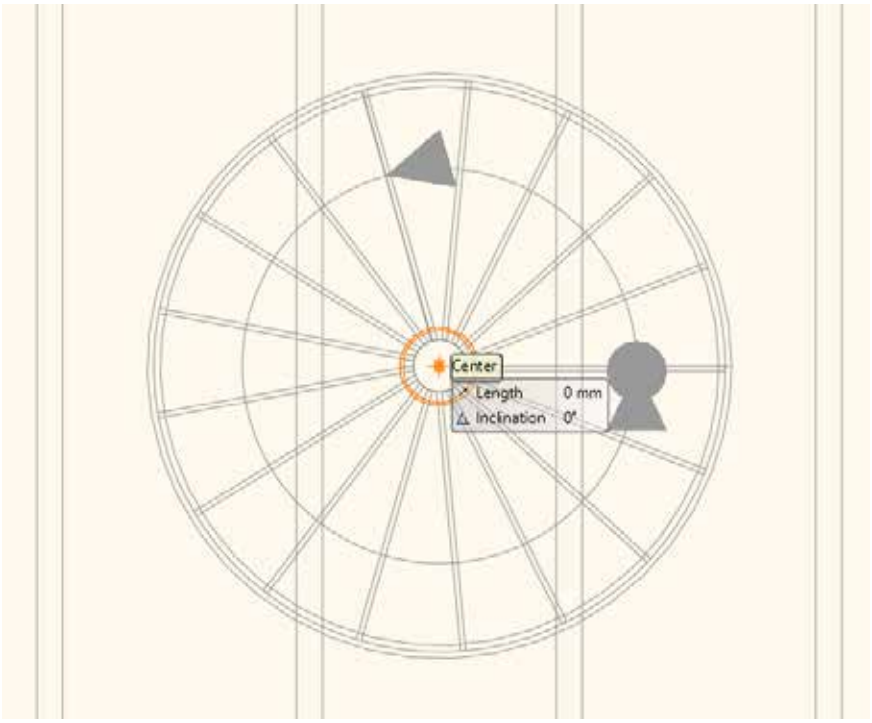


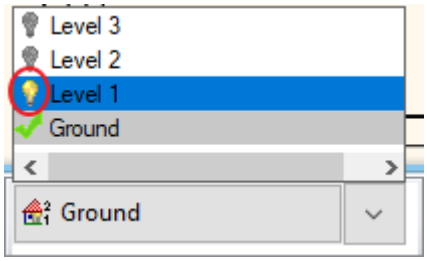
5.3.3. Placing column

Now place a column in the middle of the spiral stair.

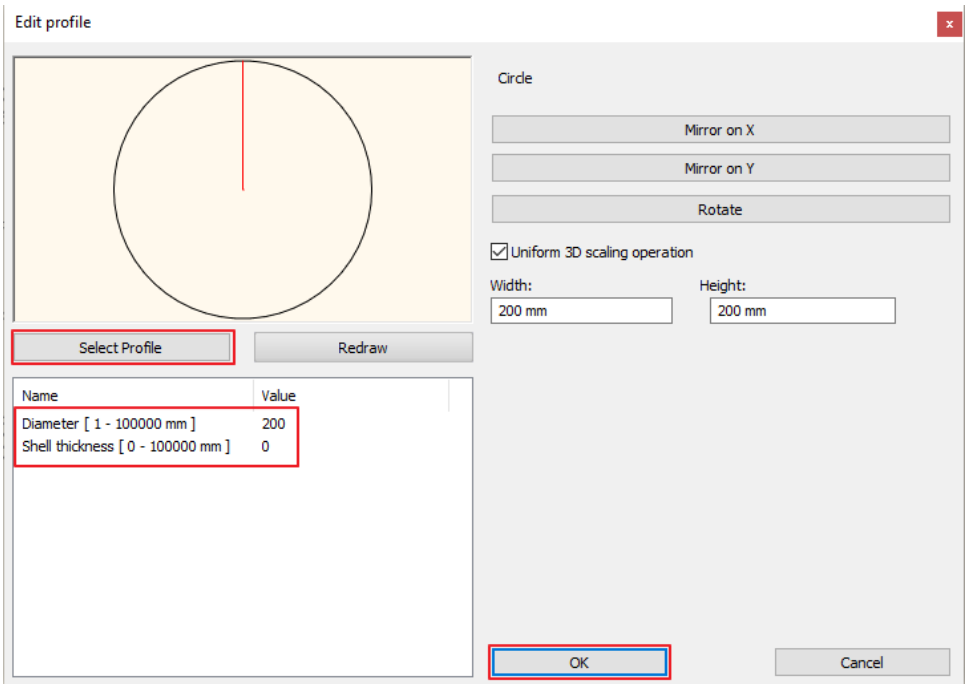
On the floor plan go to the ground floor, make visible the first floor by clicking on the light bulb icon with the left mouse button.

Go to Ribbon menu / Building and select Column.
Place it into the middle of the circle and check its properties.

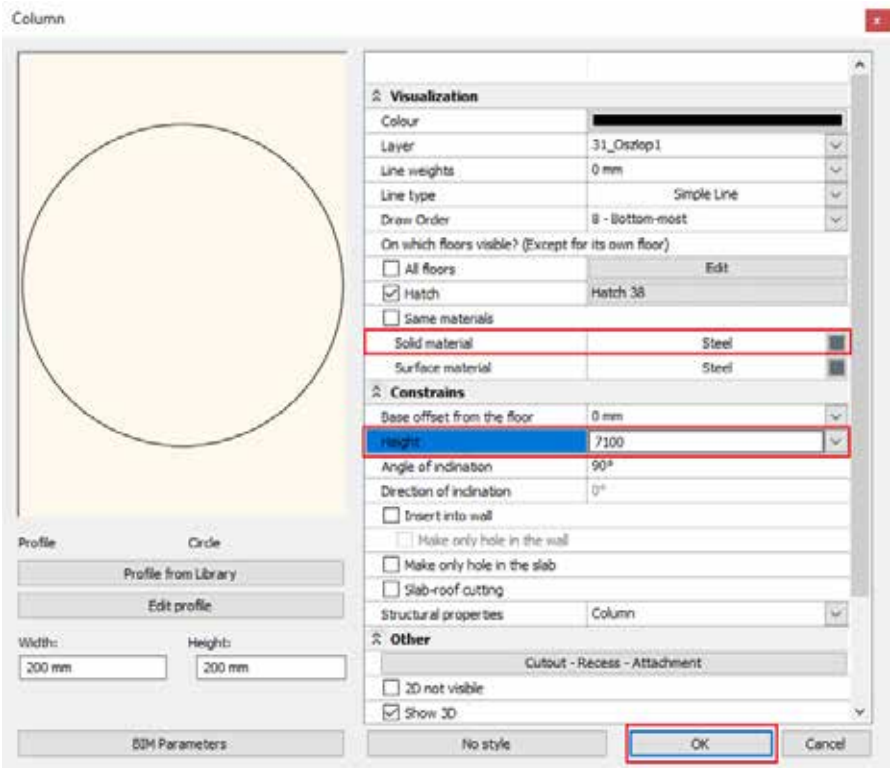




Specify the value of the section profile. Change the column section profile. Click on Profile from library and select Circle and set the Radius to 200 mm and the Shell thickness is zero.
Click on Ok to accept changes.



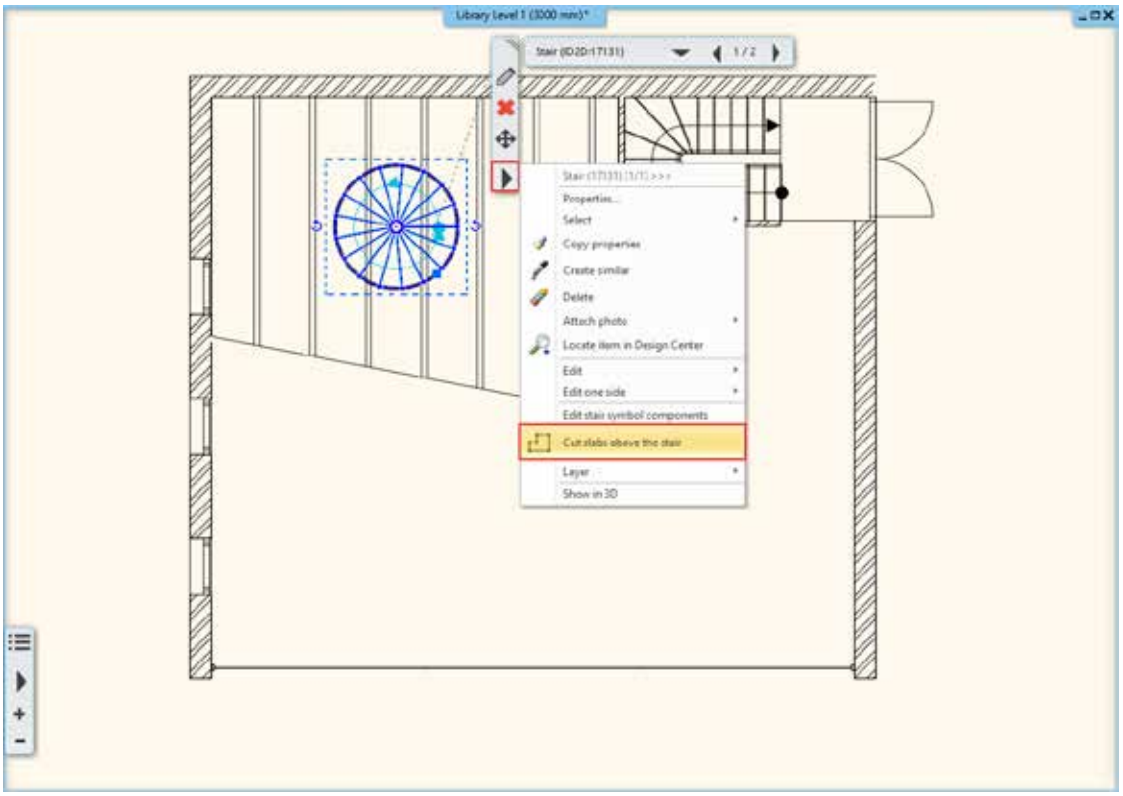
Its' material is "Steel", before closing the dialog window, we still have to modify the height of the column. In order to calculate the correct height use "Edit Level" tool. Open Edit level dialog window, here you can see that the total height from ground floor up to 2nd level is 6,000 mm. In addition, if the stair ends on the first floor, the handrail is needed here, therefore we have to add 1 000 mm. To be on the safe side, we use slightly higher value 7100 mm.
Close the dialog by clicking on OK.



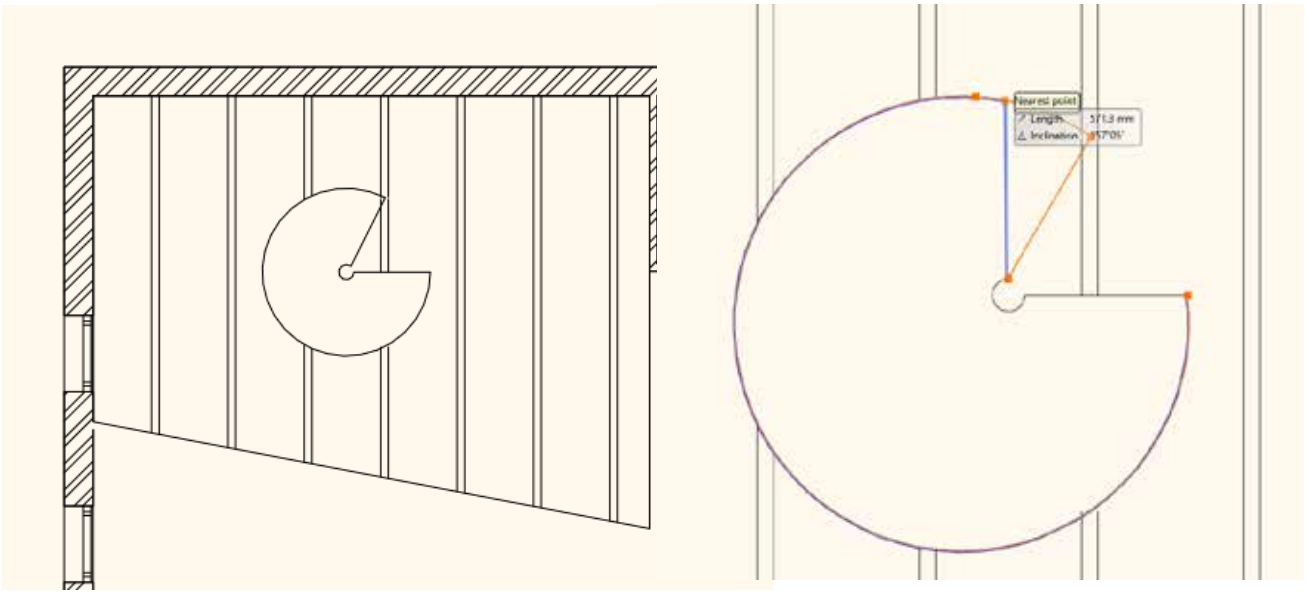
5.3.4. Cutting the slab

Finally, we cut the slab above the stair.

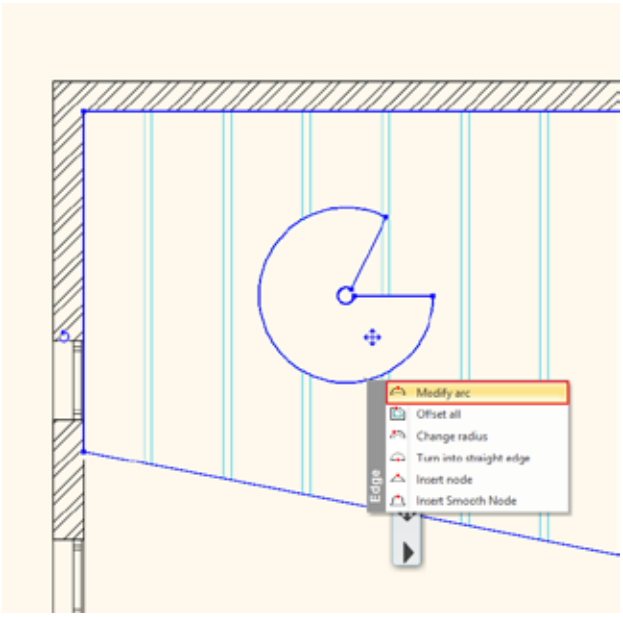
Go to the first level.
Click on the stair and select from the local menu “Cut slabs above stair” command.

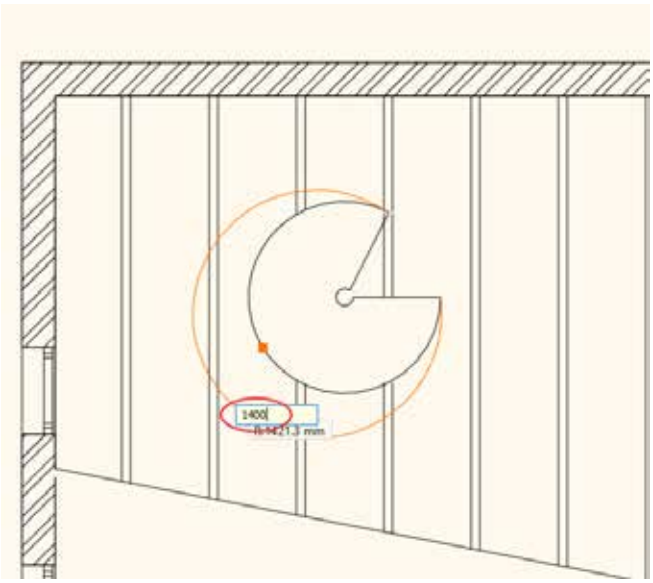


Now the cutting is done. Go to the next level, here you can see the result.



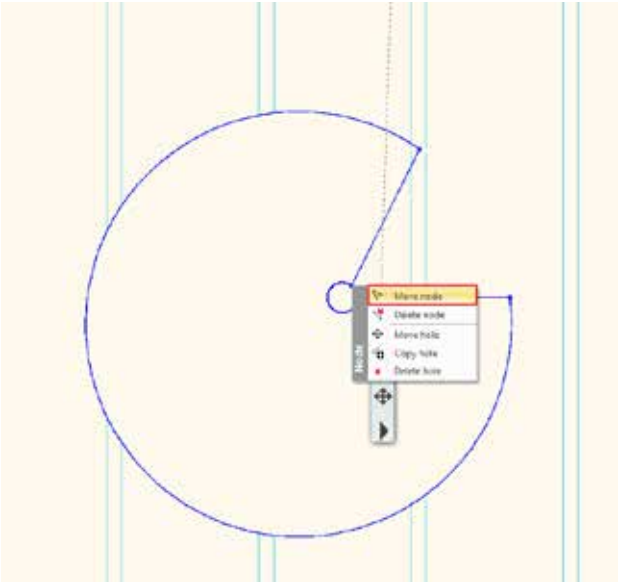
Now let's modify the size of the cutting.
Select the cutting line. Move your cursor over the selected area, and click when the cursor changes.
From the appearing local menu use Modify arc command, type the value of 1400 mm.

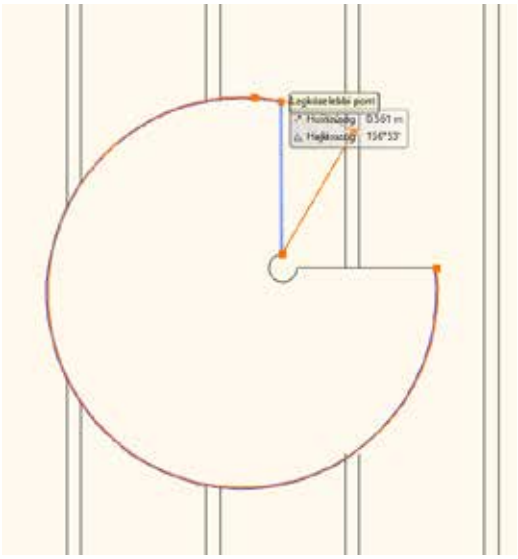


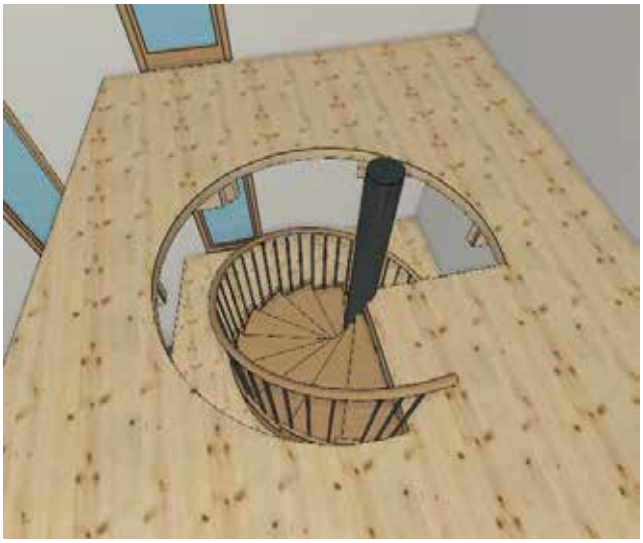


Next click on this node and move it into the middle top point of the circle.

We repeat these steps on outer circle as well and move it to the other point line.





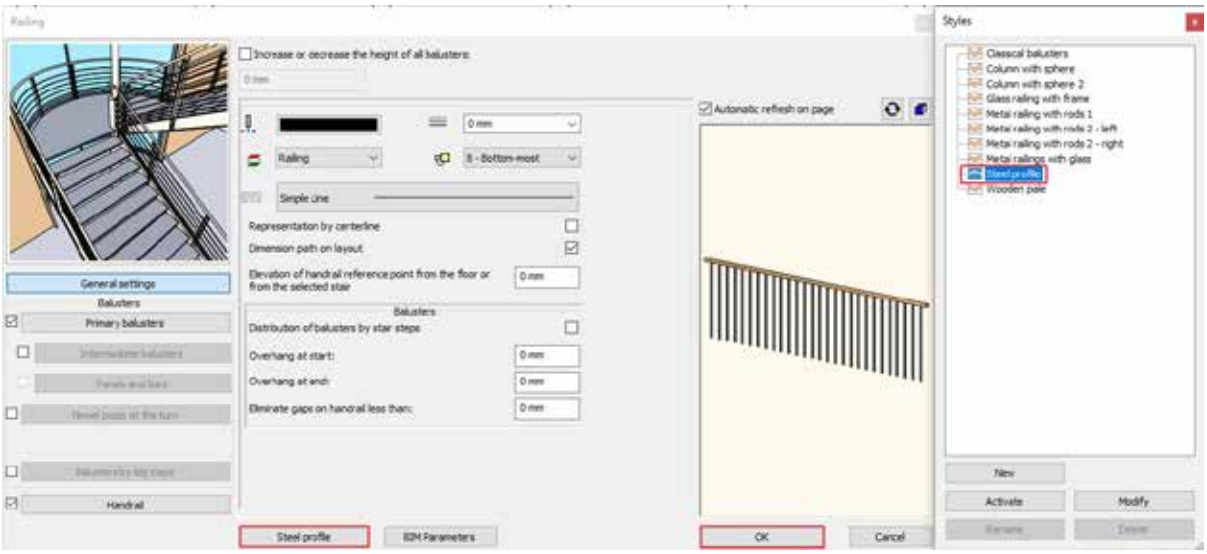


5.3.5. Handrails along the slab cutting

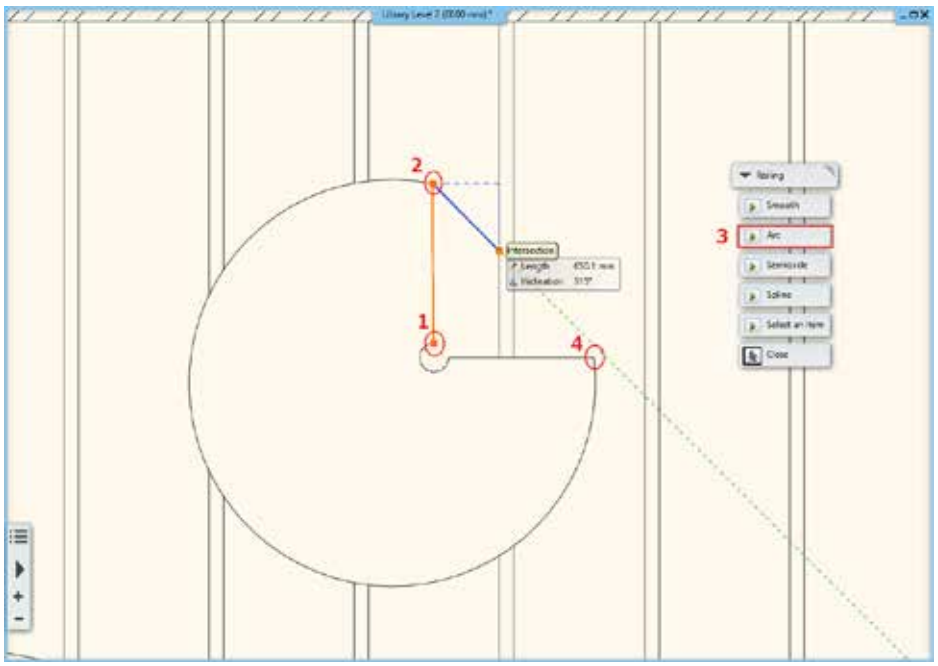
We can create handrail in ARCHLine.XP individually, not just only by placing them on the edges of steps.

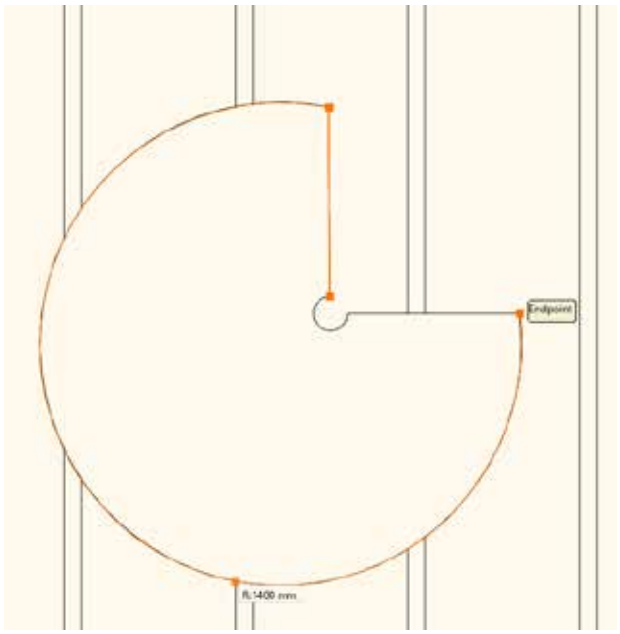
Now we create handrails following the line of the slab cutting.

Activate the floor plan window, now the second floor is active.
First go to Ribbon menu / Building / Properties / Railing and choose “Steel” from the library, then close the window by pressing “OK”.

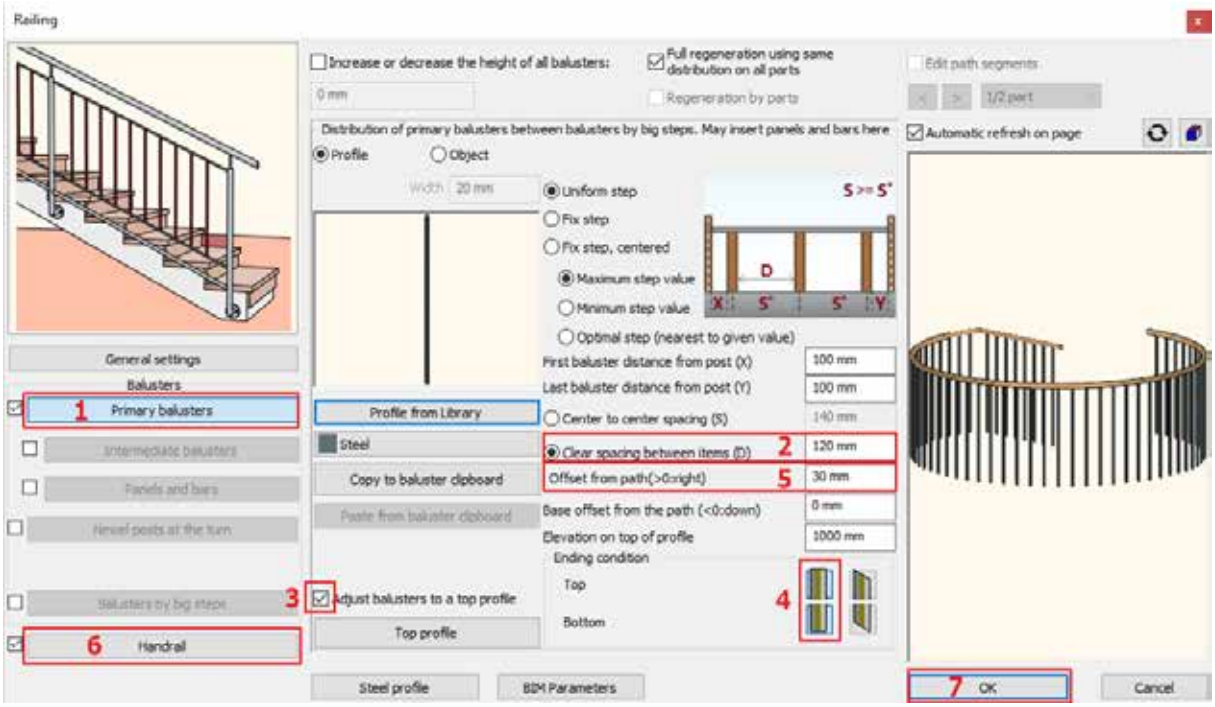


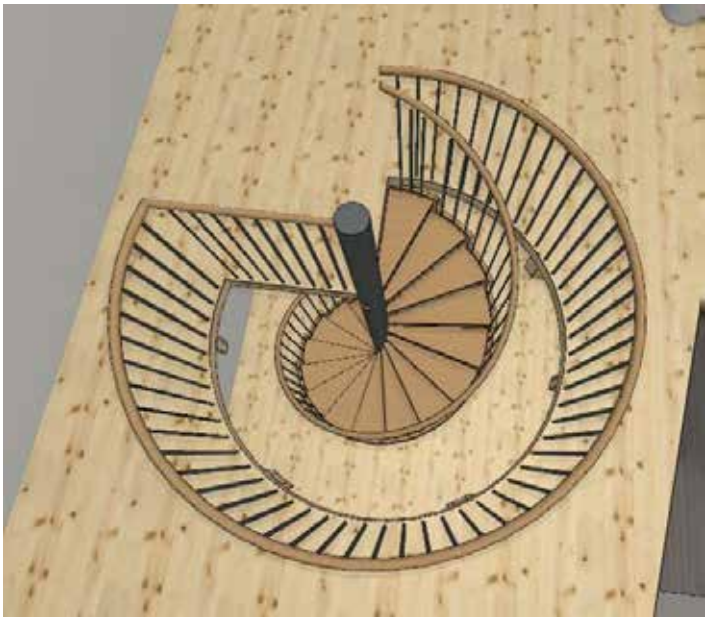
Place the railing. Go to Ribbon menu / Building / Railing and draw the railing by using polylines.
After placing the first two points (1,2) choose from the top right menu Arc option (3). Place the third point too (4), and pull the arc to the proper place.





When you finished the drawing, close the command by hitting OK twice.
This handrail is still not perfect we have to set those properties we have done before.
First click on Primary Balustrade tab (1)
Activate Clear spacing between items to 120 mm (2).
Activate Adjust bottom of balustrades to stair and Adjust balustrades to a top profile (3).
Select perpendicular Ending condition on top and bottom (4).
Furthermore, we also have to adjust the Offset from path to 30 mm (5), also change this value to the 30 mm under Handrails tab (6).
Close the dialog by clicking on OK.



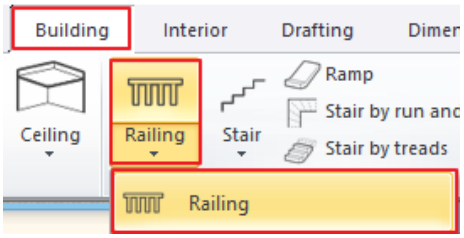


If like to apply the same material on the gallery and stairs too, change it under the Stairs properties to “Natural pine”.

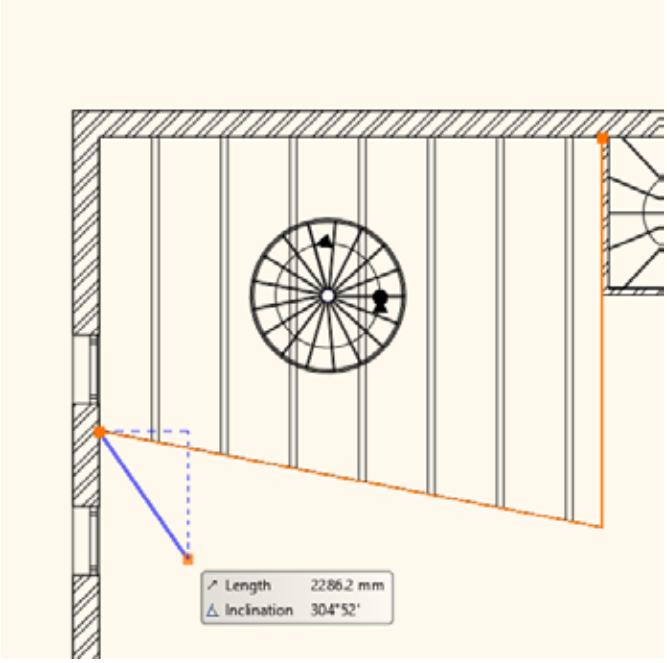
5.4. Handrail on gallery

Let’s create a separate railing on the gallery.

The floor plan window is active. Go to level 1.
Go to Ribbon menu / Building / Railing, now draw a line following the outer side of the gallery.



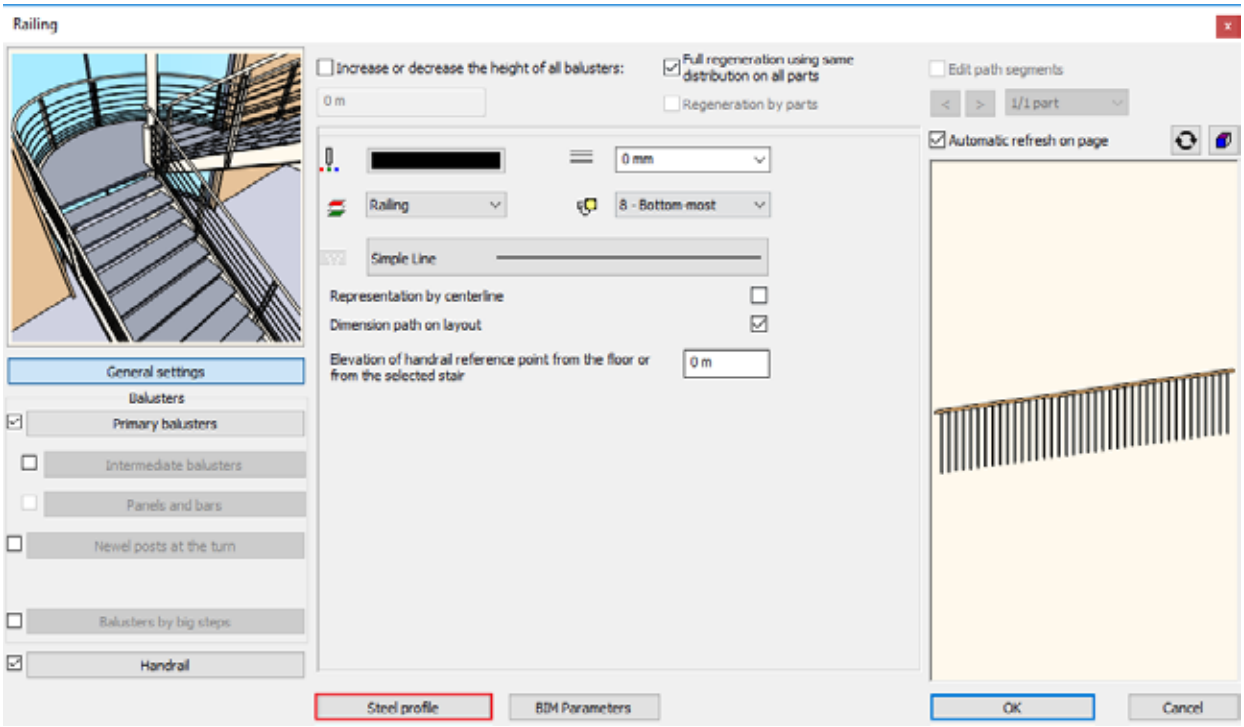
When you finished press Entre twice.



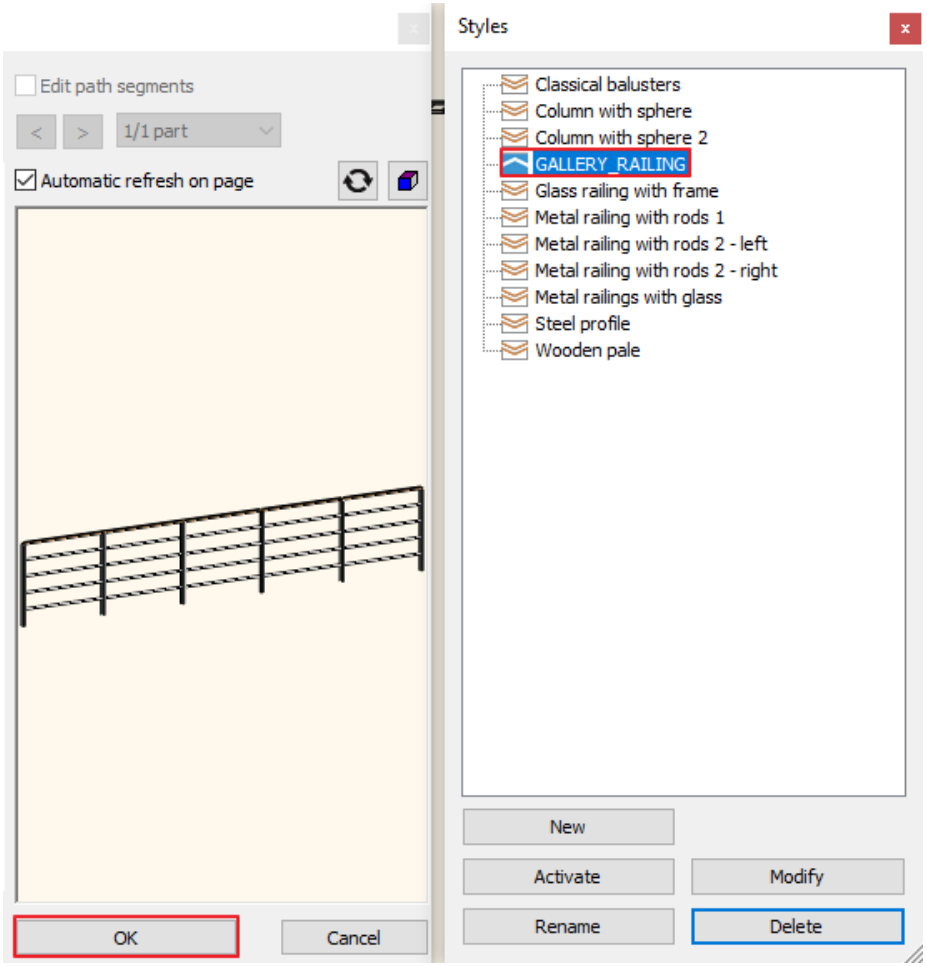
The railing is finished.

5.4.1. Modify the style of the handrail

Modify the style of the handrail.
Select the ready railing and open its' properties
Click on the name of style – Steel profile in the appearing dialog window below, this opens the library.

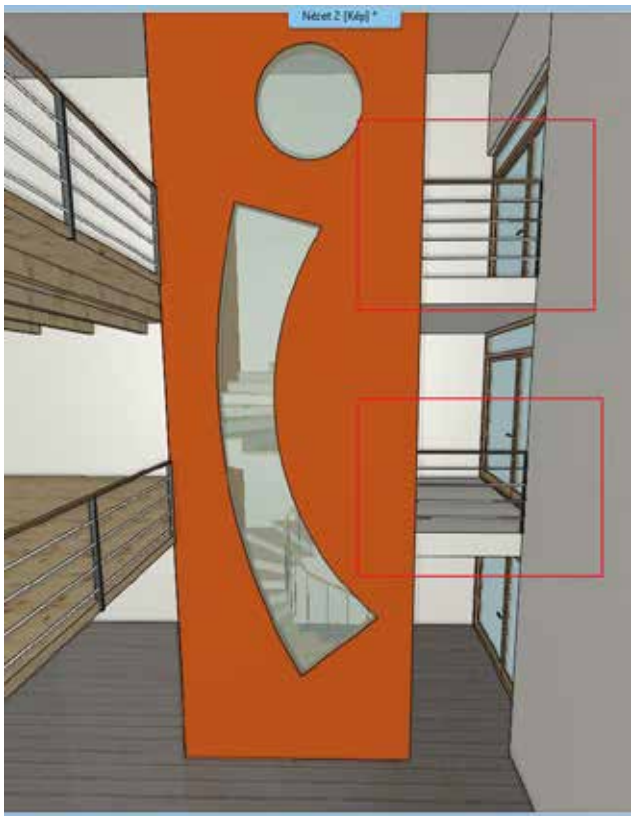


Now select GALLERY style.



Close the dialog by pressing OK, now the railing is modified.
Repeat these changes on the gallery on the second floor. In Edit level dialog window copy the previously created railing.

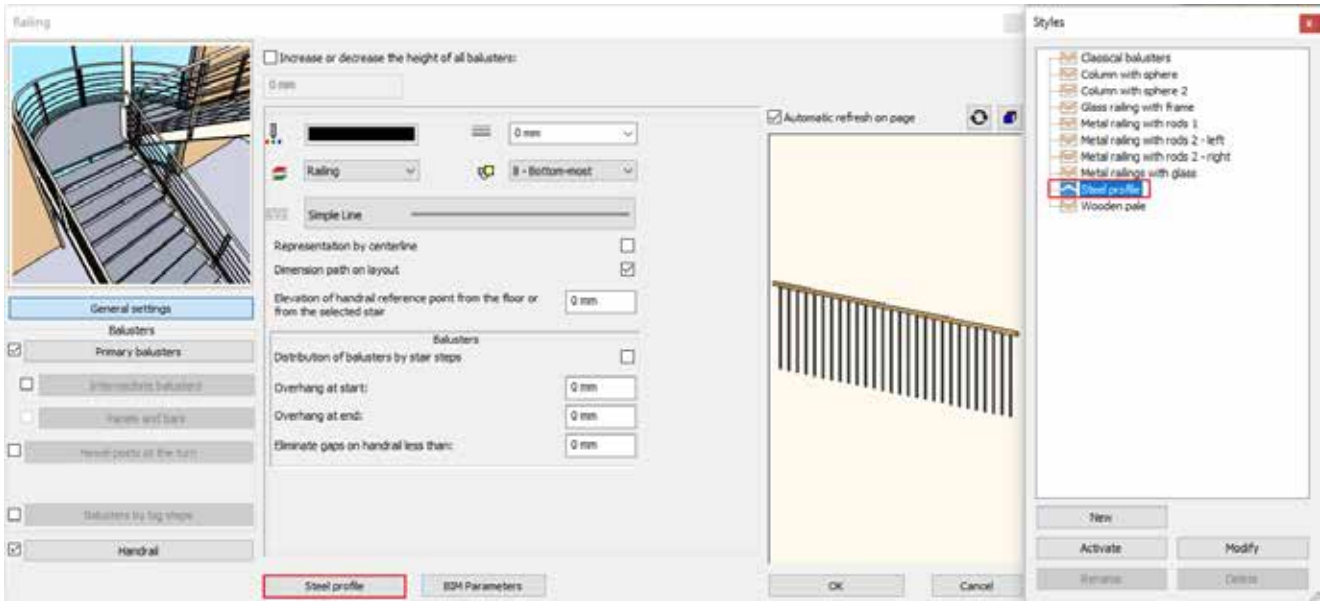
Draw the railing to the staircase, by using GALLERY style. Choose Ribbon menu / Building / Railing command.



5.5. Customized Handrail

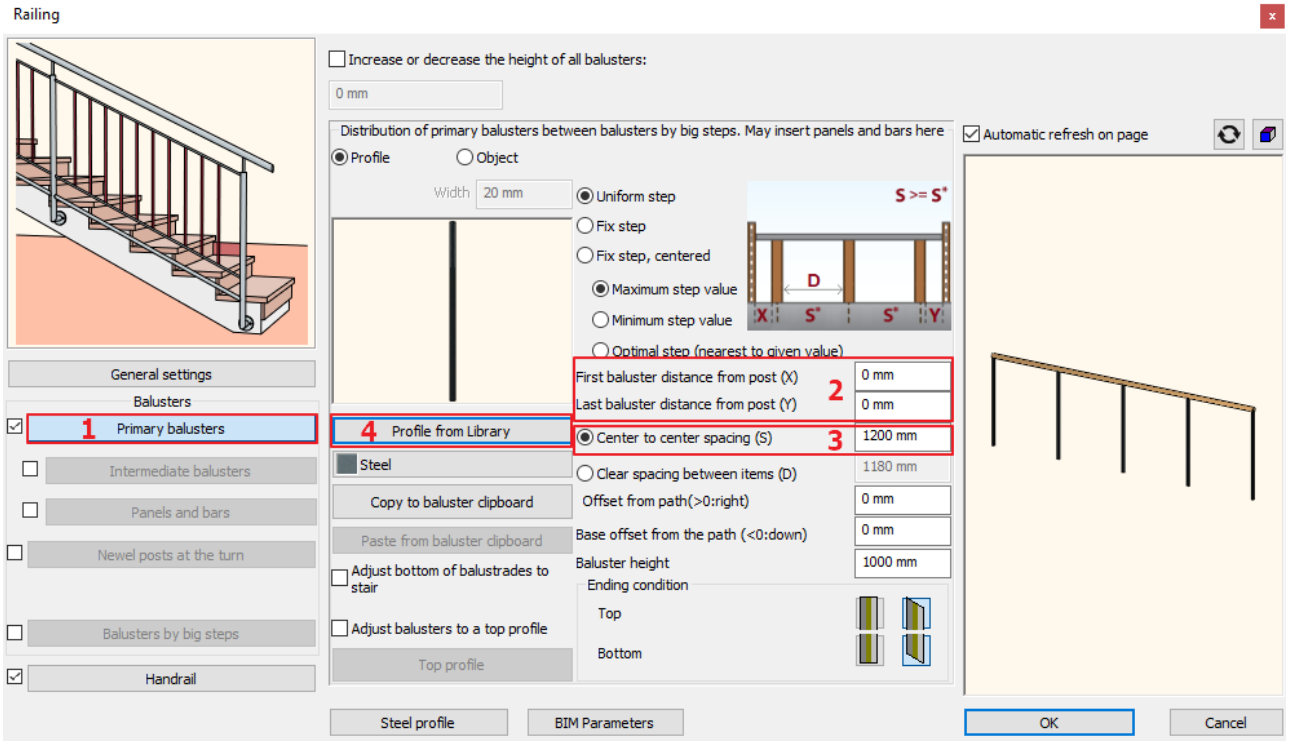
Now we will create a new handrail style which will be used on the gallery. This way you can learn the basic steps of creating customised handrails.

First, go to Ribbon menu / Building / Properties and click on Railing. In the appearing dialog window select handrail styles. For that click on the name of the previously used handrail style, now the list of the styles will pop up on the right side. Double click on the Steel style, now it is activated and it will serve as the base of the new handrail style.

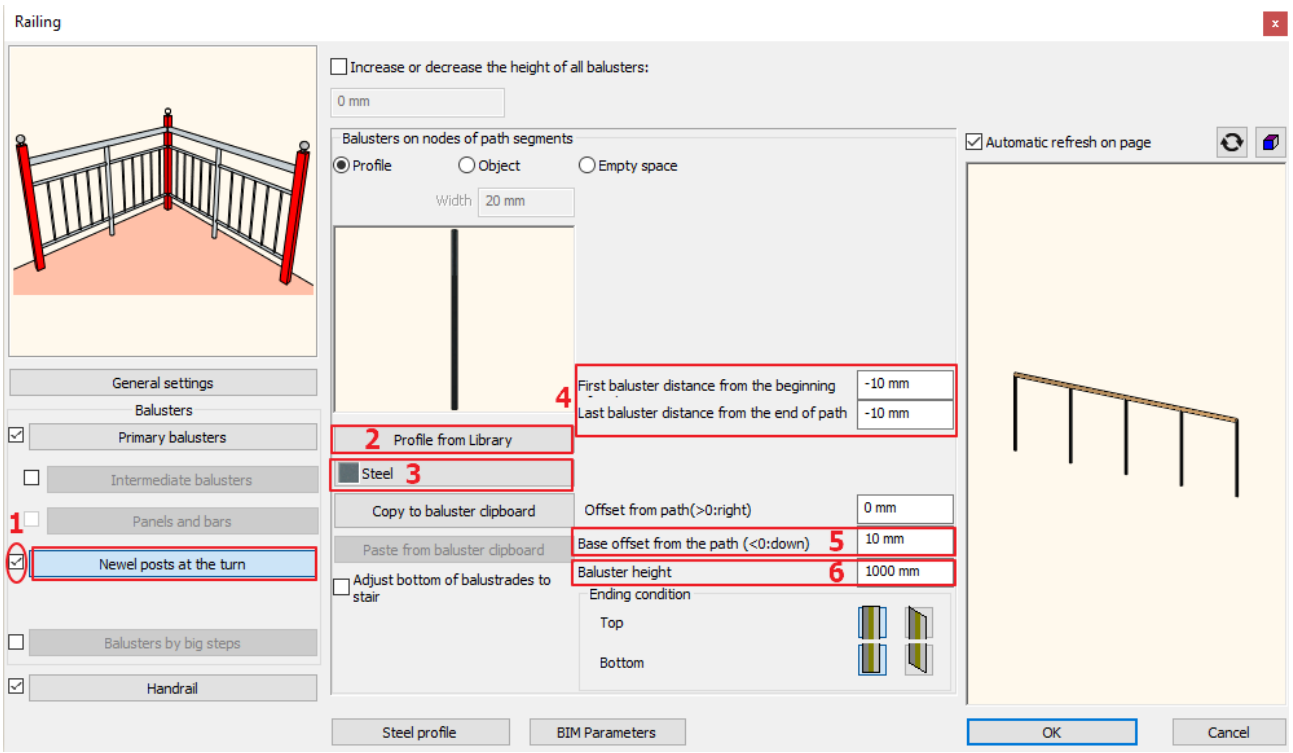


Now click on the Primary Balustrade option (1) and set the followings.
Set the distance from the first and last post to nil. (2).
Set “Center to center spacing” 1200 mm (3).

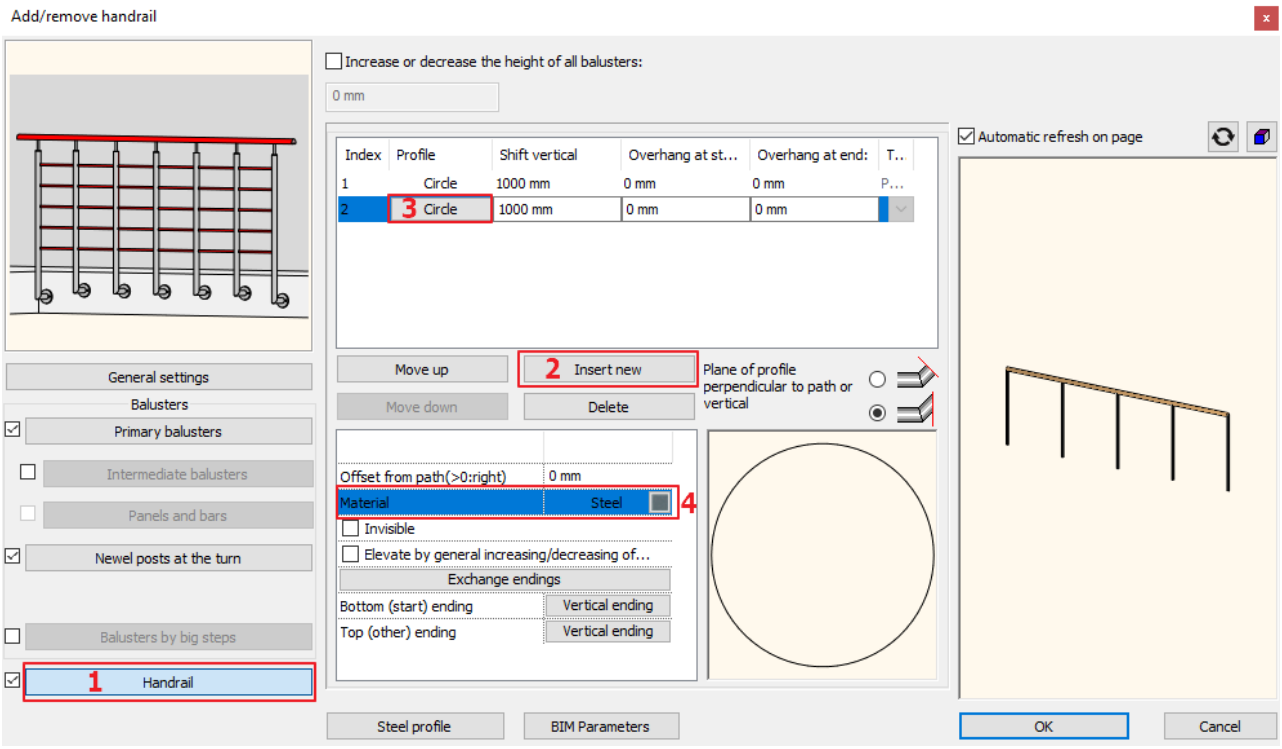
Now select the rectangle column profile from “Profile from Library”, then change the values of height and width to 20 mm.



Activate “Newel posts at the turn” and then click on it (1).
Change the profile to rectangle like the previous way (2), then set the material to “Steel” (3).
Change the value of the first and the last balusters to -10 mm (4).
The Offset from path is 10 mm (5).
The base offset from the path is 100 mm (6).



Now click on Handrail tab (1). There is only one handrail and its profile are circle by default. Add another one by clicking on “Insert new” button, then modify the diameter to 20 mm by clicking on the circle profile. Close the dialog by pressing “OK” and change the material to steel.

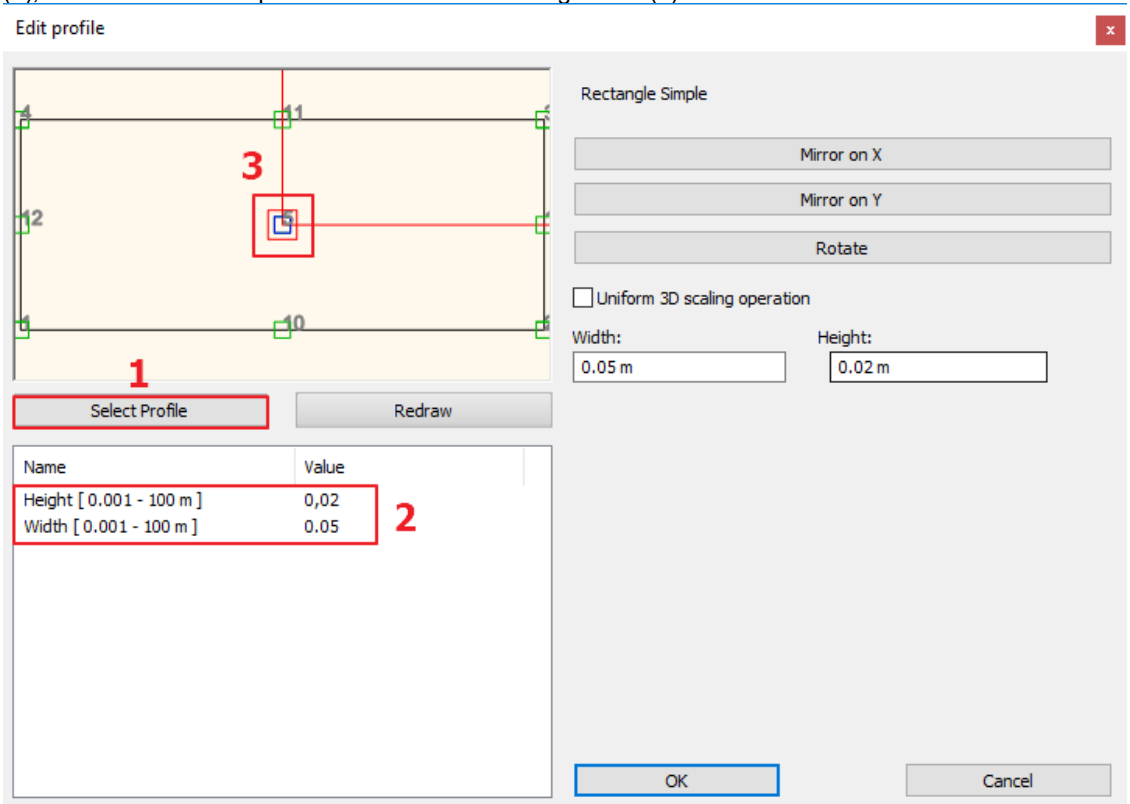


Click on “Insert new” add three more, this way you will add three handrails with the previous settings.
Now modify Shift vertical values as per followings:

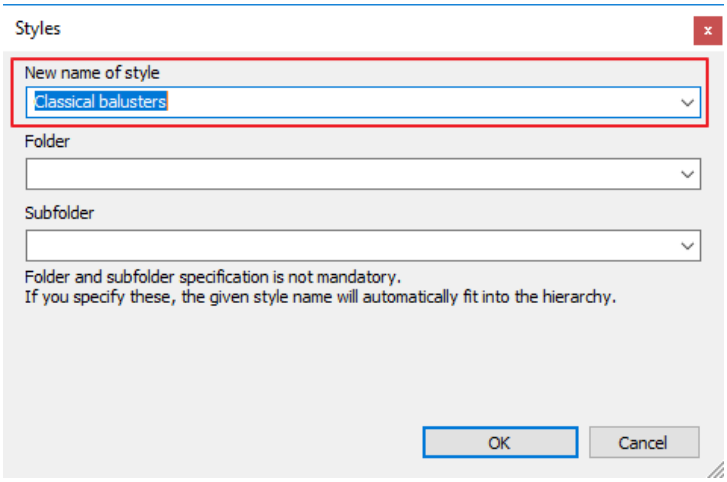
Index	Profile	Shift vertical	Overhang at st...	Overhang at end:	T..
1	Circle	1000 mm	0 mm	0 mm	P...
2	Circle	800 mm	0 mm	0 mm	P...
3	Circle	600 mm	0 mm	0 mm	P...
4	Circle	400 mm	0 mm	0 mm	P...
5	Circle	200 mm	0 mm	0 mm	

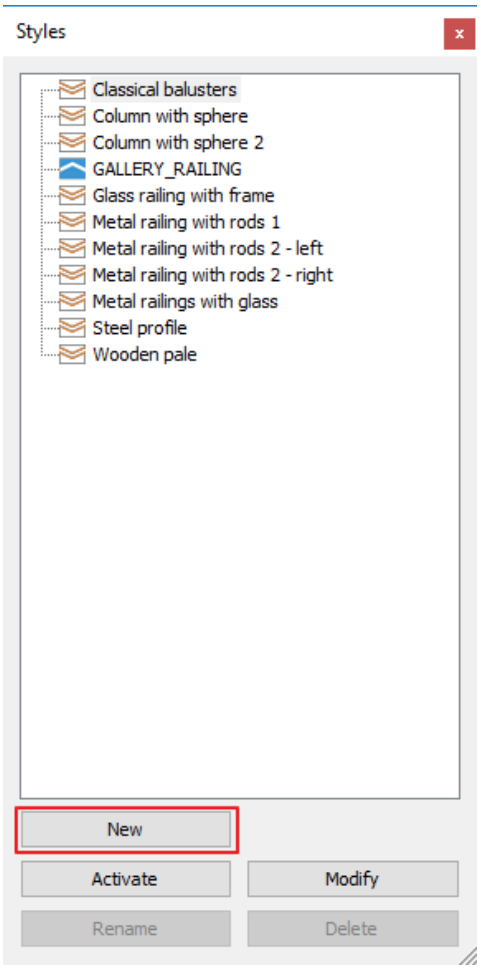
- 2nd handrail value: 800 mm.
- 3rd handrail value 600 mm.
- 4th handrail value 400 mm.
- 5th handrail value 200 mm.

Finally modify the profile of the first handrail to rectangle. Change the height to 20 mm and width to 50 mm (2), move the reference point to the centre with a single click (3).



The handrail is finished and save it as a new style. Bring up the style library and click on “New” and give a name to the new style. Click on “Activate”, the close the window by pressing “OK”.





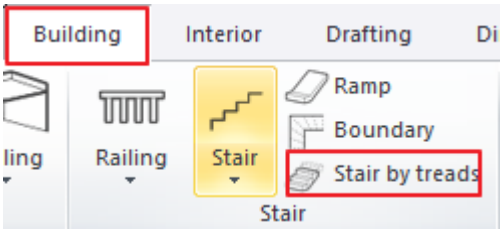
Check the result. Place the handrail by using Ribbon menu / Building / Railing / Railing. Later this style can be used any time.

5.6. Customised stairs

We will create customised stairs which is leading from the ground floor to the first-floor gallery.

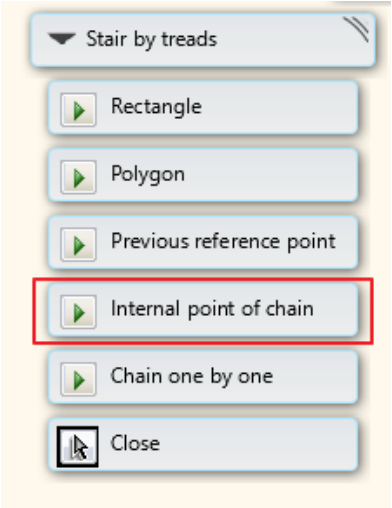
Activate the floor plan window. Go to the first floor. On the area marked by blue we will place stairs. Now you have to draw it step by step, then the program will automatically put together the model of the stairs.

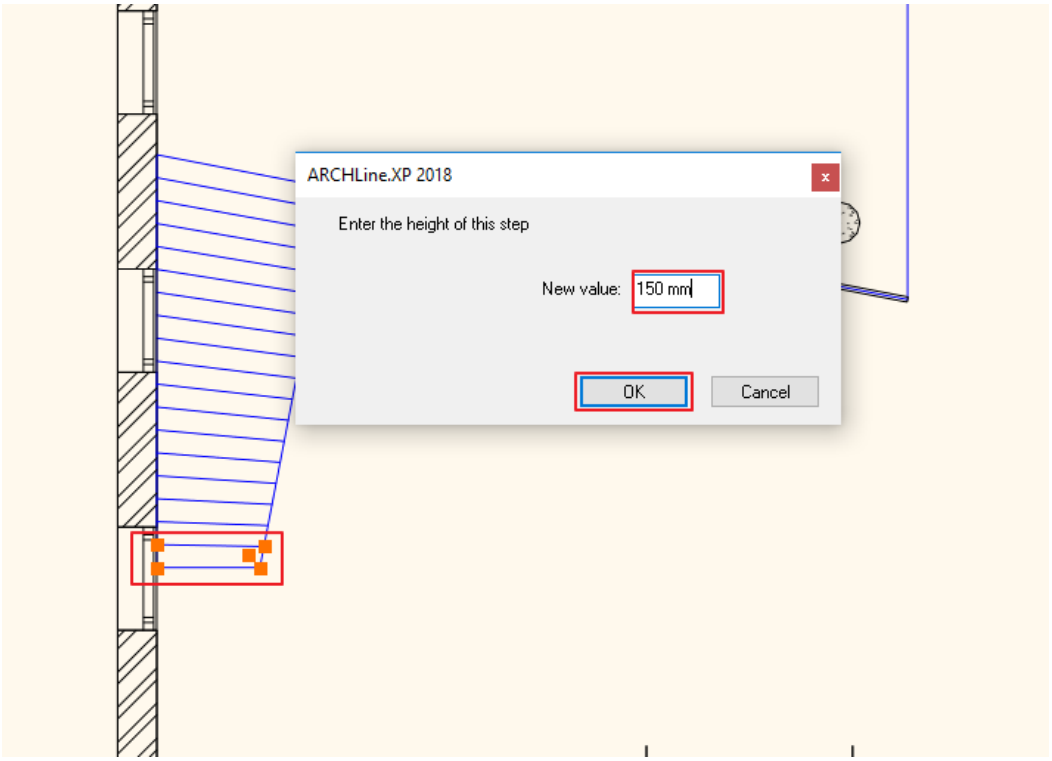
Go to Ribbon menu / Building and choose Stair by treads commands.



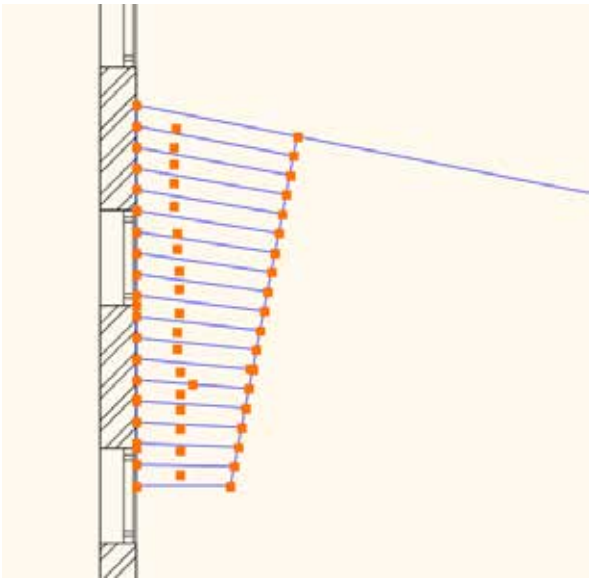
From the appearing floating menu Choose “Internal point of chain” tool. As you can see the cursor shape has changed, move it over the lowest stair, and click on every step one by one, preferably in one line.

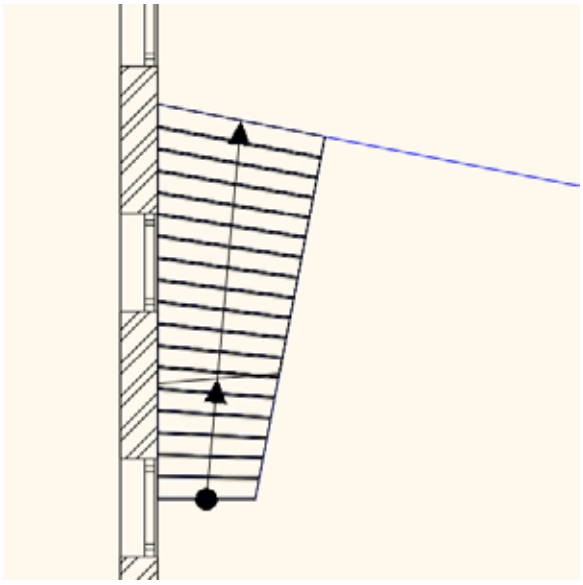
After the first click, the program will ask for the height of steps. This should be 150 mm and if it is necessary, we can modify it later.





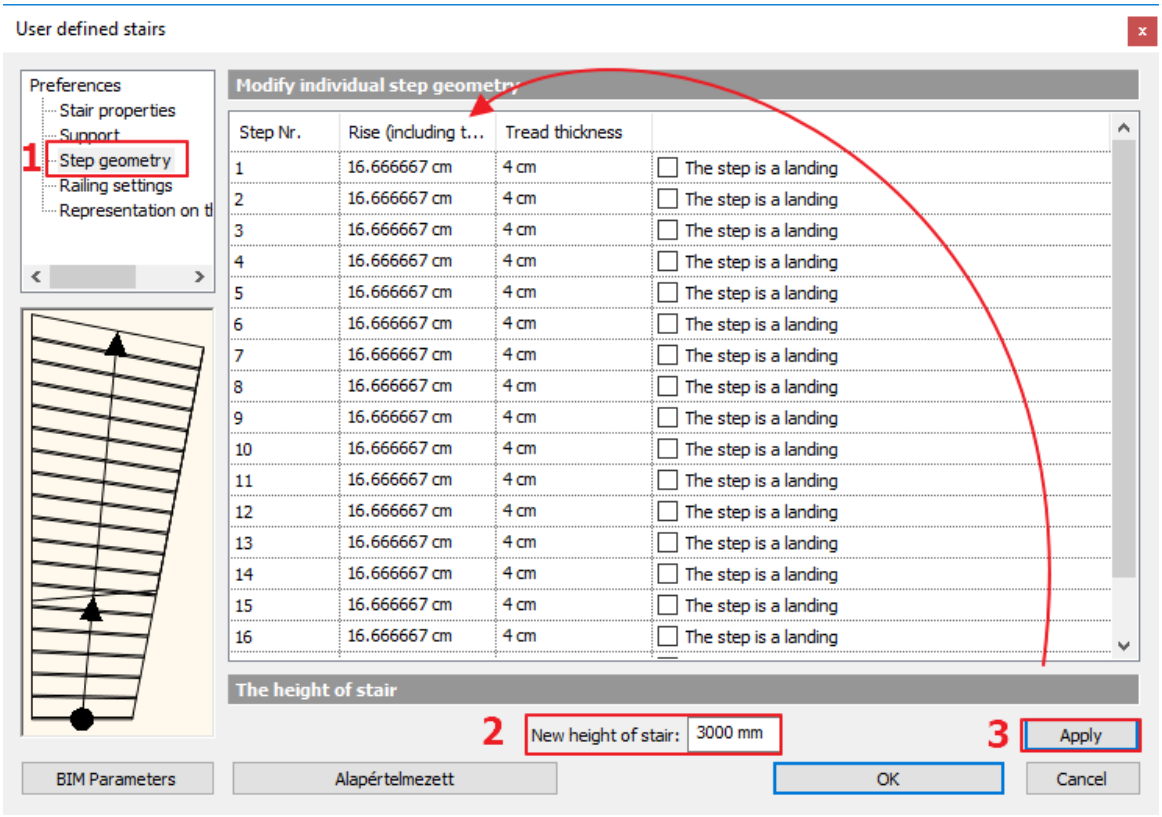
When finished, close the command with double Enter.





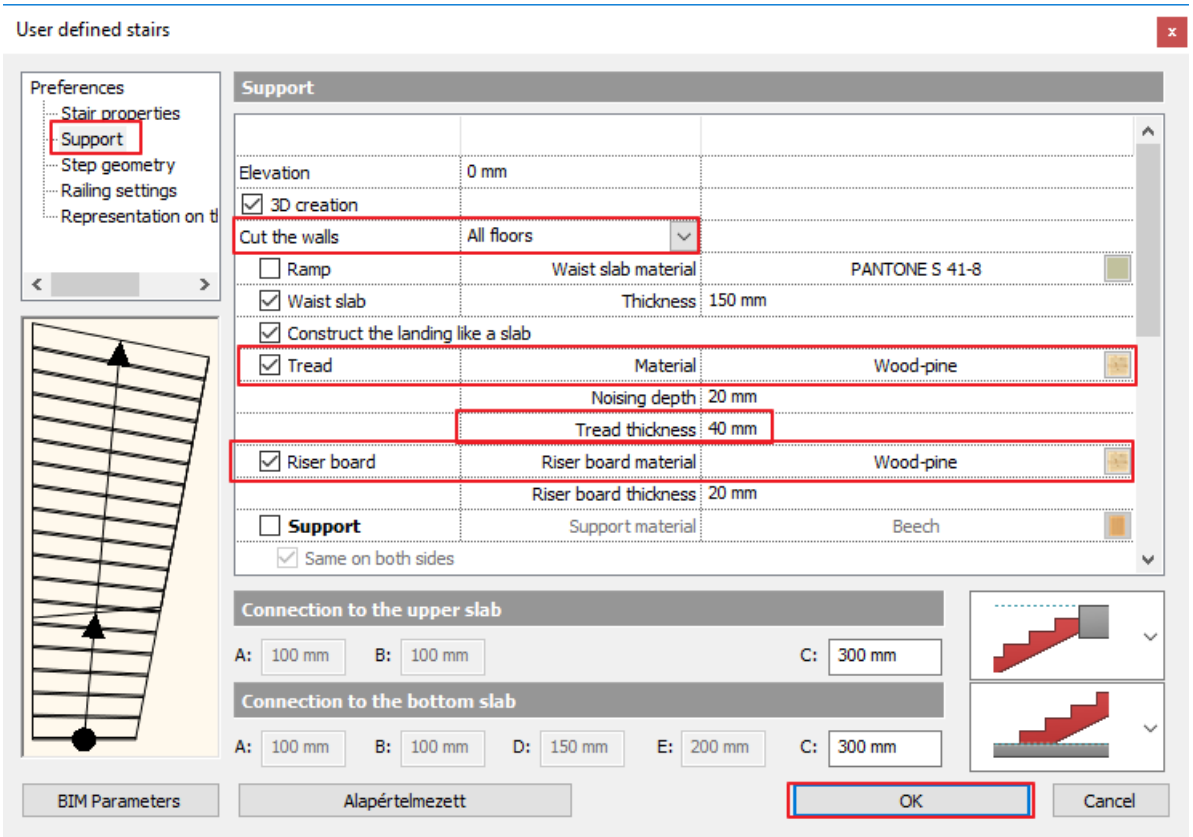
If you switch to 3D view, you can see that the top of the stair does not reach the correct height. We want that the top step to be at the same height as the first-floor level. Please do the followings:

Click on the stair and look at the properties.
The User defined stairs dialog window appears. Here we can find the general properties, now let's go to Step Geometry tab. (1). In the preview window you can see all steps were created individually. At the bottom of the window you can set the New Height of stair, now change it to 3,000 mm (2). Click on Apply (3), then the program will automatically re calculate the rise of stairs.
Click on OK to close the window



Modify the material of the tread.

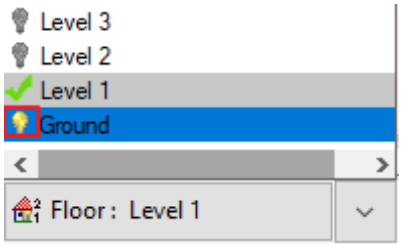
Select the stairs, and open its properties.
Click on Support tab.
Under “Cut the walls” select All floors option.
Now set Tread properties, select material - Natural pine and set tread thickness to 40 mm.
Now activate Riser board option, set its material Natural pine.
Close the dialog by pressing OK.



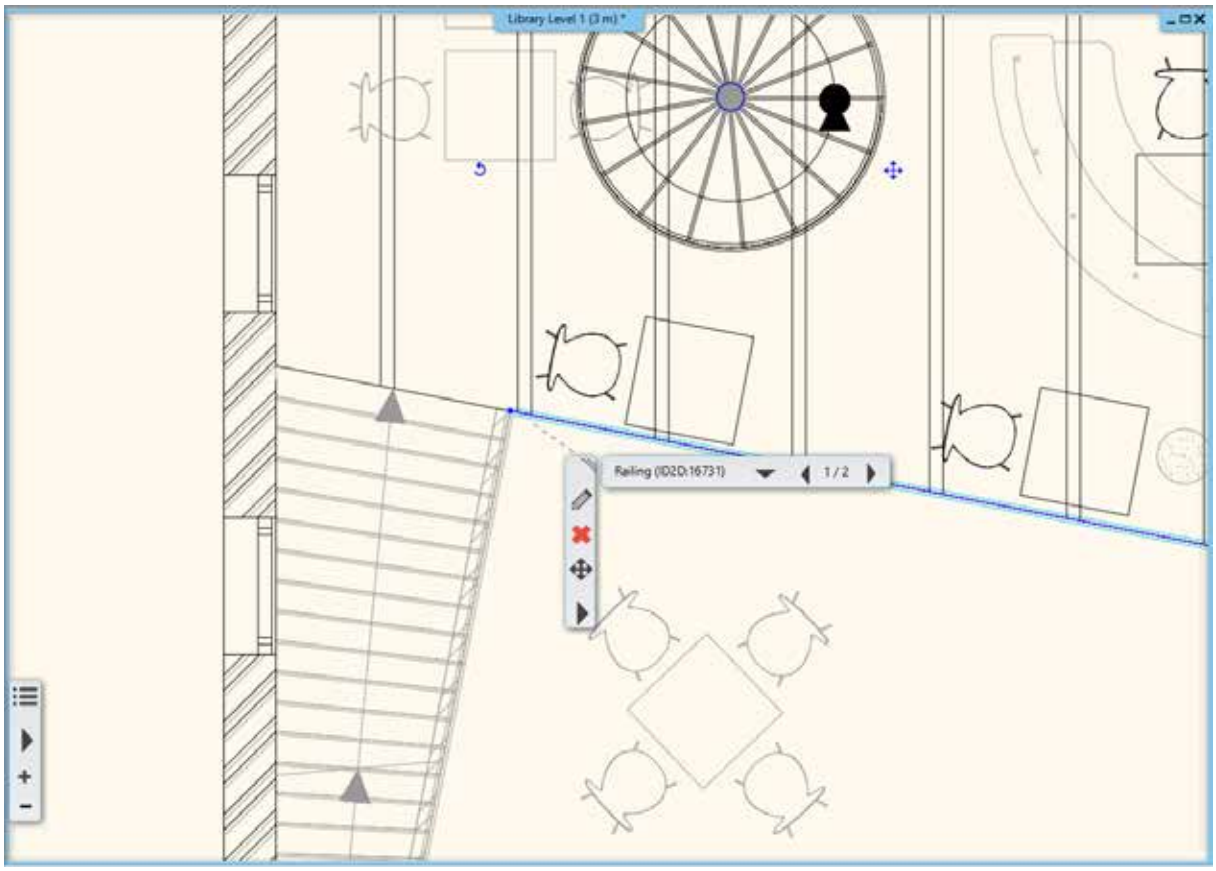
5.6.1. Handrail on stairs

Now create the same handrail to this stair which can be found on the gallery.
First modify the handrail of the gallery complying with step up.

Activate the floor plan window. Move to the first floor.
Make visible the ground floor.

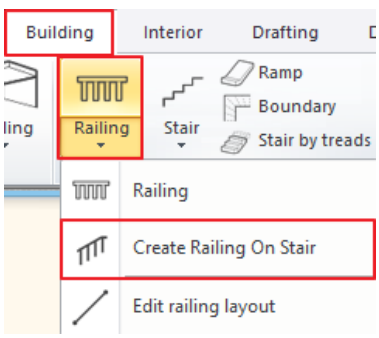


Select railing, by using “move node” command place the railing line to the right place.
Close the command.



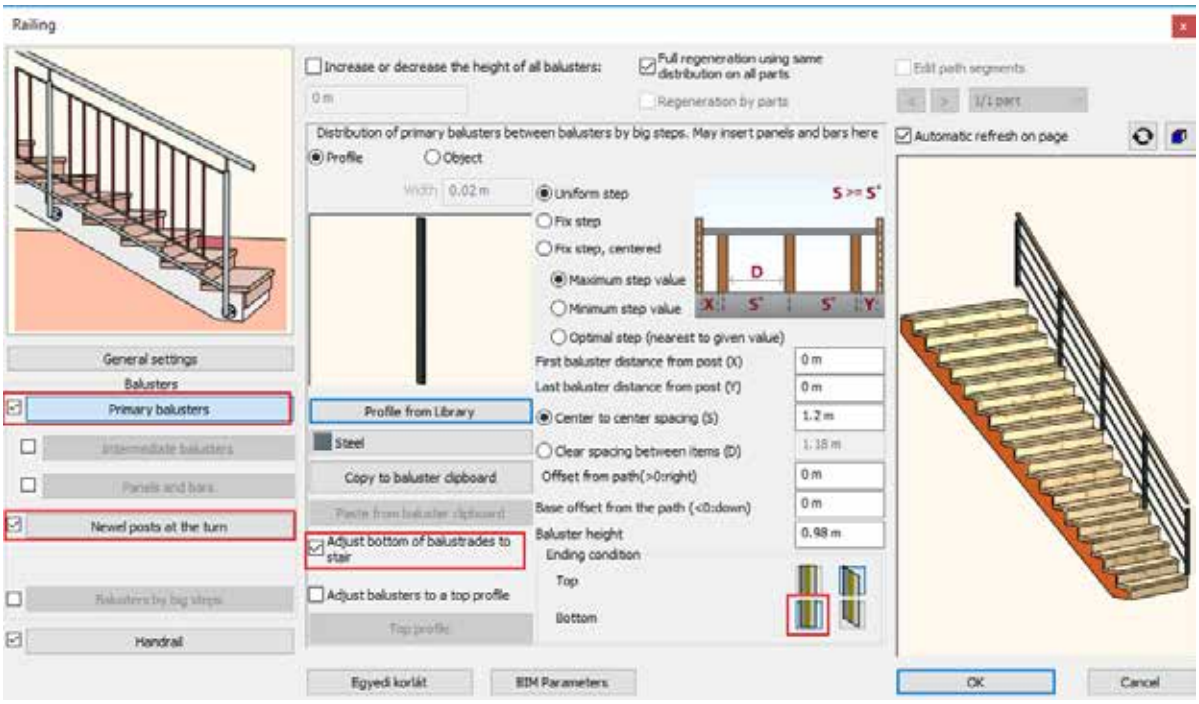
Now simply place handrail on the stairs:

On the Ground Floor go to Ribbon menu / Building / Railing and choose “Create railing on stair” command, now click on the stairs.

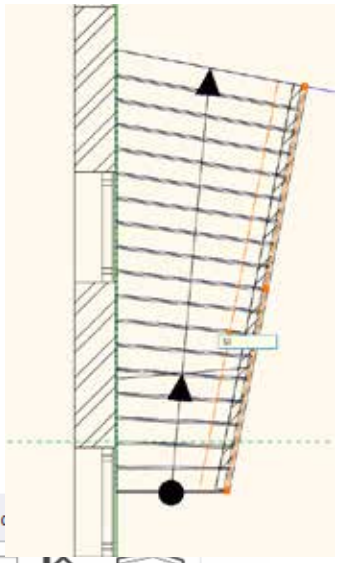


The railing is placed now.

Open railing properties. Click on “Primary balusters”, and active “Adjust bottom of balusters to stair” option. Then select perpendicular “Ending condition”.
Activate „Newel posts at turn” and activate “Adjust bottom of balusters to stair” option.
Close the window by pressing OK.



Finally select the handrail on the floor plan, use Offset to pull it closer to stairs by 50 mm.

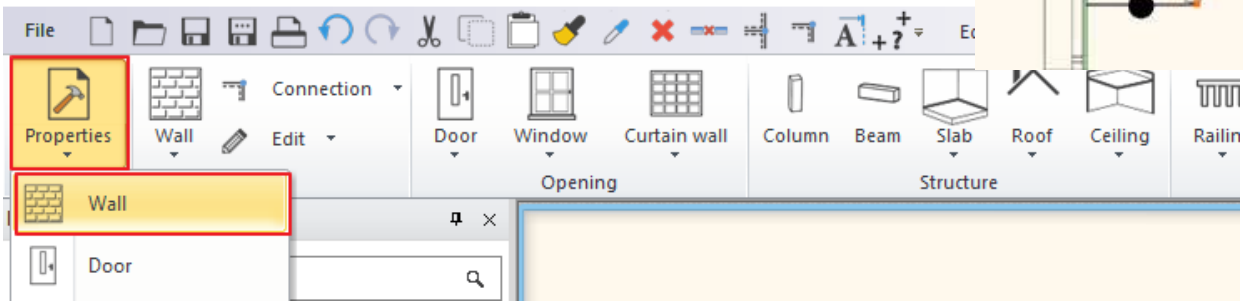


5.6.2. Place wall along the stairs

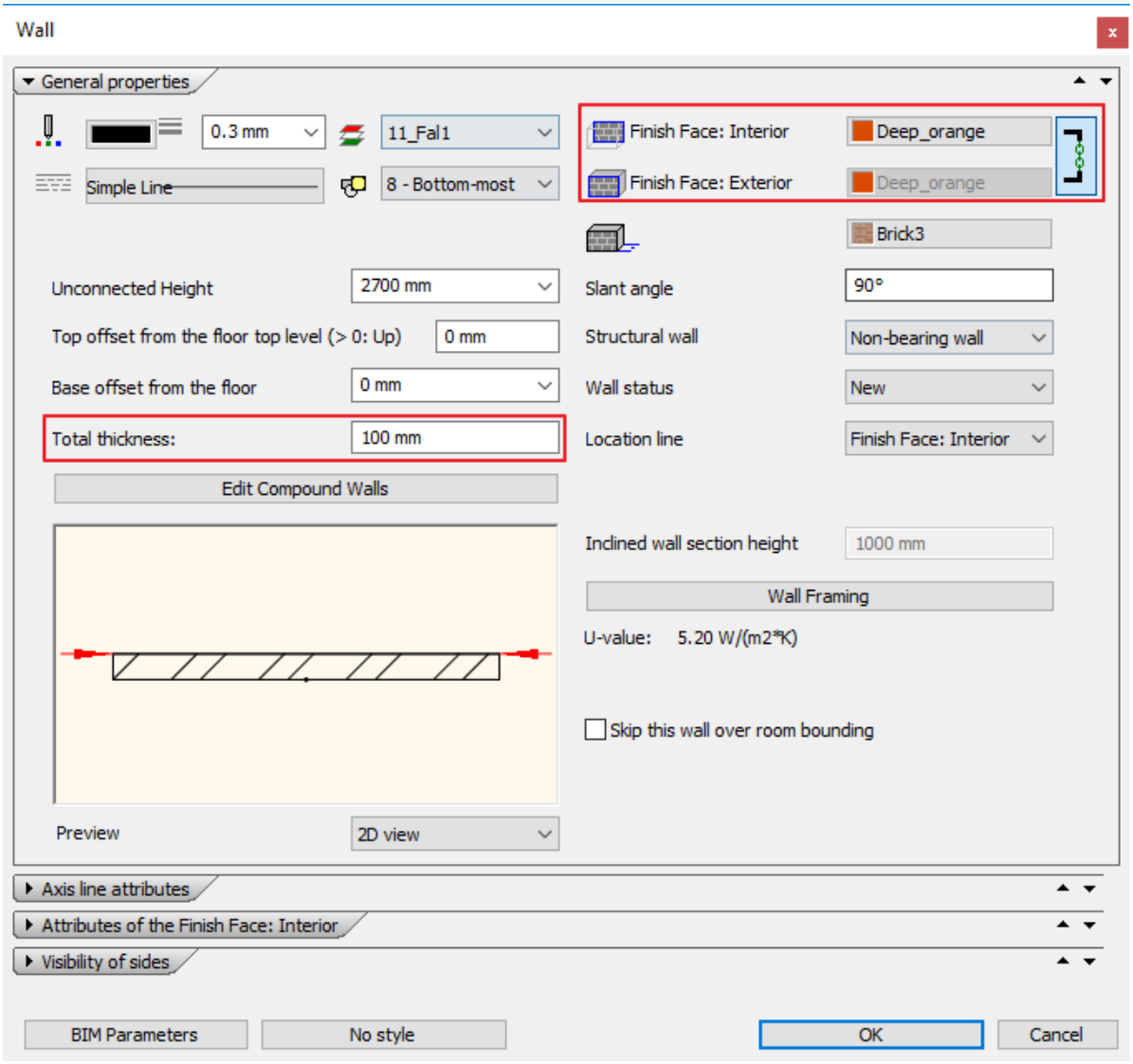
Now we will place a wall under the customised stairs, this area now can be built-in.

Please do the followings:

The floor plan window is active. Go to Ground floor, where the customized stairs can be found.
Modify this stair to a lightweight structure stair.
Select stairs and open its properties.
Select Support tab and switch off “Waist slab” option.
Close the dialog by pressing “OK”.
Go to Ribbon menu / Building / Properties / Wall.



Modify the total thickness to 100 mm and change the colour to orange.



Draw a wall along the outer line of the customised stairs. The wall reference line is this outer line. You can change this in the appearing right floating menu. Click on right side option.
The wall under the stairs is ready.

Finally switch on Object layer from the used layers in the Layer properties management and display the entire project including furnishing.

Workshop 6: Designing roofs

6. Workshop: Designing roofs

This workshop guides you through how to design a roof.

- Settings, creating styles
- Roof plane with three points
- Automatic roof
- Extruded roof
- Roof slab
- Roof window, customized window, curtain wall

6.1. Open and save project

Start

Open the following project:
…\ARCHlineXP Draw\2018\Course_Intermediate\6_Roof\ workshop_roof_start.pro

Save project

Before you start working on the project, save it under a new name.
Select **File / Save project as**… command and rename the project, then select the folder you want to save it.

6.2. Settings and creating styles

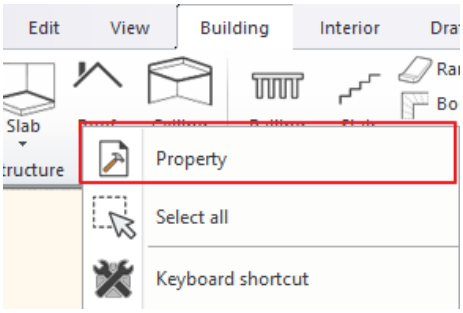
The roof is one of the most complex architectural design elements. As it has loads of fine details that goes beyond simple roof plane representation, which can be sufficient for a conceptual design plan.

Let's see how we can achieve that all details are visible and also how we can design a simple roof with roof planes for a conceptual plan.

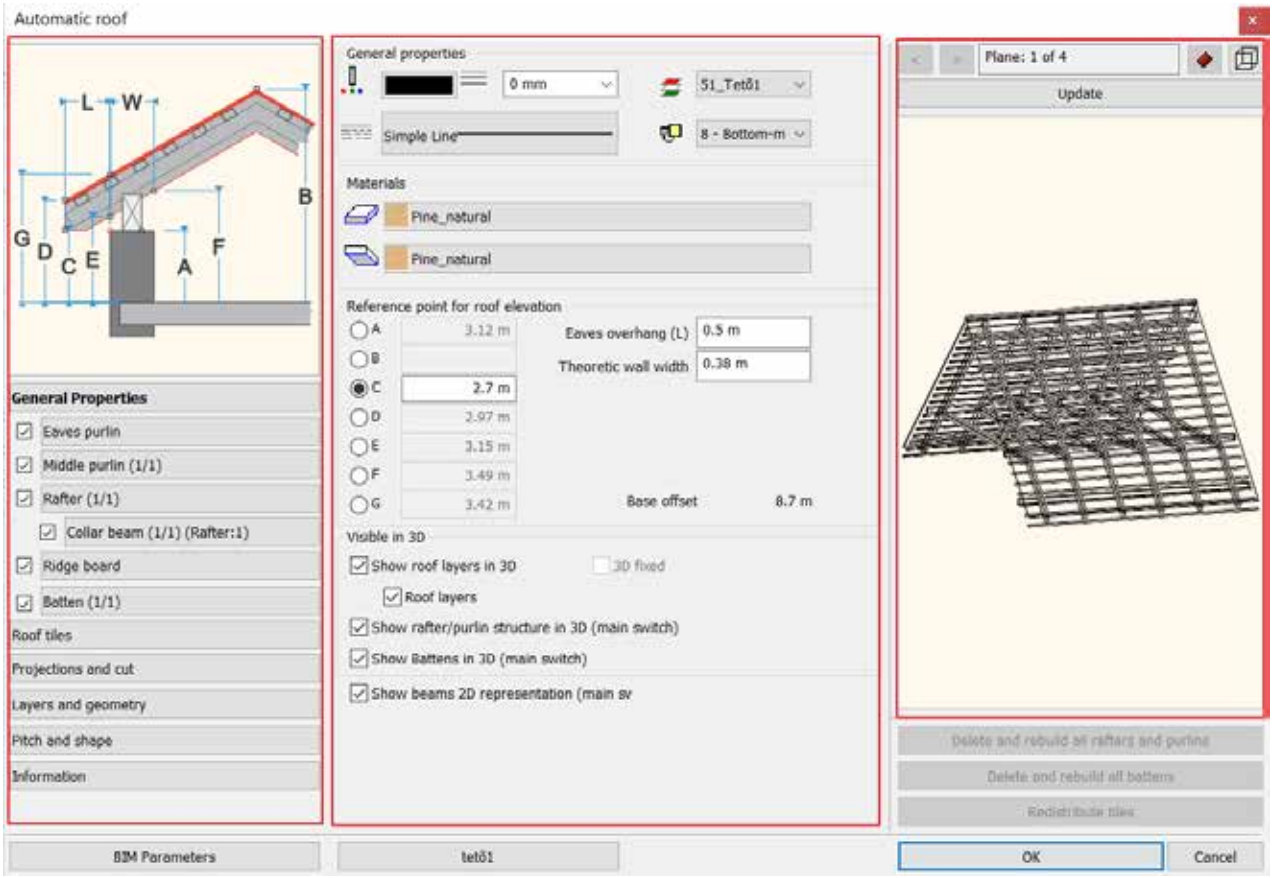
6.2.1. Roof - settings

First let's check the roof properties:

Go to **Ribbon menu / Building / Roof** tool and right-click on it. From the pop-up menu choose **Property** command.

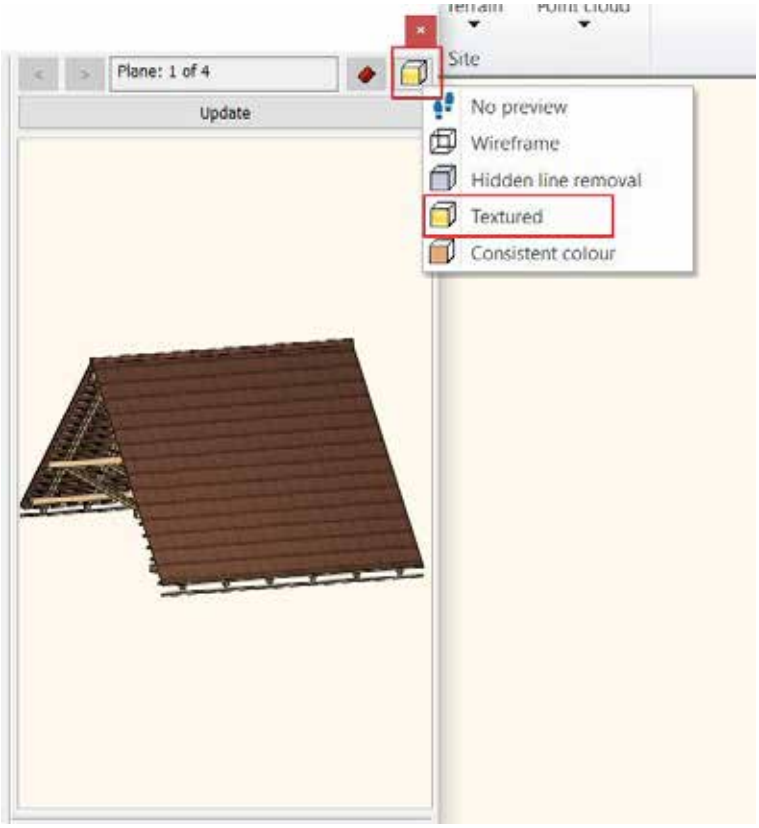


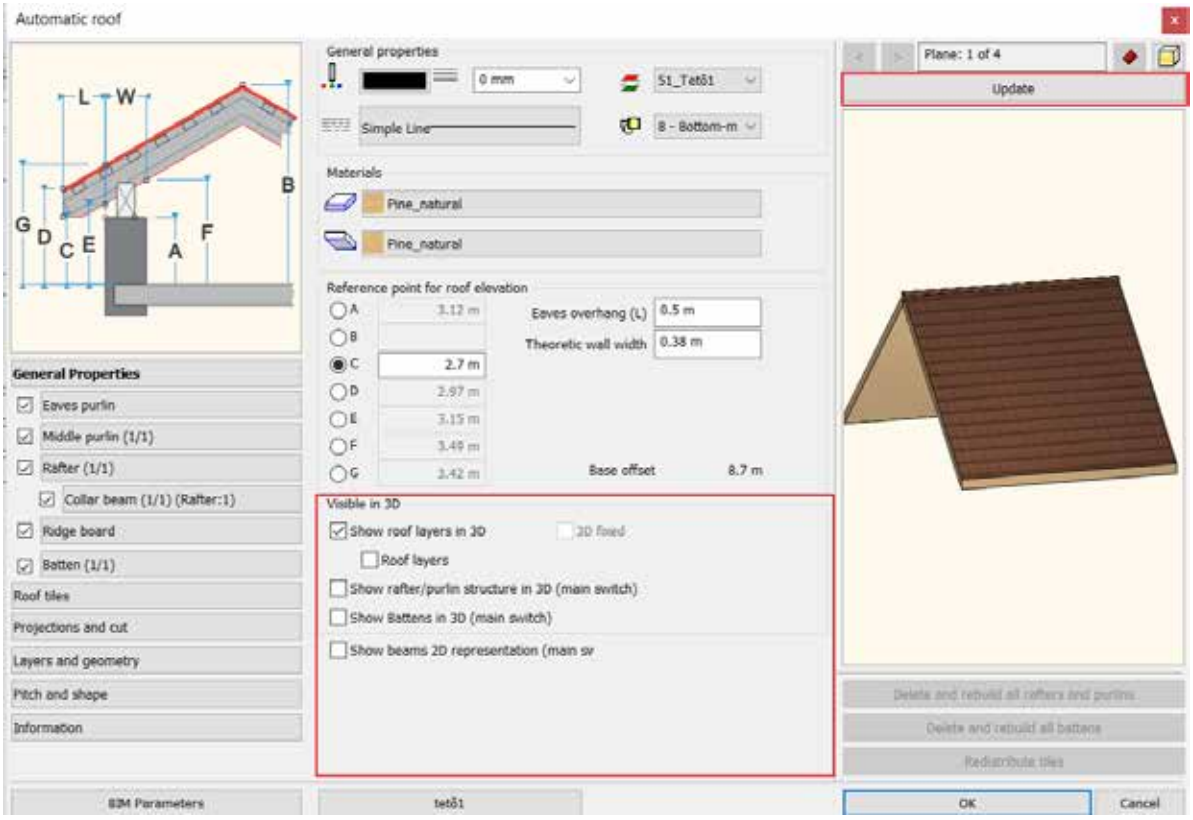
Now the "Automatic roof" dialog window will come up.



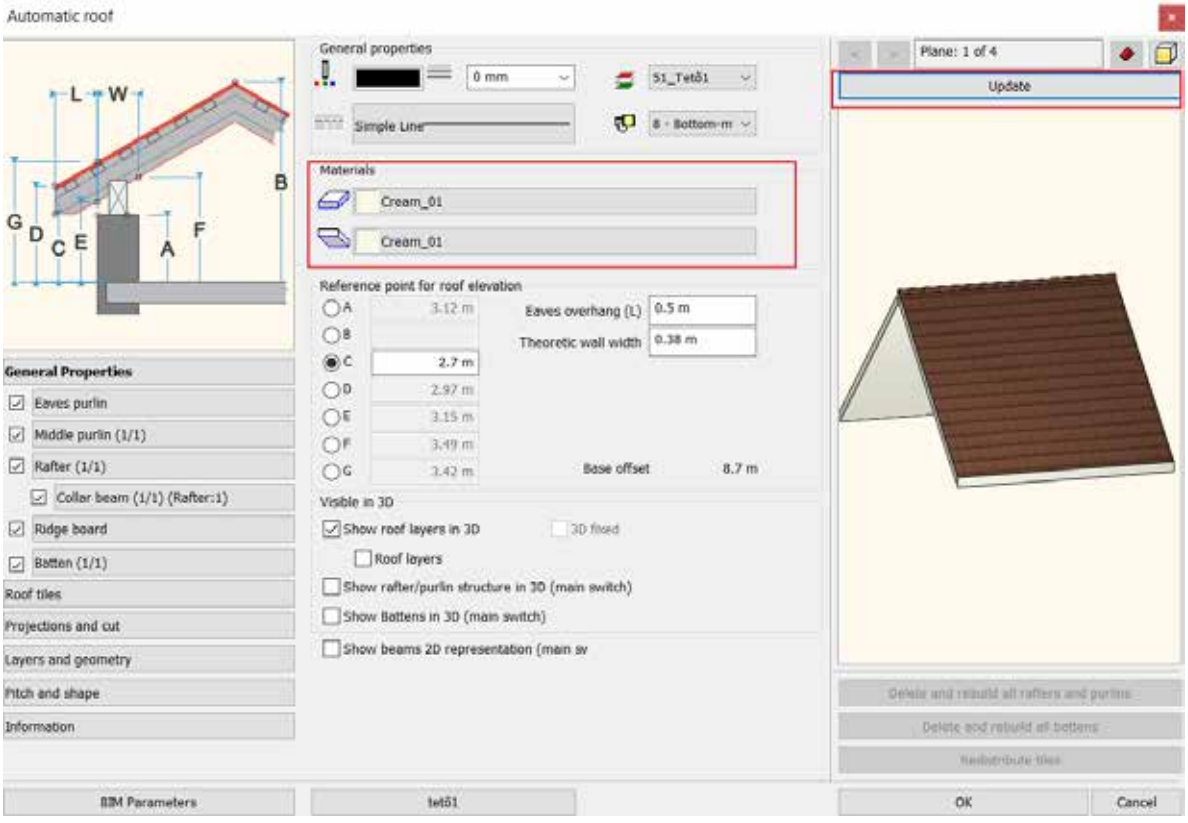
This property window has three sections. On the left side we can choose from the main property categories which can be modified in small details. The middle section shows all details of the selected main category. Finally, there is a “preview” window on the right side, here we can check the result of all modification. Clicking on the “3D preview mode” icon we can set other 3D representation mode.

Select “Textured” view.
We are currently on General Properties within the Main Categories. Now change the finely detailed 3D representation to much simpler one. That means to turn off other options under “Visible in 3 D” and leave on “Show roof layers in 3D”.

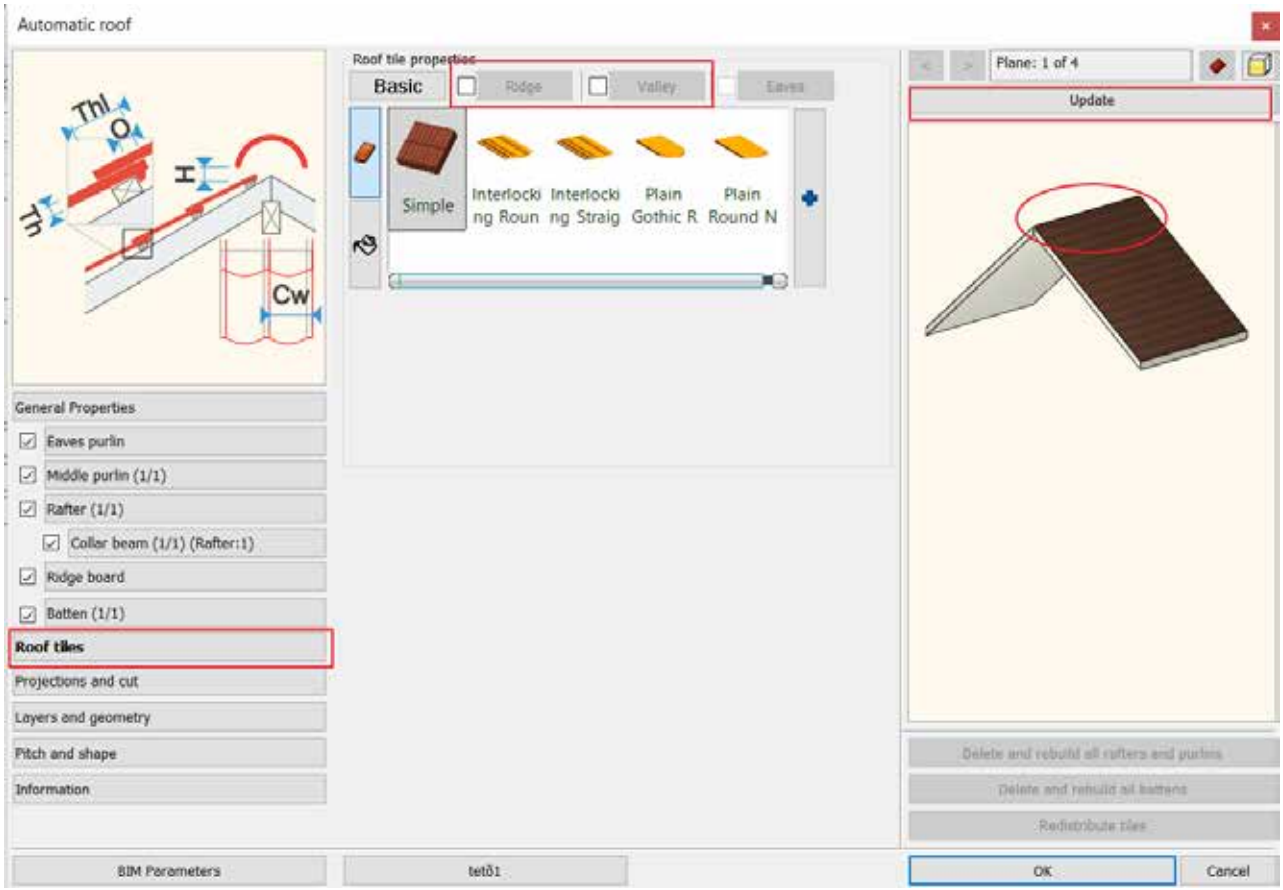




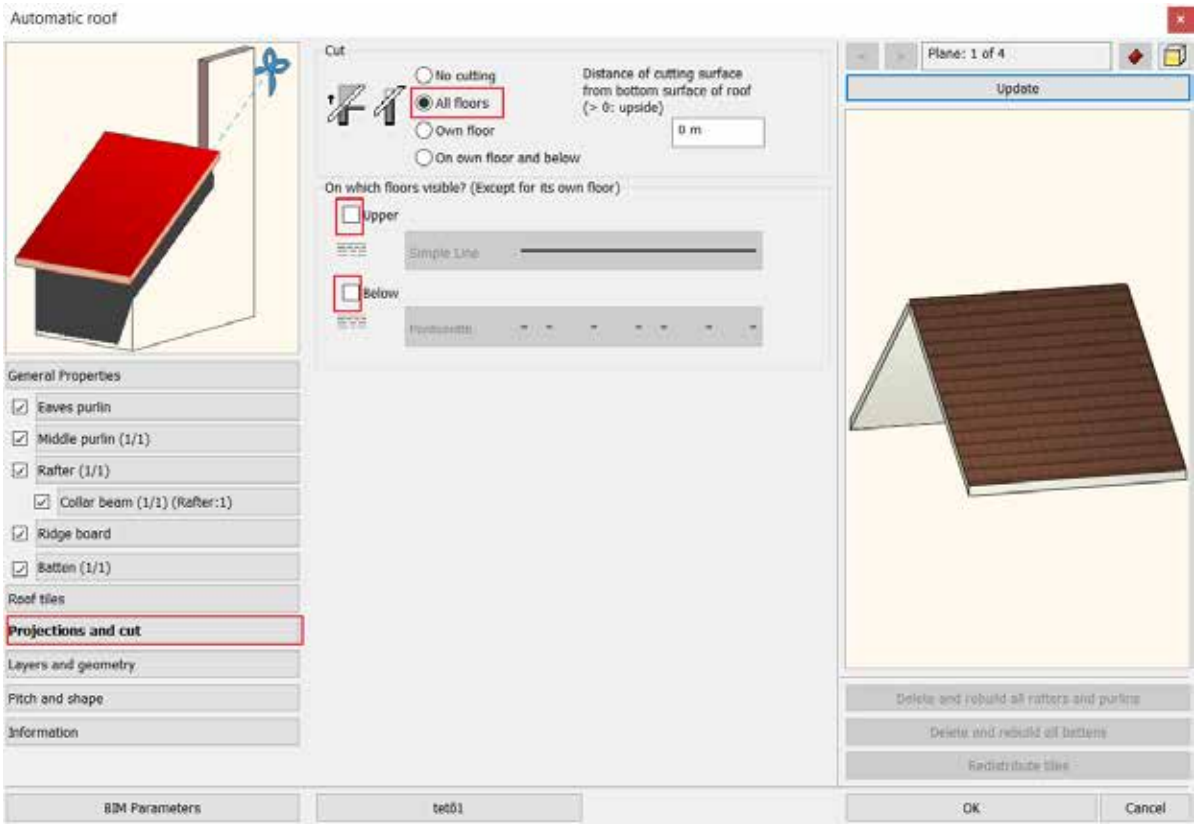
At the bottom can be found the “Visible in 3D” settings, first turn off “Show beams 2D representation” main switch.
For the simplest representation “Show Battens in 3D” and “Show rafter / purlin structure in 3D” main switches should be also turned off. (If this is an architectural plan and these will be needed later then come back here and turn them on)
In this example we don’t need “Roof layers” so let’s turn it off.
In order to see changes, click on “Update” button above the preview window.
Now change the roof material. Currently it is “Pine_natural” on side plane and bottom plane. Click on the name and set “Cream_01”.
Change the material on the bottom plane as well.
When you finished update the preview, press “Update” button. The changes immediately can be seen.



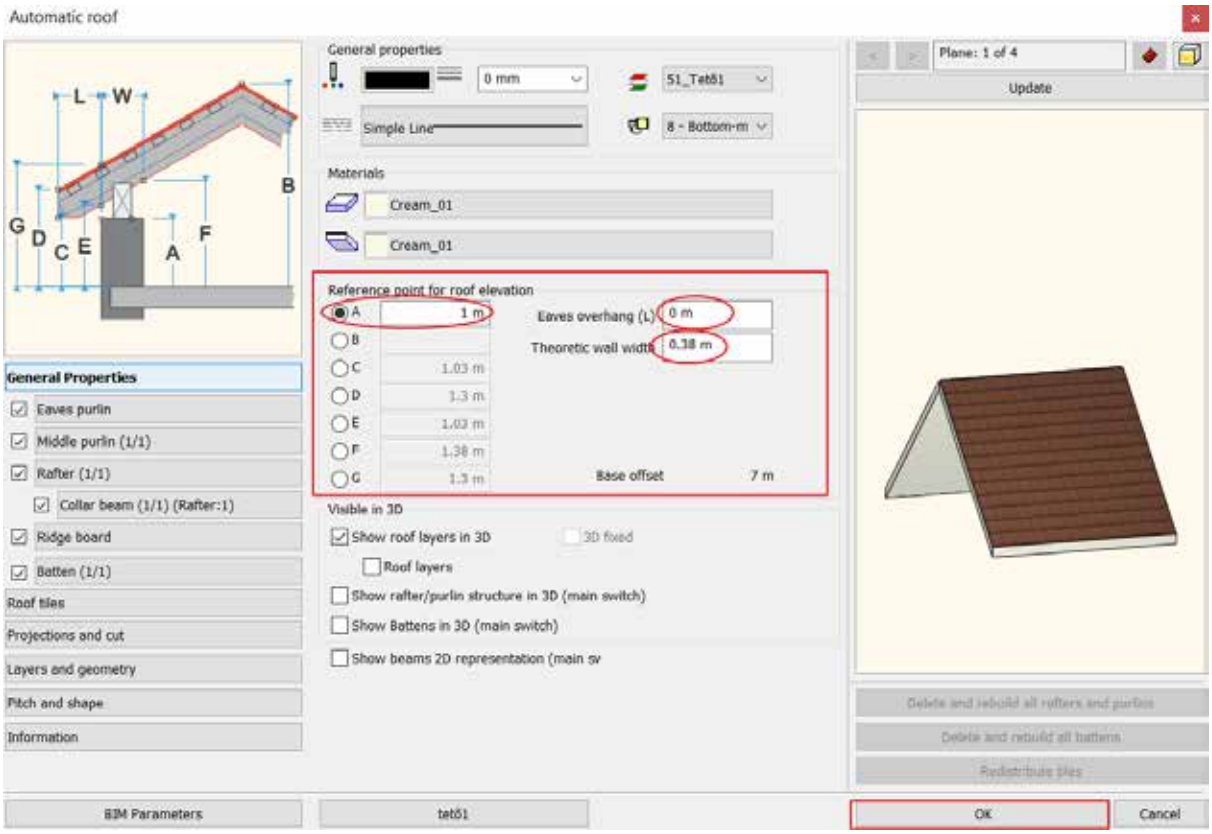
On the left side click on the “Roof tiles”, here can be set the material and the type of the roof tiles.
Detailed roof tiling is not needed now, as we are preparing the interior design plan so turn off “Ridge” and “Valley” options.
Updating the preview, the “Ridge” has disappeared. (Valley wasn’t on the original model.) Now there is only a simple connection line between two planes.



Now click on the “**Projections and cut”** category. Here you can set where the roof cut the different walls. It can be set to cut or not, depending on which level was the wall created and connects to the roof. You can determine depending on which level you created the wall which connects to the roof to cut it or not.
Select “All floors”, so anywhere walls are coming from those will be chopped by the bottom of roof plane by all means.
The next setting is to make visible the roof not just on that level it was originally created, but furthermore on the level above or below. You can also set the line type.
Now turn off both options, so now the roof line can be seen where it was originally created.



Now let's go back to **General Properties** and see through Roof elevation and reference points settings. There are several values from A to G, the diagram on the left side can help to interpret them.
In this example we have to define "A" representing the wall knee height.
Activate "A" and enter 1 m. Then set the "Eaves overhang" to 0.
It is recommended to set the "Theoretic wall width" to the same value as the wall width on the original plan. If there is a difference the software alters the interior structure of the roof differently. Now it is 380 mm, this should not be changed.

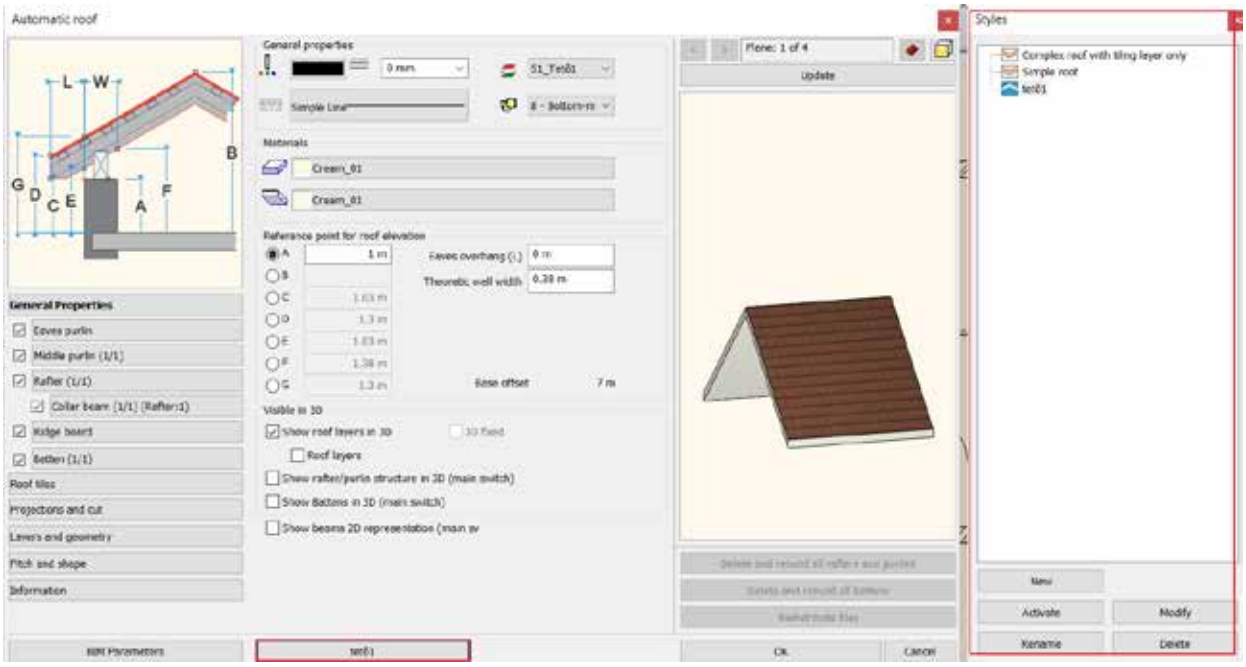


We customized the settings.

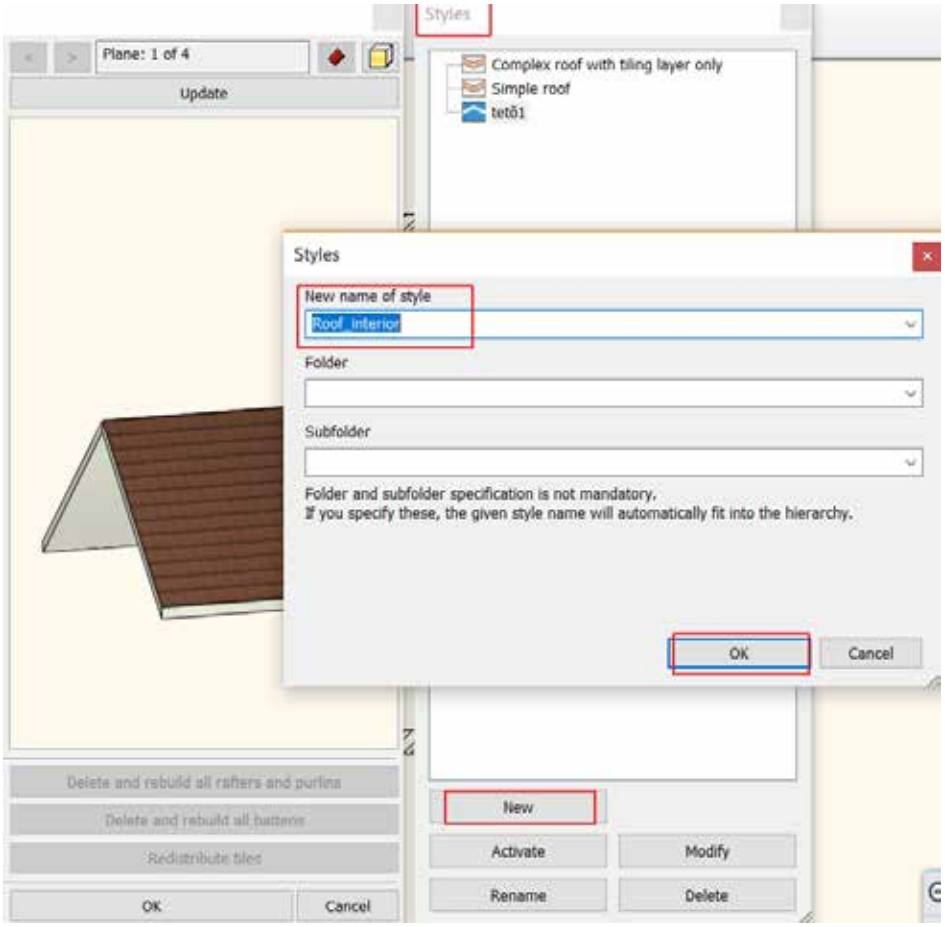
6.2.2. Creating styles

We finished with modification of the roof properties, let's save it as a new style.

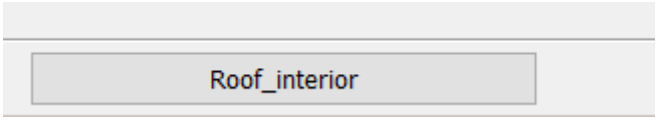
There is a button to do so at the bottom of the dialog window with the currently used style name on it.



Click on „tető1", then the list of styles will appear on the right side. Here are those styles which can be used after installing the software.
Now save it as a new style under the list. Click on "New" button.
Enter the name of the new style "Roof_Interior", then press "OK".



From now on the newly created style is active. This is indicated by the name of the style button on the bottom toolbar. You can continue to work with this new style settings until another one is activated.



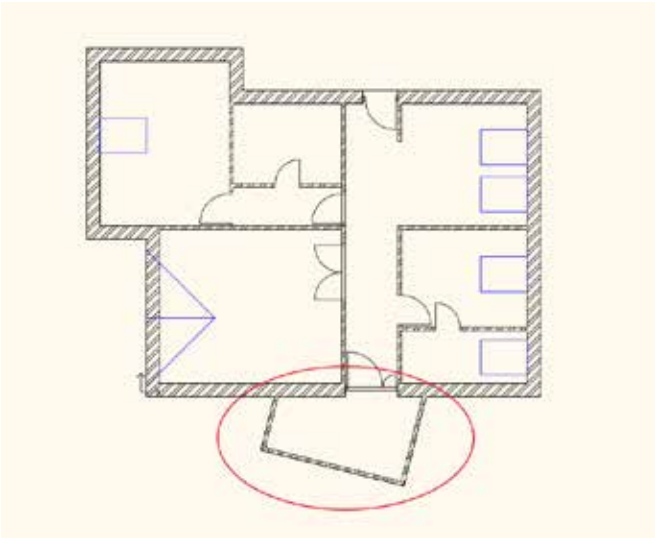
New style can be activated by clicking on the selected style, then you choose “Activate” command at the bottom.

Now the “Roof_Interior” style should be active, close the dialog by pressing “OK”.

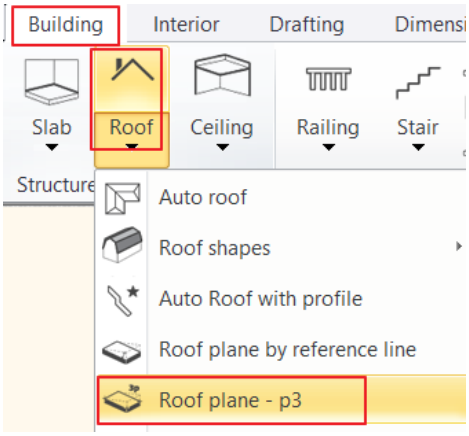
Using this style, we are going to create a new roof structure.

6.3. Creating roof plane with 3 points

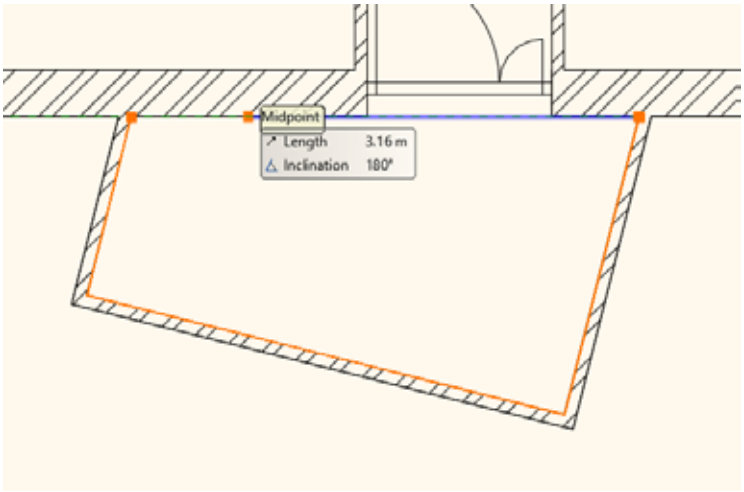
In the first example we are going to create a roof by using three elevation points that we had measured before. This is where we are going to start:



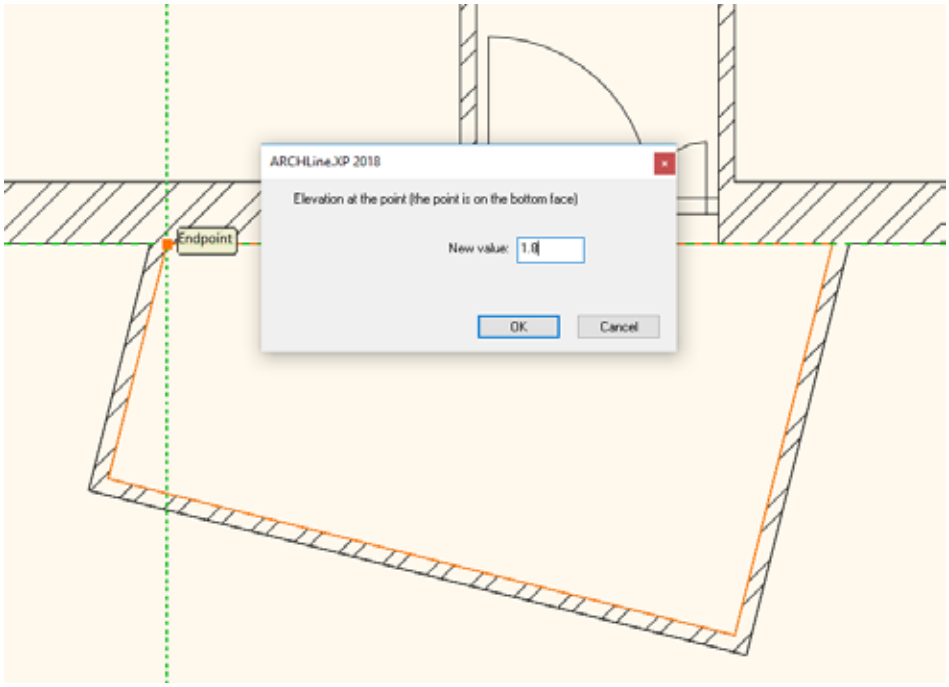
Select **Ribbon menu / Building / Roof / Roof plane – p3** command.



After starting the command, we have to define the roof contour. Click on four corner points alongside the outer wall.



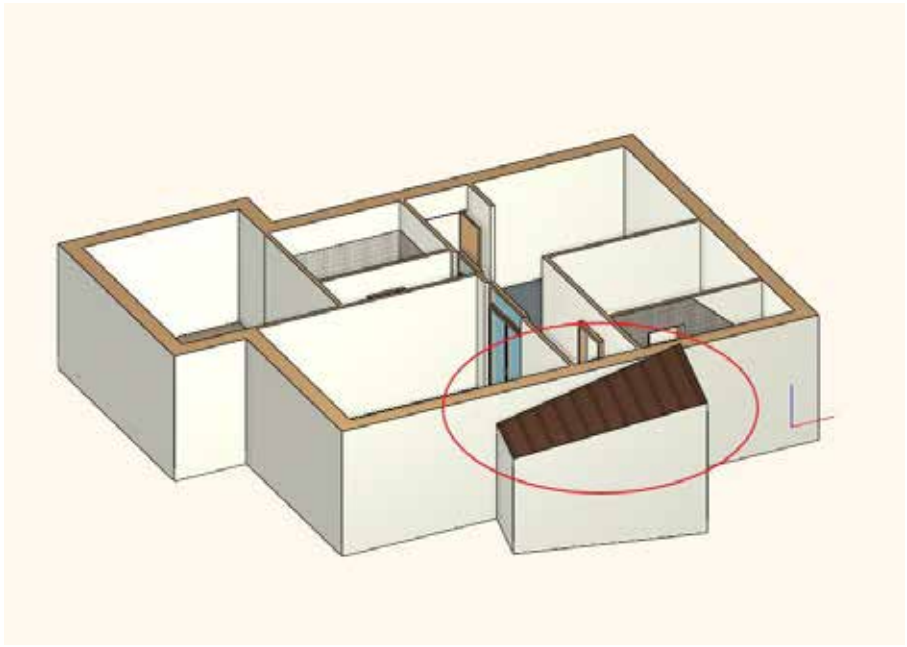
Now enter three elevation values, which were measured at the site.
Click on the corner point inside and type 1,8 m, then hit “Enter”.



Click on the second corner point inside and type 1,8m, then hit Enter.
Finally click inside of the third corner point and type 2,6 m, then hit Enter.
The roof is finished, which is indicated by only contour lines on the floor plan. The modification is not striking as the roof contour overlaps other contours.

On Navibar click on “Magnify window” button and zoom in the 3D window, here you can see changes.
Previously you set that the roof cuts walls. You have to update the model in order to cut walls according to the settings.

The floor plan window is active. Click on “3D hammer” icon on the Toolbar to rebuild the model.

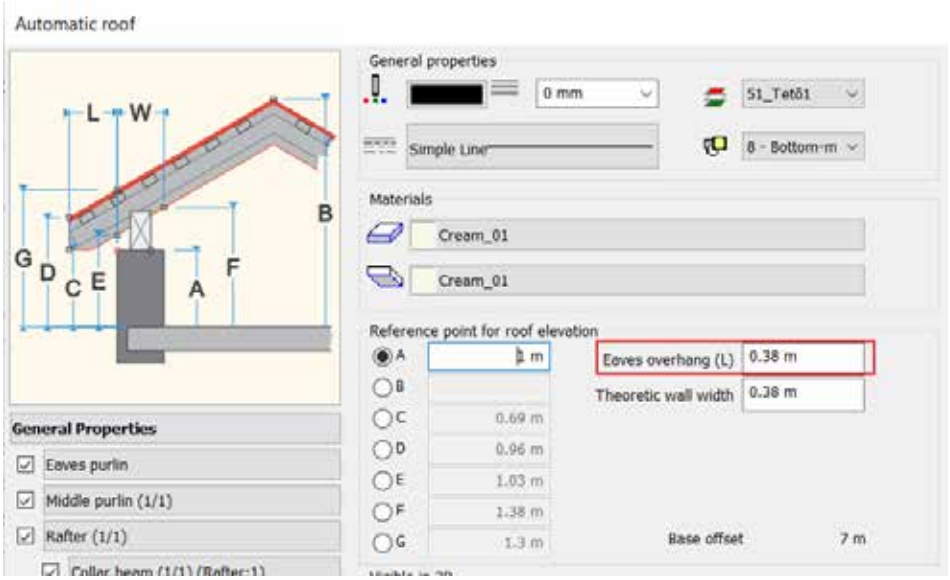


6.4. Auto roof

In the next example we are going to create a roof structure, which is automatically generated.

The roof will be drawn along inner walls; therefore, we have to modify the value of “Eaves overhang” by adding the wall thickness to it. So, the roof will overhang just that much to cover the walls entirely. Please do the followings.

Click on **Ribbon menu / Building / Roof** and select properties with right-click.
Modify the “Eaves overhang” value to 0,38 mm. You have to add the wall thickness to the existing value.



Accept changes by pressing “OK”.

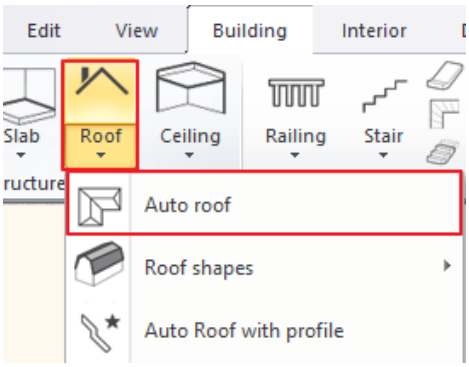
Now draw the roof.

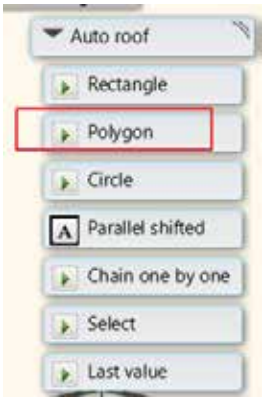
Activate floor plan window.
Click on **Ribbon menu / Building / Roof / Auto roof** command.

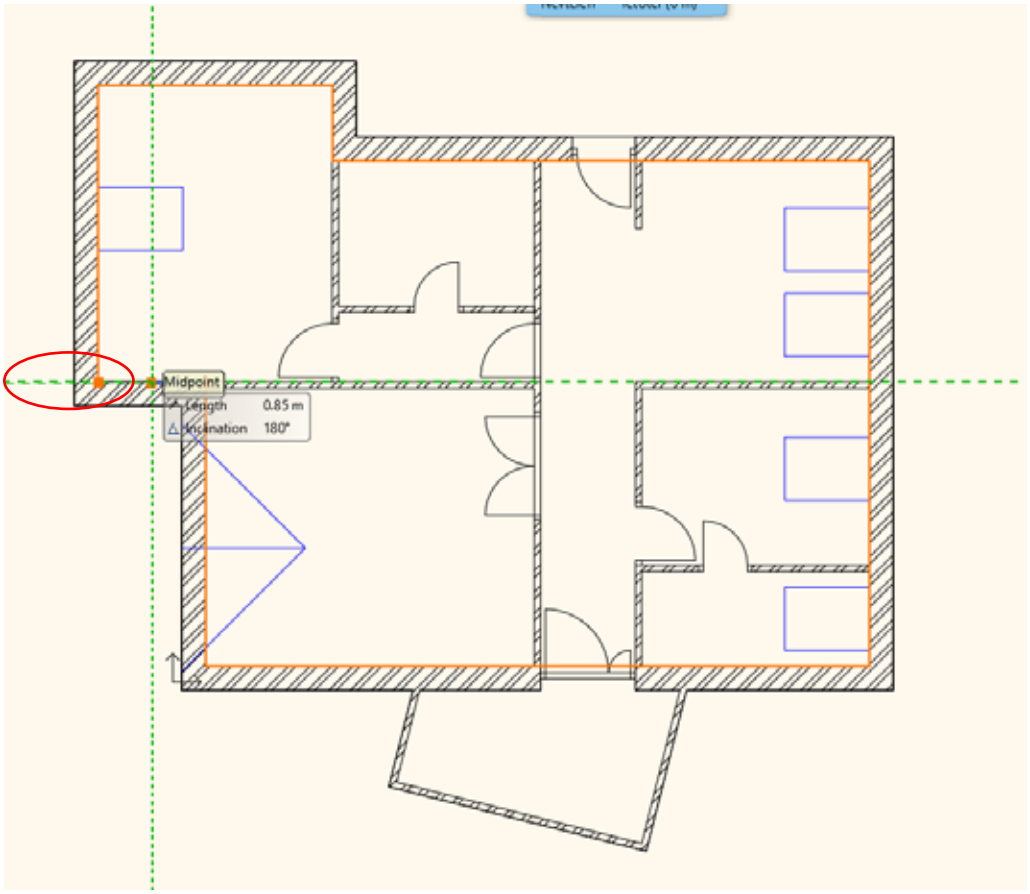
The software basically wants us to select walls. From interior designer point of view, it is easier to draw the contour of the area we want to cover.

For this select the polygon option from the floating menu, and start to draw the contour along the corner points. Click on all corner points except the conservatory area as we have created a roof there in the previous example.

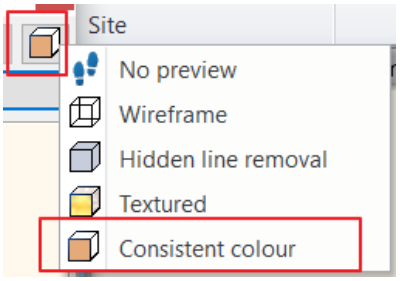
Be careful to click on the proper corner points in places with multiple corner points.





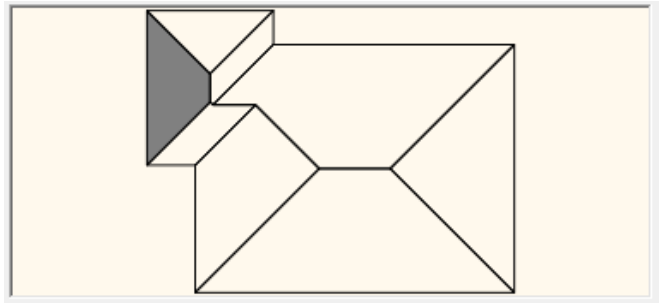


When you finished the program automatically brings up the Automatic roof property window.
Set the 3D preview mode to “Consistent colour” so you can see changes better.

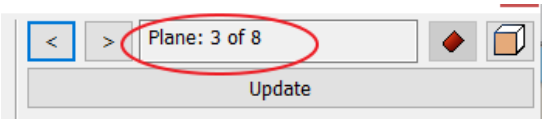


Now let’s see another option how to modify a roof.

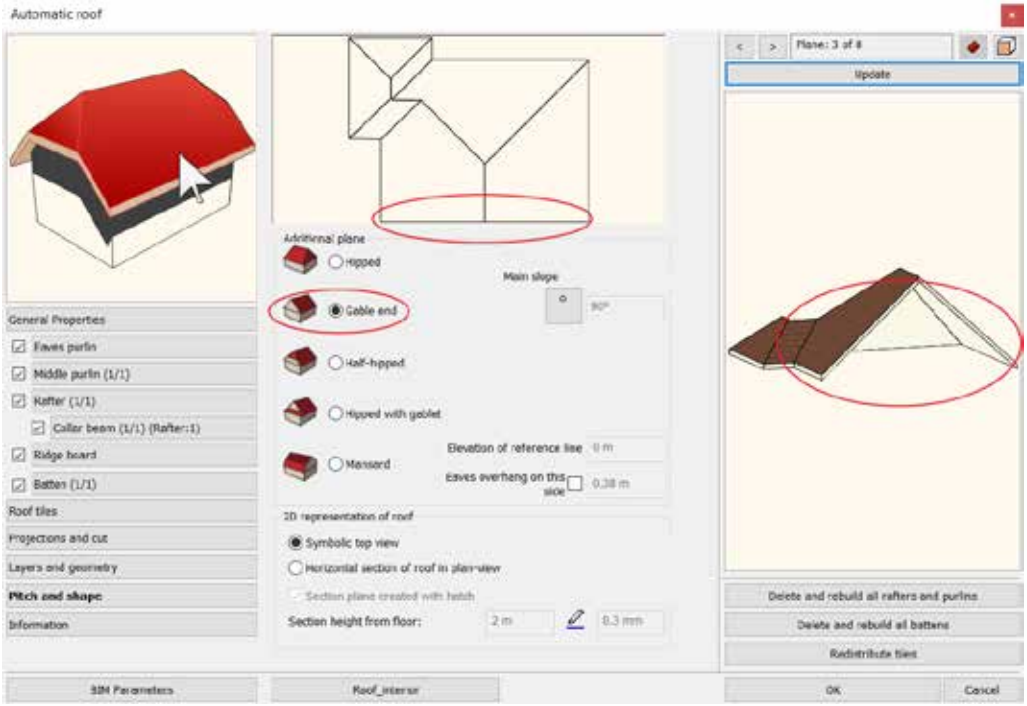
On the right side of the “Automatic roof” dialog window, select from the main categories **“Pitch and shape”.** Here we can modify the roof plane settings.
In the middle section we can find the top view of the roof, here we can click on any roof planes to modify.



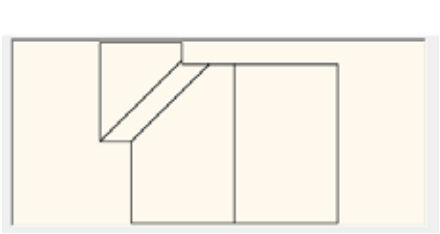
Let’s start working on 3/8 roof plane. You can find the number of roof planes above the Update button. You can easily swap between planes by using arrows next to numbering.



Simply change the roof plane to “Gable end” on 3/8 roof plane. Activate the “Gable end” option and click on “Update” above the 3D preview. The changes are striking. It looks that a roof plane disappears and a saddle type of roof is created instead.



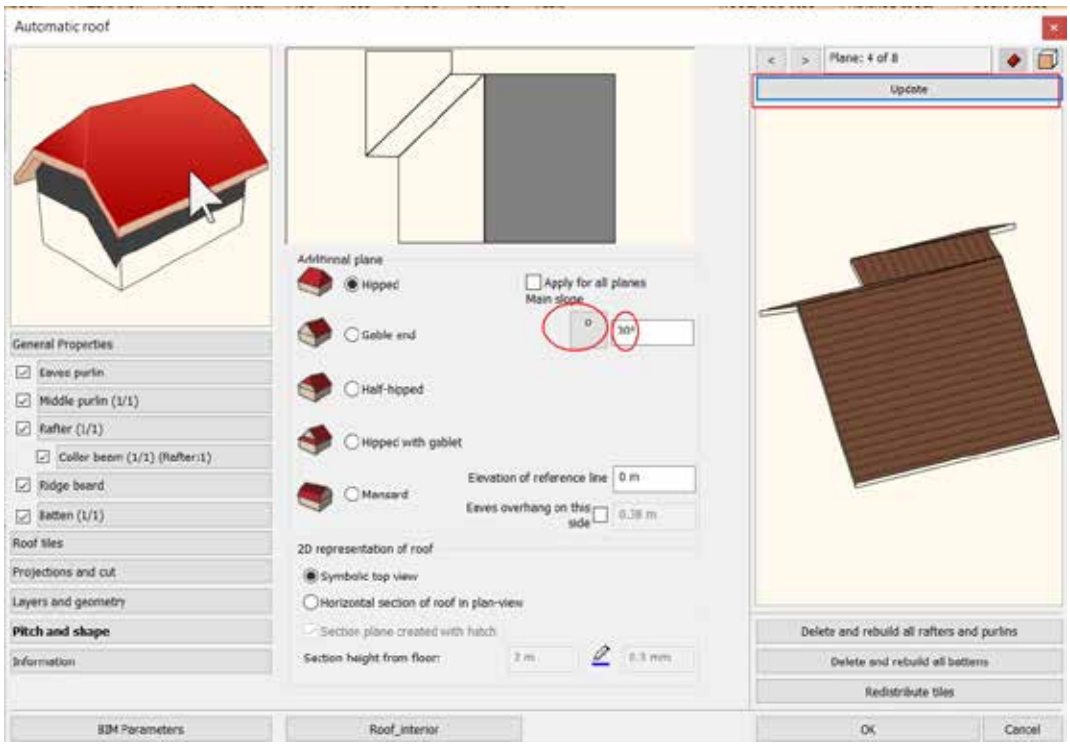
Repeat the same on the 7/8, then 6/8 and finally on 5/8 roof plane to create Gable end roof planes.
When you finished press update. The result immediately is shown.



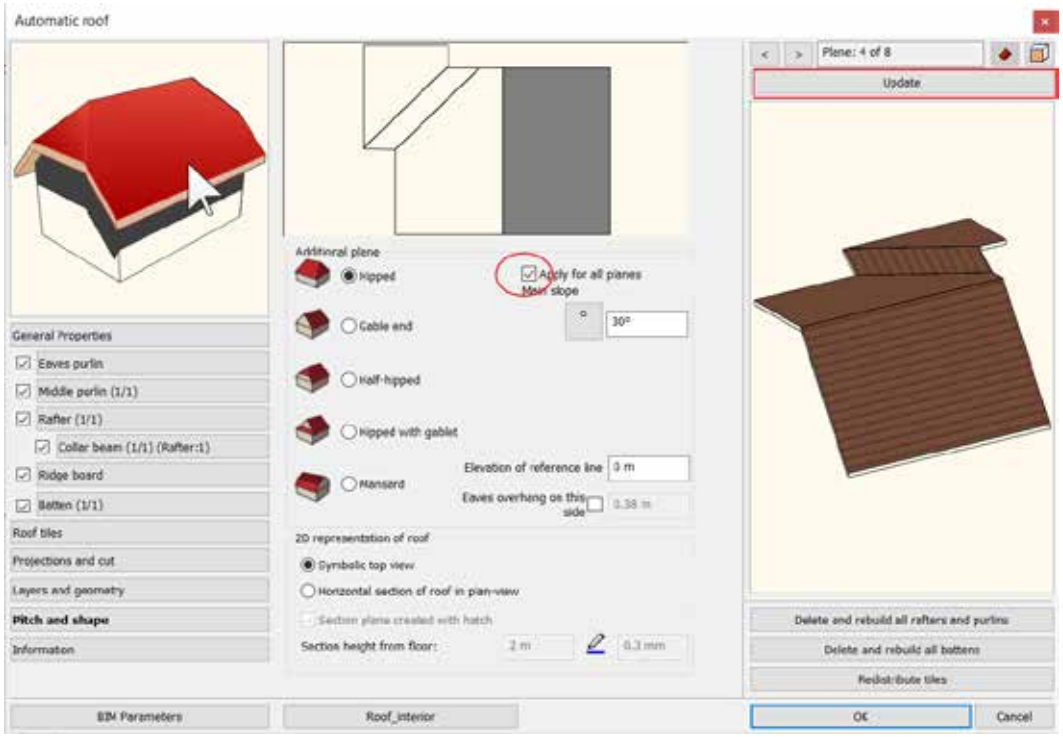
The continuous changes on the roof structure is noticeable. As we turned off some of the roof planes, then roofs that remained unchanged are now connected to each other different way. Different edges, ridges, and valleys are formed accordingly as it is shown on our model.

Often, we want to change the roof inclination. Let’s see how we can do it.

Select a roof plane with a single click.
Under “Main slope” you can define the way how the inclination is to be changed.
In case you are working on an architectural plan, it is worth to set the inclination in degrees. In this instance all you have to do is to enter the value in the field.
In this case enter 30° and refresh the 3D preview. You can see the roof became flatter.



If you want to apply this value on all roof planes, then activate “Apply for all planes” option, then update the preview.



Using degrees for defining a roof plane inclination can be very effective when we are designing the roof structure by ourselves. But if we are working with data collected from the site then we have to define the roof inclination by ourselves this is much more difficult situation. This can be only derived from the measured values such as distances, heights, projections. To avoid these calculations in the program exists an input method.

Click on the option button again. One of the three options is when a right-angled triangle appears.
In essence the software calculates the inclination based on the measured length of a right-angled triangle. As you can see on the picture this value is a/b. Where “a” represents the vertical side and “b” is the horizontal side of the triangle.
You can determine these values based on the values measured at the original site in this ratio pair.

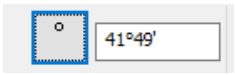
Let’s see an example:

In this case we can measure the knee length 1m, then a vertical 1,7 m and a horizontal 1.9 m length.

Now type 1.7 as the vertical length, then 1.9 values as horizontal length.

It is important to separate values with forward slash, but also enter space before and after it. Now these values will be interpreted as ratio pair not division. The inclination will be calculated accordingly.

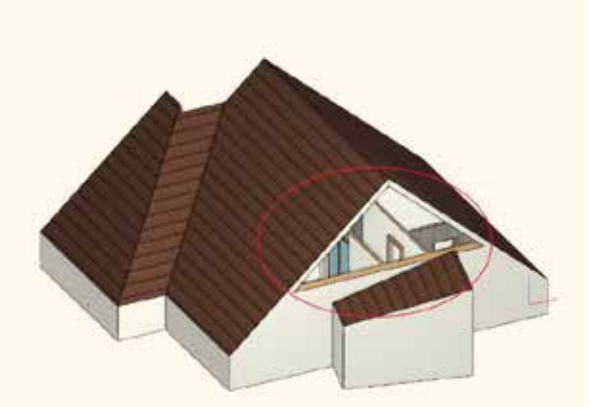
To set the inclination at the same time for all roof planes activate “Apply for all planes”, then update the 3D preview. Now the inclination has been modified. If you click again on the option button, the software calculates the inclination in degrees according to the given values.

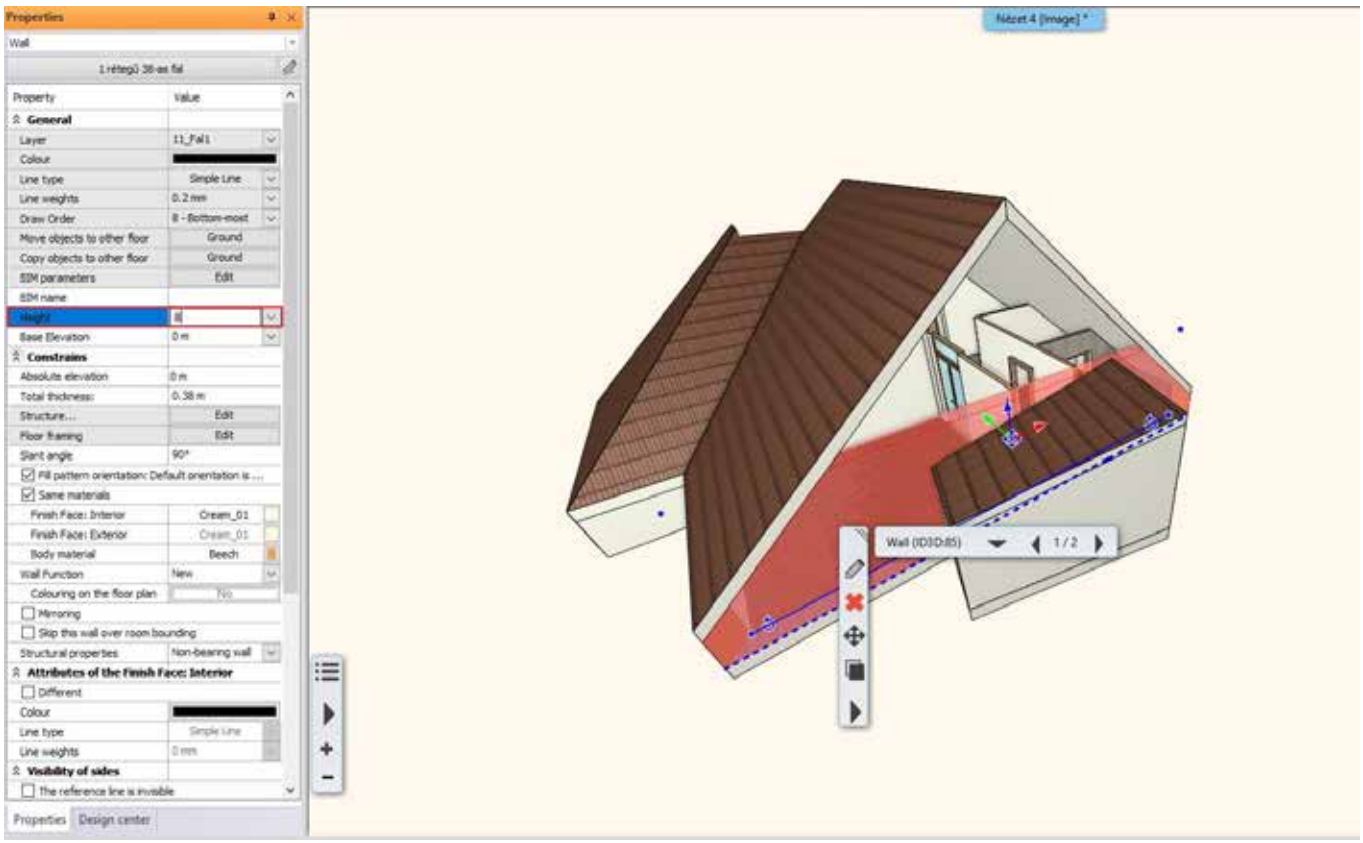


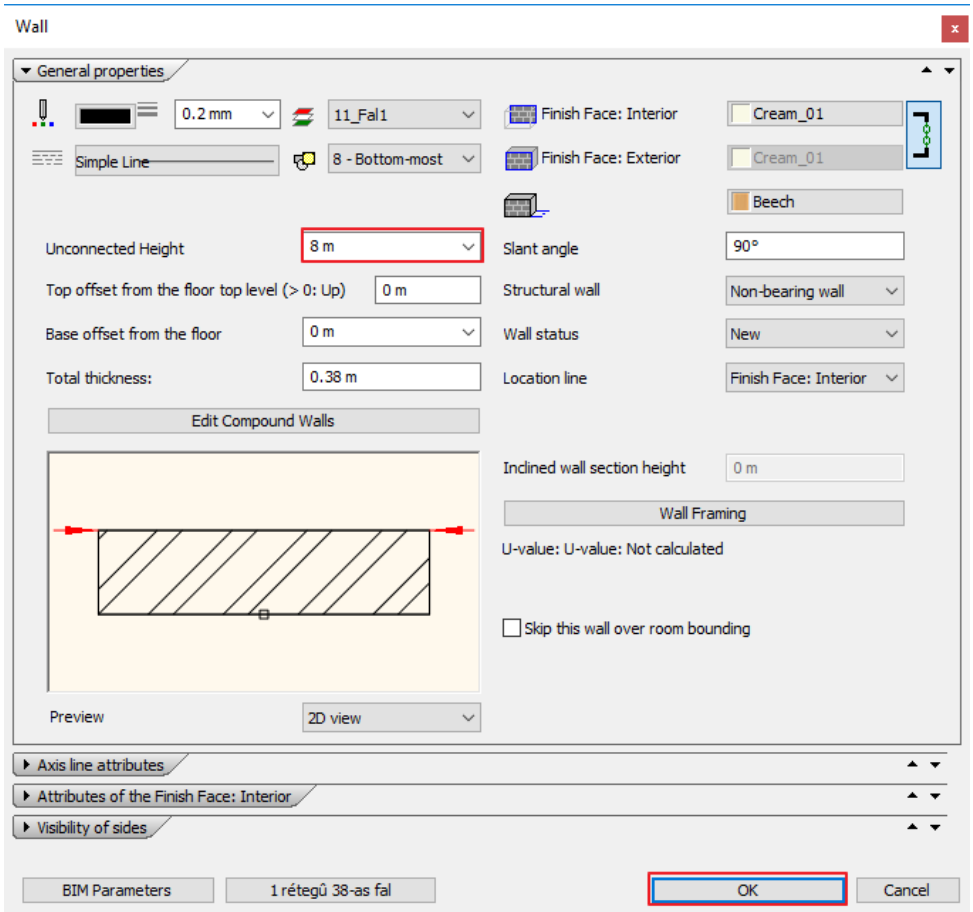
Now close the dialog by pressing “OK”, now the roof is completed.
Finally fix the wall connections, by clicking on the 3D hammer.

As you can see in some cases the walls are not high enough to meet some of the roof planes. Now we have to adjust these values accordingly.

Activate 3D window. Select any of those walls mentioned above.
On the left side under properties change the wall height to that value which might reach the roof top point.
In this example it is 8m. Enter the value and press OK.







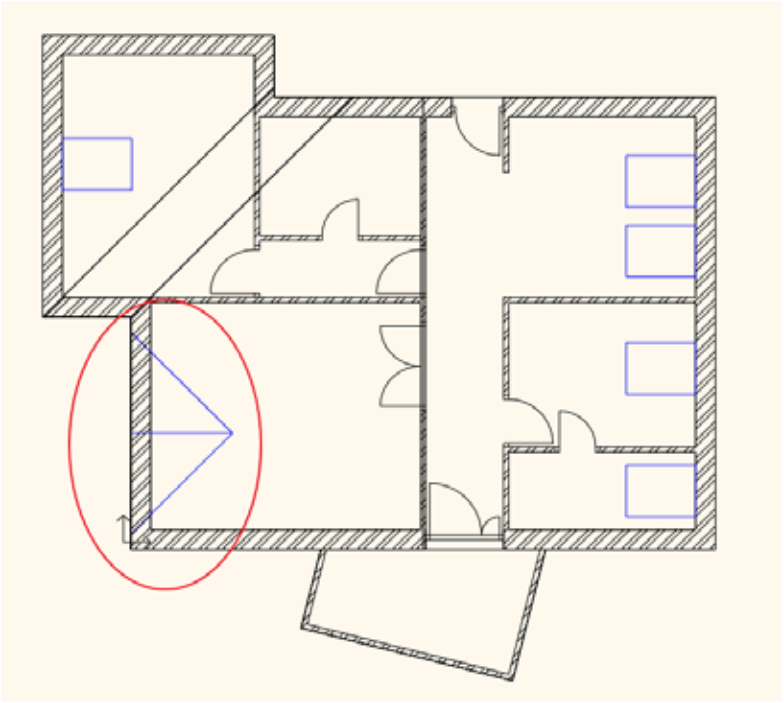
After this modification the roof meets the wall. Due to the roof settings the roof cuts the wall anyway.

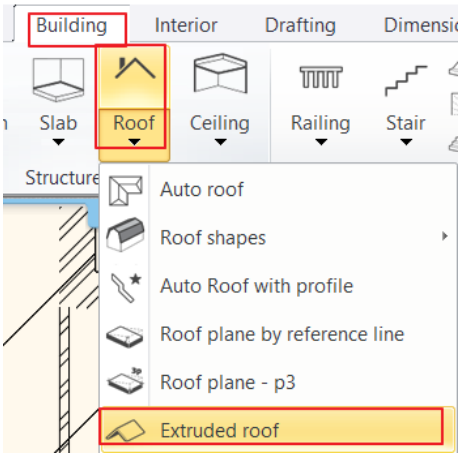
Rotate the model to the opposite side, select all three walls by holding the CTRL key down, and modify heights to 8m on the left side under properties. Hit Enter.

In order to remove the border lines, surface integration is necessary. Use 3D hammer and those will disappear immediately.

6.5. Extruded roof

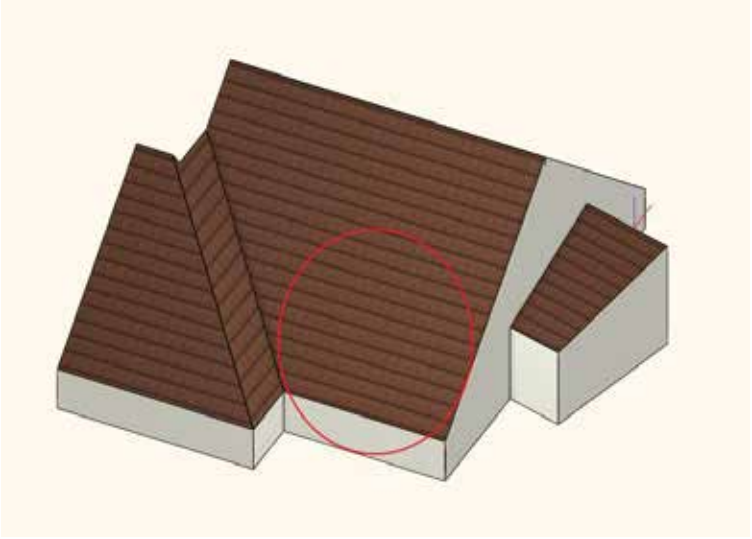
this part we will create an extruded roof. It will be placed on the floor plan marked by blue.





When creating extruded roofs basically there is no need for predefined editing lines, but in our case, those will be very helpful.

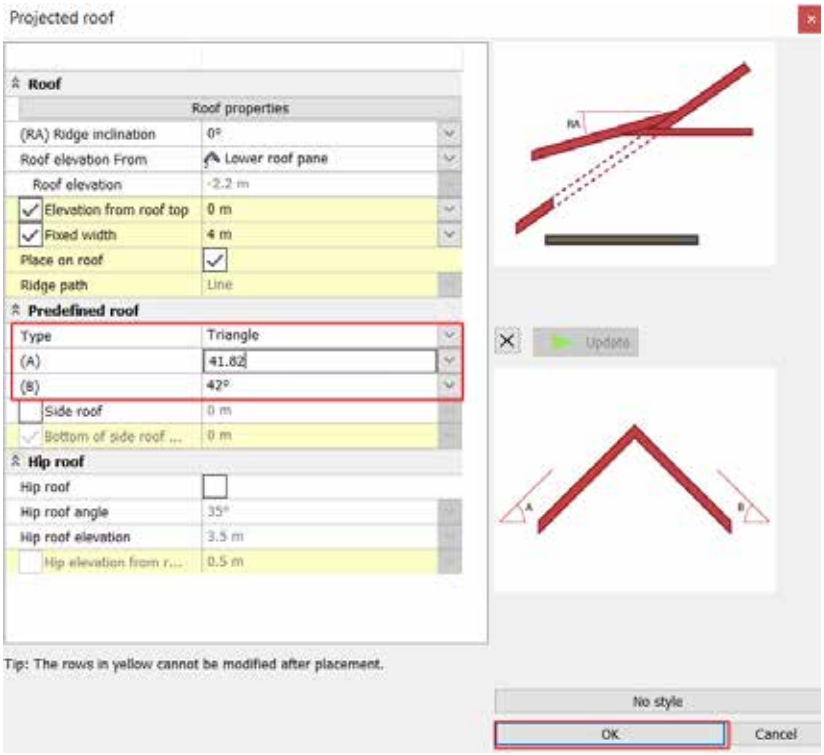
. The 3D window must be activated, rotate the model to see the top roof plane as shown below.

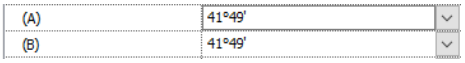


Now go back to the floor plan and activate it.
Select **Ribbon menu / Building / Roof / Extruded roof** command.

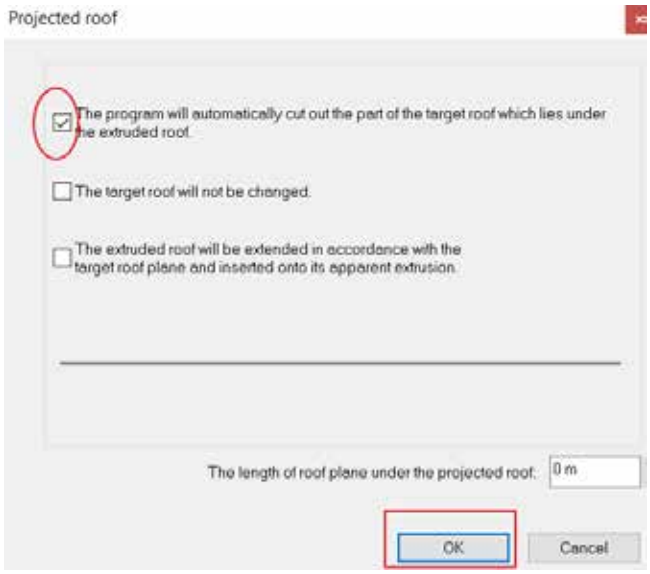
In the pop-up dialog window change the followings:

Under “Projected roof” change the values “A and B” to 41.82°, this will be automatically converted into degrees and minutes.
Leave other properties unchanged. Close the dialog by pressing “OK”.

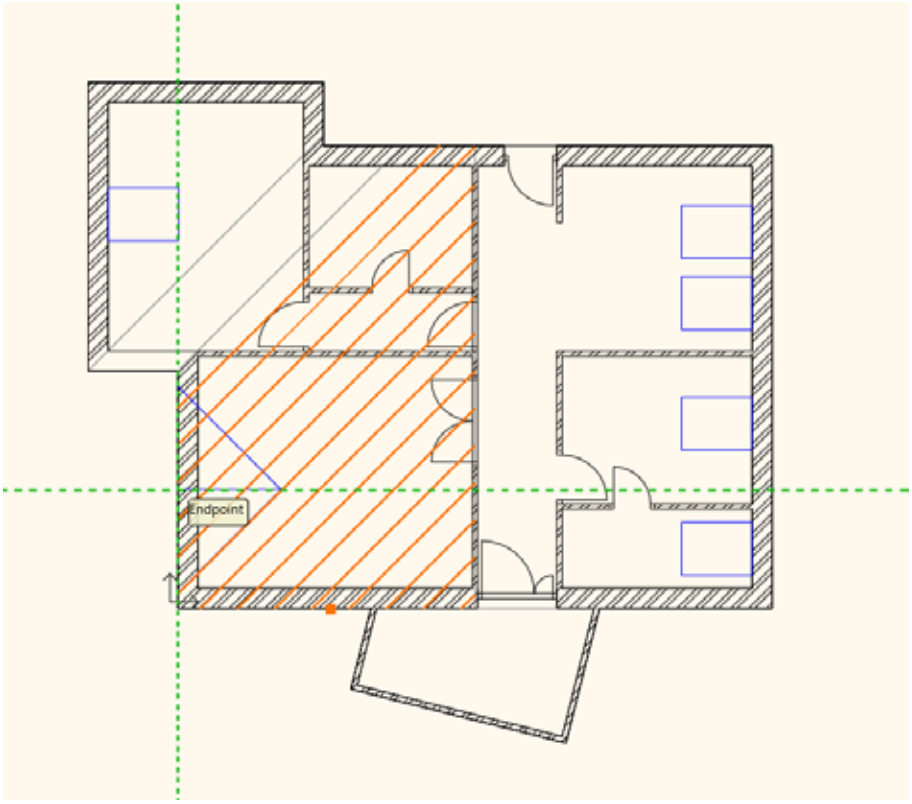




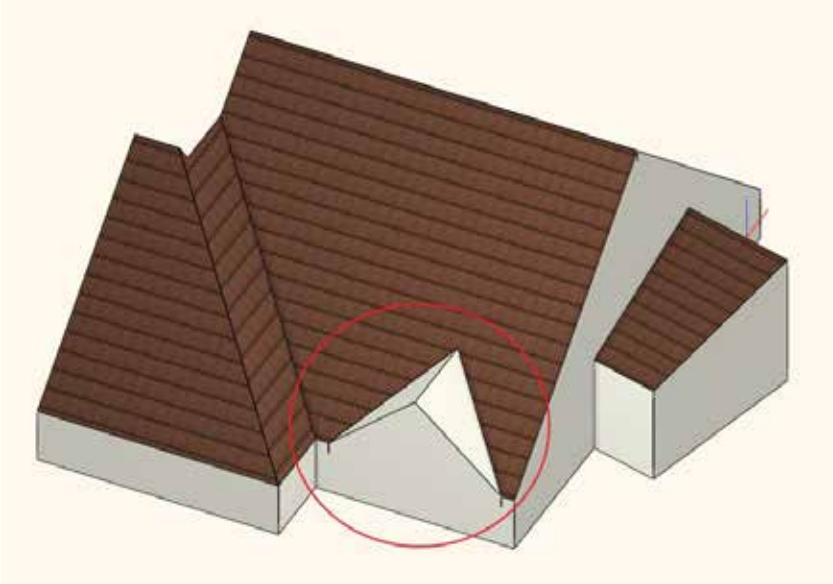
In the pop-up dialog window, you can characterize the extruded roof how to be projected into the main roof. The most common default setting can be found here, when the projected roof creates a cut-out along the contour of the connection underneath it. So, the projected roof is accessible and not a closed roof plane.
Close the dialog by pressing “OK. As you can see the cursor shape has changed.



Next you have to define which roof plane to use for the projection. Click on the eaves lines next to predefined lines.
The software recognized the selected roof plane and the current roof can be moved according to the current settings.
Click on one point and place the projected roof.



Close the dialog by pressing ESC, as we don't need any more projected roofs as per the original floor plan.
Use 3D hammer to generate the 3D model based on the floor plan.



The material and tiles are not the same compared to the previously created ones, in this example we didn't modify those relevant settings which can be found in Projected Roof dialog window under Roof properties. Obviously, these can be changed later as well.

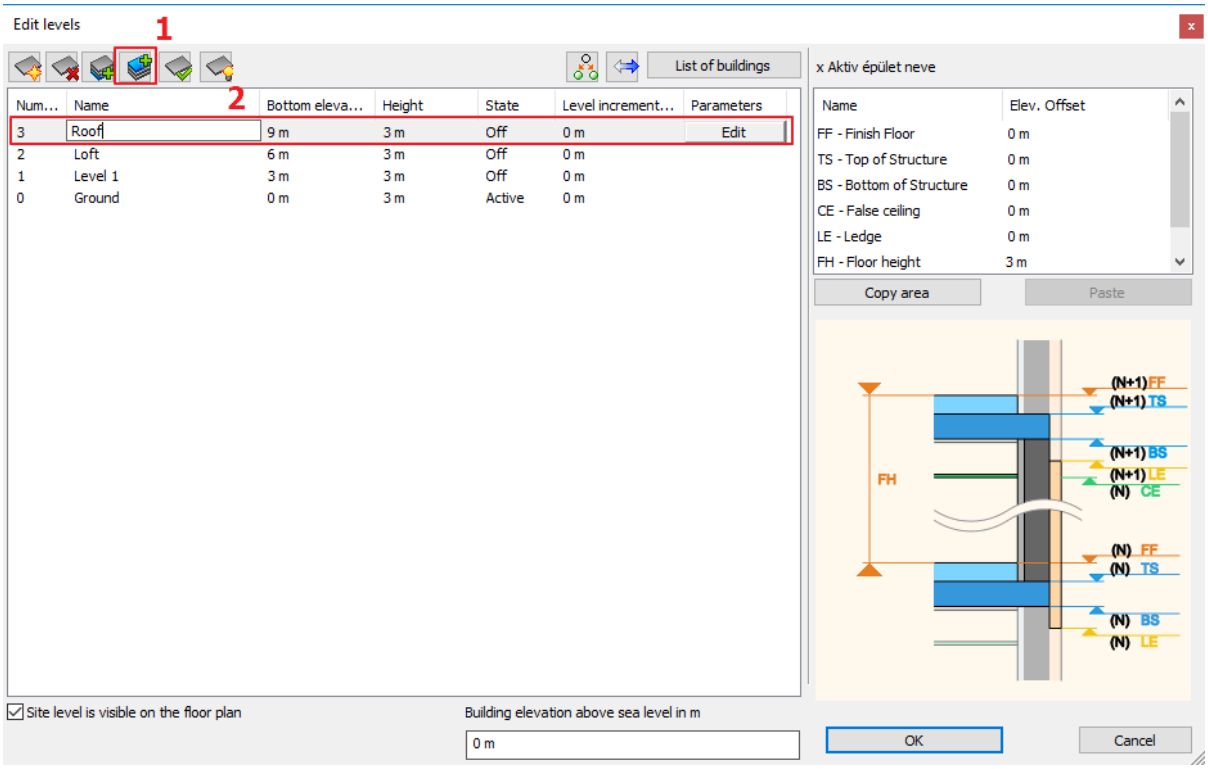
6.6. Loft slab

Now we are going to move the whole roof structure to another level. In this example we are going to use this to eliminate the roof edge lines. This is also useful when we want to work out the fine details of the roof structure in a completely separate drawing.

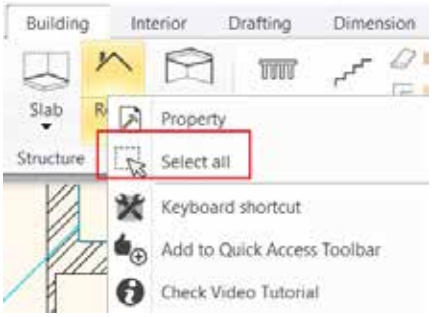
6.6.1. Managing levels

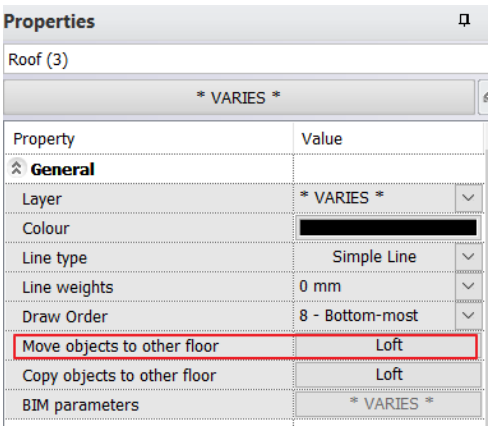
At the moment we are working on the Loft level. We can add new layers in the "Level Edit" dialog window.

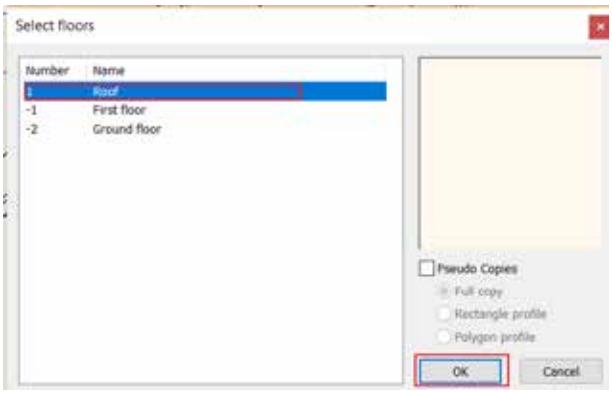
Click on “Loft” tab at the bottom toolbar, then the Edit level dialog window will come up. Here we can find all levels which are here by default.
Insert a new level by clicking on “Add-up” button (1).
Click on the label twice and rename it to “Roof”. We are going to move the roof structure to this level. Doing so now an empty Roof level is created above the Loft where all three roofs can be moved together.
Close the dialog by pressing “OK”.



Select all three roofs by right clicking on **“Roof”** icon **under Ribbon menu / Building**, then “**Select All**” command. As you can see all three roofs are selected in 2D and 3D.
On the left side under properties press the “Loft” button next to “Move objects to other floor” and select “Roof” from the pop-up dialog window, finally press “OK”.

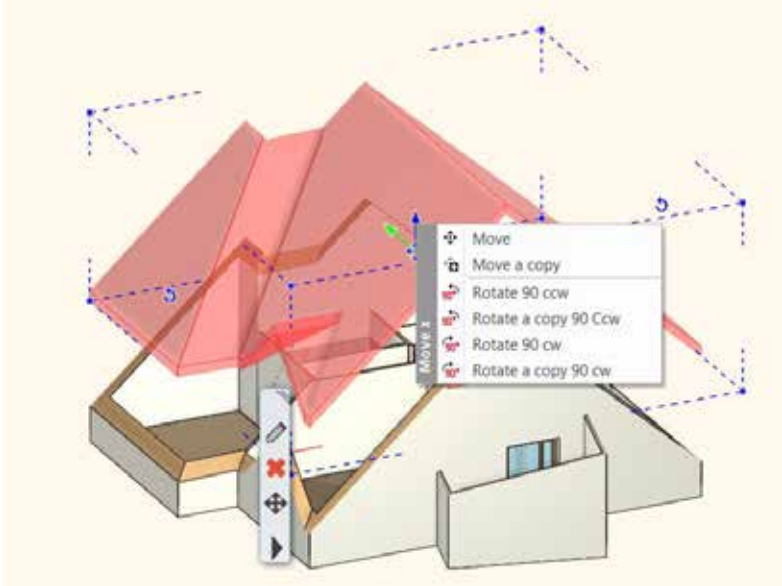




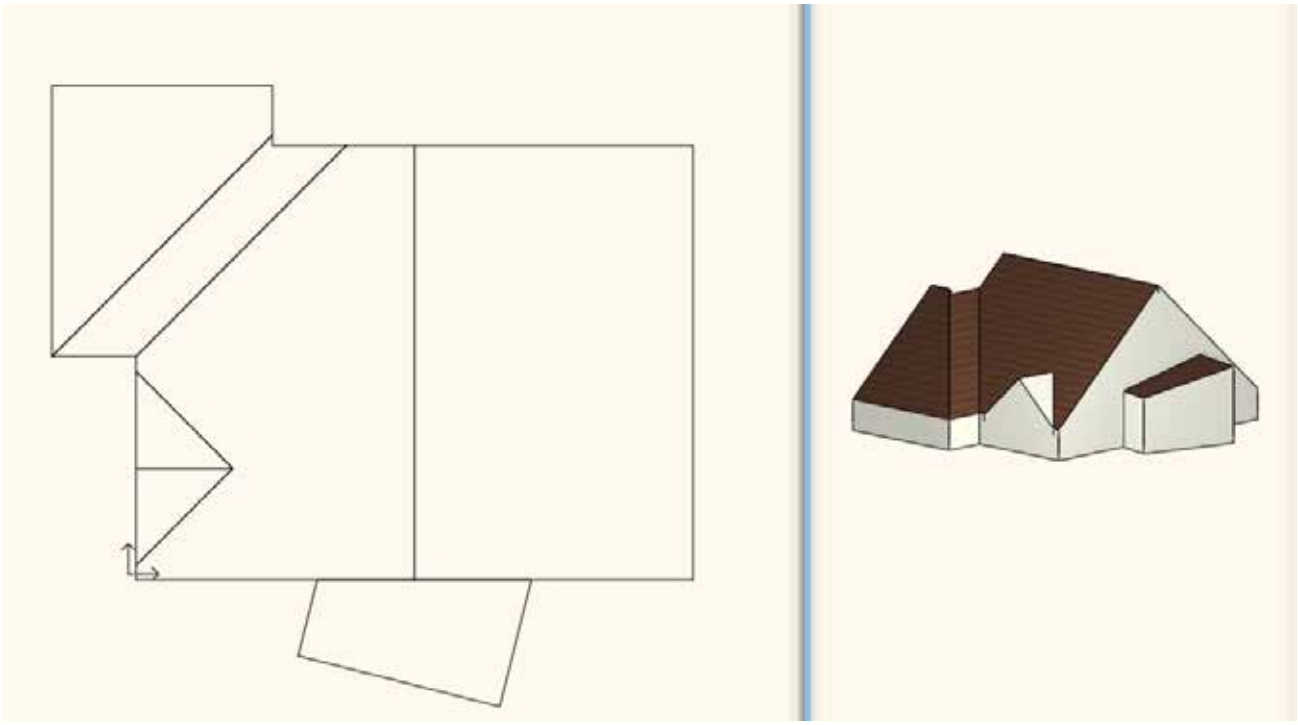


That happened exactly what we were expecting in the 2D window, but in 3D as result the roof is now placed 3m higher. Now let’s move downwards.

You can do this in the quickest way as follows. First select all three roofs in 3D.
Then click on the vertical blue arrow, then select “Move” command.



Move down the roof and type 3m.
Accept changes by pressing Enter, now the roof is placed correctly in 3D window as well.

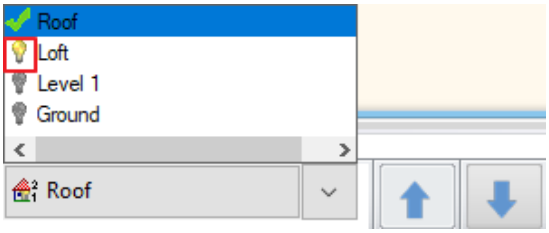


Activate the floor plan window. You can easily swap between levels (Roof, Loft) by using the blue arrows at the bottom toolbar. These levels now can be managed as completely separated items.

6.6.2. Creating Slab

Now we will create the slab on the Roof level.

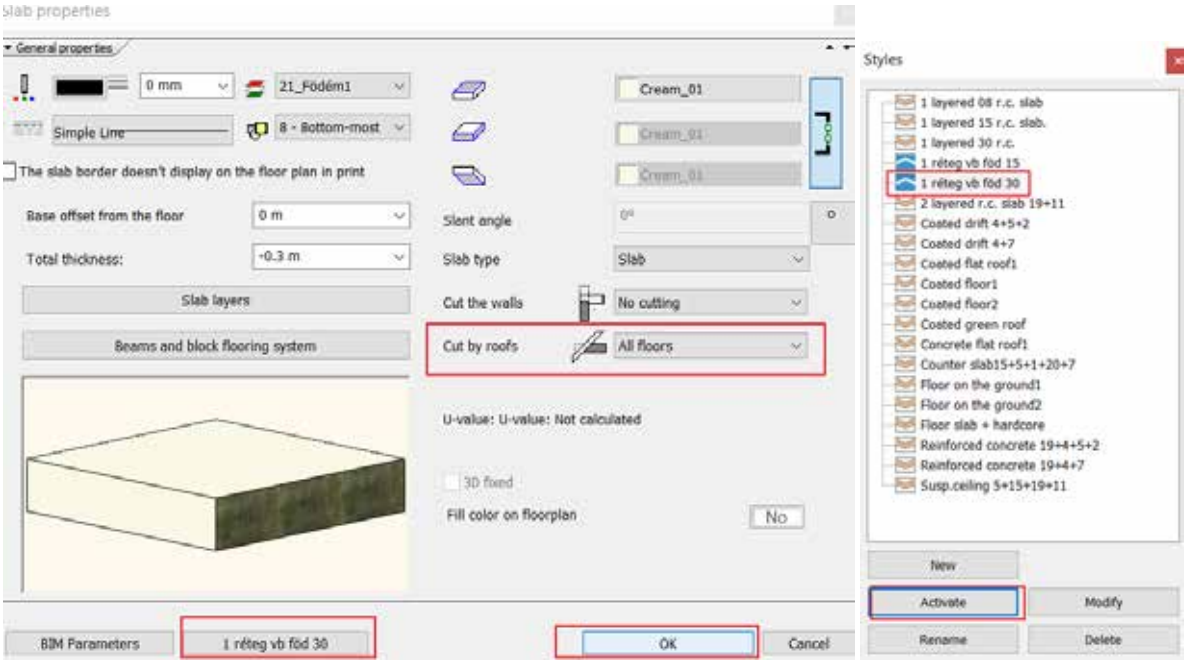
For this we have to move to Roof level by using blue arrows.
In order to make visible it for editing later you have to choose the level down below, select the arrow next to Roof and open the level list.
Click on the bulb icon next to Loft. Now it has changed to yellow.



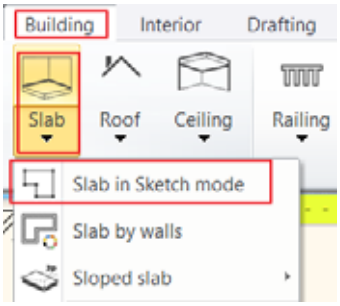
On floor plan window the effect of this modification can be immediately seen. This method allows you to see different levels including the level you are currently working on.

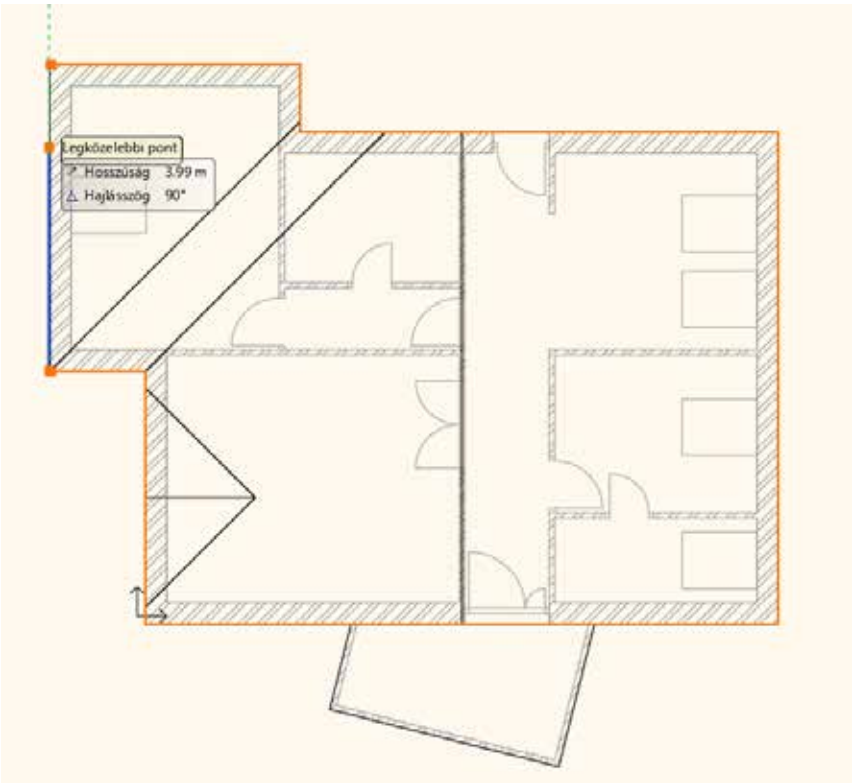
Before creating the slab, check its properties.

Go to **Ribbon menu / Building / Properties / Slab** tool.
Now the Slab properties window will come up. Now select a new wall style. For this click on the currently use style name at the bottom. On the right side select from the style list the 300 mm thick reinforced concrete slab “1 layered r.c. 30 slab“.
Click on “Activate” button. Under properties all relevant details have changed, which are needed for later.
is very important to set “Cut by roofs” option to “All floors”. So, if the slab meets the roof structure, the roof overlay will be automatically cut off by the roof.
Close the dialog by pressing “OK”.



Draw the slab by using **Ribbon menu / Building / Slab / Slab in Sketch mode** command.
Click on the outer corner points except the conservatory and press Enter.
The slab is ready.





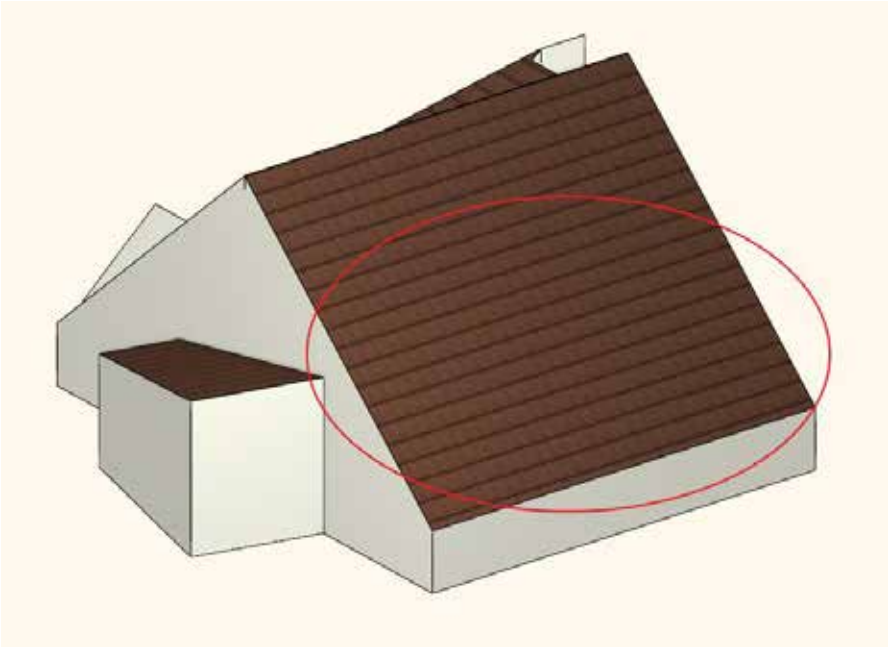
6.7. Placing openings

Now we will place windows on this building.

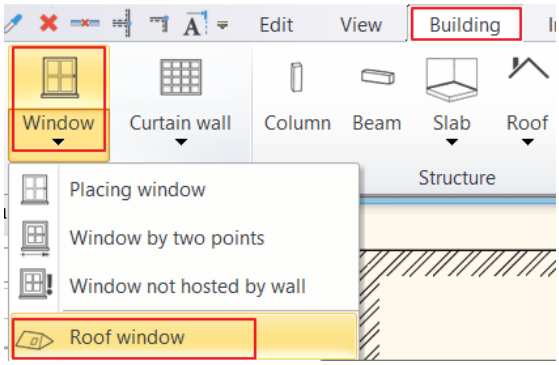
6.7.1. Placing roof window

Let's start our work with placing roof windows.

Activate 3D window rotate the model to make clearly visible the roof plane is shown below:



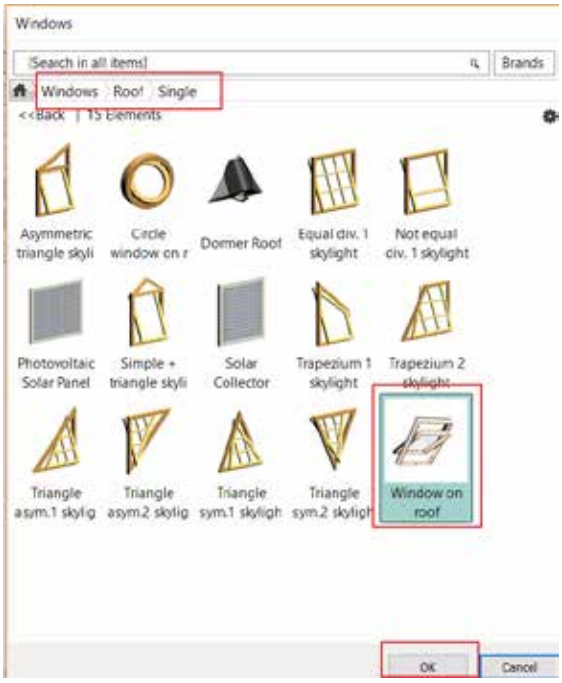
Click on floor plan window and activate it.
Select **Ribbon menu / Building /Window** and **Roof Window** command.



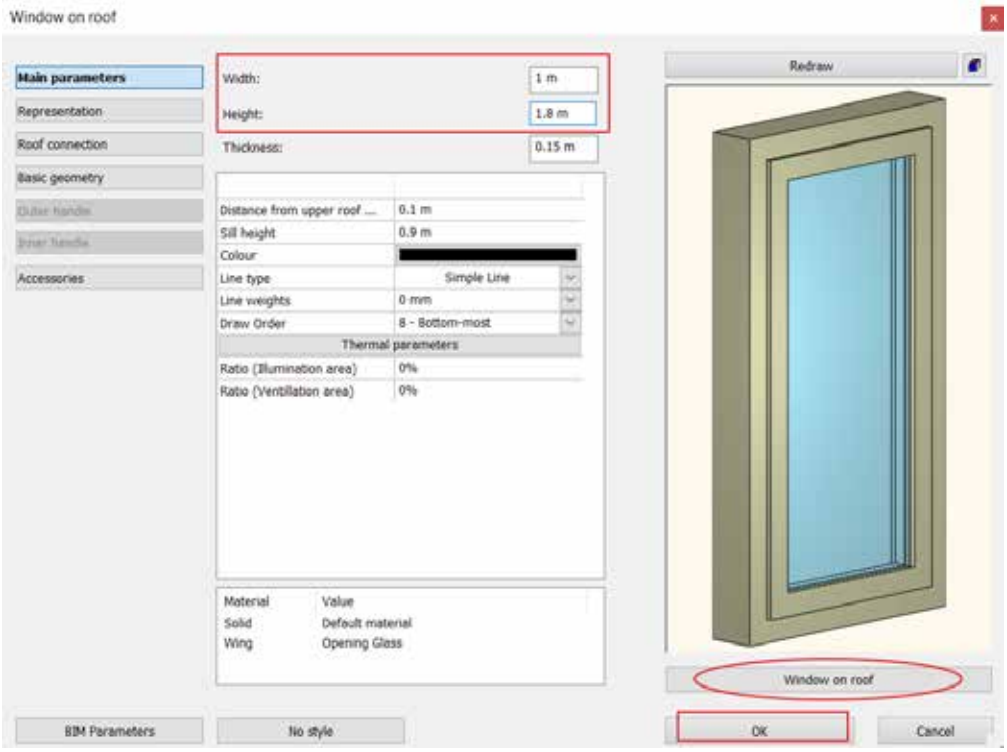
The shape of the cursor has changed. Select that roof plan on which you want to work where you like to place roof windows.
The program immediately brings up “Window on roof” dialog, here you can define window properties.

It is important to select roof window. This makes sure that roof windows will be correctly represented on floor plan and 3D model.

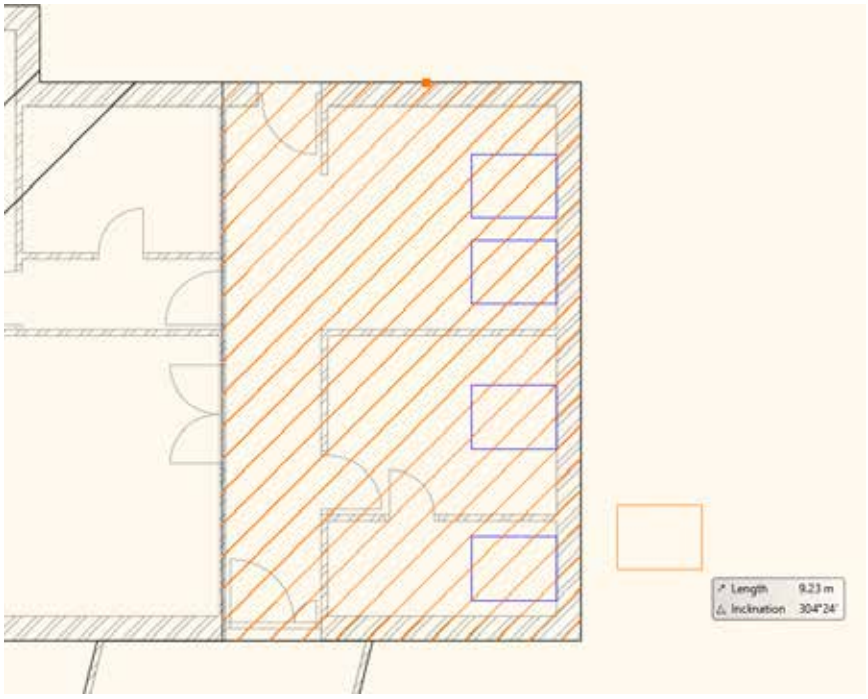
According to the current example, the window type should be a roof window. For this click on the “Default” button below the preview, this way we can have an access to the window library.
Select from Window / Roof / Single folder “Window on roof” type.

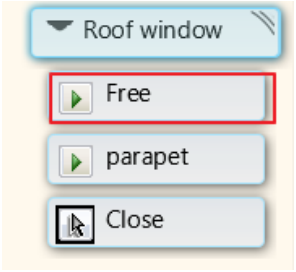


The width 1m, thickness/ height 1.8m.
Close the dialog by pressing “OK”.

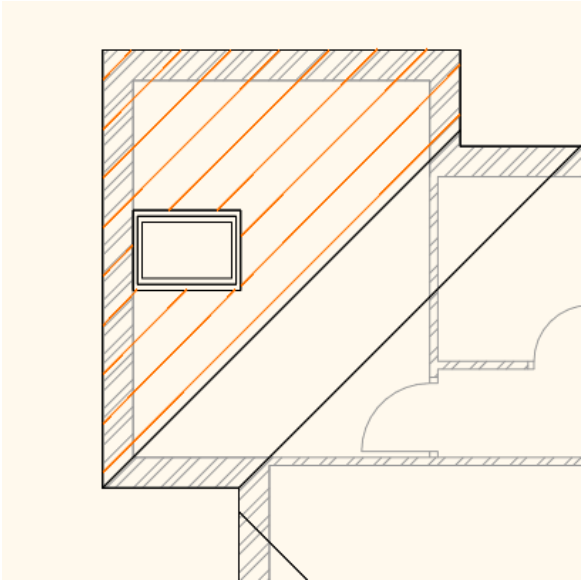


Now place windows.
By default, the software places roof windows at a fixed height which not the case now, therefore choose “Free option” from the floating menu on the right.
Place four windows with one click to anywhere you like. You can follow the changes in 3D window too.





If you want to place window on a separate roof plane, then press Enter to close the command and select the new roof plane.
Close the pop-up dialog “Window on roof” dialog by pressing “OK”, then place the window.

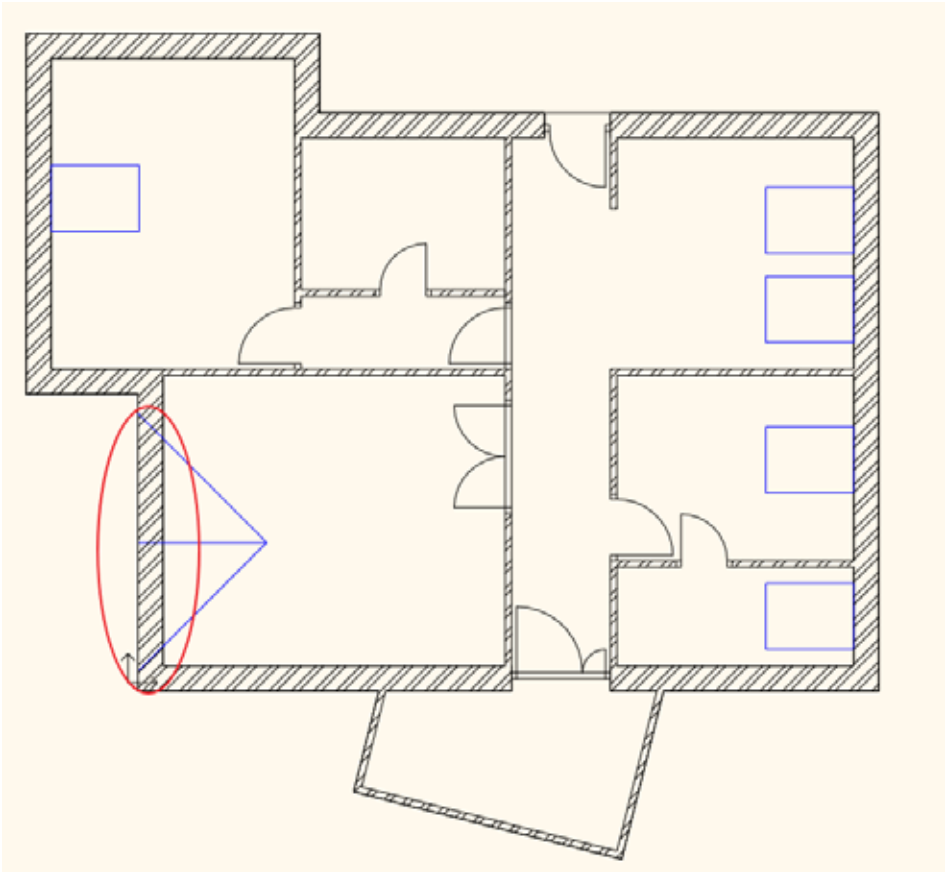


Close the command with double Enter.

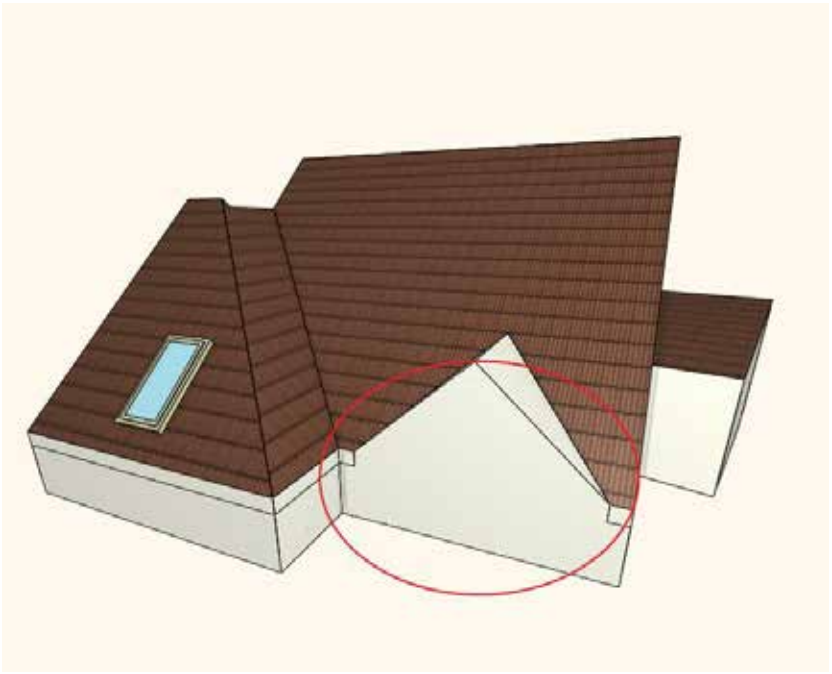
6.7.2. Place customised windows

Now we are going to create a customized window.

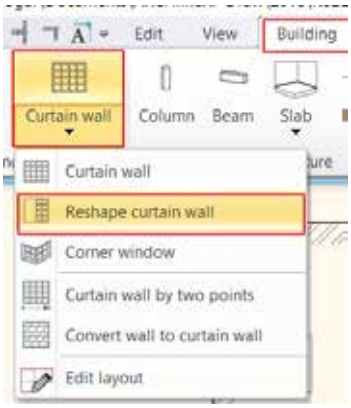
To create the window first we have to move to Loft level. We place the window on the wall is shown on the picture below:



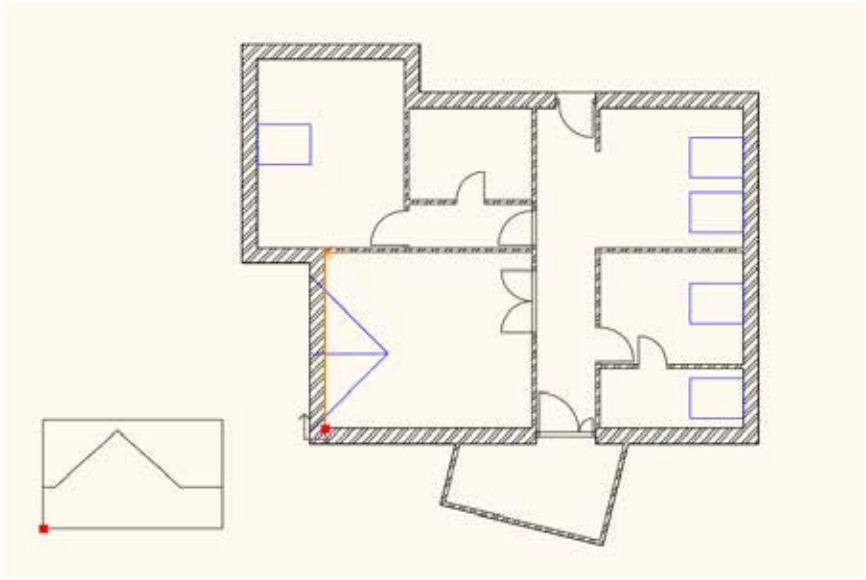
Activate the 3D window and change the perspective to an external view.
Rotate the model to see the selected wall properly.



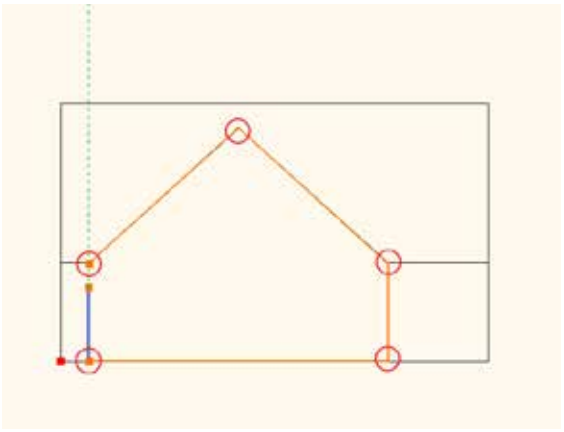
Activate the floor plan window.
Go to **Ribbon menu / Building / Curtain wall** and “select **Reshape curtain wall**” command.



Now select the inner side of the wall with one click, then place its layout, but not to overlap the floor plan.
Now a question will pop-up: “Do you want to keep the layout of wall?”- answer: YES.
An alert message will appear asking to specify a profile in order to describe the frontal shape of the curtain wall. Please press “OK”.



Click around the shape is shown below:



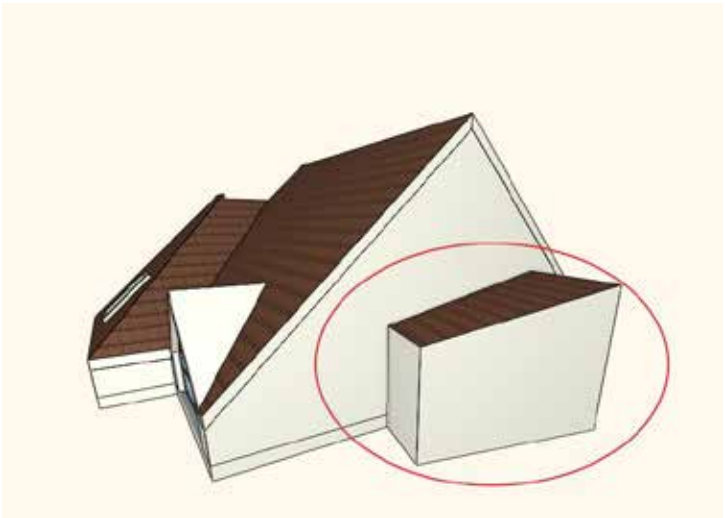
When you close the polygon “Curtain Wall” dialog window will appear, here you can customize the window.
At the moment we are going to keep the settings, close the dialog with “OK”.
The curtain wall now is visible on the floor plan and 3D window.

The mullion can be modified which we will demonstrate in the following example. Now close the command with ESC. Now the customized window is ready.

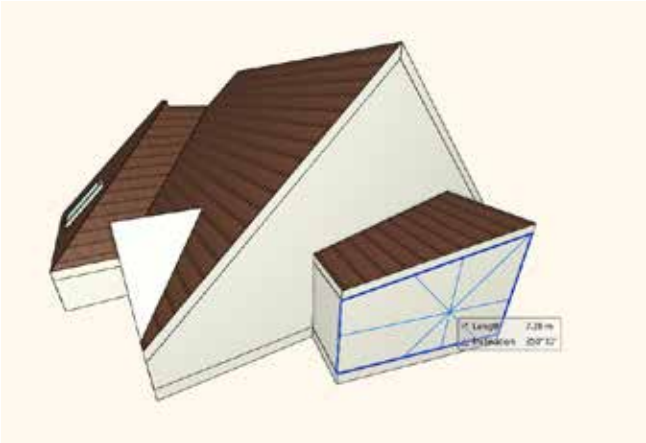
6.7.3. Conservatory with curtain walls

The last openings that will be placed in this project will transform the walls of conservatory into curtain walls.

Activate 3D window and rotate the model to clearly see the conservatory.

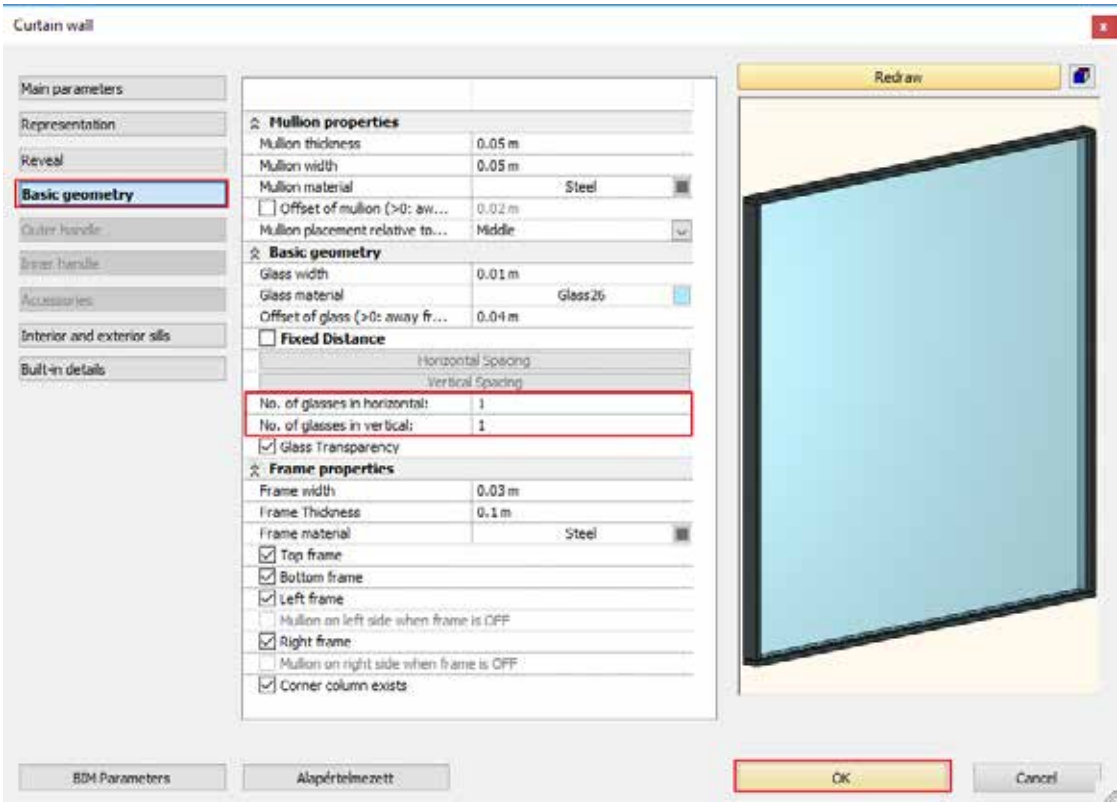


The modification can be done in 2D and 3D window.
Select **Ribbon menu/ Building / Curtain wall / "Convert wall into curtain wall"** command.
As you move the cursor you can see that the software recognizes wall planes. Click on one of the conservatory walls, then it turns into curtain wall with the current settings.
Modify other walls.
Close command with Enter, now the conservatory has glazed walls.

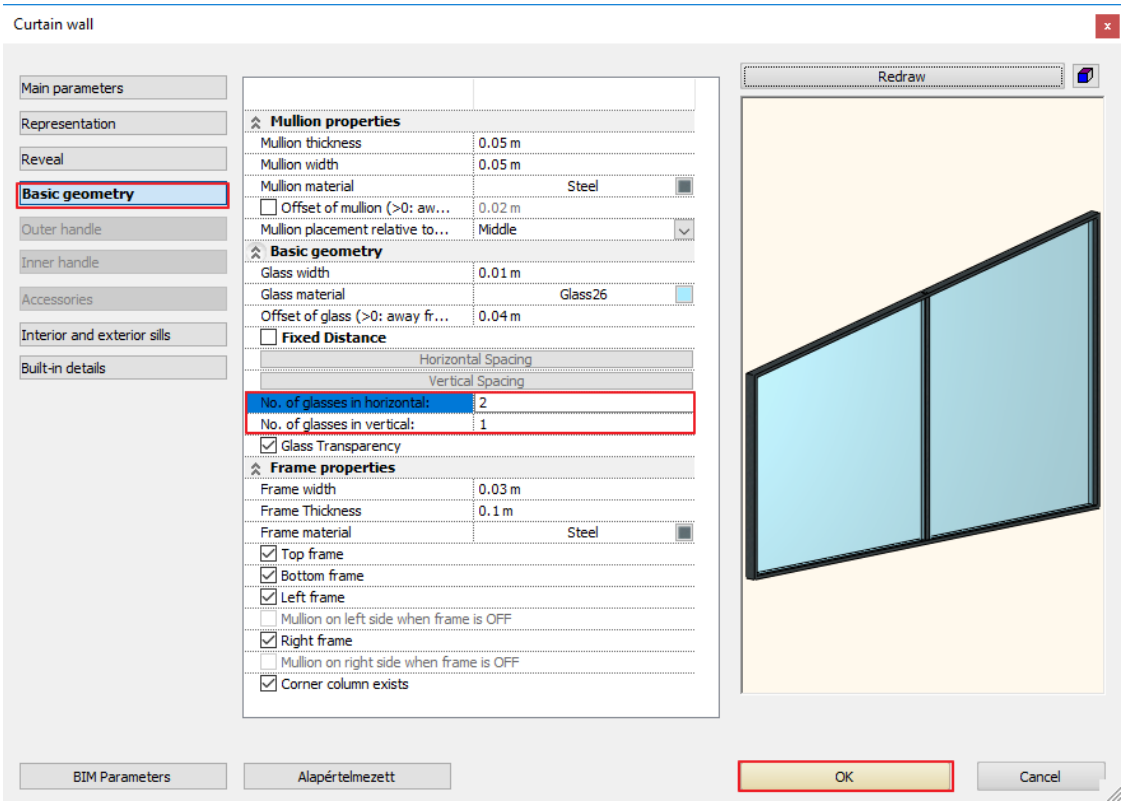


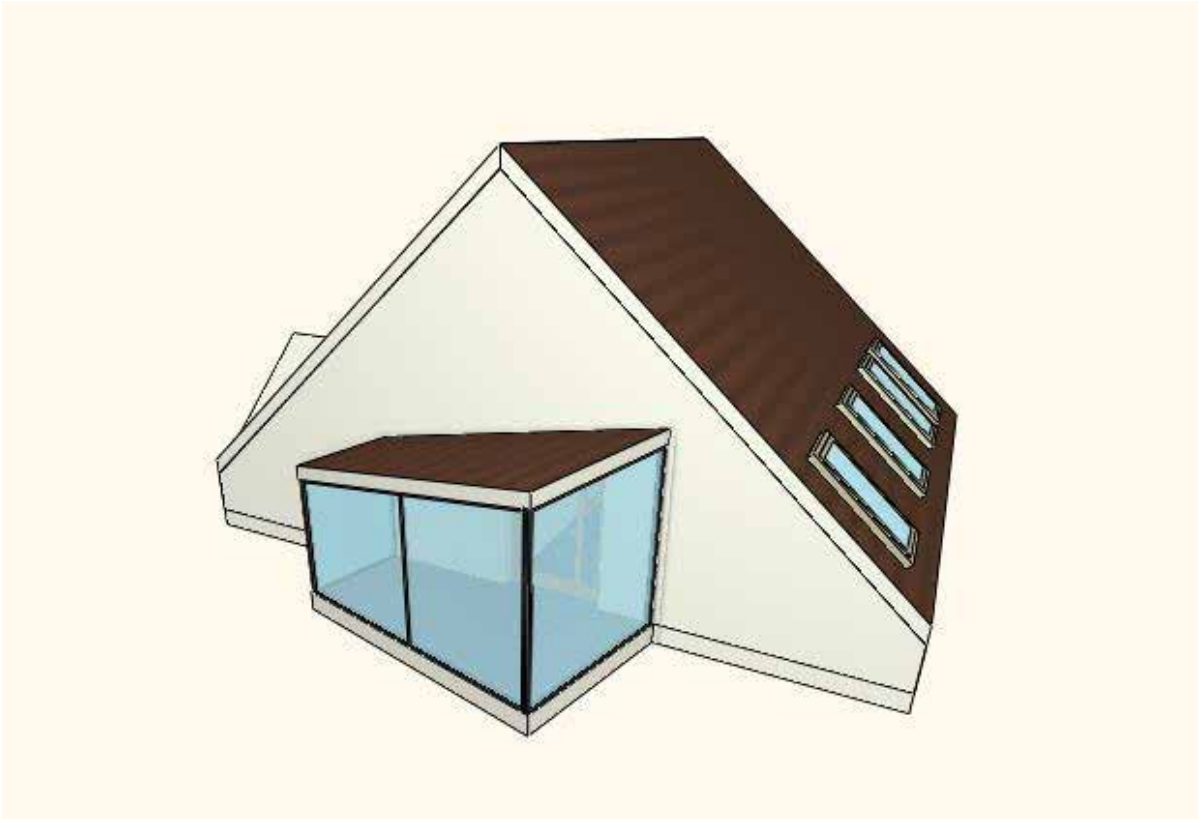
Let's see an example how to customize curtain walls.

Select the curtain wall on the left side and open its properties.
Click on "Basic geometry" tab. On this tab you can define Curtain wall properties that are related to divisions, representation and even the geometric representation of the window.
In this example we modify only one thing - the division.
Now change the number of glasses horizontal and vertical to 1-1, then press OK to close the dialog.



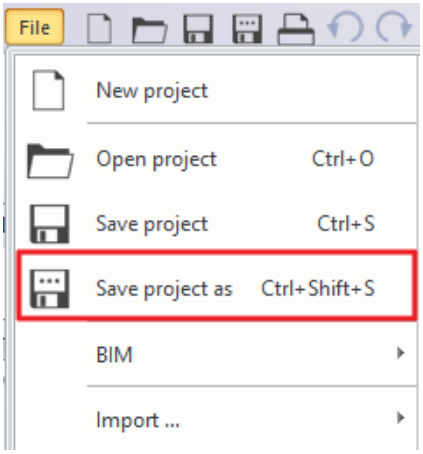
Repeat the same on other walls.
Finally, open properties again and change the number of glasses in horizontal to 2.
Close the dialog with "OK" and now the conservatory is ready.


Curtain wall
Main parameters
Representation
Reveal
Basic geometry
Outer handle
Inner handle
Accessories
Interior and exterior sills
Built-in details
Mullion properties
Mullion thickness 0.05 m
Mullion width 0.05 m
Mullion material Steel
Offset of mullion (>0: aw... 0.02 m
Mullion placement relative to... Middle
Basic geometry
Glass width 0.01 m
Glass material Glass26
Offset of glass (>0: away fr... 0.04 m
Fixed Distance
Horizontal Spacing
Vertical Spacing
No. of glasses in horizontal: 2
No. of glasses in vertical: 1
Glass Transparency
Frame properties
Frame width 0.03 m
Frame Thickness 0.1 m
Frame material Steel
Top frame
Bottom frame
Left frame
Mullion on left side when frame is OFF
Right frame
Mullion on right side when frame is OFF
Corner column exists
Redraw
BIM Parameters
Alapértelmezett
OK
Cancel



Workshop 7: Visual design

7. Workshop: Visual design



7.1. First steps

The knowledge and acquisition of different tools of visualisation is a basic demand to represent our project and also to impress our clients.

You can learn the following conception:

- Creating animation
- Creating look around animation
- Creating Panorama 360

Open your browser and watch the following video tutorial:
www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-2/visualization-interior-level-2

Recommendation:

To understand and master the lesson, you need to know the basics. Therefore, we highly recommend to look through the "Rendering" workshop training material, which can be found within the Preliminary course materials. Also, you can find the video tutorials here: www.archlinexp.com/education/tutorial-videos/archline-xp-interior-level-1/rendering-interior-level-1

Start:

Open the following project:
C:\Users\Erika\Documents\ARCHlineXP Draw\2018\Course_Intermediate\7_Visual\Visual_Design.pro

Save project

Before you start working on the project, save it under a new name.
Select **File / Save project as** command, rename the project and define the folder you want to save it.

7.2. Creating animation

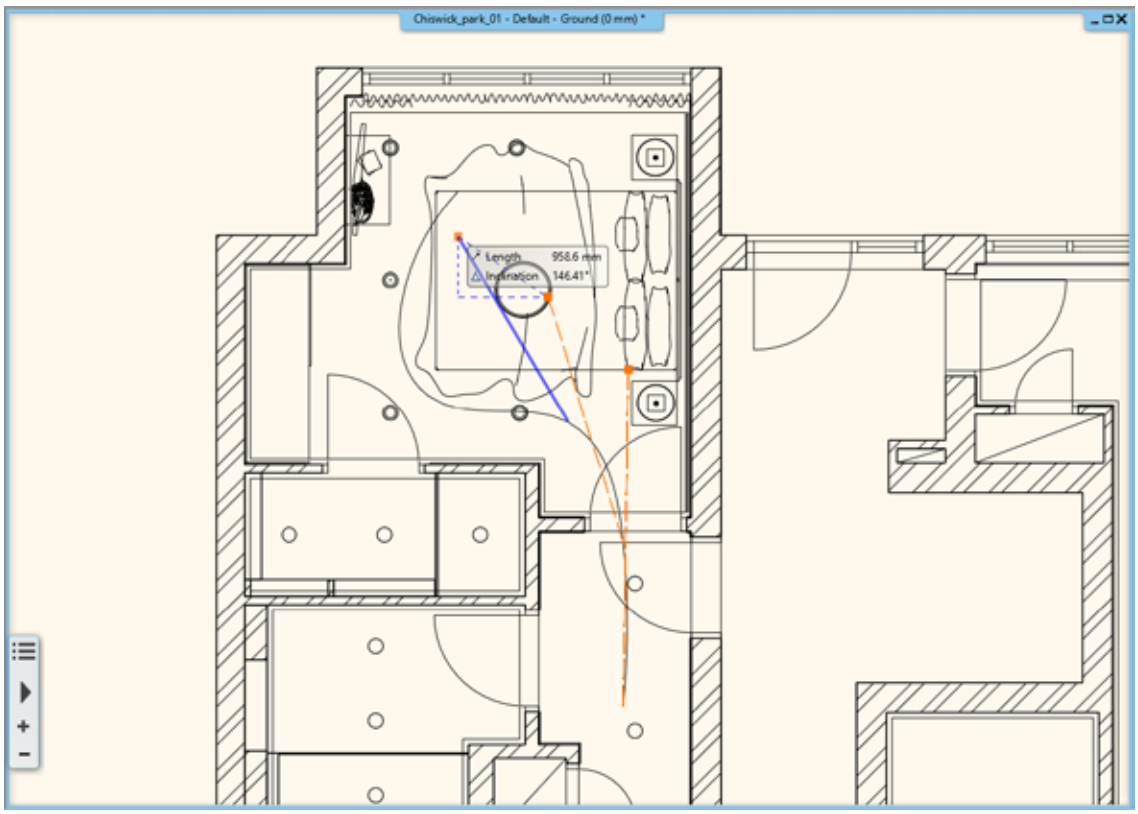
Using Animation tools, we can record our plan with the help of "Walk-in" animation.

Click on **Ribbon menu / VIEW/ Animation / Path / Define path** command.

Click to define tangent points on the floor plan.
To close the command hit Enter.

When you finished next you have to define the camera view point. It is recommended to choose the forward-looking camera view (not to the left or right looking camera views) to result better quality animation.

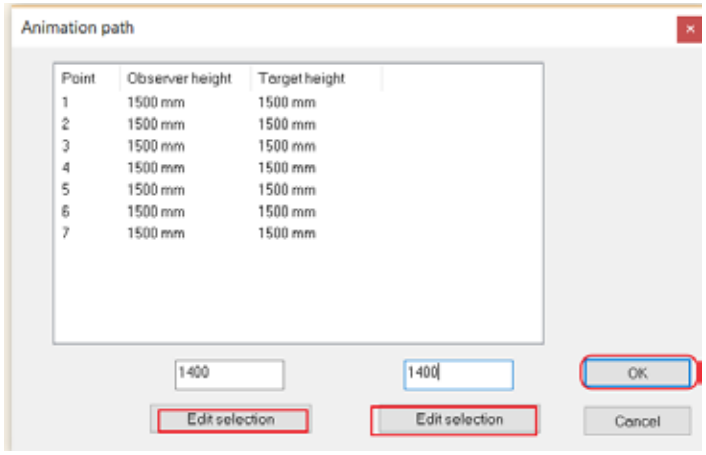
Click to define observer points that you look at from the animation tangent points.



To finish press Enter.

After pressing Enter in the pop-up dialog window you can change the height of the camera view point one by one or selecting all at once. It is useful to set the height of the observer and tangent points at the same height.

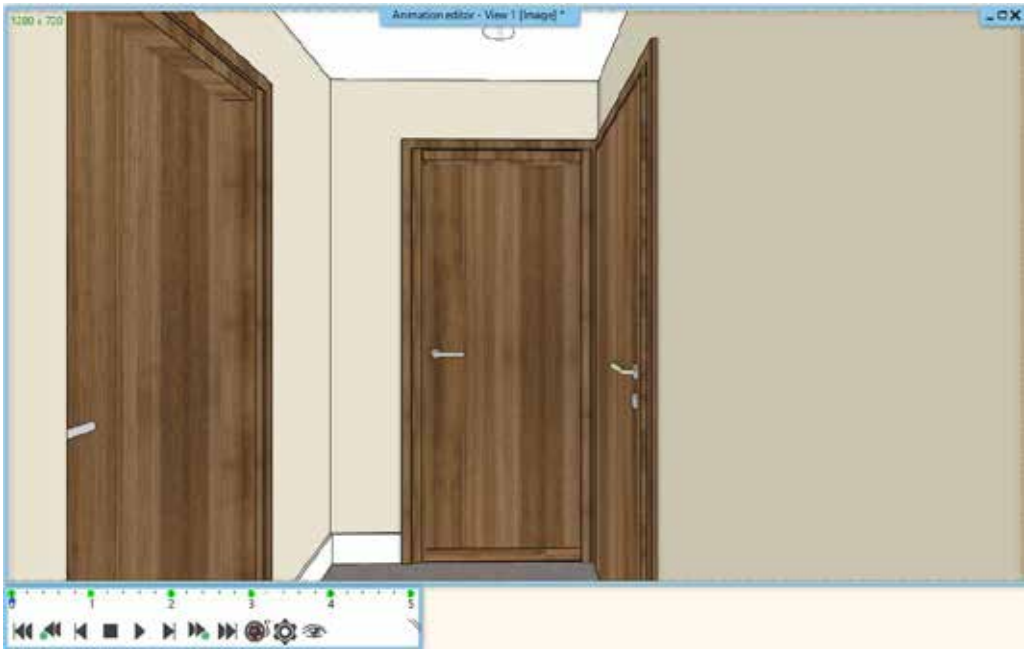
Change the camera height to 1400 mm and close the dialog by pressing “OK” button.



After closing the pop-up window, the Animation editor window will come up.

7.2.1. Animation editor window.

You can alter the animated view in the Animation editor window. On the timeline in the bottom left corner, the „Play” toolset lets you view the animated video, or use these buttons to skip in the video. The Animation editor window can be also opened if you select the animation route and click on Ribbon menu / View / Animation / Path / Create amination command.



Next to play buttons, by clicking on the cogwheel, you can modify the followings:

- The speed
- The number of frames per second
- The camera angle
- The resolution

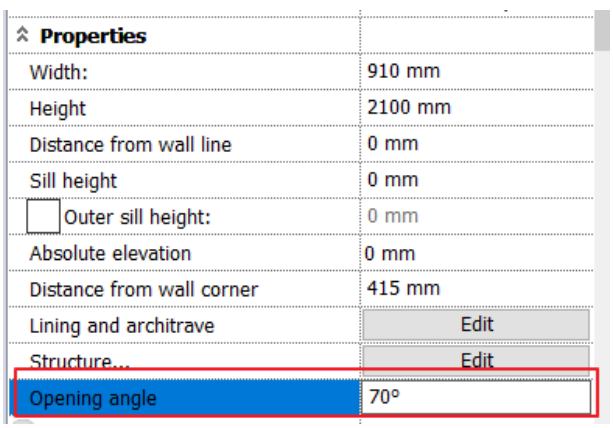
7.2.2. Modifying views

To make our animation more realistic, we need to do some minor changes on the model. First, we will open the door so during the animation we don't have to pass through the closed door.

Select the door.
On properties tab on the left side find "Opening angle" and change to 70°.

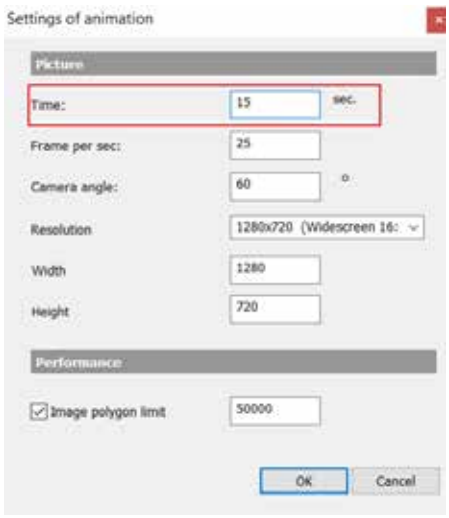
Now we will change the background picture. This is needed because the moving video has an unnatural effect on the static background which doesn't follow the camera's motion.

Click on the 3D window header and select "Environment background" option.
In the pop-up dialog window change the background to "Panorama" and select one from the drop-down menu.



Now close the dialog by pressing "Close".

7.2.3. How to modify animation

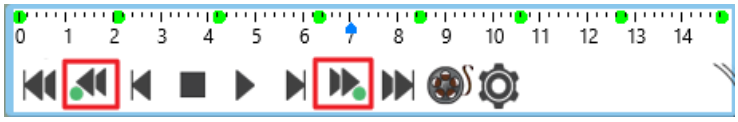


Now let's watch the previously created amination. This is still too fast, 7 seconds. Now change the time period.

Click on the cogwheel and set the time to 15 seconds.

Now watch the animation again.

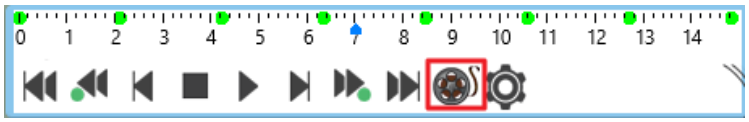
On the timeline there are green dots, these are the key frames. These points have been previously placed on the animation path. The software automatically fills the gap between key frames and combines altogether into a playable content. Key frame heights can be modified in the Animation editor window. It is enough to hold down the mouse scroll wheel for pulling down the camera view point.
If we watch the animation now, we can see that it starts with a slight take-off then at the second green dots reaches the original unchanged camera height (1400 mm). This way we can give individual height for each key frame.
It is important to stay on the selected key frame otherwise changes will not be applied. It is recommended to find the key frame on the time line by using "Jump to previous/next key frame" buttons.



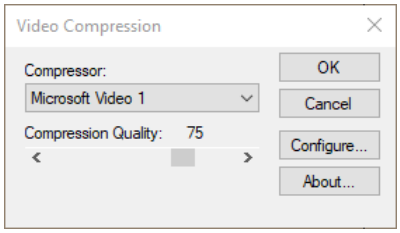
7.2.4. Save animation

The animation can be saved as AVI file and also can be uploaded to internet.

Click on "Create AVI" icon.



Now name the file and select the folder you want to save it.
In the pop-up dialog you have to set the video compression properties. Without compression the size of the file can significantly increase. Close the dialog by pressing "OK" and create AVI file.

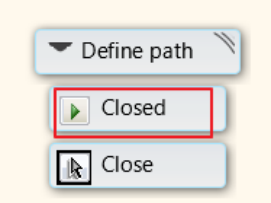


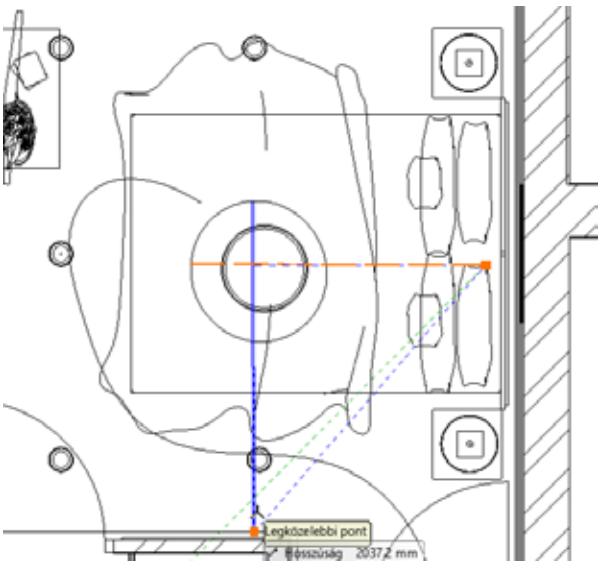
When saving the animation, the software takes photo of the animation from frame to frame. This way the video file is created, which can be watched by using any kind of video player or we can upload it to the right place.

7.3. Create look around animation

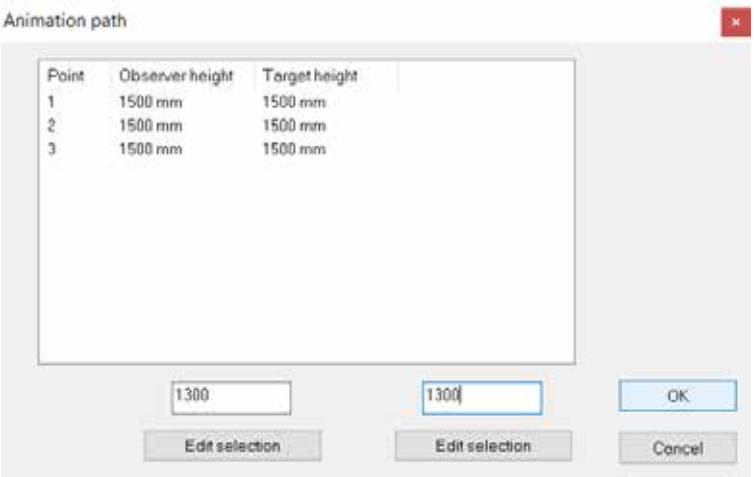
There is an option to record such a motion picture when we look around in one selected room. For this we can use animation tools.

Start Ribbon menu / View / Animation / Path / Define Path command.
After selecting the first key frame point a floating menu will come up. Here select "Closed" option. This way we selected a closed path.
Define the path with four opposite points which result roughly a circle. Now close the dialog with Enter.
Now define the observed points from the animation tangent points. It is useful to select the observed points opposite to tangent points.





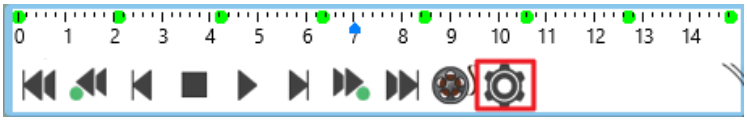
The end point and the first point should be the same, this make sure the animation returns to original starting point.
To finish press Enter.
In the appearing dialog set the Observer and the tangent points heights. In both cases the height should be 1300 mm.



7.3.1. Modifying Animation.

In the Animation editor window, we can modify and watch the animation. On the timeline we can see that this is a very short movie, lasts only for 4 seconds.

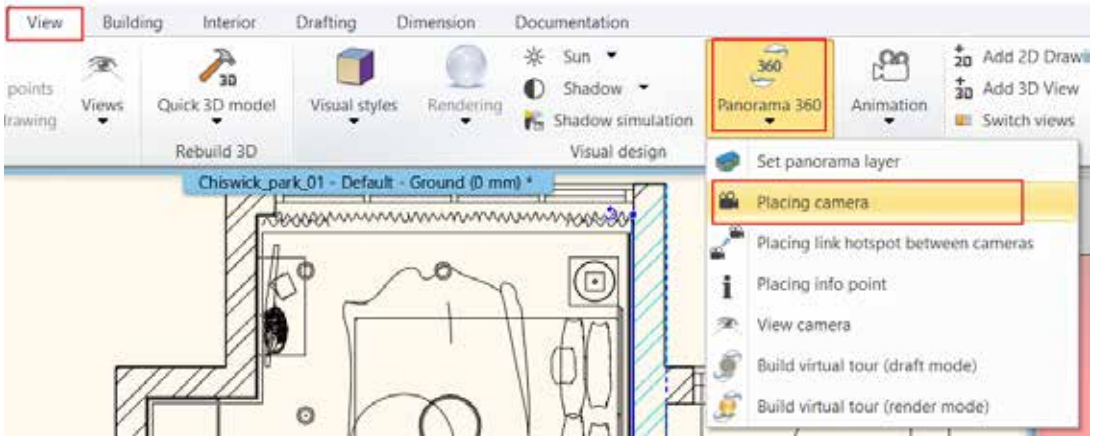
Click on cogwheel and change the time to 25 seconds. Close the dialog by pressing “OK”.



The look around animation can be modified the same way as we shown in the previous example. The height and position of the camera can be changed in green key frames. This animation can be also saved as creating AVI file which can be watched by using any video player.

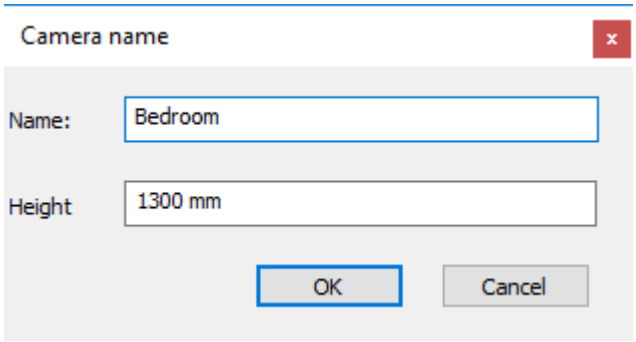
7.4. Creating Panorama 360

Using Panorama 360 tools we can create a virtual walkthrough which grants the overview of the entire living space in 360 degrees. The Panorama 360 is freely accessible by our client, can be discovered. First step is to place cameras through which the plan can be seen.



7.4.1. Placing camera

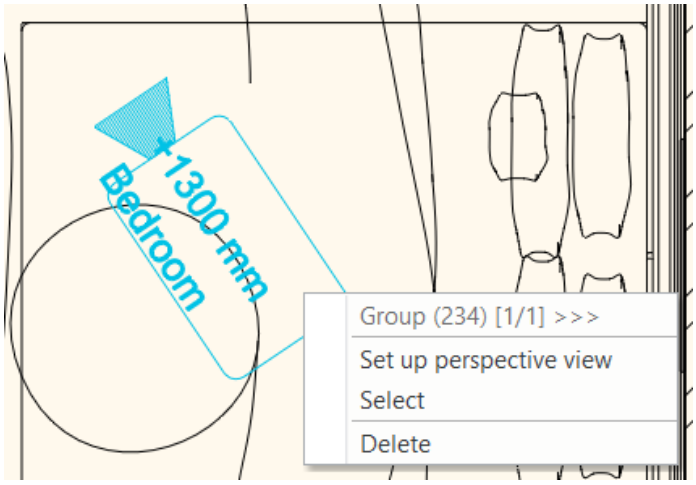
Click on Ribbon menu / View / Panorama 360 / Placing camera command.
In the dialog name the camera and define its height, place in the bedroom.



Place another camera on the corridor. You can add as many cameras as you like,

On the floor plan the camera lens icon indicates that direction where the camera will be pointed when we enter into a given virtual point. This can be freely modified.

Click on the camera and use Rotate commands to set the proper direction of the camera lens.
Check if you got the desired perspective view. Click on the local menu Set up perspective view command.



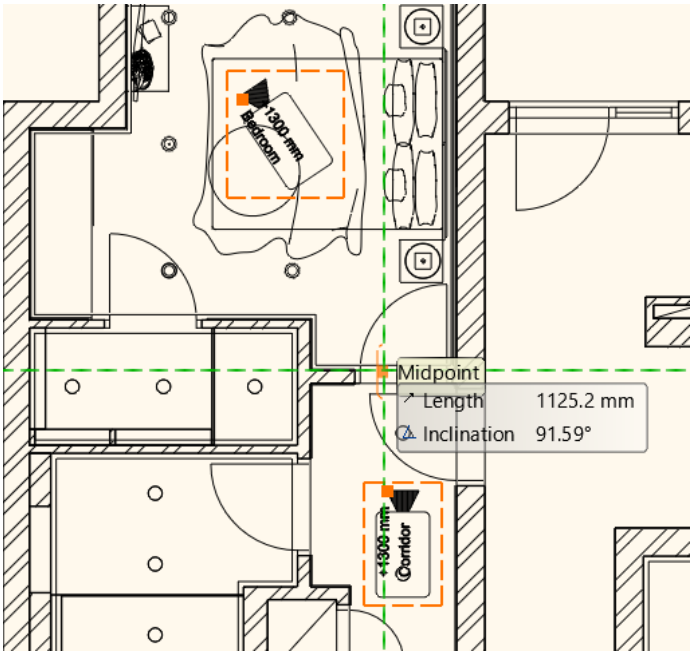
If you are not satisfied you can still modify the camera position by using move and rotate commands until you get the desired result.

7.4.2. Placing link hot spots

We can join two cameras by placing link hot spot.

Start Panorama 360 / Placing link hot spots between cameras command.

Define the height of the hot spot.
Now select two cameras which will be linked by the hot spot.



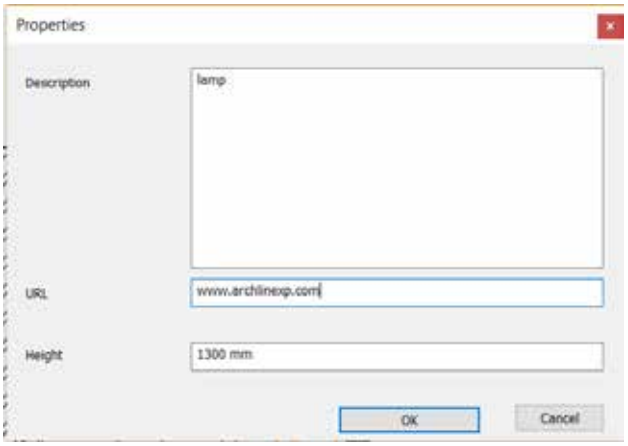
Place the hot spots preferably on doors, because there we will look for them. If you don't need more hot spots, close the dialog by pressing Cancel.

7.4.3. Placing info point

In case we like to add more information to the virtual tour, there is an option to place info points on the floor plan.

Click on Panorama 360 / Place info point command.
Select the camera from where the info point will be visible.
In the dialog you can add description which will be assigned to that object you want to provide more information on. Also, there is an option to insert link, furthermore you can set the info point height.

Place the info point by pressing" OK".



7.4.4. Build Virtual Tour in draft and render mode

We can create virtual tour in two different qualities. First is the draft quality, which can be done within seconds and the result can be seen immediately.

Click on Panorama 360 / Build virtual tour (Draft mode) command.
Save the file on your computer.

The virtual tour immediately opens up in your internet browser. You can look around using your mouse, by clicking on info points you can read the previously given descriptions and also you can switch between cameras by clicking on hot spots.

The rendered quality panorama can be viewed the same way, but it takes longer to create since the software should calculate reflections and light-effects. This panorama therefore has a more realistic effect. We can launch this command by clicking on Panorama 360 / Build virtual tour (render model).

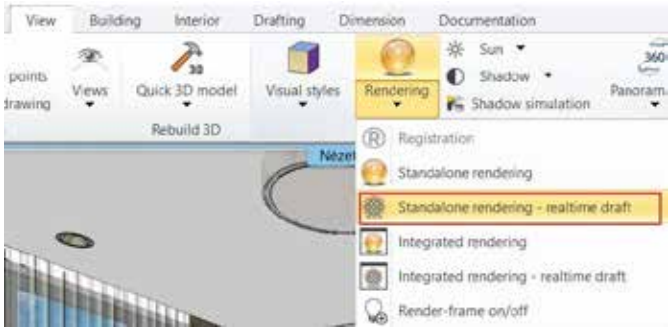
7.5. Material settings

In order to obtain realistic images, we have to pay attention not only to the lights or shapes of the downloaded objects but also to the material settings. Now let's see some examples how to make the image of bedroom far more realistic with some minor changes on materials.

7.5.1. The blurriness of transparency and the blurriness of reflection

Lampshade of ceiling lights

First let's check the material of the ceiling lights. This lamp covered with a textile linen and from here one or two light sources emit lights.



Go to Ribbon menu / View / Render and select “Standalone rendering – real-time draft” command. This way we can follow the changes and compare to the current settings. Right now, the result is not convincing.
Right-click on the lamp and select from the appearing menu “Find material” command. As a result, in Design Centre the properties of the lamp material will be displayed.

The current material is a light colour textile slightly transparent, to let the light come through. This is not a reflective surface and there is no blurriness of transparency at the same time.

Now increase the Blurriness of transparency by 30-40% and check result on the interactive rendering.

Now the image of the light source is not so clear behind the lampshade so it has more realistic effect. Using the blurriness of transparency, we can create life-like surfaces but only if the surface itself doesn’t emit light, so the light goes through it.

Now increase further the value of Blurriness of transparency to 70%. Check the result on the interactive rendering.

Now the image changed slightly, the effect is not so visible. Sometimes it may also cause grainy or gritty effect. This is normal in case of a draft render, obviously this effect will improve with better quality render.

Curtain

In the case of slightly transparent curtains, it is worth paying attention to the Blurriness of transparency

Right-click on the curtain and from the floating menu choose Find material command. As a result, in Design Centre the properties of the curtain will be displayed.

The curtain material was made of a normal textile type with high transparency without reflection and blurriness of transparency.

Check the result on the interactive render while increasing the Blurriness of transparency by 3-4%.

Here we can see the same just like at lampshade, that the surface will appear more realistic. In real life the area behind the curtain is kind of blurred and there is no sharp contoured view here. The small size of modification can result such effect in case of this type of curtain material.

Without Blurriness of transparency:

With Blurriness of transparency:

Lampshades of the bedside lamps

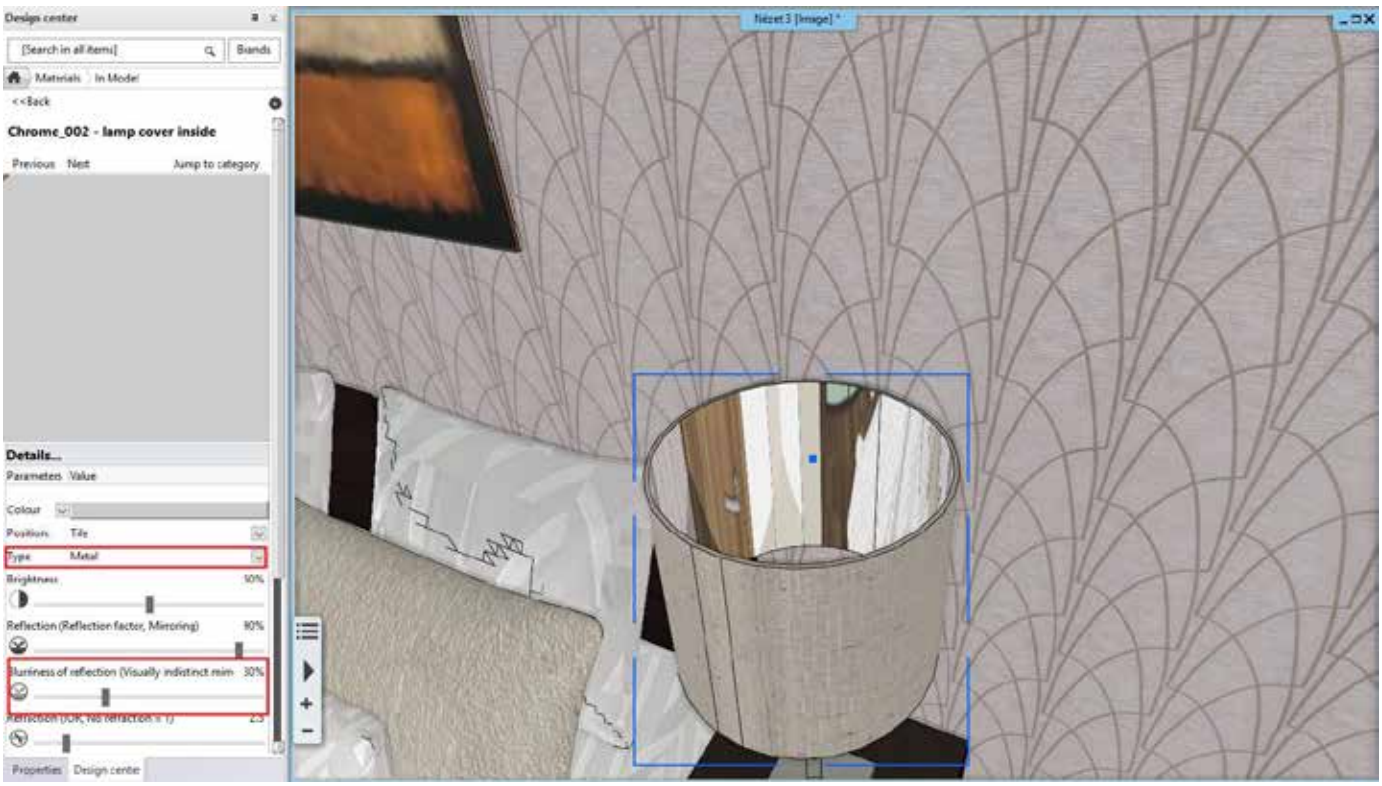
It is also important to see what makes the lampshade of the bedside lamps even more reflective.

Right-click inside of the lampshade and from the pop-up menu choose “Find material” command. As a result, in Design Centre the properties of the lampshade material will be displayed.

This is a chrome type material which was created from a mirror. To get the desired effect we have to modify the Reflection and the Blurriness of reflection. It often happens that the lampshades are covered inside with a reflective material.
Now change the material to Metal and check the result on the interactive rendered image.

The current metallic effect is reflected perfectly, so the light source in the lamp is concentrated in the zenith.

Now increase the Blurriness of reflection to 30% and check the result.



It can be seen that the reflection of the light effect is much more dispersed on the surface and thus gives a much more realistic representation.

Without Blurriness of reflection:

With blurriness of reflection:

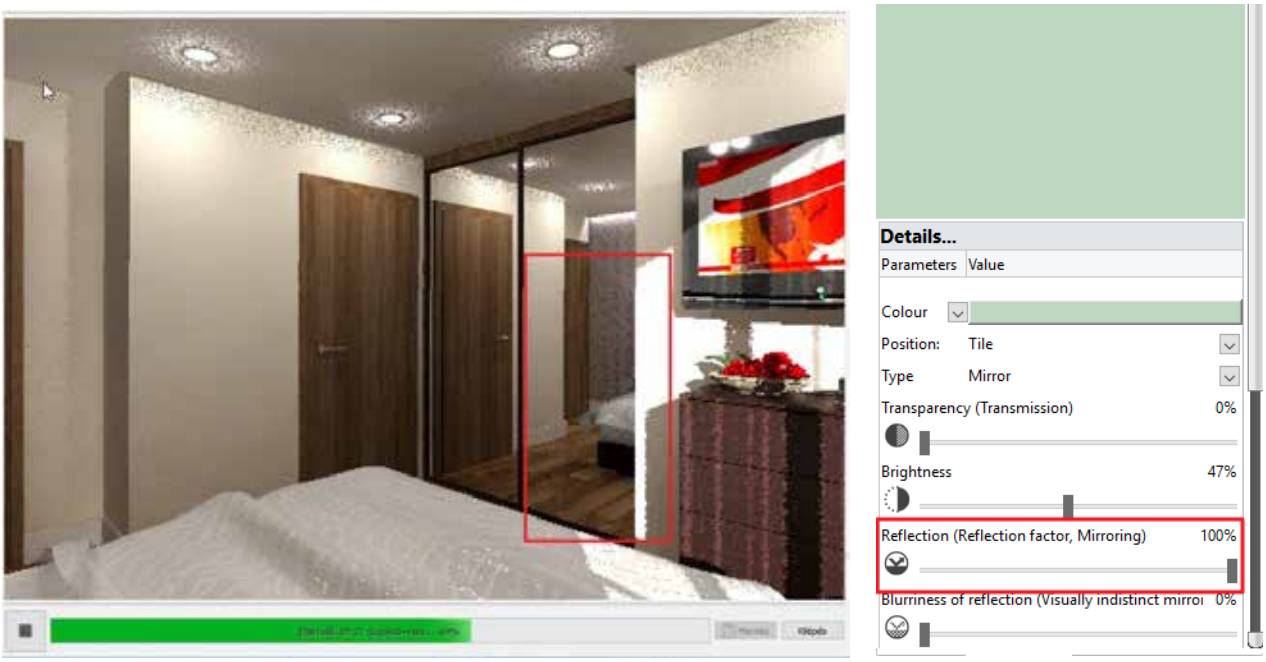
7.5.2. Mirror

When there is a mirror in the interior, it is a dominant element of the space, it is important to set its properties right.

Change the representation view from where the mirror door of the wardrobe opposite to the bed can be well seen.
Now check how the mirror appears on the rendered image.

Right at the moment this is more similar to a reflective plastic surface then a real mirror. In the next example we can see how the size of the reflection and colour representation of the mirror are related to each other.

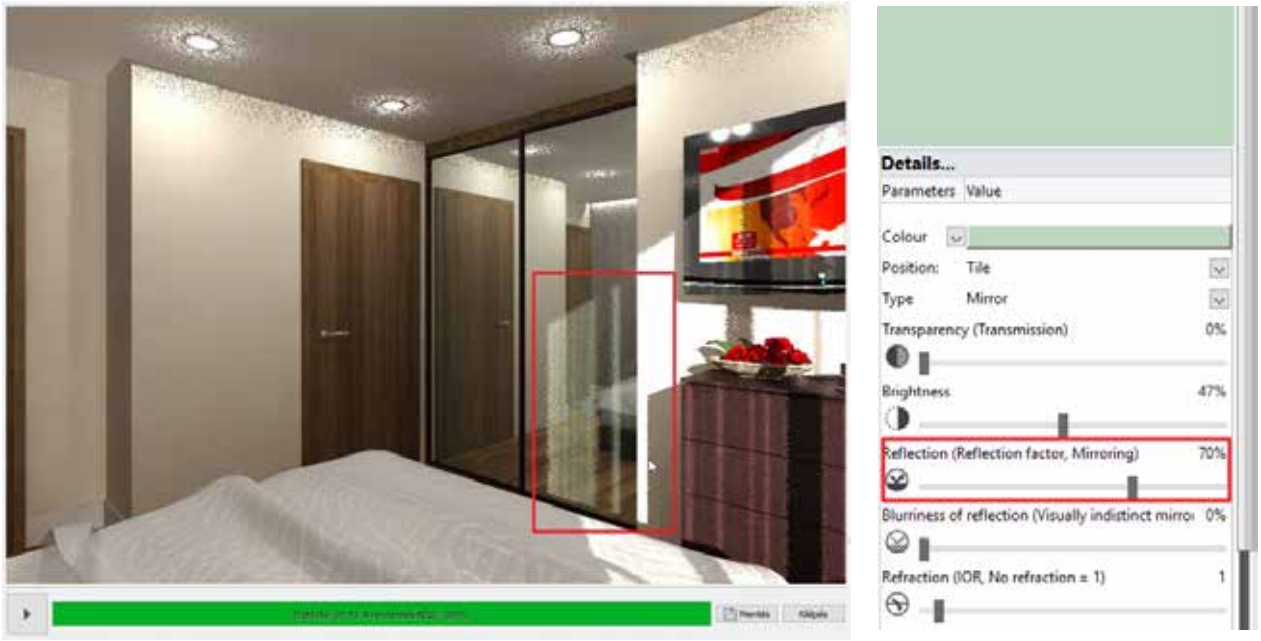
Right-click on the mirror and from the pop-up menu choose “Find material” command. As a result, the mirror material appears in Design Centre.
Change the value of Reflection to 100%, check the result on the interactive rendered image.



The picture shows that the reflection in this case may have been too perfect since there is no sign of the original turquoise shade, and in vain sun illumines this surface we cannot see anything from it.

Now change it to 70%.

In the preview we can see that the original turquoise shade slightly appears. On the interactive rendered image there is a direct light as the reflection of the space, and also the illuminated surface gets a slightly turquoise shade.



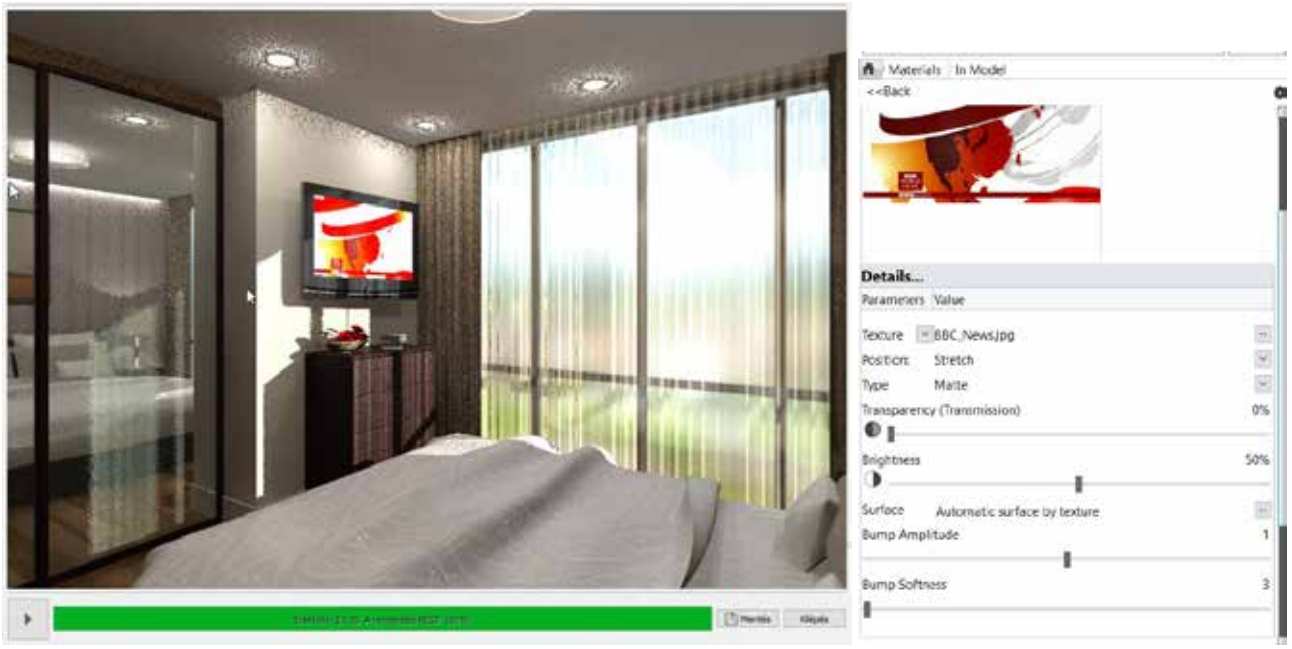
7.5.3. Emissive materials

We have to spend some time on the settings of those surfaces which emits lights (such as TV screens, PC monitors)

Right-click on TV screen and from the pop-up menu choose “Find material” command. As a result, the material of TV screen appears in Design Centre.

Now this type of material is Matte which appears as an illuminated poster on the interactive rendered image. In this case the best solution to choose a material which emit lights, so it acts as a material and a light source at the same time.

Now change the type to “real emissive”. You can set the light intensity in case of this type of material.
Using interactive rendering try to find that intensity setup which results the most realistic view.



Setting the type of materials in some cases we can choose between Real Emissive and False Emissive. The Real Emissive material not just only burns-out on the rendered image as it is even more contrasting, more intense compared to other materials in its environment, but actually illuminates its environment. For example, in a night scene, without lights, it can illuminate the objects around.

Opposite to this the False Emissive doesn’t illuminate its environment but on the surface, we have applied it on, it also burns-out. The reason of using the False emissive material type can be the saving of render time, because the calculation

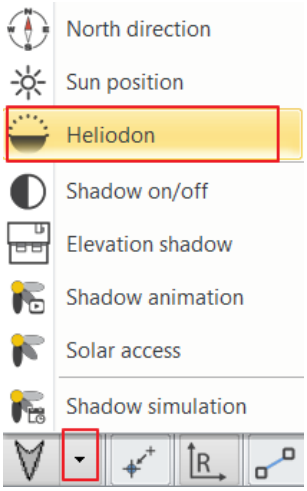
of an emissive are can increase the render time. However, the most convincing result can be achieved using real light on the area.

7.6. Light settings

After setting the materials right, the other key to realistic rendering is the light settings. In CAD design both natural and artificial lights can be displayed. In the following we will see a few examples of displaying and setting lights.

7.6.1. Heliodon

It is important in both interior design and architectural plans how the sunlight illuminates the interior and exterior surfaces of the model. We can set the direction of sunlight two ways:

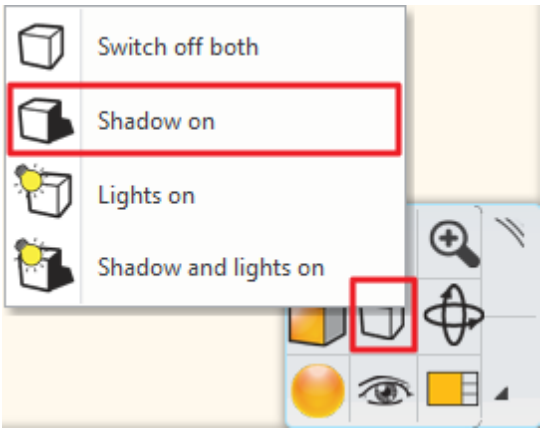


- The geolocation is one of them. Based on orientation we determine the location and the exact time when the sunlight effects the model. This can be easily set on **Ribbon menu / File / BIM select "Project Parameters"** option. In the pop-up dialog we can enter all the requested data. This is useful when we want to know exactly how sunlight effects the model at a given time and we want to make a shadow analysis.
- The other way is to use Heliodon tool. This is a good solution when we want to put the model in an advantageous lighting and we are not eager to know more about the real light effects. This tool can be found at different places in the software. Let's see how this tool works:

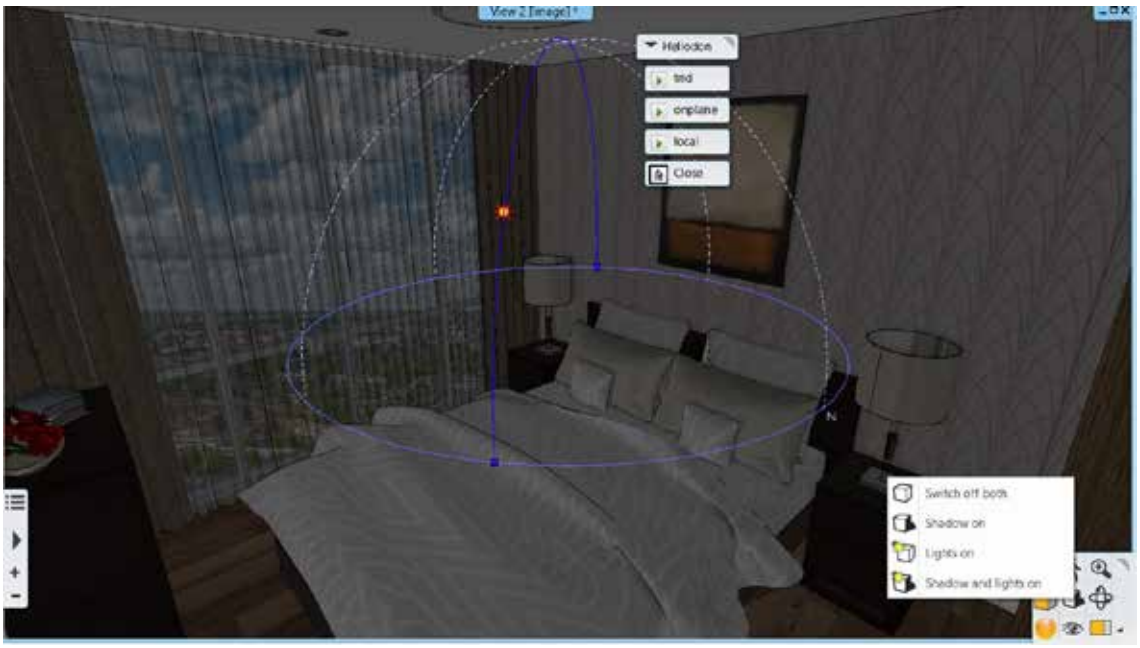
Click on an arrow on the bottom toolbar and next to the "North direction" icon and start Heliodon tool.

Helidon is a simplified model of a hemisphere above our model. We can see the main longitude lines on horizon and the sun path.

On Navibar Switch on Shadow so you can trace the sun path in 3D window.



Rotate the model slightly to see the Heliodon from above.
Change the sun path on the lower circle to that position when the most sunlight reaches the room.
Now move the sun to set the height from where the sunlight gets into the room.



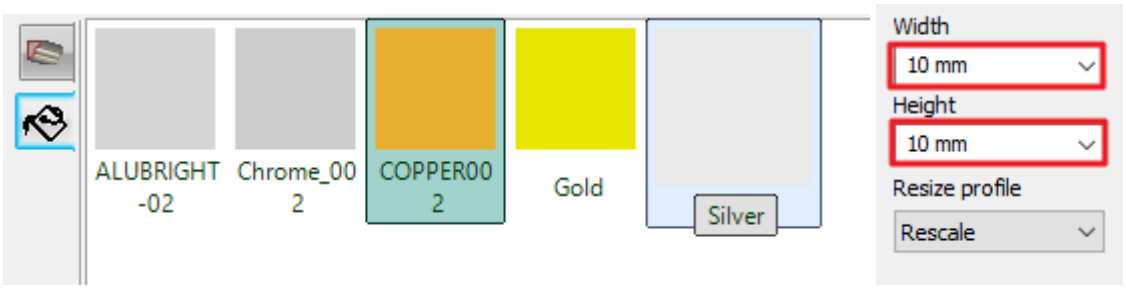
Under the same principle we can set the external lighting. The size and position of Heliodon is always reflected by the fact how we see the model. Heliodon is always represented with clearly visible markers while using it inside or outside.

When you finished with the settings, close Heliodon by pressing ESC.

7.6.2. Led strips

Next to the natural lights we need artificial lights too. First, we will place LED strip behind the bed between the wall and suspended ceiling as mood light.

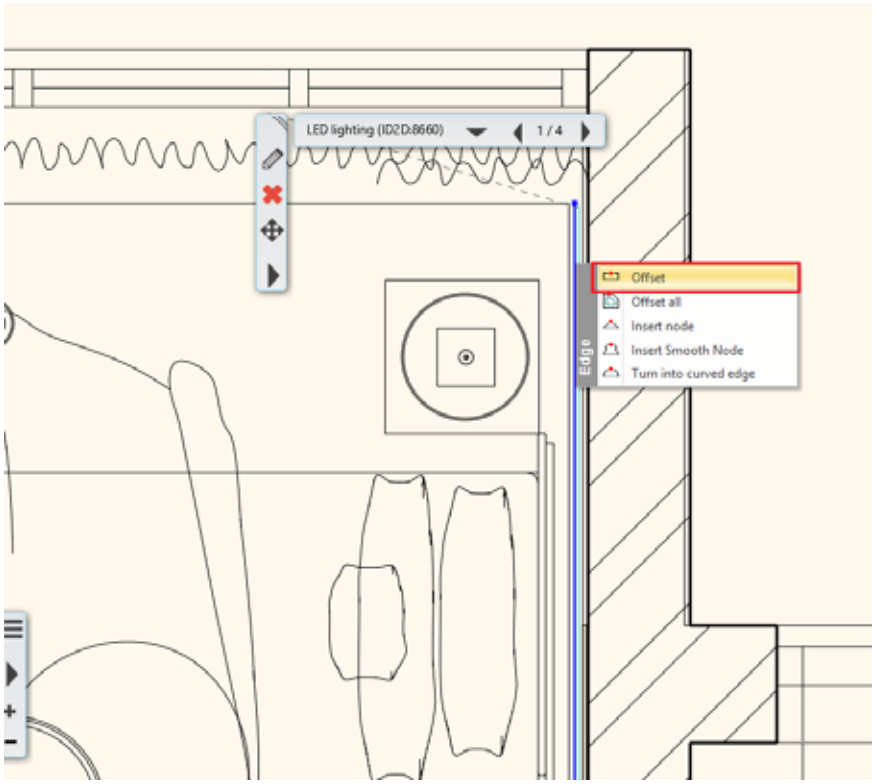
Go to Ribbon menu / Interior / Lighting and select “LED light strip” command.
Draw the path of the LED strip and close the command by pressing ENTER.
In the appearing “LED lighting” dialog window we can set the LED light colour to a warmer select Copper _002.
Under “Section profile” tab change the profile size, width 10 mm and height 10 mm. Under the blue cross tab, we can select the material. This is important to do when the Led strip is not hidden and switched off. This time the Led strip will appear on the plan with the selected material.



Now set the relative elevation to 2500 mm on the last tab. Finally accept changes by pressing OK.

In case of any lights (i.e. LED strip) it is important to keep in mind that those should not be placed inside of any 3D shapes. Now if you select the LED strip, we can see that the suspended ceiling covers the LED strip, it happens when both has the same height, the light won’t be able to come through.

Click on the LED strip and select “Offset” command, now push the line parallel to the right by 30 mm. Moving your mouse the direction can be set.



Now start a “Standalone rendering – real-time draft” to check the LED strip. Make sure that the Lights are turned on.

7.6.3. Realistic display of a light bulb

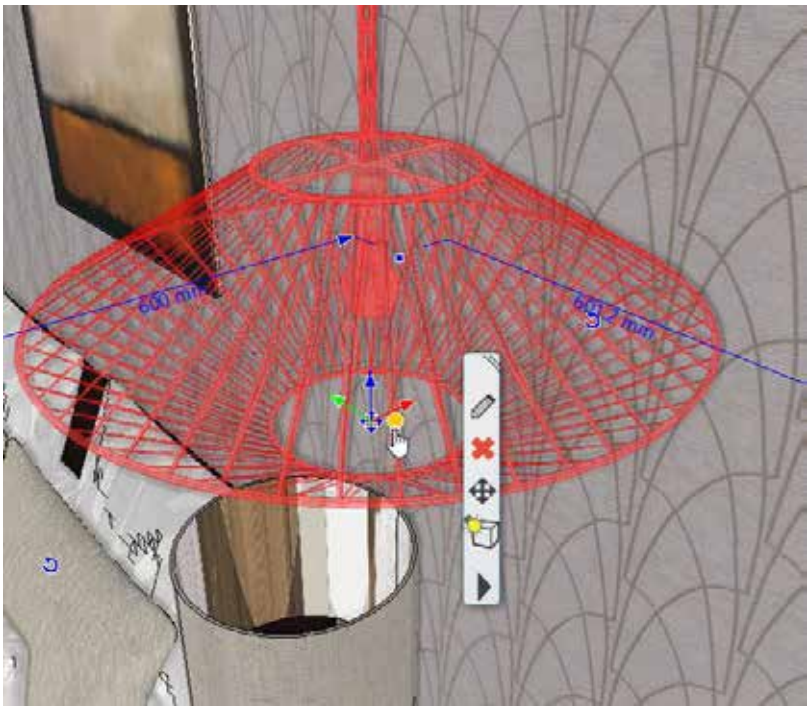
Next, we will show an example how to set the properties of a lamp with a light bulb. On the rendered image we want to create the impression that the light bulb is turned-on.

Download *pendant lamp* from the Warehouse. Go to Ribbon menu / Interior and start Warehouse command.
Now find a lamp within the search result with a bulb is clearly visible.

Now download the selected lamp, place on the floor next to the wall, then change the elevation as later we need a vertical light-absorbing surface, which is in this case the wall.
After downloading check, the image on the interactive rendering but before switch off all other light-sources, so now you can be sure that you can see the downloaded lamp light effects only.

Now select the pendant lamp if there appears a yellow light bulb than this lamp has light source. The software automatically recognizes keywords now that we downloaded a lamp with a light source then the software assigns a light source to it. However, the position needs to be modified in all cases. As you can see in our case the black cross which represents the light source is slightly lower in space, so it is unlikely that the light will come out of the light bulb.

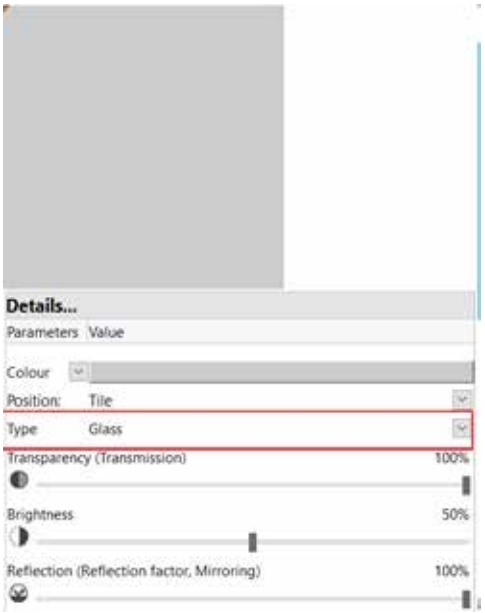
Select the lamp and click on the yellow light bulb icon. Now with the help of the axis move it inside the light bulb.



Now check the image on the interactive rendering. If the image is unchanged refresh the 3D model or start again the real-time rendering.

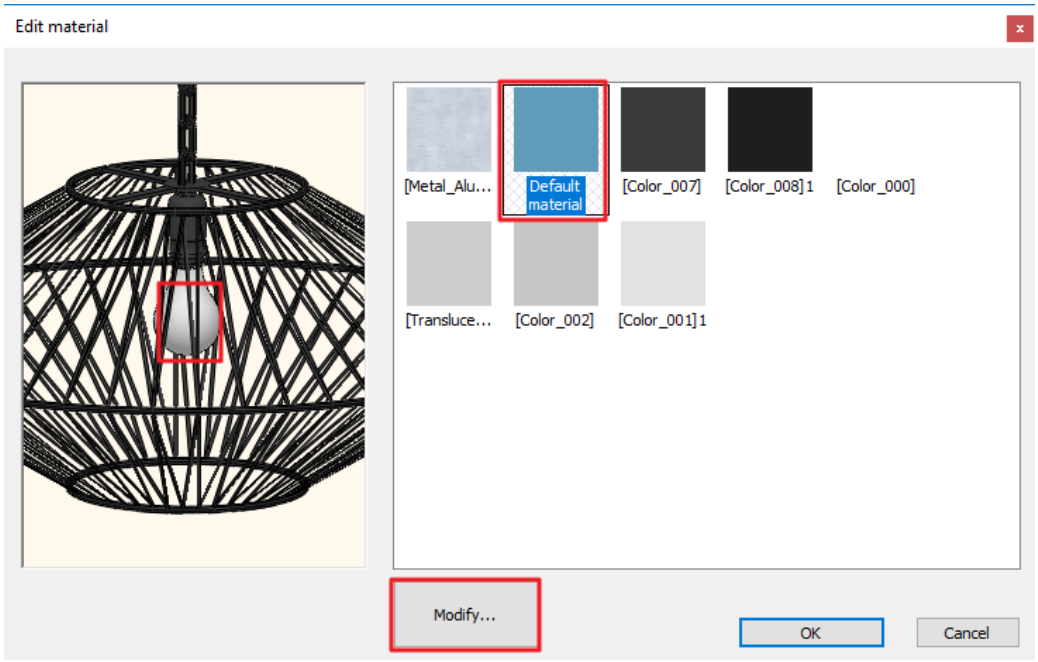
On the result we can see that light bulb doesn't light up at this time, as the downloaded object doesn't contain all information regarding the surfaces which can be transparent or glossy.

Right click on the bulb and from the appearing menu choose "Find material" option. As a result, on the left side in the Design Centre will come up the bulb material properties.
Change the material type to Glass.



It is likely that not just only one material is assigned to the light bulb as we have seen in this example. This happens in many cases.

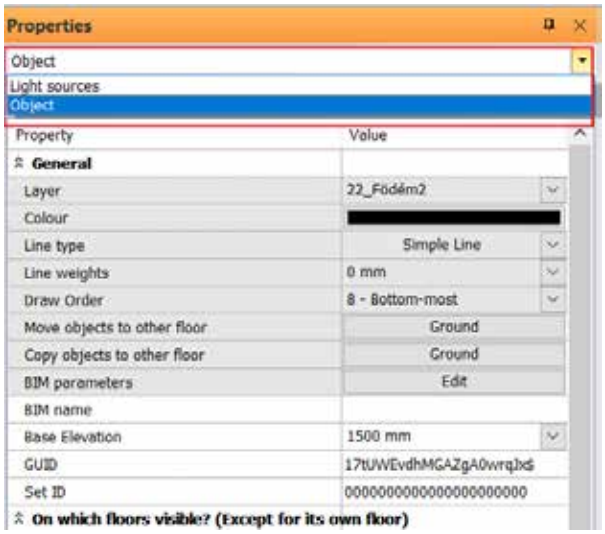
Now open the lamp properties and edit material.
In the preview window click on light bulb. The material of bulb surface automatically will be selected from the list of materials. That way we can easily identify that material which should be modified now.
Click on Modify button after selecting the material with wrong settings now choose the Glass type instead.

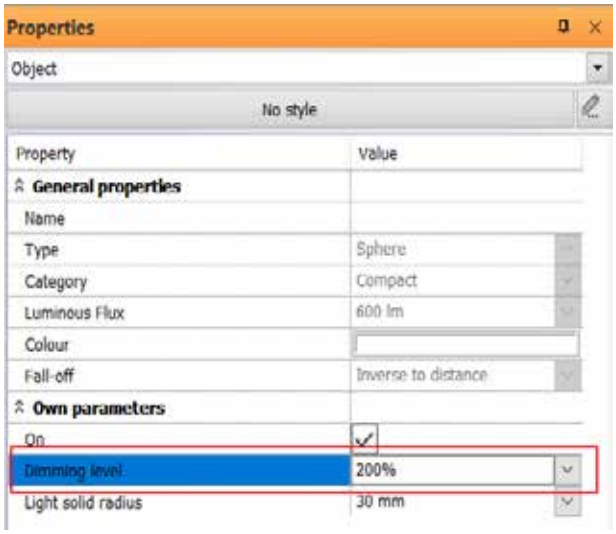


In the preview check that the light bulb is translucent, then close the dialog with OK.

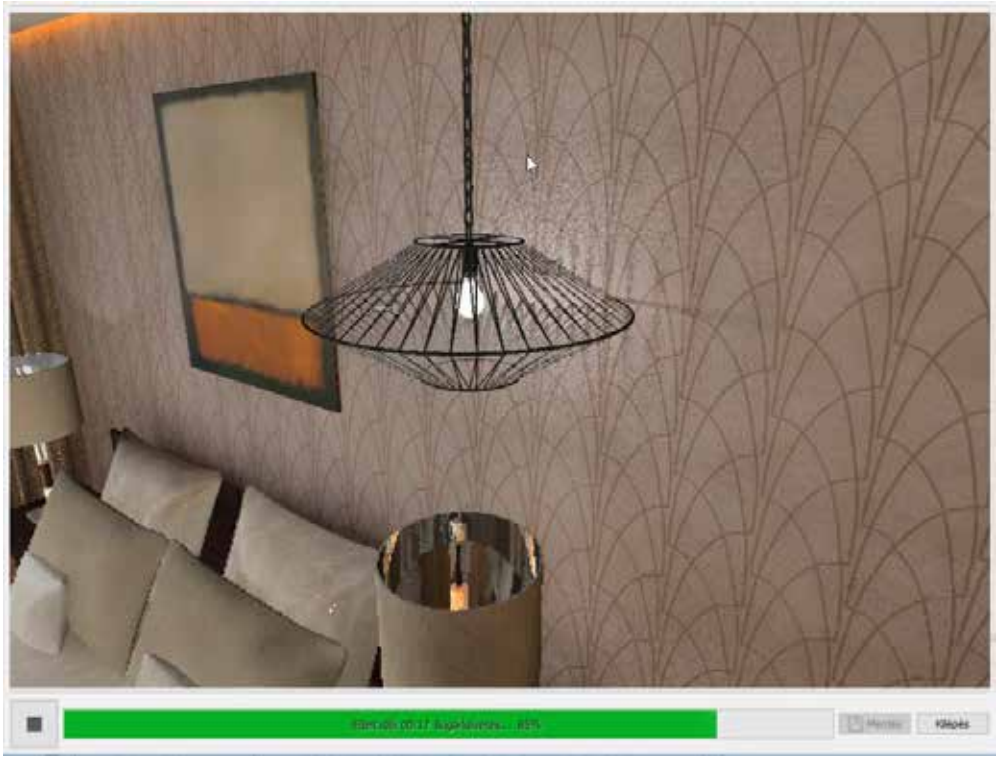
If you check the interactive rendered image now you can see that light comes out of the bulb. Now there might be two more problems one of them is the light intensity, the other is the glass settings which might cause the impression that the bulb doesn't emit lights.

In order to make the bulb glow change the transparency from 100% to 98%. Now the light makes the right impression. Now select the pendant lamp, go to "Properties" tab on the left side and from the drop-down menu change from Object to Light sources.





Now increase the Dimming level to 200%.

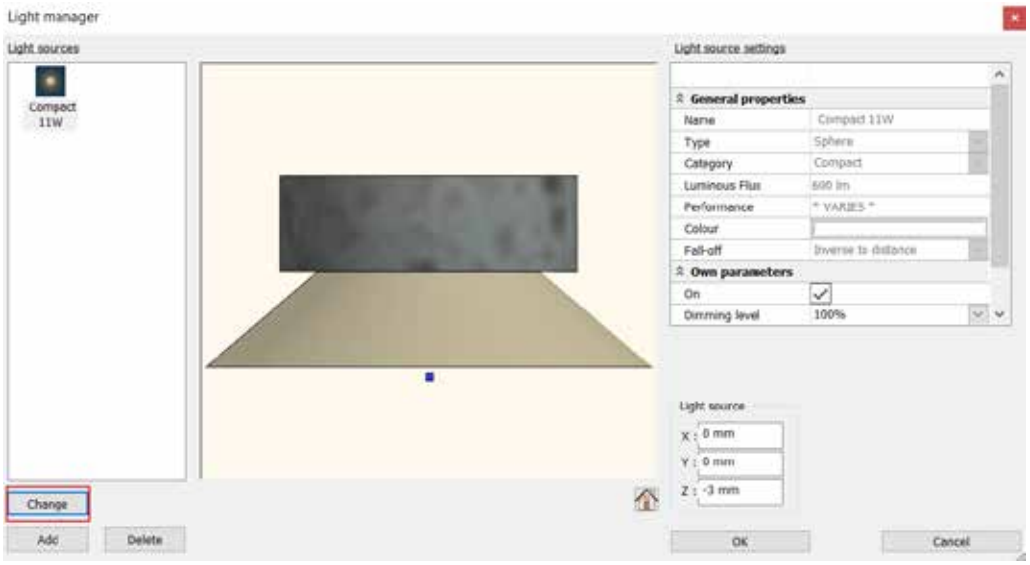


Now check the result on the interactive rendering, and move it to its final position.

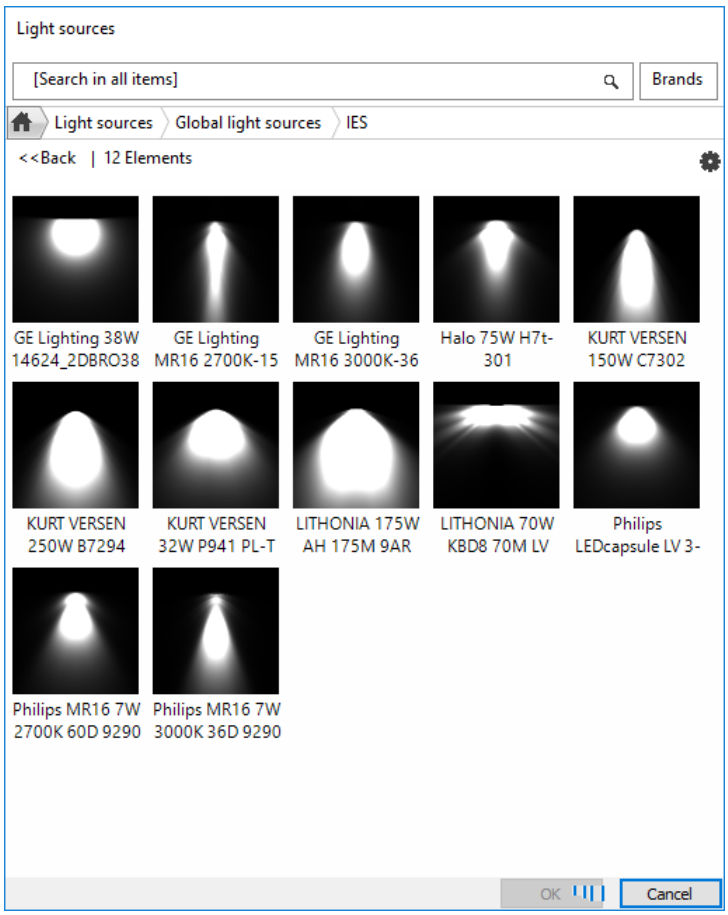
7.6.4. Using IES lights

The software gives you the option to use IES profile, which creates an even more realistic light effects on the scene compared to the traditional light-sources. For this we can use any kind of lamps. IES profiles are special because they are produced by using data based on the manufacturer's measurements. IES light sources can be found in Design Centre under Global Light Sources. The list can be extended by files downloaded from the manufacturer website. You can import them by clicking on the cogwheel. This can last for a couple of seconds as the software automatically creates the preview of it.

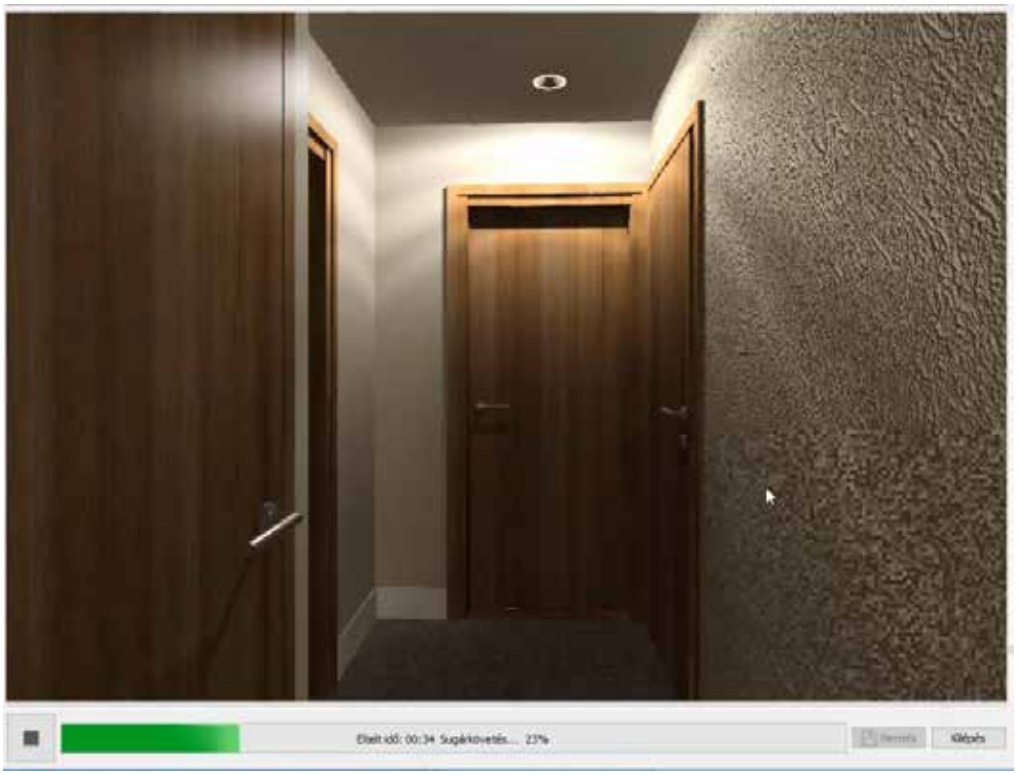
Select one of the spot lights in the bedroom and Copy-Paste on the ceiling on the corridor.
Select the spot lamp on the corridor and from the appearing local menu choose from Lighting the “Add / Edit light source” option.
In the appearing dialog delete one of the light sources, then select the other and then click on “Change” button.



From the “Global Light Sources / IES” folder select an IES light source.



Now check the result on a rendered image.



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