ARCHLine.XP[®] 2023

Windows

INTERMEDIATE COURSE

Interior Design Tutorial

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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 8 workshops:

Material management, Importing architectural plans, Save and manage large-size projects, KBB - Modelling and furniture design, Stairs and railing, Roof design, Visual design, Upholstered furniture based on profiles. After accomplishing these workshops, you will be able to execute more challenging and advanced design tasks.

Enjoy the successful design! CadLine

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/enrollments/courses/intermediate-course/downloads



Workshop 1: Material management



1. Workshop: Material management

During this workshop we will take a look on one of the most important aspects of the work of interior designers: How can we create good quality materials and textures for our plans that helps us present them even more realistically? Let's see the following steps:

Creating material

- Creating new material from color
- Downloading new material from the Showroom
- Downloading new texture from the internet page of the manufacturer
- Creating new material from texture by copying or browsing the downloaded image file

Material properties

- Material properties settings
- Render styes

Material / Texture editing

- Editing a seamless pattern
- Material and texture coloring
- Materials with transparent background Alfa channel
- Creating decals
- Bump mapping with the pattern of the original image

Color cards

- Create a new color card
- Convert existing material into a color card

PBR materials

To complete tasks please download **WORKSHOP PROJECT – INTERMEDIATE** from our website and install to your computer. This contains all projects for Intermediate workshops. Here you can also find the tutorial video of the lecture. <u>https://www.archlinexp.com/enrollments/courses/intermediate-course/material-editing/1</u>

 Open ..\Documents\ARCHlineXP DRAW\2023\Workshop_Intermediate\1_Material_management\1_Material management_Start.pro file.

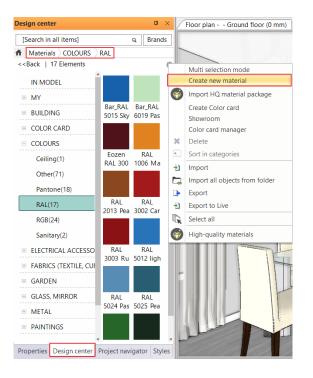
1.1. Create new material

We will create a new material from color or texture.

1.1.1. Creating a new material from color

Frist we will choose a color from the RAL color palette and we will use it as the basis of our new material.

- In the Design Center select the Materials Colors RAL category, then Settings - Create new material option.
- Click on the color button and select a color from the RAL color palette: RAL 7031 Blue Gray-t



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RAL 7035 Ligh	t grey	G: 75 🛓 L: 75 🛓	
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• Select the Wall render style at the Appearance tab.

Material properties		×
	Copy material properties Paste material proper	rties
Texture(albedo)	Render styles Wall	× ^
	☆ Texture / Color	
	Colour	
	Use texture image	
	Texture(albedo)	80
	Image size in pixels: None	_
	Physical properties	
	Position: Tile	~
	Recalculate UV mapping	
	☆ Basic settings	
	Transparency	0%
	Metalic (Reflection)	3%
Appearance	Refraction (IOR, No refraction = 1)	2
Thermal parameters	Roughness(Blurry Reflection(Visually indistinct mirroring))	5%
BIM parameters		
bin promotors	Blurriness of transparency (transparent -> blurred)	0%
Hatch on section		
Hatch in 3D	Medium color / Density	0
		Connect
	Нер	Cancel

• After pressing OK, save the material.

Create new item in the library		×
Name of the new item in the library:		
RAL 7031 Blue Grey		~
Category:		
COLOURS		\sim
Sub category:		
RAL		\sim
Producer:		
generic		\sim
	ОК	Cancel

• Drag and drop the new material on the wall next to the door. Use the As painting option.

		/ Hoor plan Ground hoor (o min) / view 2 [image] +
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Previous Next Jump to category		
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Render styles Wall	~	Replacing one material with another on this object
☆ Texture / Color		
Colour June 1000		
Texture(albedo)	80	
Physical properties		
Position: Tile	~ •	
Properties Design center Project navig	gator Styles	

1.1.2. Downloading material from the Showroom

We can use a material from the Design Center – Material library or we can download one from the Showroom. We will change the material of the curtain in the living room to a material downloaded from the Showroom.

Select the Showroom – Rovitex – Denver – Denver_A_304 material and after download, drag and drop it on the curtain
using the Replace one material with another option.





Right-click on the curtain and select Find Material to view the properties of the material. For this material, for example, the Transparency is set automatically to 13%, but you may want to set it to 0%, since we are talking about a blackout curtain.

1.1.3. Downloading texture from the internet page of the manufacturer

We can not only create a material from color but from texture as well. It is worth to select the appropriate texture from the manufacturer's website.

In our example we will use a wallpaper from JAB (<u>https://www.jab.de/de/en</u>) and we will apply it to the wall behind the sofa.

Before download we need to register on the website.

Search for the MIRAGE wallpaper and select a color:

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Product Finder					< Bac
PRODUCT					
PRC	DUCTS	FOUND (4)	CONTENTS	5 FOUND (1536)	
HIDE FILTERS	^	MIRAGE	Q Re	ecommendation	
Range of use	\sim	4 Results for MIRAGE			
Wallpapers (4)		Filters: WALLPAPERS 🛞			
Color					
			TAN .		
Design	^	MIRAGE CH9116/050	MIRAGE CH9116/040	CH91	AGE 16/010
		Wallpapers	Wallpapers	Wally	papers

Pay attention to the "Length of repeat" value on the webpage. This will be the width of our pattern: 610mm. In the download section, select "*Image of pattern repeat*" option. We have to specify the resolution of the pattern. It is not recommended to choose a too large resolution, because it will

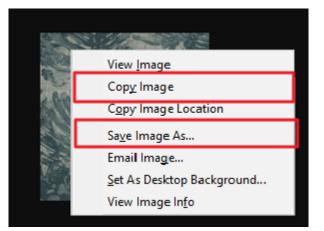
only increase the project size: 900 pixels.

AN STORTZ GROUP THE DESIGN COMPANY										
PRODUCT DET	AILS									
Article:	MIRAGE					AVIA		ANT ANT		
Brand:	CHIVASSO					正义等			度改	
Number:	CH9116/050									
Colour variations:	8					AND		ALC: AND	No.	
Quality:	Wallpapers, Printed, Nor	n-woven								
Material:	Surface : 100% vinyl, gro	undmaterial:	100% paper							
Instructions:	≝ ⊮ →⊨ ⊫ ≝									
Width/Length:	69 cm/27"									
Length:	1005 cm/396"									
Length of repeat:	61 cm/24"									
Length of roll:	1005 cm/396"									
Design:	Graphic, Large-patterned	ł								
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E-mail			entering field.	g your postcod	stcode in the search		product by selecting a m and then the media form			
Your message										
							Image of pattern	n repeat		
						\sim	Office format (9	00 px)		

After download we can choose



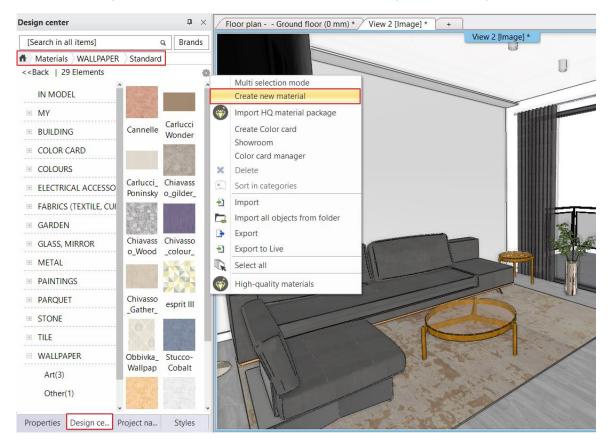
- Copy image this will place the image on the clipboard or
- Save image this will save the image file to our computer.



1.1.4. Creating new material from texture

The downloaded material is on the clipboard or is saved as an image file. We can create a new material from texture by pasting the element on the clipboard or by browsing the downloaded image file.

• Select in the Design Center the Material - Wallpaper - Standard category, then Settings - Create new material option.

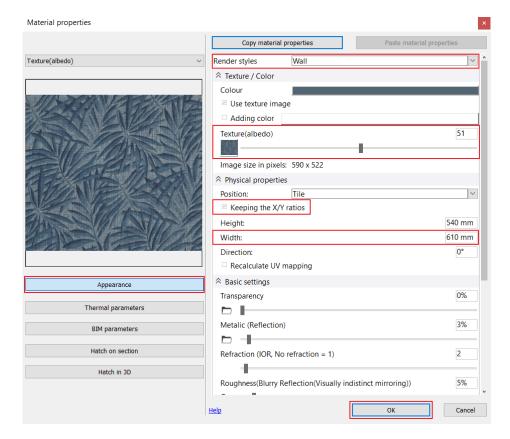


The Material properties dialog appears.

- Click on the Texture icon.
- If you have the image on the clipboard, click on the **Insert** button.
- If you have saved the image to your computer, click on the Texture button and search for it on the computer.

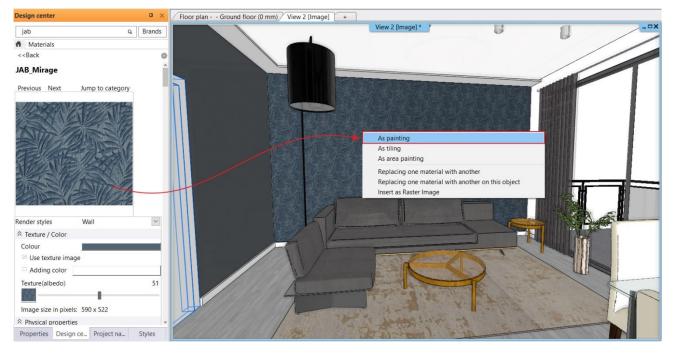
Material properties		×
	Copy material properties Paste	material properties
Texture(albedo)	Render styles General	× ^
	☆ Texture / Color	
	Colour	
	☑ Use texture image	
	Adding color	
KAN ANA	Texture(albedo)	58
	In Colour	
	R R R R R R R R R R R R R R R R R R R	
	Pd Copy to clipboard	~
	H Paste	442 mm
	W Reset value back to default	500 mm
and the presented and the second s	Direction:	0°
	Recalculate UV mapping	
Appearance	☆ Basic settings	
	Transparency	0%
Thermal parameters		
BIM parameters	Metalic (Reflection)	2%
Hatch on section	Refraction (IOR, No refraction = 1)	1
Hatch in 3D	1	
	Roughness(Blurry Reflection(Visually indistinct mirroring	g)) 10%
	Неір ОК	Cancel

- On the **Physical properties** tab, type in the value of "*Length of repeat*" from the website: 610 mm as the Horizontal dimension. It is important to turn on the Keeping the X/Y ratios command first.
- On the Appearance tab we will set the display properties. The most important task is to select the appropriate Render style. The parameters of the selected Render style can be modified carefully.





After pressing OK, name the new material and enter the appropriate category and subcategory where you want to save it. After closing the dialog drag and drop the wallpaper on the wall behid the sofa, and select the As painting option.



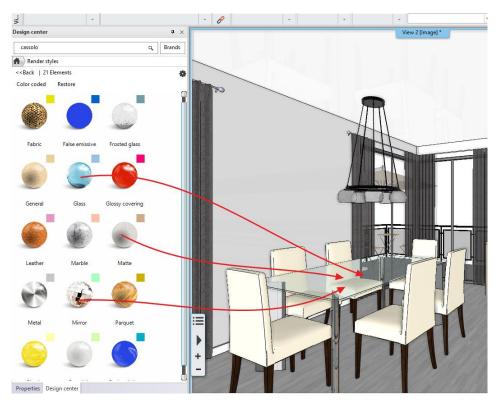
1.2. Material properties

When creating the materials, we saw how the **physical and appearance properties** of the material can be set. These properties can be modified later.

Render styles are a great help in setting the appearance properties of materials.

Let's try different render styles for example on the dining table glass. The result is best seen in Rendering, but the difference is also visible in the Textured display mode in the 3D window. (This assumes using DirectX 11.)

For example, from the **Design Center - Catalogs - Render styles**, drag the Matte style onto the glass, and then the Mirror style then reset it to Glass.





1.3. Material/Texture editing

Textures you receive or download from the Internet may need to be readjusted so that we can use them in our project. For example, the pattern is not continuous, not a seamless pattern, so it shows a square like repetition when applied to the surfaces, or some part of the pattern is transparent in real life, or the color of the pattern may not what we want. In such cases, we need to edit the texture.

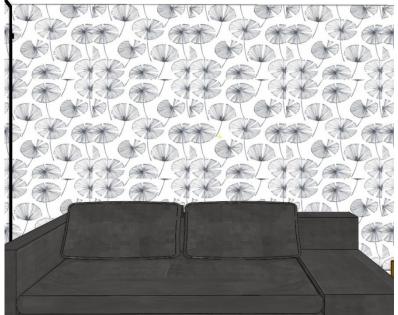
1.3.1. Creating a seamless pattern

1. What is a seamless pattern?

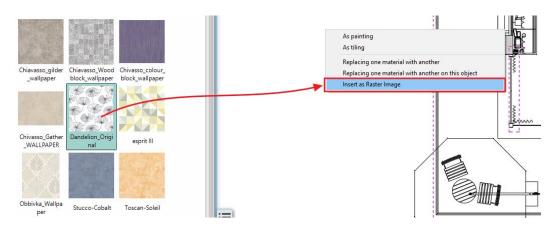
A continuous, endless pattern that shows no square like repetition in either direction when applied on a surface. "A pattern is actually a small image that, when repeated one after the other in each direction, forms a seamless pattern, and you can fill the available space with it as long as you repeat it. Because the pattern is repeatable, you don't see the image being interrupted anywhere."

With the **Create Seamless Pattern** command, it is possible to convert the imported texture to a seamless pattern (endless pattern). This means that the pattern row and column become continuous. This makes it possible to edit the texture within ARCHLine.XP and we do not have to use an external image editing program. The pattern edited this way can be saved as material and may be used in the model immediately. By using seamless patterns, we can avoid that for example the wallpaper applied to the wall looks like a "checkered tablecloth".

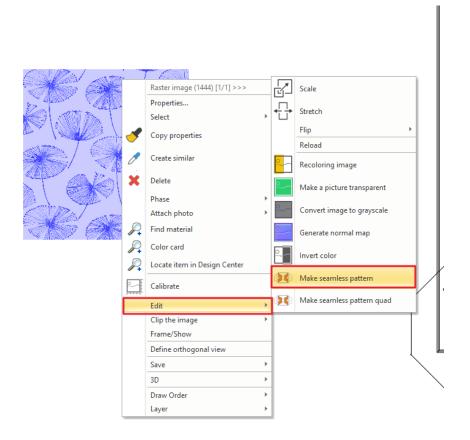
- Let's create a material from the Dandelion.jpg texture from the ...\Material management\Textures folder, and use it on the wall behind the sofa. In the image, we can see that it is not a seamless pattern.
- Let's place the material from the Design Center on the floor plan as a raster image.







• Click on the pattern and from its local menu select the Edit - Make seamless pattern option.



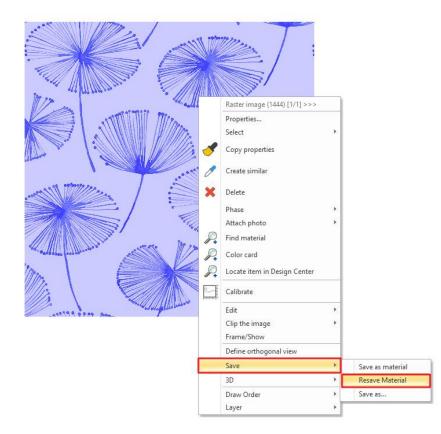
By clicking on one of the sides of the pattern, the program complete the pattern into a 3x3 pattern. Move the cursor til the pattern is overlapping

Repeat it with the other side, then Enter. The seamless pattern is ready.

The command can only be used with textures that has a repetition.

• Save the seamless pattern as a material: Choose the Resave Material. The material In Model category will then be overwritten with the new material and the model will display the modified seamless pattern material on the wall.

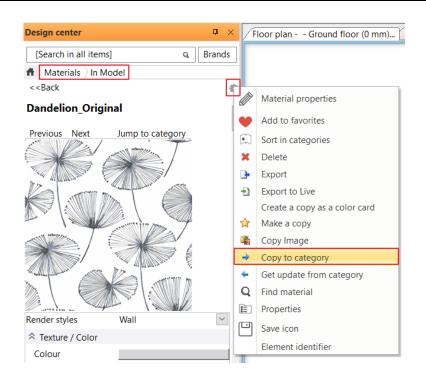
ļ



• Drag and drop the seamless pattern on the wall.



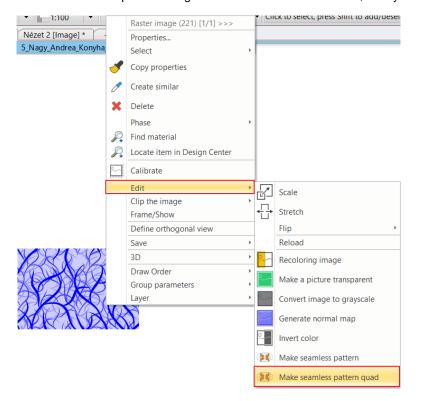
• It is worth copy material in the In Model category back into the category, overwriting the original material.



Create a seamless pattern from a non-repeating pattern

If you find material on the Internet that is not a repetitive pattern, proceed as follows:

- Let's create a material from the Abstract2.jpg texture from the ...\Material management\Textures folder, based on the previous steps, and place it on the floor plan as a raster image.
- Now click on the pattern and from the Local menu, select Edit Make seamless pattern quad command. The program will then mirror the pattern on the X and Y axes, giving you a seamless pattern. Save the seamless pattern using the Save as material command, then you can use the material As painting as usual.





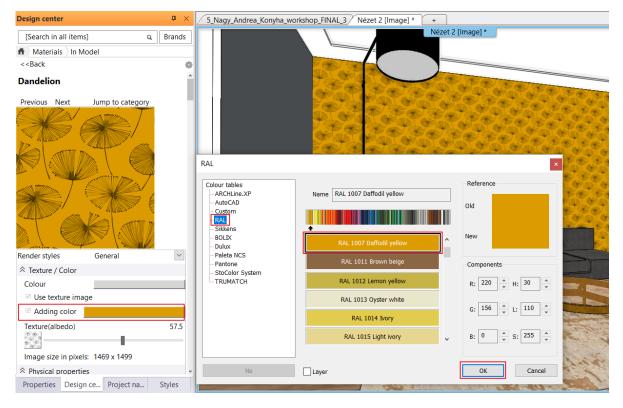
1.3.2. Coloring material and texture

How can we use the same material or texture with different color alternatives in ARCHLine.XP? It is possible to add a background color to a material or texture, so we will have another color alternative.

Coloring material

The Adding Color option can be turned on at the material properties. Click the Color button to select the appropriate color from the color tables. The added background color can be turned off at any time, this is just a property of the material, it does not affect the texture.

The advantage is that you can try many color variations quickly, the result is immediately visible in the 3D model.



Coloring texture

The pattern on the floor plan can be recolored using the **Local menu - Edit – Recoloring image** option. After that the texture can be saved as a material.



In contrast to the Material Coloring method, we create textures that are actually recolored here, as well as the materials saved from them. The disadvantage is that the result will only appear in the model later when these textures are used as material.



1.3.3. Materials with transparent background – Alfa channel

We might need an image with a transparent background. Such an image for example is a wall sticker.

We also use a transparent image when we want to display a lamp shade that has a cut through a pattern and the lamp illuminates through that pattern.

The solution is the ALFA channel. This means that we can mark the colors on the image that are transparent.

Let's create images with transparent backgrounds:

Create a lampshade

- Place the Cantallops_pattern.jpg on the floor plan from the ...\Material management\Textures folder.
- Select the Local menu Edit Make a picture transparent option.
- Select the color you want to make transparent with the eyedropper tool. Here the white.
- Set the value of the transparency: 255. Enter.



Degr	ee of transparency		×
c	Dpaque	Transparent	255
		ОК	Cancel

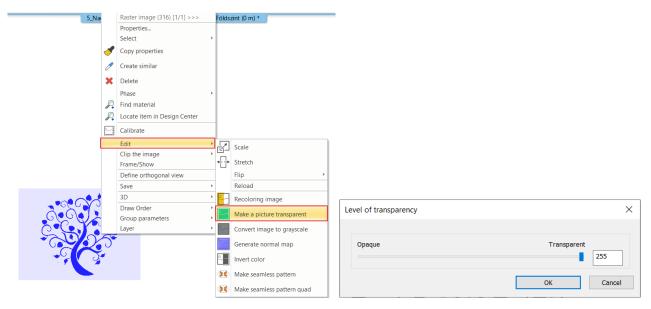
Save the texture as material then drag and drop it on the lamp above the dining table.

A Materials In Model	
< <back< td=""><td>•</td></back<>	•
Cantallops	^
Previous Next Jump to category	- 1
	- 1
	- 1
	- 1
	- 1
Render styles General	~
✓ Texture / Color	
Physical properties	
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Create a wall sticker

- Place the Abstract_wood.jpg on the floor plan from the ...\Material management\Textures folder.
- Select the Local menu Edit Make a picture transparent option.
- sleet the color you want to make transparent with the eyedropper tool. Here the white.
- Set the value of the transparency: 255. Enter.

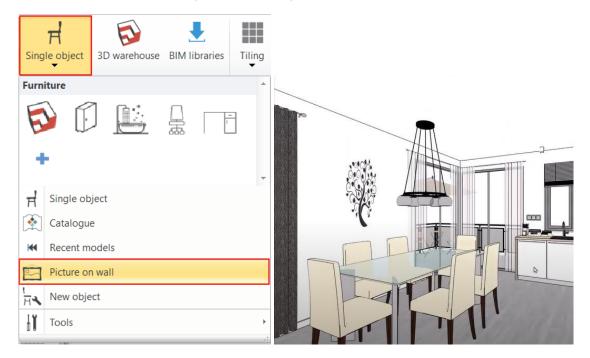


- Save it as a material, then choose which wall you want to place it on.
- You can do this with the Picture on wall command, which you first set the properties of the command. Choose Interior Properties Picture on wall command.
- Here, turn off the frame and the matting, and in the Image parameters, specify the previously created Abstract_wood
 material as the Material.



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• Place the sticker on the wall using the Interior - Single object - Picture on wall instruction.



1.3.4. Bump mapping – with the pattern of the original image

By adding bump map to a texture, we can create a 3D depth. We call it bump mapping.

Bump mapping

Bump Mapping makes the appearance of surfaces uneven, creating a much more realistic effect. During the procedure, a more uneven surface is created by freely modifying the direction of the normal vectors of the model, thus creating the illusion of a more complex, uneven surface. These normal vectors are stored in a texture. These textures are called **Normal Map**. It corresponds to the RGB 3 color (red, green, blue) of the 3 axes of the coordinate system, so that the blue color falls on the axis pointing towards us. Therefore, Normal Maps are mostly bluish.

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LearnOpenGL - Normal Mapping earnopengl.com	How to get a smooth curvature	How to use normal maps? : Corona R	Why are normal maps predomi gamedev.stackexchange.com	. How are normal maps made?

The bump map of a material can be set 3 ways in the Material properties:

- Automatic by the texture of the material
- By selecting a built-in Normal map from the list
- By using our own Normal map texture

Automatic bump mapping by the texture of the material

For materials with texture, if the scale factor is other than 0, a normal map is automatically added, creating the illusion of a 3D effect. The surface roughness must always be corrected by smoothing the roughness, otherwise a too rough effect is obtained.

Specifying a surface roughness with a scale factor only makes sense on a suitable texture, on a color based pattern it is meaningless.

- Select the *Building Brick Blockwork* material and drag it to the wall between the kitchen cabinet and the front door with the As painting option.
- Try the values below.

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Bump mapping with built-in Normal map texture

Normal Map texture can be used on texture based material or on color based material. Normal Map textures can be built-in textures, or you can specify your own Normal Map texture pattern. The built-in Normal Map textures can be selected from the list below:



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Bump / Normal - Softness	40	Pro	*****	A Start Provent and
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Built-in Normal map on texture based material

Let's try the Leather surface on the gray sofa.

If the material is applied on a non-flat surface it is advised to turn on the Recalculate UV mapping option in the material properties. It is especially important in the case of patterned materials.

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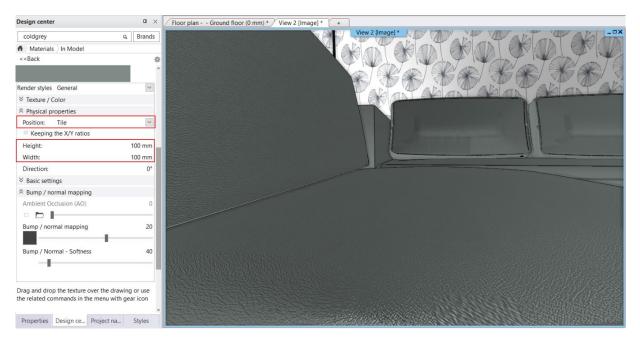
Drag and drop the texture over the drawing or

Properties Design ce., Project na., Style

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Built-in Normal map on color based material

• Let's change the materal of the sofa for example to the RAL coldgrey color and set the built-in Leather Normal map.



• Set the bump mapping og the material of the chairs as well.



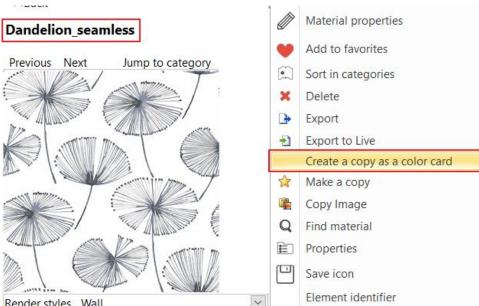
1.4. Color cards

The purpose of a color card is to make the color or texture selection on the 3D model easier, without modifying the plan. The house or flat can be displayed in a new color just by one click.

We can create a color card 2 ways:

- 1. Create a new color card
- 2. Create a color card from an existing material. In the Design Center Project folder select the material that we want to transform to a color card. Then select the **Create a copy as a color card** option by clicking on the cogwheel icon.





Render styles Wall

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Double-click on the color card in the top left corner.

In the color card manager dialog:

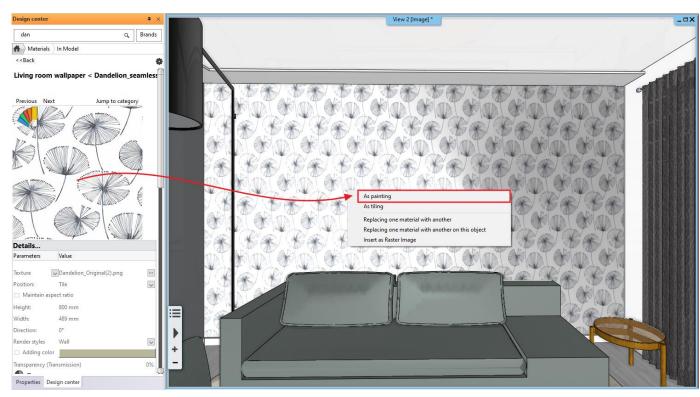
Change its name: Living room wallpaper. Add new materials. These will be the wallpaper variations. You can delete here as well.

When you modify the current material, the program automatically replaces the entire 3D model with the new one. Attention, the name of the material will not change!

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COLOR CARD	
Sub category:	
Other	~
Producer:	
generic	~
(Use \ to organize into tree-structure eg: Myroom\Furniture)	
Current:	
Dandelion_seamless	
Name Dandelion_seamless Cassolo Cassolo light	
The Color card is a collector of real material and displays the currently selected material. You can list any number of materials in the list. It has the advantage that different versions of the same 3D model can b presented by selecting another element in the list without changing the project. If materials are directly to walls, windows, furniture, etc., then their modifications will not affect the 3D model in general. YOU CAPPLY MATERIALS IN THE PROJECT CATEGORY ONLY.	e linked
OK	el

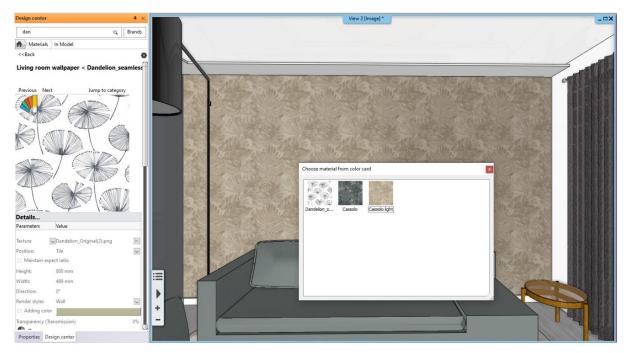
30

• Drag and drop the color card (Living room wallpaper) on the wall behind the sofa.

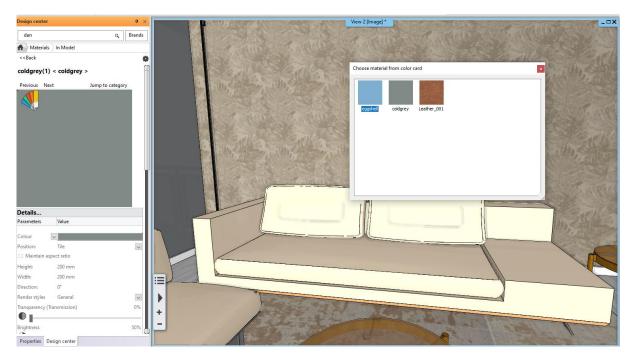


From now on, the materials of the 3D model can be changed to the materials on the color card.

• Click on the color card icon in the upper left corner and select the new material in the appearing dialog.

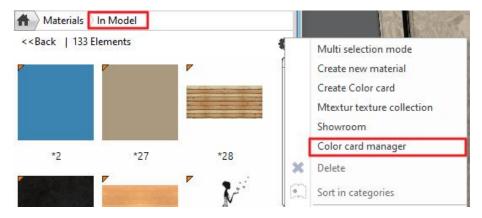


• Repeat it for the material of the sofa. Now we have two color cards.



After that the color cards can be organized into styles so the different variations can be displayed immediately.

Select the Project material library – Settings – Color card manager.



• Create 3 variations.

Select the sofa fabric or living room wallpaper you want to see in a version, then click on the gear to save it as New Style. Repeat this as many times as you want to make as many versions as you like.

When you are done, you can open these styles in the same place. Select the first version, and after pressing OK, the
program will automatically generate the new 3D view.

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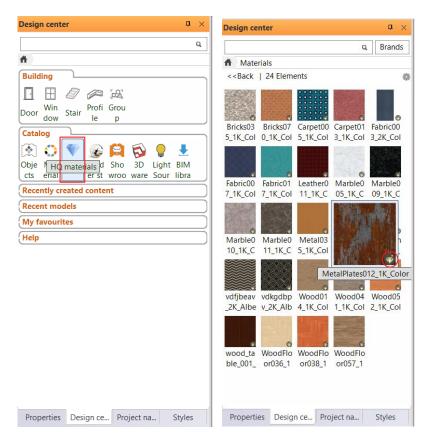
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1.5. PBR materials

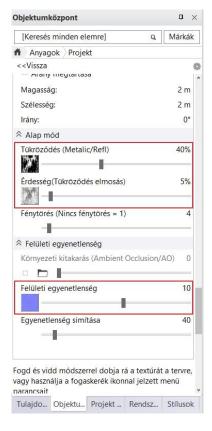
PBR materials open a new world to realism thanks to the channels being not only colors for reflection, transparency and roughness channels for example, but allowing designers to use a wide range of ready to use textures for these too from extremely rich and continuously growing online sources. PBR means Physically Based Rendering and allows to simulate existing materials as realistic as possible under all lighting conditions.

• These materials are available in ARCHLine.XP under **Design Center - HQ Materials**. Here, a number of materials are already pre-saved with a diamond symbol in the bottom right corner indicating that they are PBR materials.

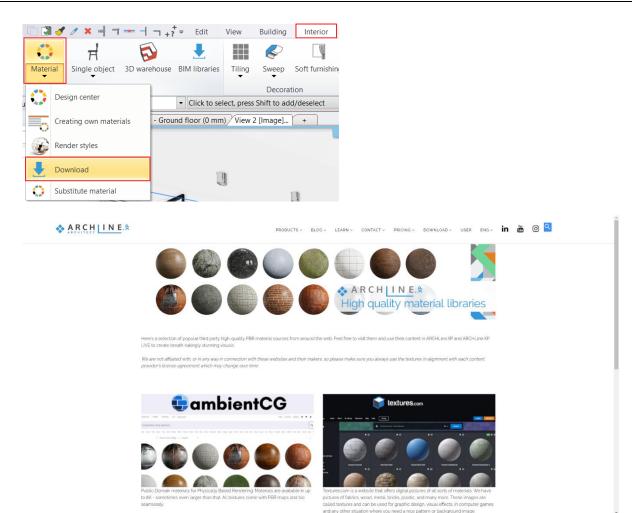




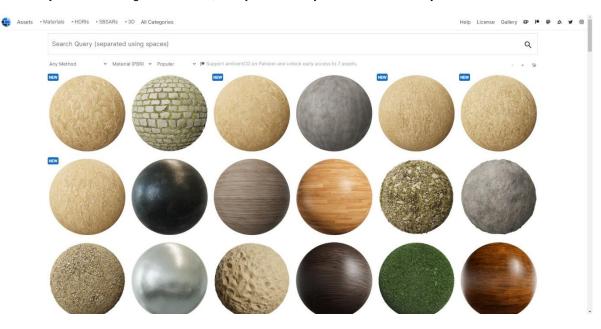
In the material setting, you can see that Metallic (Reflection), Roughness and Bumb mapping can be specified not only by
values but also by textures. This makes PBR materials much more detailed and realistic than "normal" materials.



 Another advantage is that you can access these materials from a huge and constantly growing database. By choosing Interior - Material - Download, the program redirects you to the PBR material library of ARCHLine.XP, where you can find a list of where to download additional PBR materials.



Go to ambientCG, where you can find a range of textures under Materials. Search for 'wood' and download a sample of
your choice. There are several resolutions to choose from, but we recommend that you do not use a resolution higher than
1K-2K. If you choose a higher resolution, it may slow down your work considerably.



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- After downloading the .zip file, drag and drop the zipped folder into the Design Center of ARCHLine.XP (on the left sidebar) without unzipping it.
- The program then pops up the material properties, where you can set the following: Render styles – Parquet Texture (albedo): 55
 - If necessary, the reflection, roughness, refraction and bump mapping of the material can also be adjusted here.
- Save the material after pressing OK:

Name of the new item in the library:	
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• In Design Centre - HQ materials or Design Centre - Recently created content - Materials, select the material you just saved, then place it on the floor as usual As painting.

For more useful information on material management, watch this video: https://www.archlinexp.com/enrollments/courses/latest-videos/interior/8

Workshop 2: Visual design



2. Workshop: Visual design

Created by Krisztina Hárosi

First of all, we need to answer one question.

Why is photorealistic rendering important?

One of the most common ways of communicating in today's modern world is through images. You only have to think of the various social networking sites, we communicate with each other almost exclusively through pictures. This is also mostly the case in interior design. Often our clients prefer to look at a visual image rather than a drawing or a section. A good render will help you to visualize the interior design, answering many questions/doubts: "Will the materials and colors I choose look good in my living room? Will my client like the lights? Will they light the room well enough? And the accessories? What will she/he think of them?". These are questions that can be answered positively with a well-done render image.

So why is photorealistic rendering important? Because we can capture the heart of our client with a sophisticated visual image. The interior will feel like their own.

Let's look at these two pictures taken in the same room. In the first image (image 1), the materials are not set up yet, I didn't use render styles, excessive use of sun and artificial lights, poor perspective, few test renders and short render times.

The second image (image 2) required more time, many test renders and longer render times, but if we put the two images in front of our client, which one would have the greater impact?



Image 1.





Image 2.

To achieve the quality of image 2 in our renderings, we need to learn to create photorealistic images. You have to learn to deal with lights and shadows, know the physical properties of the materials, find the ideal point of view, and build up a photorealistic image that looks realistic, step by step.

In this tutorial, I will show you the main steps of rendering using a simple living room example. From setting the viewpoint to the final render, we will see in detail what values to add in this project and what to look out for to avoid the main mistakes. The result will be the image shown above.

- The tutorial video assumes a basic knowledge of rendering, which you can learn in the <u>Preliminary Course Rendering</u> workshop.
- You can find the project file in the Intermediate course Workshop projects, so you can try all the steps.

If you feel like it, first create a render with the default settings and save it, so you can compare the two images at the end of the process. It's also a good idea to save the test renders so you can track the progress of the image. In the tutorial, we will follow the steps below:

- 1) Viewpoint setting
- 2) Sun position
- 3) Material options Render styles
- 4) Artificial lights
- 5) Final render image
- 6) Photo retouching
- Open the ...\Documents\ARCHlineXP DRAW\2023\Workshop_Intermediate\2_Visual_Design\ Harosi_Krisztina_Render_Start.pro file.

2.1. Viewpoint setting

We often overlook the right perspective. Perhaps the main mistake you see in interior renders is that the creator wants to show as much as possible in a picture: usually setting the perspective from a corner, diagonally (so the scene will look insignificant) or from the top down (so it will look smaller) and with a high camera angle (so the scene will look deformed) to fit everything in.



Scene with wrong viewpoint setting

Let's look at the basic rules for setting a good perspective:

Set the viewpoint perpendicular to the opposite wall at a height of 1-1.4 m so that the camera is at the same height as the point of view. This will make the scene of the picture more pronounced, resembling a professional photographer's image.



Scene with good point of view setting

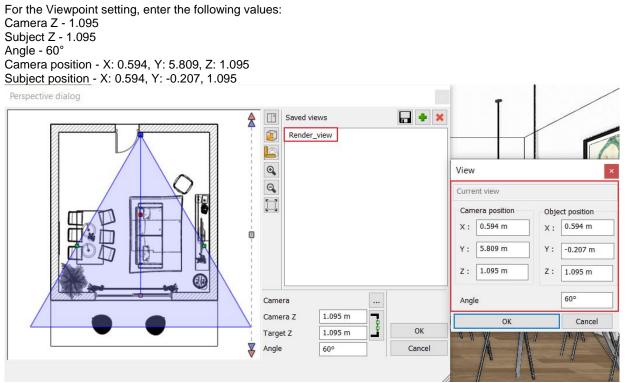
Of course, this is not a rule that cannot be "broken". If necessary, from this position, you can take small steps to turn towards the corner (while making test renders), but don't overdo it.





Render image with turned viewpoint

The camera angle should be between 50° and 70°, otherwise the scene will be deformed.



Perspective settings window

At this point you can also adjust the size of the image. Of course, here it's only at a low resolution. In the rendering settings, in the Standalone Rendering window, set the Resolution to 854x480 and turn on the Render frame. It's a good idea to leave this on as you work, so that if you use a new viewpoint or modify an existing one, you can keep track of what you'll see in the render.

Photorealistic Rendering

Samples per pixel (anti-aliasing)	Q1 - Quick preview image	
Y	_	\sim
Pondornace count	2	\sim
Renuel pass count	30	
Sharper details	~	
Enable artificial lights		
Scaling of artificial lighting	100 %	~
Sunlight	Clear daylight	~
Date and time	18 May 08:30 (Daylight)	
Background	Panorama	~
Panorama	Custom panorama	~
Filename with path	C:\Users\Erika\Documents\ARCHlineXP D	
	25	~
Specify a folder to save render i	C:\Users\Erika\Documents\ARCHlineXP DRA	
Background brightness	100 Brighter, daytime scenes	\sim

	Inherit background from 3D model
Start Pondoring	Rendered Frame on/off
Start Rendering	Change to the default
	Close
	//

2.2. Sun position

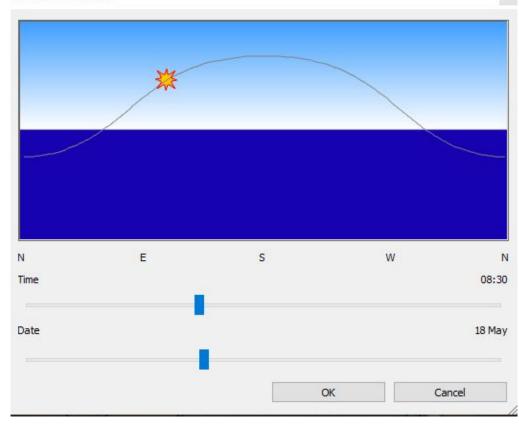
After setting the right viewpoint, try several sun positions, compare the results and choose the best one. Some like a late autumnal late afternoon sun setting with longer shadows, others like a high sun setting in the summer after lunch. Choose the sun setting that works best for you, but make sure it creates a contrast between light and shadow. For example, don't brighten the whole scene by having the light come from behind the camera, or choose a sun setting so low from the eye that it illuminates the whole interior. Try to find a good light/shadow balance.





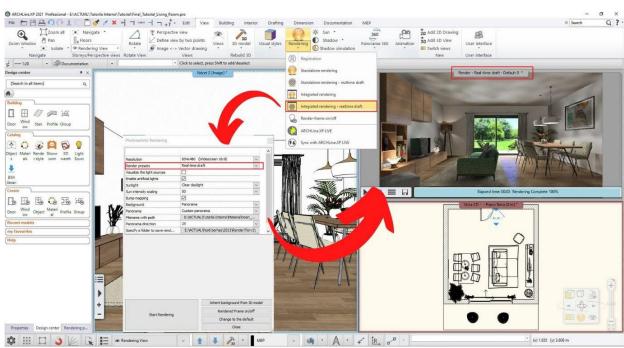
Too low sun exposure from the front

Switch on the shadow and use the shadow simulation to set the date to 18 May at 08:30



Shadow simulation

If you don't like this setting, use the realtime draft to find another sun position.



Integrated realtime draft mode

Once you have set the correct position of the sun, turn off the integrated realtime draft window.

2.3. Material Options - Render Styles

Before we get into this not at all easy subject, I would like to give you some general advice on choosing the right texture and setting the material.

Always use high quality textures. These can be found in the ARCHLine.XP Tutorial or downloaded from various websites, but make sure you choose images with a medium resolution, about 400x400 pixels, but this depends on the actual size of the texture. For example, if it's a poster covering a whole wall, choose a higher resolution image.

It is important that the textures are seamless. If they are not, they should be converted into an area pattern either in ARCHLine.XP or in an image editing program, if possible.

If you want a really good rendering, not only assign the right render styles to the objects, but also take the time to fine tune the parameters of the materials while checking the settings with test renders.

During test renders, it is possible that the color of some materials, e.g., wood, may become too dominant and affect the surroundings, e.g. walls (Image 1), so it is recommended to desaturate them somewhat in an external program such as Photoshop, Gimp, Lightroom, etc. (Image 2).







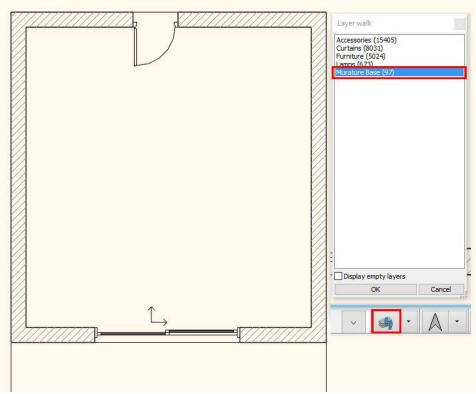


Image 2

2.3.1. Material adjustment on architectural elements - Phase 1

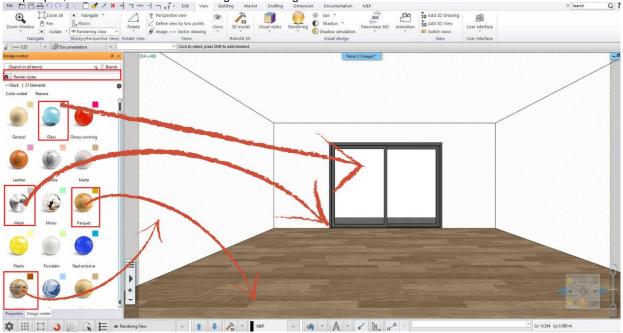
In the first phase, only the architectural model is displayed, which is located on the "Murature Base" layer in the example project. Switch off all other layers. Rebuild the 3D model.

45



Layer walk window

Use the drag and drop method to assign appropriate render styles to these main elements. Wall for the wall, parquet for the parquet, metal for the metal door and glass for the glass.



Render styles

Before fine-tuning the material settings, let's create the first standalone test render. In the **Standalone Render** window, I set a low resolution, best quality, but low light source sampling:

- Resolution: 854x480
- Render presets: Q2
- Sharper details: on
- Sunlight: Clear daylight
- Background: Panorama Custom panorama: HDRI noon_grass_2k
- Panorama direction: 25. Brightness: 100

You can find the panoramic picture here: ..\Documents\ARCHlineXP DRAW\2023\ Workshop_Intermediate\2_ Visual_Design\noon_grass_2k.hdr

Photorealistic Rendering

Resolution	854x480 (Widescreen 16:9)	\sim
Render presets	Q2 - Cleaner, higher quality image	
Samples per pixel (anti-aliasing)	4	\sim
Renderpass count	30	\sim
Sharper details	\checkmark	
Enable artificial lights		
Scaling of artificial lighting	100 %	
Sunlight	Clear daylight 📃 🗸	
Date and time	18 May 08:30 (Daylight)	
Background	Panorama	
Panorama	Custom panorama	
Filename with path	C:\Users\Erika\Documents\ARCHlineXP Dra	
Panorama direction	25	
Specify a folder to save render i	C:\Users\Erika\Documents\ARCHlineXP [DRA
Background brightness	100 Brighter, daytime scenes	\sim



Standalone rendering window





Render image without modification of materials Depending on this, fine-tune the materials as shown in the diagrams below:

Wall:

48

Material prop	perties		×
Name	Stucco2	Copy material properties Paste material prop	erties
Render	~	Texture(albedo)	59
		Image size in pixels: 64 x 64	
		Physical properties	
		 A Highed properties A Basic settings 	
		Transparency	0%
		Metalic (Reflection)	0%
		Refraction (IOR, No refraction = 1)	1
		Roughness(Blurry Reflection(Visually indistinct mirroring))	0%
	10000000000000000000000000000000000000	Blurriness of transparency (transparent -> blurred)	0%
	Appearance	Medium color / Density	0
	Thermal parameters		
	BIM parameters	Ambient Occlusion (AO)	0
	Hatch on section		
		Bump / normal mapping	3
	Hatch in 3D	Bump / Normal - Softness	18
		Нер	Cancel

Parquet:

Material pro	perties		
Name	Wood041_1K_Color	Copy material properties Paste material pro	operties
Render	Ň	Render styles Parquet	× ^
		Colour	
		☑ Use texture image	
		Adding color	
		Texture(albedo)	75
		Image size in pixels: 1024 x 1024	
		➢ Physical properties	
		Metalic (Reflection)	15%
		Roughness(Blurry Reflection(Visually indistinct mirroring))	10%
		Refraction (IOR, No refraction = 1)	1.4
	Appearance	1 +	
	Thermal parameters	Ambient Occlusion (AO)	0
	BIM parameters		
		Bump / normal mapping	15
	Hatch on section	· · · · · · · · · · · · · · · · · · ·	
	Hatch in 3D	Bump / Normal - Softness	25
			v
			Concel
		Неір ОК	Cancel



Door frame:

Material pro	operties		
Name	ALUBRIGHT-02	Copy material properties Paste material prop	perties
Render	~	Render styles Metal	× ^
		☆ Texture / Color	
		Colour	
		□ Use texture image	
5232/		Texture(albedo)	48
		Image size in pixels: None	
		Position: Tile	~
		Recalculate UV mapping	
		A Basic settings	
		Metalic (Reflection)	20%
		Roughness(Blurry Reflection(Visually indistinct mirroring))	11%
	A	Refraction (IOR, No refraction = 1)	1.4
	Appearance		
	Thermal parameters	A Bump / normal mapping	
		Ambient Occlusion (AO)	0
	BIM parameters		
	Hatch on section	Bump / normal mapping	0
	Hatch in 3D	Bump / Normal - Softness	0
			v v
		Неір ОК	Cancel

Door glass:

Material propert	ies		×
Name	Glass26	Copy material properties Paste material propert	ies
Render	~	Render styles Glass	× ^
		☆ Texture / Color	
		Colour	
		Use texture image	
		Texture(albedo)	85
5252a			
		Image size in pixels: None	
		Physical properties	_
		Position: Tile	~
		Recalculate UV mapping	
		Basic settings	
		Transparency	100%
	1m	Metalic (Reflection)	0%
	Appearance	Roughness(Blurry Reflection(Visually indistinct mirroring))	0%
	Thermal parameters	Refraction (IOR, No refraction = 1)	1
	BIM parameters		
	Hatch on section	Blurriness of transparency (transparent -> blurred)	0%
	Hatch in 3D	Medium color / Density	0
			,
		Нер ОК	Cancel

In the Glass property window, as you can see, I've completely removed the reflection, as if the glass wasn't there. Of course, if you want, you can set low values for refraction and reflection. However, keep in mind that in this scene the intensity of the sunlight is strong and the background is bright, so you shouldn't see any reflection of the interior on the glass.





Window glass with reflection

Terrace flooring:

This will be the surface that gets the most sun. To keep it from being over-burned, I've assigned it a matte style and set the brightness to low.

Material prope	rties				×
Name	36_dolomia marble floor tile texture-sea	Copy material prope	rties	Paste material propert	ies
Render	~	Render styles Ma	atte		× ^
~~~~~~~~~		☆ Texture / Color			
		Colour			
		Use texture image			
		Adding color			
		Texture(albedo)			12
		Image size in pixels: 200	00 x 2000		
		Position: Til	e		$\sim$
		Keeping the X/Y ratio	IS		
		Height:			2 m
		Width:			2 m
		Direction:			0°
		Recalculate UV mapp	ing		
	Appearance				
		Transparency			0%
	Thermal parameters				
	BIM parameters	Medium color / Density			0
	Hatch on section		ıg		
	Hatch in 3D	Ambient Occlusion (AO)			0
	instantin op				
		_			· ·
		Help		ОК	Cancel

### Prepare the next test render with the values already set.



It's OK if it looks dark, we'll correct it at the end of the workflow.



### 2.3.2. Material adjustment on furniture - Phase 2

In phase 2, we deal with the furniture.

Let's turn on the "Furniture" layer, where the furniture can be found and rebuild the 3D model.

Layer walk	
Accessories (15405)	
Curtains (8031)	
Furniture (5024)	
Lamps (673)	
Murature Base (97)	
Display empty layers	
Refresh 3D	
ОК	Cancel

We also assign render styles to the new elements:

- Flooring style for the bookcase
- Textiles for the sofa, cushions, chair fabric and carpet
- Mirror style for metal legs.

It's worth taking a close-up test render of each piece of furniture to see any imperfections at a low resolution.



### Sofa upholstery material:

Name	57_canvas fabric texture-seamless_hr	Copy material properties Paste material	properties
Render	~	Texture(albedo)	50
		Image size in pixels: 1024 x 1024	
		➢ Physical properties	
		☆ Basic settings	
		Transparency	0%
		Metalic (Reflection)	0%
		Refraction (IOR, No refraction = 1)	1
		Roughness(Blurry Reflection(Visually indistinct mirroring))	0%
		Blurriness of transparency (transparent -> blurred)	0%
	Appearance	Medium color / Density	0
	Thermal parameters	A Bump / normal mapping	
	BIM parameters	Ambient Occlusion (AO)	0
	Hatch on section	Bump / normal mapping	9
	Hatch in 3D		
		Bump / Normal - Softness	40

#### Bookcase:

56

Material properties Copy material properties 21_light wood fine texture-seamless_hrk Paste material properties Name Render  $\sim$ Texture(albedo) 60 1 Image size in pixels: 2610 x 2000 ➢ Physical properties Transparency 25% ł Metalic (Reflection) 5% 2 Refraction (IOR, No refraction = 1) ÷ Roughness(Blurry Reflection(Visually indistinct mirroring)) 22% ł Blurriness of transparency (transparent -> blurred) 0% Ŀ Medium color / Density 0 Appearance Thermal parameters ☆ Bump / normal mapping Ambient Occlusion (AO) 0 BIM parameters Hatch on section Bump / normal mapping 3 Hatch in 3D Bump / Normal - Softness 25 ОК <u>Help</u> Cancel

### Grey cushion:

Name	mpm_vol.07_p02_fabric_4_bump	Copy material properties Paste mat	erial properties
ender		Colour	
		☑ Use texture image	
		Adding color	
		Texture(albedo)	57
		Image size in pixels: 1000 x 1000	
		♥ Physical properties	
		Transparency	0%
		Metalic (Reflection)	0%
		Refraction (IOR, No refraction = 1)	1
		Roughness(Blurry Reflection(Visually indistinct mirroring))	0%
	Appearance		
	, appearance	Blurriness of transparency (transparent -> blurred)	0%
	Thermal parameters		
	BIM parameters	Medium color / Density	0
	- Parametero		
	Hatch on section	A Bump / normal mapping	
	Hatch in 3D	Ambient Occlusion (AO)	0
			0



### Brown cushion:

58

	mpm_vol.07_p02_fabric_3_diff	Copy material properties Paste materia	ial properties
		<ul> <li>Render styles</li> <li>Fabric</li> </ul>	~
		A Texture / Color	
7		Colour	
7		☑ Use texture image	
		Adding color	
		Texture(albedo)	57
		Image size in pixels: 2500 x 2500	
		✓ Physical properties	
		A Basic settings	
		Transparency	0%
L			
		Metalic (Reflection)	0%
-			
		Refraction (IOR, No refraction = 1)	1
	Appearance		
		Roughness(Blurry Reflection(Visually indistinct mirroring))	0%
Th	ermal parameters		
	BIM parameters	Blurriness of transparency (transparent -> blurred)	0%
н	atch on section	Madium color / Density	0
		Medium color / Density	0
	Hatch in 3D	Bump / normal mapping	
		A builty normal mapping	-
		Неір ОК	Cancel

### Metal legs of sofa, table, chairs:

Name Steel     Render     Render styles     Mirror     * Texture / Color        Color	Material properties		
Adding color   Adding color   Colour   Use texture image   Adding color   Texture(albedo)   20   Physical properties   Basic settings   Transparency   Metalic (Reflection)   4%   Metalic (Reflection)   1   Metalic (Nor No refraction = 1)   1.56   Medium color / Density	Name Steel	Copy material properties Paste material prope	rties
Colour   Adding color   Adding color   Texture(albedo)   20   Physical properties   Basic settings   Transparency   Metalic (Reflection)   4%   Roughness(Blurry Reflection(Visually indistinct mirroring))   8%   Metalic (iOR, No refraction = 1)   1.56   Metaliur color / Density	Render ~	Render styles Mirror	× ^
Use texture image   Adding color   Texture(albedo)   Image size in pixels: 512 x 520   Physical properties   Basic settings   Transparency   Metalic (Reflection)   Metalic (Reflection)   4%   Roughness(Blurry Reflection(Visually indistinct mirroring))   8%   Metalic (IOR, No refraction = 1)   1.56   Medium color / Density		☆ Texture / Color	
Adding color   Texture(albedo)   Image size in pixels: 512 x 520   Physical properties   & Basic settings   Transparency   Metalic (Reflection)   Metalic (Reflection)   4%   Metalic (Reflection)   4%   BIM parameters   Medium color / Density		Colour	
Image size in pixels: 512 x 520   Physical properties   Basic settings   Transparency   Metalic (Reflection)   Metalic (Reflection)		☑ Use texture image	
Appearance   Metalic (Reflection)   Metalic (No refraction = 1)   1.56   Metium color / Density		Adding color	
<ul> <li>Physical properties</li> <li>Basic settings</li> <li>Transparency</li> <li>Metalic (Reflection)</li> <li>Metalic (Reflection)</li> <li>Metalic (Reflection(Visually indistinct mirroring))</li> <li>8%</li> <li>Refraction (IOR, No refraction = 1)</li> <li>1.56</li> <li>Medium color / Density</li> </ul>		Texture(albedo)	20
<ul> <li>Physical properties</li> <li>Basic settings</li> <li>Transparency</li> <li>Metalic (Reflection)</li> <li>Metalic (Reflection)</li> <li>Metalic (Reflection(Visually indistinct mirroring))</li> <li>8%</li> <li>Refraction (IOR, No refraction = 1)</li> <li>1.56</li> <li>Medium color / Density</li> </ul>			
Appearance   Appearance   BIM parameters     BIM parameters     Medium color / Density		Image size in pixels: 512 x 520	
Transparency 0%   Metalic (Reflection) 4%   Metalic (Reflection) 4%   Roughness(Blurry Reflection(Visually indistinct mirroring)) 8%   Refraction (IOR, No refraction = 1) 1.56   BIM parameters 0		➢ Physical properties	
Appearance   Thermal parameters   BIM parameters     Medium color / Density			
Appearance   Thermal parameters   BIM parameters     Medium color / Density		Transparency	0%
Appearance         Thermal parameters         BIM parameters             Medium color / Density			
Appearance       Roughness(Blurry Reflection(Visually indistinct mirroring))       8%         Thermal parameters       Refraction (IOR, No refraction = 1)       1.56         BIM parameters       Medium color / Density       0		Metalic (Reflection)	4%
Appearance     Refraction (IOR, No refraction = 1)     1.56       BIM parameters     Medium color / Density     0			
Thermal parameters     Refraction (IOR, No refraction = 1)     1.56       BIM parameters     Medium color / Density     0		Roughness(Blurry Reflection(Visually indistinct mirroring))	8%
Thermal parameters     Refraction (IOR, No refraction = 1)     1.56       BIM parameters     Medium color / Density     0	Appearance		
BIM parameters 0		Refraction (IOR, No refraction = 1)	1.56
BIM parameters	Thermal parameters		
	BIM parameters	Medium color / Density	0
Hatch on section A Bump / normal mapping	Hatch on section		
Hatch in 3D Ambient Occlusion (AO) 0	Hatch in 3D	Ambient Occlusion (AO)	0
Help OK Cancel		Неір ОК	Cancel

### Chair upholstery material:

60

Material properties

ame	28_canvas fabric texture-seamless_hr	Copy material properties P	aste material properties
der	, ,	Render styles Fabric	~
		Colour	
		☑ Use texture image	
		Adding color	
H		Texture(albedo)	57
4		Image size in pixels: 2000 x 2000	
		Transparency	0%
		Metalic (Reflection)	0%
		Refraction (IOR, No refraction = 1)	1
	Appearance		
		Roughness(Blurry Reflection(Visually indistinct mirr	roring)) 0%
	Thermal parameters		
	BIM parameters	Blurriness of transparency (transparent -> blurred)	0%
	•		
	Hatch on section	Medium color / Density	0
	Hatch in 3D		
		A Bump / normal mapping	
			-
		Help	OK Cancel

### Carpet:

Material pro	operties		
Name	18_white carpeting texture-seamless_hr	Copy material properties Paste material	properties
Render	~	□ Adding color	
		Texture(albedo)	45
		Image size in pixels: 2000 x 2000	
		Physical properties	
		Basic settings	
		Transparency	0%
		Metalic (Reflection)	0%
		Refraction (IOR, No refraction = 1)	1
		Roughness(Blurry Reflection(Visually indistinct mirroring))	0%
	Appearance		
		Medium color / Density	0
	Thermal parameters		
	BIM parameters		
	•	Ambient Occlusion (AO)	0
	Hatch on section		
	Hatch in 3D	Bump / normal mapping	15
		Duran (Nama) Cathana	40
		Неір ОК	Cancel

Create a new test render.



Render image with furniture

The result is evolving, let's keep working on Setting artificial lights.

### 2.4. Artificial lights

In addition to natural lighting, the correct management of artificial light sources is very important. A well-lit space can give a pleasant feeling to those who look at it. It can help to highlight important parts of the room. By playing with light and shadow reflections, you can make the final result more exciting.

Start with lighting the darker parts of the room, then use spots, for example, to brighten up the more interesting parts of the room (e.g., a wall painting) and so on, taking care not to over-light the scene. If you reduce the intensity of the shadow, you 'flatten' your image.

#### With lamps off

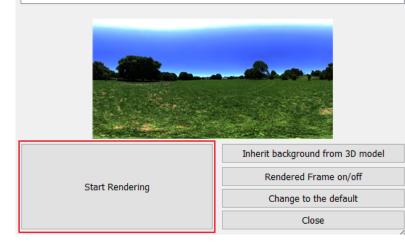
Turn on the "Lamp" and "Curtains" layers.

We have three groups of light sources: a floor lamp in the balusters, a small table lamp on the bookcase and 2 large pendant lamps. In the separate rendering window, turn off the Lights display and start rendering.

Photorealistic Rendering

Resolution	854x480 (Widescreen 16:9)	~	
Render presets	Q2 - Cleaner, higher quality image	$\sim$	
Samples per pixel (anti-aliasing)	4	~	
Renderpass count	30	~	
Sharper details	$\checkmark$		
Enable artificial lights			
Scaling of artificial lighting	100 %	~	
Sunlight	Clear daylight	~	
Date and time	18 May 08:30 (Daylight)		
Background	Panorama	~	
Panorama	Custom panorama	~	
Filename with path	C:\Users\renata.nagy\Documents\ARCHline		
Panorama direction	25	~	
Specify a folder to save render i	C:\Users\renata.nagy\Documents\AR(	CHline	
Background brightness	100 Brighter, daytime scenes	~	

Accessories (15405)		
Curtains (8031) Furniture (5024) Lamps (673)		
Murature Base (97)		
Display empty layer	s	
□ Display empty layer	s	

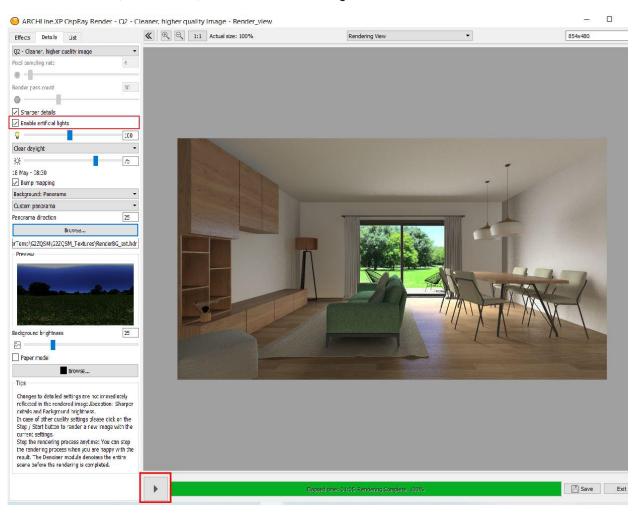




Render image with lights switched off

#### With lamps on

The picture still shows only natural lighting, regardless of whether the lights were on. In the render window, under *Details*, turn on *Enable Artificial Lights* and restart the render.







Render image with lights switched on

### Low light

If you compare the two pictures, you can see that the small lamp and the floor lamp are very good at illuminating the dark parts of the scene. The 2 large pendant lights can be switched off, because this part of the room is already illuminated by the sun. Let's make a rendering anyway. Remember to turn the lights back on in the separate render window.



Switch off the 2 pendant lights



So, the lighting of the scene is right.

# 2.5. Final render image

Let's also turn on the last layer on which the accessories can be found: "Accessories".

Layer walk	×
Accessories (15405) Curtains (8031) Furniture (5024) Lamps (673) Murature Base (97)	
Display empty layers	
Refresh 3D	
ОК	Cancel

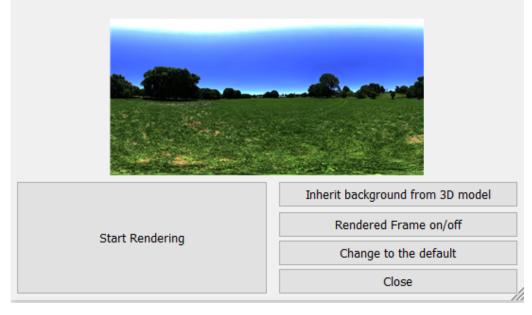
In the standalone render window, enter the following values:

Resolution: 1280x720 Samples per pixel: 10 Renderpass count: 30

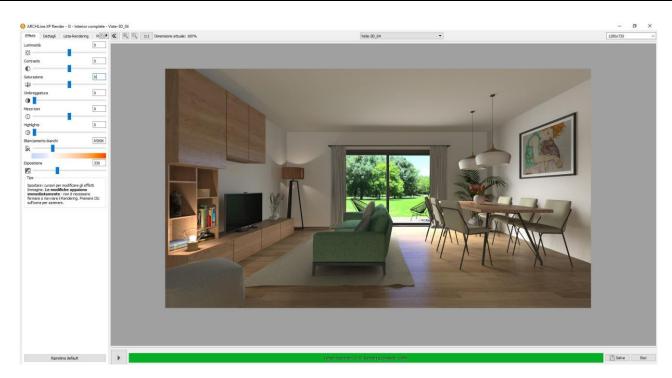


Photorealistic Rendering

Resolution	1280x720 (Widescreen 16:9 - HD)	~	
Render presets	Qx - Custom settings	~	
Samples per pixel (anti-aliasing)	10	~	
Renderpass count	30	$\sim$	
Sharper details	$\checkmark$		
Enable artificial lights	$\checkmark$		
Scaling of artificial lighting	100 %	$\sim$	
Sunlight	Clear daylight	$\sim$	
Date and time	18 May 08:30 (Daylight)		
Background	Panorama	$\sim$	
Panorama	Custom panorama		
Filename with path	C:\Users\Erika\Documents\ARCHlineXP Dra		
Panorama direction	25	$\sim$	
Specify a folder to save render i	C:\Users\Erika\Documents\ARCHlineXP DRA		
Background brightness	100 Brighter, daytime scenes	$\sim$	



Let's start the rendering. The larger size of the image and the Qx setting (samples per pixel: 10) make it easier to check that everything is correct. However, more render time is needed.



If everything is OK, you can set the final render values in the rendering window.

Resolution: 1920x1080 Samples per pixel: 30

ARCHLine.XP OspRay Render - Qx - C	ustom	settings - Rer	nder_view					×
Effects Delails List	«		1:1 Actual size: 100%	Rendering View	•		1920×1080	~
Qx - Custorn settings								
Pixel sampling rate 30	1							
Render pass count 30								
	-							
Sharper details								
Enable artificial lights								
9	]							
Clear daylight	•							
※ 75		-	The second					
18 May - 08:30								
Bump mapping			A CONTRACTOR					
Background: Panorama						-		
Custom panorama			The second second			-		
Panorama direction 25								
Browse								
erTemp\G3ZTC6\G3ZTO6_Textures\RenderBG_ext.hd	1			-				



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The end result may still look bleak. Now set *Effects* to the values below. Of course, if you want the image lighter or darker, you can change them. Always set the Exposure first so that the image is bright enough. Adjust the other values very gently.

Since the render time is very long at such a high resolution and sample rate, the previous render image with a resolution of 1280x720 and a pixel sampling of 10 is also suitable for testing the effects in this example. For live work, it is best to set the effects on the final high-resolution image.

Effects Details List	
Brightness	0
×	
Contrast	0
0	
Saturation	-13
ф —	
Shadows	10
•	
Mid tones	12
0	
Highlights	0
()	
White balance	6500K
lk	
Exposure	350
Tips	
Drag the sliders to modify the image effects. <b>changes will immediately appear</b> - there i need to stop or restart the rendering. To rese effect simply click on its icon.	s no



Final render image with effects

## 2.6. Photo retouching

With the results you see below, I'm sure anyone you show the picture to will just say "*WOW, it looks so realistic*". But it can be further improved!

I'm sure you've seen some beautiful scenic designs on various websites. The first question is always the same. How do they do it? What software do they use for rendering? Of course, it's very important that whatever visual design program you use, the render image you create here must be of high quality. The visual designs you see on the internet or in catalogues are all photo-retouched. A photo post-production only enhances the beauty of the render image that is already well done. Just adding a little contrast or lighting can add a lot of subtlety to the result.

As I mentioned above, there are different programs: Gimp, Lightroom, Photoshop, ...

You can use these, but you can also use the Effects in ARCHLine.XP Render to get a nice result without using an external program.

Photo post-processing is an extra step that can help to improve the final result. At the end of the workflow movie that accompanies this <u>tutorial</u>, you can see the adjustments I made in Photoshop.





Retouched image

This brings me to the end of my proposals. I hope that it will be of help to you and that you will be able to master what you have learned here in a short time.

As I mentioned, I have also made a workflow movie of this teaching aid, which you can find here:

Workshop 3: Importing architectural plans



# 3. Workshop: Importing architectural plans

During this workshop, we look through all options how we can import an architectural floorplan 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 floorplan in the following formats.

- image as .jpg, .png format
- raster image as PDF format
- geometry as PDF format
- ✤ as DWG drawing
- ✤ as IFC model
- ✤ as Revit file
- Open your browser and watch the following video tutorial: <u>https://www.archlinexp.com/enrollments/courses/intermediate-course/importing-architectural-plans/1</u>

## 3.1. Import floorplan 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 floorplan in different formats. Let's look at the simplest case when the floorplan is available as raster image.

#### 3.1.1. Import raster image

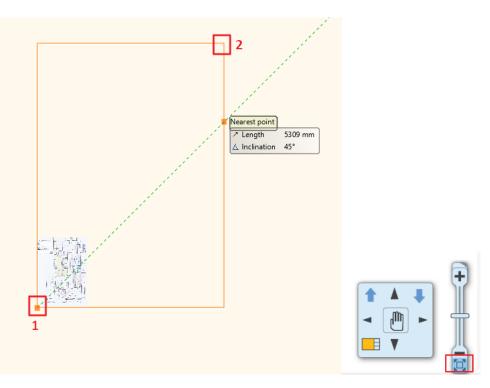
- First import the previously saved raster image. Select File / Import / Raster image command.
- Choose the folder ...\ARCHlineXP Draw\2023\Course_Intermediate\3_Importing architectural plans\JPEG and the file
   Beetroot_Bar_floorplan.jpg-
- Now the Image Property window appears:

Image						×
File				General Pr	operties	
Name	Beetroot_Bar_floorpla	an	<b>7</b> 0 8	- Bottom-most $\sim$		
Path	C:\Users\Cadline\Doo	cuments\ARCI	HineXP Draw\2020\Cou	] 🥭 R	aster image 🛛 🗸	
	Attached		$\sim$			
Insertion	Point y on screen	Size	y on-screen	Rotation	y on-screen	
X: Y:	0 mm 0 mm	Length Height	1000 mm 1426.1 mm	Angle	0 ~	
		Resolutio	n: 2410 x 3437	Transpare	ncy 0	
B	IM parameters			ОК	Cancel	

 Press OK to close the dialogue and either place the image by entering the two corner points, or press Enter after entering the first corner point to place the image at the original size.



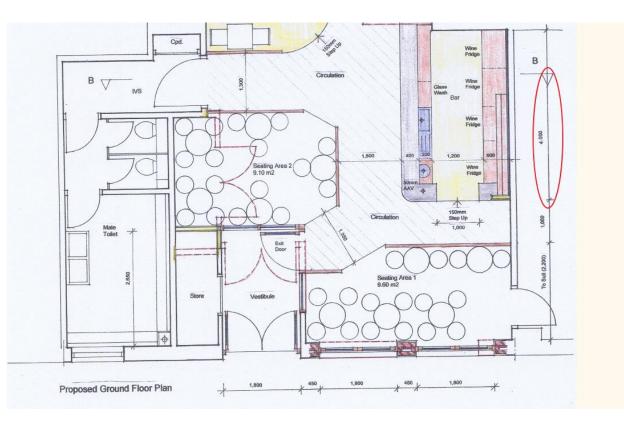
🐟 ARCH INE. 🕏



• Then it is recommended to use "Fit to view" command to get the optimal zoom of the image.

## 3.1.2. Calibration

- 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 endpoints of the selected wall and enter the actual size (4000 mm).

ge E	2 Hosszúrség 0.699 m ∠ Hejűsszög 90'47	
e .	4.000	ARCHLine.XP 2020
600		ARCHLine.XP 2020 × Input the real world distance between the points
lge		New value: 4000
	1+	OK Cancel

- Now use the "Fit to view" command again.
- It is advisable to check the accuracy of the calibration. The quickest way is going to the Ribbon menu / Dimension / Measure and select Distance tool.

Drafting	Dimensio	n D	0	cumentation	1
ckets Lamp	os on wall	Edit		(i) Measure	
rior		Edit		+	
	Floor plan	- Default	+? Dis	tance	

• As you can see the "Measured distance" is 4000 mm, so the calibration was accurate. Now we have a scaled floor plan.

A difference of 10-20 mm is acceptable. If the deviation is greater than this, repeat the Calibration instruction.

Measured distance Measured distance in x	4000.8 mm 0 mm	
Measured distance in y	4000.8 mm	

Next step is to draw walls.

#### 3.1.3. Rotate the image

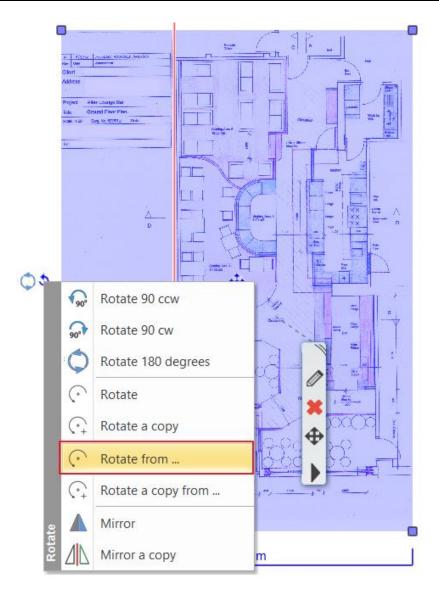
 $\square$ 

The vertical and horizontal walls in the image are not completely vertical and horizontal because the drawing in the image is rotated slightly.

In such a case, it is a good idea to rotate it back before starting work.

- Draw a vertical red line (Drafting Line tool) from point 1 upwards. Now you can clearly see the inaccuracy.
- From the local menu of the image, select Rotate from... command.
- Specify the first angular segment by clicking on points 1 and 2.
- Then click on the red line (3).





If the lines overlap, the walls are completely vertical. Delete the auxiliary line.

## 3.1.4. Create wall styles

•

Now we create a new wall style which can be used for all projects: 1 layered 20 wide wall First set the wall properties. Go to **Ribbon menu / Building / Properties** and choose **Wall**.



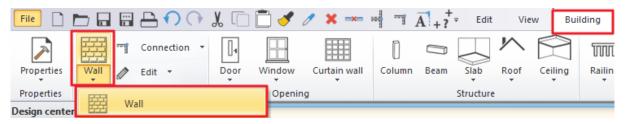
• Set the wall "Total thickness" to 200 mm, and "Unconnected height" to 2700 mm (1).

Wall		Styles	
General properties		▲ ▼ I layered	06 wide wall
🚺 🔲 🔲 0.3 mm 🗸 🛫 Wall - Load-beari 🗸	Finish Face: Interior		l 08 wide wall l 10 wide wall
Simple Line 8 - Bottom-most V	Finish Face: Exterior	Coffee_cream	I 12 wide compact brick I 25 wide compact brick
			25 wide wall
Unconnected Height 2700 mm	Slant angle	Styles	×
Top offset from the floor top level (> 0: Up) 0 mm	Structural wall	New name of style	
Base offset from the floor 1 0 mm ~	Wall status	Folder	
Total thickness: 200 mm	Location line		~
Edit Compound Walls		Subfolder	
	Inclined wall section height	Folder and subfolder specification is not mandatory. If you specify these, the given style name will automatical	
	U-value: 2.60 W/(m2*K)	Scope	
	Skip this wall over room	Available in this project only     Available in all projects	5
			OK Cancel
Preview 2D view ~			
Axis line attributes		New	3
Attributes of the Finish Face: Interior      Visibility of sides		Activate	Modify
		6	
BIM Parameters 1 layered 38 wide wall		OK Cancel - Rename	Delete

- Click on the **Style** button (2).
- In the "Styles" dialogue window, click on "New" to create a new style (3).
- Name the new style "1 layered 20 wide wall" (4). This style can be used in any projects. Hit OK (5) to close the dialogue window.
- The new style activated automatically. Close the wall dialogue window (6).

#### 3.1.5. Draw a wall

· Let's draw walls by choosing the Ribbon menu / Building / Wall command.



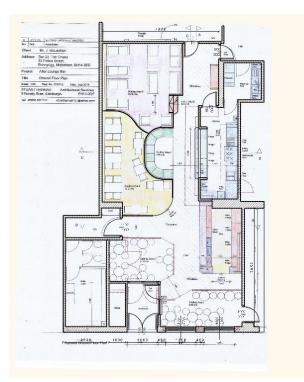
• To redraw walls, you have to give the starting and endpoints. Be careful the wall thickness should fall to the good side of the reference line.

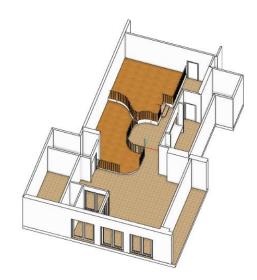
From the floating menu, choose "**Right side**" then click on the wall endpoint. Now follow the image and draw all walls on the floorplan.



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







## 3.2. Import floor plan from raster image as PDF file

In the next example, we received the PDF file as a 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.

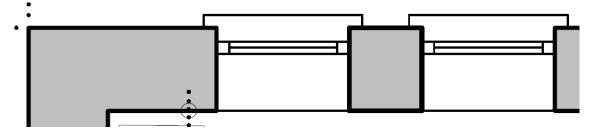
How can we decide which type of PDF file we received?

Open the image from File Explorer and zoom out the floor plan, before importing it.

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 an image.



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

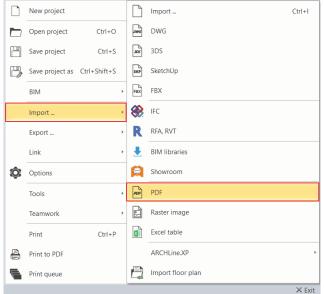


Regardless of the PDF file contains a raster image or a geometry drawing; the same PDF import option is applicable. The result will be a raster image or a geometry drawing.

#### 3.2.1. Import a PDF file as a raster image

We received the floorplan as raster image in PDF file.

- Select from File menu / Import / PDF command.
- Choose the folder ...ARCHlineXP Draw\2023\Course_Intermediate\3_Importing_Architectural_Plans\PDF and the file Charleville Mansion.pdf.



- Once it is a raster file, select the Data as raster image option.
- The Resolution should be 300 dpi to ensure that details are visible when enlarged.
- Select page 1 of the multi-page PDF file.

PDF import options		 	
Procedure			
O Data vectorization			
Data as raster image			
Resolution			
300 dpi ~			
The selected PDF document contains 2	page(s)		
◯ All pages			
Selected pages	1		
Enter a list of the selected page numbe e.g. 1;3;6-12	ers and/or ranges,	ОК	Cancel

Place the PDF file near the original. Enter.
 Use the "Fit to view" tool to enlarge the image if necessary.

#### 3.2.2. Calibration

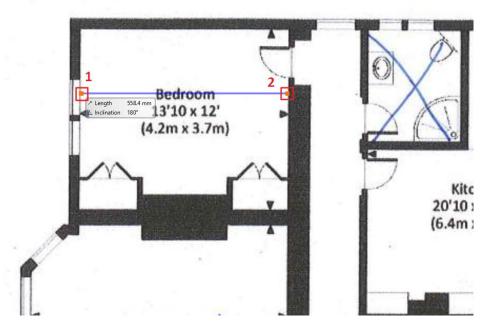
The raster image is not scaled; therefore, we have to calibrate. Zoom in the raster image and select a wall which has a dimension value.

• Go to Ribbon menu / Drafting / Raster image and select Calibrate tool and then the image.

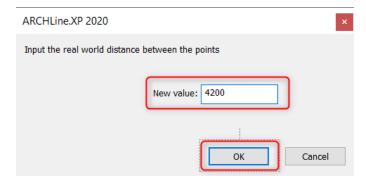


ding Interior			Draft	ing	Anno	tate
	°	[ <b>2D</b> ]		É		
Rast	er image	(	Group T	3D	Shape -	Push /
-	Place					
2	Calibrate					

Select the first point (1) then the second point on the parallel wall (2).



• In the appearing dialogue window enter the dimension given by the imported floorplan **4,200 mm**. Check your work with the Measure command.



## 3.2.3. Create walls

- Now, images are scaled. Use the "Fit to view" option.
- Create a new wall style with 200 mm width.
- 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 (1 layered 20 wide wall) from the appearing list and start to redraw the external walls.

When you finished with it, you can see other walls of different widths on the floorplan.

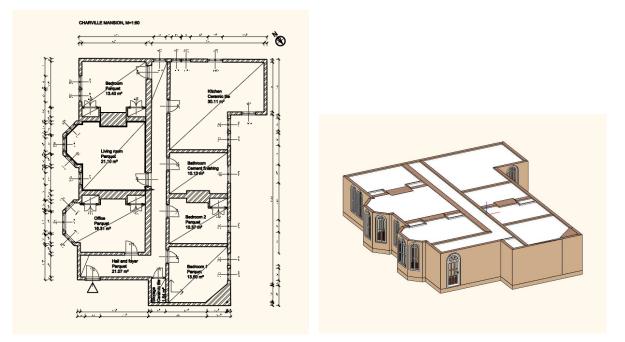
 Under properties, you can easily swap between different wall thickness without closing the drawing command. Choose "1 layered 38 wide" wall, and draw the last wall.

Properties		<b>t</b> >
	1 layered 20 wide wall	0
Style		^
🖂 1 layered	06 wide wall	
🖂 1 layered	08 wide wall	
🖂 1 layered	10 wide wall	
🖂 1 layered	12 wide compact brick	
🕋 1 layered	20 wide wall	
🐸 1 layered	25 wide compact brick	
🐸 1 layered	25 wide wall	
🐸 1 layered	30 wide wall	
🖾 1 lavered	38 wide wall	

 Now open "Layers Properties Management" floorplan will be visible. and turn off "Raster image PDF" layer, this way only the newly drawn

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



## 3.3. Import floorplan geometry from PDF file

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

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

## 3.3.1. Import PDF geometry

- Now select Ribbon menu / Import / PDF command.
- Choose the folder ... ARCHlineXP Draw\2023\Course_Intermediate\3_Importing_Architectural_Plans\PDF and the file Happy House first floor.pdf.

The PDF import options are including vector geometry, raster image, True Type text, Layers, drawing scales and other minor features.

In the appearing PDF import option dialog window turn off "Apply lineweights", and select all pages.



We recommend to try different import options as well.

PDF import options		
Procedure     Data vectorization     Data as raster image	Layers Layers are created based on layer names from the input .pdf document Imports all visible PDF objects to the current layer	PDF import options          Image: Display the segments         Convert solid fills to hatches
Data to import Vector geometry Solid fills TrueType text Raster image Shading objects		Apply lineweights
The selected PDF document contains 1	page(s)	
All pages		
◯ Selected pages	1	
Enter a list of the selected page numbe e.g. 1;3;6-12	ers and/or ranges,	OK Cancel

In the next window, enable the preview and set the scale factor of the PDF file so that you get a scaled floor plan. Use the ruler to decide which scale unit to use.

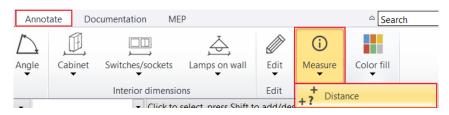
Here we choose mm. The unit of measurement displayed on the ruler is then closest to the actual measurement: 20 m.

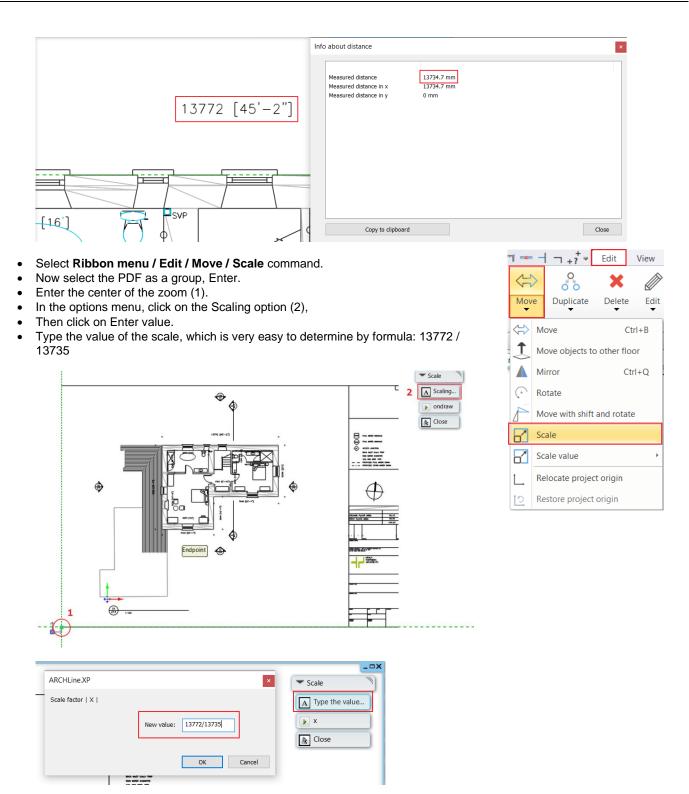
PDF import options		
Preview options:          Preview - enabled for files less than 3Mb       V		
Scale factor		
	, The ruler displays the unit of measurement	
	L	20 m
	ОК	Cancel

• The program automatically places the PDF file in the origin as a group. Use the "Place with new origin" option only if you want to place the image elsewhere.

#### Scaling

- In the PDF file, the length of the wall above is 13 772 mm.
- Check this value using the Annotate / Measure / Distance command: it is 13 735 mm. So, there is a difference of 37 mm. We can correct this.



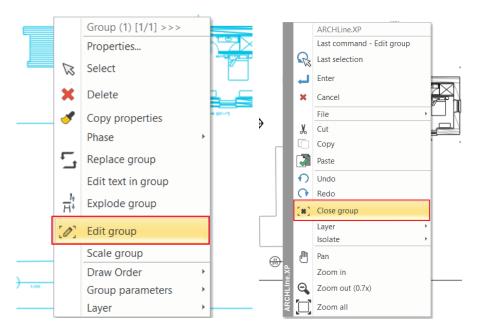


The scaling is done.

• Check the previous distance also with Annotate / Measure / Distance: 13 772 mm, so we are working with an accurate drawing.

The imported PDF file is a group. The elements of the group can be edited if necessary. To do this, you need to enter the group, which you can do using the *Local menu - Edit group* command. Once editing is complete, the group must be closed using the *Local Menu - Close group* command so that work can continue.





This PDF has been imported with its elements on a separate layer, which can be seen in the Layer Manager. However, it can be confusing to be able to select the PDF when working with it, so you may want to follow these steps to lock it:

- Move the group's layer to the "Transfer" layer.
- In the group properties, set the Force layer,
- Then go to the Layer Manager and close the "Transfer" layer.
- This way, when you click on the floor plan, the group will not be selected, but its elements can be referenced.

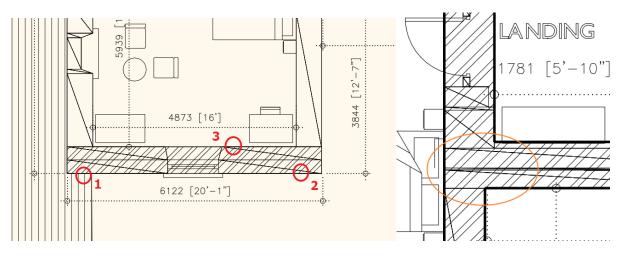
#### 3.3.2. Draw walls on DWG floor plan

Let's continue our work with drawing walls.

- First set the wall properties. Set the height to 2,700 mm.
- Select Ribbon menu / Building / Walls on DWG drawing command.

		$\square \bigcirc ($		10	<b></b>	0	<b>X</b> ===	-	Ā + ?	≠ Edit	Vie	ew B	uilding	Interior
	-1	Connection	•	[]1				0			ト	$\widehat{\Box}$	] 100	~~~
Wall	Ø	Edit 🝷		Door	Windov	v c	urtain wall	Column	Beam	Slab	Roof	Ceiling	Railing	Stair
6777					Oper	ning				Structure	2			St
	Wa	all												
J	Cu	rved wall			1									
DWG	Wa	alls on DWG (	draw	ving	Ľ.									

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

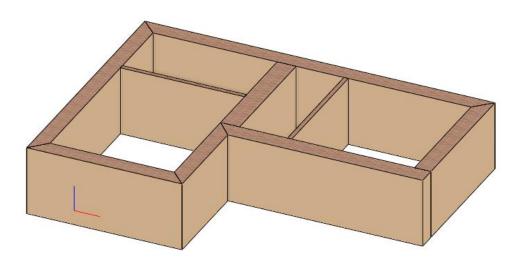


- Now redraw the entire floorplan.
- As a final step, it's worth to connect the main wall into an already existing L connection. Click on Toolbar; there you can find wall connection commands, find T connection and then specify the wall to be connected and select the already connected walls.



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

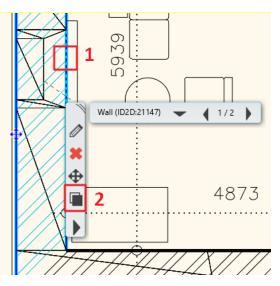
Now we finished. If it is necessary, we can improve on wall connections by using L or T connections.

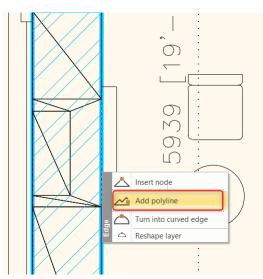


### 3.3.3. Creating niche

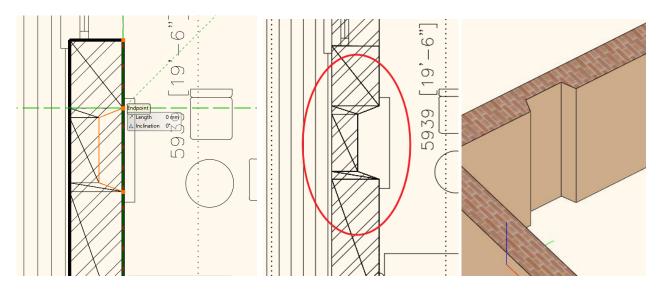
Next, we are going to create a niche:

- 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 insert a niche here.







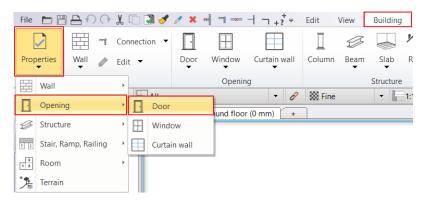


### 3.3.4. Place openings

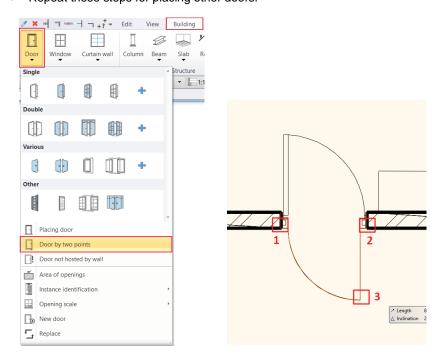
Let's continue the work with placing openings.

#### Doors

• First set the door properties.



- Select "Flash" door and set its distance from the wall to 0 mm.
- Now choose Ribbon menu / Building / Door / Door by two points command.
- Give the door first (1) and second point (2) on the floor plan and finally set the opening direction (3)Repeat these steps for placing other doors.



If it is necessary, we can modify its distance from wall under properties later.

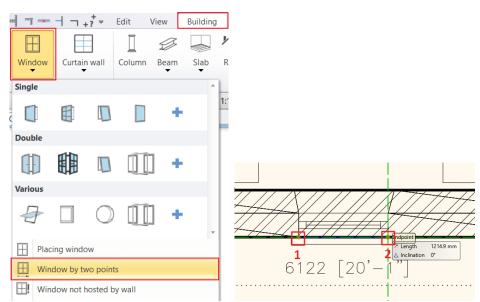
#### Windows

Now place windows.

• First set the windows properties.

File	DB	] 🗗 🔿	$\bigcirc$	X	) 🔊 🤞	' / ×			+? ⁺ ≠	Edit	View	Building
[	<u>、</u>			Conn	nection 🔻	-					-	<u>ب</u>
Prop	oerties ▼	Wall	Ĩ	Edit	•	Door T	Window	Curtai	n wall	Column	Beam	Slab R ▼
	Wall						Open	ing				Structure
	vvan						_		0	I Fine		<b>→</b> 1:
	Openir	ng		•	Doo	r	und flo	or (0 mm)	γ <u>+</u>			828
ø	Structu	ire		•	H Win	dow						
11	Stair, R	amp, Raili	ng	· [	Curt	ain wall						
3	Room			٠Г								
*	Terrain											

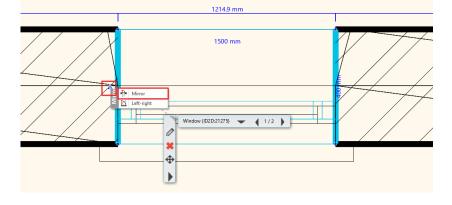
- Now select the "Flush" window and set the distance from wall to 400 mm.
- Now select from Building / Window / Window by two points.



- Now give the window starting and endpoint on the floorplan. Now the window is placed.
- Repeat the same to place other windows.

The program placed the window on the exterior of the wall, so it is necessary to mirror it.

• Select the window and by clicking on the "Mirror" marker, choose "Mirror" command.



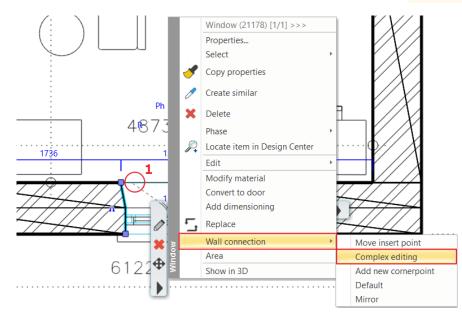


- Originally the distance from wall is 100 mm, now modify this value to 400 mm.
- Now mirror other windows and change the distance from the wall too.

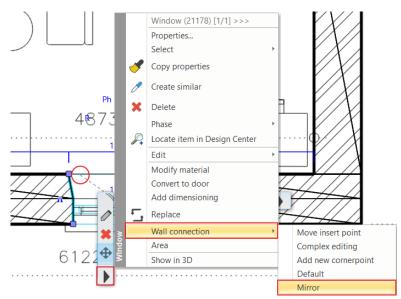
#### 3.3.5. Create window chamfer

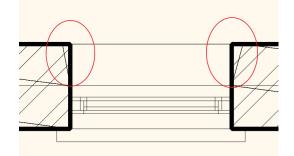
If you zoom in, you can see on the floorplan that the connection between window and wall is slightly beveled; therefore, a chamfer is needed.

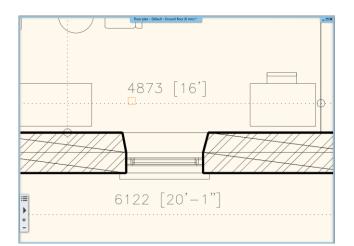
 To create chamfer, click on the inner side of the wall (1) and choose from the local menu Wall connection / Complex editing (2) command.



- Since this is not just a typical slope cut, 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.

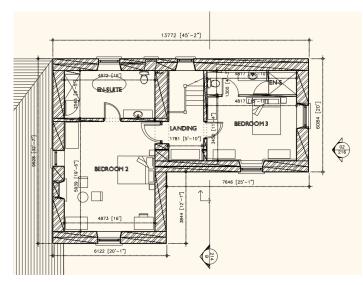


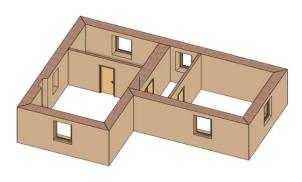




• Now repeat these steps on other walls. The window chamfer is created.

You completed importing the floorplan and architectural design process.





# 3.4. Importing DWG drawing

In this example we are going to import a DWG drawing. It 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 object can be placed 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\2023\Course_Intermediate\3_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:



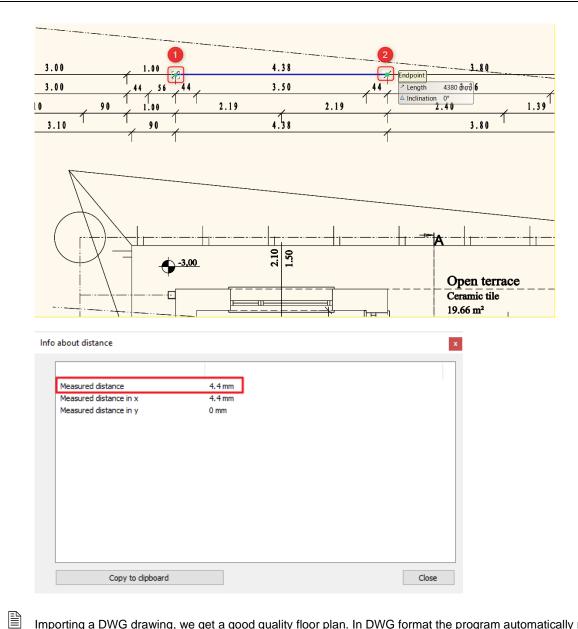
review options: Preview - enabled for files less than 3Mb	
Model-space Paper-space Layout selection Interpret AutoCAD unit as mm Interpret MutoCAD unit as	
	The ruler displays the unit of measurement

- Select a unit of measurement from the drop-down list. By selecting the correct unit helps to ensure that you have an accurately sized imported drawing.
- By pressing "OK" import the file.
- In the appearing dialogue window choose "Place with the new origin" option. And place the drawing close to the origin.

Merge files		×
Insert as external reference           Place with new drawing origin		
Place as new building		
	OK	Cancel

- Now check if you gave the correct scale unit.
- The Distance command can also be found on the Quick Access Toolbar.

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		Connection 🔻				Distance			
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Properties		Wall		Openir	ng		e the secon		



Importing a DWG drawing, we get a good quality floor plan. In DWG format the program automatically recognizes the dimensions, notes, these can be easily adjusted or removed from the floor plan.

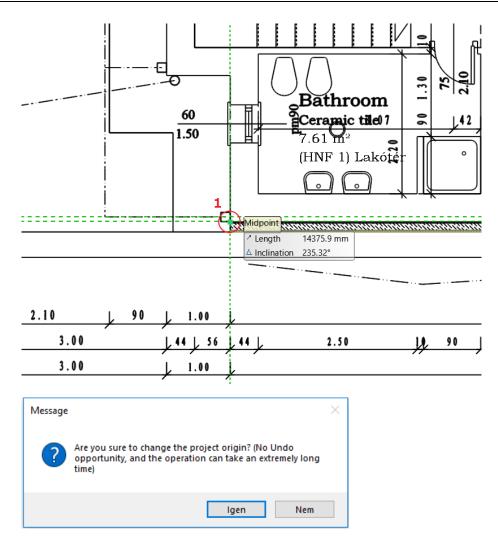
Now place the left corner point of the floorplan to the origin. You can do this the following way:

On the Status bar select Global Coordinate System.



- Select from *Ribbon menu Edit Move Relocate project origin* command.
- Select the left corner point of the supporting wall (1), then click on the Yes in the dialogue.

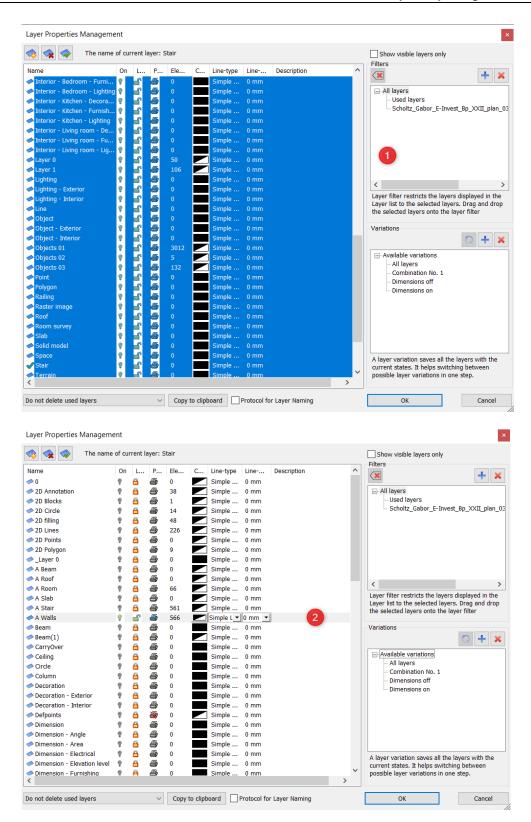




- Use "Fit to View", now you can see that the selected corner is now in origin.
- In the followings step in the Layer Manager", let's look through layers.

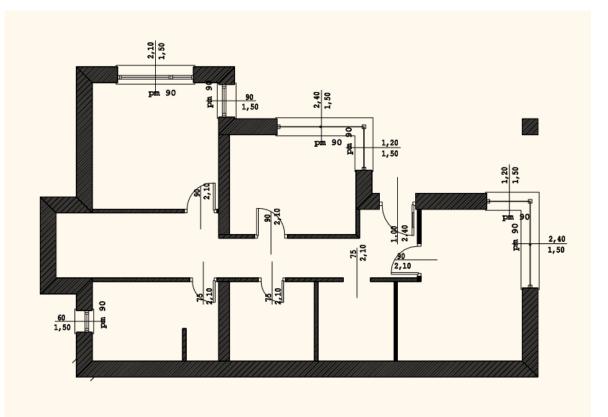
We are going to draw walls again; our work gets significantly easier if layers only corresponding to walls are turned on.

 Now open the Layer Manager, select all layers by pressing CTRL+A key combination (1). Turn off all layers by clicking on one bulb. Only A Walls layer has to visible and editable, so unlock it. (2) Currently, on the floorplan, there are many unnecessary drawing items for redrawing walls.



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

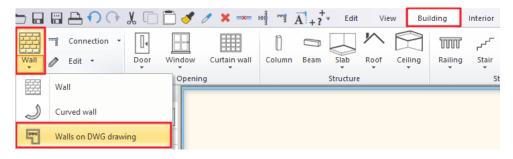




## 3.4.1. Drawing walls on DWG floor plan

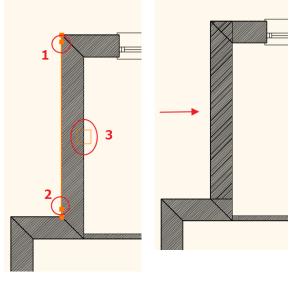
Let's draw the walls again.

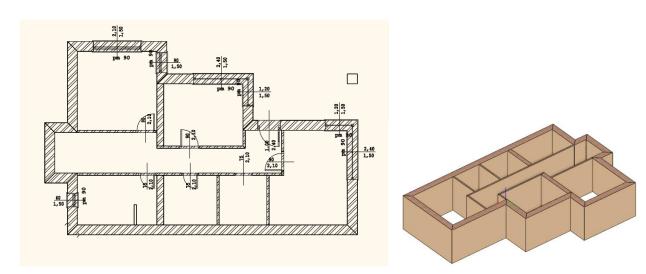
• Select Building / Wall / Walls on DWG drawing command.



• In case the 3D model is incomplete, choose from the Toolbar, L or T wall connections and apply them where it is necessary.







#### Display Lineweights on screen

Now let's look through how to show lineweights on the screen.

Under **Graphics settings** by clicking on the drop-down menu next **Line weights scale**, we can choose from several options. These values will affect the representation on the screen only and won't change the print settings. By default, the lineweight is **1:20**.

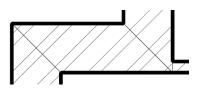
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No sty	yle		Ô			_	1:10
Property	Value					Z <mark>—</mark>	1:20
Drawing settings							1:50
Opening scale	1:100						
Cut plane is activated on floor plan						—	1:100
Display of openings above cut plane height	Not Displayed	$\sim$	[				4 200
Items to be displayed on floor plan fro	1000 mm		Î			_	1:200
Wall fill pattern	Fine	~	1				1:500
Side marker to display wall reference					VIII Ann		
Line weights scale	Off	~	[			<b>"</b> —	1:1000
Display proportional line weights							ť

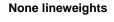
In case later you want to print the floorplan at a scale of 1:100 and also want to see the corresponding lineweights on the screen, then you should choose 1:100 scale factor as Lineweights.

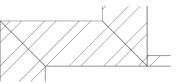
#### "None" Lineweights

The "None" lineweights means that lines are represented in the smallest unit (1px) in the screen, i.e., the lineweights are turned off. It can be useful for editing on floorplan because clear visibility of endpoints and other particular points will improve the accurate work.

1:100



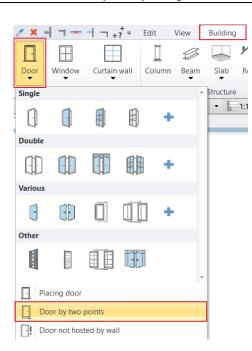




### 3.4.2. Place openings on the DWG floor plan

Let's start with the doors. We will place doors according to the DWG drawing so that the DWG drawing will define the door width.

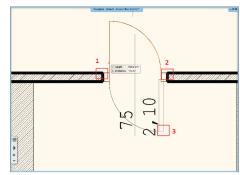
• Select Building / Door / Door by two points command.

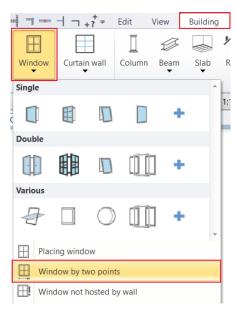


- In the Properties window, set the Distance from wall line to 0 mm, as most of the doors will be installed in the 100 mm partition walls.
- Enter the first point of the door, then the second point, and finally the direction of the opening.
- Proceed through all the doors using this method.

Let's place windows.

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

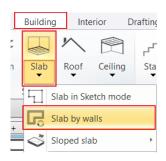


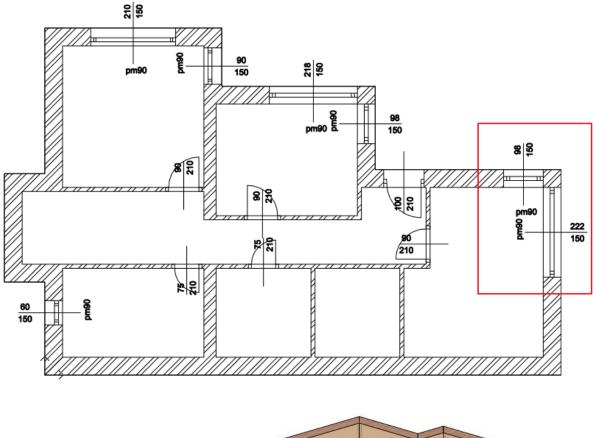


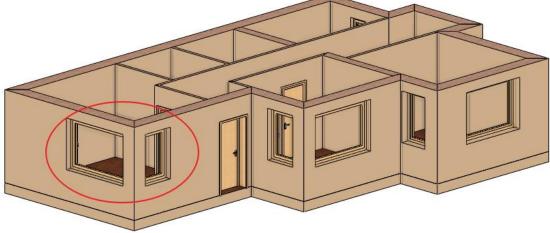
- Select two corner points of the window by clicking on the inner side of the wall.
- Place all windows.
- Set the Distance from the wall line to 170 mm in Properties to center the windows in the wall.

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. After turning off the DWG drawing wall layer and placing dimensions for openings, we get the following results:





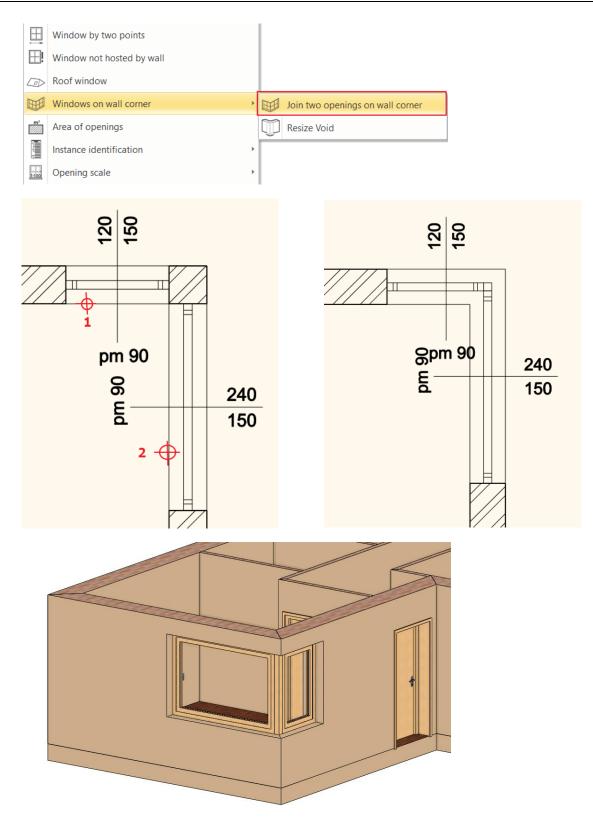


#### 3.4.3. Create corner window

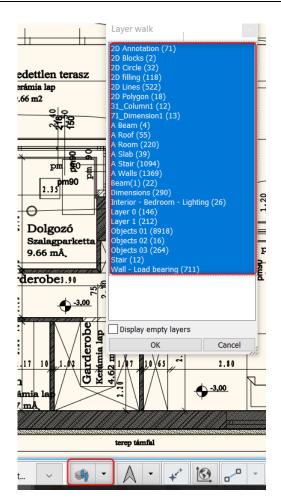
We create corner windows by using previously placed windows. You can join any combination of standard windows:

- Two windows are placed on each side of the wall corner, close to where the two walls meet (in the example, these are already available.)
- Using the Window / Windows on wall corner / Join two openings on wall corner command, we select the first and second windows.
- The program will automatically create the alignment and insert the line between the two windows.
- Resize the windows if necessary.

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Use Layer Walk to open all used layers on the floorplan.



### 3.4.4. 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 the up arrow next to "Ground floor" button on the Status bar.



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 drag and drop the floor plan into the program.

Floor plan - Default - Ground floor (0 mm) *	_ = ×
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$\leftrightarrow \rightarrow \checkmark \uparrow$ Using architectural > DWG $\checkmark \heartsuit$ Search DWG	
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- In the pop-up window select mm as in the previous import.
- Place with new drawing origin.

The first step is to move the DWG drawing to the origin. Before that, in the Layer Manager

- Select the entire floor plan.
- Choose Edit menu Move Move command.
- Select the bottom left corner of the supporting wall and type "0 0" (0 space 0) and press Enter.
- Select "Fit to view" and you will see that the corner point has been moved to the origin.

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

ॡऀ; Ground floor	~	1 +

 $\square$ 

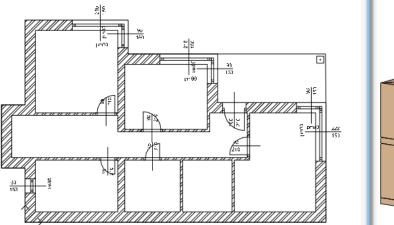
100

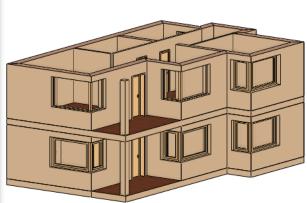
In this case, it is not worth drawing the walls on the first floor, as main walls in buildings are the same at different levels. These have been previously created on the ground floor,

- Now go to ground floor, select the entire floor plan and copy it to the first floor.
- For this open Edit level dialogue window and use "Copy objects to other floor" command 5. Select the 1st floor in the pop-up window.
- Close the window by pressing "OK", the 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 walls which are non-existent on the first floor.
- Move existing walls to the previously drawn place, then use L and T wall connection tools.





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

# 3.5. Importing IFC model

Architects can provide us with the floor plan in many formats during the 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®.... ARCHLine.XP 2023 supports IFC4 and IFC2x3 import/export.

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.

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

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1		BIM	Þ	FBX	FBX				
[		Import	•	8	IFC			Impo	vrt ×
•		Export	Þ	R	RFA, RVT				Import file and create a new project.
		Link	Þ	₹	BIM libraries			88	The current project will be closed. 1 The file will be saved in the new project.
•	Ø	Options			Showroom				
•		Tools	•	PDF	PDF			_	Keep the current project and show the file in a new
•		Teamwork	÷	ł	Raster image				view. The file remains its own directory and does not <b>2</b>
•		Print	Ctrl+P	×I	Excel table				belong to the project.
	A	Print to PDF			ARCHLine.XP		×	0	
		Print queue		P	Import floor plan				IFC element 3

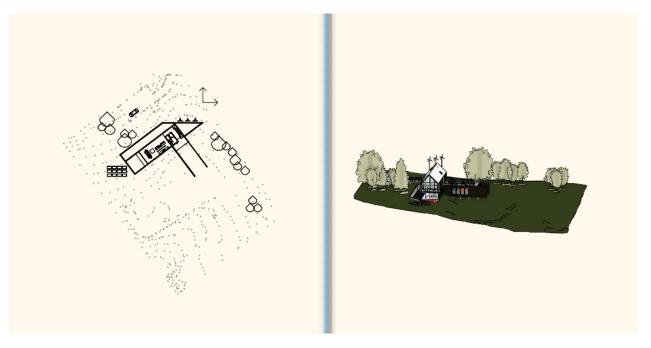
Choosing the first option, we open a new project file, and the IFC model will be imported here, then we can work on it.

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 from Documents \ARCHlineXP Draw\2023\ Course_Intermediate \3_Importing_Architectural_Plans\IFC\ folder, then click on Open. In the Import settings select "Create empty setting and add new ones". 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 the IFC model does not contain drawing elements such as dimension or labels.

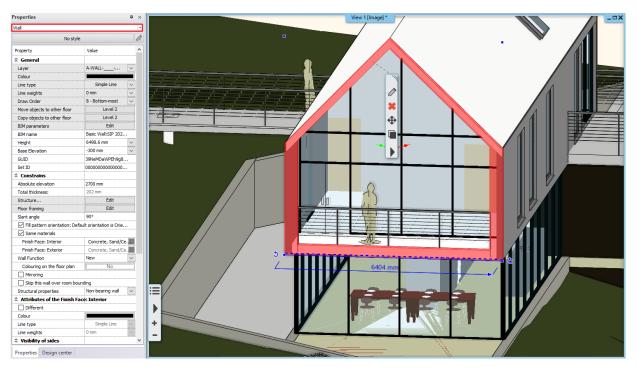


• During IFC import, the model keeps its original level structure. We can check this by opening the Level Manager.

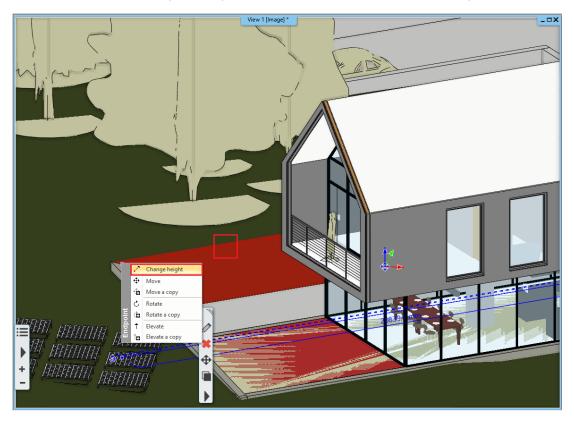




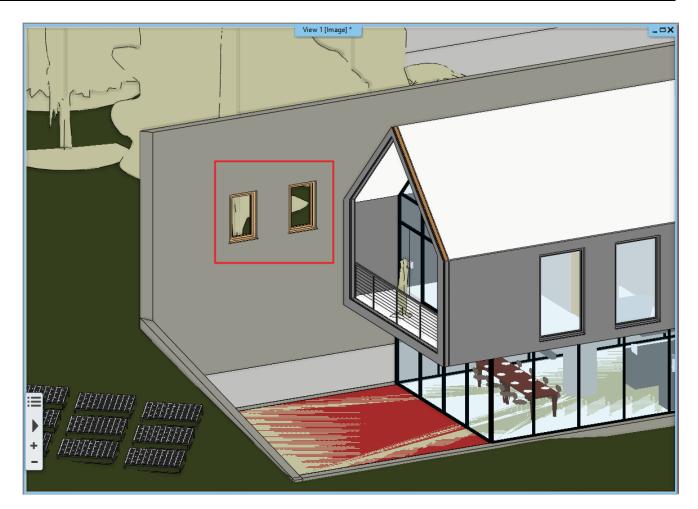
- Now let's see the 3D model. The terrain, other objects and the building are included in the 3D model. We can modify them.
- Now delete trees to make it easier to see through the model.
- Now let's examine the building closer.
- Click on one of its items, e.g., a wall. On the left side under Properties,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



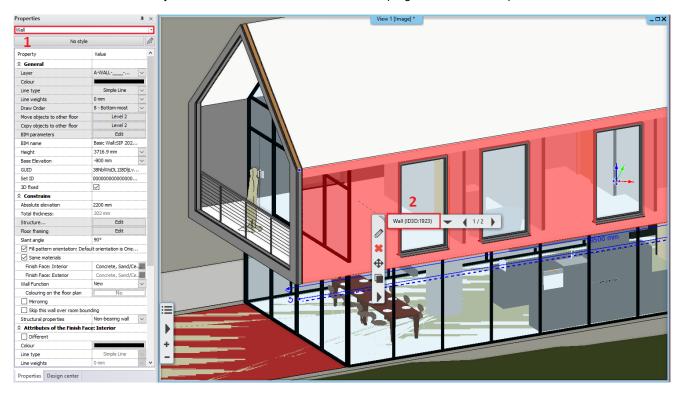
• Now click on a wall and change the height. Now click on the wall and increase the height.



• This is wall 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.

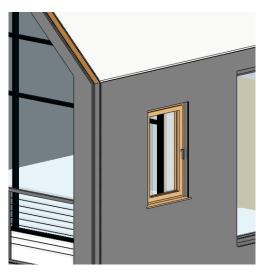
It could happen when the software imported the item is 3D fixed. It can be checked on the side menu too. In this case, we have to unlock fixation to execute any modification.

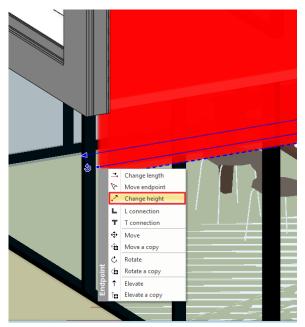


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🎗 General		
Layer	A-WALL	~
Colour		
Line type	Simple Line	~
Line weights	0 mm	~
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Copy objects to other floor	Level 2	
BIM parameters	Edit	
BIM name	Basic Wall:SIP 202	2
Height	3716.9 mm	~
Base Elevation	-800 mm	~
GUID	38NblWsDL 118DljL	v
Set ID	000000000000000000000000000000000000000	)
3D fixed		



• After resolving the fixation, the previously placed window now appears on the wall.

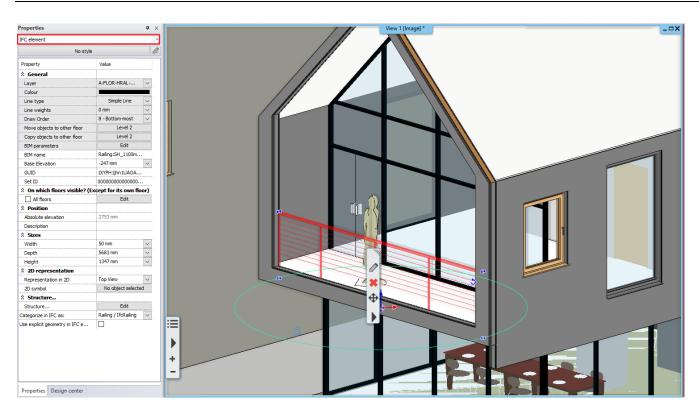




- The wall dimension has also changed; the bottom is now much below. Change the height back to the original position.
- Now click on the wall, in the appearing pop-up menu choose "Change height" command.
- Align to the next wall endpoint.
- Now remove previously placed window, as there will be no need for it during our work.

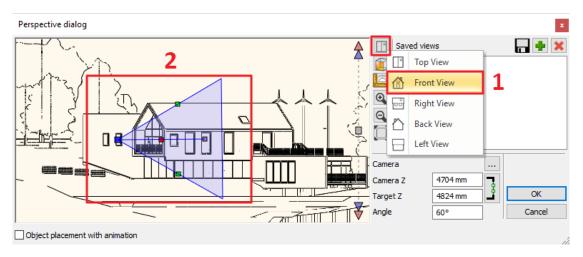
The imported items can be an architectural item such as walls, slab.

• Now click on the handrail. 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.

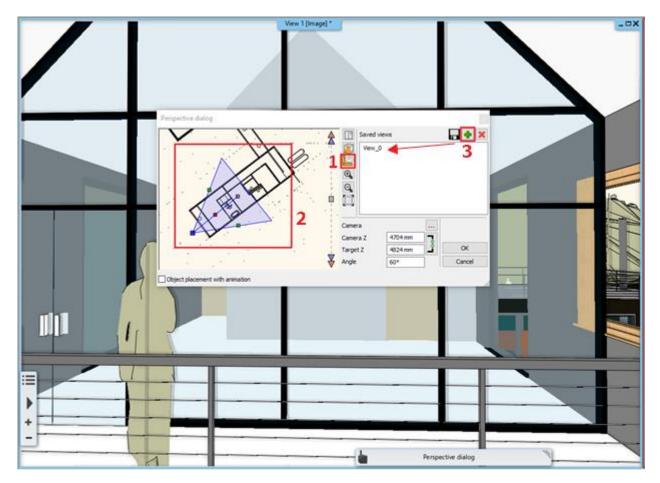
- For this, we have to create a perspective view.
- To set the correct height of the view, choose front view (1) option in the appearing pop-up dialogue window. Now move the camera point to the shown position, i.e., to the first floor (2).



- 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 (3).

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- Add 3-4 more views; this way, you can practically view around in the given room.
- Press OK to close the dialogue window.
- Start from "View 0" and delete the man standing on the balcony.

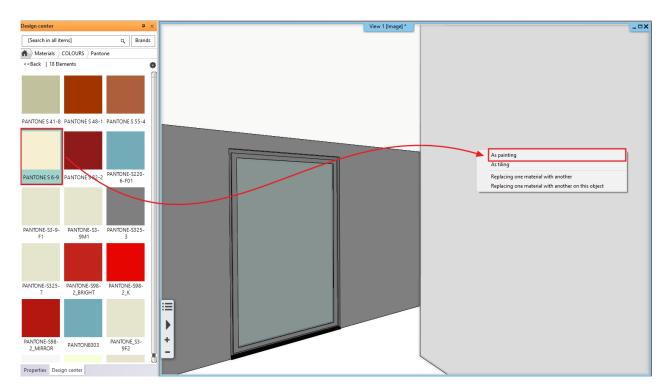
Shifting views, we can gradually look around in the room.

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

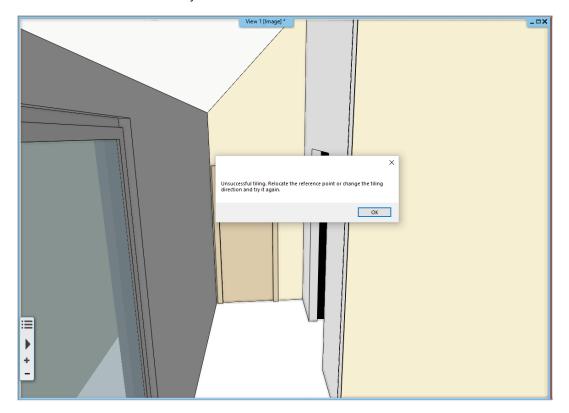


First, put colors on the walls:

- Therefore, we have to go to the Design Center then Catalog / Materials and here you can choose a color.
- Use drag and drop to place the chosen color on the wall and then from the appearing menu choose "as painting" option.



- Click on the second wall, a warning 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 color on this wall.
- Apply colors on other walls too.
- In case of the wall shown below you have to unlock the 3D fixation.

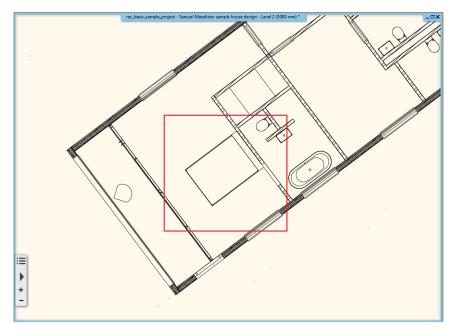


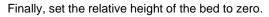
- Now modify the floor material and put a carpet there.
- Select a carpet from Catalog / Material / Fabrics / Carpet folder and then choose a color. Place it "as painting" on the carpet.

Continue the design the same way.

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- You can also place here furniture, let's see an example.
- From the Design Center / Catalog / Objects / Bedroom library, select a bed and place it on the floor plan.
- Activate the floor plan and place the bed shown on the picture.





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



## 3.6. Importing Revit file

BIM collaboration between architects is based on quick and easy model exchange. A good solution is to import Revit .rvt and .rfa files. Revit models can be used in ARCHLine.XP in two ways: as a standalone file or as a reference link. We import them as a standalone file:

- Select File menu / Import / RFA, RVT command.
- Select the RVT file from the Documents\ARCHlineXP Draw\2023\Workshop_Intermediate\3_Importing_Architectural_Plans\RVT folder and click Open. In the import settings window select "Create empty setting and add new ones".

Depending on the size of the Revit file, it may take several minutes to open the file. The original Revit walls, slabs, columns and beams are converted into slabs, columns and beams by ARCHLine.XP, and the other elements are converted into IFC elements. The import does not retain references to the source model. At the end of the import, a dialog window displays the statistics of the imported elements. Here you can see which architectural and IFC elements will be imported. Click OK to accept.

	×
Elements imported:	
47 Walls,	
9 Slabs,	
3 Columns,	
0 Beams,	
14 Grids,	
20 Dimensions,	
377 IFC elements,	
470 elements processed in total.	
	ОК

• See the model in 3D!

If the Autodesk Material Library is downloaded to your computer, the model will be displayed with the textures. These textures are included in the Revit file for reference only.

Click on the building wall. In the Properties on the left, you can see that it appears as a wall in the program. In the local
menu, look at its properties. Here you can see that it is a layered wall structure, and you can even edit it by clicking on the
"Edit Compound Walls" button. You can also edit its general properties like material, height, slope.



Wall					×				
General properties					• •				
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Fill pattern orientation: Defaul Collision of layers with the sar Collision of layers upon differe	t orientation is Orient to ne priority, too	Finish Fa	ace: Interior	← ∰ ‼	to the w	Layer Col Lin 0 m 0 m 0 m	line propertie e weight m m m	25	Cancel

Revit Families appear in ARCHLine.XP, available as styles with the same properties as ARCHLine styles.

• For example, when you click on the Wall or Slab tool, the Revit families, or styles, appear in blue on the left.

Properties	ņ	×	Properties D	×
Basic Wall\Cavity wall_sliders		ĝ	Foundation Slab\150mm Foundation Slab	ĝ
Styles			Styles	
1 layered 16 wide wall			* Floor	_
🗎 1 rétegű 20-as fal			Concrete-Domestic 425mm	ן ך
🗎 1 rétegű 44-es fal			Generic 150mm	
* Basic Wall			Generic 300	
<b>≧</b> α_w1			Insitu Concrete 225mm	
Cavity wall_sliders			Timber Suspended Floor	
Foundation - 300mm Concrete			* Foundation Slab	-
Interior - 165 Partition (1-hr)			150mm Foundation Slab	
Tinterior - Partition				-
Retaining - 300mm Concrete				
≤SIP 202mm Wall - conc clad				
Properti Design Project	Style	es	Properti Design Project Styl	es

• Another great advantage of importing Revit is that level structures are also displayed. By clicking on the Level dialog, you can see that the same level structures are there as in the original Revit plan.

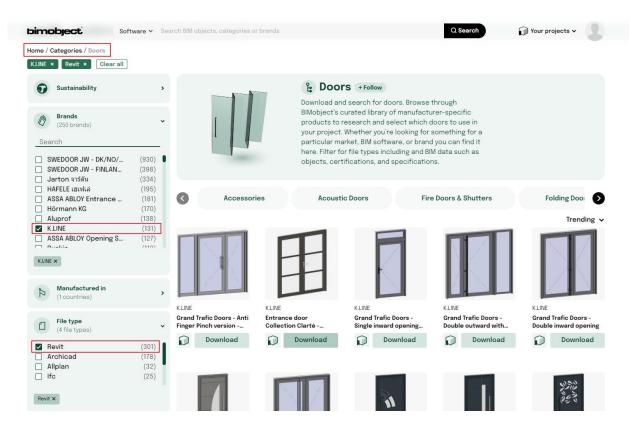
Edit le	evels								×
<hr/>	🍬 🧔 🗳 👒	}			8	≷ (⇒	List of buildings	Samuel Macalister sample h	ouse design
Nu	Name	Bottom ele	Height	State	Split level hei	Parameters		Name	Elev. Offset
2	Level 2	3000 mm	3000 mm	Active	0 mm	Edit		FF - Finish Floor	0 mm
1	Level 1	0 mm	3000 mm	Off	0 mm		-	TS - Top of Structure	0 mm
0	Default floor	-1000 mm	1000 mm	Off	0 mm			BS - Bottom of Structure	0 mm
								CE - False ceiling	0 mm
								LE - Ledge	0 mm
								FH - Floor height	3000 mm
								FH - Floor neight	5000 mm
								Copy area	Paste
								FH	(N+1)FF (N+1)BS (N+1)BS (N+1)LE (N) CE (N) FF (N) TS (N) BS (N) LE
Site	level is visible on the floor	plan		В	uilding elevation a	above sea leve	l in m		
				Γ	0 m			ОК	Cancel

### Importing doors and windows

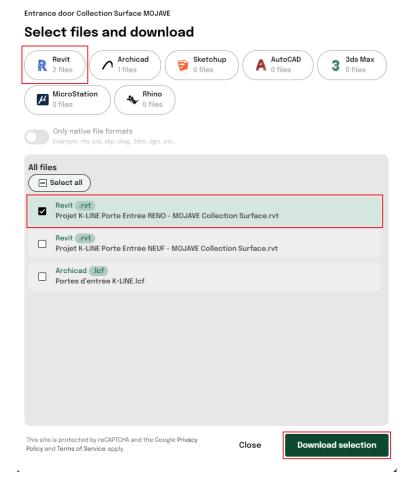
You can also import doors and windows from .rvt and .rfa files into ARCHLine.XP.

- Visit the <u>https://www.bimobject.com/</u> website. Create a user account, as you need to be logged in to download the items.
- Select the doors category, then filter by Revit files, including the K.LINE brand.

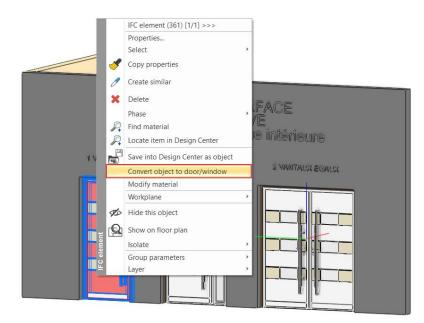




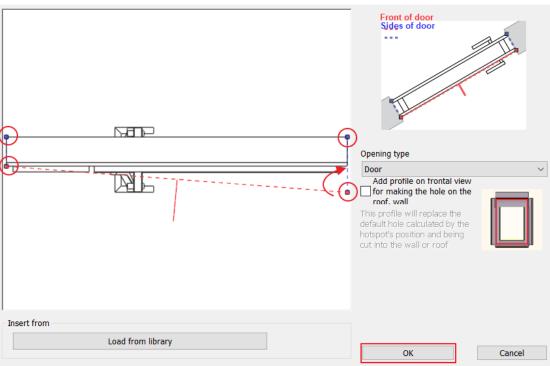
Choose a door of your choice (we are using the "Entrance door Collection Surface MOJAVE"), then click on the Download
page to download it.



- Go back to ARCHLine, select File menu / Import / RFA, RVT and select "Create empty setting and add new ones".
- Here we also get the statistics of the imported elements, accept this by clicking OK.
- View the model in 3D, right click on the first door and select Convert object to door/window.



• In this window, the wall connection points must be aligned with the corresponding points on the model. Grab the points and drag them to the right place. The diagram at the top right will help you see exactly how to do this. After pressing the OK button, save it in the library under a name of your choice, in the OUTDOOR category.



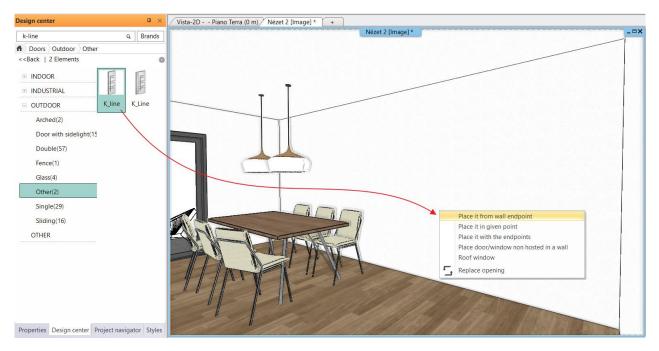
Door / window definition

- You can even save an entire product line using this method: save the other doors using the same method.
- Use the File menu / Open Project command to open an older project (in the example we use the file Documents\ARCHlineXP Draw\2023\Workshop_Intermediate\2_Visual_Design\Harosi_Krisztina_Render_Final.pro file and place the doors you just saved in it.



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• Activate the 3D view, then from the Design Center, select the doors you just saved from the Building / Doors / Outdoor folder. Use the drag and drop method to drag and drop into the 3D view, then select Place it from wall endpoint, select the wall surface and then enter the door location.



• With this, the door was included in the project. Click on the door and then on the pencil icon to change its properties, including material, width, height and other parameters.



Door							
Main parameters	Width:	0	.9 m	~		Redraw	•
Representation	Height:	2	.15 m	~		1. Salaria	
Reveal, void, niche, cavity	Thickness:	0	.1025 m			and the second s	
Basic geometry				^			
Outer handle	Hide opening and make a void						
Inner handle	Distance from wall line	0.1 m					
	Sill height	0 m					
Accessories	Outer sill height:	0 m					
Interior and exterior sills	Effective clear width	0.9 m			-		
	Effective clear height	2.15 m					
Built-in details	Colour						_
Information	Line type	Simp	le Line	~			
	Line weights	0 mm		~			
	Draw Order	8- Bottom-most		~	6		
	Reference axis	Side		~			
	Distance from wall corner	0.5153 m				24	
		Lining and architrave					
		Dimension, consignment					
		Thermal parameters					
	Ratio (Illumination area)	100%					
	Ratio (Ventillation area)	100%		~		1	
	Material	Value		^			
	1	Hachure KL6				e	
	2	K.Line Vintage Anodisé					
	3	K.Line Tendance Gris s					-
	4	K.Line Tendance Noir S	Sablé (2100) - OO	$\sim$			
	<			>			
						K_line	
BIM Parameters	Normal d	oor			ОК		Cancel

If you want to learn more about importing Revit RVT and RFA files, watch the following tutorial video: <u>https://youtu.be/j5jpNyoIDgk</u>



Workshop 4: How to save and manage large-size project



# 4. 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: <u>https://www.archlinexp.com/enrollments/courses/intermediate-course/how-to-save-and-manage-large-size-projects/1</u>
- Choose the folder ...ARCHlineXP Draw\2023\Workshop_Intermediate\4_ Project_ Management and the file Little_John_Living_room.pro

## 4.1. 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: PI. PDF, Render, 3D_Views, Wall_views
- Every day, save a new file with the current date in the Versions folder, so that all versions are available in case the customer still wants an older design version.

File		) 🖁 🗇 🖁
	New project	
	Open project	Ctrl+O
B	Save project	Ctrl+S
₿	Save project as	Ctrl+Shift+S
	BIM	•
	Import	•



Name
3D_views
📕 PDF
Render
Saved
Wall_views
🔃 Little_John_Living_room

## 4.2. 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.

#### How it works:

During the day, the program stores a total of three .pro files in the Archive folder in a hidden folder automatically created with the date of the day.

Save 1: The program makes a copy of the project every day when you open it. This will not be overwritten by later backups, so the daily start status can always be retrieved.

Backup 2-3: Two more backups are made during the day. The user-issued backup and the Automatic Backup to Backup Archive library always overwrite the older of these if it has been at least 60 minutes since the last backup.

### Automatic backup to the Backup Archive library

If this option is enabled, ARCHLine.XP will automatically save the project to the Backup Archive library at specified intervals to help preserve your work. Automatic saving is enabled by default. The backup is activated at specified intervals. The default and minimum backup period are 60 minutes. These backups also count towards the maximum of 3 backups per day of a project.

- 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
- Interval to save work automatically: 60 minutes
- Path of Backup Archive content
- Delete backup file that is older than the given time interval.
- The interval for keeping archive files: 4 weeks.



Graphics								
Open and Save	☆ Open and Save							
	Project default path(requires restart)	C:\Users\renata.nagy\						
Units and angles	Image Path	C:\Users\renata.nagy\						
Snap and grid	Project template folder path	C:\Users\renata.nagy\						
' Cursor and marker	Google Drive, Microsoft OneDrive - Download folder	C:\Users\renata.nagy\						
	Enable project backup to your personal cloud account							
User interface	Google Drive							
Item settings	Microsoft OneDrive							
- 5	*Save 3D database (significant increase in size)							
	Transfer settings and files from one computer to another	Edit						
	Migrate custom settings and files from previous releases	Edit						
	Tag/Schedule template folder	C:\Users\renata.nagy\						
	* Manage styles							
	8 Backup Archive							
	✓ Create Backup Archive - Daily backup copies for recovery purposes							
	✓ Interval to save work automatically in minutes:	60						
	Use the ARCHLine.XP Drawing Recovery Manager ONLY to recover data.							
	Path of Backup Archive content:	C:\Users\renata.nagy\						
	AUTO-ERASE all backup archive that is older than the Archive Preservation Period							
	Archive Preservation Period in weeks:	4 🗸						
	Erase Backup Archive older than 4 weeks	Edit						
	The Backup Archive stores up to 3 backup copies of a project daily.							
	* *Save auto recover information							
	Save auto recover information							
	Save frequency (steps)	5 ~						
	Free space now on C:	699419 MByte						
	* *IFC Classifications							
	Import database from Excel files Edit							
Close	* Sharing Categories with other users							
Close		E 414						
🍳 🏭 🎞 🗳 🖉	Image: Constraint of the second floor     ✓     ▲     Image: Second floor     ✓	Wall - Loa 🗸						

- Please note switching off the auto-erase function means that archived files will use your PC memory. Deleted archive files go to Trash.
- Deleted archive files are permanently deleted, so they are not stored in the computer's Recycle Bin. However, it is recommended that the Recycle Bin is emptied on a weekly basis.

## 4.2.1. Recover Backup Archive

To use the Backup Archive folder, do the following steps:

- Create a wall and save the project.
- Draw another line and save the project again.
- Repeat the previous step one more time.

So, you have 3 backups.

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

File	┣ ⊟ ฿ ♠ ♠ ✌ []	<b>3</b> (	I	★ = = = - +? =	Edit	View	Build
	New project	C	2	Drawing recovery manager			
	Open project Ctrl+O	XR	EF	External reference			
	Save project Ctrl+S		REF	Import from Project (XREF)			
	Save project as Ctrl+Shift+S			Download from Google Drive			
ī.	BIM			Logout from Google Drive			
	Import	•					
	Export	•					
Ô	Options						
	Tools						
	Teamwork						
	Print Ctrl+P						
4	Print to PDF						
	Print queue						
(						2	× Exit

- In the appearing dialog window select the folder you want to search through, by default it is the ARCHLine.XP Draw folder. (1)
- Then 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.

Find project	cts and drawings			
	Project			
Search In	C:\Users\balin\Documen	ts\ARCHlineXP Drav	v <b>1</b>	Browse
Search for	Little	2		Search 4
Search res	ults in archive directory:	3 ~	Project contents lis	t
	020 2020_04_24 Little_john_living_room Little_John_Living_r Little_John_Living_r	oom(2).pro	Preview	
Enter a file Start the se	folder in which you want 1 mask. Example: AB will se arch with the 'Search' but en a file with the 'Open' bu	arch for all files tha ton.	t contain AB pattern.	ject content list
Press ESCA	PE to stop searching		Open	Cancel



After opening the file, a message appears on the screen: the file is in the RECOVERED folder. It's worth transferring it from here to your own folder using the "Save project as" command.

	×
File renamed C:\Users\balin\Documents\ARCHlineXP	
DRAW\Archive_2020\2020_04_24\Little_John_Living_room\Little_John_Living_room(1).	
C:\Users\balin\Documents\ARCHlineXP DRAW\Recovered\2020_04_24\Little_John_Living_room(1).pro	
OK	7

## 4.3. 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".

The Automatic save function DOES NOT ENSURE SAVING THE PROJECT! The content of this folder is automatically deleted when the program is closed normally.

- 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: 5 steps

📮 Graphics			^				
Open and Save	* Open and Save						
	Project default path (requires restart)	D:\Munka - Cadline\Ar					
Units and angles	Image Path	D:\Munka - Cadline\AR					
□ Snap and grid	Google Drive - Download folder	D:\Munka - Cadline\Ar					
'x Cursor and marker	Enable project backup to your personal Google drive						
	✓ *Save 3D database (significant increase in size)						
User interface	Transfer settings and files from one computer to another	Edit					
Item settings	Migrate custom settings and files from previous releases	Edit					
	Tag/Schedule template folder	D:\Munka - Cadline\Ar					
	* Manage styles						
	Copy project settings to other projects	Apply					
	Restore your defaults to factory settings	Apply					
	Export styles	Edit					
	A Backup Archive						
	Create Backup Archive - Daily backup copies for recovery purposes						
	Use the ARCHLine.XP Drawing Recovery Manager ONLY to recover data.						
	AUTO-ERASE all backup archive that is older than the Archive Preservation Period						
	Archive Preservation Period in weeks:	12	~				
	Erase Backup Archive older than 12 weeks	Edit					
	The Backup Archive stores up to 3 backup copies of a project daily.						
	* *Save autorecover information						
	Save autorecover information						
	Save frequency (steps)	5	~				
	Free space now on C:	81667 MByte					
	Creating Network Share						
	Network Sharing requires a folder to which all users' computers have access with netwo	ork permission.					
	Shared styles package name (create or select)						
	Specify the network location of the shared styles (requires restart) C:\ProgramData\Cad						
Close	Copy project settings to shared style package	Apply					
		Wall - Lo					

- I It is important to know that this function does not replace Save. When you turn off the computer in the normal way, this file is automatically deleted, and if you choose "Exit without save" and you rely on only Save Autorcover function you will lose all modifications on the project you have 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 several seconds.

## 4.4. OneDrive backup restrictions

ARCHLine.XP cannot save a project 100% safely if the file is located in a folder that is synchronized with the OneDrive file storage service.

Saving an ARCHLine.XP project is a complex, multi-step process, and OneDrive may attempt to synchronize due to a change detected during the save process while the save is still in progress. As a result, your project may become damaged and show a file length of 0 because ARCHLine.XP cannot successfully complete saving the project file.

#### Can the backup folder for the ARCHLine.XP project still be on OneDrive?

It can be, but periodic data loss must be expected, so (as with other CADs) it is not highly recommended. It is recommended to exclude from OneDrive synchronization the ... Documents\ARCHLineXP Draw folder. The project files should be saved locally on the computer. However, archiving a project saved on your computer to OneDrive is supported. It is recommended to change the path to the Project folder in the Options - Open and Save window.

#### What can I use OneDrive cloud storage for?

OneDrive can be used for archiving.

## 4.5. Running out of space on the C: drive?

A common problem is that there is not enough space on the C: drive. Where to install ARCHLine.XP in such a case? It should be noted that the Windows operating system requires at least 10% free space on the C: drive to run properly. Of course, it is recommended to uninstall any unused applications from the computer.

Let's look at where files are placed during installation:

- It is recommended that you install ARCHLine.XP on the C: drive under the Program Files folder offered by the installer. You should expect the program to take up about 1.5 GB of space under Program Files.
- In addition to this, the libraries will take up about 5-6 GB under ProgramData.
- In addition, the ARCHLine XP Draw folder is created under Documents during installation. This may contain projects.
- The Archive folder will be placed under C:\Users\...\AppData\Roaming\cadline\ARCHlineXP2023\Archive ...., which is a hidden file. As we have seen, by default it is deleted every 4 weeks, with 3 backups per day, so the size of this can grow significantly.

In the case where space on the C: drive is limited and there is enough space on the D: drive, the following 2 folders should be moved to the D:\ drive:

#### 1. ARCHLine XP Draw 2. Archive

ļ It is important not to touch the ARCHLine.XP files under Program Files and ProgramData. Never copy them!

We recommend the following steps:

- To copy the Documents ... ARCHLine XP Draw folder from C: to the D: drive, to the root: D:\ ARCHLine XP Draw
- C:\Users\...\AppData\Roaming\cadline\ARCHlineXP2023\Archive folder is also copied to D:\ ARCHLine XP Draw
- In ARCHLine.XP, in the Options Open and Save window, you need to change the folder paths to the D:\ARCHLineXP Draw folder or its corresponding subfolders.
- Also change the path to the Backup Archive.



Graphics									
	☆ Open and Save								
Open and Save	Project default path(requires restart)	D:\ARCHLineXP Draw\							
Units and angles	Image Path	D:\ARCHLineXP Draw\							
Snap and grid	Project template folder path	D:\ARCHLineXP Draw\							
	Google Drive, Microsoft OneDrive - Download folder	D:\ARCHLineXP Draw\							
" Cursor and marker	Enable project backup to your personal cloud account	······································							
User interface	Google Drive								
Item settings	Microsoft OneDrive								
Treni settings	*Save 3D database (significant increase in size)								
	Transfer settings and files from one computer to another	Edit							
	Migrate custom settings and files from previous releases	Edit							
	Tag/Schedule template folder	D:\ARCHLineXP Draw\							
	Backup Archive								
	* *Save auto recover information								
	Sharing Categories with other users								
	* Project specific object handling								
	Project properties								
	* DXF/DWG								
	DWG/DWF/DXF Import path	D:\ARCHLineXP Draw\							
	DXF/DWG import assignments	Edit							
	DXF and DWG export settings	Edit							
	Colour exchange dialog	Edit							
	* Lists								
	✓ Open XLS (Excel) outputs with the built-in spreadsheet handler.								
	Option saved with the project								
	Options with an asterisk character (*) are saved into the project.								
Close	Other options are saved into the registry - affecting all projects								

Restart the program.

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- On C:, under Documents, delete the ARCHLine XP Draw folder.
- Also delete the C:\Users\...\AppData\Roaming\cadline\ARCHlineXP2023\Archive folder.
- Then empty the Recycle Bin.

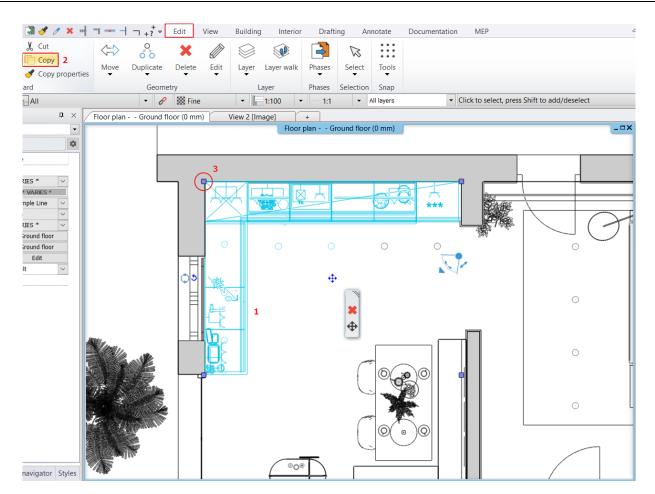
This will significantly increase the space on the C: drive.

Please note: Do not keep older versions of ARCHLine.XP on your computer. It is recommended to keep the current version and the version before that. Uninstall the older versions. Accordingly, you should also delete the libraries of already installed versions under ProgramData. These are hidden files, so it is recommended to consult an IT specialist.

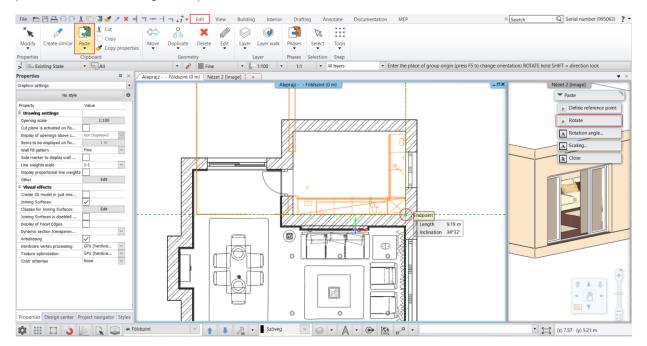
## 4.6. Copy project detail

In case the customer prefers an older version, we can easily copy it into the current project. We will now copy the kitchen created in the Preliminary Course, Kitchen Design workshop into the current project.

- Open the Documents\ARCHlineXP Draw\2023\ Workshop_Preliminary\ 4_Kitchen_Design\3_Nagy_Andrea_Kitchen_workshop_2023_FINAL.pro file.
- Select the kitchen, (1) then select Edit \ Copy. (2) After selecting the command, enter the reference point for the copy, which should be the top left wall corner. (3)



Go to the István Kiss project and select Edit \ Paste. In the floating menu on the right, select Rotate and rotate to the
position shown in the image, then place it in the bottom left corner.



For optimal workflow, only run one copy of the program at a time, so close the Kitchen workshop file after successful
insertion.



## 4.7. Organizing projects

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

### 4.7.1. 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. This way the objects can be modified together. With the help of the Layer variations, we can save different states, so we can for example show the equipment of on one room at the time without having to enter the Layer manager and setting the layer visibility separately.

- Open "Layer Manager". In the appearing dialog window, you can find layers.
- Click on the Used layers option.

$\bigotimes$	Layer Manager												
\$	Move Objects to New Layer												
	Layer Walk												
٩	Change to Current Layer												
Ś	Activate the layer of selection												
$\bigotimes$	• 🙏 • 🕞 🔯 🧝												

Now you can see, that in this project the objects are placed on three layers: Object, Slab and Wall – Load bearing.

Our aim is to handle the two premises separately in this project: the **Living room** and the **Dining room**. Also, we want to handle the objects, the decoration and the lamps separately in these rooms. This kind of folder system helps the rendering process, it is much quicker to change the views.

Layer Properties Management										×
The name of current laye	er:Wa	ll - Loa	d bear	ring					Show visible layers only	
Name	On	L	P	Ele	с	Line-type	Line	Description	Layer filters	
🧼 Object	· 💡	<u> </u>	9	3946		Simple	0 mm			
🧼 Slab	<b>?</b>	<u> </u>	8	22		Simple	0 mm		Allayers	
✔ Wall - Load bearing	9	<u> </u>	8	178		Simple L 🔻	0 mm 💌		Used layers	

• Now click on the All layers option.

Now all of the layers in the project will appear. You can see that we created preset layers for the architectural objects (these are automatically assigned to the object types) and the facilities so the architect can easily place the furnishes, lamps and decorations on separate layers. If you need a room that is not included in the list, you can create new layers for them.

Name	On	L	P	Ele	C	Line-type	Line	De: ^	Filters		
Interior - Kitchen - Decoration	0	ef.	-	0	-	Simple	0 mm		× + ×		
Interior - Kitchen - Furnishing	0	5	-	0	=	Simple	0 mm		All layers		
Interior - Kitchen - Lighting	9	d'	-	0		Simple	0 mm		Used layers		
Interior - Living room - Decoration	9	ď	-	0		Simple	0 mm				
Interior - Living room - Furnishing	8	ď	-	0		Simple	0 mm				
Interior - Living room - Lighting	9	d'	-	0		Simple	0 mm				
Lighting	8	ď	-	0		Simple	0 mm				
Lighting - Exterior	8	5	-	0		Simple	0 mm				
Lighting - Interior	9	ď	-	0		Simple	0 mm				
> Line	. 9	ď	-	0		Simple	0 mm				
MEP	0	ď	-	0		Simple	0 mm				
Object	8	ď	-	3946		Simple	0 mm				
Object - Exterior	8	ď	-	0		Simple	0 mm		Layer filter restricts the layers displayed in the		
Object - Interior	8	ď	-	0		Simple	0 mm		Layer list to the selected layers. Drag and dro the selected layers onto the layer filter		
Point	8	ď	8	0		Simple	0 mm		the selected loyers onto the layer inter		
Polygon	8	ď	-	0		Simple	0 mm	100	Variations		
Railing	8	ď	-	0		Simple	0 mm		D + X		
Raster image	8	d'	8	0		Simple	0 mm				
Roof	8	ď	-	0		Simple	0 mm		Available variations		
Room survey	8	ď	6	0		Simple	0 mm		- All layers		
Slab	8	ď	-	22		Simple	0 mm		Combination No. 1 Dimensions off		
Solid model	8	ď	-	0		Simple	0 mm		- Dimensions on		
Space	- 9	ď	-	0		Simple	0 mm		o internativa en		
Stair	2	ď	-	0		Simple	0 mm				
Terrain	Ŷ	d'	6	0		Simple	0 mm				
Text	8	ď	-	0		Simple	0 mm				
Text - Annotation	0	ď	-	0		Simple	0 mm				
Text - Notes	2	ď	8	0		Simple	0 mm				
Title box	8	ď	-	0		Simple	0 mm		A layer variation saves all the layers with the		
Wall - Load-bearing wall	8	ď	6	178	-	Simple L -		1	current states. It helps switching between		
Wall - Partition wall	0	el.	4	0		Simple	0 mm	>	possible layer variations in one step.		

In the project there are two "rooms": Living room and Dining room. The layers for the Living room are already done, so now create 3 layers only for the Dining room.

#### Creating new layers

ļ

- Click on the Add new layer icon. Now the new layer is created: "Layer 1".
- Rename it by double clicking on it Interior Dining room Decoration, then hit Enter.
- Now create two new layers for the Furnishing and the Lights.

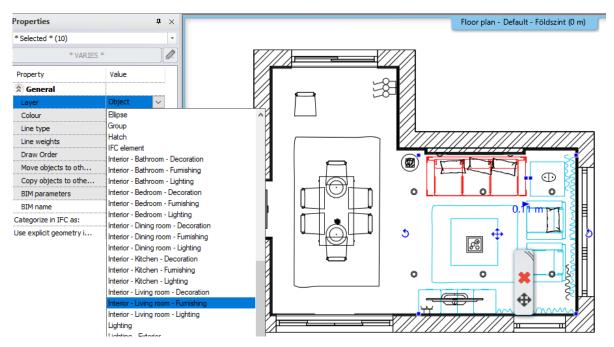
You can create new layers only if all the layers are visible.

Interior - Bedroom - Furnishing	9	Ē	9
Interior - Bedroom - Lighting	9	<u> </u>	5
Interior - Dining room - Decoration	9	<u> </u>	5
Interior - Dining room - Furnishing	<b>9</b>	<u> </u>	5
Interior - Dining room - Lighting	<b>?</b>	<b>B</b>	6
Interior - Kitchen - Decoration	· 💡	<u> </u>	5

• After finishing with all three layers, click on OK to close the window.

#### Moving objects to other layers

- Now select all furniture in the Living room area.
- Go to Properties on the left side of the screen and select "Interior Living room Furnishing" layer from the dropdown layer menu.
- Place all the other objects on the correct layers too.

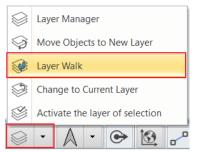


#### Layer walk

With Layer walk, you can narrow or expand the appearance of items within a selected layer group. It can also be used to check that the elements have been placed on the correct layers.

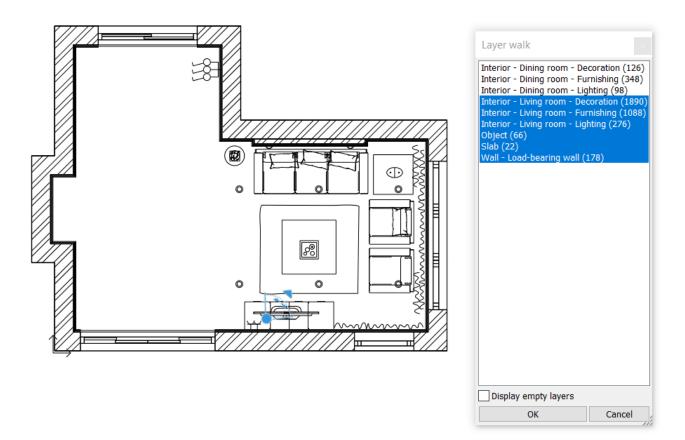
It's worth a try, you can work with it very quickly and spectacularly.

In the example below we selected the Living room furnishing plan.

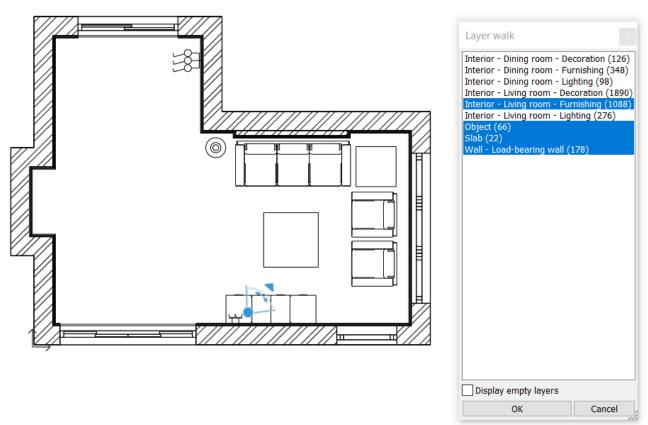








Press CTRL and click on the layers you want to make invisible. Press on the invisible ones again to make them visible. Let's leave only the Living room furniture on.



This makes it very easy to check that all the elements are on the right layer.

#### Layer variations

Now create three main layer groups, one for both rooms one for Living room and one for Dining room.

- Activate the 2D window.
- Open Layer Manager.
- Click on the Used layers option.
- Switch off all layers except the Wall Load bearing wall and Slab layers.
- To create a new layer variation, click on the blue plus icon.
- A new group is created. Click on it with the right mouse button and select the *Rename* option: Architectural plan.

Layer Properties Management									×
🐟 🐟 The name of current lay	er:Sla	b							Show visible layers only Layer filters
Name	On	L	P	Ele	C	Line-type	Line	Description	
Dimension - Length	8	8	6	8		Simple	0 mm		×
Interior - Dining room - Decor	8	<u> </u>	9	91		Simple	0 mm		- All layers
Interior - Dining room - Furniture		<u> </u>	9	359		Simple	0 mm		Used layers
nterior - Dining room - Lighting		<u></u>	9	98		Simple	0 mm		
Interior - Kitchen - Furniture	9	<u> </u>	9	139		Simple	0 mm		
Interior - Living room - Decor	9	<u> </u>	9	1972		Simple	0 mm		
Interior - Living room - Furniture		<u></u>	9	1152		Simple	0 mm		
Interior - Living room - Lighting	1	<u> </u>	9	221		Simple	0 mm		
🖋 Slab	Ŷ	É	8	26		Simple			
- Text	1	<u> </u>	9	1		Simple			
🧼 Wall - Load bearing	Ŷ	Ē	6	246		Simple	0 mm		
									Layer filter restricts the layers displayed in the Layer list to the selected layers. Drag and drop the selected layers onto the layer filter Variations Available variations All layers Architectural A layer variation saves all the layers with the current states. It helps switching between possible layer variations in one step.
<								>	
Do not delete used layers	$\sim$	Сору	to clip	board	Pro Pro	otocol for La	yer Naming	9	OK Cancel

• Turn on the living room layers by double-clicking on the lock, then create a second group: Living room.



Layer Properties Management					_			×
The name of current	layer:Slab							Show visible layers only
Name Interior - Living room - Decor Interior - Living room - Furniture Interior - Living room - Lighting Vall Wall - Load bearing	ତ ସ ତ ସ ତ ସ ତ ସ	L P	Ele 1972 1152 221 26 246	C	Line-type Simple Simple Simple Simple	0 mm 0 mm 0 mm	Description	Layer filters
								Layer filter restricts the layers displayed in the Layer list to the selected layers. Drag and drop the selected layers onto the layer filter Variations Available variations All layers Architectural Living room
< Do not delete used layers	~	Copy to clip	board	Pro	tocol for Lay	yer Naming	>	A layer variation saves all the layers with the current states. It helps switching between possible layer variations in one step.

- Turn off "Show visible layers only" option.
- Turn off the layers for the living room by double-clicking on the yellow light bulb and turn on the layers for the dining room by double-clicking on the lock, then create a third group: **Dining room**.

131	
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Layer Properties Management									×
									*
🐟 😪 🐟 The name of current lay	er:Sla	b							Show visible layers only
Name	On	L	P	Ele	C	Line-type	Line	Description	Layer filters
Interior - Dining room - Decor	9	<u> </u>	6	91		Simple	0 mm		×
Interior - Dining room - Furniture	9	<u> </u>	9	359		Simple	0 mm		- All layers
Interior - Dining room - Lighting	9	<u> </u>	8	98		Simple	0 mm		Used layers
🖋 Slab	<b>?</b>	<u> </u>	9	26		Simple	0 mm		
🧼 Wall - Load bearing	9	Ē	9	246		Simple	0 mm		
<								>	Layer filter restricts the layers displayed in the Layer list to the selected layers. Drag and drop the selected layers onto the layer filter Variations Available variations All layers Architectural Dining room Living room
Do not delete used layers	$\sim$	Сору	to clip	board	Pro	tocol for La	yer Naming	9	OK Cancel

If you select now these variations, you can see that the settings of these layers change based on it.

• Click on OK to close the window.

On the plan in the Drawing tools bar, you can change the variations easily, you don't have to open the Layer Properties Management every time you want a different variation.

1:100	• -	1:1	•	Architectural
				All layers
mage] [ +	<u> </u>		<i>c</i> 1	Architectural
Floo	r plan	Ground	flool	Dining room
				Living room

#### Saving new layers

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The new layers are saved automatically only in the project. If you want to save these layers into new projects as well, then you have to save these settings. This is how you can do it:

Select the *Gear icon* in the bottom left corner and select the *Open and Save* tab. Select the **Copy project settings to** other projects option and select the Layer structure option.

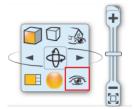
Graphics			Save current settings	
Open and Save	* Open and Save			
	Project default path (requires restart)	D:\Munka - Cadline\Ar	The new projects will start with the selected project settings.	
Units and angles	Image Path	D:\Munka - Cadline\AR	The items selected from the list will be saved in the My template:	
Snap and grid	Google Drive - Download folder	D:\Munka - Cadline\Ar	- Current graphic settings	
Cursor and marker	Enable project backup to your personal Google drive		- Layer structure     Building and floor structure	
Cursor and marker	*Save 3D database (significant increase in size)		- Default styles for all element types	
User interface	Transfer settings and files from one computer to another	Edit	- Graphic Override	
Item settings	Migrate custom settings and files from previous releases	Edit	Would you like to save current settings as new default?	
e, item octango	Tag/Schedule template folder	D:\Munka - Cadline\Ar		
	* Manage styles		······	
	Copy project settings to other projects	Apply		
	Restore your defaults to factory settings	Apply	Current graphic settings	
	Export styles	Edit	✓ Layer structure	
	* Backup Archive		Building and floor structure	
	Create Backup Archive - Daily backup copies for recovery purposes		Default styles for all element types     Graphic override	
	Use the ARCHLine.XP Drawing Recovery Manager ONLY to recover data.			
	AUTO-ERASE all backup archive that is older than the Archive Preserve	ation Period		
	Archive Preservation Period in weeks:	12 ~		
	Erase Backup Archive older than 12 weeks	Edit		-
	The Backup Archive stores up to 3 backup copies of a project daily.		ОК	
				×

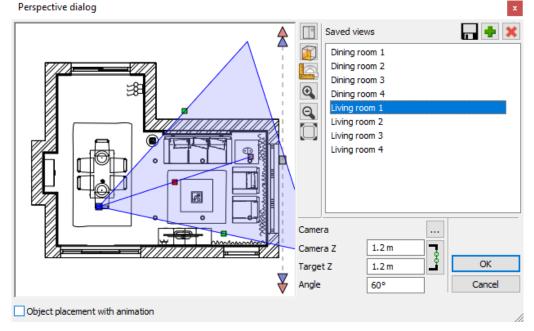
### 4.7.2. Settings and labelling the perspective views

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_Living_room_01; to first floor: 1_Bathroom_01.

- Now move to the 3D window.
- From Navibar select the right bottom "Perspective dialog" icon.
- Create new views by clicking on the green plus button and rename them according to the example " Living room_1 "
- The program automatically will put all views in alphabetical order. Always put serial number after the name of the consecutive perspective views.





After exiting the dialogue, you can select the view you want on the Status bar or switch between them using the blue arrows.

<ul> <li>Kitchen_0</li> <li>Kitchen_1</li> <li>Living_room_0</li> <li>Living_room_1</li> <li>Living_room_2</li> <li>Living_room_3</li> </ul>	
֎ Living_room_1	Ŧ

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.

 Open the following project: ARCHlineXP Draw\2020\Workshop_Intermediate\3_ Project_ Management\Little_John_Living_room_02_Layers

## 4.8. Managing large-size projects

### Project size

The size of the project is defined by 2 parameters:

- File size
- Surfaces in the 3D model

In Windows File manager you can check the size of the file you saved on your computer. This project is approximately 36 MB.

Name	Size	Quick 3D model
3D_views PDF		Build 3D model
Render		Create cut-away 3D view
Saved		Space volume computation
Wall_views		3D Section Box
🔂 Little_John_Living_room_01	27 502 KB	4
🔂 Little_John_Living_room_02_layer	36 103 KB	

#### Surface number

The **Surface** number is displayed in the Build 3D model window. In the pop-up window you can see that this project currently has **131 288** 3D surfaces. Quit this window with the "Cancel" button.

Resolution		
High		$\sim$
Minimal resolution of a circle	32	$\sim$
Maximal chord height	3 mm	
Surfaces	131288	

B

In case you use a mid-range laptop, it is recommended to keep the surface number under **1 000 000**. If the number of surfaces exceeds 2.000.000 surfaces, the program sends a warning and repeats the warning at 5.000.000 surfaces. Take the warning seriously, otherwise the efficiency of your work may be significantly reduced.

The surface boundaries can be changed if necessary under Settings / Item settings / Objects.



Graphics				^
Open and Save	Grid nodes X:	5		
	Grid nodes Y:	5		
Units and angles	▲ Text			
□ Snap and grid	*High detailed display			
' Cursor and marker	Keep readability when rotated between			
	120°	300°		
User interface	Plot layout			
S Item settings	Place drawing names automatically on plot layout			
	Tracking changes on so the drawings on the plot layout are updated when the ori	$\checkmark$		
	* Room Maker			
	Minimum wall length	100 mm		
	Minimum wall height	500 mm		
	* *Objects			
	✓ Enable 3D cache for generating KBB elements in 3D			
	Recalculate texture coordinates automatically when replacing a material of an obje	ect.		
	Clear 3D acceleration cache			
	✓ *Enable XML acceleration			
	Skp import (3D Warehouse) maximum texture count reached warning message	50	2	~
	Warning message when number of mesh face exceeds the limit during object import	50000	`	~
	First warning limit when the sum of 3D surfaces exceeds the given value	2000000		
	Second warning limit when the sum of 3D surfaces exceeds the given value	5000000		
	Warning limit when the number of project materials exceeds the given value	1000	2	~
	Specify lighting fixture type during 3DWarehouse downloads	$\checkmark$		
	Floorplan representation vocabulary	Edit		
	Network settings			
	Delete built-in browser cache, history and cookies			
	Option saved with the project			
	Options with an asterisk character (*) are saved into the project.			
Close	Other options are saved into the registry - affecting all projects			
				~
🔯 🏭 🗖 🔌 🖉	💦 😂 👁 View 2 🛛 🖌 🕇 🖡 % 🗸 📕	Lépcső	~	

#### Reducing the size of a project

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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 four steps:

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

#### 4.8.1. 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.

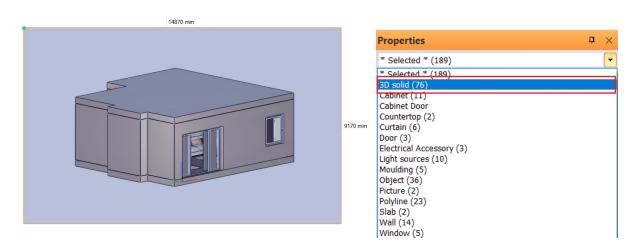
These unnecessarily increase the project size; therefore, we have to delete them.

Open the following project: ARCHlineXP Draw\2020\Workshop_Intermediate\3_Project_ Management\Little_John_Living_room_ 03_3D_body

🔂 Little_John_Living_room_01	27 502 KB		
Little_John_Living_room_02_layer	36 103 KB	Surfaces	165268
🔛 Little_John_Living_room_03_3D_body	37 684 KB	Sundees	

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

• Activate the 3D view and select the entire model. In the side menu under Properties, select 3D body and delete them.



 Now click again on 3D build tool – Rebuild 3D model. As you can see the number of surfaces decreased from 165.268 to 132 351.

Surfaces	132351
Surfaces	152551

### 4.8.2. 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

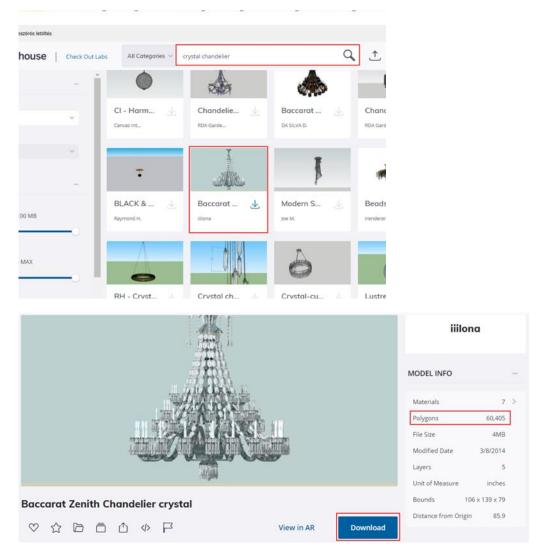
Now let's look at an example of too large objects.

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

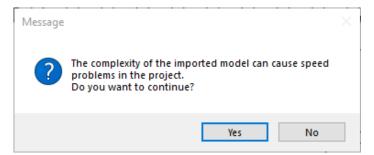
File 🛅 🗖		- 🗋 🍎	/ 🗙 🚽 🗃		+ = Edit	View	Building	Interior	Drafting
		(	ਜ	Ð	Ł				
Properties •	Room maker	Material T	Single object	3D warehouse	BIM libraries	Tiling ▼	Sweep	Soft furnishing	Lighting T
Properties	Room		PI	ace			Decorat	tion	

- 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.





• A warning window will pop up after the download. If you click "No", the object download will be cancelled and the program will not download the object. Now select "Yes", knowing that this object will slow down your work.



• 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.

3D Warehouse						
🗲 🚽 🛕 🗆 Többszörös letöltés						
③ 3D Warehouse	Check Out Lab	All Categories 🗸	Kettle teapot		Q 1	8 Fanni S.
CATEGORY	-	Showing results from al	categories (22 items found)			
Category		PRODUCTS O MO	DELS COLLECTIONS	CATALOGS		Iĝ
All Categories	~					
Subcategory	¥	2	Î	٢	V	1
PROPERTIES	-	kettle, tea	kettle, tea 🚽	kettle, tea	kettle	e, tea 🔬
File Size 0 - 100 MB		Enarepitea	Екатерина	Exal epizina	Exarepti	-
Polygons		2	4	02	~	9
0 - MAX		pan, pot, K	Coffee / te	Электроч	Kettle	. 1
		Екатерина	Mário M.	radukova	carson19	977

The program indicates in a popup message how many materials this object contains. The number 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 choose Yes.

Message		×
?	This object contains 290 materials. Using it can cause slow-down in the project. Continue anyway? No means import without materials.	
	Yes No	

- Place it on the floor plan.
- Now check the number of the surfaces by using 3D Build tool after placing the two objects. The previous 132 351 surfaces increased to 212 242.
- Now save the project under the name Little_John_Living_Room_4_Large.pro.

🔂 Little_John_Living_room_01	27 502 KB
🔂 Little_John_Living_room_02_layer	36 103 KB
🔂 Little_John_Living_room_03_3D_body	37 684 KB
🔁 Little_John_Living_room_04_large	47 075 KB

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.



Property	Value	'
These solids take the most space in the mem	pry:	
Element ID: [3D=3196] [2D=3598]	31148[KB] (3D surface: 76494) (Object: Baccarat Zer	nit
Element ID: [3D=205] [2D=1654]	2750[KB] (3D surface:8781) (Object: almohada 3d)	_
Element ID: [3D=275] [2D=3776]	2750[KB] (3D surface:8781) (Object: almohada 3d)	- 14
Element ID: [3D=228] [2D=2542]	2750[KB] (3D surface:8781) (Object: almohada 3d)	- 1
Element ID: [3D=254] [2D=3212]	2750[KB] (3D surface:8781) (Object: almohada 3d)	
These items use the most material:		
Element ID: [3D=4011] [2D=15606]	865 (Object: kettle, teapot, чайник)	
Element ID: [3D=102] [2D=301]	9 (Object: NEG TV Te 1)	- 1
Element ID: [3D=836] [2D=3598]	7 (Object: Baccarat Zenith Chandelier crystal(1))	- 1
Element ID: [3D=100] [2D=238]	6 (Object: candle 11)	
Element ID: [3D=120] [2D=435]	5 (Object: Flower 2)	
<		>
Show selected item	Delete selected item	lose

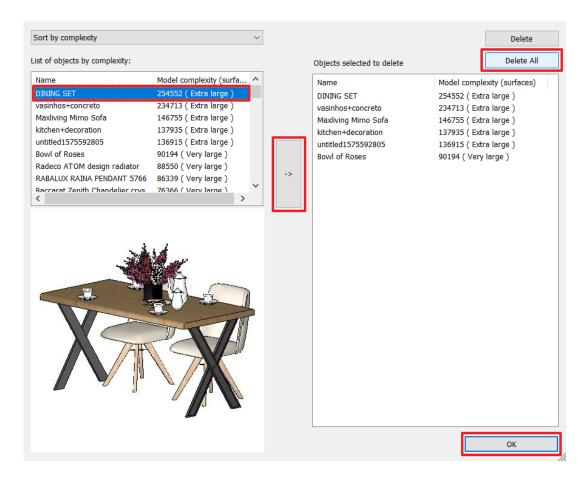
- Now check again the number of surfaces by using 3D Build tool. By deleting these two large objects the number decreased to **132 351**.
- Save project under a new name Little_John_Living_room_05_cleaned.pro, use "Save project as... "command.

#### Cleaning object library

It is recommended to clean the object library in the Design center based on the surface count and delete the large ones.

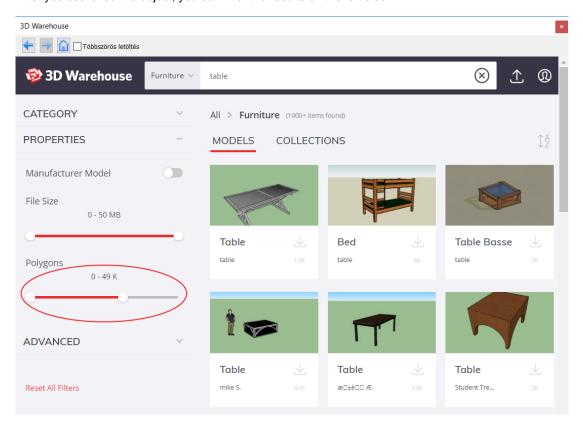
Select the Objects in the Design center and in the properties click on the **Cleaning object library** option. It filters the objects in the Design center and you can organize them by size or date. On the right side you can collect the objects that you want to delete.

f Objects		
< <back 178="" elements<="" th=""  =""><th></th><th></th></back>		
		Multi selection mode
I MY	P	New object
B 3D IMPORT	×	Delete
	(م)	Sort in categories
ACCESSORIES	Ð	Import
		Import all objects from folder
BATHROOM	₽	Export
BEDROOM	Ð	Export to Live
⊞ CARS	X	Cleaning object library
DECORATION	R	Select all



#### Filter 3D Warehouse® by surface number

The 3D Warehouse® also helps you filter large objects. After you searched the object, you can filter the results on the left side.





We recommend to set the Polygons to max. 50K. This way the search engine shows only those objects that have maximum 50 000 polygons. Now the needlessly big objects, that ARCHLine.XP® doesn't support won't appear in the list.

## 4.8.3. 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 **Design Center / Catalog / Materials / In Model**, here you can see that the project contains **696** 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

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- 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. The new project name is: Little_John_Living_Room_5_Cleaned.pro

You should save the project under a different name so that if you make a mistake, you can restore the original project.

- Select File menu / Tools / Project Cleaner.
- Select the Unused materials category. These materials will appear in the middle, Items window.
- Select the first and last items by holding down the SHIFT key, then use the arrow key to move them to the Removable items.

In the Project Cleaner, you can delete elements other than unused material, including sections, views or schedules.

• Accept the settings with OK to allow the program to delete unused material.

Project cleaner					$\times$
Categories	Items	•	Removable items		
Floor plan (0)	Color_A01 (4 kB)		Selected items to delete from project		^
Section and elevation (0)	Aluminium4 (5 kB)		* Materials		
Print layout (0)	Coffee_cream (5 kB) BRONZE_DARK001 (5 kB)		Color_A01		
Mood board (0)	drapp (4 kB)		Aluminium4		
3d view (1)	Black (5 kB)		Coffee_cream		
Link CAD (0)	Nincs anyaga(1) (4 kB)		BRONZE_DARK001		
Link Image (0)	Nincs anyaga(2) (4 kB)		drapp		
Unused materials (718)	Nincs anyaga(3) (4 kB)		Black		
Tags (0)	Nincs anyaga(4) (4 kB)	·	Nincs anyaga(1)		
Schedules (0)	< >		Nincs anyaga(2)		
Styles - Available in this project only (34)			Nincs anyaga(3)		
Styles - Available in all projects (3)			Nincs anyaga(4)		
			Nincs anyaga(5)		
			Teak		
			fehér_matt		
			Grey		
			UK_Single_BT_Master_Telephone_Socket		
			Legrand Valena White Inner		
			Fehér uveg		~
				ve from list Clear list	
			The cleaning of the project starts by pressing the OK	button.	
				ОК Са	ancel

Design center	<b>d</b> ×
[Search in all items]	۹ Brands
A Materials In Model	*

Design center			ġ×
[Search in all it	tems]	٩	Brands
Materials ↓ I < <back 103="" 8<="" p=""  =""></back>			•
			Ĥ
*1	*2	*3	

• Check the number of materials. Click again on **Design Center / Materials / In Model.** Now the number of the materials decreased **from 696 to 103** items. Deleted materials increased the project size unnecessarily.

After all these steps it can be seen that our project size significantly decreased from 47 075 KB to 26 032 KB. Thanks to the clearing, more storage space is left on our computer.

🔃 Little_John_Living_room_01	27 502 KB
🔃 Little_John_Living_room_02_layer	36 103 KB
🔃 Little_John_Living_room_03_3D_body	37 684 KB
🔃 Little_John_Living_room_04_large	47 075 KB
🔃 Little_John_Living_room_05_cleaned	26 032 KB

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

## 4.9. Tips to avoid IT problems in 10 points

The finished project is usually large, hundreds of Mb. in size. During its preparation, several IT problems can occur that can make it very difficult to solve the task:

We therefore recommend that you check the following **10-point list** for each project to make sure you are not experiencing the problem. Several of the points will be familiar to you, and we have reviewed them in section *4.7. Managing large-size projects.* 

## 4.9.1. Does the computer meet the recommended system requirements?

The recommended configuration is suitable for preparing a large-scale exam paper. A computer that meets the minimum requirements is for creating example projects during the course, but not for exam work or large projects. **Low memory (RAM e.g. 4 GB)** can lead to the "Out of memory" crash.

In this case, the program displays the following message: "The system does not meet the minimum memory requirements required to run the application. Low memory can result in unpredictable behavior."

With DxDiag you can check the parameters of your computer: More here: <u>Open and run DxDiag</u>



😵 DirectX Diagnostic Tool	_		×
System Display 1 Display 2 Sound 1 Sound 2 Sound 3 Input			
This tool reports detailed information about the DirectX components and drivers installed on your system.			
If you know what area is causing the problem, click the appropriate tab above. Otherwise, you can use the "Next Page" button below to visit each page in sequence.			
System Information			
Current Date/Time: Monday, June 26, 2023, 11:10:45 AM			
Computer Name: RENI-DELL			
Operating System: Windows 10 Pro 64-bit (10.0, Build 19044)			
Language: English (Regional Setting: English)			
System Manufacturer: Dell Inc.			
System Model: Inspiron 15 7000 Gaming			
BIOS: BIOS Date: 08/30/21 13:50:39 Ver: 1.15.0.00			
Processor: Intel(R) Core(TM) i7-7700HQ CPU @ 2.80GHz (8 CPUs), ~2.8GHz			
Memory: 16384MB RAM			
Page file: 12821MB used, 11555MB available			
DirectX Version: DirectX 12			
Check for WHQL digital signatures			
DxDiag 10.00.19041.2075 64-bit Unicode Copyright © Microsoft. All rights reserved	ł.		
Help Next Page Save All Information	E	Exit	

#### Integrated video card 4.9.2.

An integrated video card is not recommended, a dedicated video card is recommended. Check the date of the video card driver. If it is older than 1 year, it is recommended to download the update.

ndszer 1. képernyő 2. képernyő Leképezés 1. hang 2. hang E	emen	et
Eszköz Név: NVIDIA GeForce RTX 3050 Ti Laptop GPU Gyártó: NVIDIA Processzor típusa: NVIDIA GeForce RTX 3050 Ti Laptop GPU DAC típusa: Integrated RAMDAC Az eszköz típusa: Csak leképezésre alkalmas megjelenítőeszköz Összes memória: 20212 MB Kijelzőmemória 3978 MB Megosztott memória: 16234 MB DirectX-szolgáltatások DirectDraw-gyorsítás: Engedélyezve Direct3D-gyorsítás: Engedélyezve	~	Illesztőprogramok Fő illesztőprogram: nvldumdx.dll,nvldumdx.dll,nvldumdx Verzió: 31.0.15.3179 Dátum: 4/25/2023 02:00:00 WHQL embléma: n/a Direct3D DDI: 12 Szolgáltatás 12_1,12_0,11_1,11_0,10_1,10_0, Illesztőprogram típusa: WDDM 2.7 <
Megjegyzések		
Nincs probléma.		

## 4.9.3. Is there enough space on the C:\ drive?

If there is not enough space on C:, there may be a problem with the operation of Windows. In practice, Windows needs at least 10 Gb of free space. The recommended size of the C: drive is at least 100 Gb. If there is not enough space on the drive, saving the project may be interrupted. In such cases, the computer must be cleaned, e.g., Empty Recycle Bin. More here: Free up disk space in Windows

## 4.9.4. Is the ARCHLine.XP project save folder on OneDrive?

ARCHLine.XP cannot save a project 100% safely if the file is located in a folder that is synchronized with the OneDrive file storage service. It is therefore strongly not recommended. Saving a project may be interrupted. More here: <u>OneDrive issues</u>

#### The following should be checked regularly throughout the project:

#### 4.9.5. Distant element

Elements located at long distances (several km) cause calculation inaccuracies and errors may occur during work. The program warns about remote elements.

#### Symptoms:

1. In the optimal view, the floor plan is not visible in the floor plan window Reason: some elements on the floor plan are far from the origin.

2. In axonometric view, the 3D model is only a small point Reason: some elements are far from the rest of the model in 3D.

3. Poor texture quality in 3D view, elements cannot be selected in 3D, etc. Reason: the model is far from the origin.

4. Elements cannot be selected in 3D

Reason: the model is far away from the original or DirectX9 is set instead of DirectX11 in the Options - Display Setup section.

5. The image wall view results empty grey area

Reason: some elements on the floor plan are far from the origin or in perspective, the viewed point is far from the camera.

If this distance is possibly several km, calculation inaccuracy will occur. DirectX 11 uses floating point number representation. This means that it cannot be accurate in mm and more than 100 km at a time.

Therefore, it is necessary to check whether there is a distant element:

- on the floor plan,
- in the 3D window,
- * or is the perspective object far away, or is the model far away from the origin?

More here: Issues with model being far from origin

### 4.9.6. Does the number of surfaces in the model exceed 2,000,000?

The program warns you about this. Models with a large number of surfaces slow down work depending on the performance of the machine. When importing objects with more than 50,000 surface numbers, the program sends a warning. A list of elements with a large surface area in the project can be requested. The use of foils is recommended. We recommend the ARCHLine.XP LIVE program for displaying decorative elements with a large number of surfaces.

## 4.9.7. Are there elements with extremely large surfaces in the Object Library?

Use the Object Library Cleaner!

It's a good idea to delete extremely large items not only from the project, but also from the Object Library, to avoid using them in the next project.

### 4.9.8. Is there an object in the plan that contains more than 50 materials?

A list of these can be requested, it is recommended to delete them. Such objects are mainly made for game programs, where each surface piece has its own texture. When downloading such objects, the program sends a warning, because errors may occur in the operation of CAD/BIM programs during their use.



## 4.9.9. Does the number of unused materials in the project exceed several hundred?

Then it is worth cleaning the project, because in most cases the materials of previously downloaded, but no longer used, redundant objects accumulate. Due to the high number of materials occupying a large amount of memory (over 1000), an error may occur during work. The program sends a warning about the high number of materials.

## 4.9.10. Did the ARCHLine.XP program send a warning from the aforementioned?

It must be taken seriously and the cause must be eliminated!

# Workshop 5: KBB, Modelling and furniture design



## 5. Workshop: KBB - Modelling and furniture design

During this lesson you can learn how to use the furniture design tools in ARCHLine.XP, this way you can easily create customized kitchen cabinets.

- 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: <u>https://www.archlinexp.com/enrollments/courses/intermediate-course/kitchen-kbb-modelling-and-furniture-design/1</u>

#### Refresh your skills

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/eprol/ments/courses/preliminary-course/kitchen-

The tutorial videos can be found here: <u>https://www.archlinexp.com/enrollments/courses/preliminary-course/kitchen-design/1</u>

#### Start

- Open ARCHLine.XP software.
- Click on **Open Project** button.
- Open the following project: ...ARCHlineXP Draw\2023\Workshop_Intermediate\5_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.

## 5.1. Adding drawers, changing fronts

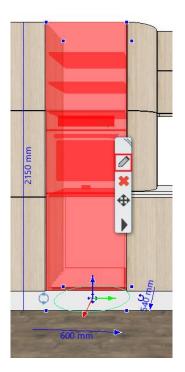
During this workshop we will modify the kitchen in the opened project.



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

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• 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.

Cabinet	
	i Bottom i Front i Core i Back i Core i Back i Core i Top
14 <b>   </b>	
Shelf O Only division	50% Divide on front
Dividers	Automatic refresh on page OK Cancel

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

Cabinet	
	<ul> <li>in Bottom</li> <li>in Front</li> <li>in Sheff - Single horizontal</li> <li>in Sheff - Single horizontal</li> <li>in Divider - Single horizontal</li> <li>in Divider</li></ul>
14 <b>           </b>	
1/1 Single Multiple Multiple Multiple	● Full Overlay ○ Traditional
Single wollupie front with front with single	Opening (%)
	100
Drawers	Automatic refresh on page OK Cancel

• Select the newly added upper drawer using the blue arrows on the left. On the third vertical tab deactivate the Apply the default option.

\$\$_ <b>0</b> \$\$\$\$\$	<u>e</u> 🦉 🖉	🥙 🗠 📄		
1 / 2	Walnut panel Wenge	Wenge- mirror 3	Wood panel Wood11 WS front WS front WS front WS front WS front WS front white WS front	uveg front ≥
	Rotate X	Rotate Y 0° ~	Rotate Z	
Drawers			Automatic refresh on page	OK Cancel

- Using the blue cross on the right, search for a front named *Wood11 front* in the library, then close the dialog with the OK button.
- Change the one front of three further cabinets to the Wood011 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 can easily navigate to the front you need by ALT + clicking.



• You should have a similar result as the picture above.



## 5.2. 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 unlock the bottom padlock. 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.

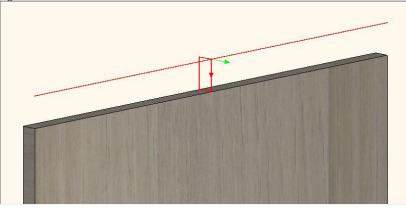
	There are no items to list
	A & @ D & A
€00 mm Height 60 mm Height 60 mm Height 60 mm Height 60 mm Height 60 mm Height 60 mm Height	Come offsets

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.

Edit profile		
		a Rectangle Simple
4		Mirror on X
rt12		Mirror on Y
μ-		Rotate
		Uniform 3D scaling operation
d	C	Width: Height:
		40 mm 20 mm
Select Profile	Redraw	
Name	Value	
Height [ 1 - 100000 mm ]	20	
Width [ 1 - 100000 mm ]	40	
		OK Cancel

• 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.

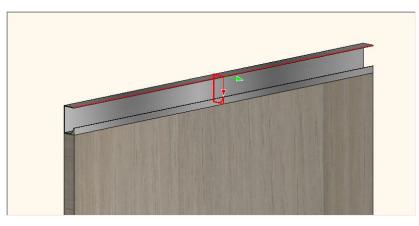


- Click on the sixth tab from the right, the Add profile tab. This option operates on the same principle as the Subtract profile
  option with the difference that here a profile will be added not subtracted.
- Select the profile named *horizontal1* as the frontal profile and set its distance from the 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.



Edit profile		
	17 11 20 Redraw	aluminium2          Mirror on X         Mirror on Y         Rotate         Uniform 3D scaling operation         Width:       Height:         40 mm       20 mm
Name Width [0.0001 - n.a. mm] Height [0.0001 - n.a. mm]	Value 40 20	OK Cancel

• 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.

## 5.2.1. Creating alternative front variations

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

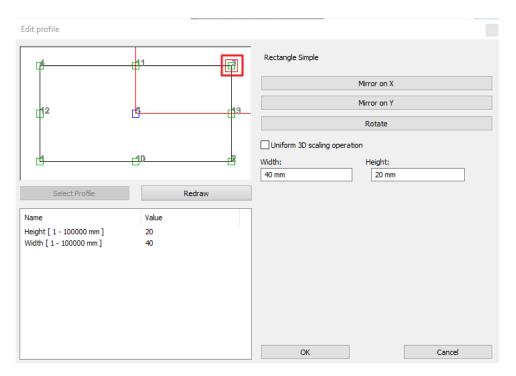
• Let's create the front with the *Pine_011* material. It can be done by selecting the second vertical tab on the Frontal profile tab and here choose *Pine_011* material.

Cabinet Door	8 A	
		<ul> <li>ADD profile: Unit doors can</li> <li>SUBTRACT profile: Unit door</li> </ul>
		<b>1 1 1 1 1 1 1 1 1 1</b>
	rogate y>2 Dark_grey Old_ashtre e Pine_011 Sabbia stained bee Beech	+ 2 3 3
Material direction 0°	~	
Frontal profile	Automatic refresh on page	OK Cancel

- After this save the new front 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.

$\sim$			Width		Same offsets
			600 mm	$\sim$	0 mm 🗸
		2	Height		
for a baba		Ô	0 mm	~	0 mm ~ _ 0 mm ~
front_chate dral	horizontal1				
urai		0			0 mm ~
					<b>—</b>
					Resize profile
					Rescale $\lor$

• 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.



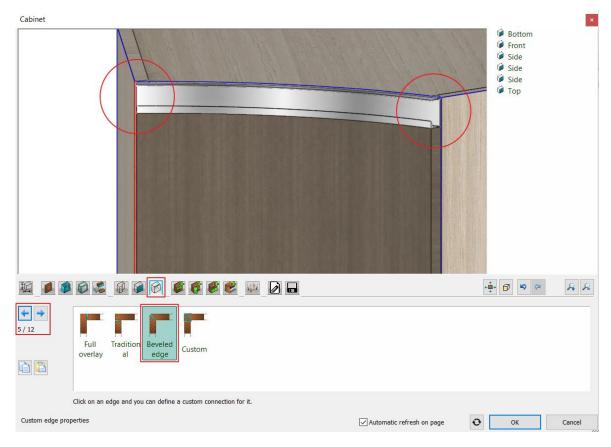
- Repeat these modifications on the Add profile tab.
- Save this front with another name: front with hidden handle 02 - pine
- After this, modify the material to *Old_Ashtree* on the first tab, then save it with another name on the last tab: *front with hidden handle 02 ashtree*.
- As a last step, change 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 place 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 window.





For curved elements, we need to modify the panel connections so that the hidden handle does not cut into the side panels.

- Select the curved element, then go to Properties.
- Go to the Custom Edge Properties tab and use the arrow keys to select the two edges you want to modify. Change the connection to Beveled Edge.

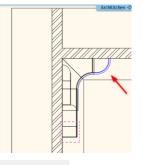


- Save the modified item with the Save button to overwrite the original cabinet.
- Also modify the panel settings on the curved element next to it, then save the furniture.

## 5.3. 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.

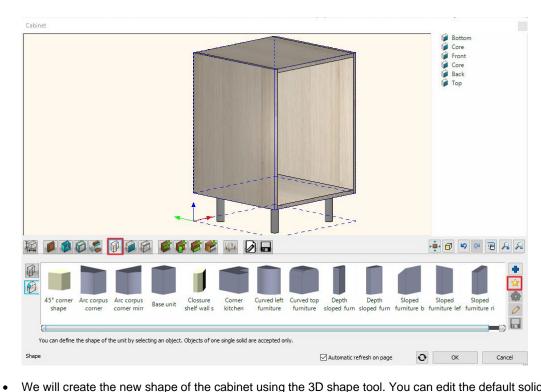
- Start the Cabinet command from the Ribbon bar / Interior / KBB group.
- First, set the default front of the cabinet on the second tab. This will be the *front with hidden* handle 01 ashtree.
- Hide the default handle since the chosen front already has built-in handles. This can be done
  on the second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



Default door fr selection. You Sustained a selection of the selection of t	can also apply s, shelves and Bedford shelf		_c Debba_c Gi h abinet_h T		dle handle si	+ ☆ 1 ⊘	Offset from Offset from	nt/back (green)
	Rotate X	Rotat √ 0°	≥Υ ~	Rotate Z	Mirror			
General unit door properti	es			✓ Automatic	refresh on page	Ð	ОК	Cancel

- 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.



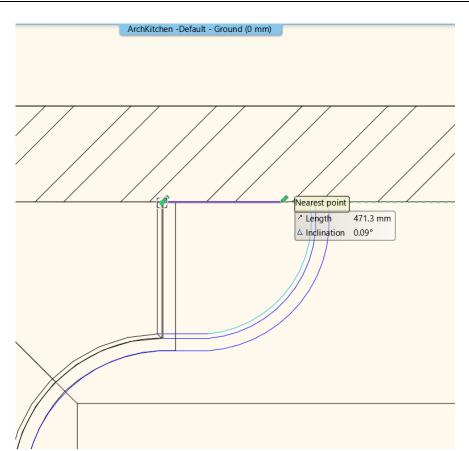


We will create the new shape of the cabinet using the 3D shape tool. You can edit the default solid cube with the help of three profiles (front, side and top view). The active profile is always the red one. In this case the top profile should be the active one. Click on the star icon to define the profile.

3D Shape			
◑◈◪◲			A & Ø
Width         1000 mm         Image: Constraint of the second seco	Rectangle Simple		Resize profile Rescale ~
Sizes and profiles		Automatic refresh on page	OK Cancel

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

•

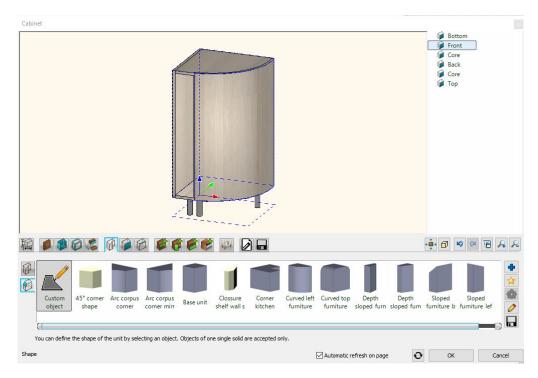


• When you have finished drawing, click on the Close button on the Ribbon bar. The new top profile is automatically engraved on the top of default cube, and now it is modified to the desired shape.

3D Shape	
Width         Image: Constraint of the second s	
Sizes and profiles	Automatic refresh on page OK Cancel

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

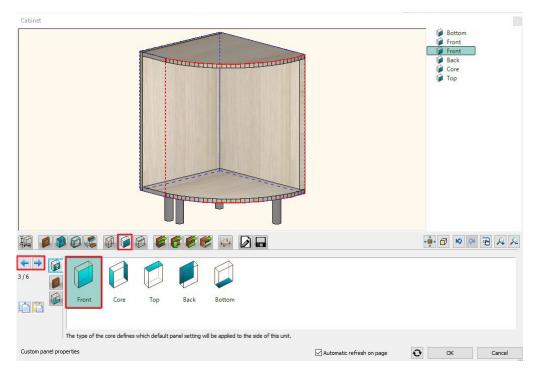




Click on the first tab and set the dimensions. The total height of the cabinet is 850 mm, the carcass height is 700 mm, and the space for legs is 150 mm.

On the seventh tab you can customize the panel properties. This means that you can change flexibly the type of the panels, so a you can make a front panel from a side panel; or a top panel can be turned into a back panel. This is useful in situations like this one.

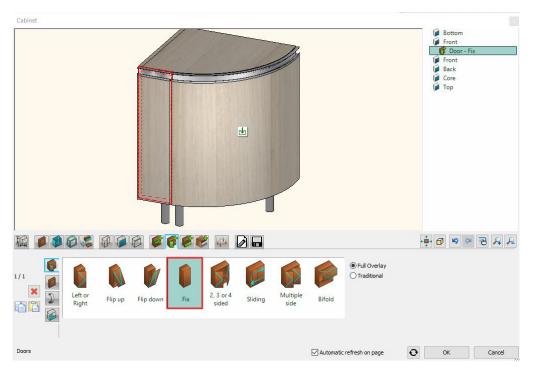
In the next step we will modify the curved side panel of the cabinet to a front; so, a door can be assigned to it. Navigate with the blue arrows on the left side until the color of the contour of the curved panel is marked with red. After this, select the front type from the options below.



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

Cabinet			<ul> <li>i Bottom</li> <li>i Front</li> <li>i Front</li> <li>i Door - Left or Right</li> <li>i Back</li> <li>i Core</li> <li>i Top</li> </ul>
1/1	Flip down Fix 2, 3 or 4 Sliding	Multiple side Bifold Oradional Deft Opening (%)	100
Doors		Automatic refresh on page	OK Cancel

• 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.

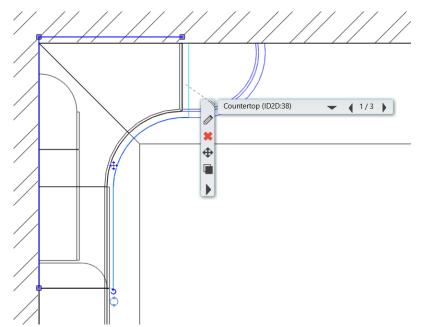




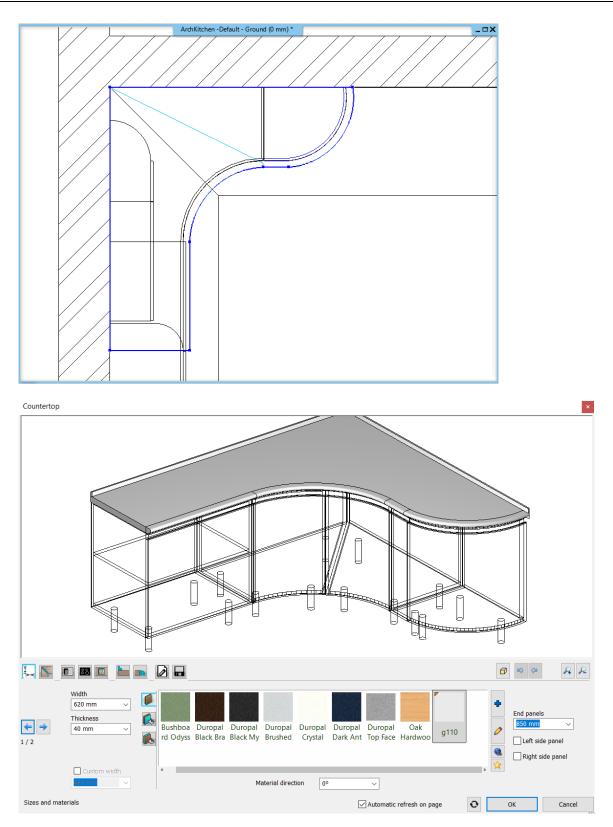
### 5.3.1. Creating a curved countertop

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.

Activate the floor plan window and select the existing worksheet, then Component mode from the Local menu. Component
mode allows you to edit each side of the element flexibly, move nodes around or insert new ones.



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

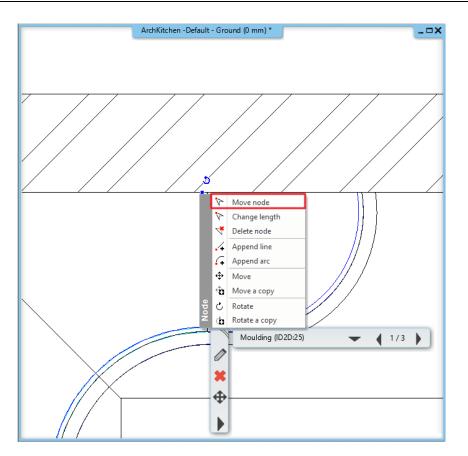


## 5.3.2. Modifying the plinth

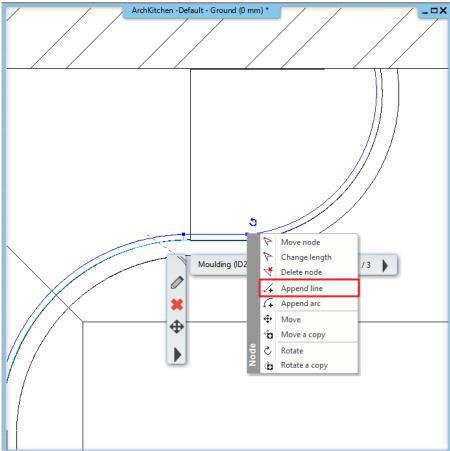
In the next step we will adjust the plinth to the curved cabinet.

- Activate the floorplan window.
- Click on the last node of the plinth and in the appearing edge menu select the Move node option.



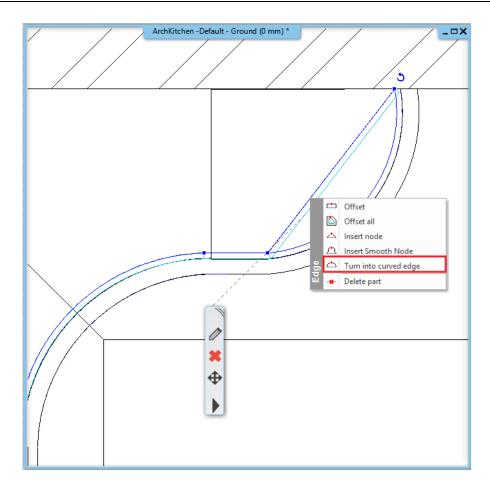


Move it to the beginning to the curved part, then click on it again and select the *Append line* option from the appearing menu.



• 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.

•



## 5.4. Modify fronts

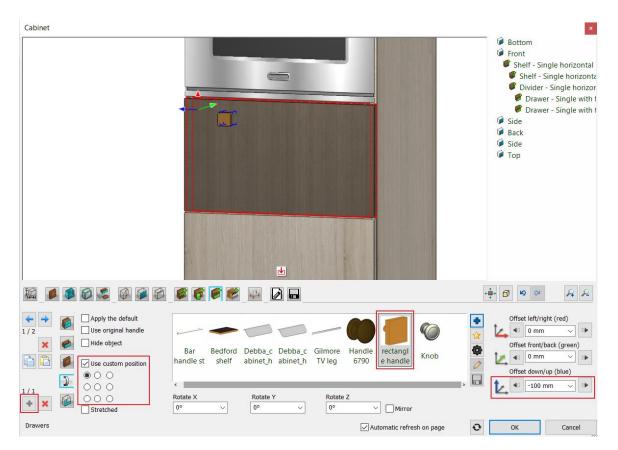
### 5.4.1. Drawers with multiple handles

KBB furniture fronts can accommodate more than one handle, so you can add different handles to the same drawer or door.

- Select the drawer cabinet you created above and enter the editor.
- Select the top drawer by ALT+clicking on it, then go to the Door front tab from the horizontal tabs and select the Pine011 front, then go to the Handle tab.
- Uncheck the "Apply the default" option and then select the rectangle handle. Use custom position and select the top left position. Change the Offset down/up value to -100 mm.
- Click the plus button to add the second handle.

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• Select the same handle, move the position to the top right position and add the item by clicking on the plus button.

	S S S 🖉 🔛 🛛 🗖	-∳ Ø ♥ ≈ A
Image: Apply the default         Image: Apply the default         Use original handle         Image: Apply the default         Image: Apply the default <td>Bar Bedford Debba_c Debba_c Gilmore Handle Frectangl e handle Stabinet_h abinet_h TV leg 6790 Knob</td> <td>Offset left/right (red)</td>	Bar Bedford Debba_c Debba_c Gilmore Handle Frectangl e handle Stabinet_h abinet_h TV leg 6790 Knob	Offset left/right (red)
Stretched	Rotate X     Rotate Y     Rotate Z       0°     >     0°     >	/0
Drawers	Automatic refresh on page	OK Cancel

You can copy the finished handles to another drawer in a single movement.

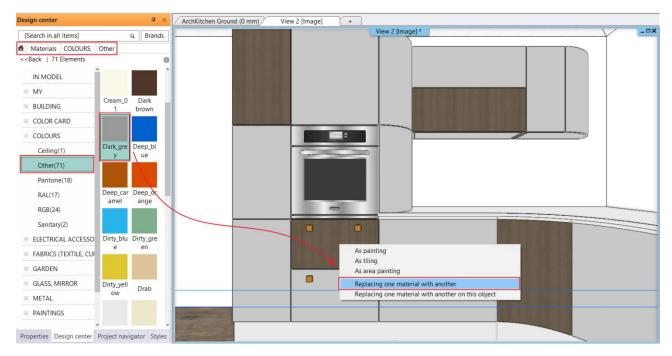
• Standing on the two-handle drawer, select the copy button, then select the bottom drawer and press the apply button. On the front tab, uncheck the "Apply the default" option and select Old ashtree front.



### 5.4.2. Change the color of fronts

Creating new fronts is a time-consuming process. It is possible to change the color of the fronts with a much quicker solution.

- Go to the Design Centre and select Materials Colors Other. Find the Grey and Dark Grey colors.
- Using the drag and drop method, drag the Grey material onto one of the light-colored fronts and select "Replacing one material with another".
- Select the Dark Grey material and drag it onto the Dark Brown front. To replace, select the same option as for the grey.



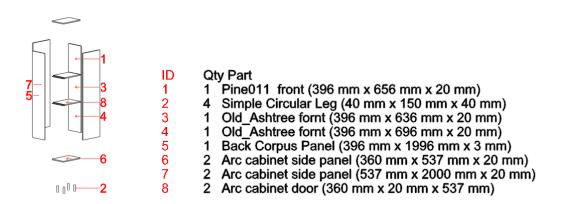
## 5.5. Creating documentation

### 5.5.1. Create an exploded view

The exploded view helps to understand the structure of the cabinets and provides information to facilitate the manufacturing process. The exploded view only works for cabinets created with the KBB tool.

• Select Ribbon bar / Documentation / Quantity take-off / Cabinet exploded view / Create and select one of the furniture items, or select the furniture and from the local menu click Cabinet exploded view from the local menu.

The resulting diagram is free to edit and modify once you have entered the group.



### 5.5.2. Create tags

- Select Ribbon bar / Documentation / Tags / Create Tags.
- Select Interior from the Discipline and Cabinet from the Types.

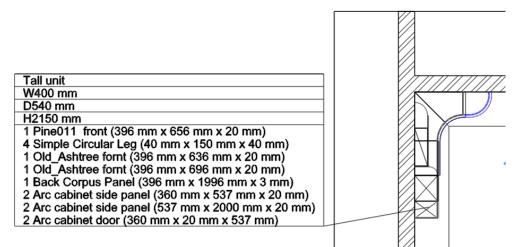


Under Tag parameters, you can select which parameters the tag should list. You can turn off the visibility of existing parameters or add new ones from the middle list.

- Turn off the visibility of the ID, Floor and Style parameters and add the Components and quantities property. Fill in the Prefix column for the Width, Depth, Height parameters with the prefixes W, D, H.
- Use the Apply and OK buttons to confirm the settings, then select Menu Ribbon / Tags / Place Tags.

Tag creation								
Discipline:	Group	]	Tags	Cabi	net tag	~	New	Delete
Interior ~	Common properties				Import	Export	Export all	Delete All
L	General properties		_					
Types	Calculated values		lag	parameters				
3D Shape	Pset_FurnitureTypeCommon (1)			Parameter Name		Visible	Prefix	Suffix
Brise soleil	ARCHline.XP Common (5)		1	ID				
Cabinet			2	Floor				
Cabinet Door			3	Style				
Countertop	Name		4	Туре				_
Curtain	View		5	Width		$\checkmark$	W	
Electrical Accessory	Туре		6	Depth		$\checkmark$	D	
Grid ceiling	Relative elevation	->	7	Height		$\checkmark$	Н	
Gutter	Width		8	Components and quar	ntities	~		
IFC element	Depth							
LED lighting	Height							
Light sources	Product ID							
Loft	Room							
Luminous text	Components and quantities							
Moulding	Image							
Object	View with scaling							
Picture								
Plain ceiling				UP Down				Delete
Roman blind								
Smart Object assembly	From existing object					ОК	Cancel	Apply

- Click OK to accept the pop-up window, which will show the parameters you have previously set.
- In the next window you can format the style of the tags. Now click OK to accept.
- Select the cabinet to be tagged and place the tag on the floor plan.



There is a live connection between the tag and the furniture, if you change the parameters of the furniture, the tag will also be changed by selecting Update Tag from the Local menu of the tag.

### 5.5.3. 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.

	Element types
Make Excel report          Building calculation         H Interior Calculation	3D Shape         Cabinet         Cabinet Door         Countertop         Electrical Accessory         Kitchen         Lamps         Loft         Luminous text         Moulding         Object         Picture on wall         Pipe and Duct
Tiling	Pipe and Duct Smart Object assembly
m ¹ Rooms	Ignore invisible layers and its items Select elements
* Terrain calculation	Export BIM parameters
List by manufacturers	OK Cancel

- From the appearing list, select the types to be listed, in this case Cabinet, and turn off the export of BIM parameters.
- Finally save the Excel worksheet, which opens automatically if Excel is installed on your computer.

In the Furniture detailed tab, you will find the components of each cabinet, the number of pieces and their dimensions.

Curved counter part 2	4 Simple Circular Leg 1 Old_Ashtree fornt 1 Arc cabinet side panel 1 Old_Ashtree fornt 1 Old_Ashtree fornt	Base unit	715       40       467       539       701       1012       1092       300       296       467	1140 150 696 700 1092 700 680 600 656	850 40 20 20 20 20 20 20 660 660 20
	1 Old_Ashtree fornt 1 Arc cabinet side panel 1 Old_Ashtree fornt 1 Old_Ashtree fornt	Wall unit	467 539 701 1012 1092 300 296	696 700 1092 700 680 600 600 656	20 20 20 20 20 20 660
	1 Arc cabinet side panel 1 Old_Ashtree fornt 1 Old_Ashtree fornt	Wall unit	539 701 1012 1092 300 296	700 1092 700 680 600 656	20 20 20 20 660
	1 Arc cabinet side panel 1 Arc cabinet side panel 1 Arc cabinet side panel 1 Arc cabinet side panel 1 Old_Ashtree fornt 1 Old_Ashtree fornt	Wall unit	701 1012 1092 	1092 700 680 600 656	20 20 20 660
	1 Arc cabinet side panel 1 Arc cabinet side panel 1 Old_Ashtree fornt 1 Old_Ashtree fornt	Wall unit	1012 1092 300 296	700 680 600 656	20 20 660
	1 Arc cabinet side panel 1 Old_Ashtree fornt 1 Old_Ashtree fornt	Wall unit	1092 300 296	680 600 656	20
	1 Old_Ashtree fornt 1 Old_Ashtree fornt	Wall unit	300 296	600 <b>656</b>	660
	1 Old_Ashtree fornt	Wall unit	296	656	
Curved counter part 1	1 Old_Ashtree fornt				20
Curved counter part 1	-		467		
Curved counter part 1			407	656	20
Curved counter part 1	1 Back Corpus Panel		596	656	3
Curved counter part 1	2 Arc cabinet side panel		297	580	20
Curved counter part 1	1 Arc cabinet side panel		297	660	20
		Base unit	1140	716	850
	1 Pine011 front		467	696	20
	4 Simple Circular Leg		40	150	40
	1 Arc cabinet side panel		540	700	20
	1 Arc cabinet side panel		984	700	20
	2 Arc cabinet side panel		1072	682	20
	1 Arc cabinet side panel		1120	700	20

> Project properties Furniture summary Furniture detailed Summary (+)

And in the Summary tab, you can see how many m2 of surface area will be needed from the given panels and fronts.

### 5.5.4. Using color schemes

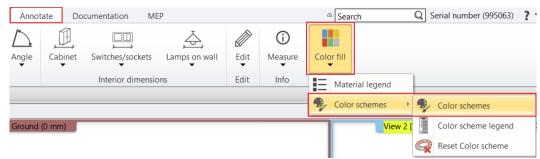
Color scheme is a graphical representation that is used to group elements or spaces according to any of their properties and to present them in a way that is easy to understand. A color scheme is based on an element type, its parameter and its assigned value. The color schemes by property can be saved in templates, so that by changing the templates, the model can be presented according to different aspects.

The color schemes help to understand the content of the project.



In this project, we will group and color the cabinets according to their width: cabinets 0.4m or narrower, 0.6m or narrower, and 0.6m or wider will be displayed in a different color.

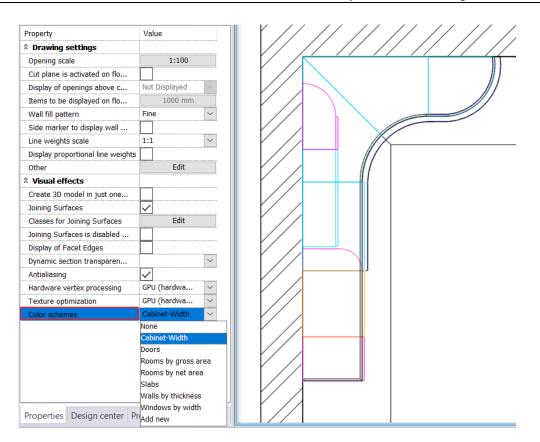
- Activate the floor plan.
- Select Ribbon bar / Annotate / Color Fill / Color schemes command.



- In the pop-up window, select Interior (1) from the Discipline, and within that select Cabinet (2). Select the Width parameter (3) from the middle list and add it by clicking on the button (4).
- Select the No more than action, then enter the value 400 mm. Select a color of your choice. (5)
- Select Add and create the following line: up to 600 mm. Select a color of your choice. (6)
- Finally, create the last line: Greater than 600 mm. Select a color of your choice. (7)

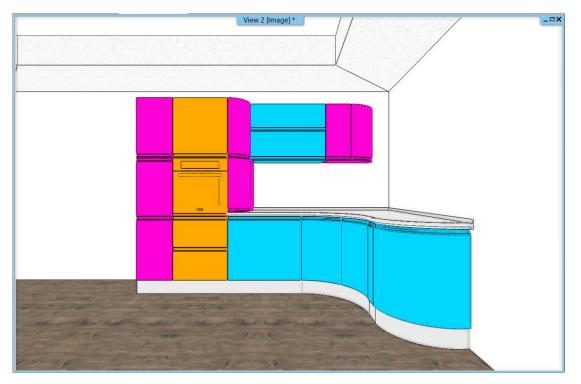
Col	or schemes													$\times$
Disciplin	^{ie:} 1													
Interior	·	Group	^	1		Color schemes								^
		Common properties				Cabinet-Width							Ø	
		General properties				Doors							Ø	
0	3D Shape	Calculated values				Rooms by gros	s area						Ø	
0	Brise soleil	Pset_FurnitureTypeCommon (1)				Rooms by net							0	
0	Cabinet 2	ARCHline.XP Common (5)				Slabs							- //	
0	Cabinet Door Countertop	Add custom BIM narameter	~			Walls by thickn	1855						<i>"</i>	~
0	Curtain			_										
õ	Electrical Accessory	Name				New	Delete	e	Delete All		Impo	t	Export	:
0	Grid ceiling	All elements										Save	as global	
0	Gutter	Туре		4	_								<b>3</b>	
0	IFC element	Relative elevation				Colour		Proper	ty	Opera	ition	Va	alue	
0	LED lighting	Width	3					Width	1	No mo	or 🚿	40	0 mm	5
0	Light sources	Depth		+				Width	1	No mo	or 🚿	60	0 mm	7
0	Loft	Height						Width		Greate	er than 🕓	60	0 mm	8
0	Luminous text	Product ID						1:						<u> </u>
0	Moulding Object	Room												
0	Picture													
õ	Plain ceiling													
0	Roman blind													
0	Smart Object assem													
0	Smart Object parts					<								>
0	Venetian blind									~ [				
0	Vertical blind					Import from	n floor plan			6	Ado		Delete	
				_									Delete A	ll 👘
		From existing object												
									ОК				Cancel	
									UK				Cancel	

The outlines of the cabinets on the floor plan have been changed based on the color schemes. In the side menu you can change or turn off the color schemes.



Color schemes can also be displayed in the 3D view.

Activate the 3D window and select Cabinet-Width from the side menu under Color schemes.





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For more practice and interesting tutorials please visit our website: <u>https://www.archlinexp.com/enrollments/courses/latest-videos/interior/1</u> <u>https://www.archlinexp.com/enrollments/courses/latest-videos/interior/11</u>

Workshop 6: Stairs and railing



## 6. 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
- Floating staircase with support
- Open your browser and watch the following video tutorial.

https://www.archlinexp.com/enrollments/courses/intermediate-course/stars-and-railing/1

#### How to start

- Start ARCHLine.XP software
- Click on "Open Project" button
- Open the following project file without any furniture ...\ARCHlineXP Draw\2023\Course_Intermediate\6_Stair_and_Railing \Stair_and_Railing_START.

#### Save project

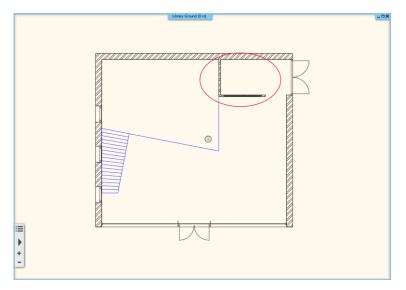
- Before doing anything, first you must save the project under a different name.
- Choose File menu / Save project as command then you can give the new project name and location to be saved.

## 6.1. 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:

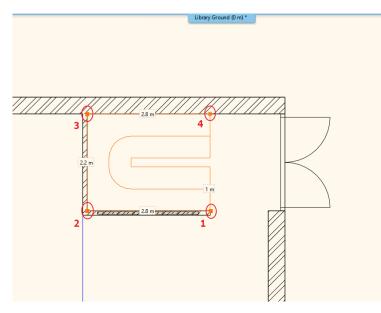


- Go to Ribbon bar / Building / Stair. Here you can find tools for creating and editing stairs.
- Select U-form category and "U-form winded" option.



Building	g	Inter	ior	Drafting		Dimensio	n	Docum	entation	
Ceiling		MM ailing	ہے۔ Stair	Sta	ir by r	un and lar reads	nding	Roor	n and ar	
	_		Straig	ht						-
			ŧ	1						
			U form	n						
					• •			U form	winded	

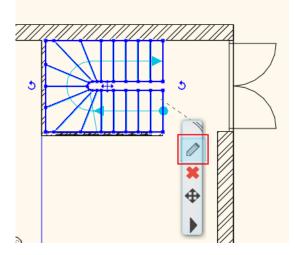
• Move the cursor over to that area where you will place it, and define its four-corner point.



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

## 6.1.1. 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.

n = 19	246		
	1357	n = 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.

24		
ALL ALL A	n1 = 6	n2 = 6
13		

### Width:

It is shown here, which is currently 100 cm.

<b>1</b> ₽ <del>777</del> ₽	100 cm

#### Side parameters:

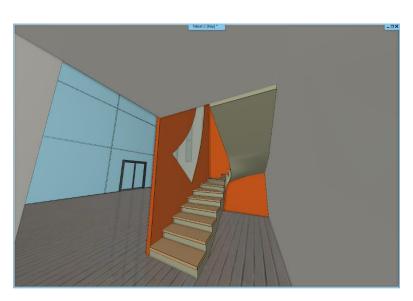
These three values show the length on each side of the stairs, shown below:

280 cm
220 cm
280 cm 🗎

### Rounded radius can be found at the bottom.

NYTHIN .		
	10	
E K R	10 cm	
978		1

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.







## 6.1.2. 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 "General properties" tab.
- Activate the "Style on right side", and select the "Steel profile" type.

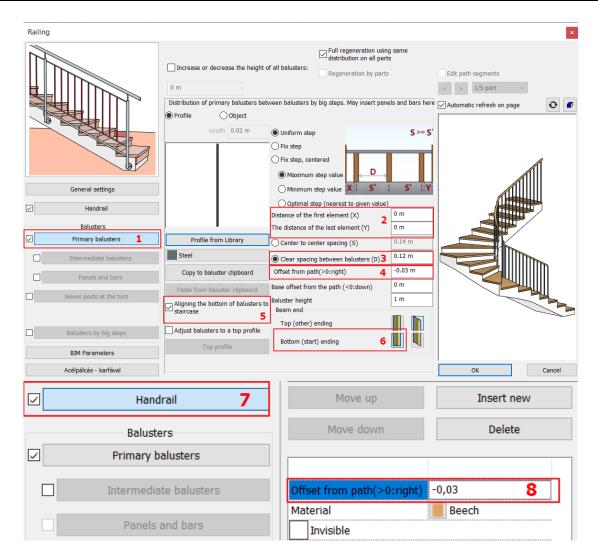
Stair Calculator			^	
	A General			
General properties	Layer	Stair 01	$\sim$	
Support	Colour			
	Line type	Simple Line	$\sim$	
Step geometry	Line weights	0 mm	$\sim$	
and the second sec	Draw Order	8- Bottom-most	$\sim$	
Representation on the floor above	Railing			
	Railing automatically added to left side			
	Regenerate			$\land \land \mid /$
	Railing	Acrylic railing	$\sim$	
	Railing automatically added to right side	$\checkmark$		$\mathbb{L} \times \mathbb{V} / \mathbb{X}$
	Regenerate			
	Railing	Steel profile	$\sim$	
	Representation in 2D			
	Nosing:	Along the stair	~	
	Nosing line-type	Szaggatott1	$\sim$	
	Section line	Dotted above the section line	$\sim$	
	Partial line-type	Szaggatott	$\sim$	
	Cutting elevation	1000 mm		
	Cutting line direction	20 °		
	Parallel distance	100 mm		
	Draw walking line	$\checkmark$		-
	Walking line arrow	<b>‡</b> 4	$\sim$	
	Cut out landings on walking line			
	Walking line before landing			
	Text on walking line			
	Numbering (50% of current font size)			
	Walking line backward			
	Arrow fit the box			
	Show geometry text		~	

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

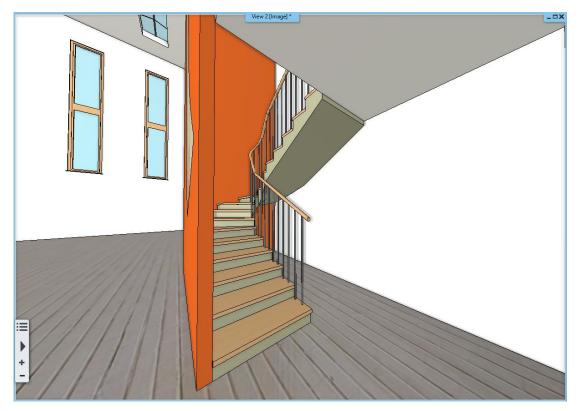
The railing follows the stairs' line and goes up. The railing is a separate element, so the stairs and railing can be selected separately.

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)
- Activate Adjust bottom of balustrades to stair, and set the Bottom Ending condition to perpendicularly ending. (5,6)
- Now go to Handrail option. Set Offset from path to -30 mm. (7,8)
- Click OK to close the window, now the railing is finished.



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.



🐟 A R C H | I N E.🕏

- 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.

Edit	leve	ls
Luit	ieve	2

<hr/>					List of buildings
Num	Name	Bottom eleva	Height	State	Le Copy objects to other floor
3	Level 3	10000 mm	3000 mm	Off	0 mm
2	Level 2	6000 mm	4000 mm	Off	0 mm
1	Level 1	3000 mm	3000 mm	Off	0 mm
0	Ground	0 mm	3000 mm	Active	0 mm Edit

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

Select floors			×
☐ All buildings Library (2/4)	Number Name 3 2 1	Bottom eleva	K
		Pseudo Copies  Full copy  Rectangle profile  Polygon profile  OK Cance	21

- 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.
  - Go to the first level and enter the properties of the stairs there.
  - In the General properties, select the 2D visualization option with section line.

Representation in 2D				
Nosing:	Along the stair	$\sim$		
Nosing line-type	Szaggatott1	~		
Section line	With section line	$\sim$		
Partial line-type	No section line	No section line		
Cutting elevation	With section line	With section line		
Cutting line direction	Dotted above the section line	Dotted above the section line		
<u> </u>	Contour-line above the section line	Contour-line above the section line		
arallel distance				
Draw walking line				

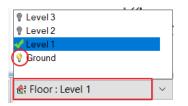
- Go to the second level and select the properties of the stairs there.
- Under Support, turn off the Create 3D option, and under General properties, select No intersection line for 2D display. Clear the barrier on the second level.

General properties	Connection to the upper slab	
Support	A: 100 mm B: 100 mm C: 300 mm	
Step geometry	Connection to the bottom slab	
Representation on the floor above	A: 100 mm B: 100 mm D: 150 mm E: 200 mm C: 300 mm	
		^
	Base Elevation	0 mm
	3D creation	
	Cut the walls	No cutting 🗸
	Waist slab material	Bright_white
	Construct the landing like a slab	

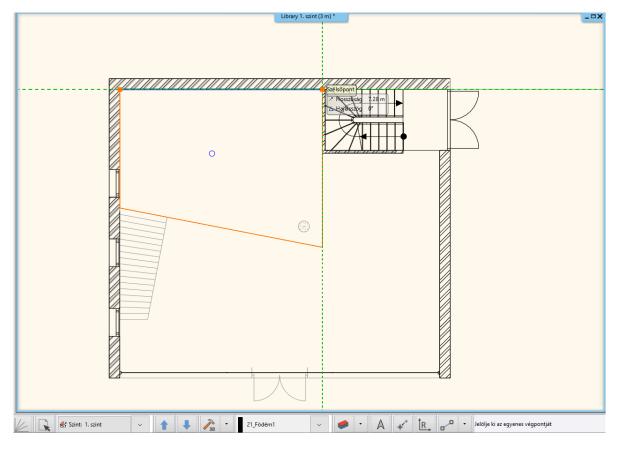
## 6.2. Create gallery

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 the first level, then make the ground level visible by clicking on the light bulb icon next to it.



• Use the **Ribbon menu / Building / Slab / Slab in Sketch mode** command. Draw around the slab line, starting from the top right-hand corner and moving clockwise.



- First select the slab and edit its properties.
- The material should be "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 minus 100 mm (3).
- To set the structural properties click on "Beams and block flooring system" (4).

Slab properties ×			
▼ General properties /			
0 mm 🗸 💆 21_Födém1 🗸	1 Wood-pine		
Simple Line 8 - Bottom-most V	Wood-pine		
The slab border doesn't display on the floor plan in print	S Wood-pine		
Base offset from the floor 0 mm ~	Slant angle		
Total thickness: 3 -100 mm V	Slab type Slab ~		
Slab layers	Cut the walls No cutting ~		
4 Beams and block flooring system	Cut by roofs		
	U-value: U-value: Not calculated		
	Fill color on floorplan		
BIM Parameters 1 réteg vb föd 30	OK Cancel		

- 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, then rotate it, so the width is 100 mm and the height is 100 mm.
- 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).

Bea	Beams and block flooring system ×			
Bea	ims in slab			
	Create 5		W	
	Rectar	ple	Н	
A	0 mm	100 mm		
в	1000 mm 6	200 mm		
с	-200 7	Use profile	C C	
	Regenerate	Use object Layer of framing 1. Layer(100 mm	V Wood-pine	

• Finally set the material "Natural pine".

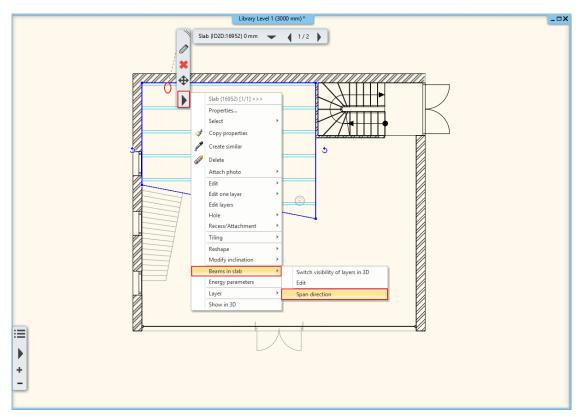
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Bea	Beams and block flooring system ×						
Bea	ms in slab						
	Create						14/
	Recta	ngle S	imple				PAH
Α	0 mm	w	100 mm				
в	1000 mm	н	200 mm				
С	-200		Use profile				C C
	Regenerate		○ Use object	Layer of	framing	1. Layer(100 mm) 🗸	Wood-pine

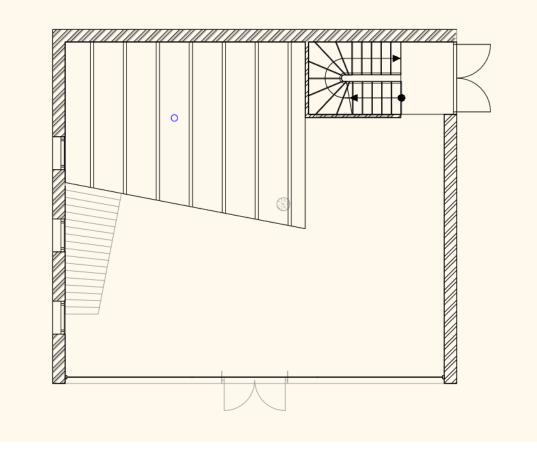
• In the Visual properties, set the color to dark grey and the line type to Dashed.

0 mm ~	b beams 2D representation	Exchange endings			
	f beam sign allowed B	lottom (start) ending Perpendicular ending	Vertical e	Vertical ending	
		ОК		Cancel	

- 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 if needed. Select the gallery and choose from the local menu Beams in Slab / Span direction.



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

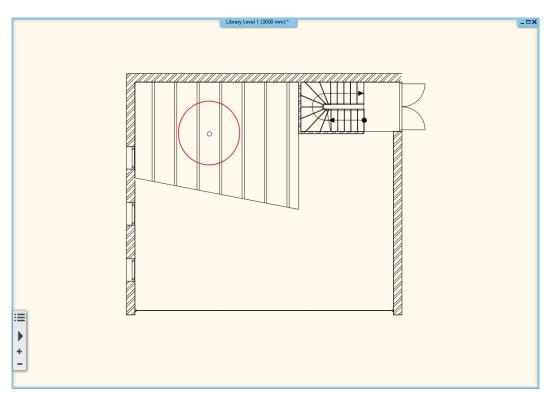


Now repeat this procedure on the second level.

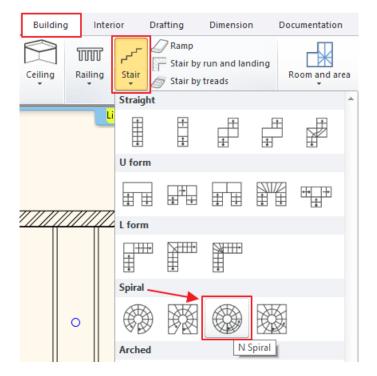
# 6.3. Placing Spiral Stair

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 center point here.

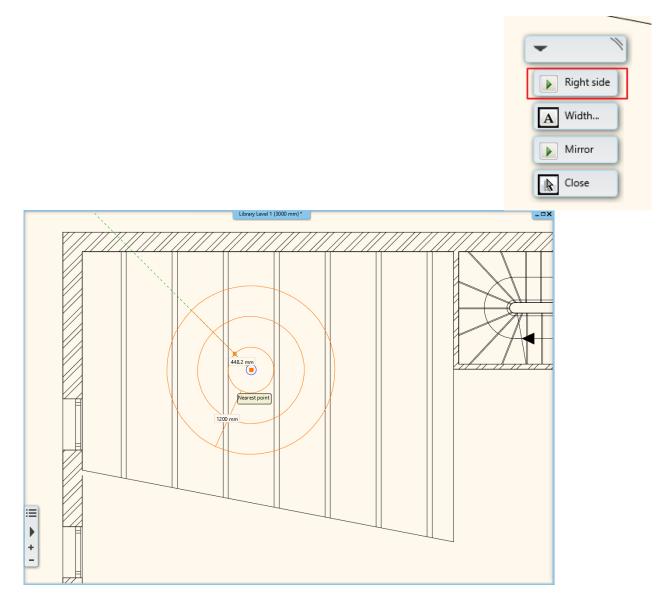


Go to Ribbon menu / Building / Stairs and select "N spiral" stairs from the list.

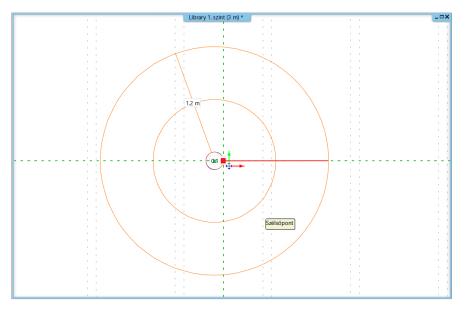


• Place it in the middle of the pre-drawn circle.



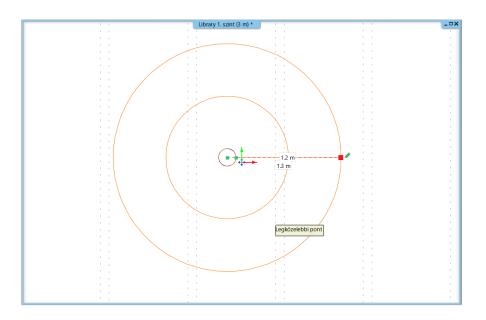


Give the starting point of the handrail. Here it is very important the distance and direction. Click on the right side of the circle so that the first line is horizontal.



With the second point, you need to specify how big a circle the staircase should describe. Since we are creating a 360° staircase, click on the starting point of the staircase circle.

•

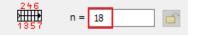


### 6.3.1. Modify Spiral stairs properties

- When the stairs are placed modify its properties. Click on the stair, then select "pencil" icon.
- First, choose the last step to be the slab.



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



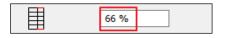
• The stair width to 1000 mm and the radius of the stairwell is 100 mm. This is how we got 1100 mm which had been used at the first time to place the stairs.



• 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 center point and that way the tread will be wider outside.

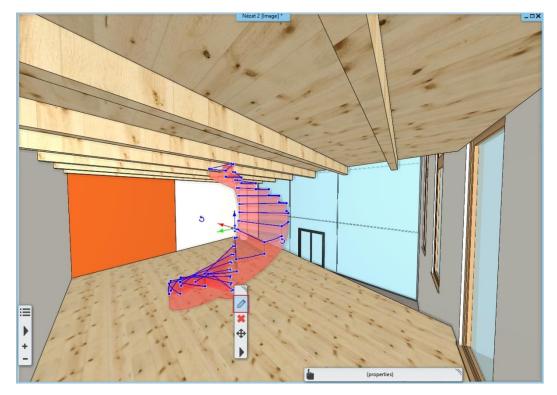


• Now close the window by pressing **OK** and changes will be applied.

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.



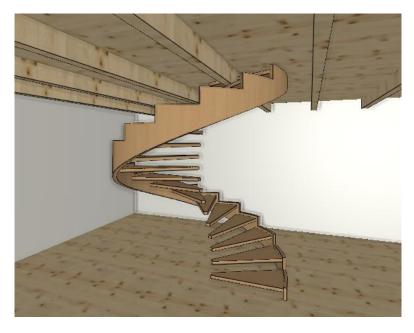
- In order to make changes on the structure click on Support tab.
- Turn off "Waist slab" and switch on the "Support". This command refers to the support representation which follows the steps straight or the bottom edge of the steps.
- Sides of stairs are different, so we will place a column inside.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

🔲 Stair				
Stair Calculator	Support			
General properties	Connection to the upper slab			
Support	A: 100 mm B: 100 mm	C: 300 mm		
Step geometry	Connection to the bottom slab			
Representation on the floor above	A: 100 mm B: 100 mm D: 1	50 mm E: 200 mm C: 300 mm		
				^
	Waist slab material		Bright_white	
	Waist slab	Thickness	150 mm	
		Thickness of landings	253 mm 🗸 🗸	
	Stair stringer			
		The stair stringer doesn't display on the floor pl Position	·	$\square \square $
	Middle			
		Style	Right str 🗸	
		Offset from stair side	0 mm	
	Right side	Chdo	Right str 🗸	
		Offset from stair side		
	✓ Tread	Material		
		Nosing depth	20 mm	
		Tread thickness		
	Riser board	Riser board material Riser board thickness		
		Angle of riser board from the vertical		
	✓ Support	Support material		
	Same on both sides		,	~
BIM Parameters	Normál lépcső			OK Cancel

Go further down, then select Sharp from The Right support type.

• Close the dialog by clicking on OK.

I Stair				×
Stair Calculator	Support			
General properties	Connection to the upper slab			
Support	A: 100 mm B: 100 mm	C: 300 mm		
Step geometry	Connection to the bottom slab			
Representation on the floor above	A: 100 mm B: 100 mm E	D: 150 mm E: 200 mm C: 300 mm	• · ·	
		Nosing depth 20 mm	^	
		Tread thickness 40 mm		
	Riser board	Riser board material 📕 Wood66		
		Riser board thickness 20 mm Angle of riser board from the vertical 0°		
	√ Support	Support material Wood66		
	Same on both sides			
		Left support type None	~	
		Left support width 40 mm		$\langle \mathcal{M} \rangle$
		Height from tread top 40 mm		
		Vertical cut off at start from tread top 110 mm		
		Vertical cut off at end from tread top 40 mm		
		Overhang horizontal at start from tread 40 mm		
		Overhang horizontal at end from tread 40 mm Right support type Sharp	~	
		Right support type Sharp		
		Height from tread top Parallel		
		Vertical cut off at start from tread top		
		Vertical cut off at end from tread top 40 mm		
		Overhang horizontal at start from tread 40 mm		
		Overhang horizontal at end from tread 40 mm	~	
BIM Parameters	Normál lépcső	lio Q		OK Cancel



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

## 6.3.2. Placing handrail

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

ARCH INE. 🕏

Stair			
Stair Calculator			^
	General		
General properties	Layer	Line	
Support	Colour		
Support	Line type	Simple Line 🗸	
Step geometry	Line weights	0 mm 🗸	
	Draw Order	8- Bottom-most ~	
Representation on the floor above	Railing		
	Railing automatically added to left side		
	Regenerate		
	Railing	Acrylic railing	
	Railing automatically added to right side		
	Regenerate		
	Railing	Steel profile 🗸 🗸	
	Representation in 2D		
	Nosing:	Along the stair	
	Nosing line-type	Szaggatott1 ~	
	Section line	Dotted above the section line 🗸	
	Partial line-type	Szaggatott 🗸	
	Cutting elevation	1000 mm	
	Cutting line direction	20 °	
	Parallel distance	100 mm	
	Draw walking line	V	
	Walking line arrow	<b>↓</b> 4	
	Cut out landings on walking line		
	Walking line before landing		
	Text on walking line		
	Numbering (50% of current font size)		
	Walking line backward		
	Arrow fit the box		
	Show geometry text		~
BIM Parameters	Normál lépcső		OK Cancel

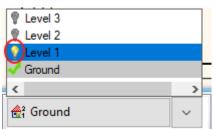
- The railing is created but still not perfect. To modify further open its properties.
- First click on Primary Balustrade tab (1) and activate Clear spacing between items to 120 mm (2).
- Activate Adjust bottom of balustrades to stair (3), also select perpendicular ending condition on the bottom (4).
- Close the dialog by clicking on OK. (5)

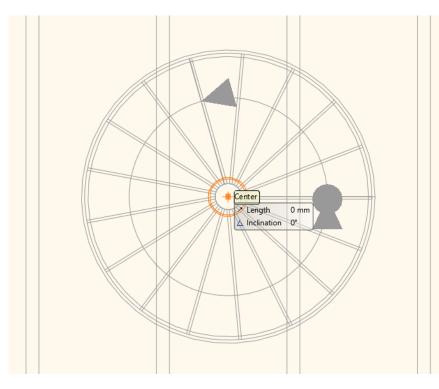
Railing				
		Increase or decrease the height o	Full regeneration using same     distribution on all parts     Regeneration by parts	Edit path segments
		0 m		< > 1/2 part ~
Jon M.		Distribution of primary balusters bet       Profile     Object       Width     0.02 m	ween balusters by big steps. May insert panels and bars here Uniform step Fix step Fix step, Fix step, centered Maximum step value	Automatic refresh on page
	General settings		Minimum step value X S* S* Y	
	Handrail		Optimal step (nearest to given value) Distance of the first element (X) 0.1 m	
	Balusters		The distance of the last element (Y) 0.1 m	
	Primary balusters 1	Profile from Library	Center to center spacing (S)	
	Intermediate balusters	Steel	Clear spacing between balusters (D) 2 0.12 m	
	Panels and bars	Copy to baluster clipboard	Offset from path(>0:right) 0 m	
	Neural acets at the true	Paste from baluster clipboard	Base offset from the path (<0:down)	
	Newel posts at the turn	Aligning the bottom of balusters to staircase 3	Baluster height 1 m Beam end	
	Balusters by big steps	Adjust balusters to a top profile	Top (other) ending	
	BIM Parameters	Top profile	Bottom (start) ending 4	
	Acélpálcás - karfával			OK 5 Cancel

### 6.3.3. 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.

Edit profile	×
	Circle
	Mirror on X
	Mirror on Y
	Rotate
	Uniform 3D scaling operation
	Width: Height:
	200 mm 200 mm
Select Profile Redraw	
Name Value	
Diameter [ 1 - 100000 mm ] 200 Shell thickness [ 0 - 100000 mm ] 0	
	OK Cancel

• Turn off the Hatching.



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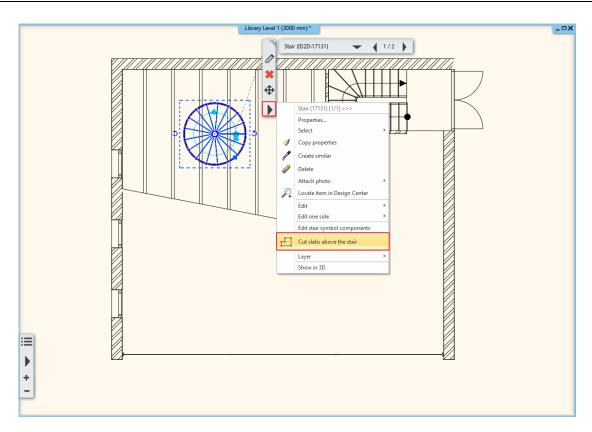
- Its' material is "Steel", before closing the dialog window, we still have to modify the height of the column. In order to calculate the correct height use "Edit Level" tool. Open Edit level dialog window, here you can see that the total height from ground floor up to 2nd level is 6,000 mm. In addition, 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.

A Visualization         Colour       1_Oszlop1         Layer       31_Oszlop1         Line weights       0 mm         Line type       Simple Line         Draw Order       8 - Bottom-most         On which floors visible? (Except for its own floor)       All floors         All floors       Edit         Image: All floors       Edit         Same materials       Steel         Solid material       Steel         Sconstrains       Base offset from the floor       0 mm         Height       7100       Angle of inclination       0°         Direction of inclination       0°       0°       0°         Direction of inclination       0°       0°       0°         Base offset from the slab       Slab-roof cutting       Stuctural properties       Column         Width:       Height:       200 mm       Cutout - Recess - Attachment       20 not visible         Vishow 3D	umn						
Colour       Layer       31_Oszlop1         Line weights       0 mm       1000000000000000000000000000000000000							
Layer       31_Oszlop1         Line weights       0 mm         Line type       Simple Line         Draw Order       8 - Bottom-most         On which floors visible? (Except for its own floor)       All floors         All floors       Edit         Ø Hatch       Hatch 38         Solid material       Steel         Solid material       Steel         Solid material       Steel         Solid material       Steel         Sconstrains       Base offset from the floor       0 mm         Height       7100       Angle of inclination       90°         Direction of inclination       90°       Direction of inclination       90°         Direction of inclination       90°       Direction of inclination       90°         Direction of inclination       90°       Direction of inclination       90°         Direction of inclination       90°       Stuctural properties       Column         Kidth:       Height:       200 mm       Cutout - Recess - Attachment         200 mm       200 mm       Cutout - Recess - Attachment			☆ Visualization				
Layer       31_Oszlop1         Line weights       0 mm         Line type       Simple Line         Draw Order       8 - Bottom-most         On which floors visible? (Except for its own floor)       All floors         All floors       Edit         Ø Hatch       Hatch 38         Solid material       Steel         Solid material       Steel         Solid material       Steel         Solid material       Steel         Sconstrains       Base offset from the floor       0 mm         Height       7100       Angle of inclination       90°         Direction of inclination       90°       Direction of inclination       90°         Direction of inclination       90°       Direction of inclination       90°         Direction of inclination       90°       Direction of inclination       90°         Direction of inclination       90°       Stuctural properties       Column         Kidth:       Height:       200 mm       Cutout - Recess - Attachment         200 mm       200 mm       Cutout - Recess - Attachment			Colour				
Line weights       0 mm         Line type       Simple Line         Draw Order       8 - Bottom-most         On which floors visible? (Except for its own floor)       All floors         All floors       Edit         V Hatch       Hatch 38         Same materials       Steel         Solid material       Steel         Surface material       Steel         Solid material       Steel         Solid material       Steel         Surface material       Steel         Constrains       Base offset from the floor       0 mm         Height       7100       Angle of inclination       0°         Direction of inclination       0°       O       O         Insert into wall       Make only hole in the slab       Structural proof cutting         Structural proof properties       Column       \$ Other         200 mm       200 mm       Cutout -Recess - Attachment         200 mm       2	/			31 Oszlop1	~		
Line type       Simple Line         Draw Order       8 - Bottom-most         On which floors visible? (Except for its own floor)       Image: Im			· · · · · · · · · · · · · · · · · · ·		~		
Draw Order       8 - Bottom-most         On which floors visible? (Except for its own floor)       All floors         All floors       Edit         Very Hatch       Hatch         Base offset from the floor       0 mm         Height       7100         Angle of inclination       90°         Direction of indination       90°         Direction of indination       0°         Disert into wall       Insert into wall         Edit profile       Studural properties         Column       200 mm         200 mm       200 nm	/	$\backslash$		Simple Line	~		
On which floors visible? (Except for its own floor)         All floors       Edit         Hatch       Hatch 38         Same materials       Solid material         Solid material       Steel         Surface offset from the floor       0 mm         Height       7100         Angle of inclination       90°         Direction of inclination       0°         Direction of inclination       0°         Insert into wall       Insert into wall         Make only hole in the slab       Slab-roof cutting         Structural properties       Column         X Other       Cutout - Recess - Attachment         20 not visible       Z0 not visible	/	Ì	\	8 - Bottom-most	~		
All floors       Edit         ✓ Hatch       Hatch 38         Same materials       Steel         Surface material       Steel         Constrains       Base offset from the floor       0 mm         Height       7100       Angle of inclination       90°         Direction of inclination       90°       0°       0°         Insert into wall       Make only hole in the slab       1       1         Slab-roof cutting       Structural properties       Column       20 not visible         20 not visible       20 not visible       1       1	/			ot for its own floor)			
Solid materials         Solid material         Solid material         Solid material         Solid material         Surface material         Make only hole in the slab         Surface material         Surface material         Surface material         Surface material         Surface material         Surface material							
Same materials         Sold material       Steel         Surface material       Steel         Angle of indination       0 mm         Height       7100         Angle of indination       0°         Direction of indination       0°         Direction of indination       0°         Direction of indination       0°         Make only hole in the wall       Insert into wall         Make only hole in the slab       Slab-roof cutting         Stuctural properties       Column         Stuctural properties       Column         \$ Other       20 not visible			Hatch	Hatch 38			
Surface material       Steel         Constrains       Base offset from the floor       0 mm         Base offset from the floor       0 mm       100         Height       7100       7100         Angle of inclination       90°       100         Direction of inclination       0°       100         Insert into wall       100       100         Make only hole in the wall       100       100         Edit profile       Stab-roof cutting       Stab-roof cutting         Structural properties       Column       Column         Ø Ohm       200 mm       Cutout - Recess - Attachment         20 not visible       200 not       100				1			
Image: Constrains         Base offset from the floor       0 mm         Height       7100         Angle of inclination       90°         Direction of inclination       0°         Insert into wall       Insert into wall         Make only hole in the slab       Image: Stab-roof cutting         Edit profile       Stab-roof cutting         Stub-roof cutting       Structural properties         Column       200 mm         200 mm       200 nt visible			Solid material	Steel			
Base offset from the floor     0 mm       Height     7100       Angle of inclination     90°       Direction of inclination     0°       Babe only hole in the slab     0°       Stab-roof cutting     Studeroof cutting       Stude roof cutting     Column       200 mm     Cutout - Recess - Attachment       20 not visible     20 not visible			Surface material	Steel			
Height     7100       Angle of inclination     90°       Direction of inclination     0°       Direction of inclination     0°       Insert into wall     Insert into wall       Make only hole in the slab     Insert into wall       Edit profile     Slab-roof cutting       Structural properties     Column       200 mm     200 mm			Constrains	☆ Constrains			
Angle of indination     90°       Direction of indination     0°       Do mm     200 mm			Base offset from the floor	0 mm	~		
billingtion     0°       profile     Circle       Profile from Library			Height	7100	~		
Insert into wall       Profile     Circle       Profile from Library     Make only hole in the slab       Edit profile     Slab-roof cutting       Structural properties     Column       200 mm     200 mm			Angle of inclination	90°			
Option     Circle       Profile from Library <ul> <li>Make only hole in the slab</li> <li>Slab-roof cutting</li> <li>Structural properties</li> <li>Column</li> <li>200 mm</li> <li>200 mm</li> <li>200 nm</li> </ul> <ul> <li>Column</li> <li>Cutout - Recess - Attachment</li> <li>20 not visible</li> </ul>			Direction of inclination	0°			
Profile from Library <pre>             Make only hole in the slab             Slab-roof cutting             Structural properties             Column             Column             200 mm             200 mm</pre>			Insert into wall				
Edit profile     Slab-roof cutting       Edit profile     Structural properties     Column       dth:     Height:     Column       200 mm     200 mm     Cutout - Recess - Attachment       2D not visible     2D not visible	file	Circle	Make only hole in the wa	all			
Edit profile     Slab-roof cutting       Structural properties     Column       dth:     Height:     Other       00 mm     200 mm     Cutout - Recess - Attachment       20 not visible     20 not visible	D	rafila from Library	Make only hole in the slab				
dth:     Height: ^C Other        00 mm     200 mm     Cutout - Recess - Attachment       2D not visible     2D not visible	F		Slab-roof cutting				
D0 mm     200 mm     Cutout - Recess - Attachment       2D not visible		Edit profile	Structural properties	Column	~		
00 mm  200 mm  Cutout - Recess - Attachment 20 not visible	dth:	Height:	☆ Other	λ			
	00 mm		Cutou	it - Recess - Attachment			
Show 3D			2D not visible	2D not visible			
			Show 3D				
BIM Parameters No style OK C		BIM Parameters	No style	ОК	Cancel		

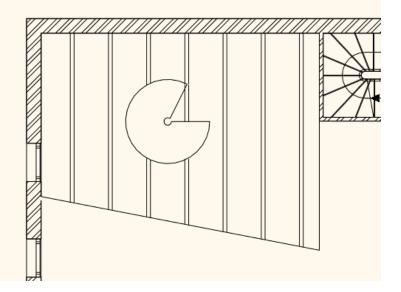
### 6.3.4. Cutting the slab

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.

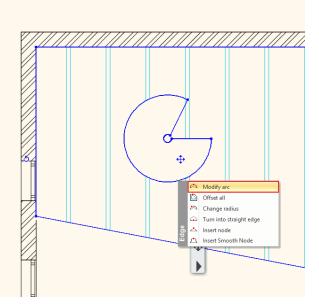


• Now the cutting is done. Go to the next level, here you can see the result.

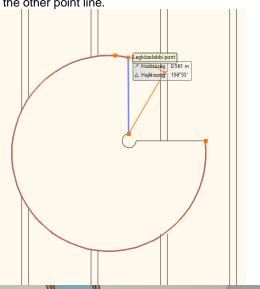


- Now let's modify the size of the cutting.
- Select the cutting line. Move your cursor over the selected area, and click when the cursor changes.
- From the appearing local menu use Modify arc command, type the value of 1400 mm.

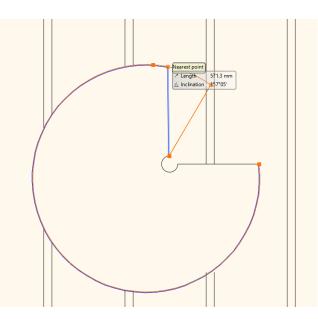


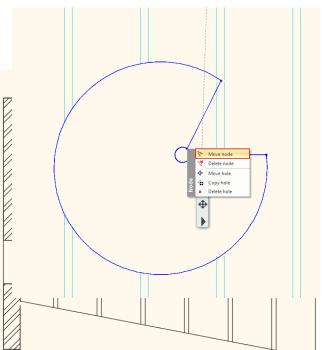


- Next click on this node and move it into the middle top point of the circle.
- We repeat these steps on outer circle as well and move it to the other point line.







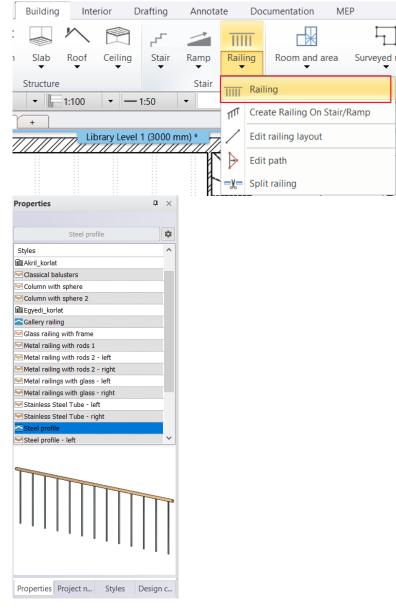


#### 6.3.5. Handrails along the slab cutting

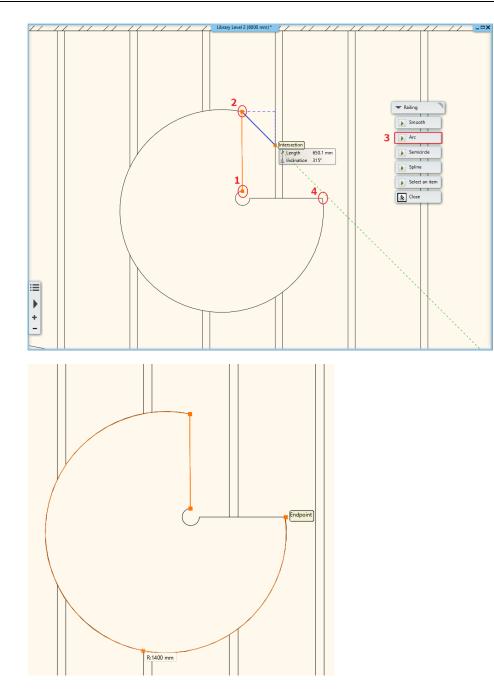
We can create handrail in ARCHLine.XP individually, not just only by placing them on the edges of steps.

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

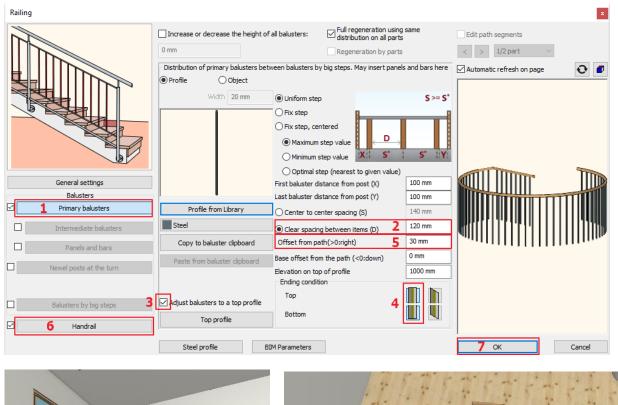
- Activate the floor plan window, now the second floor is active. Turn off the visibility of the ground level and turn on the visibility of level 1 to display the stairs.
- First go to Ribbon menu / Building / Railing /Railing and choose "Steel" from the side menu.

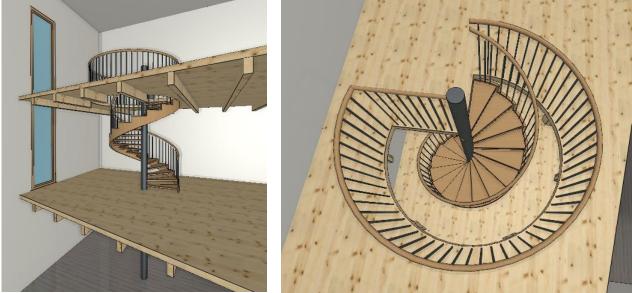


- Draw the railing by using polylines.
- After placing the first two points (1,2) choose from the top right menu Arc option (3). Place the third point too (4), and pull the arc to the proper place.



- 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".

## 6.4. Handrail on gallery

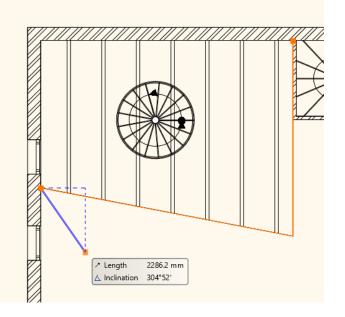
Let's create a separate railing on the gallery.

- 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.





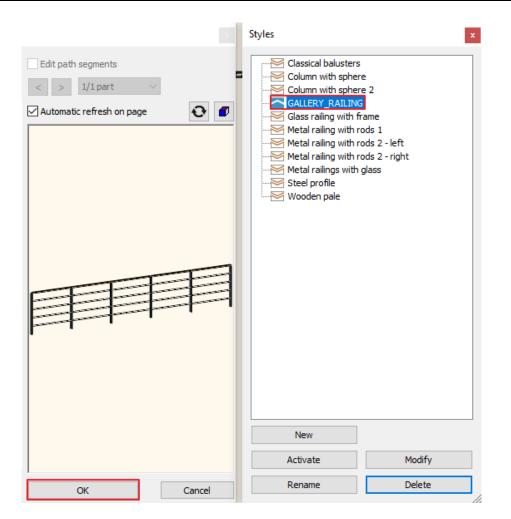
• The railing is finished.

### 6.4.1. 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.

Railing		×
	Increase or decrease the height of all balusters:       Image: Full regeneration using same distribution on all parts         0 m       Regeneration by parts	Edit path segments
		Automatic refresh on page
	Simple Line	
	Representation by centerline	
	Dimension path on layout	
General settings	Elevation of handrail reference point from the floor or 0 m	
Balusters		
Primary balusters		
Intermediate balusters		
Panels and bars		
Newel posts at the turn		
Balusters by big steps		
Handrail		
	Steel profile BIM Parameters	OK Cancel

• Now select GALLERY_RAILING style.

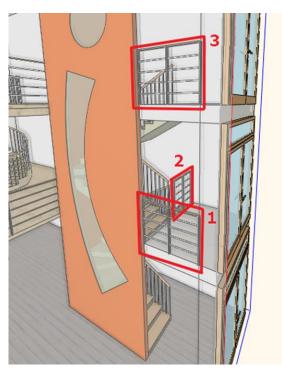


- Close the dialog by pressing OK, now the railing is modified.
- Repeat these changes on the gallery on the second floor. In Edit level dialog window copy the previously created railing.





Draw the railing to the staircase (1.2.3), by using GALLERY style. Choose Ribbon menu / Building / Railing command.



## 6.5. 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 customized 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.

Railing			Styles ×
	Increase or decrease the height of all balusters:  Imm Imm Imm Imm Imm Imm Imm Imm Imm I	Automatic refresh on page 💽 🖉	Classical balusters Column with sphere 2 Column with sphere 2 Glass railing with frame Metal railing with rods 1 Metal railing with rods 2 - left Metal railings with rods 2 - right Metal railings with glass Wooden pale Wooden pale
	Elevation of handrail reference point from the floor or 0 mm	TITITI	
General settings Balusters	from the selected stair		
Primary balusters	Balusters		
Primary balusters	Distribution of balusters by stair steps		
Intermediate balusters	Overhang at start: 0 mm		
Panels and bars	Overhang at end: 0 mm	IIII	
Newel posts at the turn	Eliminate gaps on handrail less than: 0 mm		
Balusters by big steps     Handrail			New Modify
	1	1	
	Steel profile BIM Parameters	OK Cancel	Rename Delete

- 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 to 50mm and width to 20 mm.

Railing					×
General settings Balusters	Increase or decrease the height of Omm Distribution of primary balusters bet Profile Object Width 20 mm	Fall balusters: ween balusters by big steps. May insert pane Uniform step Fix step Fix step, centered Minimum step value Optimal step (nearest to given value) First baluster distance from post (X) Last baluster distance from post (X) 2	S >= S*	Automatic refresh on page	0
Primary balusters	4 Profile from Library	Center to center spacing (S)			
Intermediate balusters	Steel	<ul> <li>Clear spacing between items (D)</li> <li>Offset from path(&gt;0:right)</li> </ul>	1180 mm		
Panels and bars	Paste from baluster dipboard	Base offset from the path (<0:down)	0 mm		
Newel posts at the turn	Adjust bottom of balustrades to stair	Baluster height Ending condition	1000 mm		
Balusters by big steps	Adjust balusters to a top profile	Тор			
Handrail	Top profile	Bottom			
	Steel profile B	IM Parameters		ОК	Cancel

- 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).

Railing					×
2	Increase or decrease the height of 0 mm	all balusters:			
8	Balusters on nodes of path segments	S		Automatic refresh on page	<b>•</b>
	Profile     Object     Width 20 mm	O Empty space			
General settings Balusters	4	First baluster distance from the beginning	-10 mm		
Primary balusters	2 Profile from Library	Last baluster distance from the end of path	-10 mm		
Intermediate balusters	Steel 3			' '	
Panels and bars	Copy to baluster clipboard	Offset from path(>0:right)	0 mm		
	Paste from baluster clipboard	Base offset from the path (<0:down) 5	10 mm		
Newel posts at the turn	Adjust bottom of balustrades to	Baluster height 6	1000 mm		
Balusters by big steps	L stair	Ending condition Top Bottom			
	Steel profile BI	M Parameters		ОК	Cancel

• 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.



Add/remove handrail Increase or decrease the height of all balusters: 0 mm Automatic refresh on page **O** Index Profile Shift vertical Overhang at st... Overhang at end: T... Circle 1000 mm 0 mm 0 mm P... 3 Cirde 1000 mm 0 mm 0 mm  $\sim$ Plane of profile perpendicular to path or Move up 2 Insert new General settings  $\odot \Rightarrow$ vertical Balusters Delete  $\bullet \blacksquare$  $\Box$ Primary balusters 0 mm Offset from path(>0:right) Δ Panels and bai Invisible  $\square$ Newel posts at the turn Elevate by general increasing/decreasing of... Exchange endings Vertical ending Bottom (start) ending Vertical ending Top (other) ending Balusters by big steps  $\overline{}$ Handrail Steel profile BIM Parameters OK Cancel

- 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 Index Profile Shift vertical Overhang at st... Overhang at end: Т... followings: P... Circle 1000 mm 1 0 mm 0 mm 2nd handrail value: 800 mm. * Ρ.... 2
- 3rd handrail value 600 mm.  $\dot{\mathbf{v}}$
- $\dot{\mathbf{v}}$ 4th handrail value 400 mm.
- $\dot{\mathbf{v}}$ 5th handrail value 200 mm.
- Circle 800 mm 0 mm 0 mm 3 600 mm P.... Circle 0 mm 0 mm P.... 4 Circle 400 mm 0 mm 0 mm 0 mm Circle 200 mm 0 mm

x

Finally modify the profile of the first ٠ handrail to rectangle. Change the height to 20 mm and width to 50 mm

(2), move the reference point to the center with a single click (3).

Styles

Edit profile	x
di 1. cé	Rectangle Simple
3	Mirror on X
1 ²	Mirror on Y
	Rotate
4 <u></u> 4	Uniform 3D scaling operation
1	Width:         Height:           0.05 m         0.02 m
Select Profile Redraw	
Name Value	
Height [0.001 - 100 m] 0,02 Width [0.001 - 100 m] 0.05 <b>2</b>	
	OK Cancel

• 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".

tyles		x
New name of style		1
Classical balusters	~	
Folder		
	~	
Subfolder		
	~	
Folder and subfolder specification is not mandatory If you specify these, the given style name will auto		

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

## 6.6. Customized stairs

We will create customized 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.

Classical balusters Column with sphere Column with sphere GALLERY_RAILING Glass railing with fr Metal railing with re Metal railing with re Metal railing with re Steel profile Wooden pale	e e 2 ; rame ods 1 ods 2 - left ods 2 - right
New	
Activate	Modify
Rename	Delete



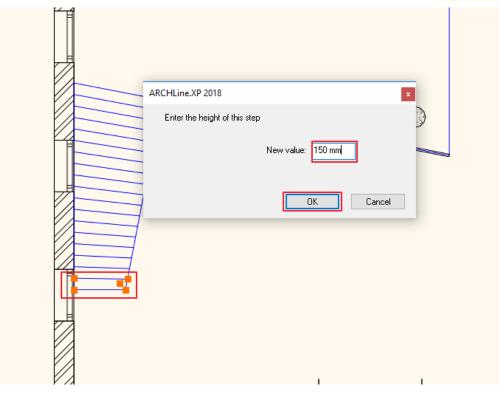
x

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

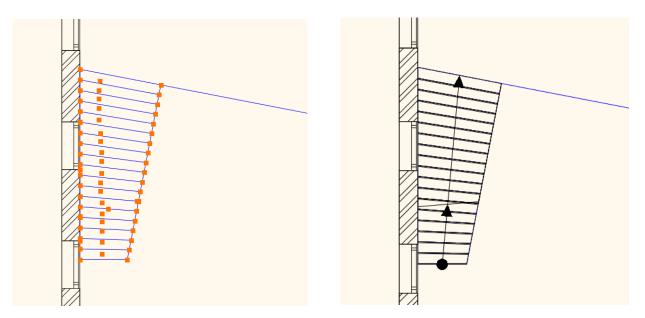


- From the appearing floating menu Choose "Internal point of chain" tool. As you can see the cursor shape has changed, move it over the lowest stair, and click on every step one by one, preferably in one line.
- After the first click, the program will ask for the height of steps. This should be 150 mm and if it is necessary, we can modify it later.



• When finished, close the command with double Enter.

✓ Stair by treads
Rectangle
Polygon
Previous reference point
Internal point of chain
Chain one by one
Close



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

Stair Calculator					
General properties	Step Nr.	Rise (including tread)	Tread thickness		
	1	16.666667 cm	4 cm	The step is a landing	_
Support	2	16.666667 cm	4 cm	The step is a landing	
Step geometry 1	3	16.666667 cm	4 cm	The step is a landing	
Step geometry	4	16.666667 cm	4 cm	The step is a landing	
presentation on the floor above	5	16.666667 cm	4 cm	The step is a landing	
	6	16.666667 cm	4 cm	The step is a landing	
	7	16.666667 cm	4 cm	The step is a landing	
	8	16.666667 cm	4 cm	The step is a landing	
	9	16.666667 cm	4 cm	The step is a landing	
	10	16.666667 cm	4 cm	The step is a landing	
	11	16.666667 cm	4 cm	The step is a landing	
	12	16.666667 cm	4 cm	The step is a landing	
	13	16.666667 cm	4 cm	The step is a landing	
	14	16.666667 cm	4 cm	The step is a landing	
	15	16.666667 cm	4 cm	The step is a landing	
	16	16.666667 cm	4 cm	The step is a landing	
	17	16.666667 cm	4 cm	The step is a landing	
	18	16.666667 cm	4 cm	The step is a landing	
	The height o	f stair			
			eight of stair: 3 m	3 Apply	

### 6.6.1. 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.

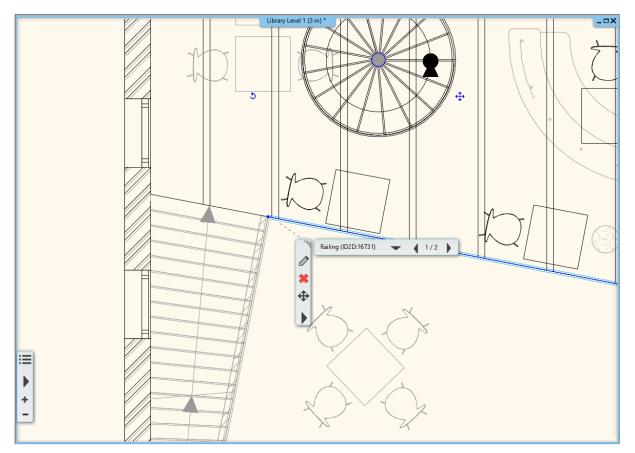
- Activate the floor plan window. Move to the first floor.
- Make visible the ground floor.



💡 Level 3	
💡 Level 2	
🗸 Level 1	
Ground	
<	>
€ Floor: Level 1	~

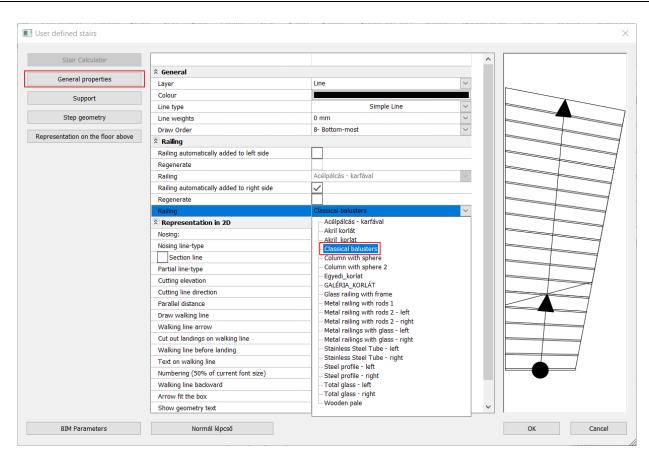
- Select railing, by using "move node" command place the railing line to the right place.
- Close the command.

•



Now simply place handrail on the stairs:

• Go to the properties of the staircase, select the General properties tab, then activate the Railing on the right and select the custom railing style, the classical balusters.



- 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.

Railing					x
	Increase or decrease the height of 0 m	all balusters: Full regeneration using distribution on all parts	2	Edit path segments	
	Distribution of primary balusters betw     Profile     Object	ween balusters by big steps. May insert panel	ls and bars here	Automatic refresh on page	0
	Width 0.02 m	Uniform step     Fix step	S >= S*	A	
		Fix step, centered     Maximum step value			
		Minimum step value     X: S*     Optimal step (nearest to given value)	S* Y		
General settings		First baluster distance from post (X)	0 m		
Balusters		Last baluster distance from post (Y)	0 m		
Primary balusters	Profile from Library	• Center to center spacing (S)	1.2 m		
Intermediate balusters	Steel	O Clear spacing between items (D)	1.18 m		NN.
Panels and bars	Copy to baluster clipboard	Offset from path(>0:right)	0 m		///Vr
	Paste from baluster clipboard	Base offset from the path (<0:down)	0 m		
Newel posts at the turn	Adjust bottom of balustrades to stair	Baluster height Ending condition	0.98 m		
Balusters by big steps	Adjust balusters to a top profile	Тор			
Handrail	Top profile	Bottom			
	Egyedi korlát Bl	IM Parameters		OK	Cancel

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

#### 6.6.2. Place wall along the stairs

Now we will place a wall under the customized 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.

File 🗋 🛅 🖬 🔚 🗭 🔿 🔿	🐰 🗀 📩 🍼 🗶 🚥	m A +? = Edit View Building
Connection -		
Properties Wall 🖉 Edit 👻	Door Window Curtain wall	Column Beam Slab Roof Ceiling Railing
	Opening	Structure
Wall	<b>4</b> ×	
Door	٩	

• Modify the total thickness to 100 mm and change the color to white.

Wall				×
✓ General properties				<b>• •</b>
0.3 mm 🗸 💆 54_Tető4	∼ Finish F	ace: Interior	Bright_white	
	st 🗸 🧱 Finish F	Face: Exterior	Bright_white	Ľ
	æĻ.		Erick3	
Unconnected Height 1 3 m	✓ Slant angle		90°	
Base offset from the floor 0 m	✓ Structural was	all	Non-bearing wall	~
Total thickness 2 0.1 m	Wall status		Disallow wall joins	
5 Edit Compound Walls	Location line		Finish Face: Exterior	~
Finish Face: Interior	Inclined wall	section height	1 m	
		Wall Fra	ming	
	U-value: 5	5.20 W/(m2*K)		
	Skip this	vall over room bo	unding	
	Display til	ing on the interior	side (needs multilayere	d V
Finish Face: Exterior	Display til	ing on the exterior	side (needs multilayere	ed
Preview 2D view	~			$\sim$
	Tiling repres	entation on 2D	Off	~
Axis line attributes				* •
Attributes of the Finish Face: Interior				* <b>*</b>
Visibility of sides				- •
BIM Parameters No style			ОК	Cancel
Edit Compound Walls Total thickness 0.1 m U-value: 5.20 W/(m2*K)				
Finish Face: Exte	rior	Layers in	existing or demolished phases	~
	offset Height		Name Layer en Visible in	
1< 1 - Very low V 📑 Brick3 0.1 m 0 m	∨ 3 m	V No V Edit Copy from hate Copy from hate 6 No hatch		Existing 🗸
Finish Face: Inter	rior		Layer line properties	
1 🔸 🔸	X 🗧 🏦	111 L. Col.		
Fill pattern orientation: Default orientation is Orient to View. You can change to	o Align with Element, it stays ali	gned to the v		
Collision of layers with the same priority, too				
Collision of layers upon difference of materials or heights Apply layer endings				
To the sum and a				
			ОК	Cancel



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• Draw a wall along the outer line of the customized stairs. The wall reference line is this outer line. You can change this in the appearing right floating menu or using Space key. Click on right side option.

The wall under the stairs is finished, but the stairs do not cut the wall.

 Select the staircase and enter its properties. On the Support tab, set the Cut the walls option to All floors and close the window by clicking OK.

This completes the wall under the stairs. Rebuild the model so that the change appears in the 3D view.

User defined stairs				×
Stair Calculator	Support			
General properties	Connection to the upper slab			
Support	A: 0.1 m B: 0.1 m	C: 0.3 m		
Step geometry	Connection to the bottom slab			
Representation on the floor above	A: 0.1 m B: 0.1 m D	: 0.15 m E: 0.2 m C: 0.3 m		
			^	
	Base Elevation		0 m	
	Cut the walls		All floors 🗸 🗸	
	Waist slab material		Own floor All floors	
	Construct the landing like a sla		No cutting	
		Thickness of land	On own floor and below	
	Stair stringer			
	Tread		erial Beech epth 0.02 m	
		Tread thick	ness 0.04 m	
	Riser board	Riser board mat Riser board thick	erial Wood66	
		Angle of riser board from the ver	······	
	Support	Support mat	erial 📕 Wood66	
	Same on both sides	Left support	time None	
		Left support		
		Height from tread		
		Vertical cut off at start from tread Vertical cut off at end from tread	11 0.01 m	
			1 top 0.04 m	
BIM Parameters	Normál lépcső			OK Cancel

## 6.7. Floating stair with steel support

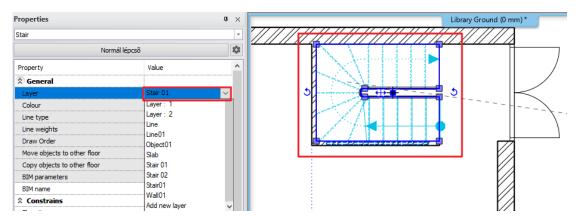
In the program, it is possible to create different stair types. We will now see an example of these. Let's suppose there is a cloakroom at the entrance in place of the present U-shaped staircase, and a steel-structured staircase leads upstairs along the wall.

#### 6.7.1. New stair

- In the Layer manager place the already existing stair to a new layer.
- Open the Layer manager dialog and create a new layer. Name them "Stair01" and "Stair02"."

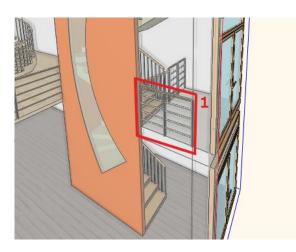
Layer Properties Mana	agement									x
🐟 🐟 Th	e name of current lay	/er: 41_	Stair 1							Show visible layers only
Name	On	Lock	Pr	Elem	с	Line-type	Line-w.	Description	^	Filters
00_Layer 0	· •	<u> </u>	<b>e</b>	156		Simple Line	0 mm			
01_Other 1	÷	<u>a</u>	ā	0		Simple Line	0 mm			All layers
02		8	ā 5	0		Simple Line	0 mm			····· Used layers
02_Other2	Ý		ā	0		Simple Line	0 mm			
03_Other3	ý.	8	ā	0		Simple Line	0 mm			
04_Other4	9	8	ā 8	0		Simple Line	0 mm			
05_Other5	9	8	<b>a</b>	0		Simple Line	0 mm			
06_Other6	9	8	ā 5	0		Simple Line	0 mm			
07_Other7	9	8	4	0		Simple Line	0 mm			
08_Background	9	8	6	0		Simple Line	0 mm			
🧼 09_Room stamp	9	8	ā 5	0		Simple Line	0 mm			
🧼 10_Area	9	<u> </u>	6	0		Simple Line	0 mm			Layer filter restricts the layers displayed in the
🧼 11_Wall1	<b>?</b>	<u> </u>	9	362		Simple Line	0 mm			Layer list to the selected layers. Drag and drop the selected layers onto the layer filter
🧼 12_Wall2	9	8	9	0		Simple Line	0 mm			the selected layers onto the layer linter
🧼 15_Wall5	9	<u> </u>		0		Simple Line	0 mm			Variations
🧼 16_Wall6	9	<u> </u>	9	0		Simple Line	0 mm			
🧼 17_Wall7	9		ā 8	0		Simple Line	0 mm			
🧼 18_Wall8	9	<u> </u>	<b>a</b>	0		Simple Line	0 mm			Available variations
🧼 19_Wall9	9	<u> </u>	ā	0		Simple Line	0 mm			All layers
🧼 20_Wall 10	9	<u> </u>	8	0		Simple Line	0 mm			
🧼 21_Slab 1	<b>?</b>	<u> </u>	6	45		Simple Line	0 mm			
🧼 22_Slab2	9	- - - - -	8	0		Simple Line	0 mm			
🧼 23_Slab3	9	<u> </u>	8	0		Simple Line	0 mm			
🧼 24_Slab4	9	<u> </u>	8	0		Simple Line	0 mm			
🧼 25_Slab5	9	8	4444 4444 4444 4444	0		Simple Line	0 mm			
26_Slab6			8	0		Simple Line 💌	0 mm	-		
🧼 27_Slab7	9	<u> </u>	7	0		Simple Line	0 mm			
🧼 28_Slab8	9	<u> </u>	8	0		Simple Line	0 mm			A layer variation saves all the layers with the
🧼 29_Slab9	9	<u> </u>	ā	0		Simple Line	0 mm		~	current states. It helps switching between possible layer variations in one step.
<			-					>	.	possible layer variations in one step.
Do not delete used layer	rs	$\sim$	Copy	to clipboar	d	Protocol for L	ayer Nam	ing		OK Cancel
					_					
🧼 87_Line		- 9		r é	3	62		Simple Line	0 n	nm
89_Circle		- <u> </u>			3	1		Simple Line	0 n	nm
_					2 2				-	
🥟 Line		<b>?</b>			<b>3</b>	406		Simple Line	0 n	nm
🧼 Stair 01			ć	16	3	276		Simple Line	0 n	nm
🧼 Stair 02		- <u>-</u>			3	315		Simple Line	0 n	nm

• Place the U stair and its railing to the layer "Stair01". Place the previously created 1st gallery railing to this layer as well.



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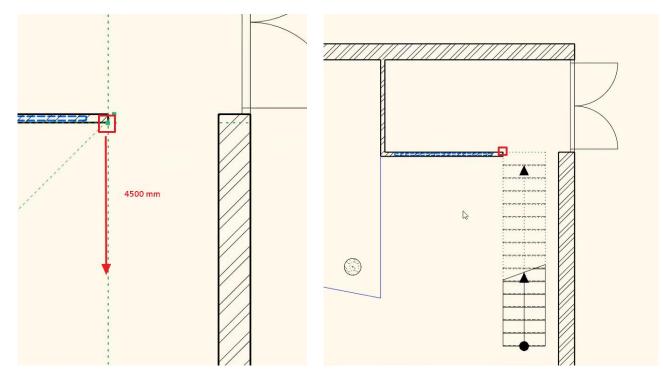
Turn off this layer by activating the Layer walk dialog and CTRL + click on the "Stair01" layer.

		Layer walk ×
		00_Layer 0 (156) 11 Wall1 (362)
	Layer Manager	21_Slab1 (45) 31_Column1 (9)
	Move Objects to New Layer	41_Stair 1 (46) 53 Roof3 (49)
<b>S</b>	Layer Walk	54 Roof4 (5) 61_Object1 (16587)
ø	Change to Current Layer	87_Line (62) 89_Cirde (1) Line (406)
<b>\$</b>	Activate the layer of selection	Stair 01 (276) Stair 02 (315)
	• 🛆 • 🗚 🗈	

• Select the Ribbon Bar / Building / Stair / Straight run type, the click on the Reference option on the Status bar below.



• Select the outer wall corner of the cloak room as reference and drag the cursor down 4500 mm. Select the inner corner point of the cloak room as the endpoint of the stair.



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• Modify the properties of the stair: set the height to 300 cm, change the number of steps (n) to 17, and set the width to 130 cm.

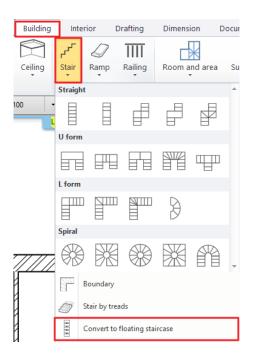
I Stair			×
Stair Calculator General properties Support Step geometry Representation on the floor above	Step properties $ \int_{a}^{a} r^{a} r^{a} = 300 \text{ cm}  \text{a}^{a} $ $ \int_{a}^{b} r^{a} r^{a} 2h + w = 62.127 \text{ cm} $ $ \begin{array}{c} & & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ $	Regenerate Take the floor height Min Max 60 cm 64 cm 26 cm 37 cm 14 cm 19 cm	
	Step geometry 130 cm 429.333 cm	Rise/Tread 21/32	
BIM Parameters	Normál lépcső	Q	// OK Cancel

The following stair will appear in the 3D window:



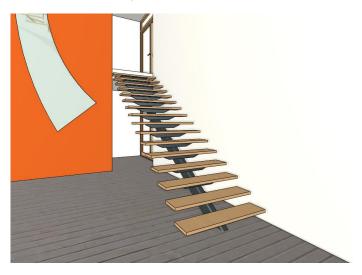
## 6.7.2. Selecting the stair support

Many different stairs support can be created. These can be accessed from the Ribbon bar / Building / Stair / Convert to floating stair. The stair supports listed here are integrated into the program and you can activate them with just one click on the stair.



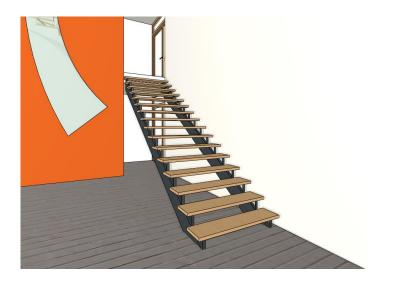
•

Select the Middle stringer stair support – Basic style, the click on the stair boundary on the floor plan.

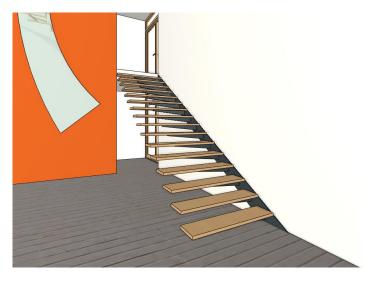


• Let's try another stair support style: select the Left stringer stair support – simple L and click on the left side of the stair on the floor plan. Then select the Right stringer stair support – simple L and click on the right side of the stair.

Eft stringer stair support - Cantilever	
⊠Left stringer stair support - Simple	
Left stringer stair support - Simple L	
Middle stringer stair support - Basic	
Middle stringer stair support - Simple L	
⊠Middle stringer stair support - Simple T	
Right stringer stair support - Simple	
🔀 Right stringer stair support - Simple L	



• Finally select the Right stringer stair support – Cantilever from the list. Click on the right side of the stair, then hit Enter. Delete the remaining left stair support from the drawing.



### Editing the stair support

Upon entering the properties of the stair support, the editable parameters of the stringer beam and the tread support appear. With these options the whole stair support can be customized.



Stair stringer							×
	Select an object that includes tread plate and plate riser Wedges from library to support tread cover. On the Stringer Beam tab, select a profile (railing) that will follow the staircase layout.						
	Index Profile S	hift vertical Ove	rhang at st	Overhang at end:	T	Automatic refresh on page	€ 🕈
		.00 mm 0 mr		0 mm	~		
General settings Stringer beam Tread support			Plane o perpen vertica	of profile dicular to path or ( I (		THURSDAY	
	Shift vertical along landings						
	Offset from path(>0:right) Material	0 mm				•	
	Exchange						
	Bottom (start) ending	Horizontal endin	g				
	Top (other) ending	Vertical ending					
BIM Parameters							
ldali lépcsőtámasz - konzol						ОК	Cancel

### 6.7.3. Creating a glass railing

• To create the railing of the stair, select the Ribbon Bar / Building / Railing option and click with right mouse button, and select the Properties option.

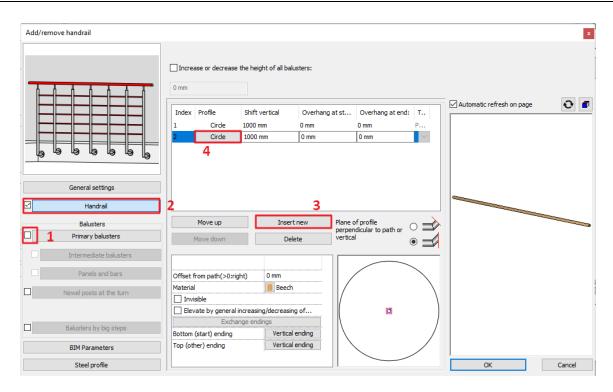
Building	Inte	Interior Dra		fting Dimension		Documentation	
$\bigcirc$	ۍم	$\square$					
Ceiling	Stair	Ramp	F	tailing	Room and are	a Surveyed ro	
·		Stair		A	Property		
100	- <b> </b> 1	1:50		ß	Styles		

• In the appearing dialog click on the name of the railing, then click on the Steel profile style on the right.

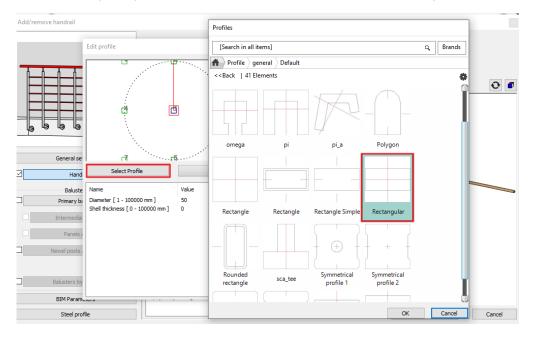
Railing		× (	Styles
General settings Ceneral settings Cenera	Increase or decrease the height of all balusters:  Imm  Imm  Imm  Imm Imm Imm Imm Imm Im	Automatic refresh on page	Acrylic railing       Acrylic railing       Column with sphere       Column with sphere 2       Column with sphere 1       Stanless Skell Tube - left       Stanless Skell Tube - left       Column with sphere 1       Column with sphere 1
Steel profile		OK Cancel	Rename Delete

There are many ways to create a railing. We will now see an easy example.

• Turn off the Primary balusters and on the Handrail tab add another handrail element with the Insert new button. We will convert this to a glass plate. Click on the profile in the new row.

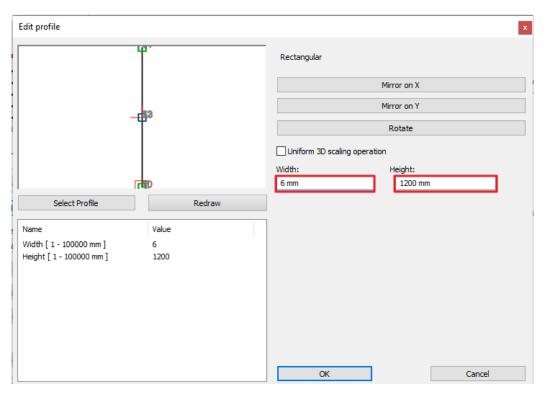


• In the appearing dialog click on the Select profile button and select the Rectangle profile from the library, then hit OK.

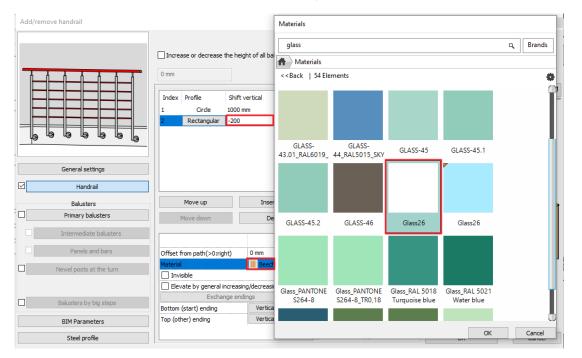


• Turn of the Uniform 3D scaling, and set the profile width to 6 mm and its height to 1200 mm, then hit OK.





Set the vertical shift of the profile to -200 mm, then modify its material to "Glass26".



- Select the handrail in the first row with the circle cross-section (1) and set its offset from path to 50 mm. (2) .
- Open the library by clicking on the button in the lower left corner, (3) then click on the New button (4) and name the railing as "Acrylic railing". (5,6)

.

Add/remove handrail		at Styles
	Full regeneration using     Increase or decrease the height of all balusters:     Regeneration by parts     O m	ts Edit path segments
	In         Profile         Shift vertical         Overhang at         Overhang at         Type of a state of	Automatic refresh on page
General settings		Folder
Handrail	Move up Insert new Plane of profile	Subfolder
Balusters	Perpendicular to path overtical perpendicular to path overtica	Folder and subfolder specification is not mandatory.     If you specify these, the given style name will automatically fit into the hierarchy.
Primary balusters     Intermediate balusters     Panels and bars	Offset from path(>0.right) 0.05 m 2 Material Beech	Scope O Available in this project only (a) Available in all projects
Newel posts at the turn	Elevate by general increasing/decreasing o Exchange endings Bottom (start) ending Vertical ending Top (other) ending Equal to bottom (s	
Balusters by big steps	Extension at ending of None	4 New
BIM Parameters		Activate Modify OK Cancel Rename Delete

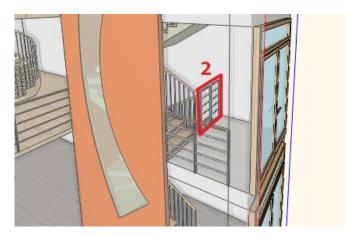
• Select the stair on the floor plan and select its properties. In the dialog, on the General properties tab, tick the Railing automatically added to the left side option. Select the "Acrylic railing" from the drop-down list, then hit OK.

Stair Calculator			^	
	* General			
General properties	Layer	Lepcso 02	~	
Support	Colour			
	Line type	Simple Line	~	
Step geometry	Line weights	0 mm	~	
	Draw Order	8- Bottom-most	~	
presentation on the floor above	Railing			
	Railing automatically added to left side	$\checkmark$		
	Regenerate			
	Railing	Acrylic railing	$\sim$	
	Railing automatically added to right side			
	Regenerate			
	Railing	Acrylic railing	~	
	Representation in 2D			
	Nosing:	Along the stair	~	
	Nosing line-type	Szaggatott1	~	
	Section line	Dotted above the section line	~	
	Partial line-type	Szaggatott	×	
	Cutting elevation	1 m		
	Cutting line direction	20 °		
	Parallel distance	0.1 m		
	Draw walking line	~		
	Walking line arrow	4	~	
	Cut out landings on walking line			
	Walking line before landing			
	Text on walking line			
	Numbering (50% of current font size)			
	Walking line backward			
	Arrow fit the box			_
	Show geometry text		~	

• The railing automatically appears in the 3D window as well.



• Put the recently created railing and stair and the 2nd gallery railing to the "Stair02" layer.



In the Layer manager you can switch between "Stair01" and "Stair02" versions. This way you can easily and quckly activate different versions.

The end result using the "Stair01" layer:



### The end result using the "Stair02" layer:

Ð



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



Workshop 7: Designing roofs



# 7. Workshop: Designing roofs

This workshop guides you through how to design a roof.

- Settings, creating styles
- Roof plane with three points
- Roof in sketch mode
- Extruded roof
- Roof slab
- Roof window, customized window, curtain wall
- Open your browser and watch the following video tutorial.
   <u>https://www.archlinexp.com/enrollments/courses/intermediate-course/designing-roofs/1</u>

## 7.1. Open and save project

#### Start

 Open the following project: ... \ARCHlineXP Draw\2023\Course_Intermediate\6_Roof\01_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.

## 7.2. Settings and creating styles

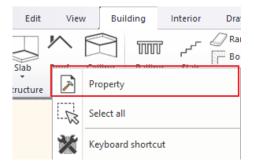
The roof is one of the most complex architectural design elements. As it has loads of fine details that goes beyond simple roof plane representation, which can be sufficient for a conceptual design plan.

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.

### 7.2.1. 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.

🗞 A R C H 🛛 I N E.🕏

Automatic roof		×
	General properties	< > Plane: 1 of 4
₩_L-₩-₩-₩		Update
	Simple Line	
B	Materials	
	Pine_natural	
G D C E A	Pine_natural	
	Reference point for roof elevation	a a a a a
	A   3.12 m   Eaves overhang (L)   0.5 m	
	○ B         Theoretic wall width         0.38 m           ◎ C         2.7 m	
General Properties	D 2.97 m	
Eaves purlin	OE 3.15 m	
Middle purlin (1/1)	OF 3.49 m	
✓ Rafter (1/1)	G 3.42 m Base offset 8.7 m	
Collar beam (1/1) (Rafter:1)	Visible in 3D	
☑ Ridge board	Show roof layers in 3D 3D fixed	
✓ Batten (1/1)	Roof layers	
Roof tiles	Show rafter/purlin structure in 3D (main switch)	
Projections and cut	Show Battens in 3D (main switch)	
Layers and geometry	Show beams 2D representation (main sv	
Pitch and shape		Delete and rebuild all rafters and purlins
Information		Delete and rebuild all battens
		Redistribute tiles
BIM Parameters	tetõ1	OK Cancel

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.

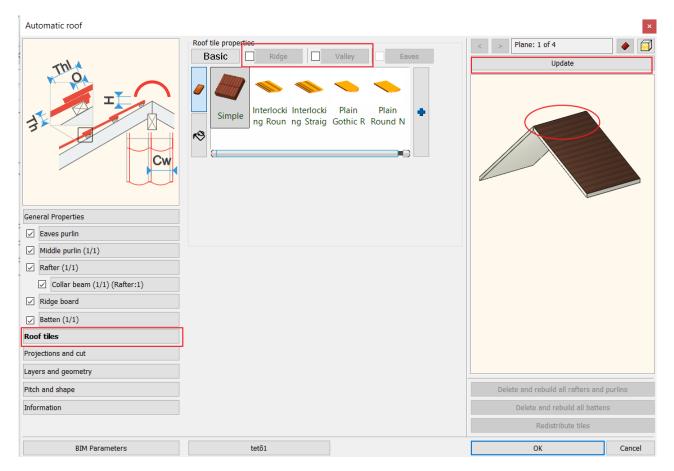
- Select "Textured" view.
- We are currently on General Properties within the Main Categories. Now change the finely detailed 3D representation to much simpler one. That means to turn off other options under "Visible in 3D" and leave on "Show roof layers in 3D".

	× × ×
< > Plane: 1 of 4	
Update	No preview
	Wireframe
	Hidden line removal
	Textured
	Consistent colour
<u><u></u></u>	
1 com	
nti.	

Automatic roof										×
		properties			<	>	Plane: 1 of 4		•	
⊬-L-₩W-1		0 m	nm 🗸 💆 5	1_Roof1 ~			Update		1	
a a l	ETTE Sim	nple Line	F <mark>P</mark> 8	- Bottom-mc 🗸						
B	Materials									
G D F A		Cream_01 ble							_	
		Cream_01				/		A ( 144 94) ( 14 144 94) ( 14 14 A ( 144 94) ( 14 149 94) ( 14 14 A ( 14 149 94) ( 14 149 94) ( 14		
		e point for roof elev	_							
General Properties	<b>∩</b> ∧	3123 mm	Eaves overhang (L)	500 mm		/				
Eaves purlin	ОВ		Theoretic wall width	380 mm		/				A
✓ Middle purlin (1/1)	€C	2700 mm			L					
	OD	2969 mm								
✓ Rafter (1/1)	ОE	3150 mm								
Collar beam (1/1) (Rafter:1)	F	3492 mm					L			
✓ Ridge board	Oc	3419 mm	Absolute elevation	8700 mm						
Batten (1/1)	Visible in	3D								
Roof tiles	Show	roof layers in 3D	3D fixed							
Projections and cut		Roof layers								
	Show	/ rafter/purlin struct	ure in 3D (main switch)							
Layers and geometry	Show	/ Battens in 3D (mai	n switch)							
Pitch and shape	Show	/ beams 2D represe	ntation (main sv			De	lete and rebuild all ra	afters and p	urlins	
Information							Delete and rebuild	all battens		
BIM Parameters							Redistribute	tiles		
tető1							ОК		Cance	el

- 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". Connect the material of the upper and lower planes so that both are changed.
- 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.

Automatic roof			×
General Properties         Øreader Stress         Eaves purlin         Middle purlin (1/1)         Rafter (1/1)         Collar beam (1/1) (Rafter:1)         Ridge board         Batten (1/1)         Roof tiles         Projections and cut         Layers and geometry		< > Plane: 1 of 4 Update	
Pitch and shape		Delete and rebuild all rafters and	purlins
Information		Delete and rebuild all batter	าร
		Redistribute tiles	
BIM Parameters	tetõ1	ОК	Cancel

- 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.

Automatic roof		×
	General properties          Image: Simple Line       0 mm       Image: Simple Line         Simple Line       Image: Simple Line       Image: Simple Line         Materials       Image: Simple Line       Image: Simple Line         Cream_01       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line         Image: Simple Line       Image: Simple Line       Image: Simple Line <th>&lt; &gt; Plane: 1 of 4</th>	< > Plane: 1 of 4
General Properties  Carlot Eaves purlin  Carlot Eaves purlin  Carlot Eaves purlin  Carlot Eaves (1/1)  Carlot Eaves (1/1)  Ridge board  Batten (1/1)  Roof tiles  Projections and cut Layers and geometry	C       1.03 m         D       1.3 m         E       1.03 m         F       1.38 m         G       1.3 m         Base offset       7 m	
Pitch and shape		Delete and rebuild all rafters and purlins Delete and rebuild all battens
		Redistribute tiles
BIM Parameters	tetõ1	OK Cancel

We customized the settings.



## 7.2.2. 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.

Automatic roof		ر ×	Styles
General Properties         Eaves purlin         Middle purlin (1/1)         Rafter (1/1)         Collar beam (1/1) (Rafter:1)         Ridge board         Batten (1/1)         Roof tiles         Projections and cut	General properties Simple Line Simple Lin	< > Plane: 1 of 8  Update Update	Complex roof with tiling layer only Simple roof Steel Roofing 900 Ventilated roof roof1
Layers and geometry	Show beams 2D representation (main sv		
Pitch and shape		Delete and rebuild all rafters and purlins	New
Information		Delete and rebuild all battens	
BIM Parameters		Redistribute tiles	Activate Modify
roof1		OK Cancel	Rename Delete

- Click on "roof1", 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".

< >	Plane: 1 of 4 Update		Styles		t tiling layer only	
		Styles New name of s Roof_interior Folder Subfolder Folder and sub If you specify th	folder spe	cification is not mar given style name wi	Il automatically fit into the hier	
De	ete and rebuild all rafters an	d purlins		New	ОК	Cancel
	Delete and rebuild all batte Redistribute tiles			Activate	Modify	
	ОК	Cancel			Delete	

229

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.

_	
Roof_interior	
reori_incerior	

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

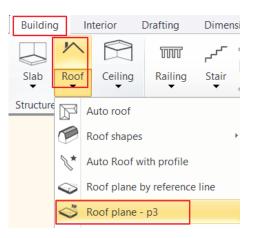
• Now the "Roof_Interior" style should be active, close the dialog by pressing "OK".

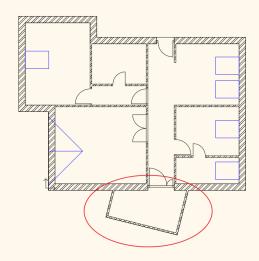
Using this style, we are going to create a new roof structure.

## 7.3. Creating roof plane with 3 points

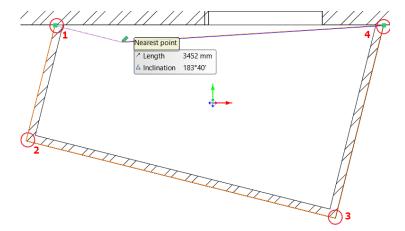
In the first example we are going to create a roof by using three elevation points that we had measured before. This is where we are going to start:

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.



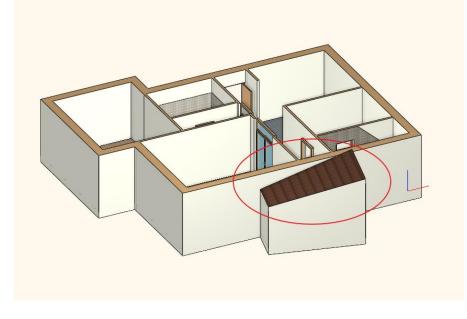
When you are done, the program will bring up a dialog box asking you if the points you want to enter next will be the lowest points of the roof or the highest points. Here, select Yes, i.e. the lowest point.

- In three clicks, enter the three interior elevation points measured on site as in the example.
- Click on the first internal elevation point (corner point) and type 1800 mm as the first elevation point is 1.8 m. Press Enter or OK.



1	H-	ARCHLine.XP	×
H	l	Elevation at the point (the point is on the bottom	n face)
2	Å	New value:	1800 mm
	3		OK Cancel

- Click on the second corner point inside and type 1800 mm, then hit Enter.
- Finally click inside of the third corner point and type 2600 mm, 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 III "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 3 "3D hammer" icon on the Toolbar to rebuild the model.



# 7.4. Roof in Sketch mode

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.

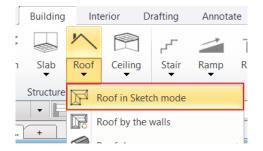
Reference	ce point for roof elev	vatiop	
A	1000 mm	Eaves overhang (L)	380 mm
ОВ		Theoretic wall width	380 mm
Оc	685 mm		
OD	954 mm		
ОE	1027 mm		
F	1369 mm		
G	1296 mm	Absolute elevation	7000 mm

Accept changes by pressing "OK".

Now draw the roof.

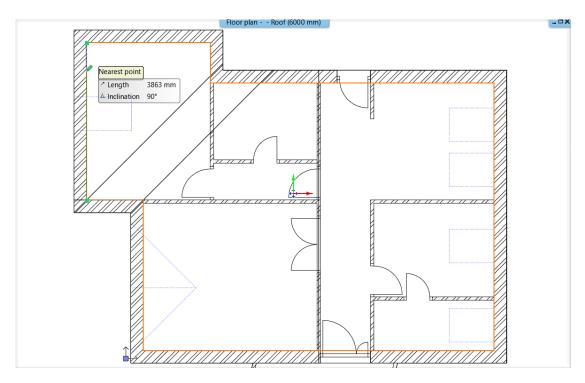
 $\square$ 

- Activate floor plan window.
- Click on Ribbon menu / Building / Roof / Roof in Sketch mode command.



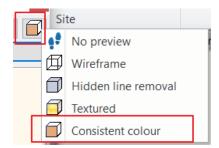
 Start to draw the contour along the corner points. Click on all corner points except the conservatory area as we have created a roof there in the previous example.

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



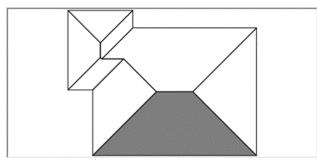
- When you finished, press Enter or click in the starting point.
- Set the 3D preview mode to "Consistent color" so you can see changes better.





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.



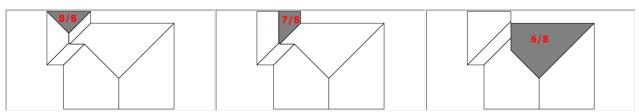
• Let's start working on the roof plane shown in the picture below. You can find the number of roof planes above the Update button. You can easily swap between planes by using arrows next to numbering.



• 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.

Automatic roof		×
	Additional plane Hipped Main slope	< > Plane: 4 of 8  Update
General Properties	Gable end	
Eaves purlin		
Middle purlin (1/1)	Half-hipped	
Rafter (1/1)     Collar beam (1/1) (Rafter:1)	Gable at the top of hip roof	
☑ Ridge board	Elevation of reference line 0 mm	
Batten (1/1)	Eaves overhang on this 380 mm	
Roof tiles	2D representation of roof	
Projections and cut	Symbolic top view	
Layers and geometry	Apply hatch on 2D plan Australian Blockwork ~	
Pitch and shape	O Horizontal section of roof in plan-view	Delete and rebuild all rafters and purlins
Information	Section plane created with hatch	Delete and rebuild all battens
BIM Parameters	Items to be displayed on floor plan 2000 mm	Redistribute tiles
tető1		OK Cancel

Repeat the same on the roof planes 8/8, 7/8, 6/8, to create Gable end roof planes until you get the same result as in the
picture below.



• When you finished press update. The result is shown immediately.



The continuous changes on the roof structure are 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.

Automatic roof		×
	Additional plane Hipped Apply for all planes Main slope	< > Plane: 4 of 8  Update
General Properties	Gable end	
Eaves purlin     Middle purlin (1/1)	Half-hipped	
<ul> <li>✓ Rafter (1/1)</li> <li>✓ Collar beam (1/1) (Rafter:1)</li> </ul>	Hipped with gablet	
✓ Ridge board ✓ Batten (1/1)	C Mansard Elevation of reference line 0 m Eaves overhang on this 0.38 m	
Roof tiles	2D representation of roof	
Projections and cut	Symbolic top view	
Layers and geometry	O Horizontal section of roof in plan-view	
Pitch and shape	Section plane created with hatch	Delete and rebuild all rafters and purlins
Information	Section height from floor: 2 m 🧖 0.3 mm	Delete and rebuild all battens
		Redistribute tiles
BIM Parameters	Roof_interior	OK Cancel

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

Automatic roof		×
	Ardditional plane	< > Plane: 4 of 8 C
General Properties	Gable end         0         30°	
Eaves purlin     Middle purlin (1/1)	Half-hipped	
<ul> <li>✓ Rafter (1/1)</li> <li>✓ Collar beam (1/1) (Rafter:1)</li> </ul>	Hipped with gablet	
Ridge board       Batten (1/1)	CMansard Elevation of reference line 0 m Eaves overhang on this 0.38 m	
Roof tiles	2D representation of roof	
Projections and cut	Symbolic top view	
Layers and geometry	O Horizontal section of roof in plan-view	
Pitch and shape	Section plane created with hatch	Delete and rebuild all rafters and purlins
Information	Section height from floor: 2 m 🖉 0.3 mm	Delete and rebuild all battens
		Redistribute tiles
BIM Parameters	Roof_interior	OK Cancel

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.

- a/6 ∡]a
- 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:

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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.





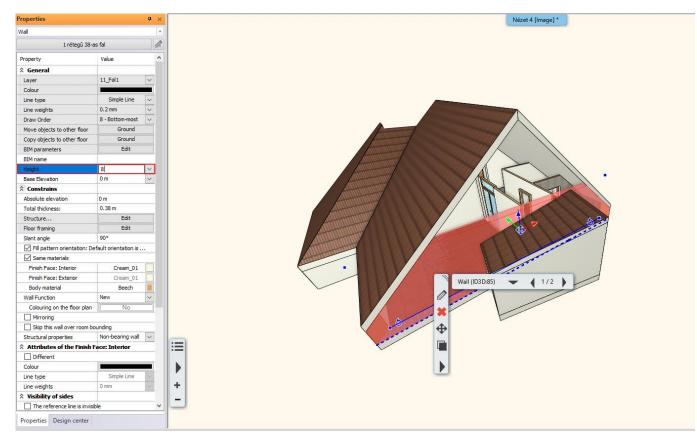
- It is important to separate values with forward slash, but also enter space before and after it. Now these values will be interpreted as ratio pair not division. The inclination will be calculated accordingly.
  - To set the inclination at the same time for all roof planes activate "Apply for all planes", 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.

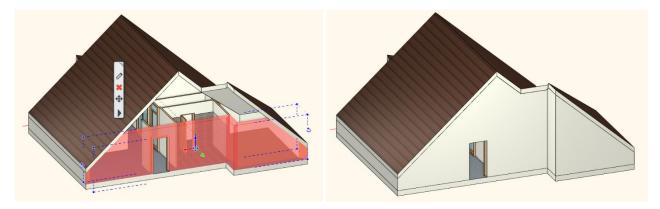


After this modification the roof meets the wall. Due to the roof settings the roof cuts the wall anyway.





• 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.

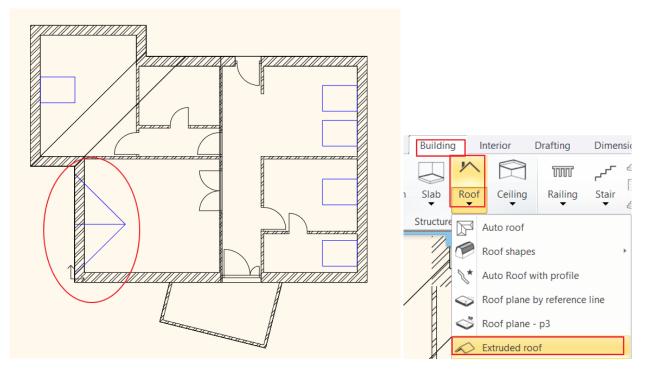


• In order to remove the border lines, surface integration is necessary. Use 3D hammer and those will disappear immediately.



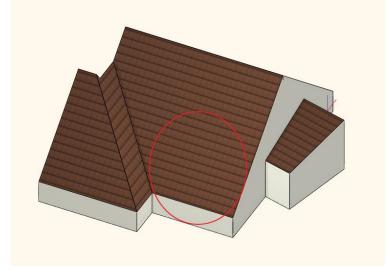
# 7.5. Extruded roof

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.



Roof         Roof properties         (RA) Ridge inclination       0°         Roof elevation From       Lower roof pane         Cof elevation       -2.2 m         Cof elevation       -2.2 m         Cof elevation from roof top       0 m         Fixed width       4 m         Place on roof	Roof properties           (RA) Ridge inclination         0°           Roof elevation From         Lower roof pane           Roof elevation         -2.2 m           Roof elevation from roof top         0 m           Fixed width         4 m           Place on roof         Image           Ridge path         Line <b>A predefined roof</b> Image           Type         Triangle           (A)         41.82           (B)         42°           Side roof         0 m           Bottom of side roof         0 m           Bidtom of side roof         0 m           Hip roof								
(RA) Ridge inclination 0°   Roof elevation From Lower roof pane   Roof elevation -2.2 m   V Elevation from roof top   V Fixed width   4 m   Place on roof   V   Rodefined roof   Type   Triangle   V   Bottom of side roof   V   Side roof   Mathematical Side roof   V   Bottom of side roof   Hip roof   Hip roof angle   35°   Hip roof elevation   3.5 m	(RA) Ridge inclination 0°   Roof elevation From A Lower roof pane   Roof elevation -2.2 m   V Elevation from roof top   0 m V   V Elevation from roof top   V Fixed width   4 m   Place on roof   V   Rodefined roof   Type   Triangle   (A)   41.82   (B)   42°   Side roof   0 m   Side roof   0 m   Battom of side roof   0 m   Hip roof   Hip roof   Hip roof   Hip roof   Si50   Hip roof elevation   3.5 m	Roof							
(KA) Ridge inclination       0°          Roof elevation From       Lower roof pane          Roof elevation       -2.2 m          Celevation from roof top       0 m          Fixed width       4 m          Place on roof           Ridge path       Line          X Predefined roof           Type       Triangle          (A)       41.82          (B)       42°          Side roof       0 m          Bottom of side roof       0 m          Hip roof	(RA) Ridge inclination       0°       ````````````````````````````````````		Roof properties						
Roof elevation       -2.2 m	Roof elevation       -2.2 m         V       Elevation from roof top       0 m         V       Fixed width       4 m         V       Fixed width       4 m         V       Place on roof       V         Ridge path       Line       V         *       Predefined roof       V         Type       Triangle       V         (A)       41:82       V         (B)       42:°       V         Side roof       0 m       V         Side roof       0 m       V         Hip roof       0 m       V         Hip roof angle       35°       V         Hip roof elevation       3.5 m       V	(RA) Ridge inclination	0°	~	RA	-			
Elevation from roof top         0 m         Fixed width         4 m         Place on roof         Ridge path         Line         Ridge path         Line         Trangle         (A)         41.82         (B)         42°         (B)         60 m         Side roof         Mip roof         Hip roof         Mip roof elevation         3.5 m         Bit roof         Hip roof elevation         3.5 m         Side roof         Side r	Image: Several state in the image: Severa state in the image: Several state in the	Roof elevation From	\land Lower roof pane	Image: A state of the state	and a second				
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Y Fixed width       4 m         YPlace on roof       Ime         Ridge path       Une         X Predefined roof       Ime         Type       Triangle         (A)       41.82         (B)       42°         Side roof       0 m         Side roof       0 m         Fibp roof       0 m         Hip roof angle       35°         Hip roof angle       35°         Simon of side roof       0 m         Bid roof       0 m         Bid roof       0 m         Y       Proof         Hip roof angle       35°         Sis       8         Mip roof elevation       3.5 m	Y Fixed width       4 m       Y         Place on roof       Y         Ridge path       Line         X Predefined roof       Y         Type       Triangle         Y       Y         (A)       41.82         (B)       42°         Side roof       0 m         Side roof       0 m         Battom of side roof       0 m         Hip roof	Elevation from roof top	0 m						
Ridge path       Line         & Predefined roof         Type       Triangle         (A)       41.82         (B)       42°         Side roof       0 m         Side roof       0 m         Bottom of side roof       0 m         Rip roof       Image: Comparison of the roof         Hip roof       Image: Comparison of the roof         Hip roof angle       35°         Hip roof elevation       3.5 m	Ridge path       Line         Ridge path       Line         & Predefined roof          Type       Triangle       >         (A)       41.82       >         (B)       42°       >         Side roof       0 m       >         Rib roof            Hip roof	Fixed width	4 m	~					
* Predefined roof         Type       Triangle         (A)       41.82         (B)       42°         Side roof       0 m         Bottom of side roof       0 m         * Hip roof	* Predefined roof         Type       Triangle         (A)       41.82         (B)       42°         Side roof       0 m         Side roof       0 m         Bottom of side roof       0 m         Prince       (a)         Hip roof	Place on roof							
Type       Triangle         (A)       41.82         (B)       42°         Side roof       0 m         Bottom of side roof       0 m         R Hip roof	Type       Triangle       V         (A)       41.82       V         (B)       42°       V         Side roof       0 m       V         Bottom of side roof       0 m       V         Hip roof       V       V         Hip roof angle       35°       V         Hip roof elevation       3.5 m       V	Ridge path	Line	~					
A     41.82       (a)     41.82       (b)     42°       Side roof     0 m       Bottom of side roof     0 m       Bottom of side roof     0 m       Hip roof	A     41.82       (a)     41.82       (b)     42°       Side roof     0 m       Bottom of side roof     0 m       Buttom of side roof     0 m       Hip roof	Predefined roof		mm					
(A)       41.82         (B)       42°         Side roof       0 m         Bottom of side roof       0 m         Buttom of side roof       0 m         Hip roof	(A)       41.82       ~         (B)       42°       ~         Side roof       0 m       ~         Bottom of side roof       0 m       ~         Hip roof	Туре	Triangle	×	Undate		(A)	41°49'	
(B)       42°         Side roof       0 m         Bottom of side roof       0 m         Buttom of side roof       0 m         Hip roof          Hip roof angle       35°         Hip roof elevation       3.5 m	(B)       42°         Side roof       0 m         Bottom of side roof       0 m         Bild roof       0         Hip roof       1         Hip roof angle       35°         Hip roof elevation       3.5 m	(A)	41.82		- opdate			41°49'	
Bottom of side roof       0 m         R Hip roof	Bottom of side roof     0 m       Bit proof       Hip roof       Janething	(B)	42°	×					
A Hip roof       Hip roof       Japan Stress       Hip roof angle       35°       Hip roof elevation       3.5 m	A Hip roof       Hip roof       Hip roof angle       35°       Hip roof elevation	Side roof	0 m	~					
Hip roof     Image: Control of angle     35°     Image: Control of angle     B       Hip roof elevation     3.5 m     Image: Control of angle     Image: Control of angle	Hip roof     B       Hip roof angle     35°       Joint Proof elevation     3.5 m	Bottom of side roof	0 m	~					
Hip roof angle     35°     V       Hip roof elevation     3.5 m     V	Hip roof angle     35°       Hip roof elevation     3.5 m	🕅 Hip roof							
Hip roof elevation 3.5 m	Hip roof elevation 3.5 m	Hip roof		_ /					
		Hip roof angle	35°	A		В			
His elevation from r 0.5 m	Hip elevation from r 0.5 m	Hip roof elevation	3.5 m	~		_			
		Hip elevation from r	0.5 m	~					
		p: The rows in yellow canno	t be modified after placement.						
ip: The rows in yellow cannot be modified after placement.	ip: The rows in yellow cannot be modified after placement.				No style				
					OK	Cancel			

• Click on the Roof properties, then on the Tiling tab, set the Roof - Brown material.

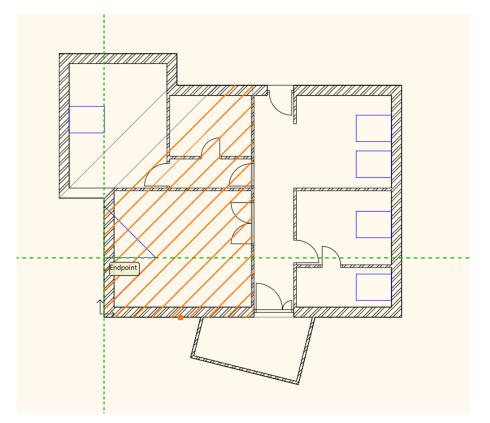
Automatic roof			×
TINIO TI	Roof tile properties       Basic     Rudge     Valley     Eaves       RAL     RAL     Roof     Rusty.gr     Cream_0       8007 Fa     8012 Re     Brown     ey     1	< > Update	
General Properties			
Middle purlin (1/1)			
Collar beam (1/1) (Rafter:1)			
Ridge board Batten (1/1)			
Roof tiles			
Projections and cut			
Layers and geometry			
Pitch and shape		Delete and rebuild all rafters and	purlins
Information		Delete and rebuild all batten	s
BIM Parameters		Redistribute tiles	
ROOF_WORKSHOP_		ОК	Cancel

- Accept the changes with 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.

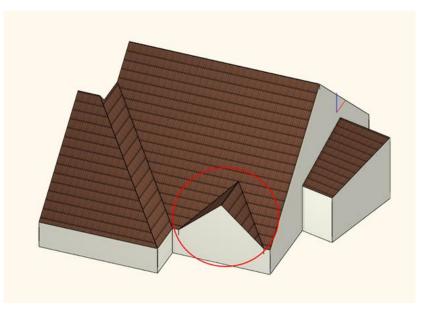
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Projected roof	×
The program will automatically cut out the part of the target roof which lies under the extruded roof.	
The extruded roof will be extended in accordance with the target roof plane and inserted onto its apparent extrusion.	
The length of roof plane under the projected roof: 0 m	

- 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.

## 7.6. 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.

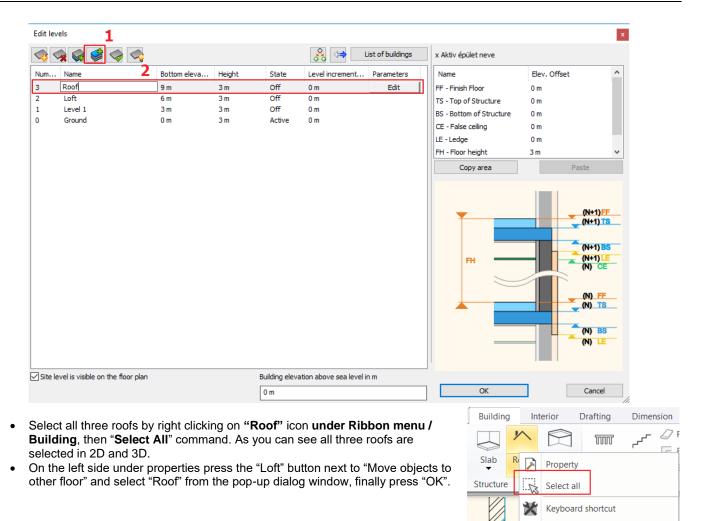
### 7.6.1. Managing levels

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".

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Properties		џ
Roof (3)		
* VARIES	5*	6
Property	Value	
Layer	* VARIES *	$\sim$
Colour		
Line type	Simple Line	~
Line weights	0 mm	~
Draw Order	8 - Bottom-most	~
Move objects to other floor	Loft	
Copy objects to other floor	Loft	
BIM parameters	* VARIES *	

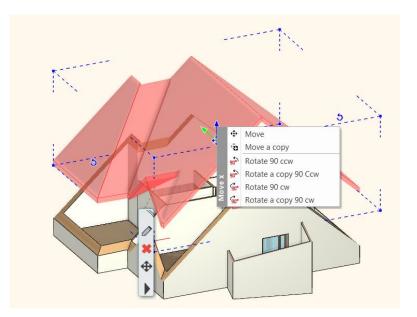
That happened exactly what we were expecting in the 2D window, but in 3D as result the roof is now placed 3m higher. Now let's move downwards.

- 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.

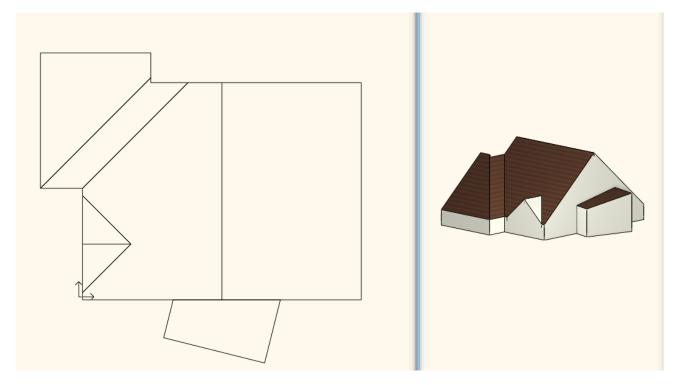
Add to Quick Access Toolbar

Check Video Tutorial

• •



- 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.



### 7.6.2. 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.

✓ Roof ♥ Loft ♥ Level 1 ♥ Ground		
<	>	
<mark>∉</mark> ₁² Roof	~	1 +

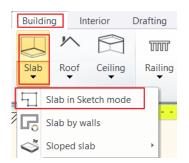
On floor plan window the effect of this modification can be immediately seen. This method allows you to see different levels including the level you are currently working on.

Before creating the slab, check its properties.

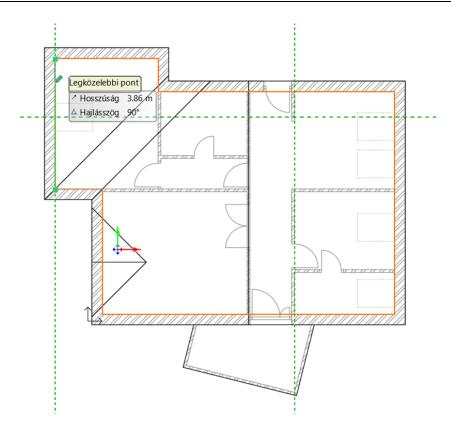
- Go to Ribbon menu / Building / Properties / Slab tool.
- Now the Slab properties window will come up. Now select a new wall style. For this click on the currently use style name at the bottom. On the right side select from the style list the 300 mm thick reinforced concrete slab "1 layered r.c. 30 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".

Slab properties		Styles
	Cream_01 Cream_01 Cream_01 Cream_01 Slant angle 0° Slab type Slab	2 layered 30 r.c. slab. 2 layered r.c. slab 19+11 Coated drift 4+5+2
Slab layers Beams and block flooring system	Slab type Slab Cut the walls No cutting Cut by roofs All floors	Concrete flat roof1 Counter slab15+5+1+20+7 Floor on the ground1 Floor slab + hardcore
	U-value: U-value: Not calculated 3D fixed Fill color on floorplan	Reinforced concrete 19+4+5+2 Reinforced concrete 19+4+7 Susp.ceiling 5+15+19+11
BIM Parameters 1 layered 30 r.c. slab.	ОК	New Activate Modify Cancel Rename Delete

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



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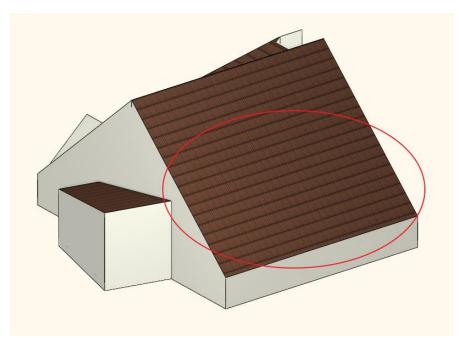
# 7.7. Placing openings

Now we will place windows on this building.

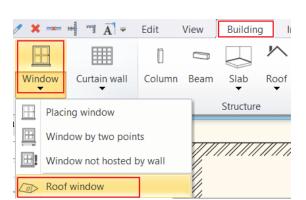
### 7.7.1. Placing roof window

Let's start our work with placing roof windows.

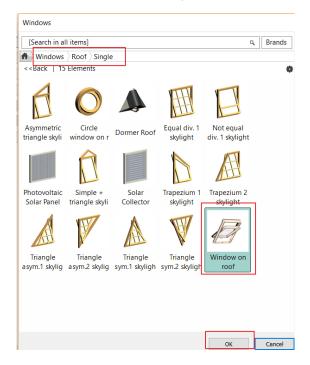
• Activate 3D window rotate the model to make clearly visible the roof plane is shown below:



- 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, the distance from the upper roof plane is 0,03 m.

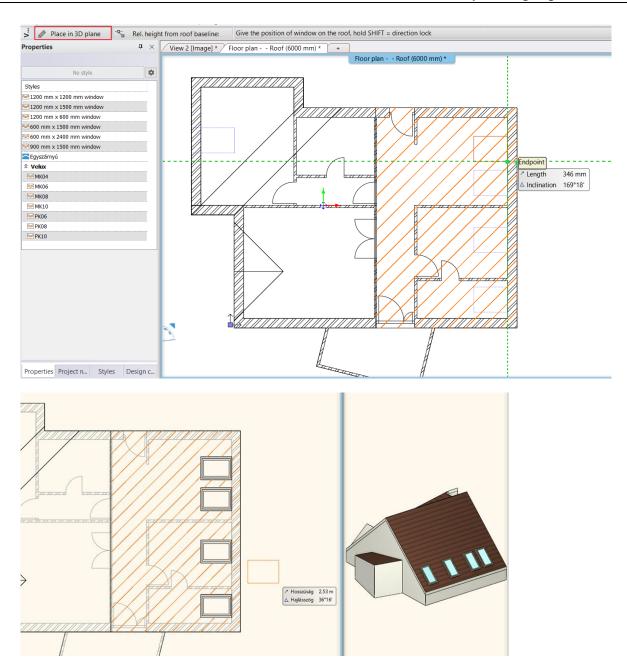


Window on roof							×
Main parameters					(	Redraw	
Main parameters	Width:		1000 mm	~	[	Reulaw	
Representation	Height:		1800 mm	~			
Roof connection	Thickness:		150 mm				
Basic geometry							
Outer handle	Distance from upper roof plane (>0:	30 mm					
Inner handle	Sill height	0 mm					
	Colour						
Accessories	Line type	S	Simple Line	~			
	Line weights	0 mm		~			
	Draw Order	8- Bottom-most		~			
	The	ermal parameters					
Information	Ratio (Illumination area)	100%					
Create variant	Ratio (Ventillation area)	100%					
	Material	Value		^			
	Solid	Beech				THE REAL PROPERTY OF THE PARTY	33552E
	Glass material	Glass26			50	Lange State State State	
	External frame material Internal frame material	Default material Default material					
		Derault material		>			
						window on roof	
BIM Parameters	No style				ОК		Cancel

• On the Roof Connections tab, set the Top hole to Horizontal and the Bottom hole to Perpendicular to the Roof. This will give the most light to the room.

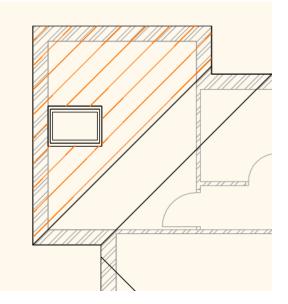
Window on roof	n oosaala ahaan kalana oo kalandko ahaan kalan	NG CHUMBER ADMARCHUEROLDE EN	
Main parameters			Redraw
Representation	Material of surface of hole	Default m	
Roof connection	Top hole Angle from the horizontal plane (A>0: upwards)	Horizontal V 0°00'	
Basic geometry	Bottom hole	Perpendicular V	
Outer handle	Angle from the vertical plane (B>0: outwards)	40°00'	
Inner handle			
Accessories			
Information			
Create variant	JA NORTH AND	B	
			window on roof
BIM Parameters	No style		OK Cancel

- Close the dialog with OK.
- Now place windows.
- Since you don't want to place the window at a fixed height, where the program currently places it, select the **3D plane** option in the top menu bar.



- 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.



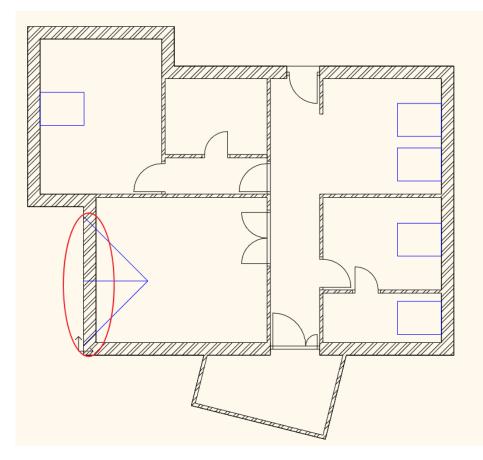


• Close the command with double Enter.

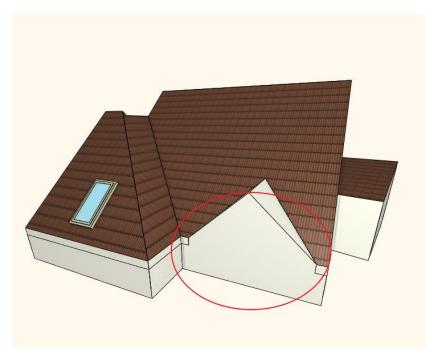
### 7.7.2. Place customized windows

Now we are going to create a customized window.

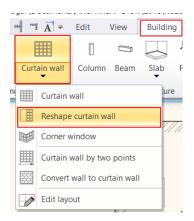
To create the window first we have to move to Loft level. We place the window on the wall is shown on the picture below:



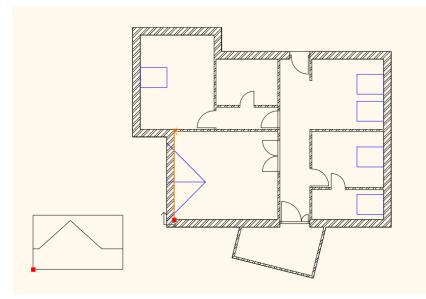
- Activate the 3D window and change the perspective to an external view.
- Rotate the model to see the selected wall properly.



- Activate the floor plan window.
- Go to Ribbon menu / Building / Curtain wall and "select Reshape curtain wall" command.

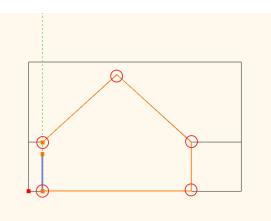


- Now select the inner side of the wall with one click, then place its layout, but not to overlap the floor plan.
- Now a question will pop-up: "Do you want to keep the layout of wall?"- answer: YES.
- An alert message will appear asking to specify a profile in order to describe the frontal shape of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

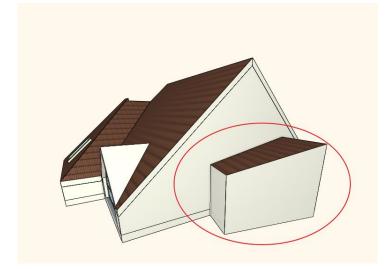


The mullion can be modified which we will demonstrate in the following example. Now close the command with ESC. Now the customized window is ready.

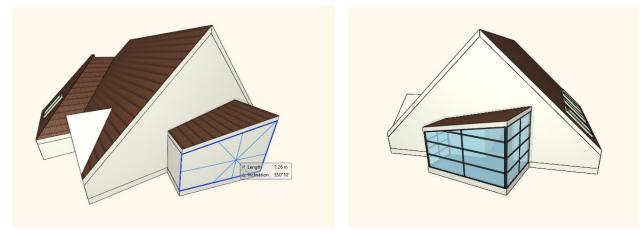
### 7.7.3. Conservatory with curtain walls

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.



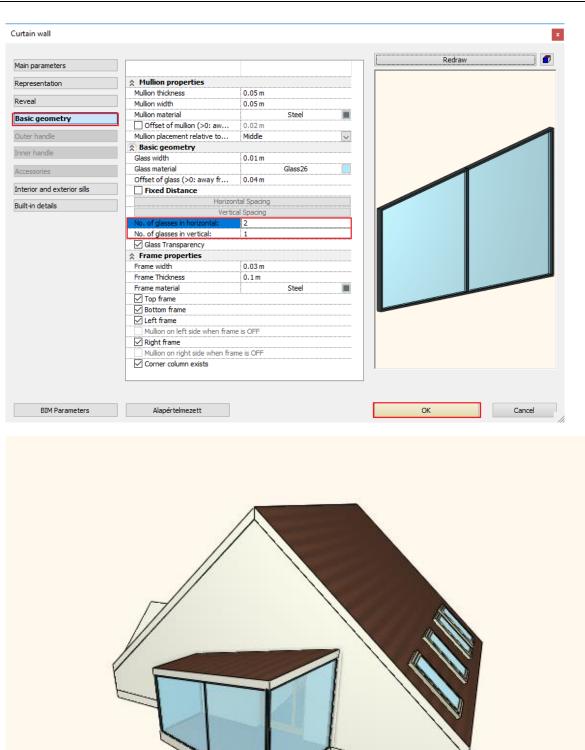
Let's see an example how to customize curtain walls.

- 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.

Ameters Attion A
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
sills Fixed Distance
Horizontal Spacing
Vertical Spacing
No. of glasses in horizontal: 1
No. of glasses in vertical: 1
Glass Transparency
☆ Frame properties
Frame width 0.03 m
Frame Thickness 0.1 m
Frame material Steel
Bottom frame
✓ bottom mane
Mullion on left side when frame is OFF
Mullion on right side when frame is OFF
Corner column exists

- 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.





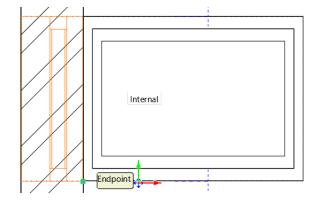
### 7.7.4. Creating complex roof window

Let's create a complex roof window with the combination of a roof window and a window in the wall.

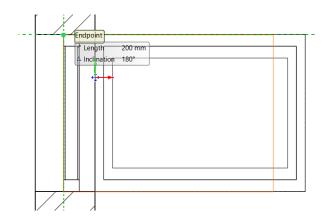
- Activate the 2D window and navigate to the left roof window.
- Set the properties of the window by right-clicking the Window command.
- Click on the Flush designation to change the window style to "1 leaf double glassed" type from the library.
- Set the Width to 1 m, the Height to 1.16 m and the Parapet Height to 0 m.

Window						×
Main parameters Representation Reveal, void, niche, cavity	Width: Height: Thickness:		1000 mm 1160 mm 100 mm	> >	Redraw	•
Basic geometry Outer handle	Hide opening and make a voic	1				
Inner handle	Distance from wall line	100 mm				
Accessories	Sill height Outer sill height:	0 mm 0 mm				
Interior and exterior sills	Add level shift Colour					
Built-in details	Line type		Simple Line	~		
Information	Line weights	0 mm		<u> </u>		
	Draw Order	8- Bottom-most		×		
	Reference axis Distance from wall corner	Side 2083 mm		×		
Create variant		Lining and architrave				
		Dimension, consignment				
		Thermal parameters				
	Ratio (Illumination area)	100%				
	Ratio (Ventillation area)	100%				
	Material	Value				
	Solid	Beech				
	Glass material	Glass26				
	External frame material	Default material				
	Internal frame material	Default material				
				[	1 leaf double gl	assed
BIM Parameters	No sty	le			ОК	Cancel

• Use the Place window command to position a window so that it is flush with the bottom plane of the roof window.



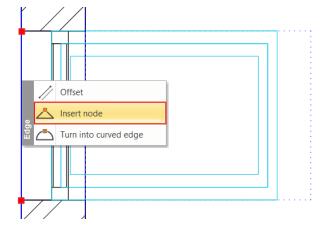
• Go to the Roof level, select the roof window and click on the top left corner to select Move. Move it to the outside of the window in the wall plane.



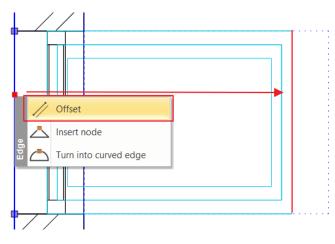


The roof will still cut into the window in the plane of the wall, so in the next steps we will modify the contour of the roof so that it does not cut into the window.

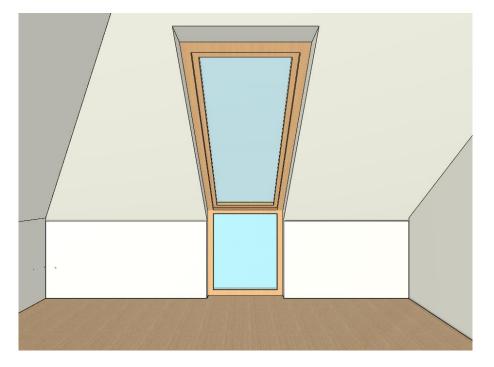
• Select the roof and click on its contour. Then in the pop-up window, select the Insert Node option.



• Place a node at each end of the window, then click on the roof outline in the window line and select Offset. Drag the plane of the roof to the inside of the window, then click to place it.



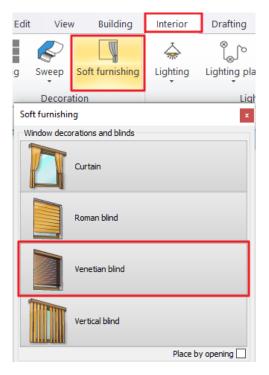
• The window is ready, the end result should look like in the picture below:



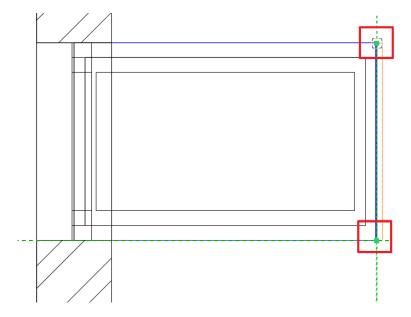
# 7.8. Blinds and curtains on roof windows

We can place curtains and blinds on different window types. Now we will place an aluminum Venetian blind on the roof window.

• Activate the floor plan and select the Ribbon Bar / Interior/ Soft furnishing / Venetian blind.



Place the Venetian blind on the floor plan. First select the lower corner point of the window, the upper.



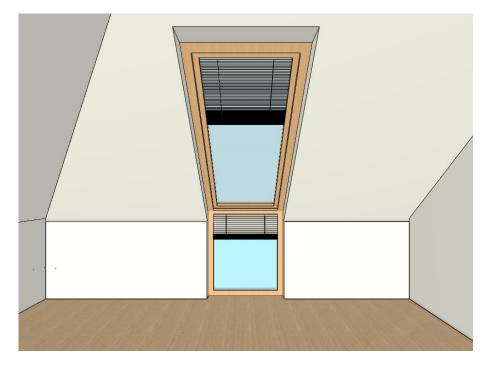
In the appearing dialog set the following parameters: Top height: 2.46 m, Bottom height: 0.4 m, Angle of inclination: 48.19 (since we measure the angle from the vertical and the rotation point is on the top of the blind)

Venetian blind		×
		<b>D A A A</b>
Top height     Angle of inclination       2460 mm     49°11'       Bottom height     Direction of inclination       400 mm     0°       Width     1000 mm       1000 mm        Height     2060 mm	Beech Beech- tree Default Steel Cream_0 1	•
Position and sizes	Automatic refresh on page	OK Cancel

• The program automatically places the blind before the roof window.

Venetian blind		×
Strip width -0.03 m V Spacing 0.027 m V	Strip rotation 81	
Venetian blind	Automatic refresh on page	OK Cancel

- Set the retraction of the blind by clicking on the second tab.
- Place a blind on the lower, fixed window as well with the following parameters: width: 0.85 m, height: 1.03 m, relative elevation: 0.07 m.



This is how the complex roof window looks like with the blinds and furniture:





# Workshop 8: Upholstered furniture based on profiles



# 8. Workshop: Upholstered furniture based on profiles

In this tutorial, you can learn how to assemble furniture by using ARCHLine.XP tools; this way, you can easily design customized upholstered furniture. You can learn to use the loft tool, which helps to create the legs for furniture and Smart Object Assembly tool, which supports creating the seat and the back panel. Also, you get to know how to assemble the furniture parts.

- Creating Esmeralda ottoman components
- Assemble Esmeralda pouffe
- Drawing profiles for Marseille chair
- Creating components of Marseille chair
- Assemble Marseille chair
- Open your browser and watch the video tutorial here: <u>https://www.archlinexp.com/enrollments/courses/intermediate-course/upholstered-furniture-based-on-profiles/1</u>

#### 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.

# 8.1. Esmeralda ottoman

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



# 8.1.1. Creating Esmeralda legs

First, we create legs.

As you can see, these are particular legs, not a regular cuboid. Profiles on the top and at the bottom, are different and the whole 3D shape is slanted.

 Select from Ribbon menu / Interior / Smart objects / Loft command. Now we use the Loft tool to create a 3D solid or surface in the space between several cross-sections. We pull a drawn cross-section profile all along a specified path for the lofted solid.

Interior	Drafting	Annotate [	Documentation M	1EP			
	₩	ol [®]					
Soft furnishing	Lighting	Lighting Plan	Electrical accessory	KBB	Sma	rt Objects	Sketch Mod
tion		Lightin			0	Loft	
1:100 -	- 1:20	•	✓ Click to	o select, pre	× × × ×	Smart Obj	ect parts
		Floor plan	Ground floor (0 mm)		€	Assembled	l object

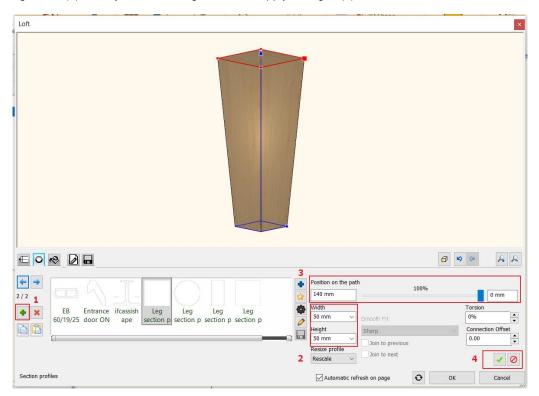
• The path is going to be a vertical profile. On the first tab, set the height to 140 mm.



Loft		×
Vertical Horizontal Chair leg Chair leg EB profile 1 Profile 2 60/19/25	ifcassishap kagylo.pat Marseille_c profil_Jab_0 e h hair_profile 1 profile005	
Surface resolution Medium	Bottom (start) ending         Top (other) ending         Length           Perpendicular ending         Y         Perpendicular ending         140 mm	~
Position and sizes	Automatic refresh on page	OK Cancel

On the second tab, define the section profiles.

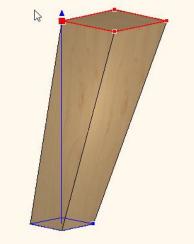
- The bottom profile is 30x30 mm rectangle. Enter the new width and heights values. Click on the refresh button to see the changes.
- Add the top section profile, by clicking on the green cross icon (1), then enter its values (width: 50; height:50 mm) (2). Now
  you have to define its position on the path. This profile is on the top; therefore, move the slider to the value 100% to the
  right side (3). Finally, click on the green tick to apply changes (4).



When we thoroughly checked the leg, we saw that the basic shape is a truncated pyramid, which has two vertical sides and two slanted sides. To get this shape, we have to modify the reference points of the profiles.

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

Now in the "Loft" window, you can see that the center point of the bottom profile is connected with the reference point of the top profile. The section profile is pushed to the side, so we have to repeat the same at the bottom.



• Let's 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 also be the bottom left corner point.

Edit profile					×
¢	<u>d</u> 1		Leg section profile 01 squa	are	
				Mirror on X	
-12	ď	13		Mirror on Y	
μ-	6			Rotate	
			Uniform 3D scaling oper	ation	
<b></b>	0		Width: 100 mm	Height: 100 mm	
Select Profile		Redraw			
Name	Value				
Width [ 0.0001 - n.a. mm ] Height [ 0.0001 - n.a. mm ]	100 100				
Height [ 0.0001 - h.a. min ]	100				
			ОК		Cancel

Now the 3D shape of the leg has the desired shape; two sides are vertical, others are slant.

- On the next tab, select the material. We use "Egzot03" 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, subcategory. In this case we recommend to use Living room as the main category, and accessories for sub-category. Components and other furniture parts are good to save under this section. If you like, you can enter the producer's name here too.





Loft		
	Create new item in the library	
	Name of the new item in the library:	
	Esmeralda leg 🗸 🗸	
	Category:	
	Sub category: Accessories	
	Producer:	
	CadLine	
	BIM parameters OK Cancel	<b>1 1 1 1 1 1 1 1 1 1</b>
Save the current item into the library, or select a new	r one to edit	
		Save as
Amboise Ceiling Ceiling console_l _lab_01 Main Ru Molding eg	esmerald Gilmore Leg 01 Leg 02 Leg 02 Leg_gray Marseille OvalnyP dad a_leg TV leg Leg 01 Leg 02 Leg 02 _100x10 _leg_01 ult	•
	Description	✓ Restore default from:
Save	Automatic refresh on page	OK Cancel

• Finally, place the leg on the floor plan.

# 8.1.2. Create the base for Esmeralda ottoman

The next session is about to create the seat of the ottoman.

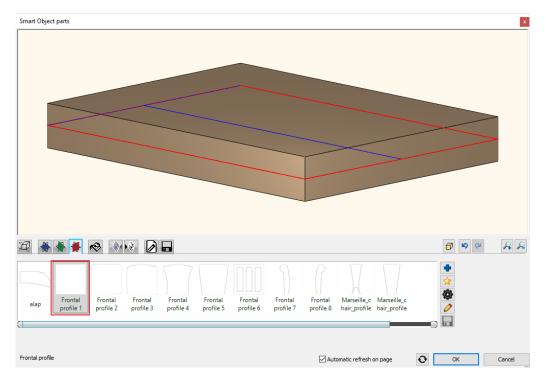
• For this use Ribbon menu / Interior / Smart Objects and choose Smart Object parts command.

Interior	Drafting	Annotate	Documentation I	MEP		
	- 	°)°				
Soft furnishing	Lighting	Lighting Plan	Electrical accessor	ry KBB	Smart Objects	Sketch Mod
on		Lighti			💭 Loft	¢
100 ▼ −1:20 ▼ Click to select, pre					Smart Obje	ect parts
Floor plan Ground floor (0 mm)				Assembled	l object	

• In the appearing dialogue set the horizontal orientation.

Smart Object parts		×
2 🐐 🐐 🖊 🧒	🔹 🔖 🖉 🖬	
Orientation Horizontal V	Base profile width 600 mm 600 mm 600 mm 100	Round all edges     Surface resolution       Side rounding     Medium       0 mm     Show grid       Front rounding     Show grid       0 mm     Back rounding       0 mm     V
Position and sizes		Automatic refresh on page OK Cancel

• On the fourth tab, 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 Base profile width to 600 mm, Base profile height to 450 mm and Thickness to 100 mm (1).
- Set the surface resolution to high (2).
- Round all edges to 10 mm (3).



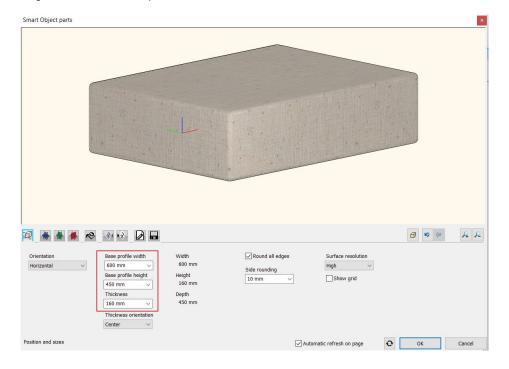
Smart Object parts						
🖉 🖌 🖌 🥐	🔌 🕅 🖉 🗖					6 9 9 A A
Orientation Horizontal V 1	Base profile width 600 mm V Base profile height 450 mm V Thickness 100 mm V Thickness orientation Center V	Width 600 mm Height 100 mm Depth 450 mm	Round all edges Side rounding 10 mm	Surface resolution High ~	2	
Position and sizes				Automatic refresh on page	Ð	OK Cancel

- On the fifth tab, you can select materials from the Library, now choose "Cream_01".
- Finally, on the last tab, save the base by clicking "Save as" command. The category should be Living room, for subcategory we recommend to use accessories for furniture components. Now enter the producer's name, which could be the model manufacturer.
- Now place it on the floor plan.

### 8.1.3. 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 the previously created base. Go to the last tab and select the Esmeralda base from favorites then save it under a new name.
- Next, under "Position and sizes" tab set the new parameters. The Bas profile width and height remain the same, but change the Thickness to 160 mm.
- Edges are rounded, keep the value at the same: 10 mm.



Let's get familiar with decoration effects. Tools for effects are stored on two tabs next to material settings. One is adding decoration to the top; the other is adding to the bottom alternatively if you have a vertical 3D shape to the front and the back.

- Pillow effect is added to the cushion; which you can create in 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 is rising from the top of the item. To apply changes, click on green tick (3). As you can see, the padding depth is adding to the base height.

Smart Object parts	×
1/1 Tufted Tufted Nailing Pillow Sewing 1	Affected area Full surface V
Padding depth 100 mm V	Automatic refresh on page OK Cancel

• Save the changes on the seat cushion, go to last tab and press "Save". Overwrite the changes on Esmeralda seat cushion and place it on the floor plan.

### 8.1.4. How to assemble Esmeralda ottoman

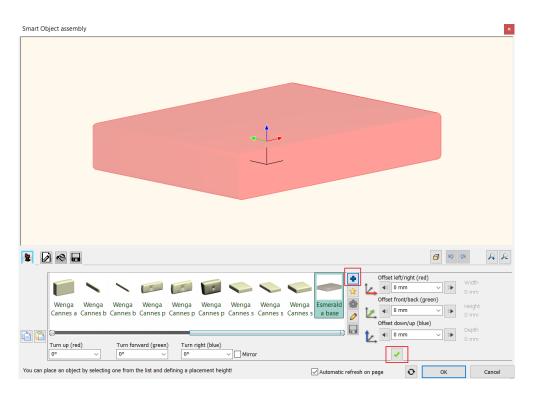
As we have created all three components for the Esmeralda ottoman, now the next step is to put them together.

Open "Assembled objects" command from the Smart Objects group.

Interior	Drafting	Annotate	Documentation	MEP			
		°l⊗]					
Soft furnishing	Lighting	Lighting Plan	Electrical access	ory KBB	Sma	rt Objects ▼	Sketch Mod
ion		Light			0	Loft	e
:100 -	- 1:20	-	▼ Clic	k to select, pre:	×× ××	Smart Obj	ect parts
Floor plan Ground floor (0 mm)				<del>د ا</del>	Assembled	d object	

- First select Esmeralda base. Select the new item from the library by pressing the blue cross.
- The selected item appears. If the selected item is red in the dialogue window, that means the item has not been placed there yet. Therefore, click on the green tick.

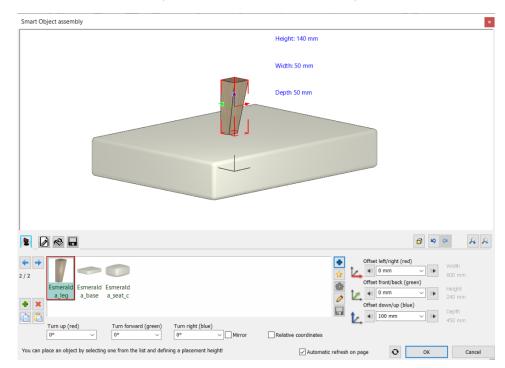




If we choose another item now, this is highlighted in red which refers to its selected status.

Let's add legs to the bottom of the Esmeralda base.

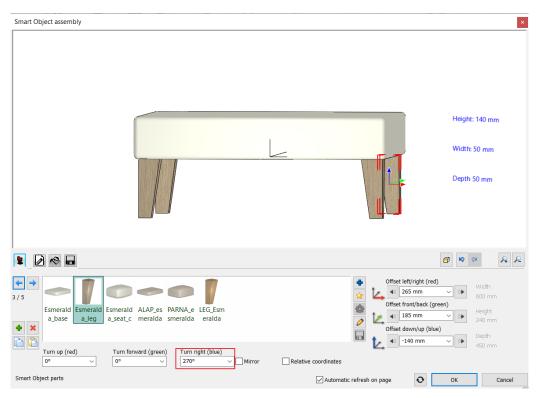
 Now click on the green cross icon. By default, the program puts the new item on top of the previously placed item. Now select from the library Living room / Accessories / Esmeralda leg.



• You can see that the program placed the new item in the middle of the base with the leg center point. Switch off Relative coordinates to make it easier to position the leg. Move the leg: Along the blue axis (downward), minus 140 mm; along the red axis (to the left), minus 265 mm; and along the green axis (forward), 185 mm.

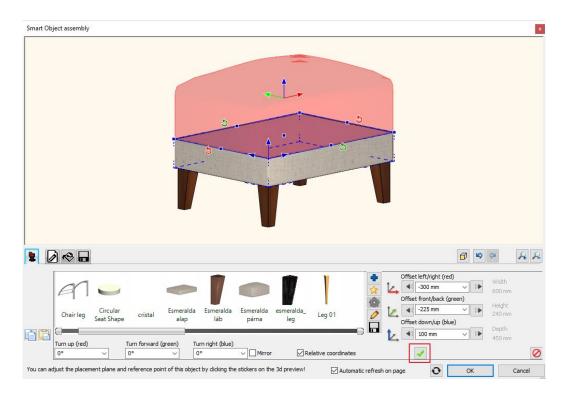
nart Object assembly		
	Height: 140 mm	
st a	Width: 50 mm	
4	Depth-50 mm	
Esmerald a.log a.base a.seal.c		et left/right (red) 265 mm V 600 mm et font/back (green) 185 mm V Peight 240 mm et down/up (blue)

- Add the following leg. Click on the green plus button, then position it: Along the blue axis (downward), minus 140mm; along the red axis (to the right), 265mm; and along the green axis (forward), 185mm.
- After adding the third leg, adjust the values as follows: Along the blue axis (downward), minus 140mm; along the red axis (to the right), 265mm; and along the green axis (backward), minus 185mm.
- The position values for the fourth leg are: Along the blue axis (downward), minus 140mm; along the red axis (to the left), minus 265mm; and along the green axis (backward), minus 185mm.
- You finished with placing legs. However, not all legs are positioned correctly. The leg is in a good position when its two
  vertical sides are facing outside. We have to adjust legs accordingly. Select the leg and set the value "Turn right (blue)" to
  90, 180 or 270 degrees.



The final task is to place the seat cushion on top of the Esmeralda pouffe. For this, select the base then add the seat
cushion from the library / Living room / Accessories category. The software automatically places it in the middle, finally
click on the green tick to create it.





- Now the Esmeralda ottoman is assembled. 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's name.
- Finally place it on the floor plan.

### 8.1.5. How to modify assembled object?

Let's check the difference between the original and the newly created Esmeralda Ottoman. 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 that we could see through between them. For this, we have to modify the newly assembled furniture. Whenever we create a new furniture with the "Smart object" tools, by double-clicking on the item again, the "Smart Object Assembly" dialogue window opens up and here can modify any components. In this special case we will adjust seat cushion.

- Select the cushion in the Smart Object Assembly dialogue window, then click on the pencil icon. This way, you can go back to the Smart Object Parts dialogue 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
  decoration effect tab, there you can add padding depth to the bottom. The padding depth value is 100 mm. Click on the
  green tick to apply changes. Now the pillow effect nicely appears.

			*
		<b>a a</b>	A P
2 🛎 🛎 🛋 🚳 📝 😥 🖬			14 1-
Image: Constraint of the second s	Affected area Full surface V		

- Save the changes, then go back to Smart Object Assembly dialog.
- If the Offset down/up value is zero, the bottom of the seat cushion will be placed right on the base. Now change this value
  to minus 30 mm, this way the pillow effect will nicely pushed into the base.

Impose la Chair back       Chair lag       Circular       Esmeralda       Esmeralda         Impose la       Chair back       Chair lag       Circular       Esmeralda       Esmeralda         Impose la       Chair lag       Circular       Esmeralda       Esmeralda       Esmeralda         Impose la       Chair lag       Circular       Circular       Esmeralda       Esmeralda       Esmeralda         Impose la       Chair lag       Circular       Circular       Esmeralda       Esmeralda       Esmeralda       Esmeralda         Impose la       Chair lag       Circular       Circular       Esmeralda       Esmeralda	Smart Object assembly x
Amboise Ja       Chair back       Chair leg       Circular       cristal       Esmeralda       Esmeralda       Esmeralda       Esmeralda       Esmeralda       Offset front/back (green)       Height         L       Offset down/up (blue)       Offset down/up (blue)       Offset down/up (blue)       Depth	
Amboise la Chair leg Circular b_01 Chair leg Circular cristal Esmeralda alap lab parna Turn up (red) Turn forward (green) Turn right (blue)	
0° V 0° V Mirror Relative coordinates 🗸	Amboise_la Chair back Chair leg Circular cristal Esmeralda Esmeralda Esmeralda parna b_01 Turn (red) Turn right (blue)

• Now save the changes and close the dialogue window.

Whenever you want to use the newly created ottoman, simply find it in the Library under Living room / Armchair subcategory.

# 8.2. 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 handy for us later on. Using the parameters mentioned above, let's start our work. First, we have to investigate what makes this chair special and also analyze how the components are built-up, such as the cushion seat, curved legs, curved back panel.

### Start

Open the project which has already included the ready model and profiles before you start the work. Here you can find the project:

...ARCHlineXP Draw\2023\Course_Intermediate\8_Upholstered_furniture\Marseille_chair.pro

## 8.2.1. 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\2023\Course_Intermediate\8_Upholstered_furniture\Photos
 From Ribbon menu / Drafting / Raster image choose "Place" command, or use drag&drop to place it on the floorplan.

Edit	View	Building	ding Interio		Draf	ting	Dimension
[	+ (	-	°	5	2D]	3D	Z⊕
ext Po	Point Ellipse		Raster image		roup ▼	3D T	New profil
			Place				

The photo is not scaled, but suitable to get the profile of the back panel. To work with a scaled back panel first, we have to calibrate it.

Click on the chair and from the local menu choose "Calibrate" command. The height of the chair is 1170 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 a vertical line. In the pop-up dialogue window enter 1170mm the height of the chair.

Nearest point	
	ARCHLine.XP
	Input the real world distance between the points
•	New value: 1.17 m
A	OK Cancel

This is a perspective image and not suitable for getting more information about the chair. We aim to get the shape of the back of the chair. This photo is scaled now; we have to draw its profile.

• Use Polyline command from Ribbon menu / Drafting.

Line Polyline Polyline Circle Arc Hatch Text Point Ellipse Raster image Group 3D New profile		<b>1</b> 00	X 🗆 🗋	1	1 ×	- <b>x</b> ]	T Ā	\ + ? ⁺ =	Edit View	Build	ling	Interior	Drafting
Draw	Line	C Rectange C Offset		-	Hatch	Text		$\sim$		Group		New profi	le Create Create

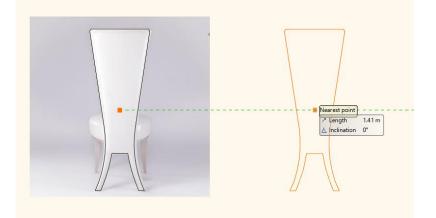
 We are going to draw the half of the profile of the chair. First, select the "Half division point" from the snapping options and define the half division point of the back panel. The option can be found on the toolbar at the bottom.

¥	Distance from intersection
0+0 1/2	Midpoint between two selected points
0	Center point
-	

 Draw a line on the top; after placing its endpoint, the program automatically sets the starting point of the polyline in the half division point. From here, you can start drawing the profile.

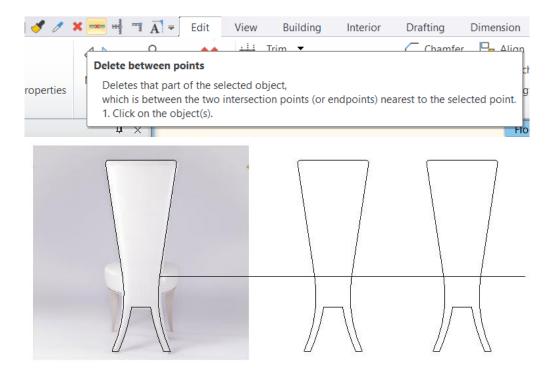


- First draw a line then an arc. You can draw an arc by using three points. The first is given, then select the endpoint, finally
  a middle point which helps to define the arc.
- Continue the drawing with a line and a smooth arc. To draw the arc, select option from the pop-up menu, first select Smooth then Arc option.
- For the next line, select "No smooth" command.
- Continue with an arc.
- Draw the last line until the perpendicular projection of the half division point. Close the drawing command, the half of the profile is ready.
- Select this profile and from the local menu choose "Mirror a copy" command.
- This way, the missing 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 panel. 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. We have to define another profile to reach this pillow effect.

- Select the profile and create another copy of it.
- Try to find the seat height and start to draw a straight line from there.
- Use Delete between point command from the top toolbar to remove unnecessary lines. The second profile is ready.



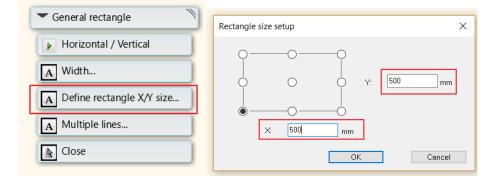
To complete the chair back profile, we need the front profile and the previously created top profile. Also, the back of the chair is curved. Therefore, this is a vertical base profile, and we use for modelling.

- Draw an arc; the height is 1170 mm.
- The curve of the back panel leans a bit backwards. It 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 the size of a rectangle will be enough for the seat.

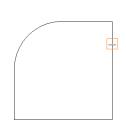


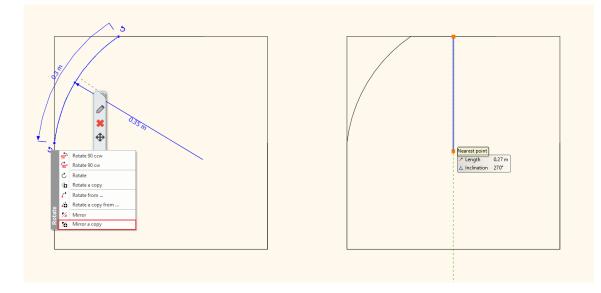
If you check the photos, then you can see that we have to fillet edges. There are more options to do that.

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

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

- Place a rectangle again and inside draw an arc from the half division point until the quarterpoint by using the arc command.
- Mirror the arc by using Mirror a copy command.



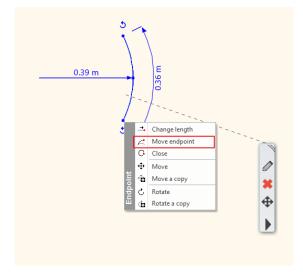


• Then use "Delete between points" command to remove unnecessary lines. The top view profile of the seat is ready.

### Leg profile

One more profile needs to be created for legs. Here we have to draw an 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 endpoints.



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

# 8.2.2. Creating Marseille legs

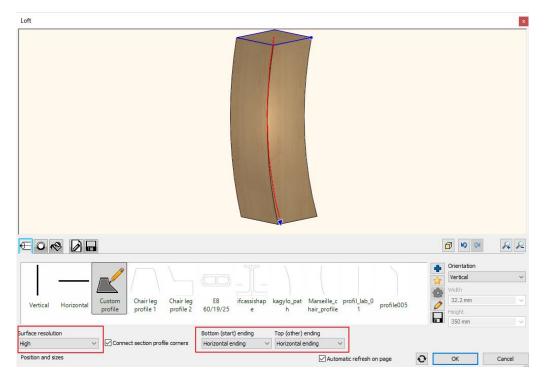
When we have all profiles, we could continue working on modelling the furniture. First, we create the components such as the leg, back and the seat.

- Select from Ribbon menu / Interior / Sweep then Loft command. It 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 "Custom profile" option. Here you can select, 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.



• - Ā	Profile Editor	mode						
Ŕ	正正 正 ⊕	[0]	L.	E	<u> </u>	$\sim$	$\checkmark$	×
Closed loop	Multiple profile	Edit boundary	Select an item	Select from list	Last defined outline	Select connected lines	Finish	Cancel
	Dra	w					Edi	itor

• When the profile is selected, then the software automatically brings up the Loft dialogue window. We recommend to set the high resolution and define the bottom and top ending to horizontal.



- The next step is to set the size of the top profile on the leg. It is a 50*50 mm rectangle. Set the parameters on the second tab.
- Set the size at 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.

Loft	X
2/2	Position on the path 354.9 mm 0 mm
friz2 fuggoleges ifcassishap friz2 _diszprofil e kagylo_1 kagylo_2 Leg section profile 01 s	Width         Torsion           10 mm         Smooth Fit         0%         •           Height         Sharp         Connection Offset         0.00         •           10 mm         Join to previous         0.00         •         •
Section profiles	Rescale V OK Cancel

 It is optional to add a third profile which is a 30*30 mm rectangle. Change its position on the path by moving the slider; the shape of the leg will also change. We also recommend to set the "Smooth fit" to smooth.

Loft	×
Design model	in to previous

- 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. The category the Dining room; then we recommend to save the leg under Accessories sub-category. All furniture components should be saved here. Enter the producer's name, Wenga.
- Now place the chair on the floor plan.

### 8.2.3. 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.

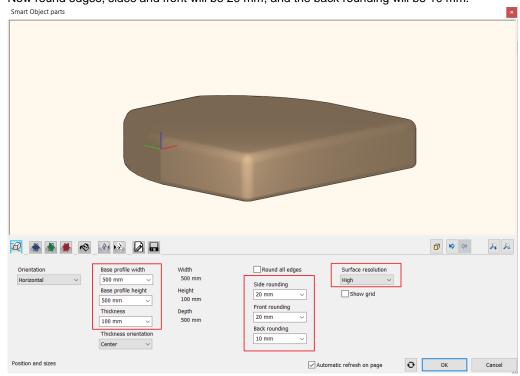
Smart Object parts						×
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Orientation Horizontal V	Base profile width 600 mm V Base profile height 800 mm V Thickness 100 mm V Thickness orientation Center V	Width 600 mm Height 100 mm Depth 800 mm	Control all edges Side rounding Omm Front rounding Omm Back rounding Omm Subscript Su	Surface resolution Medium ~ Show grid		
Position and sizes			Autor	natic refresh on page	ОК	Cancel



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

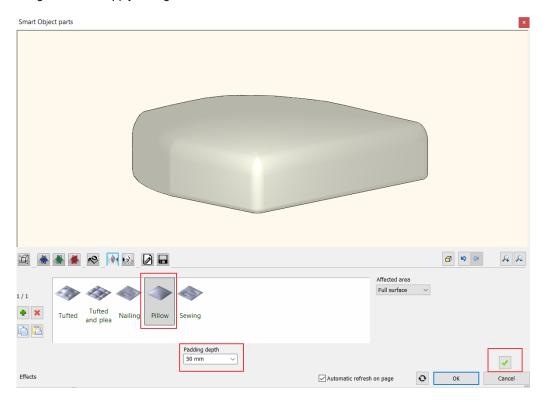
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Polygon	General rectangle	Rectangle HV	Box	Circle	Closed loop	Multiple profile	Edit boundary	Select an item	Select from list	Last defined outline	Select connected lines	Finish	Cancel
Draw											Edi	itor	

• On the first tab, set the parameters. The base profile width is 500 mm, the base profile height is 500 mm, and the thickness is 100 mm. The resolution is 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 seat. On the first tab, you can set the top effects; on the second, you can add effects to the bottom. Now we will add pillow effect to the top. The padding depth should be 50 mm. Click on the green tick to apply changes.



• Final step is to save the seat. On the last tab, click on "Save as... "command, first enter the name and the category. The category should be the dining room, choose Accessories for sub-category.

It is crucial to save components before closing the dialogue window. If we close the dialogue 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 dialogue window, here you can save the item.

## 8.2.4. Create the back of Marseille chair

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

- Select Smart Object Parts.
- The back profile of the chair is a vertical item, so this setting is correct.

Smart Object parts						×
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Orientation Vertical V	Base profile width 600 mm Base profile height 800 mm Thickness 100 mm Center V	Width 600mm Height 800mm Depth 100mm	Common all edges Side rounding Omm v Front rounding Omm v Back rounding Omm v	Surface resolution Medium V Show grid		
Position and sizes			Automa	tic refresh on page	ОК	Cancel

• On the fourth tab, define the frontal profile. Select it from the floorplan, by clicking on the yellow star icon. Here, we have to use the "Closed Loop" command and click inside the profile.

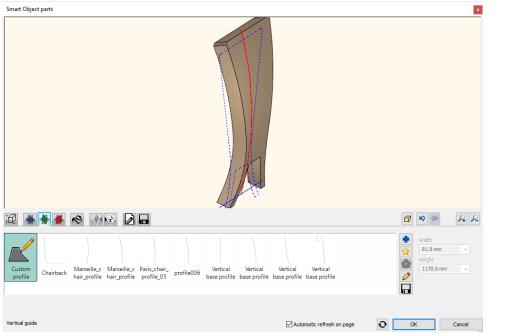
Smart Object parts	×
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Custom profile alap Frontal Frontal Profile 2 Profile 3 Profile 4 Profile 5 Profile 6	
Frontal profile	Automatic refresh on page OK Cancel



On the first tab, we can set the parameters. Here we have to mention that so far, there was no need to use the second and the third tab. Here we can customize the vertical and the horizontal base profiles.

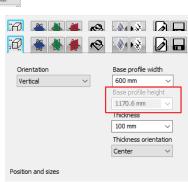
• In the case of the Marseille chair, the vertical base profile is an arc. Select this arc from the floorplan, for this use "Select an item" command. Select the arc then define the reference point with one click.

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



It is important to note that the height of the back cannot be modified on the first tab. It happens because the vertical base profile defines the height.

- It works as above-mentioned in 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 a 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.



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Position and sizes		Automatic refresh on page	OK Cancel

• The next, we add pillow effect on the front. The padding depth should be 30 mm and affects the full area.

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1/1 Tufted Tufted and Piets Nailing Pillow Sewing	Affected area Full surface V
Padding depth 30 mm V	Automatic refresh on page OK Cancel

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 icon to add further effect. Now select from the drop-down menu the "Custom area" option.

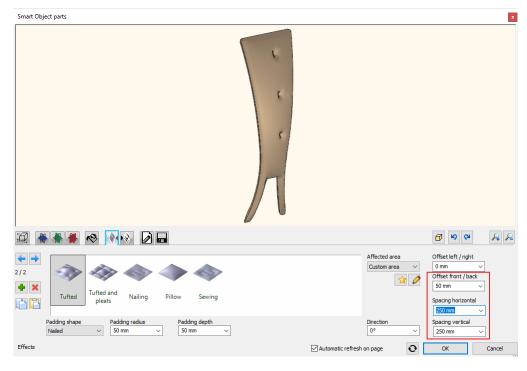
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	Padding depth 30 mm v		<ul> <li>✓ Ø</li> </ul>
Effects	Automatic refresh on page	OK	Cancel



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

Smart Object parts		×
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Padding shape Nailed V Effects	Direction Spacing vertical	
	V Automatic refresh on page OK Car	ncer

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.

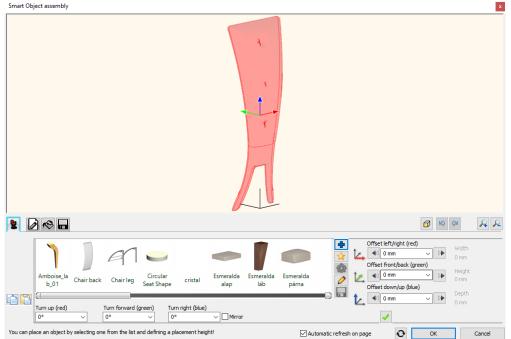


- Finally set the material Cream_01.
- The back chair is ready. You have to save it in the library. Use "Save as ... command, the category is the Dining room, sub-category is accessories, producer is Wenga.
- Now place the back chair next to other parts.

# 8.2.5. 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 in red in the dialogue. It means that the back of the chair has not been placed yet. Click on the green tick to do so.



- Add the subsequent parts: the legs. First, click on the green cross icon.
- Find the legs in the library.
- It is placed on the top of the back. Click on the front, now it is active, and then click on the lower middle point.

Smart Object assembly		5	2
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Turn up (red)     Turn forwa       0°     0°		Relative coordinates	157.4 mm

Click on the green tick to place the leg, and then move 200 mm along the red axis.

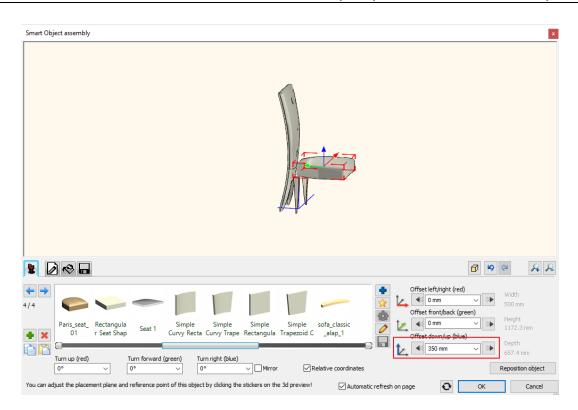


Smart Object assembly
2/2 sofa_classic_sofa_classic_sofa_classic_sofa_classic_rapezoid Wenga Wenga
sofa_classic sofa_
10m up (rea)     10m forward (green)
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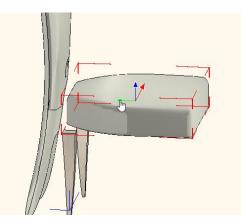
- The next element that we place is going to be the other leg, so leave the leg selected and click on the green plus icon.
- Click on the front, now it is active.
- Click on the green tick to place the leg.
- Since the lower middle point was the reference point; you have to move this leg along the red axis with -200 mm due to the symmetry. Also, you have to keep in mind that you have to turn it right with 180 degrees.

Smart Object assembly	×
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- Let's place the seat cushion. Click on the green plus.
- Select the seat cushion from the library.
- Click on the green tick to place the seat, which appears now at the bottom as for positioning we selected the lower middle point before.
- We have to elevate the seat cushion to 350 mm because of the height of the legs. Therefore, you have to move it 350 mm along the blue axis.



Move the seat cushion to the right position along the green axis.



• The last task is to place the legs in the right position. After selecting, move it -350 mm along the green axis. If you do not know the exact value, you can move it by using the arrows.



Smart Object assembly	×
	P 2
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	Height 1172.3 mm Depth
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You can adjust the placement plane and reference point of this object by clicking the stickers on the 3d preview! Automatic refresh on page OK	Cancel

- Move the other leg to the right place too. Move it -350 mm along the green axis.
- The chair is ready. The final task is to save it in the Library. Name the chair and save it to the Dining room category and Chair subcategory. You can also give the name of the producer.
- Now you can 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.

