

ARCHITECTURAL

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Contents

Intro	duction		7
	What is A	RCHLine.XP	7
	How to us	e this tutorial?	7
1.	Workshop	b: Editing the Floor Plan, Processing DWG	11
	1.1.	Let's Get Started!	11
	1.2.	User Interface, Basic Navigation, and Selection	12
	1.2.1.	User Interface	12
	1.2.2.	Navigating with the Mouse	14
	1.2.3.	Selection	14
	1.3.	Working with External Files	16
	1.3.1.	Importing the Floor Plan as a DWG Drawing	17
	1.3.2.	Setting Up Levels	19
	1.4.	Walls	20
	1.4.1.	Setting Wall Properties	21
	1.4.2.	Drawing Exterior Walls	21
	1.4.3.	Drawing Partition Walls	22
	1.4.4.	Using Filters	24
	1.4.5.	Displaying Line Thickness on the Screen	26
	1.5.	Openings: Doors and Windows	26
	1.5.1.	Variants	26
	1.5.2.	Placing doors	28
	1.5.3.	Windows	32
	1.5.4.	Creating a Corner Window	34
	1.6.	Slabs and Ramps	
	1.6.1.	Slab tool – Creating floors	36
	1.6.2.	Slab Tool – Creating a Terrace	
	1.6.3.	Creating a Ramp	
	1.7.	Layered Walls	
	1.8.	Creating stairs	46
	1.8.1.	Placing the stair	
	1.8.2.	Modifying the Placed Stair's Properties	46
2.	-	o: Multi storey building, working on second floor	53
	2.1.	Creating the first floor	
	2.1.1.	Level management	
	2.1.2.	Copying the ground floor to the first floor	
	2.1.3.	Removing unnecessary elements from the floor plan	
	2.1.4.	Restoration of the thermal insulation layer	
	2.2.	Stairs	
	2.2.1.	Opening of the slab above the stairs	
	2.2.2.	Symbolic representation of a staircase on the first level	
	2.3.	Partition walls	
	2.3.1.	Wall drawing	
	2.3.2.	Partition walls on the first floor	
	2.4.	Openings: doors, windows	
	2.4.1.	Doors on the first floor	
	2.4.2.	Modifying doors	
	2.4.3.	Windows on the first floor	68



	2.5.	Slab tool	69
	2.5.1.	Creating a balcony	69
	2.5.2.	Creating a flat roof	70
	2.6.	Railing	71
	2.6.1.	Railing editing with style	71
	2.6.2.	Creating a railing with the column tool	73
	2.7.	Creation of the closing slab	75
3.	Worksho	p: Roof Structure and Firewall Editing	81
	3.1.	Roof	81
	3.1.1.	Roof Design	81
	3.1.2.	Changing the Roof Contour	83
	3.1.3.	Designing a Firewall with the Push and Pull Tool	84
	3.1.4.	Creating a Gutter	87
	3.2.	Placing Solar Panels	89
	3.3.	Columns	91
	3.3.1.	Placing Structural Columns	91
4.	Worksho	p: Documentation - Sections, Elevations and Callout	99
	4.1.	Meaning of Sections and Elevations	99
	4.2.	Sections	99
	4.2.1.	Hatching Patterns in Sections	103
	4.3.	Elevation Views	104
	4.3.1.	Image Representation Mode	104
	4.3.2.	Vector Representation Mode	107
	4.3.3.	Creating Technical Shadows	108
	4.3.4.	Creating Sun Shadows	108
	4.4.	Callouts	109
5.	Worksho	p: Dimensioning, Detailing, Schedules and Project Phases	117
5.	Worksho 5.1.		117
5.	Worksho 5.1. 5.2.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning	117 117 119
5.	Worksho 5.1.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning Dimensioning of Openings	117 117 119 125
5.	Worksho 5.1. 5.2. 5.3. 5.4.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning Dimensioning of Openings Room and Area	117 117 119 125 129
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning Dimensioning of Openings Room and Area Room and area properties	117 117 119 125 129
5.	Worksho 5.1. 5.2. 5.3. 5.4.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning Dimensioning of Openings Room and Area Room and area properties Room and area: Automatic placement tool	117 117 119 125 129 129 129 131
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning Dimensioning of Openings Room and Area Room and area properties Room and area: Automatic placement tool Room by walls tool	117 117 119 125 129 129 131 133
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning Dimensioning of Openings Room and Area Room and area properties Room and area: Automatic placement tool Room by walls tool "Room by polygon" - tool	117 117 119 125 129 129 131 133 134
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning of Openings Dimensioning of Openings Room and Area Room and area properties Room and area: Automatic placement tool Room by walls tool "Room by polygon" - tool Color Schemes	117 117 119 125 129 131 133 134 135
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning Walls dimensioning of Openings Dimensioning of Openings Room and Area Room and area properties Room and area: Automatic placement tool Room by walls tool "Room by polygon" - tool Color Schemes Elevation on floor plan	117 117 119 125 129 129 131 133 134 135 137
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138 140
5.	Worksho 5.1. 5.2. 5.3. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138 140 141
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138 140 141
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2. 5.8.3.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138 140 141 141 146
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2. 5.8.3. 5.8.4.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138 137 138 140 141 141 141 141
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.5.5. 5.8.5. 5.8.5. 5.8.5. 5.8.5. 5.8.5. 5.8	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138 140 141 141 141 147 147
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.4. 5.8.3. 5.8.4. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.3. 5.8.1. 5.8.3. 5.8.1. 5.8.1. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.3. 5.8.1	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138 140 141 141 141 145 147 150
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.1. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.1. 5.8.1. 5.8.1. 5.8.2. 5.8.1.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 135 137 138 140 141 141 141 141 147 147 150 152
	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.2. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.1. 5.8.1. 5.12.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 131 133 134 133 134 135 137 138 137 138 140 141 141 141 141 141 141 147 150 152 153
5.	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.1. 5.8.4. 5.8.1. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.1. 5.8.1. 5.8.2. 5.8.1. 5.8.1. 5.8.2. 5.8.1. 5.8.1. 5.8.1. 5.8.2. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.1. 5.8.5. 5.8.1. 5.8.5. 5.8.1. 5.8.5. 5.8.1. 5.8.5. 5.8.1. 5.8.5. 5.8.1. 5.8.5. 5.8.1. 5.8.5. 5.8.1. 5.8.5	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 129 131 133 134 133 134 135 137 138 140 141 141 141 141 141 141 145 147 150 152 153 157
	Worksho 5.1. 5.2. 5.3. 5.4. 5.4.1. 5.4.2. 5.4.3. 5.4.4. 5.5. 5.6. 5.7. 5.8. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.4. 5.8.4. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.4. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.3. 5.8.1. 5.8.2. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.2. 5.8.1. 5.8.1. 5.8.1. 5.12.	p: Dimensioning, Detailing, Schedules and Project Phases Properties of Dimensioning	117 117 119 125 129 131 133 134 135 137 138 140 141 141 141 141 141 141 147 150 152 153 157

5	

	6.3.	Creating Additional Plan Sheets	
	6.4.	Print Queue	
	6.5.	Exporting DWG/IFC Files	
7.	Workshop	: Creating in-place mass model, reference to other projects	177
	7.1.	Preparation	177
	7.2.	Creating a Mass Model	178
	7.3.	Urban Planning and Importing Neighboring Buildings	
	7.4.	Creating the Terrace in the Garden	
	7.5.	Creating the Pool area	
	7.6.	Adding Water using the Slab Tool	190
	7.7.	Placing objects	192
8.	Rendering		199

Introduction

What is ARCHLine.XP

ARCHLine.XP is a large-scale 3D BIM software for architecture, rendering, site design, interior design and decoration projects.

ARCHLine.XP is an architectural design software equipped with a fully integrated Open BIM interface, providing the tools to create coordinated and computable building models. Every component, such as floor plans, sections, and elevations are in one comprehensive model. Your BIM projects are fully coordinated and they don't require any manual updates to keep them synchronized.

Architectural design

The program provides the capability to create multi-story buildings. Drawing single or multi-layered, even sloping walls in both 2D and 3D is made easy with the flexible Wall command. Doors and windows are parametric, allowing for size changes to automatically rebuild and update the wall based on parameters. Stair and railing edits are guided by rules, providing flexible design options. Modifying the ceiling profile enables the creation of unique ceiling structures, such as barrel vaults and cross vaults. When it comes to roof shapes, you can choose from a long list of types (gable roof, hip roof, mansard roof, curved, etc.).

Furnishing of Spaces

For furnishing spaces, ARCHLine.XP offers shading, curtain design, lighting, flooring, baseboards, decorative moldings, suspended ceilings, switches, outlets, and parametric kitchen design tools. 3D Warehouse models can be imported and placed within the ARCHLine.XP project, enhancing your design options and allowing you to create detailed and realistic interior layouts.

Documentation

Using the Plan Sheet, creating technical documentation becomes a straightforward task. This documentation can include floor plans, wall and perspective views, detailed drawings, and rendered images in various scales. With ARCHLine.XP, building the 3D model is easy, and you can create approval-, construction-, and visual plans efficiently.

Visualization

With a single click, the model can be transferred to the ARCHLine.XP LIVE visualization software, where it can be easily transformed into immersive, high-quality interactive walkthroughs, videos, and images. The simulation of people, plants, and water provides an experience as if you were taking your clients by the hand and walking them through their future home, starting from the street, passing through the garden, circling around the gently rippling pool, through the living room, and all the way to the bathroom in the gentle breeze.

How to use this tutorial?

In this tutorial, we will walk you through the process of designing a residential building step by step. This educational material serves as a guide to help you become proficient by working through a typical architectural example. During the workshops, we will explore how to create lists, elevations, sections, and other detailed drawings and how to place them on plan sheets. By the end of the lectures, you will be able to independently create a complete set of design documentation.

The course consists of 8 workshops:

- 1. Floor Plan Editing Based on DWG on the Ground Floor: Walls, Openings, Ceilings, Ramps, Stairs
- 2. Managing Levels: Creating Upper Floor Levels and Structural Connections
- 3. Roof Editing: Editing Roof Structures and Firewalls
- 4. Documentation: Sections, Elevations, and Detail Drawings
- 5. Dimensioning, Annotations, Lists, and Design Phases
- 6. Printing: Plan Sheets, Stamps, Multi-page PDF Publishing, and DWG / IFC Export
- 7. Environmental Rendering, Referencing Other Projects, Objects
- 8. Creating Photorealistic Renderings

It is recommended to start by downloading and installing the <u>Architectural Course Workshop Installer</u>, which contains the projects and CAD files used throughout the course. As you progress through each workshop, it's a good practice to watch the instructional videos associated with the lessons. Then, based on the provided instructions, create the design in the ARCHLine.XP 2023 software.

7



During the course, we will be creating the floor plan, 3D model, documentation, and photorealistic image for the following building.



Workshop 1: Editing the Floor Plan



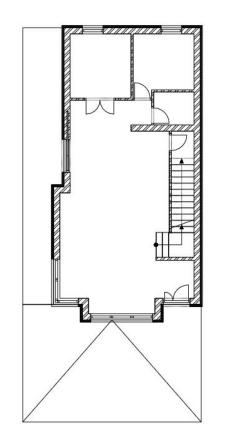
1. Workshop: Editing the Floor Plan, Processing DWG

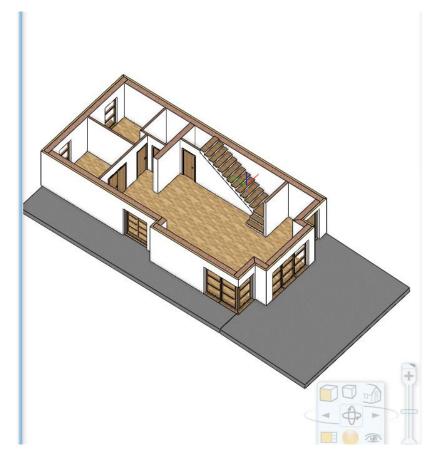
1.1. Let's Get Started!

First, watch the Editing the Floor Plan, Processing DWG tutorial video:

If you haven't already, download and install the <u>Architectural Course Workshop Installer</u>, which contains the projects and DWG files used during the course.

In this workshop, we will create the following floor plan and model using an imported CAD drawing. We will transform the CAD lines into 3D architectural elements. It's also possible to start from scratch and, for example, draw walls directly in an empty project.





Launching ARCHLine.XP

Once ARCHLine.XP is launched, the startup screen appears. Here, you can choose how you'd like to begin your work. First, let's load the existing project to become familiar with the user interface.



Create a new project or open an existing one	×
ARCH INE. ^{\$}	f 🗅
RECENT	GET HIGHLIGHTED STARTED PROJECTS
Search Sort by Recent projects	NEW PROJECT Create a new project
3_2D_symbol_start.pro 2023.10.02. 14:17 z Fanni/Documents/Fanni/Oktatói_nap/Projektek/ENG/	OPEN PROJECT Open an existing project
2_Fenyek_workshop_2023_FINAL.pro 2023.03.01. 17:42 /ARCHlineXP Draw/2023/Alapfoku_Tanfolyam/6_Fenyek/	NEW PROJECT FROM TEMPLATE New project from template

- Launch ARCHLine.XP[®].
- Click on Open Project button, and choose the following project:
- ...\Documents\ARCHLine.XP Draw\2023\Architectural_Course\lesson_1\Elata_Nova_lesson_1_FINAL.pro

1.2. User Interface, Basic Navigation, and Selection

Navigation is straightforward and clear in ARCHLine.XP, especially if you have experience with 2D or 3D design software. First, let's briefly review how to manage and navigate through the drawing content on the ARCHLine.XP user interface.

1.2.1. User Interface

Project navigator

The various windows with different content (2D drawings, 3D views, Sections, Elevations, Plan Sheets, etc.) can be found in the Project Navigator.

Managing Content Layout

There are several options for switching between windows.

By clicking on the drawing selector tabs, you can maximize the required window.



Click on the window you want to zoom in on, then press the **Magnify** view button on the Navigation bar. This way, you can always zoom in on the currently active drawing content.





Let's review its user interface and its main components so that you can more easily associate the terms used in the tutorial descriptions with the corresponding areas of the user interface in the future.

The ARCHLine.XP® interface has the following main parts: File menu (1), Quick Access Toolbar (2), Ribbon bar (3), View Control bar (4), Properties (5), Design Center (6), Project Navigator (7), Styles (8), Drawing area (9), Coordinate bar (Status bar) (10).

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Properties Wall / Edit Door	r Window Curtain wall Column Beam	Slab Roof Ceiling Stair R	Ramp Railing Room and area Surveyed room	Google Maps Terrain Masses	Point cloud
Properties 4 Wall	Opening	Structure	Stair Room	Massing and Site	Point cloud
New Construction - 🖓 All	🝷 🔗 💥 Fine	• 1:100 • - 1:20 •	 Click to select, press Shift to 	add/deselect	
Properties 0 × p	Floor plan Ground floor (0 mm) +				• ×
Graphics settings			Floor plan Ground floor (0 mm)		-¤×
No style 🕸					
Property Value					
* Drawing settings					
Opening scale 1:100					
Cut plane is activated o					
Display of openings ab Not Displayed					
Ibems to be displayed o 1000 mm Wall fill pattern Fine V					
Side marker to display					
Line weights scale 1:20 V					
Display proportional lin					
Other Edit		9			
* Visual effects					
Create 3D model in jus					
Joining Surfaces					
Classes for Joining Sur Edit					
Joining Surfaces is disa					
Display of Facet Edges					
Dynamic section transp					
Antialiasing V Hardware vertex proce GPU (har V					
Texture optimization GPU (har V Color schemes None V					
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Selection List



When you click on an element, the selection list becomes visible. This means that at this click point, multiple elements can be selected. You can navigate between the elements using the right and left arrows. To switch between elements, you can also use the TAB key on the keyboard, or the pop-up selection list that appears when you click on the downward-pointing arrowhead.

Resetting the User Interface to Factory Default Settings

To ensure that we are working with the default user interface settings of the software, which this tutorial is based on, click on the **Menu Bar / View / User Interface / Reset User Interface to factory default** command.

These are the most basic aspects of the user interface and navigation tools. We will become familiar with additional features and commands of the user interface, their placement, and usage as we progress through the tutorial.

How to correct mistakes during work?

Let's take a moment to review how to correct accidental errors during your work.

It's a natural human trait to make mistakes occasionally while following tutorials or working on our own projects. If this happens, feel free to try the following tips:

- If you select the wrong tool, you can exit by pressing the ESC key and then choose the correct one.
- If you've made an incorrect modification or created the wrong element, use the UNDO button.
- If you accidentally delete something, press the UNDO button.
- If you accidentally open a dialog or enter incorrect data, choose the CANCEL button at the bottom of the dialog.



1.2.2. Navigating with the Mouse

Zooming

You can zoom in or out on the 2D content or 3D view by scrolling the mouse wheel up or down.

Moving

Hold down the middle mouse button and move the mouse simultaneously. This allows you to pan the current content in the desired direction. Release the mouse to finish the moving.

Rotating

To rotate the model, **hold down the middle mouse button and the SHIFT key while moving the mouse**. To finish, simply release the mouse wheel and the SHIFT key.

Orbiting

If you already have a perspective view (we'll cover this topic later), **press the right mouse button and move it** in the desired direction to orbit around the model.

1.2.3. Selection

Selecting an Element

To select an element, simply **click on it**, and it will be highlighted. You will also see the properties of the selected element on the left side. To deselect, press the ESC key or click on another element.

Selecting Multiple Elements

- To select multiple elements, you can do the following:
- To add another element to the selection, hold down the CTRL key while clicking on the new element, or
- Click and drag the mouse on the drawing to create a selection rectangle. Click again to select all elements within the selection rectangle. If you draw the selection rectangle from left to right, any element fully enclosed by the rectangle will be selected. However, if you draw the rectangle from right to left, any element fully enclosed and even partially overlapping with the rectangle will be selected.

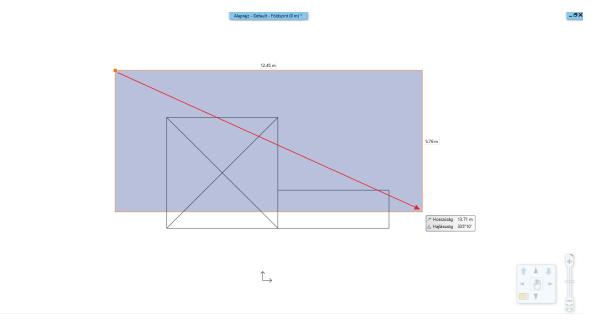
Selection with a Rectangle

You can also choose to make a combined selection using a rectangle.

To make a selection with a rectangle, click in an empty area of the drawing, then click on the drawing again after moving the mouse, defining a rectangular area. There are two ways to distinguish the selection with a rectangle:

Rectangle Selection: Left to Right

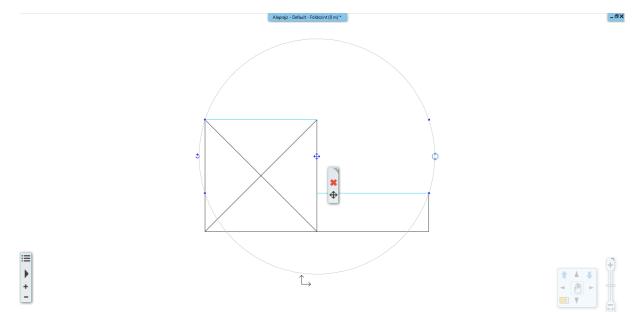
- Draw some lines as you normally would.
- If you are currently in an editing command, exit it by pressing the ESC key.
- Move the mouse to the upper-left corner of the drawing area, click in an empty part of the drawing area once.
- Move the mouse to the right and downward so that the transparent rectangle partially covers the lines; there should be some lines extending beyond the blue selection box. Click once again.



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Selection with a Rectangle: Left to Right – intentionally skipping the lower part of the drawing.



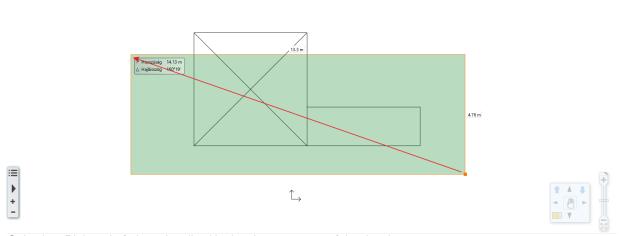
The result: only the lines that were completely within the selection rectangle were selected.

Rectangle Selection: Right to Left

- Press the ESC key to deselect if necessary.
- Move the mouse to the lower-right corner of the drawing area in an empty part of the drawing area and click once.

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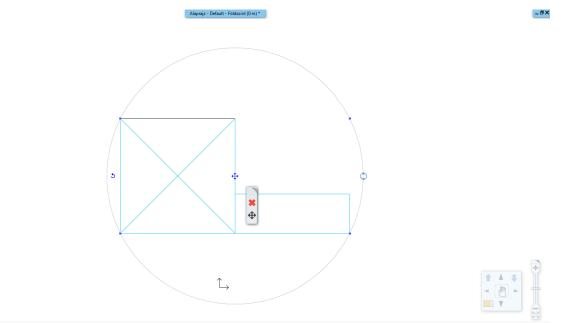
• Move the mouse to the left and upward so that the continuously appearing green rectangle partially covers the lines; there should be some lines extending beyond the green selection box. Click again.



Selection: Right to Left. intentionally skipping the upper part of the drawing.

-8×





The program selects any drawing elements that are either entirely within the selection rectangle or intersect its boundary.

Comparison:

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Rectangle Selection: Left to Right:

- Draw the selection rectangle from left to right.
- The selection rectangle is colored BLUE. The program selects only the drawing elements that are entirely within the selection rectangle.

Rectangle Selection: Right to Left:

- Draw the selection rectangle from right to left.
- The selection rectangle is colored GREEN.

The program selects any drawing elements that are within the window or intersect the boundary of the selection rectangle.

The practical benefit of these two methods is that it's much easier and faster to select an entire room's furniture, for example, by drawing a selection rectangle with the first method, encompassing the furniture. If some walls overlap this area, it's not a problem because you know that the program won't select them.

In the case where you want to select every drawing element, even those that may extend beyond the visible drawing area, you can use the second method. To achieve successful selection, it's sufficient to partially see the elements you want to select.

Selection Based on Element Type

Elements of the same type can be selected with a single click using the following method:

• On the Menu bar, right-click the desired element type, and click on the **Select All** command. All elements of that type will be selected.

1.3. Working with External Files

After the overview, let's open a new project in which we will work.

- Click on the File menu New project command.
- Exit the previous project without saving and choose New Project from the dialog.

/	/	← Rectangle (+)
Lir	>	Property
	B	Select all
	×	Keyboard shortcut
	•⊕	Add to Quick Access Toolbar

Create a new project or open an existing one	×
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Search Sort by	GET HIGHLIGHTED STARTED PROJECTS
Sort by	NEW PROJECT
Recent projects	Create a new project
Elata_Nova_lesson_1_FINAL.pro 2021.09.01. 11:58	
RCHlineXP Draw/2023/Architectural_Course/lesson_1/	Open an existing project

When using the ARCHLine.XP program, you can import CAD files in DWG or DXF file formats. Before importing a file that contains the floor plan, it's important to know which formats are supported:

- Images in JPG or PNG formats
- Raster PDFs
- Vector PDFs
- DWG drawings
- ✤ IFC models

Importing a DWG drawing means importing geometry, which results in a precise drawing with units of measurement. This can include points, lines, polylines, arcs, circles, ellipses, hatches, dimensions, and raster images.

1.3.1. Importing the Floor Plan as a DWG Drawing

The Link feature connects IFC, RVT, DWG, and PDF files to the project. Linking is the best solution for displaying external content, primarily for coordination purposes. When you open the IFC, RVT, DWG, or PDF file, it automatically updates in the project and can be manually refreshed at any time.

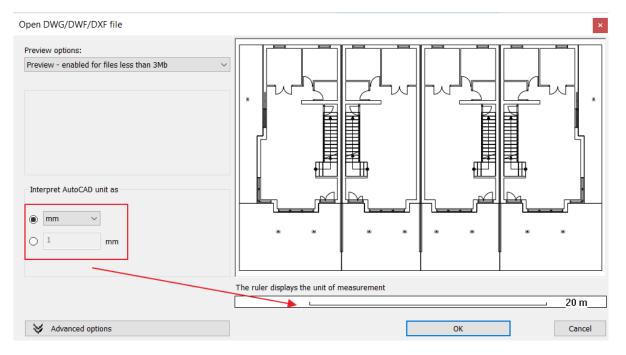
Let's open the floor plan. Choose File / Link / Link CAD command.

 Locate the following file: ...\Documents\ARCHlineXP Draw\2023\Architectural_Course\Vesson_7\elata_nova_START-Ground floor.dwg

Hely:	lesson_1	,	G 🤌 📂 💷 🗸		Preview
Gyors elérés Asztal Könyvtárak Ez a gép Hálózat	Név DWG elata_nova_ST/	ART-Ground floor.dwg	Módosítás dátuma 2023. 10. 06. 14:41 2019. 07. 12. 10:14	Típus Fájlmappa DWG fájl	
	< Fájlnév:	elata_nova_START-Ground floor		≻ Megnyitás	



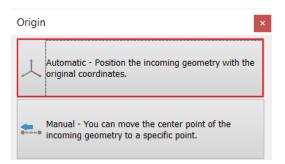
• Click on the Open button. This will open the following window:



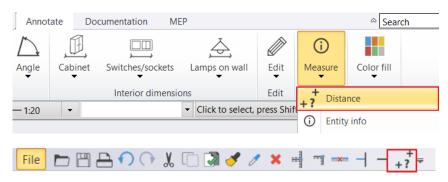
• The program automatically recognizes the unit of measurement, but you can choose a different one from the selection list if needed. Selecting the correct unit of measurement ensures that the imported drawing is accurately scaled.

At the bottom of the dialog box, there is a ruler displaying the current unit of measurement, helping you interpret the imported drawing as either metric or imperial units can be set. Based on the unit of measurement selected from the dropdown list, the program dynamically displays the size. It's a good idea to look for an element whose size you know or can estimate. For example, this could be a 900 mm door or a 300 mm wall thickness. Using the ruler, you can easily deduce which unit of measurement is correct.

- Import the file by clicking the OK button.
- In the dialog that appears, click on the Automatic option.



- Let's verify that the imported geometry is the correct size.
- To do this, select the Ribbon / Annotate / Measure / Distance command, or initiate the command from the quick toolbar.



Measure the width of the floor plan by clicking on two opposite points.

		dpoint Length 6616.4 mm Inclination 0°
	.↓	
Info about distance		×
Measured distance Measured distance in x Measured distance in y	6616.4 mm 6616.4 mm 0 mm	
Copy to clipboard		Close

If you selected the incorrect unit of measurement, resulting in incorrect dimensions, you can undo the import and repeat it with the correct unit of measurement, or you can use the Scale command in the Ribbon under Edit / Move / Scale.

1.3.2. Setting Up Levels

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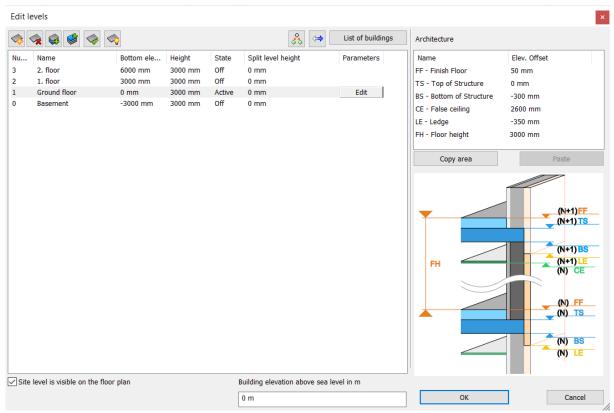
The level dialog determines on which level the new elements will be created.

You can open the Floors dialog from the Ribbon or the Status Bar. It's important to know that every project works with levels.

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	•	Previo	IS	_				🚺 Left	🔳 Ba	ack	Dave
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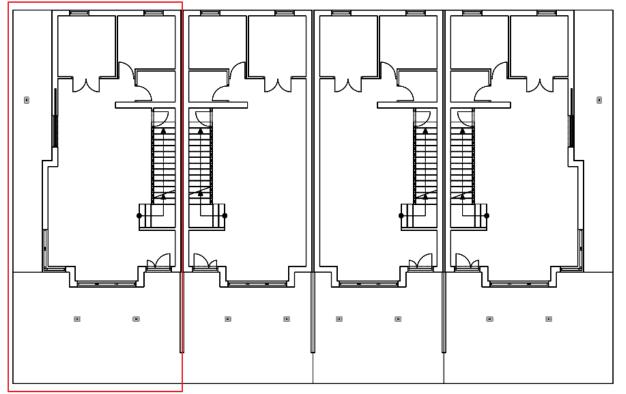
- Locate the Floors on the Status Bar and click on it.
- Make sure that the floor named "Ground Floor" is in active state.





• Close the dialog box by clicking the "OK" button.

Let's start drawing the selected building.



1.4. Walls

In this section, we will create the ground floor exterior walls, partition walls, and openings. Then, we'll create the floor and ramp based on the imported drawing. ARCHLine.XP generates the 3D BIM model simultaneously as the work progresses on the floor plan.

1.4.1. Setting Wall Properties

When starting a new project, the program creates default layers. Architectural and drawing elements we create are automatically assigned to the layer specified in the default style for that element type. For example, walls are assigned to the "Wall" layer, slabs to the "Slab" layer, and columns to the "Column" layer.

1.4.2. Drawing Exterior Walls

First, let's create the walls on the ground floor.

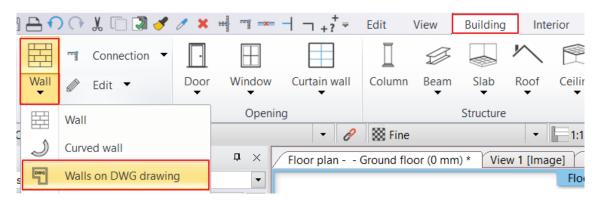
You can create walls in various ways, either completely freely or based on existing drawing content. If starting from scratch, the following tools can be used for wall drawing:

- Straight Wall
- Curved Wall
- Rectangular
- Spline

After initiating the wall command, the properties will display the saved wall styles to choose from. In this case, they may not be needed, as we will be drawing the walls based on the DWG file.

In this case, we will use the DWG file to convert 2D shapes into actual BIM walls. Use the "Walls on DWG drawing" command to convert the floor plan CAD lines into 3D conceptual architectural walls.

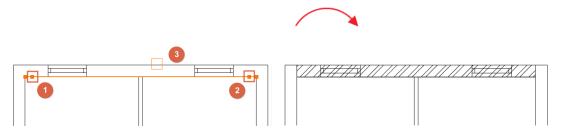
• Select Building / Wall / Walls on DWG drawing tool.



Click near the starting point (1) and the endpoint (2) on the inside of the wall, then move your cursor to the other side of the wall (the wall thickness) (3). The wall will appear in the 3D view.

Note:

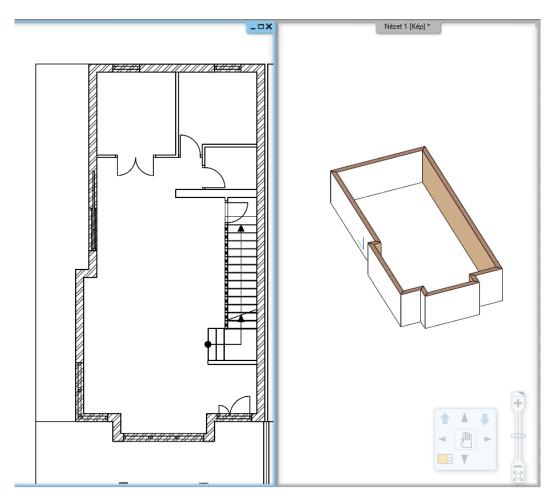
It's important that the insertion point is closest to the visible endpoint for both the starting and ending points; otherwise, the new wall may align with unintended features such as window endpoints. For accuracy, consider zooming in on the specific drawing area using the mouse scroll wheel.



· Draw all the main walls using this method.

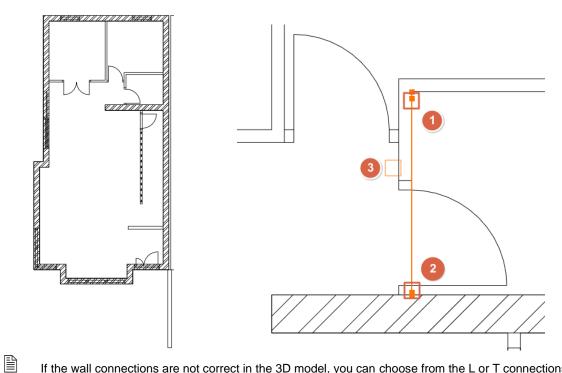
The result:





1.4.3. Drawing Partition Walls

• Let's continue with the partition walls.



If the wall connections are not correct in the 3D model, you can choose from the L or T connections in the ARCHLine.XP top toolbar.



11 11 11

T-Connection

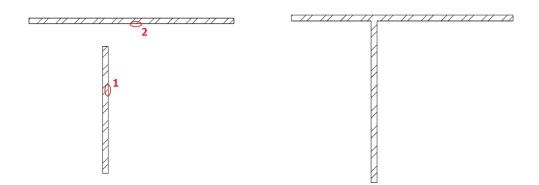
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A T-connection on the first selected element removes unwanted segments or adds missing wall segments to reach the intersection point with the second element. The second selected wall will not be modified.

Let's take an example where the T-connection adds a missing section of the wall to reach the intersection point with the second wall.

Draw the following walls according to the example below:

• Click on the icon in the toolbar. Click on the wall you want to modify, and then on the second wall.



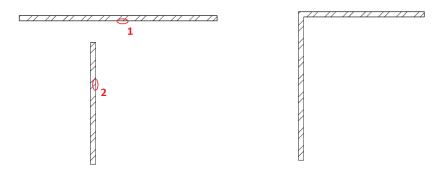
The shorter wall has been extended with the missing wall section.

Undo these steps by clicking on the icon

L-Connection

The L-connection aligns elements with each other, shortening or lengthening walls so that the selected points coincide with the endpoints.

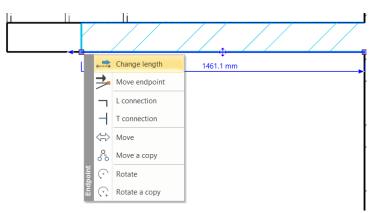
Click on the icon in the toolbar, then select the first wall with one click and then the second wall with another click.



An L-connection has been established between the walls.

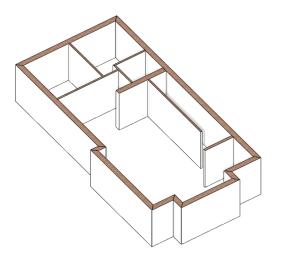
Wall Length Modification

If any of the walls do not reach the endpoint visible in the DWG, you can extend it by clicking on the wall endpoint and choosing the **Change length** command.



• As the final step in wall drawing, select the "*Bright White*" material for the exterior of the walls. Highlight all the walls on the floor plan using the selection rectangle or right-click on the Wall command and choose the "*Select All*" option. Then, in the Properties panel on the left, set the "*Finfish Face: Exterior*" to "*Bright White*."

At this point, the 3D model should look like the following:



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1.4.4. Using Filters

We will move the load-bearing walls and partition walls to separate layers for better project clarity. To do this, we'll use filters.

Select the Edit menu / Select menu from the Status Bar, then choose the Filter command.

• Under disciplines, select Architectural Elements, then choose Wall from the properties. For the operation, set it to select walls with a maximum thickness of 150 mm. After accepting the dialog, the program will select all partition walls.

Filters								>	×
Discipline:									
Architectural elements V Vall Door Window Curtain wall Slab Column Beam Roof Stair Ramp Ralling Room and area Plinth Surveyed room Group	Group Group Group Gommon properties General properties Calculated values Pset_WallCommon (10) Quantities (13) ARCHline XP Common (5) Name All elements Height Total thickness Finish Face Int. material Finish Face Int. material Slant angle Base Elevation Display tiling on the exterior side Display tiling on the interior side	->	Filters Filter New Types Wall	Delet		All Dependion	Import Save as Value Value	Export : global	
	From existing object		 All filter condition At least one filter 		must be true	к		Delete Delete All Cancel	

• In the side menu, properties, change the layer of the partition walls to the Wall - Partition Wall layer.

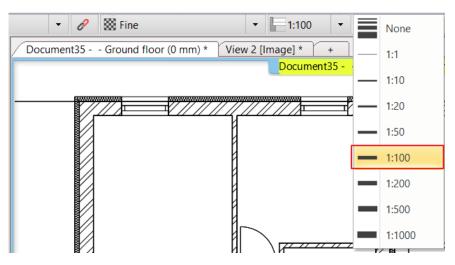
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Seneral		
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Height	Raster image	
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Constrains	Roof(1)	
Absolute elevation	Room survey	
Total thickness	Slab	
	Slab(1)	
Slant angle	Solai	
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Same materials	Stair	
Finish Face: Interior	Stair(1)	
Finish Face: Exterior	strada	
Body material	Terrain	
Disallow wall joins	Text	
Colouring on the floor plan	Text - Annotation	
Mirroring	Text - Notes	
Skip this wall over room bounding	Title box	
Structural properties	Wall - Load-bearing wall	
* Attributes of the Finish Face: Inte	Wall - Load-bearing wall(1)	
Different	Wall - Partition wall Wall - Partition wall(1)	
	Wall - Partition wall(1) Wall02	
Properties Design ce Project n.	zretino marciapiedi	

1.4.5. Displaying Line Thickness on the Screen

As a side note, let's take a look at how to display line thickness on the screen.

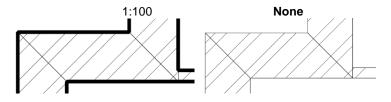
In the **View Control Bar**, by clicking on the **Line Thickness Scale**, you can choose from various line thickness size ratios. Setting the line thickness scale applies to the screen and does not affect printing settings. For example, if you plan to print the design at a 1:100 scale later and want to see the corresponding line thickness on the screen, select the 1:100 scale.

• Set the line thickness scale to: 1:100



"None" Line Thickness

The "None" line thickness means that the program displays line thickness on the screen with the smallest 1-pixel thickness, which essentially turns off line thickness. This setting is particularly useful for floor plan editing, as it enhances the visibility of endpoints and other special points, making precise editing easier.



1.5. Openings: Doors and Windows

In this section, we will go over the essential information for inserting doors and windows into walls.

The method for creating openings is the same for doors, windows, niches, and recesses. There is a strong connection between walls and openings in the program. The opening (with a few exceptions) is always part of the wall, which means that if you move the wall, the associated openings move with it.

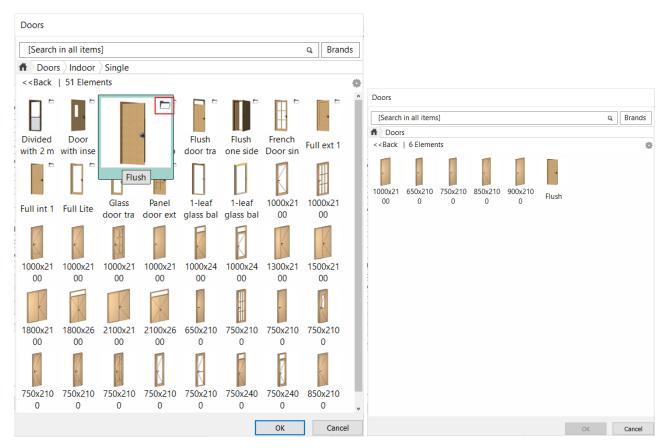
1.5.1. Variants

For openings, there is an option to create variants. Variants are elements that differ slightly from similar elements.

• Select Ribbon / Building / Properties / Opening / Door command or right-click on the Building / Door command, and choose its properties.

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Wall		•		Openii				Structure	e
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In the dialog that appears, click on Flush style. In the door dialog, you can see that there is a folder icon in the upper-right corner of doors with different styles. This indicates that you can choose from multiple variants of doors in that particular style. Clicking on the door will display these variants.



 Go back by clicking the Cancel button and create a custom variant. Change the door width to 850 mm, then click the Create Variant button.



in parameters	Width:	850	mm ~	Redraw
Representation	Height:	210) mm ~	
Reveal, void, niche, cavity	Thickness:	100	mm	
lasic geometry				
Outer handle	Hide opening and make a void		·····	
nner handle	Distance from wall line	0 mm		
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ccessories	Outer sill height:	0 mm		
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uilt-in details				
	Effective clear height	2025 mm		
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reate variant	Draw Order	8- Bottom-most	~	
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1.5.2. Placing doors

Let's place the doors based on the DWG drawing. The width of the doors is determined by the DWG drawing, and each door is 2100 mm high.

You can set the door properties in advance under the Ribbon Properties tab or use predefined door styles that appear on the left after the command is initiated.

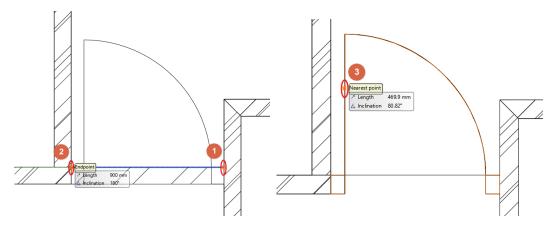
- Modify the Distance from wall line to 0 mm since these doors will be inserted into 100 mm partition walls.
- Change the door material. Select the "Wood-paldao" material from the material library.

Main parameters	Width:	Π	850 mm	~	Redraw	N.
Representation	Height:		2100 mm	~		
Reveal, void, niche, cavity	Thickness:		100 mm			
Basic geometry						
Outer handle	Hide opening and make a void			^		
Inner handle	Distance from wall line	0 mm				CARLES STATE
and additie	Sill height	0 mm				1000
Accessories	Outer sill height:	0 mm				
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	Effective clear height	2025 mm				
Built-in details	Colour					
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BIM Parameters	Normal d		1		ок	Cancel

• Close the dialog box by clicking the OK button.

Let's draw the door based on the original content of the DWG drawing.

- Select Ribbon / Building / Door / Door by Two Points command.
- Determine the first and second points of the door with consecutive clicks.
- Move the mouse to set the direction of the door opening and then click to fix the orientation.

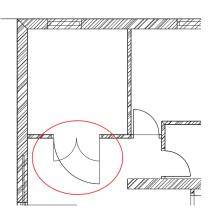


• Use this method to place the remaining doors.

Now, let's replace the entrance door with another interior double door.

Double Door

- To modify a door that was previously placed, select it and choose the pencil icon from the Floating menu to open the door's properties.
- Click on the button below the preview image that indicates the door type to open the library.
- Select the "Flush Internal Double" door and click "OK."
- The program will ask if you want to keep the previously set dimensions. In this case, choose "Yes" as we are following the dimensions from the DWG drawing.
- Change the door thickness to 100 mm and click "OK" to close the dialog.



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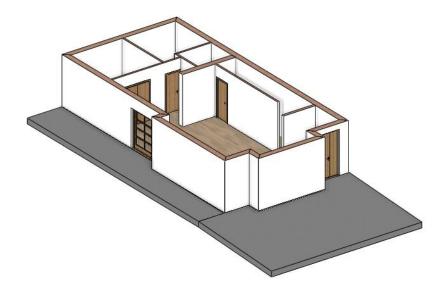
Front Door

- Select the front door and choose the pencil icon from the Floating menu to edit its properties.
- Click on the button below the preview image that indicates the door type to open the library.
- Choose the "Flush one side fixed" door and click "OK."
- The program will ask if you want to keep the previously set dimensions. In this case, choose "Yes" as we are following the dimensions from the DWG drawing.
- Change the Distance from wall line to 100 mm.

Sliding Door

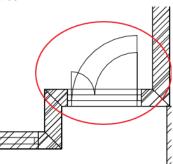
Finally, let's place a sliding door.

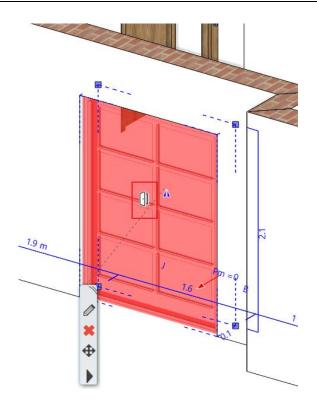
- Select the Ribbon / Building / Properties / Opening / Door command.
- Click on the button below the preview image that indicates the door type to open the library.
- Select the "Glass sliding in 1" door and click "OK."
- Modify the Distance from wall line to 100 mm.
- Click "OK" to close the dialog.
- Finally, place the door on the interior surface of the wall using the Ribbon / Building / Door / Door by Two Points command.



Door Opening Animation

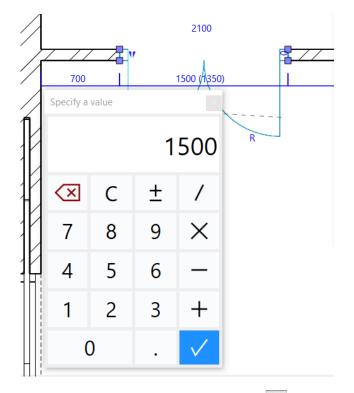
In the 3D view, you have the option to show how doors open. After selecting the door, clicking on the door opening animation icon will display the animation.





Calculator

The built-in calculator allows you to calculate various formulas directly at the dimension label.



The calculator can be turned on and off in the Settings / Units and Angles menu.

Calculator in dimensioning tool

Use a calculator to enter the dimensions



1.5.3. Windows

Now let's place the windows.

- Right-click on the Ribbon / Building / Window command and select Properties.
- In the default properties dialog, open the library and choose the window that is horizontally divided into three equal parts: "Divided frame 1x equal".
- Set the thickness to 100 mm, height to 2100 mm, and the sill height to 0 mm.
- Choose the same material for the frame that we used for the doors: "Wood Paldao."

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ain parameters	Width:	1200 mn	1 ~	Redraw	ſ
epresentation	Height:	2100 mn	ı ~		at the
eveal, void, niche, cavity	Thickness:	100 mm			T
asic geometry]				
uter handle	Hide opening and make a void				設備
ner handle	Distance from wall line	100 mm			
	Sill height	0 mm			
cessories	Outer sill height:	0 mm			
erior and exterior sills	Colour				
ilt-in details	Line type	Simple Line	~		
	Line weights	0 mm	×		
ormation	Draw Order	8- Bottom-most	×		
	Reference axis	Side	~		
	Distance from wall corner	600 mm			
eate variant		Lining and architrave			
	-	Dimension, consignment			
		Thermal parameters			
	Ratio (Illumination area)	100%			
	Ratio (Ventillation area)	10070			
	Material	Value			
	Solid	Wood-paldao			
	Glass material	Glass26			
	External frame material	Default material			
	Internal frame material	Default material			
				Divided frame 1x equal	

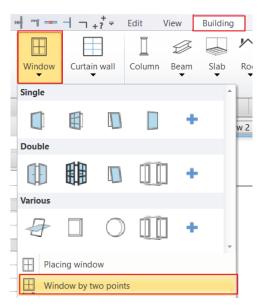
• Finally, set the same material for both the window's exterior and interior sills in the Interior and Exterior Sills tab.

1ain parameters		^	Redraw	
Representation	Profile cross-section	Edit		
eveal, void, niche, cavity	Sill nosing (D)	20 mm		
eveal, volu, niche, cavity	Depth (W)	320 mm		
isic geometry	Distance measured from the window to wall edge	200 mm		
uter handle	Sill thickness (H)	20 mm		
uter nanule	Extension	40 mm		
ner handle	Sill slope in % (min:0, max:10%)	5.00008%		
ccessories	Material	Wood-paldao		
ccessories	✓ Interior sill			
terior and exterior sills	Profile cross-section	Edit		
uilt-in details	Sill nosing (D)	20 mm		
	Depth (W)	120 mm		
formation	Distance measured from the window to wall edge	100 mm		
	Sill thickness (H)	20 mm		
	Extension	40 mm		
reate variant	Sill slope in % (min:0, max:10%)	0%		
	Material	Wood-paldao		
		erior sill		
	Reference point	S	1	
			Divided frame 1x equa	al

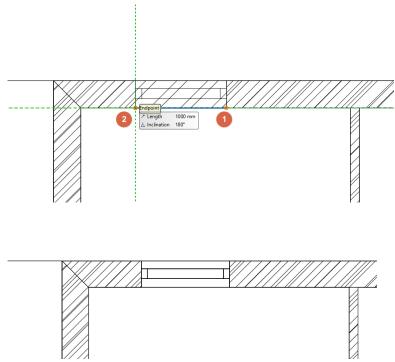
• Close the dialog with the "OK" button.

Now you can draw the windows based on the DWG drawing with the appropriate properties.

• Select the Ribbon / Building / Window / Window by Two Points command.



• Select the two corner points of the window by clicking on the interior surface of the wall.



• Place all the other windows using the same method.

Helpful tip: The interior and exterior materials of the window can be changed independently.

- Select any window in the house.
- Enter the window settings and set the materials in Main Parameters / Material.
- Choose "Beech" for the Internal frame material.
- The change will immediately appear in the window preview.

ain parameters	Width:		1000 mm	~	Redraw	
presentation	Height:		2100 mm			
veal, void, niche, cavity	Thickness:		110 mm			
sic geometry						
ter handle	Hide opening and make a void					
er handle	Distance from wall line	100 mm				
a nunue	Sill height	0 mm				
essories	Outer sill height:	0 mm				
rior and exterior sills	Colour					
for and exterior sins	Line type	Si	mple Line	~		
-in details	Line weights	0 mm	•	~		
mation	Draw Order	8- Bottom-most		~		1
	Reference axis	Side		~		
	Distance from wall corner	600 mm				
		Lining and architrave				
ite variant		Dimension, consignment				
		Thermal parameters				
	Ratio (Illumination area)	100%				
	Ratio (Ventillation area)	100%				
	Material	Value				
	Solid	Wood-paldao				
	Glass material	Glass26				
	External frame material	Default material			and the second second second	Summer Su
	Internal frame material	Beech			and a state of the	
				 _		
					Divided frame 1x e	qual
BIM Parameters	No sty				ок	Cancel

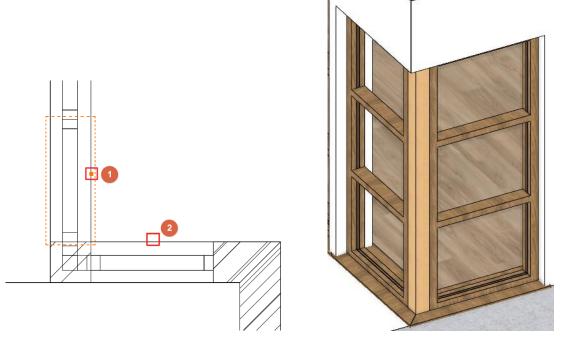
• Undo the modification.

1.5.4. Creating a Corner Window

Standard windows can be combined in any combination to form a corner window.

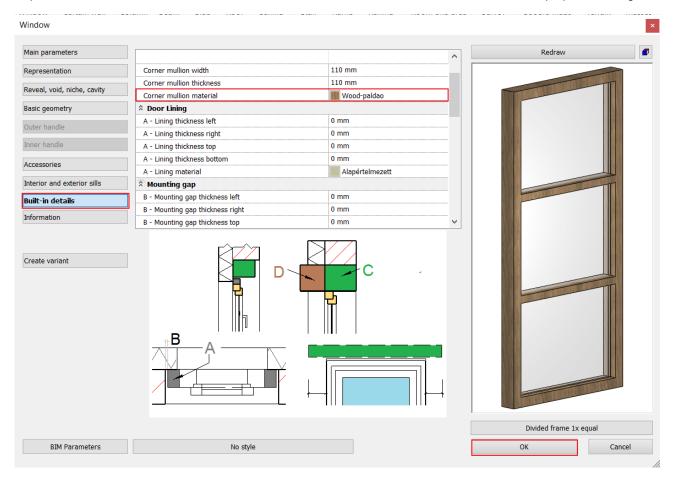
When creating a corner window, place two windows on both sides of the corner where two walls meet.

Use the **Join two opening on wall corner** command from the **Ribbon / Building / Window / Windows on wall corner** menu, then select the first and second windows with a single click each.



ARCHLine.XP automatically creates a mullion element between the two windows. Click on the windows to see which window the program has assigned the mullion element to.

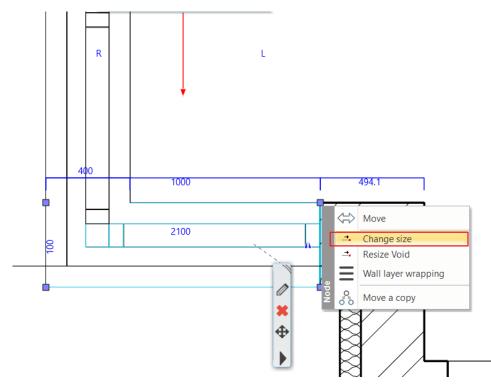
Replace the element's material with "Wooden Paldao" under the Built-in details tab in the window properties dialog.



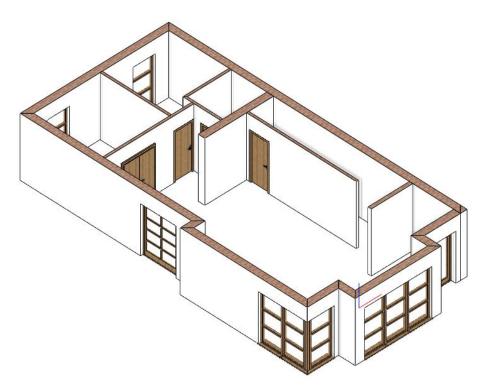
Finally, let's modify the width of the two connected windows to match the original drawing.



- Select one of the windows.
- Click on the blue corner point marker and choose the **Resize** command.
- Adjust the size to match the original drawing, where each window is 1000 mm wide.
- Repeat these steps for the other windows.



After placing all the windows, the result should look like this:



1.6. Slabs and Ramps

1.6.1. Slab tool – Creating floors

After completing the wall drawings, let's continue our work by creating the slab. First, set the parameters you will use for this task.

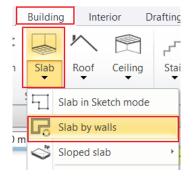
- · Before creating the slab, right-click on the Slab Tool in the Ribbon / Building menu and choose its properties.
- Modify the slab material. Select a new material for the slab's upper surface by clicking on the first material.
- In the dialog that appears, you'll see the material library with materials used in the current project (only the materials used

so far). Here, you also have the option to access all of the program's materials. Click on the home icon 1, and look for the "*Parquet / Strips*" material category, then choose "*parquet_rovere_03.*" Select the material by clicking on it, and then close the dialog with "OK."

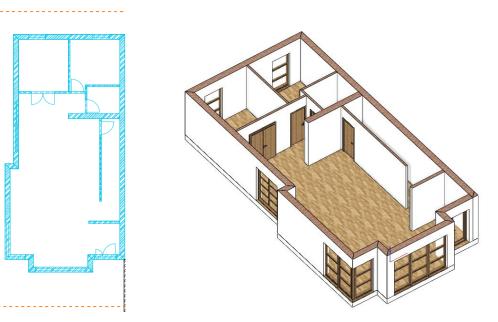
- The second material determines the side material of the ceiling. Click on it and change it to "*Bright White*," which is the same as the one used for the wall side. In the library, click on the home icon, type "bright" in the search field, and press Enter. Choose the "*Bright White*" material.
- Close the slab dialog with the **OK** button.

The settings are now ready, and you can start creating the slab.

- Activate the floor plan window.
- Select the Ribbon / Building / Slab / Slab by walls command.



- Select the walls on the floor plan using the selection rectangle.
- Press Enter, and the slab is now created.

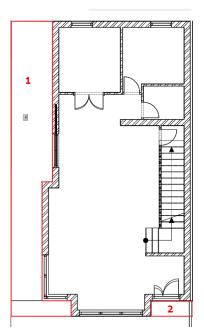


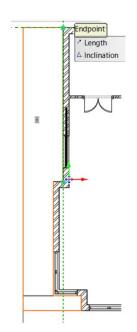
1.6.2. Slab Tool – Creating a Terrace

Next, we will create a terrace using the slab tool.

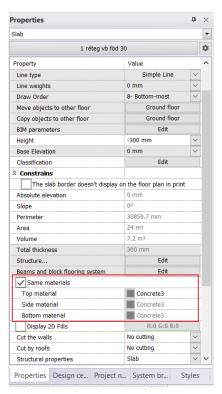
- First, enter the Layer Manager and activate the Slab sheet. Now you can see the terrace on the left side of the building (1) and the ramp (2) in front of the entrance.
- Draw the terrace on the left side using the Ribbon / Building / Slab / Slab in Sketch mode command.

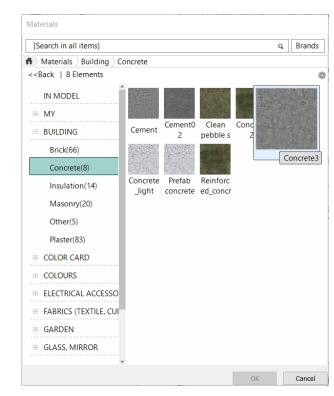






 Select the created slab by clicking on it. In the Properties tab that appears on the left, enable the "Same Materials" option, and set the material to "Concrete3" for the new terrace.





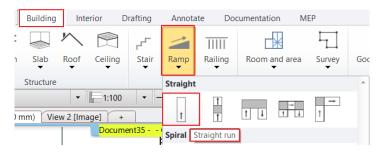
• Select the created slab, and from its local menu, choose the "Draw as" command. Draw the second slab.



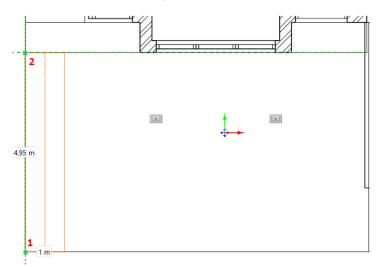
1.6.3. Creating a Ramp

You can create a ramp conveniently using the Ramp tool, especially for situations like the entrance to the building.

• Start the ramp command from the **Ribbon menu / Building / Ramp** commands, then choose the very first ramp type, the **Straight run** from the **Straight category**.

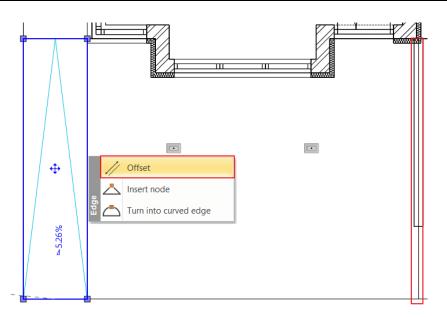


• Place the ramp by specifying the lower (1) and upper (2) points.



• Click on the ramp, then right-click on the right edge marker, and choose the Offset command to adjust the width of the ramp to reach the opposite wall.





- Click on the ramp, then click on the small triangle-shaped marker next to the Move marker. This will open the Elevation value dialog.
- The top of the ramp is at 0 meters, and the bottom starts at -0.3 meters. First, select the second option: "Base level is fixed, inclination angle or top level is editable" (1), then enter the arrival height of the ramp (2):

Elevation value		×
Horizontal Base level is fixed, inclination angle or top level is editable Top level is fixed, inclination angle or base level is editable Definition of base level and top level, inclination fixed	1 Slope	0%
 ۸	2 Top Bottom	0 mm
	- - Height	0 mm
	ОК	Cancel

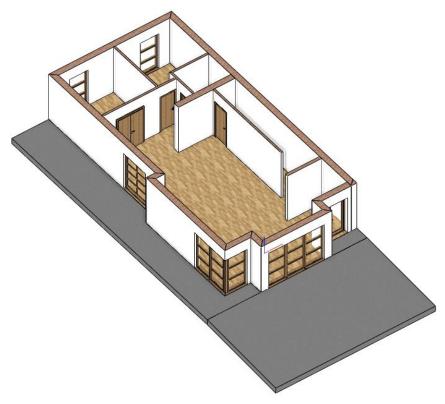
• Next, choose the third option: "Top level is fixed, inclination angle or base level is editable" (3), and then enter the lower value (4):

Elevation value				×
Horizontal Base level is fixed, inclination angle or top level is editable Top level is fixed, inclination angle or base level is editable Definition of base level and top level, inclination fixed	3	Slope	5.26176%	%
	1	Тор	0 mm	
4		4 Bottom	-β00 mm	
, <u>А</u>		Height	0 mm	
		ОК	Car	ncel

- Close the dialog box with the **OK** button.
- Click on the ramp and in the menu that appears, click on the pencil icon.
- This will open the Properties dialog, where you can change "Prefabricated concrete" to "Concrete 3".

operties		
Ramp		Ŧ
Concrete	ramp	¢
Property	Value	^
Line type	Simple Line 🗸 🗸	
Line weights	0 mm 🗸 🗸	
Draw Order	8- Bottom-most 🗸	
Move objects to other floor	Ground floor	
Copy objects to other floor	Ground floor	
BIM parameters	Edit	
Classification	Edit	
Constrains		
Base Elevation	-300 mm	
Upper level elevation:	0 mm	
Absolute elevation	-300 mm	
3D creation		
Waist slab material	Concrete3	
Thickness	300 mm	
Connection to the bott	tom slab	
😹 Vertical		
Waist slab depth	100 mm	
Waist slab height	100 mm	~
ОК	Cancel	

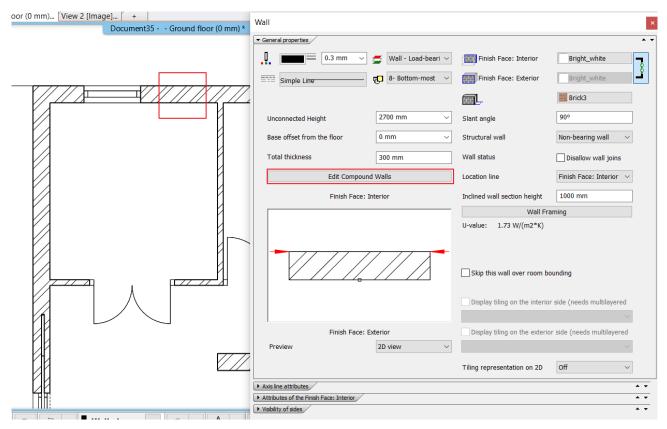
The result:



1.7. Layered Walls

We will transform the drawn walls into layered structures so that we can add an insulation layer.

• Select one of the main walls on the floor plan, then go to its properties. In the dialog box, choose the Edit Compound Walls menu.



- In the Edit Compound Walls dialog, click the 💻 plus button to add a new layer.
- Change the thickness of the top layer to 100 mm (1), then click on the *Stone Wall* in the **Hatching** section, and select the **Edit** option (2). In the Properties dialog, click on the Stone Wall under **Pattern** (3), then choose the *Thermo-insulation* folder (4), and the Thermo-insulation hatch (5), then accept the settings with the OK button (6).

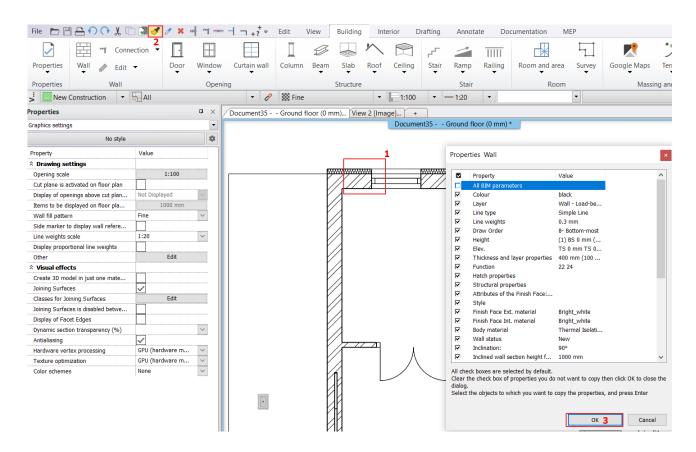
	kness 1.30 W/(m2*K)	400 mm										
			Fini	sh Face: Exterior		La	ayers in exist	ing or demoli	shed phases		~	
er	Function	Material	Thicknes	s Base offset	Height	Fill pat	ttern Name	Layer er	Visible i	n Phase		
-	Core layer 🛛 🗸 🗸	Brick3	100 mm	1 TS 0 mm	(1) BS 0 mm	Sto	~ 2	Pre	~ 🗸	Existing	\sim	
	Core layer	Brick3	300 mm	TS 0 mm	(1) BS 0 mm	Stonew	vall	Previou	· 🗸	Existing		
pert	ies		×	Hatch properties								
Hato	h		_	Preferred - Thermo-is	solation							
	No style	e	ŵ	Preferred	^							20.20
Pro	perty	Value	^	Strip							g a de a de)°)°
	eneral			Stonewall								-5,°°;
	blour			Concrete	ron	Strip	Stonewall	Concrete	Concrete	Concrete-i	Sand	Pebble
Lir	ne type	Simple Line	v ir	Concrete-iron				ī		111	~	
	ne weights	0 mm	~	- 🖾 Sand						1/ /,	8.8	
<u>х</u> н	latch		horrowed.	Pebble			6666			- / / /	. 82	
Ha	itch	Pattern	~	Thermo-isolat	tion 4	Terra	Thermo-isol	Hydro-isol	Isolation	Natural Soil	Concrete	Concret
Pa	ttern	Stonewall	3 "		n		ation	11:11:	XXXXX	ISO8048	old	ISO
An	igle	45°	~	Isolation	09049			3111.		1& 7\$,	A V	
Ha	tch spacing	80 mm	~	Concrete old	506046			4/34		/18//	125	\sim
Da	ish length	80 mm	\sim	Concrete ISO		Glassed	Adobe wall	Reinforced	Plastic and	Reinforced	Dirt wall	Natural S
	Background fill colour			Glassed concr	rete ISO	concr	1111.	concrete	non iron	concrete old		old
Ba	ckground fill colour			Reinforced co	ncrete ISO			'// /,	8,8			
Tr	ansparency			Plastic and no			·////,	- ///	, 8C			
^ H	latch boundary			Reinforced co	ncrete old	Filling	Iron ISO	Termész	Beton_régi	Beton_IS	Üvegbeto	Vályogté
Sh	iow hatch boundary			Dirt wall Dirt wall Natural Soil o	Id 🗸	ISO8048				11:11:	< × × × × :	
Co	lour									S////		
	ne type	Simple Line	~	Move to another category						1:1/21.	\times	
Lir	ne weights	0 mm	× ×	Preferred	\sim	<						>
	OK	Cancel		AutoCAD style hat	choc					Save t	o global Ten	nplate

• Change the material of the insulation layer to Thermal Insulation, set the functions of the layers to Insulation / Air, and then accept all dialogues with the OK button.

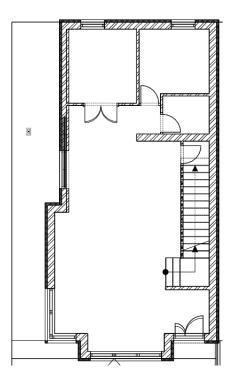
										_			
Edit Corr	pound Walls												×
Total thic U-value:	kness 0.34 W/(m2*K)	400 mm											
			Finish Fac	e: Exterior				Layers	in existing	g or demolishe	ed phases		\sim
Layer	Function	Material	Thickness	Base offset		Height		Fill pattern	Name	Layer en	Visible in	Phase	
1<	Insulation / Air \sim	Thermal Isolation	100 mm	TS 0 mm	\sim	(1) BS 0 mm	\sim	Th 🗸		Pre 🖂	\checkmark	Existing	\sim
2	Core layer	Brick3	300 mm	TS 0 mm		(1) BS 0 mm	1	Stonewall		Previou	\checkmark	Existing	
			Finish Fac	e: Interior					Laver	line propertie	s		
Collisio	Layer line properties Image: Sector and												
									OK			Cancel	
The result:													
	//_//	<u>Y_</u> /		<u> </u>	_					1//_/	1/1		

ARCH INE.

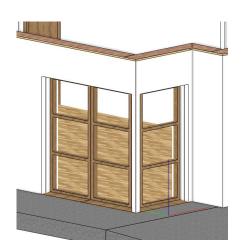
 Copy the layered structure to all the other walls. Select the layered wall, then choose the Copy Property feature from the quick access toolbar. In the pop-up properties dialog, don't change the selection of properties, just accept with the OK button.



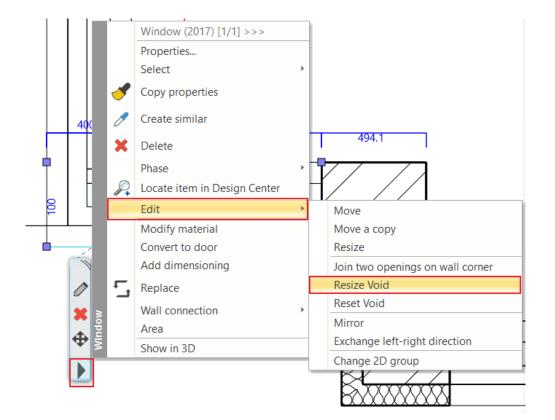
• Select all the external main walls, then press Enter to accept the command.



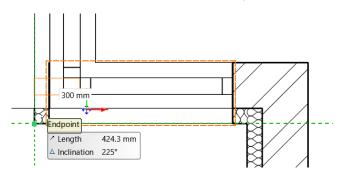
• Switch to the 3D view and zoom in on the corner window. The insulation wall layer we added has not been cut out by the program, so you will need to resize the void.



• Activate the floor plan view. Select one of the windows, and from the local menu, choose the Edit, Resize Void command.



• Modify the width of the void to reach the edge of the wall.



• While still in the command, repeat the resizing for the other window.



1.8. Creating stairs

1.8.1. Placing the stair

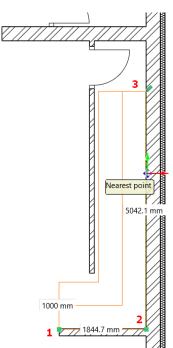
• Activate the floor plan and make sure the Ground Floor is active.

We will place the stairs on this level.

- Open the **Ribbon / Building / Stair** command. Here you will find the tools needed to create and edit stairs.
- Start the Building / Stair / L form + landing command.

Once the command is started, the Property panel on the left displays the stair styles used previously. You can also use these styles in your work.

Properties		ф.	>
	Normal stair	1	Q
Styles			
🔀 Concrete stair -			
🖂 Concrete stair -			
🖂 Glass stair - stri	nger support both sides		
≤Normal stair			
⊠Normal stair + a	nnotation		
⊠Wooden stair - :	steps and riser		
🖂 Wooden stair - :			



- Before placing the stairs, modify its reference point using the Space bar or set it in the menu above so that the "At left side" option is visible.
- Place the stairs with three points. Specify the starting point (1), the break point (2), and finally the endpoint of the stairs (3).

1.8.2. Modifying the Placed Stair's Properties

Let's modify the properties of the placed stairs. To do this, click on any part of the stairs and select the pencil icon from the floating menu.

• After the Stair dialog appears, modify the following values:

Stair				×
Stair Calculator	Step properties	Regenerate		
General properties	🗼 Г Н = 3000 mm 🗎	✓ Take the floor height		
Support	ر المربح 2h + w = 675 mm 2	600 m 640 m		
Step geometry	↔ w = 300 mm	260 m 370 m		
Representation on the floor above	h = 187.5 mm	140 m 190 m		
	1257 n = 16 🖬 3			
	18 n1 = 3 4	n2 = 13		
	Step geometry			
	1200 mm 6	50 %	8	
	1824.7 mm 🗎 4800 mm 🗎	0 mm		
	4800 mm 🗎 7	2		
	90 °			
		Rise/Tread 5/8		
			1.	
BIM Parameters	Normal stair	(M		OK Cancel

Floor height (1)

• Activate the "Take the floor height" option so that the staircase's arrival height value is automatically overridden to 3000 mm according to the project.

Action and entry parameters (2)

We do not change these values; the software automatically calculates them based on the specified height and the number of steps. The staircase is considered ergonomic if these values fall within the minimum and maximum values shown on the right side. If the values exceed the limits, the software displays them in red. The software allows for the placement of a non-ergonomic staircase, leaving it up to the designer to decide whether to adjust the values or not.

Number of the steps (3)

The number of steps is calculated based on n1 and n2 values.

- n1, n2 (4): For a winded staircase, n1 and n2 determine the number of steps on the straight section.
- Set the number of steps to n1: 3 steps and n2: 13 steps.

Staircase termination (5)

You can set whether the last step of the staircase is at the floor level (lower illustration) 🗾 or the last step itself forms

the floor level (upper illustration).

Width (6)

Here, we can adjust the width of the staircase, which is currently set to 1200 mm.

Side parameters (7)

These two values indicate the lengths of the staircase arms. Change the length of the second step to 4800 mm. To do this, unlock the padlock.

Path (8)

In this case, the value is set to 50%, so the path aligns with the center of the staircase.



• Go to the General Properties tab and change the 2D representation of the staircase above the section line to dashed, then click OK to accept.

II Stair					×
Stair Calculator				^	
	* General				
General properties	Layer	Stair	~		
Support	Colour				
Support	Line type	Simple Line	~		
Step geometry	Line weights	0 mm	~		
	Draw Order	8- Bottom-most	~		
Representation on the floor above	Railing		Anne and a second		
	Railing automatically added to left side				
	Regenerate				
	Railing	Acrylic railing	\sim		
	Railing automatically added to right side				
	Regenerate				
	Railing	Acrylic railing	\sim		
	Representation in 2D				∥ ◀┼┼┼┼┼┼┼┼ ┝ ╡╌┐ │
	Nosing:	Along the stair	\sim		
	Nosing line-type	Dashed	\sim		
	Section line	Dotted above the section line	\sim		
	Partial line-type	No section line			
	Cutting elevation	With section line Dotted above the section line			
	Cutting line direction	Contour-line above the section line			
	Parallel distance	Contour-line below the section line			
	Draw walking line	∠			
	Walking line arrow	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			~	1
BIM Parameters	Normal stair				OK Cancel

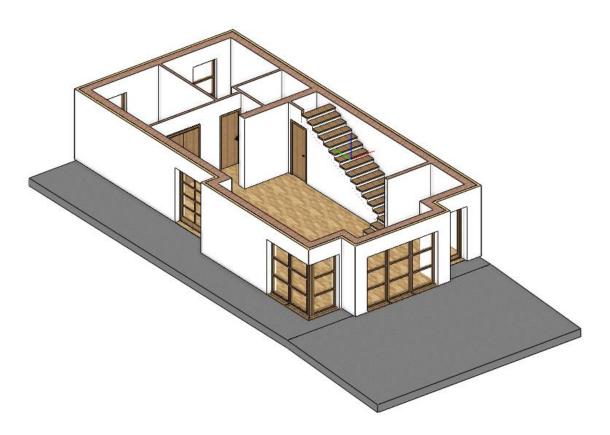
The staircase is completed, but it did not cut the adjacent wall.



- Go back to the staircase properties, and select the Support tab. Modify the Cut the walls option to "Own floor and below." This way, the staircase will cut the top of the wall.
- Finally, change the material of the tread to the same one used for the doors: "Wooden-paldao."

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 D	: 150 mm E: 200 mm C: 300 mm		
	Base Elevation		0 mm	
	3D creation Cut the walls Waist slab material		On own 🗸	
	Construct the landing like a sla	b	All floors	
	✓ Waist slab	Thickness Thickness of landings	No cutting On own floor and below	
	Stair stringer			
	√ Tread	Material	Wood-paldao	•
		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	
		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 🗸	
BIM Parameters	Normal stair	- 16 Q		OK Cancel

• After making the adjustments, accept the changes by clicking the "**OK**" button. Use the 3D hammer tool to rebuild the 3D model so that the wall cutting takes effect.





Workshop 2: Multi storey building, working on second floor



2. Workshop: Multi storey building, working on second floor

In this workshop we will look at the design of levels and the relationship between layered walls and slabs. We will also create staircase symbols and edit railings on the floor plan. Before we move on, watch the tutorial video Multi storey building, working on second floor:

2.1. Creating the first floor

ARCHLine.XP automatically creates multiple levels when you start a new project. You can import or create the contents of floors. These floors are ready to use and can be fully customized, renamed, deleted; any number of floors can be added to create your own building structure.

This project requires the addition of a second floor. We need to implement these to create the content of the first floor:

- Copy ground level to the first floor,
- Clean up content,
- Modify the architectural elements.

2.1.1. Level management

Let's see how we can manage levels in ARCHLine.XP!

• The Level manager is located at the bottom of the status bar. If the 2D view is active, click on the Ground Floor name.

KRS	def GroundFloor	k.	~	1 1	
-----	-----------------	----	---	-----	--

• By default, the program creates 4 levels. Above and below these levels you can insert additional levels or delete them. You can copy or move them to another level with the commands on the right.

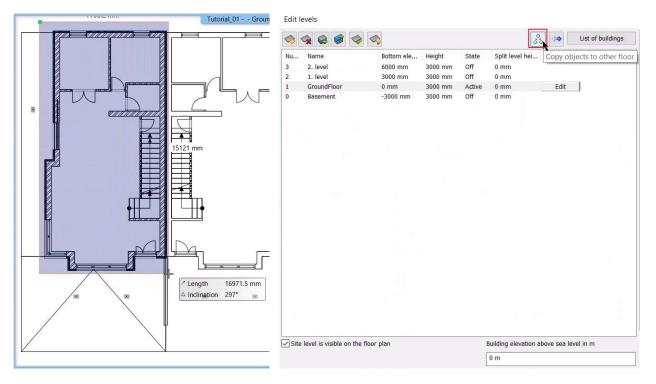
•	🤹 🤹 🛸 <	2			d	<u>%</u> (⇒	List of buildings	Építészet	
Nu 3 2 1 0	Name 2. level 1. level GroundFloor Basement	Bottom ele 6000 mm 3000 mm -3000 mm	Height 3000 mm 3000 mm 3000 mm	State Off Active Off	Split level hel 0 mm 0 mm 0 mm			Name FF - Finish Floor TS - Top of Structure BS - Bottom of Structure CE - False ceiling LE - Ledge FH - Floor height Copy area	Elev. Offset 50 mm 0 mm -300 mm -350 mm 3000 mm Paste (N+1) FF (N+1) BS (N+1) IS (N+1) IS (N+1) IS (N+1) IS (N+1) IS (N) FF (N) FF (N) IS (N) FF (N) IS
1.01	level is visible on the floo	r nlan		F	Building elevation	above sea leve	l in m]'	

2.1.2. Copying the ground floor to the first floor

To speed up the work, it is useful to know that you can easily copy and move items to other levels. What we have created on the ground floor in this project, walls and windows, will be copied to the first floor, and this is how we will create the architectural elements on the first floor.

• After selecting the floor plan, click the level dialog and select Copy to another level.





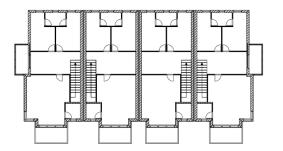
Then select the level to which you want to copy the selected items. In this project, this will be the 1st Level. OK, I accept.

Select floors				×
All buildings	Number	Name	B	
Tutorial_01 (1/4)	3	2. level		
	2	1. level		
	0	Basement		
				1
				Pseudo Copies
				Full copy
				Rectangle profile
				Polygon profile
				QK Cancel
				Cancer

• This completes our copy for the 1st Level.

These levels are completely separate and you can switch between them

using the Page Up and Page Down keys.





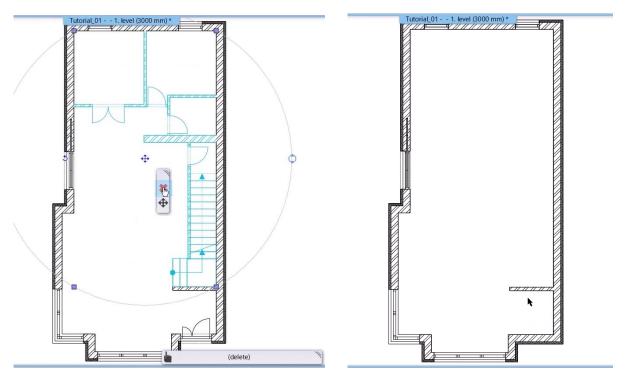
Architectural tutorial

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2.1.3. Removing unnecessary elements from the floor plan

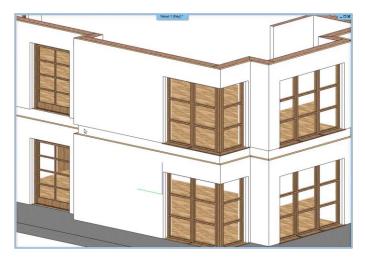
In the following we will modify the content of the first floor. We will remove the unnecessary elements (partitions, doors and stairs) and create new ones later.

- I'll select the elements by making a left-to-right rectangular selection. I will need this partition wall later, so I remove it from the selection by pressing Ctrl.
- I delete unwanted elements with X.



2.1.4. Restoration of the thermal insulation layer

In the 3D view you can see that the insulation layer is currently not correct, we want the insulation layer to meet the bottom plane of the slab.



To do this, we need to adjust the base height of the wall layer properties as follows:

 Go back to the floor plan, then select a wall you want to modify. In the local menu, click on the pencil icon to access the Properties dialog and select the "Edit Compound Walls" option.



neral properties			
0.3 mm	🗸 🗲 Fal - Teherhordó	✓ Finish Face: Interior	Bright_white
Simple Line	- R Bottom-most	✓ Finish Face: Exterior	Bright_white
			Thermal Isolation
Inconnected Height	2700 mm	Slant angle	90°
ase offset from the <mark>flo</mark> or	0 mm	Structural wall	Non-bearing wall \sim
otal thickness	400 mm	Wall status	Disallow wall joins
Edit Com	pound Walls	Location line	Finish Face: Interior $\ \ \lor$
Finish Fa	ce: Interior	Inclined wall section height	1000 mm
		Wall Fr	aming
- // //	// //	U-value: 0.34 W/(m2*K)	
		Skip this wall over room b	ounding
		Display tiling on the interio	r side
Finish Fa	ce: Exterior	Display tiling on the exterio	or side
Preview	2D view	~	\sim

• Currently, the top of the load-bearing layer is selected as the base offset of the insulation, and this will now be changed. Click on the arrow and select the Edit option.

Edit Com	pound Walls									
Total thick U-value:	ness 0.34 W/(m2*K)	400 mm								
			Finish Fa	ce: Exterior		Layers	in existing o	or demolis	hed phases	~
Layer	Function	Material	Thickness	Base offset	Height	Fill pattern	Name	Layer en.	Visible in	Phase
1	1 - Very low	Thermai Isolation	100 mm	TS 0 mm Edit	(1) BS 0 mm BS 0 mm	~ Th ~		Pre		Existing ~
			Finish F	rce: Interior						
			Finish Fa	ice: Interior			Layer li	ine proper	ties	
Collisio	n of layers with the			change to Align wit	Element, it stays aligned to	L. Co the w	0 mm	weight n		

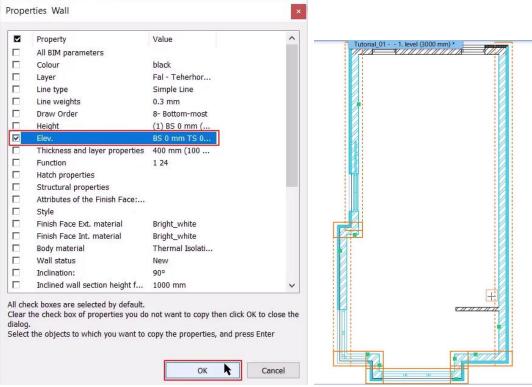
- The diagram on the right will help us in the following. Here you can see that the insulation layer is currently connected to the top of the load-bearing layer (TS). This must be adjusted to align the bottom of the insulation layer with the bottom of the load-bearing layer (BS).
- In the Wall lower level section, we select BS Bottom of Structure layer as the Bottom Bound. This way the bottom of the slab and the bottom of the insulation will run in one plane. Okay, I accept all three dialogs.

Its VARCHIIneXP Drav	Control of the second s	to a solution-most ∨ to a finite fin	h Face: Interior Bright_white h Face: Exterior Bright_white Thermal Isolation	Edit Info	
, value: 0.51 W/0	Height Parameters Wall - upper level Top Bound Story Top Offset Nominal Height	85 - 9ettom of Structure (Current + 1) 0 mm 3000 mm		1) BS	
 Fill pattern orientz Collision of layers Collision of layers Apply layer ending 	Well - lower level Bottom Bound Story Bottom Offset Base Elevation	BS - Bottom of Structure			
	Different Different Simple Line Vability of sides The reference line	e is invisible	ok Je	Cancel	

- Let's see the result in 3D. We want to do the same for the other walls.
- Go back to the floor plan. Select the wall on which you have successfully made the modification, and then select the Copy Properties command.

File 🛅 🗎	Quick dimension	Intersection points Serial in horizontal Edit View Building Interior Drafting Intersection points Serial in vertical Edit Generation Generation Arc Angle	Annotate Documentation Cabinet Switches/sockets
Properties		General dimensions	Interior dimensio
S Existi	ng State 🔹 🕎 All	▼ 🔗 💥 Fine 🔹 🔚 1:100 ▼ — 1:20 ▼	✓ Click to s
Properties		X Tutorial_01 1. level (3000 mm) * View 1 (Axonometric) [Image] * +	
Wall		✓ Tutorial_01 1. level (3000 mm)	*
	No style	Internal	
Property	Value		Wall (ID2D:2546)
* General		0	
Laver	Fal - Teh 🗸		

• Specify which parameters want to copy: choose only the Elevation. Select the walls and press Enter to confirm.



Let's take a look at the 3D model - we have finished the modification! If you don't want to see the line between the two levels, rebuild the 3D model.

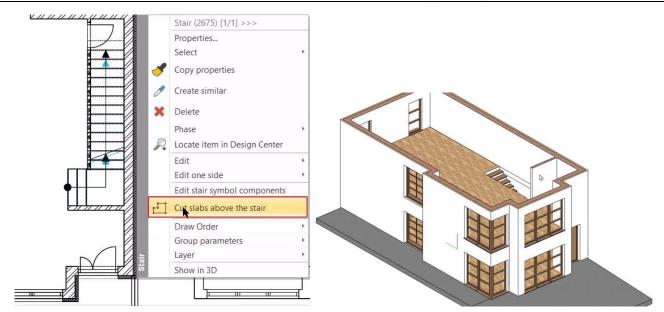


2.2. Stairs

2.2.1. Opening of the slab above the stairs

Since there is a staircase from the ground floor up to the first floor, we need to design the opening in the slab. The slab opening can be drawn manually following any contour line, or using an automatic solution, the software will calculate the optimal slab opening shape above the stairs based on the stairs already created. We will now use the automatic creation.

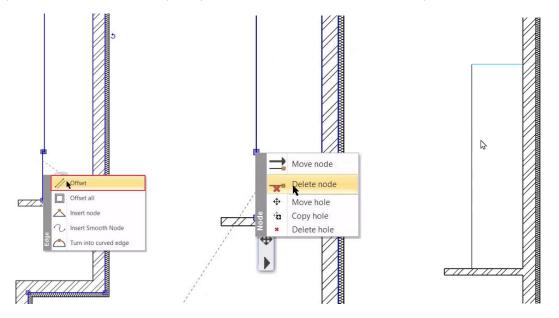
- Switch to the floor plan view, then make sure that the ground level is the active level.
- Click on the staircase and from the local menu select "Cut slabs above the stair" command.
- The program automatically creates the opening, which you can see immediately in 3D.



Edit slab opening

Edit the slab opening to get a completely rectangular slab opening.

• Select the first level to highlight the slab opening, then click on the edge marker and select the Offset command. Pull in the edge as a continuation of the longer edge, and delete the unnecessary node using the Delete Node command.



2.2.2. Symbolic representation of a staircase on the first level

On the first floor, we also need to visualize the staircase. To do this, we need to do the following:

- Go down to the ground floor, select the staircase, then click on the Level manager and select "Copy object to other level" command.
- Copy the staircase to the first level.
- In this case, the stairs will also appear in 3D, but we don't need this, we just want to keep the floor plan representation.
- Go to the properties dialog of the staircase and in the Support tab, turn off the 3D Creation option and set the Cut the walls to "No cutting". And in the General Properties tab, set the option to have no section line on the stairs, so you get the correct plan view.

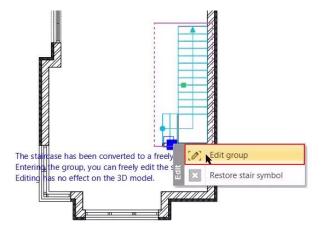


Stair Calculator	Support		
of the rectory of the second			
General properties	Connection to the upper slab		~
Support	A: 100 mm B: 100 mm	C: 300 mm	
Step geometry	Connection to the bottom slab		
resentation on the floor above	A: 100 mm B: 100 mm D: 150 mm	E: 200 mm C: 300 mm	
			^
	Base Elevation	0 mm	
	3D creation		
	Cut the walls	No cutting 🔍 🗸	
	Waist slab material	Bright_white	
	Construct the landing like a slab		
	✓ Waist slab	Thickness 150 mm	
		Thickness of landings 270.6 mm 🗸	
	Stair stringer	Viewent	
	✓ Tread	Material 📕 Wood-paldao	
		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	1.0	r
		Left support type None V	
		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	
BIM Parameters	Normál lépcső		
	Normál lépcső		
Stair Calculator	☆ General		
	A General Layer	Lépcső	
r Stair Calculator	General Layer Colour	Lépcső V	
Stair Calculator General properties Support	☆ General Layer Colour Line type	Lépcső 🗸	
Stair Calculator General properties	☆ General Layer Colour Line type Line weights	Lépcső v Simple Line v 0 mm v	
Stair Calculator General properties Support Step geometry	Ceneral Layer Colour Line type Line weights Draw Order	Lépcső 🗸	
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Stair Calculator General properties Support Step geometry	Colour Line type Line weights Draw Order Railing	Lépcső v Simple Line v 0 mm v	
Stair Calculator General properties Support Step geometry	☆ General Layer Colour Line type Line weights Draw Order	Lépcső ~ Simple Line ~ 0 mm ~ 8- Bottom-most ~	
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Stair Calculator General properties Support Step geometry	Ceneral Layer Colour Line type Line weights Draw Order Railing Railing automatically added to left side Regenerate Railing Railing	Lépcső ~ Simple Line ~ 0 mm ~ 8- Bottom-most ~	
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Stair Calculator General properties Support Step geometry	Seneral Layer Colour Line type Line weights Draw Order Railing automatically added to left side Regenerate Railing automatically added to right side Regenerate Railing Railing Railing Railing Parate Nosing: Nosing: Parate Parate Cutting elevation Cutting line direction Parallel distance	Lépcső Lépcső Simple Line O mm B- Bottom-most AcryL_ralling AcryL_ralling Along the stair Szaggatott No section line Szaggatott 1000 mm 20 ° 100 mm	
r Stair Calculator General properties Support	General Layer Colour Line type Line weights Draw Order Railing Railing automatically added to left side Regenerate Railing Railing automatically added to right side Regenerate Railing Representation in 2D Nosing: Nosing line-type Cutting elevation Cutting line direction Parallel distance Draw walking line	Lépcső	
Stair Calculator General properties Support Step geometry	General Layer Colour Line type Line weights Draw Order Railing Railing automatically added to left side Regenerate Railing Railing automatically added to right side Regenerate Railing Railing automatically added to right side Regenerate Railing Railin	Lépcső Lépcső Simple Line O mm B- Bottom-most AcryL_ralling AcryL_ralling Along the stair Szaggatott No section line Szaggatott 1000 mm 20 ° 100 mm	
Stair Calculator General properties Support Step geometry	Ceneral Layer Colour Line type Line weights Draw Order & Railing Railing automatically added to left side Regenerate Railing automatically added to right side Regenerate Railing Sailing Nosing: Nosing: Nosing: Partial line-type Cutting line direction Paraliel distance Draw walking line Walking line arrow Cut out landings on walking line	Lépcső	
Stair Calculator General properties Support Step geometry	Ceneral Layer Colour Line type Line type Line weights Draw Order * Railing Railing automatically added to left side Regenerate Railing Railing automatically added to right side Regenerate Railing * Representation in 2D Nosing line-type Cutting line-type Cutting elevation Cutting line direction Partial line direction Parallel distance Draw walking line arrow Cut out landings on walking line Walking line before landing	Lépcső	
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Stair Calculator General properties Support Step geometry	* General Layer Colour Line type Line type Line weights Draw Order * Railing automatically added to left side Regenerate Railing automatically added to right side Regenerate Railing * Representation in 2D Nosing: Nosing line-type Cutting elevation Cutting line direction Parallel distance Draw walking line Walking line arrow Cut ut landings on walking line Walking line before landing Text on walking line Numbering (50% of current font size)	Lépcső	
Stair Calculator General properties Support Step geometry	Seneral Layer Colour Line type Line weights Draw Order Railing automatically added to left side Regenerate Railing automatically added to right side Regenerate Railing Railing Railing Railing Railing Railing Representation in 2D Nosing: Nosing line-type Outing line direction Partial line-type Cutting line direction Parallel distance Draw walking line Walking line arrow Cut out landings on walking line Walking line before landing Text on walking line Numbering (50% of current font size) Walking line backward	Lépcső	
Stair Calculator General properties Support Step geometry	* General Layer Colour Line type Line type Line weights Draw Order * Railing Railing automatically added to left side Regenerate Railing * Representation in 2D Nosing: Nosing line-type Cutting line direction Partial line-type Cutting line direction Parallel distance Draw walking line Walking line arrow Cut ut landings on walking line Walking line before landing Text on walking line Numbering (50% of current font size)	Lépcső	

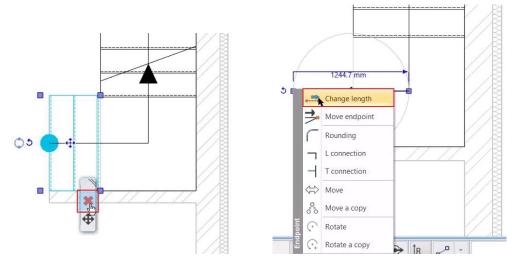
- We have finished setting up the stairs. We accept with OK.
- Also change the representation of the stairs on the first floor, as the first two steps are not visible on the upper floor. To do this, click on the stair and select "Edit stair symbol components" from the local menu.

	Stair (3386) [1/1] >>>	
	Properties	
	Select	•
1	Copy properties	
0	Create similar	
×	Delete	
	Phase	•
\$	Locate item in Design Center	
	Edit	•
	Edit one side	•
	Edit stair symbol components	
Ŀ	Cut slabs above the stair	
	Draw Order	•
	Group parameters	*
=	Layer	Þ
Stal	Show in 3D	

• The staircase on the floor plan converts to a freely editable group, where you can enter and edit the staircase components as 2D elements (lines, text, etc.). Click on the icon to edit the group.

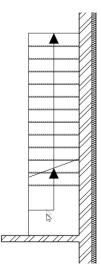


Delete the lines of the first two steps of the staircase and change their length.



- When you have finished making changes, right-click on any element on the staircase and from the local menu choose Close group command.
- When you exit the group, you will see the modified symbol of the completed staircase.





2.3. Partition walls

2.3.1. Wall drawing

In the following, we will edit the partition walls of the first floor. Here we could import the DWG drawing as we did on the ground floor, but now we will use a different method to draw the walls.

• Select the Building menu - Wall tool!

Wall styles

You can work with different wall styles, which are displayed on the left after you start the wall command. The preview window informs you which wall styles you are working with. Whenever you start an element creation command (e.g., wall, door, window, etc.) the Properties panel appears on the left and displays all the element styles.

• We will now use the 1 layered 10 wide wall:

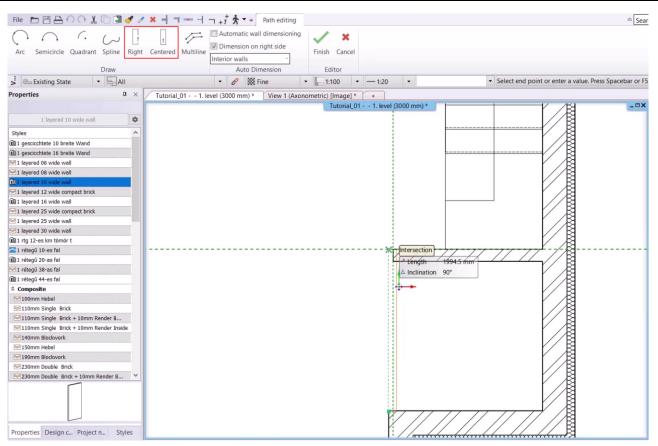
Reference line

For the wall starting from the corner point, you can see that a blue line appears in the middle of the wall, this is the reference line. With this reference line we can specify the position in which we want to draw the wall.

There are 3 ways to switch reference lines:

- On top in the menu bar with Left, Right, or Centered,
- Pressing the Space on the keyboard,
- Or by pressing F5 key.
- Now we need the reference line to be on the left, so let's switch to that.
- When connecting to the wall, you can use the alignment lines, which are automatically
 indicated by a green dashed line. This makes it easy to connect the walls correctly.
- By holding down the **Shift** key, the program locks the direction, so you're sure you're not creating a slanted wall.

Properties					¢	ı	×
	1 layer	ed 10 v	vide	e wall			¢
Styles							^
1 gescicch	itete 10	breite	Wa	and			
1 gescicch	itete 16	breite	Wa	and			
🖂 1 layered	06 wide	e wall					
🖂 1 layered 🛛	08 wide	e wall					
🛅 1 layered	10 wide	e wall					
🖂 1 layered	12 wide	e comp	act	brick			
🗎 1 layered	16 wide	e wall					
⊠1 layered∶	25 wide	e comp	act	brick			
🖂 1 layered	25 wide	e wall					
🖂 1 layered :	30 wide	e wall					
🗐 1 rtg 12-e	s km tö	mör t					
🔼 1 rétegű 1	0-es fa	I					
🗎 1 rétegű 2	0-as fa	I					
🖂 1 rétegű 3	8-as fa	I					
🗎 1 rétegű 4	4-es fa	I					
* Composit	te						
≥ 100mm	Hebel						
🔀 110mm	Single	Brick					
≥110mm							
🔀 110mm	Single	Brick -	+ 10	mm Ren	der Insid	e	
🔀 140mm	Blockw	ork					
🔀 150mm	Hebel						
≥190mm	Blockw	ork					
🔀 230mm							
≥230mm	Double	Brick	+ 1	0mm Ren	ider B		~
Properties	Desig	gn c	Pr	oject n	. Sty	le	5



Automatic wall dimensioning

The program allows you to automatically dimension the walls.

- Select Annotate Building Automatic wall dimensioning.
- Start drawing the vertical wall next to the stairs in the usual way using the Building Wall tool.
- When the first section of wall is created, you will see that the automatic dimensioning is immediately generated.
- You can even turn this off while drawing by using the Automatic wall dimensioning option on top. Turn it off, then continue
 drawing the walls.
- Dimensioning is not needed in this project, so we delete it.

2.3.2. Partition walls on the first floor

Based on what you have just learned, proceed to create the partition walls (1 layered 10 wide walls) using the Building - Wall command:

Continuing the wall drawing

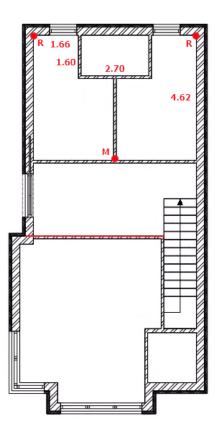
• Starting from the top left corner of the building, you need to create the next wall. To do this, we use the Reference Point

, which is available at the bottom of the Status Bar. We click on the top left corner, then move the cursor to the right and enter the distance: **1.66**. This will be the starting point of the wall of the room.

- I move the cursor down and enter the length of the wall: I type 1.60. I accept it with Enter.
- I move the cursor to the right, enter the length: **2.70**. Enter.
- Then I close the room upwards by holding down the Shift key.
- The next wall is a horizontal partition wall, running the full width of the building. For this we also use the Reference Point. I click on the command, then place the reference point in the top right corner of the building. I move the cursor vertically downwards and enter the value **4.62**.
- From here I draw the wall horizontally across the entire width of the building.
- The last partition wall shall run vertically upwards from the midpoint of the wall just created. If you move the mouse roughly
 to the center of the wall, the program will automatically mark and print the midpoint. The wall is started from here and then
 connected to the opposite partition.
- We have finished drawing the partitions.

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2.4. Openings: doors, windows

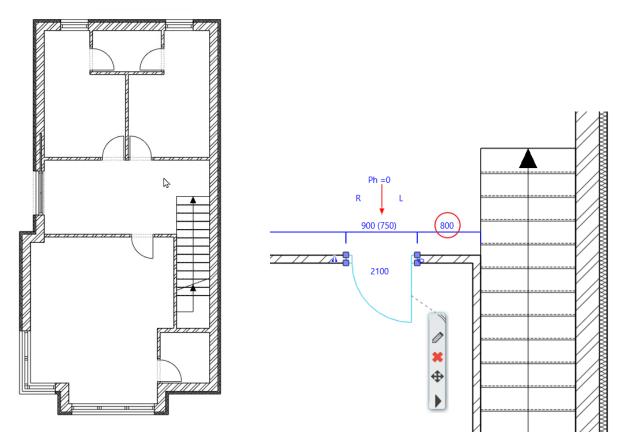
2.4.1. Doors on the first floor

Since we have not imported the DWG drawing for the first floor, we will use the **Placing door** command instead of the Door by two points command. Here we can also set the door properties in advance.

- Right-click on the Door command and select the Property option.
- Start with the settings you see here to place the doors, which you will be able to edit later.

Door						3
Main parameters	Width:		900 mm	~	Redraw	
Representation	Height:		2100 mm	~		
Reveal, void, niche, cavity	Thickness:		100 mm			
Basic geometry				^		
Outer handle	Hide opening and make a void					
Inner handle	Distance from wall line	이				
	Sill height	0 mm				
Accessories	Outer sill height:	0 mm				
Interior and exterior sills	Add level shift					
	Effective clear width	780 mm				
Built-in details	Effective clear height	2040 mm				
Information	Colour					
	Line type	5	Simple Line			
	Line weights	0 mm		~	4	
Create variant	Draw Order	8- Bottom-most		~		
	Reference axis	Side		~		
	Distance from wall corner	200 mm				
		Lining and architrave				
		Dimension, consignment				
		Thermal parameters				
	Ratio (Illumination area)	100%		~		
	Material	Value				
	Solid	Wood-paldao				
	External frame material	Default material				
	Internal frame material	Default material				
	External leaf frame material	Default material				
	Internal leaf frame material	Default material				
					900x2100	-
BIM Parameters	No style				OK	cel

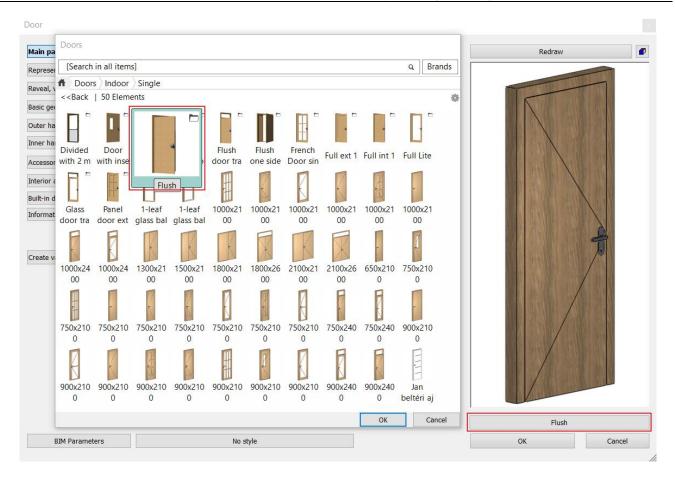
- Place the doors using the Building Door Placing door command.
- The reference point is indicated here by a green pencil, which can also be set using the space bar, depending on which point you want to use to place the door. As a reference point, you can specify a seeded point on the floor plan, or you can specify a distance, similar to the previous option.
- After placing it down, the opening direction must be determined using the mouse.
- Place all the doors as shown in the following image. For the horizontal partition, place the reference point on the right side of the door and 0,8 m from the wall.



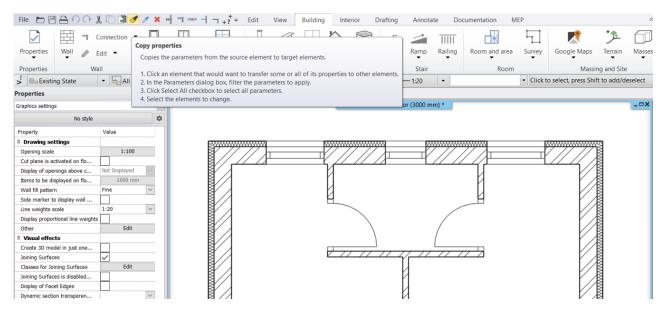
2.4.2. Modifying doors

Bathroom:

- Change the width of the two bathroom doors!
- We could do this either on the floor plan or in Properties on the left, but for now we'll use the variants again.
- Click on the door, then on the pencil icon.
- Click on the name of the door and you will see a folder icon appearing, indicating that multiple variants of this door type have been created. Let's choose the 750x2100 one.
- The program asks if I want to keep the previously set dimensions. We answer no and then accept with ok.



The door on the left is finished. We want to modify the right door as well, which we can do simply by using the Copy
properties.

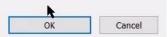


- Click on the command, then click on the door whose property you want to copy.
- In the pop-up window, we specify that we want to copy the *Opening type*, and then select the door we want to modify. Press Enter to accept, and this door is created.



•	Property	Value	^
	All BIM parameters		
	Colour	black	
	Line type	Simple Line	
	Line weights	0 mm	
	Draw Order	8- Bottom-most	
	Style		
	Distance from wall line	0.000	
	Sills	0 mm 0 mm	
	Reveal width (1)	0.000	
	Exterior sill		
	Interior sill		
	Wall connection material	Default material	
	Opening dir.	L	
	Splay types	0	
	Materials	Wood-paldao	
	Opening type	750x2100	
	2D Shape	0	
	Cavity in the slab under the	None	
	External ref. line	On	
	Internal ref. line	On	~

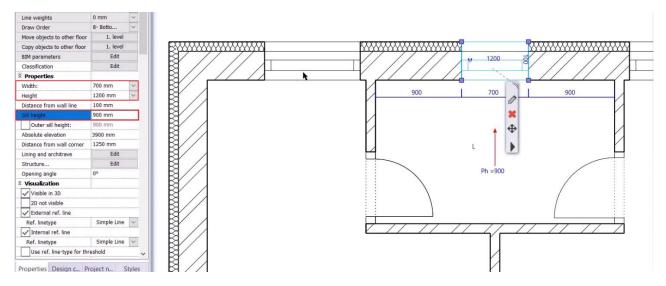
Select the objects to which you want to copy the properties, and press Enter



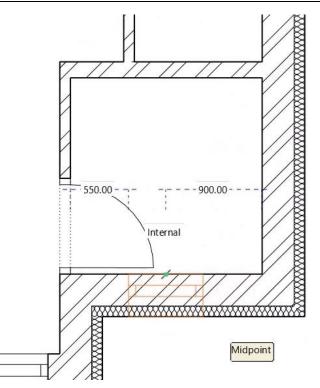
2.4.3. Windows on the first floor

There are two windows on this floor which are similar to the windows already made, but of different dimensions. Let's learn the method to create a new window by copying the properties of an existing window using the "Create similar" command.

- Activate the layers of the first floor floor plan in the Layer manager.
- Select the window you want to create a similar one and choose "Create similar" from the floating menu by clicking on the black arrow.
- Move the cursor to the center of the section of wall where you want to place the window, then use the space bar to move the reference point to the center. This will find the mid-point of the wall section and place the window there.
- Select the new window and change its properties: width: 700 mm, height: 1200 mm, parapet height: 900 m.



• Once this is done, use the Create similar command to copy this window to the storage room, also to the midpoint of the wall. It is important to place it on the inside of the wall so that the handle is in the correct position.

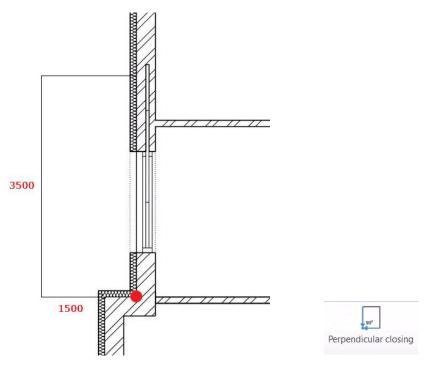


2.5. Slab tool

2.5.1. Creating a balcony

Here we create a balcony using the slab tool.

- First set its properties: right-click on Building Slab, then Property. Base offset from the floor: 0 mm, Total thickness: -300 mm, Material: Bright white. I accept with OK.
- Draw the balcony on the left using the Ribbon menu / Building / Slab / Slab in Sketch mode command as follows:



- The top third line does not need to be specified exactly, just click on the **Perpendicular closing** command at the top.
- The balcony is finished.

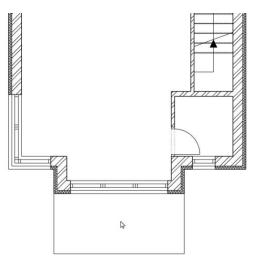




2.5.2. Creating a flat roof

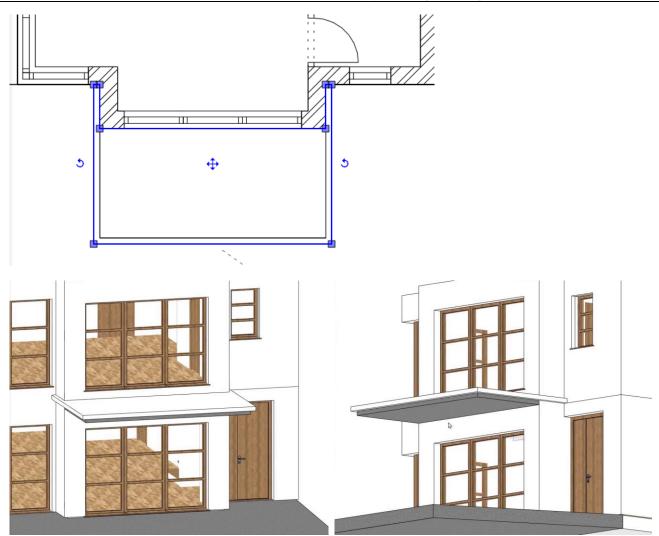
Make a flat roof over the driveway. On the plan, this is a multi-part structure, so two slabs need to be constructed.

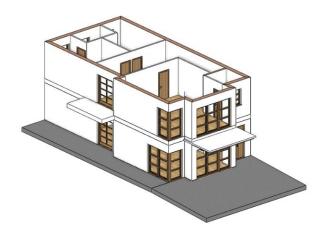
- In Properties, change the Base offset from the floor to -300 mm and the Total thickness to -100 mm.
- For the slab material, choose "Concrete 3".
- Start the Slab in Sketch mode command and draw the inner contour line of the flat roof so that it is 1850 mm wide.





- Draw the second element, the outer contour of the roof.
- Set Base offset from the floor to -200 mm and Total Thickness to -100 mm.
- Select Bright White as the slab material.
- Draw the contour of the roof with the Slab in Sketch mode command in the same way as before.
- This will be modified: we need to increase the upper decorative slab dimensions by 100 mm on all sides.
- I select the flat roof, then click the edge marker and choose **Offset all** command. I drag the cursor outwards, then type 100. This increases the size by 100 mm in all directions.
- We want the main wall to meet everywhere, so I use the Offset command to pull it back at the top, and I add extra nodes on the sides.
- I click on the edge marker, then choose **Insert Node**. Then I click between the two nodes and choose **Offset** again. This gave us the result we wanted:





2.6. Railing

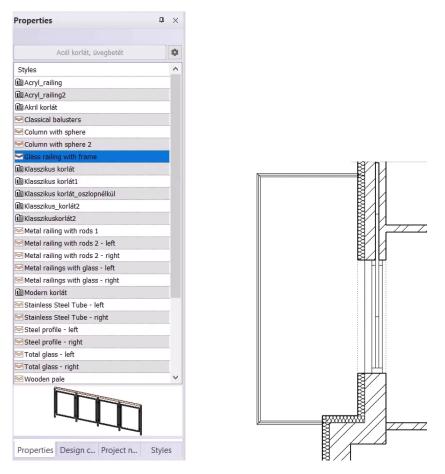
2.6.1. Railing editing with style

A railing will be installed on the balcony on the first floor. Before placing it, choose the style of the railing.

- Click on Ribbon menu / Building / Railing / Railing command.
- On the left, activate the "Glass railing with frame" style.



71



- Draw the railing along the contour of the slab.
- When you are ready, press Enter twice.
- Activate the 3D window.

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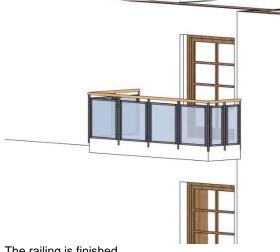
• Click on the railing and lower it by 100 mm. To do this, click on the **blue arrowhead** and select **Move**. Move the railing downward, type 100 and press Enter.

Finally, modify the glass material of the railing.

- Click on the railing, then on the pencil icon.
- On the left, select the **Panels and bars** menu. Here you can choose which of the elements of the railing you want to modify.
- Select Object, then click on Reference to select New material.

Index	Туре	Name	Height	Width	Thickn Visi		1	
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3	Bar	Rectangle		30 mm	30 mm I			
1	Bar	Rectangle		30 mm	30 mm I	Add frame		
5	Bar	Rectangle		30 mm	30 mm I		1	
5	Object	Referenc	760 mm	860 mm	10 mm I	Add swept profile		
			-					
Ν	Move up	M	ove down		Insert new	Delete		
	Rotate	M	irror on X		Mirror on Y			
. ا	Top profile		Fr	ame height	810 mm			
Mir		r panels and bars (0 mm			
	nimal width fo			ece of path)				
Offset fr	nimal width fo rom path(>0:r	ight)		ece of path) 0 mm				
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- Click on the existing material (in this case Glass 26) and then on the Modify button.
- Select "Blue glass 02" from the Materials list.
- Click OK to accept the modification.



The railing is finished.

Creating a railing with the column tool 2.6.2.

Let's see how you can create columns along the staircase, which also act as dividers and railings. This is an alternative solution besides the railing tool. Set the properties of the columns needed for the railing.

- The floor plan shows where the columns should be placed. •
- Right-click on **Building** menu Column to set the properties.
- Set the values of the cross-section profile. Click on Profile from Library and then on Select profile. Select "Rectangle". •
- Change the width to **50 mm** and the height to **100 mm**. •
- Set the reference point to the bottom left corner, simply click on it.
- The "Base offset from the floor" is 675 mm. •
- Height is 5100 mm.
- Change the material to "Wood-paldao" and activate the "Same materials" option. •



74 Workshop 2: Multi storey building, working on second floor

- Switch off the "Slab-roof cutting" function.
- Close the Column dialogue window by clicking OK.

Column

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			Colour		
			Layer	Oszlop	~
			Line weights	0 mm	~
			Line type	Simple Line	~
			Draw Order	8- Bottom-most	~
			2D representation by 3D) top view	
			Hatch	Strip	
12	۲۹	1 3	2D not visible in printing	J	
μ-	6	μ·	Same materials		
			Solid material	Wood-paldao	
			Surface material	Wood-paldao	
			Constrains		
			Base offset from the floor	675 mm	~
			Height	5100 mm	~
			Angle of inclination	90°	
			Direction of inclination	0°	
			Rotation	0°	
(rta)	r10	19	🖌 Insert into wall		
			Make only hole in the	wall	
ofile	Rectangle	Simple	Slab-roof cutting		
	Profile from Library		Apply Insulation	Thermal Isolation	
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idth:	Height:		Other		
0 mm	100 mn	n	Cut	out - Recess - Attachment	
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- Activate the floor plan view and click on Column command to place the first column. Here we can see that we can indeed place it with its bottom left corner, since that is where we have set the reference point.
- If the first column is OK, then multiply it along the path you specified.
- Select the created column, then click on the Move marker and select "Multiple copies with total distance".
- In the pop-up window, enter the number of copies: 12.
- Specify the reference point you want to copy and then place them on the entire column row.

The railing is complete with the column tool.



2.7. Creation of the closing slab

Before the roof itself is created, make the closing slab above the first level. There are many ways to make a slab; we will now copy the existing one.

- Activate the **1. level**.
- Mark the floor slab following the outer contour on the floor plan.
- Click on the Level manager in the Status bar and then on Copy to other level command in the window that appears.
- Select 2. level from the list that appears and click OK.
- On the second level, click on the hole and select "Hole / Delete hole" from the local menu that appears.
- Modify the material of the slab in the Properties window on the left: **Top material: Bright white.**

What we need to adjust is that the outer edge of the slab meets the outer edge of the isolation layer. This will give the slab its final shape. We will do this by turning on the visibility of the floor plan on the first level, so that we can align the outer contour of the slab on the second level.

- Open the Level manager. The program will indicate with a green check mark which level is active, in this case 2. level. The other levels are represented by a light bulb symbol, currently turned off. Turn on the light bulb before 1. level.
- Clicking on the floor plan will immediately display the walls, openings and elements of 1. level. These are only visible, we cannot select them, but we can refer to them.

🞺 2. level	
1. level	
GroundFloor	
P Basement	
- Bassmont	
👫 2. level	~
En El level	

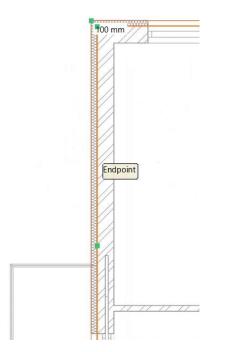


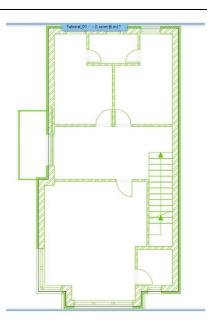
You can change the display of this, i.e., the green color, as follows:

- Click on the Gear icon in the bottom left corner, then select Inactive building color under Graphics.
- Click on the green color here to select the color you want (e.g., light grey).

So, let's prepare the slab:

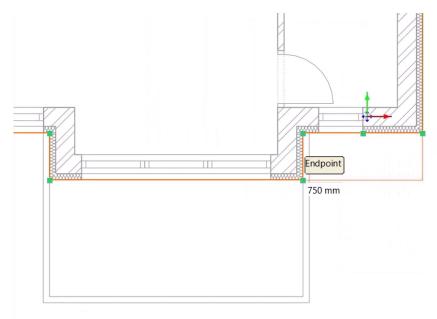
• Click on the slab outline in black, then use the **Offset all** command to drag the outline to the outside of the insulation.

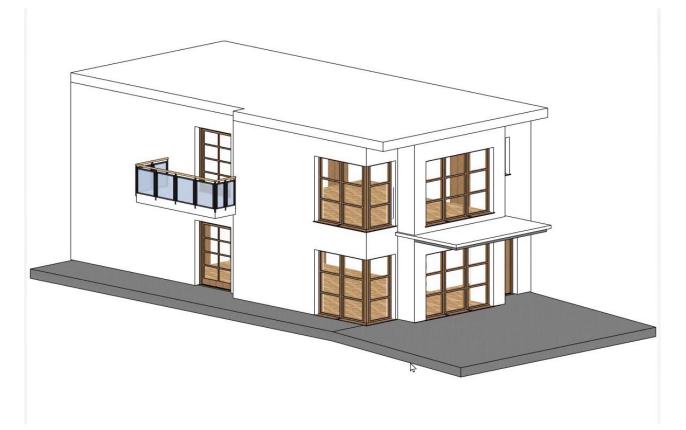




Modify the slab at the two access points:

- Select the slab, then use Offset to pull it out to the outer plane on both sides.
- Delete unnecessary nodes.





We have finished the construction of the closing slab and the 1st level.



Workshop 3: Roof Structure and Firewall Editing



3. Workshop: Roof Structure and Firewall Editing

On this workshop, we will deal with roof structures and firewall design. We will also explore how to place gutter and drains. In designing the roof, we will use the contour of the closing slab that we created in the previous workshop. With its help, we will easily draw the roof structure.

Before we start editing the roof, please watch the tutorial video on Roof Structure and Firewall Editing.

3.1. Roof

The ARCHLine.XP **Roof** toolset offers efficient solutions for designing roof structures at a professional level, whether it's a simple conceptual or highly detailed plan. You can create an unlimited number of roof structure types, design them in an antique, modern, wood, or metal style. Everything you design is parametric and flexible, allowing the designer to shape these complex elements as needed during the design process.

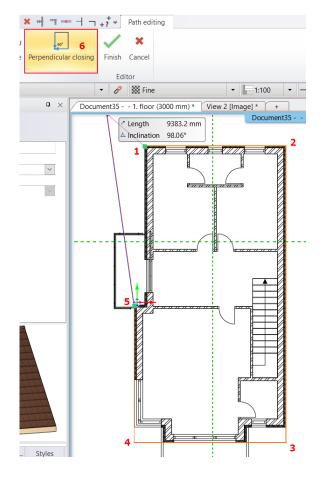
In this section, we will create a simple conceptual roof. Through this example, we will understand the following concepts:

- Roof design
- Transforming existing roofs
- Working with roof planes and roof height editing
- Setting roof materials and simple details
- Connection with other architectural elements

3.1.1. Roof Design

ARCHLine.XP has all the tools needed to create a roof structure, whether it recognizes the external contour by selecting the walls of an existing building or whether the designer draws it themselves. In both cases, the roof can be reshaped, changed, entirely redesigned, and enriched with further details. In this case, we are creating a conceptual roof that follows the contour line of an existing attic floor with some customization to grasp the basics of roof design.

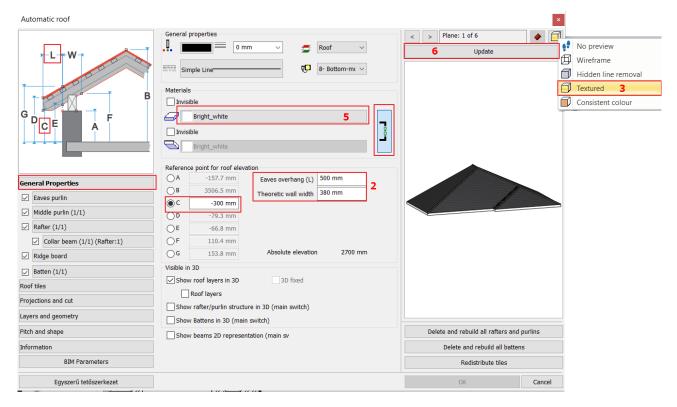
- Launch the Ribbon Menu / Building / Roof / Roof in Sketch mode command.
- Choose "Simple Roof Structure" from the roof styles on the left.
- Draw the outer contour of the roof on the second level along the closing slab, starting from the top-left corner.
- Instead of the last two clicks, choose the "Perpendicular Closing" command. This completes the roof.



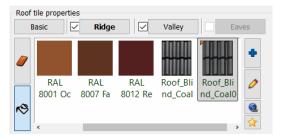
After finishing the drawing, click on the roof, and select the pencil icon. This will open the Roof Properties dialog. Let's make some modifications.

In the Roof dialog, you can set the details you see on the tabs (Eaves purlin, Middle purlin, Rafter, etc.), such as the crosssectional profile or the material. Since we are working with a simple roof for now, we won't adjust these.

- On the General Properties tab, under Reference point for roof elevation, change the "C" value to -300 mm (1). The Eaves overhang (L) should be 500 mm, and the Theoretical wall width should be 380 mm (2). The theoretical wall width usually matches the most common wall thickness found on the floor plan.
- Change the display mode to textured (3).
- Under Materials, link the two materials (4), and change the material of the bottom and side surfaces from "Pine-natural" to "Bright white" (5). You can see the changes by clicking the refresh button (6).



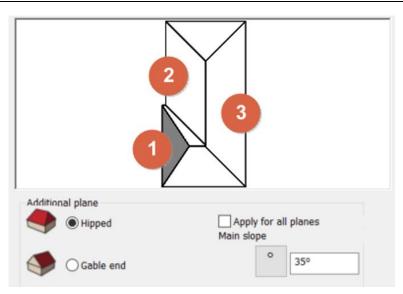
- Under the **Roof tiles** tab, in the **Roof tile properties**, click on "**Basic**," then on the paint bucket icon, and replace the current "Roof brown" with "**Roof Blind_Coal**." If you can't find this material in the list, click the blue plus sign to open the material library, where you can search for the desired material.
- Click on the "Ridge" and "Valley" roof tile settings and change the material from "Roof brown" to "Roof Blind_Coal." Click the refresh button to see the changes.



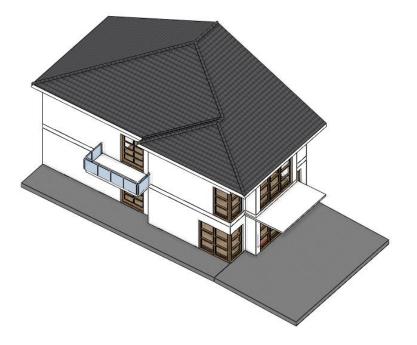
On the "**Projections and cut**" tab, you have the option to set on which level the roof should be visible and what symbol it should have on that level. You can also specify which levels the roof should cut through the walls or choose not to cut through them at all.

On the Layers and geometry tab, you can set the layer thicknesses for the roof.

- Click on the **Pitch and shape** tab and activate the "Apply for all planes" option, then change the roof plane slope from 42 degrees to 25 degrees. Click the "Update" button above the 3D view to check the changes.
- Click on the roof plane marked with the number 1 according to the diagram below and change the pitch angle to 35 degrees. Click the "Update" button above the 3D view to check the changes.



- Click on the **roof plane** marked with the **number 2** as shown in the diagram above and change the pitch angle to **35** degrees.
- Click on the roof plane marked with the number 3 and set the roof plane shape to Gable end. Click the Update button to
 preview the changes.
- Click the **OK** button and view the roof in both the floor plan and 3D view.

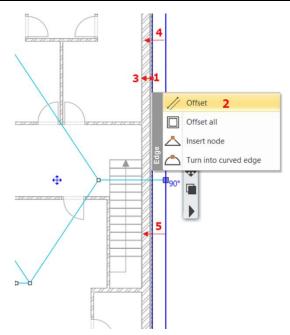


3.1.2. Changing the Roof Contour

This time, we will move two edges of the roof to create a firewall, separating this part of the building from the rest.

- Select the roof in the floor plan.
- Click on the right edge (1) and choose the "Offset" command from the appearing marker menu (2).
- Move it so that it aligns precisely with the inner wall plane (3).
- Repeat this for the two outer edges on the right side of the roof (4, 5).



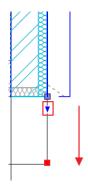


3.1.3. Designing a Firewall with the Push and Pull Tool

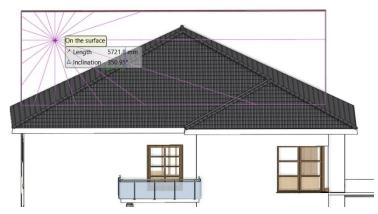
Let's create a wall that separates the two buildings. In this case, we will copy an existing wall, modify its properties, and then reshape it to precisely match the roof.

- Go to the first level.
- Select the right-side wall of the building.
- On the Property panel to the left, click the "1. floor" button next to "Copy objects to other floor."
- Choose the 2. floor and click OK.
- Select the new wall on the second level and change the **Height to 4500 mm** and the **Base Elevation** to -300 mm.
- Click on the arrow marker next to the wall endpoint marker and align it with the end of the roof structure.
- Repeat this for the other end of the wall.

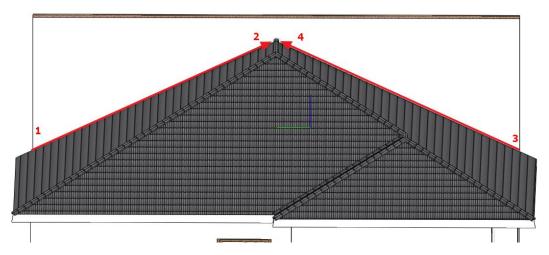
The firewall is currently a plain wall with a horizontal top. Let's redesign its shape (front elevation profile) to make it follow the roof's pitch. First, we'll consider the current shape of the wall in relation to the roof so we can use it as a basis for design.



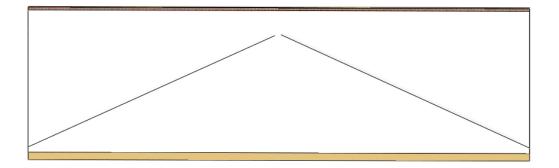
- Activate the 3D window.
- Adjust the view so that you're looking at the firewall head-on.
- Select the Drafting / Line / Line tool, then choose the surface you'll be working on, which is the firewall.



• Draw the first line along the roof pitch (1, 2). Finish the drawing with Enter. Then draw the other line on the opposite side of the roof (3, 4), and close the command with two Enters. Ensure that you draw the lines on the surface of the firewall, not on the roof.

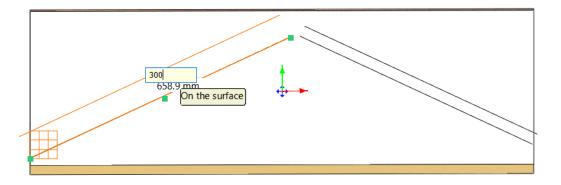


• Select the firewall in the 3D view, then click on the 3D hammer icon to isolate only the firebreak and the drawn lines.



We will now copy the two guide lines 300 mm higher, as the firewall will overhang the roof by this amount.

 Select the Ribbon menu / Drafting / Offset command, choose one of the lines, drag the mouse cursor upward, and enter the value: 300. Repeat this process for the other line as well.



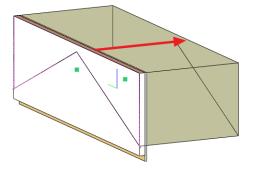
- Delete the originally drawn guide lines.
- Connect the two offset lines using the "Both objects" command. Select the "Both objects" command from the quick access toolbar, then click on both lines.

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	✓ C→ Spline ▼		• •	• •
Dra 2. Select the second item. 3D Cre	Drat	2. Select the second item.	3D	Cre
3. Hit Enter.	station 💌	3. Hit Enter.		

• We will cut the top part of the firewall. To do this, choose the Ribbon menu / Drafting / Push / Pull command.



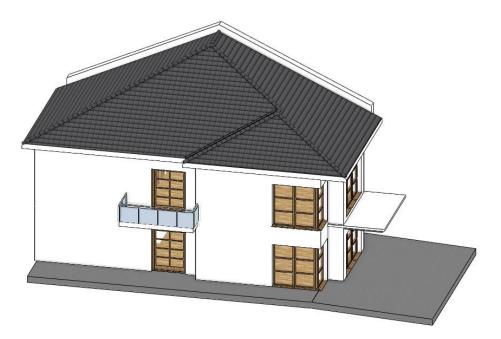
• Select the upper part of the wall that you want to delete, then drag the mouse backward in the inset direction.



- Finally, delete the guide lines.
- We will change the material of the firewall. Right-click on the inner side of the firewall and choose the "Find material" command. In the side menu, you'll see the current material, which is "Bright White."

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Physical properties							
Position: Tile	~ ·						

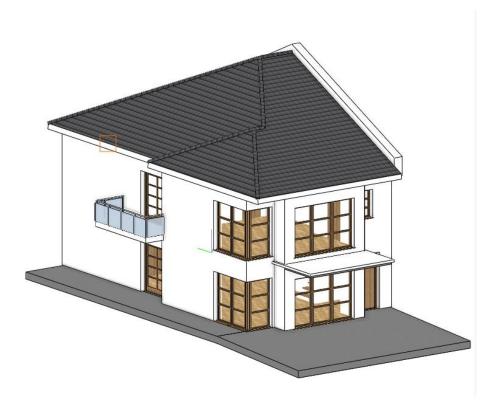
- Drag and drop the material onto the inner layer of the wall from the design center, and select the "**Replacing one material** with another on this object" command. Then, change the color of the inner layers.
- To display the entire 3D model, press the 3D hammer icon without selecting anything in the 3D view.



3.1.4. Creating a Gutter

To create a gutter, use the specialized gutter tool.

- Start the Ribbon menu / Building / Roof / Gutter tool.
- Click on the left edge of the roof in the 3D view.

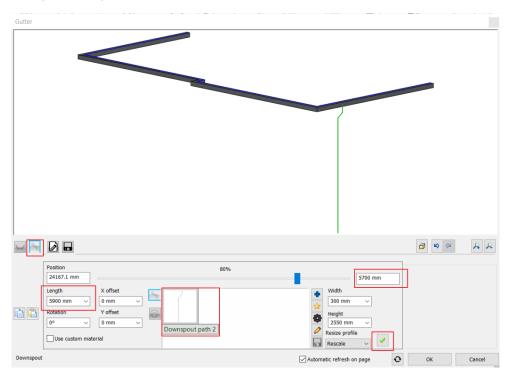


- In the appearing properties window, ensure that "Gutter section profile 2" is set as the cross-sectional profile.
- Change the Horizontal offset to 100 mm and the Vertical offset to -200 mm. (1)
- Then, click on the paint bucket icon (2) and change the material to Steel. (3)



Gutter	×
RAL Steel 3	 Horizontal offset 100 mm → Vertical offset
Gutter section profile	Automatic refresh on page OK Cancel

- Click on the second tab *which* is for the **Downspout**. Ensure that **Downspout path 2** is selected.
- Change the **Position**'s right-hand value to **5700 mm**.
- Click the green checkmark to add the drainage to the gutter.
- Change the Length to 5900 mm.



- To add the second downspout, use the green plus sign. This time, set the distance from the left to be 7800 mm.
- To create it, click the green checkmark.

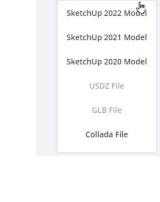


3.2. Placing Solar Panels

You can also place solar panels on the roof from the 3D Warehouse.

- Choose the Ribbon menu / Interior / 3D Warehouse command and use the Direct Download option. To download objects for free from the 3D Warehouse, you need to log in with your Trimble account.
- Find the "Dynamic-Model-LSX-Solar-Module-System-wLSX-Rail-SD-in-Landscape" solar panel, and download the 2023 model. Always download models that are compatible with your software version or older.
- In the 3D view, select the roof area above the ramp and place the object.





Dynamic Model: LS...

SketchUp 2023 Model

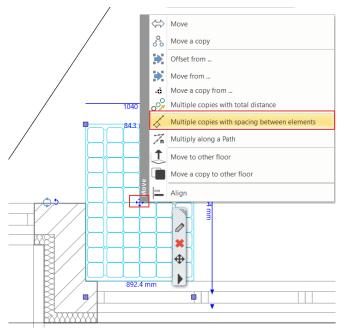
1

Select the placed solar panel and change its tilt angle in the left-hand menu by entering a value of 25° for the "Tilt ahead" parameter.

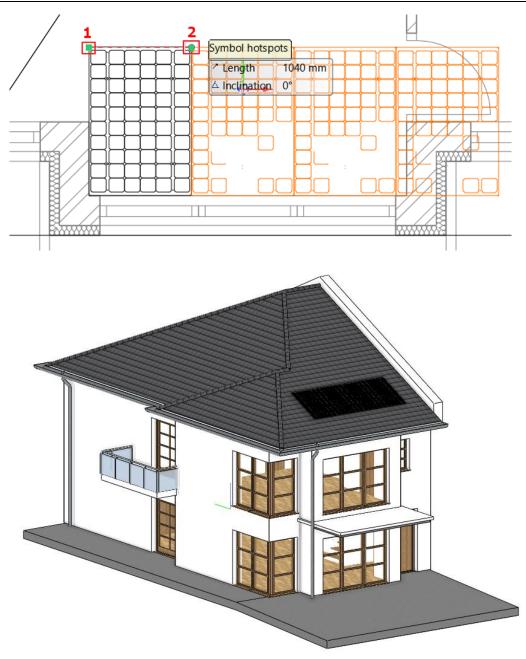


roperties		ņ	×
Dbject			-
No style			¢
Property	Value		^
All floors of the building	Edit		
* Geometry			
Object selection -> Dynamic-Model-I	LSX-Solar-Module-Syste.	••	
Edit materia	al		
Model complexity (surfaces)	Medium		
Keep original graphical attributes			
Enable 2D Fills			
Display 2D Fills	R:255 G:255 B:255		
Absolute elevation	6782.4 mm		
Height	84.3 mm		
Width	1040 mm		
Depth	1664 mm		
Tilting to left	0°	\sim	
Tilting ahead	25°	~	
Insert into wall			
Make only hole in the wall			
Make only hole in the slab			
Place it as column			
Slab-roof cutting			
* Other			
2D not visible in printing			
3D not visible			
2D representation by 3D top view		- passes of the	
Categorize in IFC as:	Default	~	
Jse explicit geometry in IFC export			
see explicit geometry in a c export			

- In the floor plan view, select the solar panel, and use the **Move from** command to move it, aligning it with a corner of the wall. Select the bottom-left corner of the solar panel and align it with the wall corner.
- With the solar panel selected, choose the **Move** option, and then within that, select the **Multiple copies with spacing between elements** command.



• Enter the number of copies: 3, and then choose the top-left corner of the solar panel and align the copied elements with the right-side corner.



3.3. Columns

3.3.1. Placing Structural Columns

Before placing the columns, right-click on the Ribbon menu / Building / Column tool to configure its properties.

- Use the "Rectangle simple" profile. Set the height to 200 mm and the width to 300 mm.
- Choose the center-bottom point as the reference point.
- Set the height to 2700 mm and the relative height to -200 mm.
- Select "Stonewall_048" as the column's material from the Building, Masonry folder. Enable the Same Materials option to change the material for the surface as well.

Add an attachment to the top of the column.

• Click the Cutout - Recess - Attachment button in the column dialog box.





olumn				
		Visualization		
		Colour		
		Layer	Column	\sim
		Line weights	0 mm	~
		Line type	Simple Line	\sim
		Draw Order	8- Bottom-most	\sim
		2D representation by 3D) top view	
		Hatch	Strip	
2	1	2D not visible in printing]	
		Same materials	4	
		Solid material	Stonewall_048	
		Surface material	Stonewall_048	
		Constrains		
		Base offset from the floor	-200 mm 3	~
	2	Height	2700 mm	<u>~</u>
		Angle of inclination	90°	
		Direction of inclination	0°	
		Rotation	00	
		Insert into wall		
ofile	Rectangle Simple	Make only hole in the	wall	
		Slab-roof cutting	Thermal Isolation	
٢	rofile from Library	Apply Insulation	100 mm	
	Edit profile		Column	Ţ.
idth:	Height:	Structural properties	Column	· · · ·
00 mm	1 200 mm		out - Recess - Attachment 5	
	200 mm	Show 3D		
			Exchange endings	
	BIM Parameters	Téglalap oszlop 30 x 3		Cancel
	bin ruidileters	regialap oszlop 30 x	UK UK	Cancer

• Add a new element using the **Insert new** button.

	Туре	Reference plane	Profile	Width	Height	Visibility
(Cutout 🗸 🗸	Front plane 🗸 🗸	Circle	100 mm	100 mm	D
Mov	ve up	Move down		Insert new		Delete
Rot	tate	Mirror on X	1	Mirror on Y	E	dit profile
	om the reference	plane (>0: outwar	ds fr	0 mm		
Distance fro						
			!	50 mm		
Distance fro Thickness Surface ma			!	50 mm	_048	
Thickness	aterial					
Thickness Surface ma Solid mater	aterial			Stonewall_		
Thickness Surface ma Solid mater Placement	aterial rial of profile referer			Stonewall_		
Thickness Surface ma Solid mater Placement Position in	aterial rial of profile referer	ice point: on, measured from:		Stonewall_		~
Thickness Surface ma Solid mater Placement Position in Distance fro	aterial rial of profile referer horizontal directi rom middle point	ice point: on, measured from:		Stonewall_ Stonewall_ Middle		×
Thickness Surface ma Solid mater Placement Position in Distance fro Position in	aterial rial of profile referer horizontal directi rom middle point	ice point: on, measured from: (>0: rightwards) , measured from:		Stonewall_ Stonewall_ Middle 0 mm		
Thickness Surface ma Solid mater Placement Position in Distance fro Distance fro	aterial irial of profile referer horizontal directi rom middle point vertical direction,	ice point: on, measured from: (>0: rightwards) measured from: upwards)		Stonewall_ Stonewall_ Middle 0 mm Bottom		
Thickness Surface ma Solid mater Placement Position in Distance fro Distance fro	aterial of profile referen horizontal directi rom middle point vertical direction, rom bottom (>0: jures follow the in	ice point: on, measured from: (>0: rightwards) measured from: upwards)		Stonewall_ Stonewall_ Middle 0 mm Bottom		

The element has been created as a recess with a circular profile. Let's modify this.

• Under Type, choose Attachment.

Cutout - Recess - Attachment				
Index Type Reference plane Profile 1 Attachment V Front plane V Rectan	Width Height		Ø	Redraw
Move up Move down	Insert new	Delete		
Rotate Mirror on X	Mirror on Y	Edit profile		
Distance from the reference plane (>0: outwards fr	-150 mm			
Thickness Surface material	100 mm			
Solid material	Concrete3			
Placement of profile reference point:	Concretes			A REAL PROPERTY
Position in horizontal direction, measured from:	Middle	\sim		
Distance from middle point (>0: rightwards)	0 mm			
Position in vertical direction, measured from:	Тор	\sim		
Distance from top (>0: downwards)	0 mm			
The figures follow the increase				
Angle of inclination	90°		I	
Direction of inclination	0°			
			(ОК

• Select **Rectangular** from the profile library and choose the bottom center point as the profile's reference point.

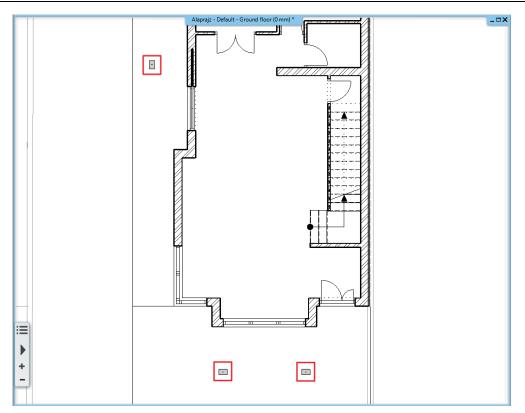


Edit profile				>
	11		Rectangular	
			Mirror o	n X
-12	_	-13	Mirror o	on Y
12	B	B*	Rotat	e
d			Uniform scaling operation Width:	Height:
			200 mm	100 mm
Select Profile		Redraw	Create va	riant
Name Width [1 - 100000 mm]	Value 200			
Height [1 - 100000 mm]	100			
			ОК	Cancel

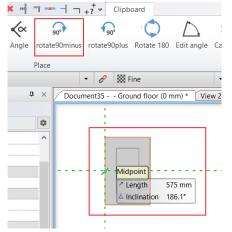
- Set the Distance from the reference plane to -150 mm and the thickness to 100 mm.
- Choose "Concrete 3" as the material.
- Select the **Top** option for the Position in the vertical direction, measured from setting.

Cutout - Recess - Attachment				
Index Type Reference plane	Profile Width	Height V	isibility	Redraw
1 Attachment V Front plane V	Rectan 200 mm	100 mm	D	
Move up Move down	Insert new Mirror on Y	Del Edit p		
Distance from the reference plane (>0: outward	ds fr150 mm			
Thickness	100 mm			- I -
Surface material	Concrete3			
Solid material	Concrete3]	
Placement of profile reference point: Position in horizontal direction, measured from:	Middle			
Distance from middle point (>0: rightwards)	0 mm			
	Тор			
Position in vertical direction, measured from				
	0 mm			
Distance from top (>0: downwards)				
Position in vertical direction, measured from: Distance from top (>0: downwards) The figures follow the increase Angle of inclination				

• Place the columns as shown in the DWG drawing. Select the Column command.



• To place the third column, select the Rotate -90° option.



• Activate the 3D view and zoom in on the column placed near the terrace with a railing.

It's evident that its height is not correct, so it needs adjustment.

• Modify the column's height to 2800 mm in the side properties menu.



Properties		ņ	×	Document35 -	- Ground floor (0 mm) * / V
Column			-		
Téglalap oszlop 30 x 30			¢		
Property	Value		^		
* General					
Layer	Column	~			
Colour					
Line type	Simple Line	~			
Line weights	0 mm	~	x.		
Draw Order	8- Bottom-most	~			
Move objects to other floor	Ground floor				
Copy objects to other floor	Ground floor				
BIM parameters	Edit				W
Height	2800	~			
Base Elevation	-200 mm	\sim			1 N.
Classification	Edit				
Xisible on other floor?					
All floors of the building	Edit				
* Constrains					
Absolute elevation	-200 mm				- · · ·
Angle of inclination	90°	\sim			
Direction of inclination	0°	\sim			
Profile cross-section	Rectangle Simple	е			
✓ Insert into wall					
Make only hole in the wall					
Make only hole in the slab					
Slab-roof cutting				BUTCH CONTRACTOR	
Same materials				TENTES SE	HEALING CONTRACTOR
Solid material	stonewall_048				
Surface material	Stonewall_048				
Structural properties	Column	\sim	-		
Properties Design ce Project	n System br S	Styles			

Workshop 4: Documentation - Sections, Elevations and Callout



4. Workshop: Documentation - Sections, Elevations and Callout

In this workshop, we will focus on documentation. Below, we will learn how to create sections, elevations, and callout, as well as how to modify them.

Creating documentation is as important as the design itself. During this process, you can add descriptions, notes, dimensions to your drawings, and extract data for schedules or bill of materials in Microsoft Excel format. Finally, you can either print the drawings or generate digital PDF files from them.

ARCHLine.XP supports direct printing and the compilation of so-called printing sheets, ensuring high-level functionality, allowing you to organize content on virtual pages and generate multi-page PDF files.

Before we begin the documentation creation, please watch the tutorial video on Sections, Elevations, and Callout.

4.1. Meaning of Sections and Elevations

Sections, elevations, wall views, and callouts are fundamentally dynamic drawings. Dynamic drawings are linked to the building itself, allowing them to respond to changes.

Definition

A **section** is a view created by cutting through the building along an imaginary plane. It illustrates the vertical dimensions of the building and architectural elements' layering that cannot be shown in the floor plan. The building section is derived from the building model and will be created as a New View related to the project. The program creates the section as a new 3D view perpendicular to the cutting plane. You can create any number of sections for your building.

The sectional view is entirely dynamic, tracking changes in the building model. You can work on a sectional view just like you would on a floor plan, selecting and modifying architectural elements. The section line is visible on the floor plan where it was created, but you can also configure it to be visible on all levels. The section line is represented by a dashed line with letters and arrows indicating the direction of the section view. You can replace the default symbol with your own.

If you move, rotate, or mirror the section line, the sectional view on the plan will update immediately. The **sectional view** allows you to represent elements through the cutting plane with or without hatching, with thin or thick contour lines. When creating the section line, you can set its depth and width. Resizing the cutting region allows you to control what appears in the Section view. Once created, you can manage sections in the Project Navigator.

Raster Images and Vector Drawings

Sections and elevations can be created in two ways: as raster images and vector drawings.

Raster images are ideal for speeding up the design process and producing informative and versatile views. A raster view can be created in seconds. Raster views are highly customizable, as you can assign various visual representations, such as hidden line, X-ray, or true color. The size and quality of a raster image depend on its resolution. Higher resolution results in better quality. The drawback is that raster images cannot be scaled to larger physical sizes. Enlarging them can lead to reduced quality and blurriness. Raster images cannot be edited as vector drawings and are primarily recommended for creating working documentation during the design phase.

The advantage of **vector drawings** is accuracy. Vector views are created using geometric primitives like angles, lines, curves, and filled areas. They maintain their appearance regardless of size and can be printed at any scale without loss of quality. Vector drawings can be freely edited. The downside is that the computation time is significantly slower than for raster images, so vector drawings are recommended for final documentation.

4.2. Sections

To define sections, initiate the **Ribbon Menu / Documentation / Section / Section Settings** command. In the dialog box that appears, you can configure the properties of section display on the floor plan and 3D view, as well as marker properties in 2D representation.

Image Representation Mode

For **Representation in 2D**, you can configure properties that will be visible on the floor plan:

- Place the section on the **Text Layer**.
- Set the line weight to 0.1 mm.
- Enable the option Visible on all floors, making them visible everywhere.



ection properties		
Parameters	Value	
Representation in 2D		
Layer	Text	\sim
Colour		
Line type	Dotted-dashed	\sim
Line weights	0.1 mm	\sim
Draw Order	8- Bottom-most	\sim
A Letter	A	\sim
Style of texts	Arial 200	\sim
Arrow head on section line		
Arrow head not on section line		
Left visible	\checkmark	
Right visible	\checkmark	
Other side visible		
Visible on all floors (More precisely in Floor di	~	

Let's review the Representation in 3D settings:

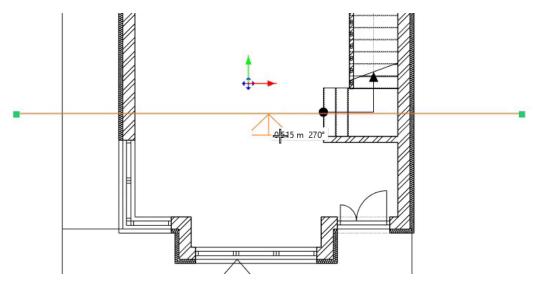
• Leave the representation mode as it is, as we want to create a **Raster image** section initially. Set the Visual Style to the following: **Realistic (with edges)**.

ection properties				
Parameters	Value			
Representation in 2D				
Representation in 3D				
Representation mode	Image	~		
Visual Style	Realistic (with edges)	~		
Section upper limit (relative to project zero)				
Section lower limit (relative to project zero)	0 mm			
Zero depth section - 3D model behind the secti				
Crop region. Depth:	1000 mm			
Enable grid lines	✓			
Partial section - the section should end at the	~			
Level annotation lines are visible	√			
Symbol at the end of level annotation lines	Edit			
Width of symbol	250 mm			
Style of floor level lines	Use style of section line	~		
Text style of level annotation line	Arial 200	~		
Hatch on section	~			
Hide all the objects	~			
Item types for applying section Line weight	on Line weight Edit			
Section Line weight	0 mm			

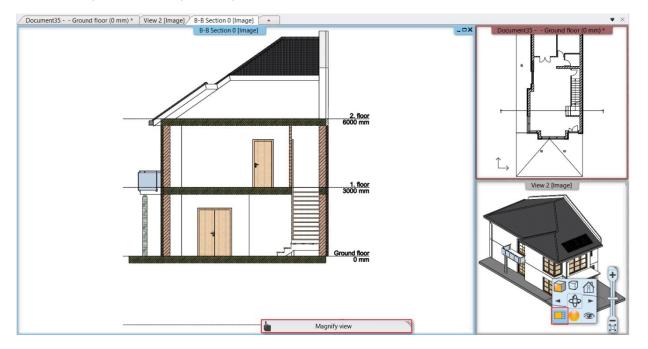
If necessary, you can configure the Marker properties; for now, we'll leave them as is.

ection properties				
Parameters	Value			
Representation in 2D				
Representation in 3D				
A Marker properties				
Section head. Symbol for the start of a sec Section_head				
Width of symbol	250 mm			
Colour				
Line weights	0 mm 🗸 🗸			
Arrowhead size	200 mm 🗸 🗸			
🛂 Arrowhead type	Arrow blank			
A 🛱 Arrowhead line length	250 mm			
Projection Line weight	0.3 mm			

- Close the dialog box by pressing the OK button and create a horizontal raster section using the Documentation Section -Section command.
- Draw the section line by clicking from the start point to the endpoint with a horizontal line.
- Adjust the viewing direction by moving the mouse so that even the staircase is visible, then click to confirm.



At this point, the program will create a completely separate window for this raster image section. You can place this window among the others using the "Magnify View" icon located in the lower left corner of the Navibar.



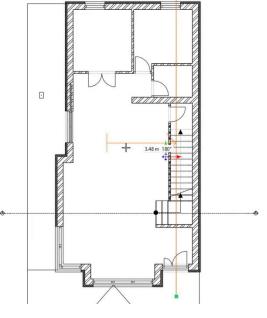
On this raster image section, you can see the colors, textures, and contour lines that the program automatically generated.



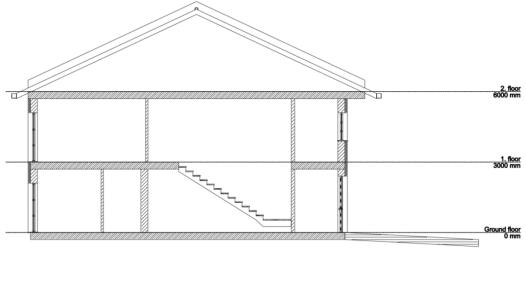
Vector Representation Mode

Now let's create a vertical section as a vector drawing.

- Go back to the Documentation Section Section Settings command.
- In the *Representation in 3D*, change the Representation Mode to **Vector drawing**. Confirm with OK.
- Again, choose the Section Section command, and draw the section line vertically, passing through the staircase and the two openings.
- Specify the viewing direction.
- The section is ready, place this window among the others as well.



-3000 mm



As mentioned earlier, sections are linked to the model, including the section line. So, if you make any changes, the section will update accordingly.

You can turn off the automatic update feature, which can speed up your work. If it always updates automatically, it can slow down your workflow.

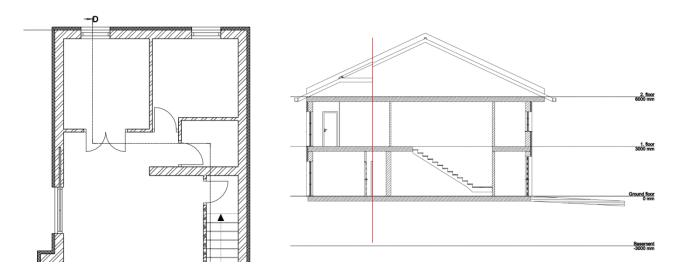
Here's how to disable it:

• Find it in the Settings, will under the Graphics menu. Under the *Build 3D model section, disable the "Keep Section view of this project updated" option.

Segmented section

You can create a segmented section using the **Documentation - Section - Segmented Section** command or modify an existing section. In this case, we'll go with the second option.

- Go back to the floor plan, select the section line, and choose the "Insert Node" option by clicking on the line.
- Click the line marker again, then select the **Offset** command.
- Accept with Enter. The program will ask if you want to update the section. Respond with "Yes." When you look at the
 newly created section, you will see that the segmented section has been created.



4.2.1. Hatching Patterns in Sections

There may be cases where you need to modify the hatching of sectioned walls, slabs, and other elements in your sections. These elements have internal materials that determine their appearance in your elevation views or sections. To represent a sectioned surface with different hatching patterns, you can do the following:

- Change the internal material to a different one with a different hatching pattern,
- Or modify the properties of the existing material to define a different hatching display for it.

Let's review this conceptual design and change the material properties of this slab.

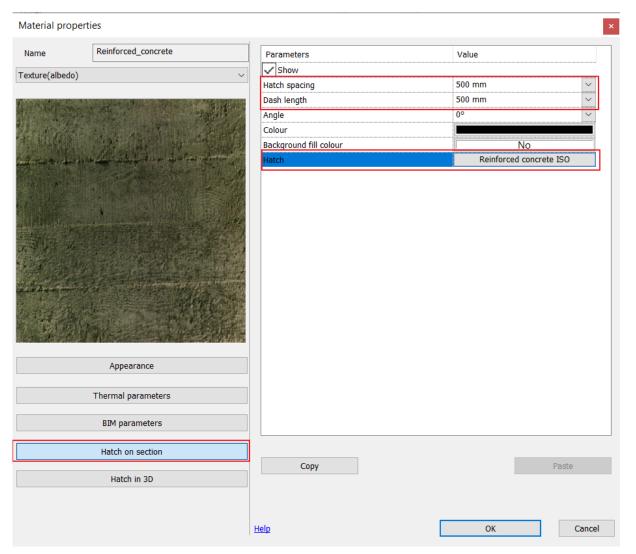
Slab properties		×					
▼ General properties ▲ ▼							
		parquet_rovere_03					
Simple Line 8- Bottom-most V		Bright_white					
The slab border doesn't display on the floor plan in print		White ceiling					
Base offset from the floor 0 mm ~	Slant angle	0° 0					
Total thickness -300 mm ~	Slab type	Slab ~					
Slab layers	Cut the walls	No cutting $\qquad \lor$					
Beams and block flooring system	Cut by roofs	No cutting \sim					
	Extract slab from terrains						
	U-value: 5.17 W/(m2*K)					
	3D fixed						
	Display 2D Fills	R:0 G:0 B:0					
	Width of border-strip not to be hatched	0 mm					
Visible on other floor?							
Visible on the floor above.	Visible on the floor below						
Simple Line	Simple Line						
BIM Parameters 1 réteg vb föd 30		OK Cancel					

- Select the slab and click the Modify button represented by the pencil icon to access its properties.
- In the displayed property window, click the "Slab Layers" button to bring up the properties of the slab layers in a new window.



104 Workshop 4: Documentation – Sections, Elevations and Callout

- Click on the **Reinforced Concrete** material. This will open the material library, where you can either choose a new material or edit the properties of the current one.
- In the materials window, click the **gear** icon in the upper-right corner and select "Edit Material" from the list, while the reinforced concrete material is selected.
- Choose the "Hatch on Section" option.
- Click on the Hatch name.
- Select the Reinforced concrete ISO pattern.
- Change the Hatch spacing and Dash length values to 500 mm.



- Close the dialog boxes by pressing the **OK** button.
- The section will automatically update at this point. However, if you still don't see the correct hatching, you can rebuild the model with the 3D hammer tool.

4.3. Elevation Views

4.3.1. Image Representation Mode

Creating elevation views works in a similar way to creating sections.

- Click on the Ribbon Menu / Documentation / Elevation View / Elevation Settings button to configure the parameters!
- You'll notice that here the parameters are divided into two sections: 2D Representation and 3D Representation, but you can adjust almost the same properties as in the case of sections.
- Under Layer, select the Text Layer.
- Set the line weight to 0.1 mm.
- Set the Representation Mode to Image and the Visual Style to Hidden Line.
- Leave the other properties at their default settings.

105

	Value			
Representation in 2D				
Layer	Text	\sim		
Colour				
Line type	Simple Line	\sim		
Line weights	0.1 mm	~		
Draw Order	8- Bottom-most	\sim		
Style of texts	Arial 200	\sim		
Visible on all floors (More precisely in Floor dialo	\sim			
Representation in 3D				
Representation mode	Image	~		
Visual Style	Hidden line	\sim		
Elevation upper limit	0 mm			
Elevation lower limit	0 mm			
Elevation region. Depth:	1000 mm			
Show items behind the crop region, too. Thei				
Enable grid lines	\checkmark			
Partial elevation view - display the division betwe				
Level annotation lines are visible	\checkmark			
Symbol at the end of level annotation lines	Edit			
Width of symbol	250 mm			
Style of floor level lines	Use style of section line	~		
Text style of level annotation line		\sim		
Hide all the objects	\checkmark			
Item types for applying section Line weight	Edit			
Section Line weight	0 mm			
Elevation symbol	Elevation_S			

Click the OK button. Within the Elevation View command, you can create automatic elevations as well as create your custom ones using the New Elevation feature.

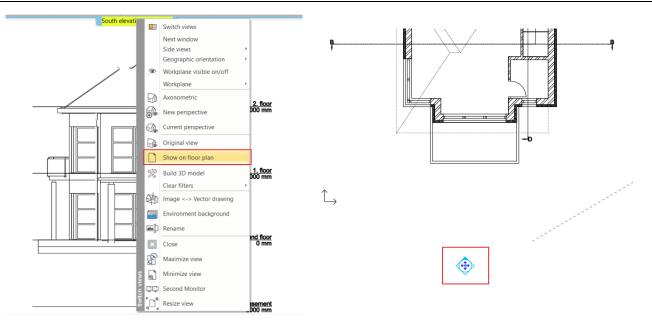
• Create the following elevations from the floor plan: North, West, South elevations. Place the newly created windows among the existing ones.

Modifying Elevation Representation

Ð

• can modify the representation of elevations even after creation by clicking on the floor plan symbol.

If you can't find the floor plan symbol, you can easily locate it by clicking on the elevation window, then choosing the "**Show on the floor plan**" option. The program will then show you the location of that elevation on the floor plan.



Let's modify the representation of the West elevation.

- Click on the West elevation on the floor plan, then choose the pencil symbol from the local menu.
- Set the Visual Style to the following: Realistic (with edges). Accept with OK.
- When prompted (Create Elevation view?), respond with Yes.

The Realistic (with edges) representation of the West elevation is now complete.



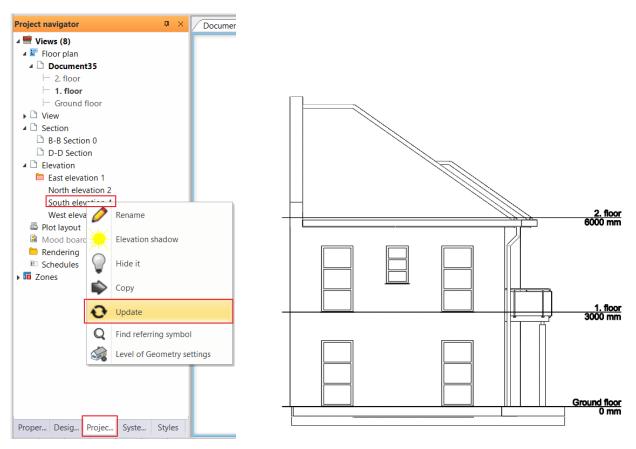
Deleting Unnecessary Floor

In the floor lines, you can see that the basement level is visible, even though there is no basement in this building. Instead of manually deleting the level lines on each elevation, let's see how to delete the entire basement level.

- Switch to the floor plan, then click on the level manager.
- Select the basement level and delete it using the **Delete Floor** command. The program will warn you that there is no undo option after deletion; accept this.

Edit le	evels								×
	*	>				8	List of buildings	Architecture	
Nu	Name	Bottom ele	Height	State	Split level h	eight	Parameters	Name	Elev. Offset
3	2. floor	6000 mm	3000 mm	Off	0 mm			FF - Finish Floor	50 mm
2	1. floor	3000 mm	3000 mm	Active	0 mm			TS - Top of Structure	0 mm
1	Ground floor	0 mm	3000 mm	Off	0 mm			BS - Bottom of Structure	-300 mm
0	Basement	-3000 mm	3000 mm	Off	0 mm		Edit	CE - False ceiling	2600 mm
								LE - Ledge	-350 mm
								FH - Floor height	3000 mm
								Copy area	Paste
								FH -	(N+1)FF (N+1)BS (N+1)BS (N+1)E (N) CE (N) FF (N) TS (N) BS (N) E
✓ Site	level is visible on the floor	pian		_	-	ion above sea lev	vei in m		
					0 m			ОК	Cancel

• On the left side in the Project Navigator, you'll find the sections and elevations. Here, you can simply right-click and update each elevation, which will immediately remove the unnecessary basement level lines.



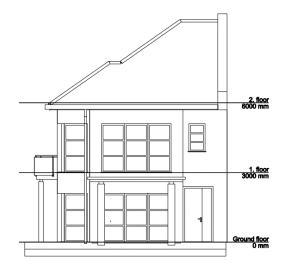
4.3.2. Vector Representation Mode

After the image representation mode, let's create an elevation using the vector representation mode!



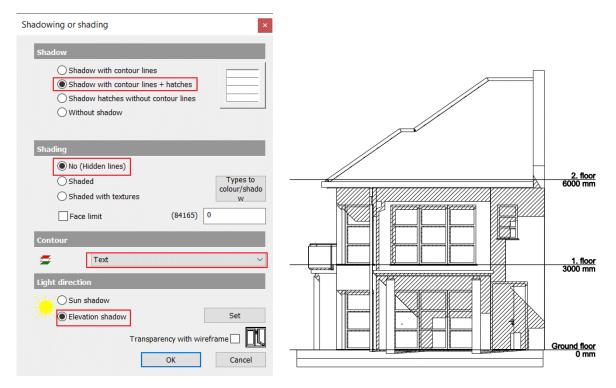
108 Workshop 4: Documentation – Sections, Elevations and Callout

- Delete the already created South elevation. Select its symbol on the floor plan, then click Delete. The program will warn you that you're trying to delete a drawing from the project. Accept with OK.
- Let's recreate the South elevation!
- This time, in Elevation View Elevation Settings, choose the **vector drawing representation** mode instead of the image representation mode.
- Use the Elevation View South Elevation command to create the elevation again.



4.3.3. Creating Technical Shadows

- To display hatching and other technical shadows on the elevation, click on the **Shadowing or shading command** on the left side, under Properties.
- In the dialog box that appears, set the shadow display mode to "Shadow with contour lines + hatches" shading to "No (Hidden Lines)," and the light direction to Elevation Shadow.
- Also, place the contour on the **Text layer**. Accept with OK. The technical shading is now complete.

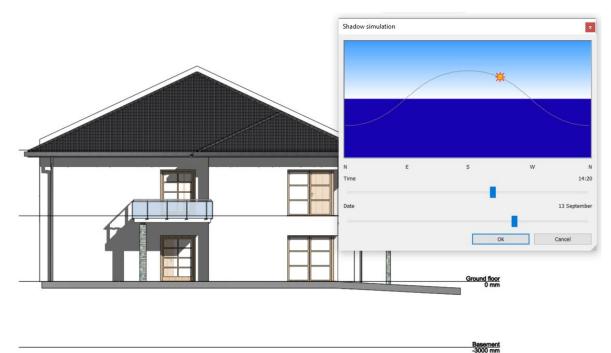


4.3.4. Creating Sun Shadows

Let's see how to create sun shadows on an elevation!

Select the West elevation, then go to View - Shadow - Shadow on/off. This will create the shadow.

• If you want to display it for a different time of day, choose View - Sun - Sun and Shadow Simulation. Here, you can adjust the sun's direction using sliders. Accept with OK.

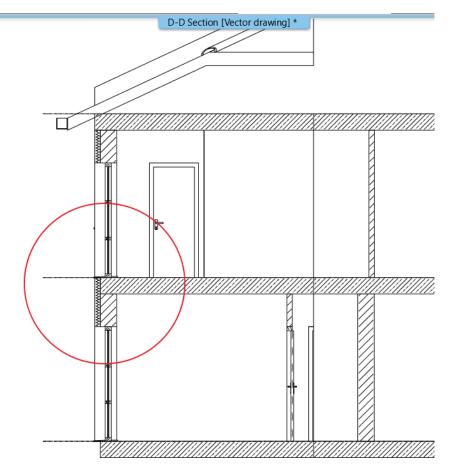


4.4. Callouts

Callouts are used to create detailed architectural details that demonstrate specific structural connections. Callout views can be added to floor plans, sections, or elevation views.

Placing a Callout

We will now use the D-D longitudinal section, and we want to create a callout for the circled area.



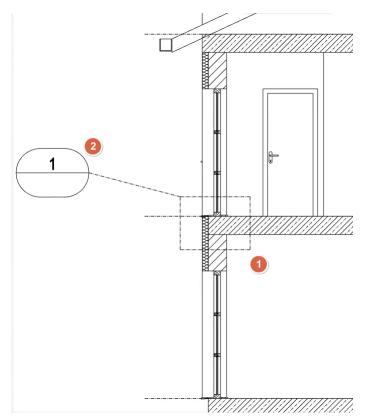


By clicking on the Ribbon Menu / Documentation / Callout / Settings option, let's configure the callout properties.

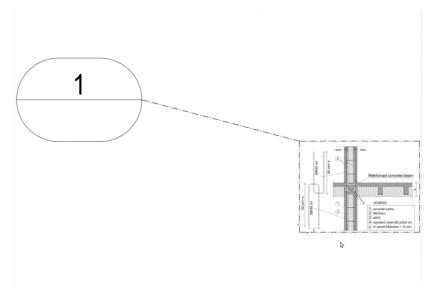
- Select the **Text layer** for the layer.
- Set the line weight to **0.05 mm.**
- You can also change the callout marker, but for now, let's keep the default oval. Accept with OK.

Parameters	Value	
Representation in 2D		
Layer	Text	\sim
Colour		
Line type	Dotted-dashed	\sim
Line weights	0.05 mm	\sim
Draw Order	8- Bottom-most	\sim
✓ Callout head	Callout sign oval	

- Draw the Callout using the Callout Rectangle tool.
- First, place the rectangle on the area to be called out, then position its marker.

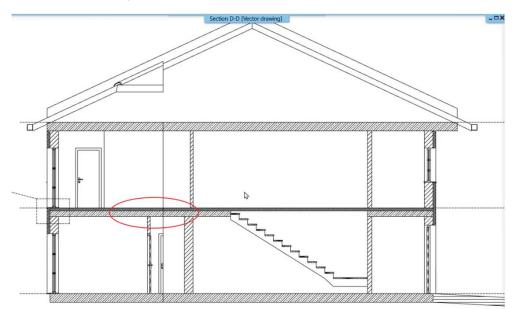


- The program has created the callout in a completely separate window, which can be inserted among the other windows in the usual way.
- Callouts maintain a continuous live connection with the original content, but in the ARCHLine.XP 2023 version, there is an option to replace the content of the callout with a PDF or DWG file.
- To do this, click on the callout, then select "Callout Content Import Raster Image" from the local menu.
- Browse and select the file you want to use from your computer; for this project, use this one: ARCHLine.XP Draw 2023 lesson_4, select the png file and click OK to load it.



Modifying the Slab Structure

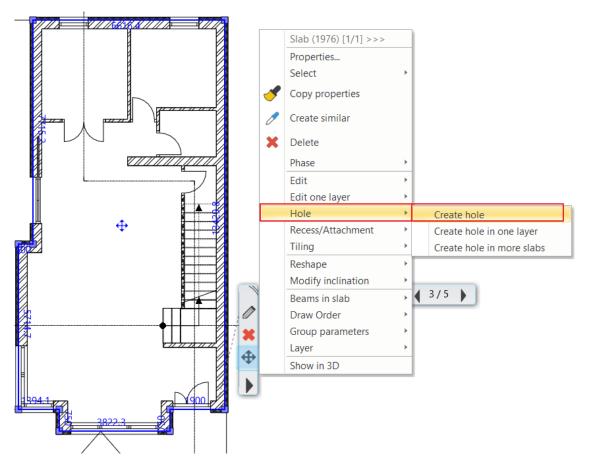
- Go back to the D-D longitudinal section.
- Click on the slab, then the pencil icon, and select the "Slab Layers" command.
- Click on the green + icon to create a new layer.
- Change their thickness: the upper layer should be -100 mm, and the lower one should be -200 mm.
- For the upper layer, select "Prefab Concrete" as the material, then change its hatch in the section.
- Click on the gear icon and choose the "Edit Material" command, then change the hatch to Concrete ISO. Accept all windows with OK.
- Rebuild the view using the 3D hammer, and you will see that the layered slab has been created.



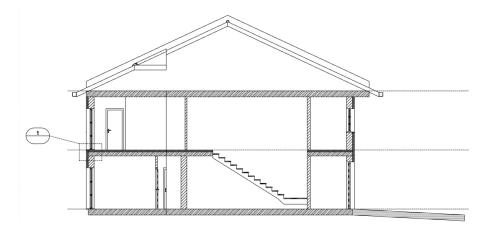
However, it appears that the hole in the slab has disappeared, so we need to recreate it on the floor plan.

- Switch to the floor plan view, then select the slab.
- From the local menu, choose the "Hole Create hole" command, then draw the hole with a rectangle above the stair structure.
- Exit the command by pressing Enter.

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Go back to the D-D section and rebuild the 3D model. The floor hole should now be correctly displayed.



Modifying the Connection Between Walls and Slab

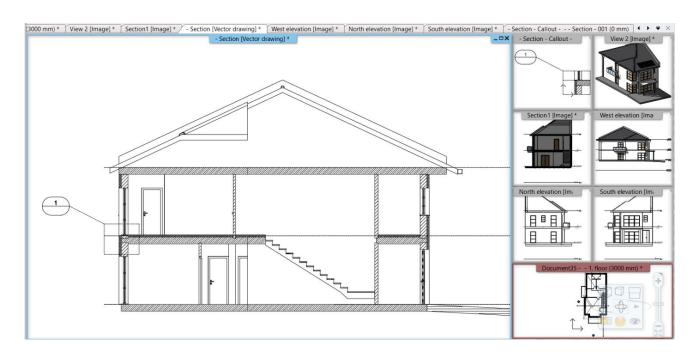
We want to adjust the connection so that it aligns with the top of the load-bearing layer of the walls.

- Make the floor plan active, and click on the level manager.
- In the top-right corner, you can adjust these heights, set the following:
- Finish Floor Level: 0 mm,
- Top of Structure: -100 mm,
- Bottom of Structure: -300 mm.
- Accept with OK.

In the D-D section, you can see that the slab has shifted down because of its relative height of -100 mm. We need to reset this to the correct height.

- Click on the slab, then the pencil icon.
- It's visible that the slab's base offset is 100 mm. Go to the editing, and adjust it to align the Bottom Bound with the Finish Floor Level. Accept with OK.
- Rebuild the model. You're now done with the modifications.

Architectural tutorial



Workshop 5: Dimensioning, Detailing, Schedules and Project Phases



5. Workshop: Dimensioning, Detailing, Schedules and Project Phases

In this workshop, we will continue with the documentation process. We will focus on dimensioning and labeling to make the documentation more readable and comprehensible.

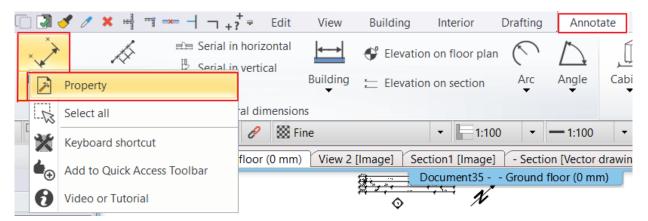
Before we begin the next workshop, please watch the tutorial video <u>Dimensioning</u>, <u>Detailing</u>, <u>Schedules</u> and <u>Project</u> <u>Phases</u>.

5.1. Properties of Dimensioning

We will be dimensioning the floor plan, the windows and doors on it, as well as the sections and elevations that have been created.

To ensure that the dimensions are prepared correctly, we need to adjust their properties. This can be done by accessing the **Ribbon / Annotate / Properties** menu or by right-clicking on various dimensioning commands.

· Right-click on the Ribbon / Annotate / Length command and access its properties.



Dimension general properties

In this section, we can configure the color, line type, and weight with which the dimensions appear, as well as the layer to which they belong.

Dimension properties			×
▼ Dimension general properties □ <td>× ====</td> <td>Simple Line</td> <td>. .</td>	× ====	Simple Lin e	. .
Text properties			▲ ▼
Dimension text properties			* •
Arrowheads			* •
Format properties			* •
Dimension line			* •
BIM Parameters Normal length dimension		ОК	Cancel

Text properties

Here, you can set the properties of the text associated with the dimensions, such as font type, size, color, as well as select from various other formatting options.



Dimension properties						×
Dimension general properties Text properties	/					× •
	Font	Tr Arial	~	Al	150 mm	~
Underline Strikeout	Style	Regular	\sim	A⊫□	5 mm	~
No Bounding	~	ЦIх	0% ~	<u>А</u> х	Default	~
Dimension text properties						* *
▶ Arrowheads						• •
Format properties						* •
▶ Dimension line						* •
BIM Parameters	Normal length dimension			OK		Cancel

Dimension Text Properties

Here, you can set the position of the dimension text with respect to the dimension line.

Dimension properties			x
Dimension general properties Text properties Dimension text properties		• • •	•
☐ 3D dim text alignment fixed	Text alignment Dim text on the other side, start angle (between this angle and this angle +180 degree)	Parallel ~ 90°	
Arrowheads Format properties		• • •	
Dimension line BIM Parameters Normal length dimension]	OK Cancel	•

Arrowhead

On this tab, you have the option to modify the symbol of the arrowhead, as well as change its size and color.

Dimension properties	×
Dimension general properties	
Text properties	▲ ▼
Dimension text properties	▲ ▼
▼ Arrowheads /	▲ ▼
Extension lines are displayed as (until 90°)	
Format properties	
Dimension line	× •
BIM Parameters Normal length dimension	OK Cancel
bur i diditeters Normal lengur dimension	Calicer

Format properties

You can select the standard according to which you want to dimension and modify the display of decimal points.

Dimension properties		×
Dimension general properties Text properties Dimension text properties Arrowheads		× • • •
	Distance and bearing # Format 0.12 Vigits Overrides in dimension text. Insert chars to be replaced with value: # -> value of dimension \$u -> unit \$-> plus-minus sign \$2 -> superscript 2 \$3 -> superscript 3	Using dot or comma (,) as decimal separator. See the setting in File/Options/Units and Angles panel. Suppress trailing zeros
Dimension line BIM Parameters Normal length dimension		OK Cancel

Dimension Line

Finally, on the Dimension Line tab, you can set the extension lines for the dimension, toggle extension lines on or off, and specify their distance from each other.

Dimension properties		×
Dimension general properties		× •
Text properties		× •
Dimension text properties		▲ ▼
Arrowheads		<u>۸</u> .
Format properties		▲ ▼
✓ Dimension line		A 🔻
Show dimension line	Extend beyond dim. line	Extension line
	0 mm	Extension line 200 mm
400 mm 🗸	<mark>↓</mark> □ 0 mm	✓ Offset from dim. line
BIM Parameters Normal length dime	ension	OK Cancel

5.2. Walls dimensioning

The first dimensions we place will be for the walls. The program allows us to dimension all the walls at once. For this, we need to set which dimensions should be displayed.

• Start the Ribbon / Annotate / Building / Wall Dimensioning Styles command.



120 Workshop 5: Dimensioning, Detailing, Schedules and Project Phases

	Vie	ew	Building	Interior	D	rafting	Annot	ate
	F	→	🗣 Elevation	n on floor pla	n	(\square	ſ
	Build	ding	는 Elevation	n on section		Arc	Angle	Cabin
	łï	Wall	dimensioning	styles				
1	ĒŪ	All w	alls			•	1:100	•
ī,			ans			- Sectio	n [Vector	drawing
	←→	Walls	S			round f	loor (0 mr	n)
	~	Auto	matic wall dir	mensioning				_
	a fe	Wind	low		Þ			
	a he	Doo	r		Þ			
		Dele	ting door/win	dow	Þ			
	ð	Roor	n internal dim	nensions				
	_m²	Area						
	34	Trian	gulation					
	3	Area	with rectangl	e divide				

In the dialog box that appears, add a custom style using the **Add** button. Rename it to "All walls" and set this style as the current one. Click the **Edit** button.

Name			Settings		Length dimension style		Current
Interior walls			Edit		Normal length dimension	\sim	0
Exterior walls			Edit		Normal length dimension	~	Õ
All walls 🛛 💈	2		Edit	4	Normal length dimension	×	03
Ac	ld 1	Delete					
_				, I	01		Cancel
🗸 Automatic d	imensioning			L	ОК		Cancel

Clicking through the dimensioning options, the diagram shows what dimensions will be displayed and how the program will mark them.

• Select the following dimensioning options in order from the list, and add them to the style by clicking the Add button:

Interior walls with opening axes distances, Interior walls dimensions, Exterior walls corner points, Exterior walls overall dimension.

Wall dimension	x
Dimension options:	
Interior walls dimensions Interior walls with opening width Interior walls with opening axes distances Exterior walls with opening axes distances Exterior walls with opening axes distances Exterior walls overall dimension Add Commands to execute: (from the inside to out)	
Interior walls with opening axes distances Interior walls dimensions	
Exterior walls corner points	0.3 3.4 0.3 2.9 Q ₁ 1 3 0.3
Exterior walls overall dimension	
×	0.3 3.4 0.3 0.9 1.2 0.8 0,1 1 0.9 1.1 0.3
Dimension to the centerline of the wall	<u>3.7 1.2 1.2 1.9 0.9 1.4 </u>
Dimension to core layer only	3.7 1.8 2.95 1.85
Dimension each wall layer separately	3.7 6.6
Wall dimensions ignore cladding	10.3 I
Door / window detailed dimension settings	_ph 0.9 _ ph 0 _
Attention. Opening width may be the gross, net or gross reduced by the frame value	OK Cancel

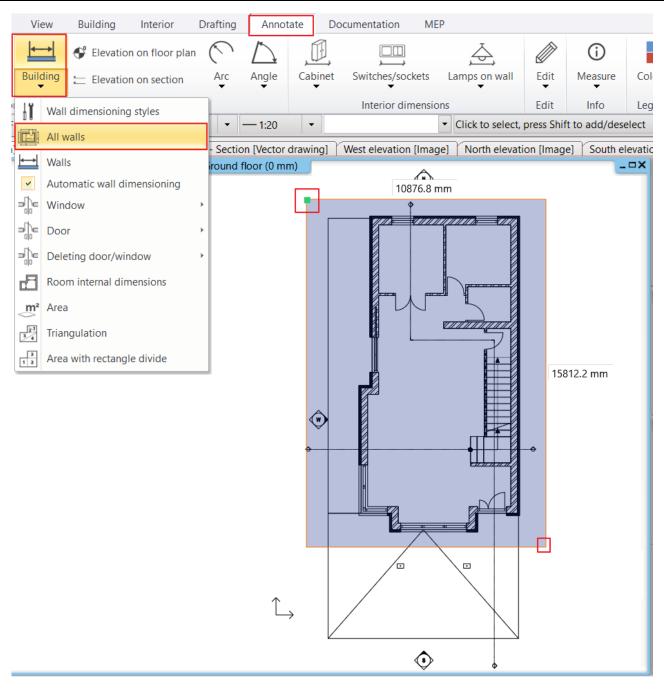
In the "Door / window detailed dimension settings" menu, you can modify the properties of window and door dimensioning, for example, whether to display the sill height or consider built-in details. Since we are currently displaying only the distances between axes, there is no need to modify these settings.

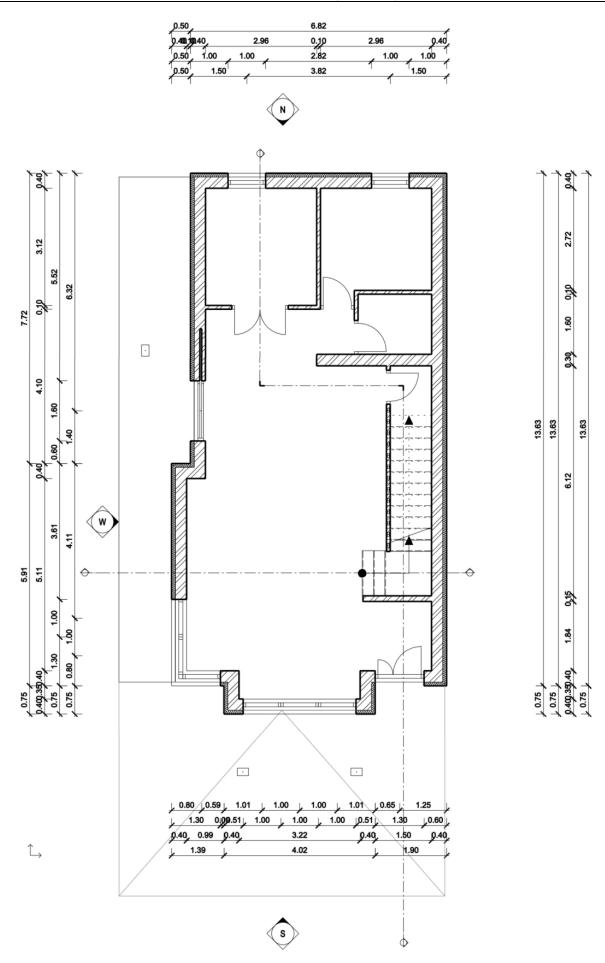
- Accept the settings in both dialog boxes by clicking OK.
- Select the Ribbon / Annotate / Building / All walls command. You will now create the dimensions with the created and activated wall dimensioning style.
- Select the floor plan with a rectangle and accept it with Enter. With the next click, determine where the innermost
 dimension line should be placed. Position the dimensions so that they do not overlap with the placed elevation and section
 marks.



121

122 Workshop 5: Dimensioning, Detailing, Schedules and Project Phases

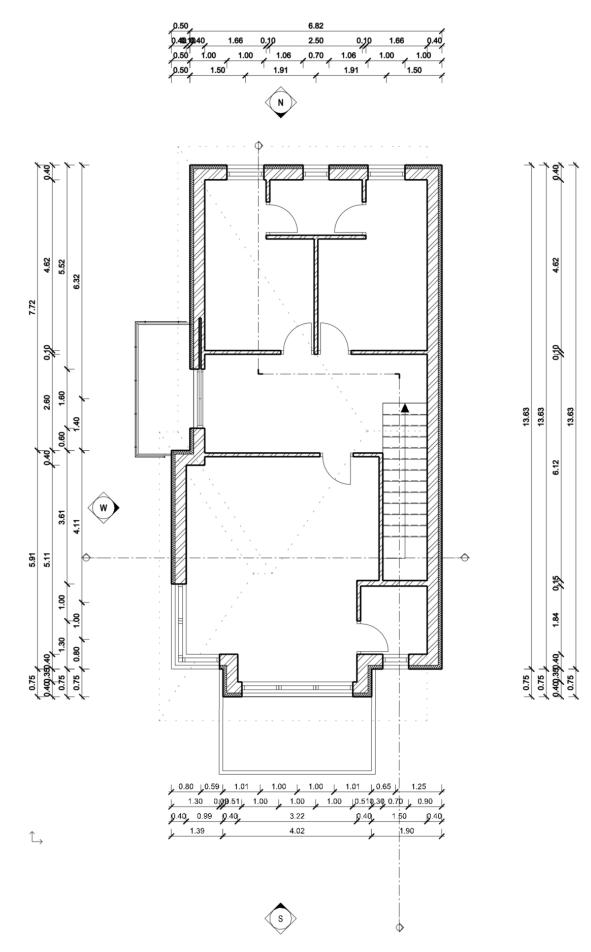




123

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• Switch to the 1st floor and create the dimensions there as well.



5.3. Dimensioning of Openings

The next dimensioning, we will create will be for the openings. Let's first examine its default settings.

• Select the Ribbon / Building / Properties / Opening / Door, then Window command.

Let's start with the door.

• Choose the Dimension, consignment menu.

Door					
Main parameters	Width:		900 mm	~	Redraw
Representation	Height:		2100 mm	~	
Reveal, void, niche, cavity	Thickness:		100 mm		
Basic geometry				^	
Outer handle	Hide opening and make a void				
Inner handle	Distance from wall line	0 mm			
	Sill height	0 mm			
Accessories	Outer sill height:	0 mm			
Interior and exterior sills	Add level shift				
	Effective clear width	750 mm			
Built-in details	Effective clear height	2025 mm			
Information	Colour				
	Line type	S	imple Line	~	
	Line weights	0 mm		~	
Create variant	Draw Order	8- Bottom-most		~	
	Reference axis	Side		~	
	Distance from wall corner	700 mm			
		Lining and architrave			
		Dimension, consignment		re-	
		Thermal parameters			
	Ratio (Illumination area)	100%		~	
	Material	Value		^	
	Solid	Wood-paldao			
	Wing	Wood-paldao			
	External frame material	Default material			
	Internal frame material	Default material		\sim	
	<			>	
					Flush
BIM Parameters	No styl	e			OK Cancel

• Select the Width Height option to see both values on one dimension line, and make sure that the Sill height is turned off.



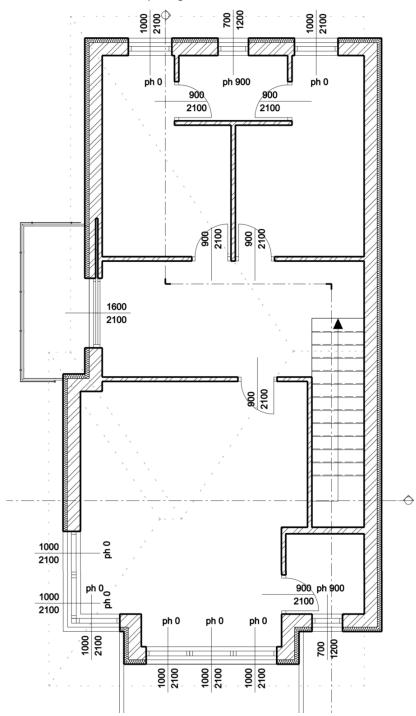
	🗂 Dimension.
Associate a dimension to the opening	consignment
✓ Visible parameters	
⊖Width	650
⊖Width / Height	
Width Height	450
Taking into co	nsideration of built-in details
Width/height PLU	JS blindframe
Adjust dimension to width value	
✓ Width MINUS reveal on left/right side (v	where exist)
Height minus reveal on top/bottom (who	ere exist)
Height minus frame	
Height plus sill	
	ph
Height plus sill	Internal floor elevation: 0
Height plus sill	

- Go to the properties of the Window, and select the Dimension, consignment menu here as well.
- Also, make sure the Width Height option is active here, and enable the display of Sill height. Accept it with OK. In the dialog box, we have the option to modify the marking of the sill height.

Dimension style				×
Dimension style Associate a dimension to the opening Visible parameters Width Width / Height Width Height	650 450 on of built-in		nension, signment	×
Width/height PLUS blindf	rame			\sim
Adjust dimension to width value				
─ ✓ Width MINUS reveal on left/right side (where exi	st)			
Height minus reveal on top/bottom (where exist)				
Height minus frame				
Height plus sill				
🗹 Sill height				ph
Sill height	~	Internal flo	or elevation:	0
Top height of door/window				STUK
Relative Absolute				
		OK		Cancel

• Select the Ribbon / Annotate / Building / Window / All command, then the Ribbon / Annotate / Building / Door / All command.

This will dimension all the openings.

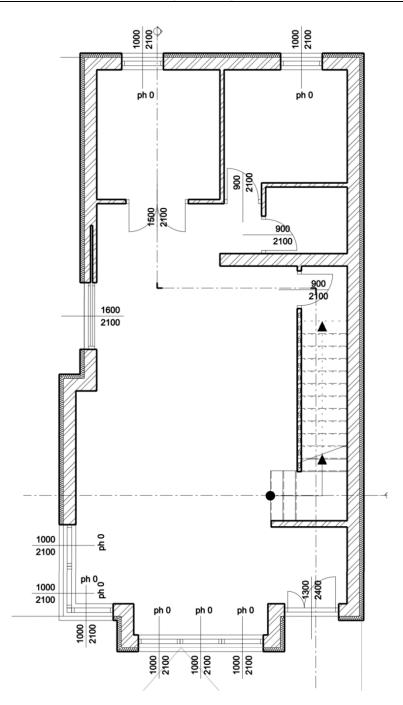


You can place the dimensioning of the openings in different positions as well. By selecting the Ribbon / Annotate / Building / Window or Door / Selection command, and clicking on the inner or outer side of the opening, you can move the dimensioning. By clicking on the arrows next to the dimension value, you can move it along the dimension line or freely.

• Go to the Ground floor and create the dimensions for the openings there as well.

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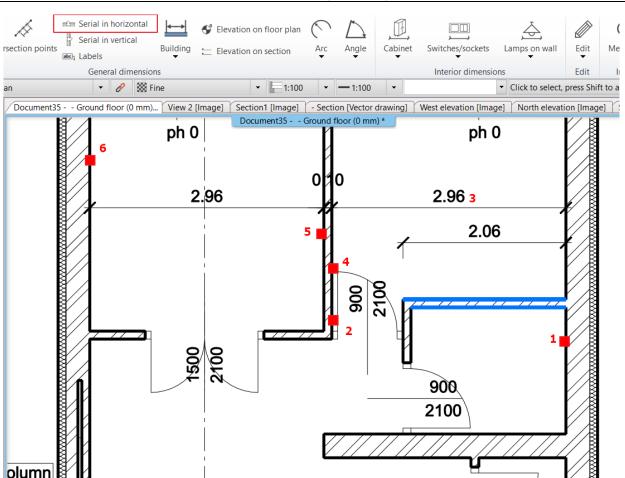
There is also an option for custom dimensioning using the Ribbon / Annotate / Length command.

With Horizontal and Vertical series dimensioning, you can dimension partition walls that are not connected to the main walls.

• Select the Serial in horizontal command, then enter the distance you want to dimension with the first two clicks, and place the dimensioning. It is not necessary to make the next clicks in a straight line; the program will place the dimensions horizontally in a line.

Workshop 5: Dimensioning, Detailing, Schedules and Project Phases

129



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The dimensions will follow any changes made on the drawing. You can add new ones or delete existing ones. Later, you can also group the dimensions if you need to modify the positioning of the dimensioning.

5.4. Room and Area

Further important information about the rooms in the floor plan can be displayed using the **Room and area** tool. By default, the room name and area are automatically displayed. The content and appearance of the room stamp can be customized to meet specific requirements.

There are three methods to determine the area of a room in the floor plan.

- Automatically, or
- By clicking within the enclosed boundary lines formed by walls, (Room by walls) or
- Sy manually drawing a polygon-shaped outline. (Room by polygon)

5.4.1. Room and area properties

- Right-click on the Ribbon / Building / Room and area command and access its properties.
- On the General Properties tab, set the Room Name text style to Arial 200.

Room				×	
				Redraw	
	* Rules				
	If the stair has more than 3 steps	subtract the whole area	<u> </u>		
	The changes can be visible on 'Calcula'				
	Properties				
	Colour				
	Line weights	0.1 mm	<u> </u>		
	Layer	Space	×		
	Priority	8- Bottom-most	×		
€ <u>,</u> <mark>-pr^b^b</mark>	Volume solid color				
	Text properties				
	Room name text style:	Arial 200	\sim		
Norm	Room data text style:	Arial 200	~		
DIN 277	Room number text style:	Arial 200	\sim		
	Flat name text style:	Arial 200	\sim		
-	Table text style:	Arial 250	\sim	Livina-room	
○ Norm I					
General properties	Draw frame		Living-room GA: 0.00 m ²		
General properties	Line Spacing	70 %			
Upper Limit	* Room partitioning properties	Room partitioning properties			
Calculated values	Room partitioning enabled				
	Font types	@Arial Unicode MS	\sim		
Abbreviations	Font size	200 mm	~		
Room surfaces	Colour				
	Layer	CarryOver	~		
Profile and area properties	Line type	Simple Line	~		
Custom Stamp	Text margin	96 mm			
Room book order	r exc margin				
Room book order					
BIM Parameters	No style			OK Cancel	

• On the **Calculated values** tab, change the Room Name from "Living-room" to "Room". Remove the checkmark from the Floor finish to ensure that the stamp does not contain this information.

Room				X
	Energy zone assignment			Redraw
		[Not associated]	~	Reuraw
	Room kind	[[Not dissociated]		
		DIN 277		
	Room name 🗸		\sim	
	Room number			
	Room kind	Administration	~	
× ····································	Room code	(HNF 1) Living area	~	
	Apartment Unit	Bereik:	~	
	Orientation	Interior	~	
	Undercutting type	a,	~	
	Room properties			
	Gross area 🗸	0.00 m ²	User d	
Norm	DIN277 area	0.00 m ²	User d	
Norm	Volume	0.00 m ³		
DIN 277	Illumination area	0.00 m ²		
O WoFIV	Perimeter	0 m		
	Height	2.6 m		Room
O Norm I	Area factor	100 %	×	
	* Constrains			GA: 0.00 m ²
General properties	Hatch			GA. 0.00 III
Upper Limit	Floor level			
Opper Linit	Slab level			
Calculated values	Floor finish	Boarding	~	
Abbum deblers	Wall finish	Dispersal paint	~	
Abbreviations	Ceiling finish	ACT	\sim	
Room surfaces				
Profile and area properties				
Custom Stamp				
Room book order				
BIM Parameters	No style			OK Cancel
BIM Parameters	No style			UK Cancel

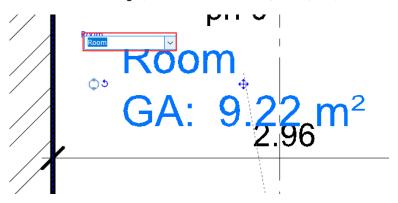
• Save the room stamp as a new style by clicking on "No style". Select the "New" option and save it as "Room Stamp". Click OK to accept, then activate it and close the dialog with OK.

5.4.2. Room and area: Automatic placement tool

• Use the Ribbon / Building / Room and area / Automatic placement command.

The program will automatically create room stamps for the rooms in the floor plan and display the number of stamps created. The stamps can be modified and moved even after placement.

 Move the room stamps so that they are clearly visible and do not collide with walls or dimension lines. Modify the names of the stamps. Click on the stamp, then click on the blue marker to edit, or select the name from the dropdown list. From top to bottom and left to right, the rooms are: Kitchen, Office, WC, and the area under the stairs is a Storage.

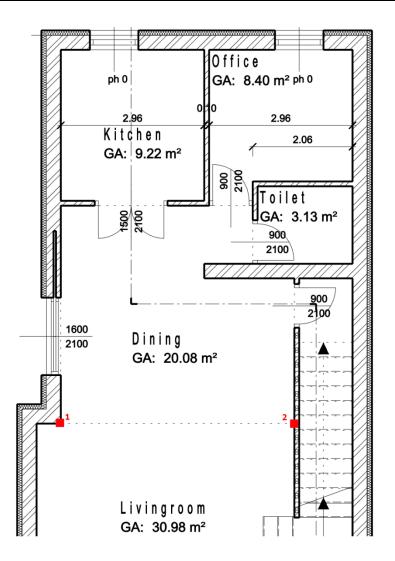


The largest room will be the living and dining area. Since the two functions are not separated by walls, the program has created only one stamp here. However, we can delineate different functions without walls using room separation lines.

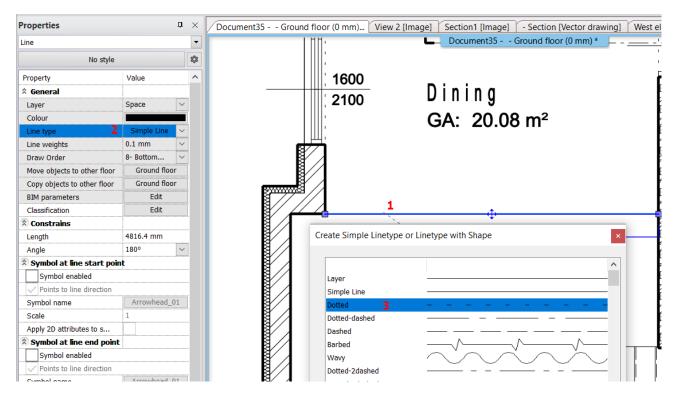
Select the Ribbon / Building / Room and area / Room Separation Line (pseudo-wall) command. Draw a horizontal
line starting from the corner of the wall recess, then press Enter. Move the created stamps and rename them as Dining
room and Living room.

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131



• Click on the room separation line, then modify the line type to dashed.

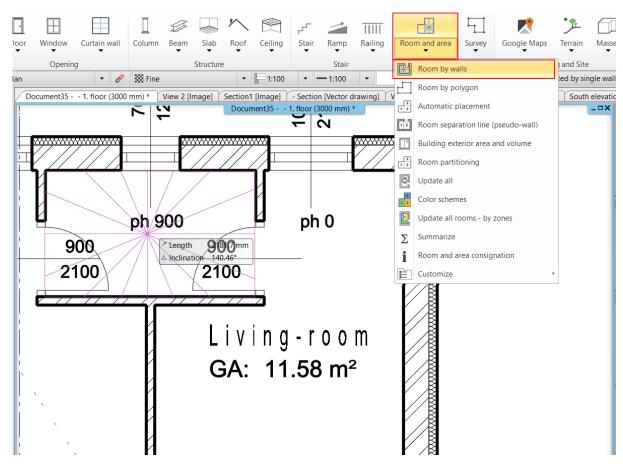


Architectural tutorial

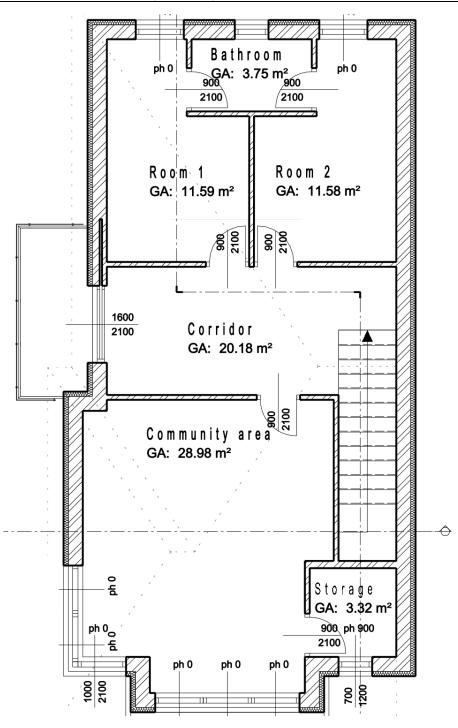
5.4.3. Room by walls tool

If the room is bounded by walls, it is advisable to use the **Room by Walls** command. This command automatically creates a room stamp along the enclosed boundary formed by walls when we click within the enclosed area. There is no need to draw the outline of the walls. This means that the room stamp is connected to the walls, so any changes made to the walls will be reflected in the calculations.

- Switch to the 1st floor.
- Select the Ribbon / Building / Room and area / Room by Walls command.
- Click within the enclosed area surrounded by walls. The room stamp will be placed.



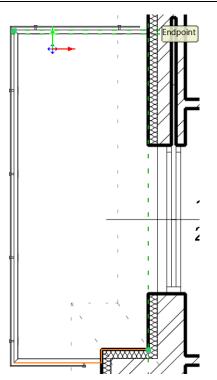
Move the stamps and rename them according to the picture.



5.4.4. "Room by polygon" - tool

This function is used when we want to measure areas that are not bounded by walls (e.g., terrace, balcony, garden).

- Select the Ribbon / Building / Room and area / Room by polygon command.
- Draw the contour of the terrace along the outline of the slab.



• Then, enter the room height in the dialog box that appears.

ARCHLine.XP			×
Room height			
New	value:	2700 mm]
		ОК	Cancel

• The room stamp has been created, which can be modified later as described earlier. Change the label to Balcony.

5.5. Color Schemes

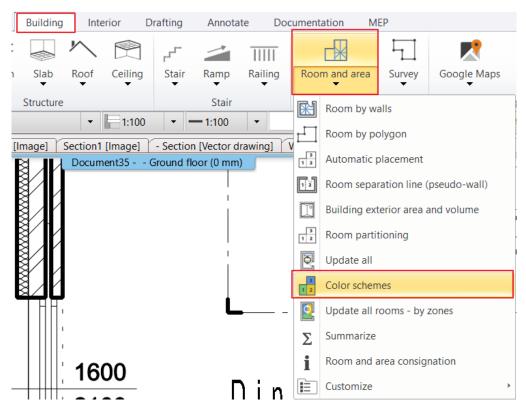
The Color Scheme is a graphical override method that serves to display group of elements or rooms based on any of their properties and present the contents of your project in an understandable way. A Color Scheme is based on an element type and its property and assigned value. The color schemes according to the properties are templates that can be saved, so by changing the templates, the model can be presented according to different aspects.

• Select the Ribbon Menu / Building / Room and area / Color Schemes command.

135



136 Workshop 5: Dimensioning, Detailing, Schedules and Project Phases

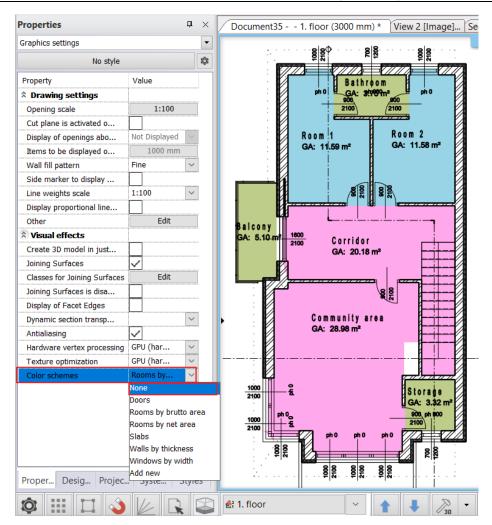


In the appearing dialogue, the grouping and display based on the gross floor area are already prepared. We can modify the values and colors associated with the color schemes, and it is also possible to create a custom color scheme.

Color schemes								×
Discipline:								
Architectural elements \sim	Group	^	Color schemes					
	Common properties		Rooms by brutt					Ø
Room and area	General properties		ORooms by net a	area				Ø
	Calculated values							
	Pset_SpaceCommon (12)							
	Quantities (12)	~						
	ARCHline XP Common (5)							
	Name		New	Delete	Delete	All	Import	Export
	All elements						Save	as global
	Room name						Save	us global
	Apartment Unit		Colour		Property	Operation	Value	
	Room type				Gross area	Less than	✓ 6 m ²	
	Room number	+			Gross area	Less than	✓ 12 m ²	
	Floor level				Gross area	Greate	✓ 12 m ²	
	Slab level							
	Floor finish							
	Wall finish							
	Wall finish							
	Ceiling finish							
	Room code							
	Norm							
			Import from	floor plan			Add	Delete
								Delete All
	From existing object							
					(ОК	1	Cancel

• Accept the dialogue with OK, so the program automatically creates the color scheme.

In the properties menu, we can switch between color schemes, and we can also deactivate it by selecting the None option.



• Disable the color scheme.

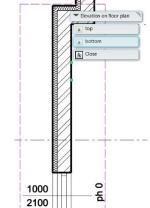
5.6. Elevation on floor plan

We can place an elevation point on the ground floor plan.

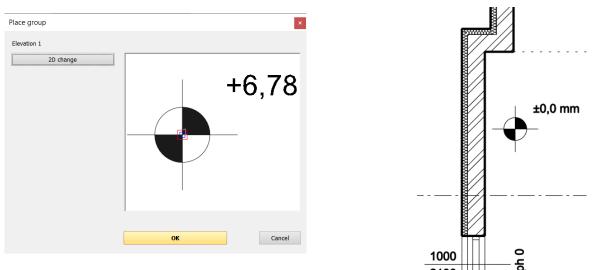
• Select the Ribbon Menu / Annotate / Elevation on floor plan command.



- Select one of the exterior walls, then click on its interior line. At this point, the program will
 query the elevation.
- First, we need to select an element. From the floating menu appearing in the upper right corner of the screen, we can choose the appropriate keyword based on which we want to measure the elevation. Now select the "Bottom" option.
- The dialogue box appears with the initial height, which can be changed if necessary. Set this to **0**.
- Click OK to proceed.
- In the appearing dialogue box, you can change the symbol of the elevation point. Choose "Elevation 1."







• Place the symbol with a single click near the entrance.

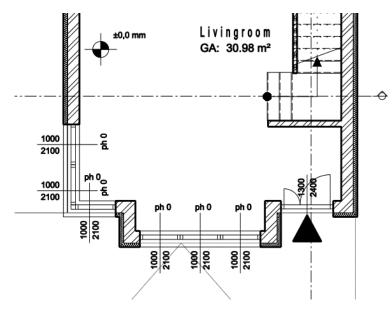
The symbol was created as a group. By clicking on the symbol, you can modify the value by choosing the "Edit Group" option from the local menu, or you can also mark the 2D group with a different icon. To exit, click on any element of the group, then select the "Close Group" option from the local menu.

5.7. Symbols

Other symbols exist that may be needed on the floor plan during the design process, such as the entrance or the indication of the north direction. Most symbols can be found in the **Design Center / Building / Group / Signs** category. Place them on the floor plan using the drag-and-drop method.

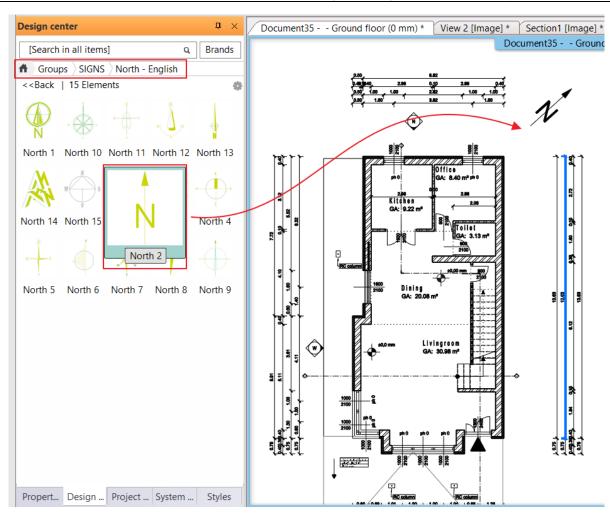
Entrance symbol

- Select Arrow 01 from the Design Center / Building / Group / Signs / Arrows category and place it in front of the entrance.
- You can modify its size in two ways. By clicking on the symbol, you can use the "Scale Group" option from the local menu, or by selecting the symbol, you can change the width and height values in the left properties menu.

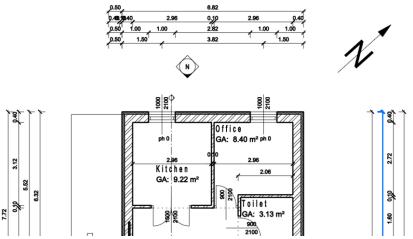


Symbol for the North Direction

• First, find the **Design Center / Building / Group / Signs / North – English** category and select one of the north symbols, then click and drag it on the floor plan. Click to place it in the right position.



• To modify the position of the symbol already placed earlier, first select it. The movement and rotation markers will then become available. Other properties can be changed in the Properties panel appearing on the left side.



In the project, the symbol for the North Direction will automatically align with the previously set north direction.

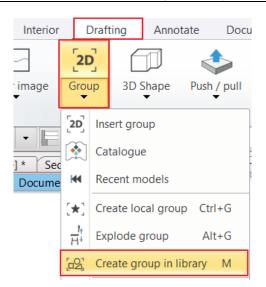
Useful Tip: How to create new symbols?

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While this tutorial does not delve into the detailed process of creating new symbols, if you need a custom symbol during the design process, this brief guide can be helpful.

- Draw the new symbol in the 2D window using lines, polygons, and text with the help of the Ribbon Menu / Drafting tools.
- the Ribbon Menu / Drafting / Group / Create Group in library command. This command allows the new symbol to be accessible and usable even when working on other projects.



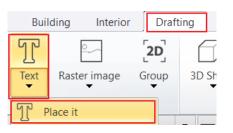


- Select all the elements of the new symbol, then press ENTER.
- Set the reference point of the symbol. You can add as many reference points as necessary. Press **ENTER** when you are done adding the reference points.
- Name the new symbol and categorize it. You can choose a subcategory from the appearing list or type in a new
 designation.

Create new item in the library	×
Name of the new item in the library:	
Symbol ~	
Category:	
SIGNS]
Sub category:	1
Other	
Arrows Callout Circle signs Consignation Elevation Human Line endings North - English North - Hungarian Opening direction Other	
Section Square signs Stair Türsymbole Urban design - Hungarian VR_Panorama	
OK Cancel	

5.8. Placing text

- In the architectural floor plan, you can place texts using the Ribbon Menu / Drafting / Text / Place it command.
- In the appearing "Text actuals" dialogue box, type in the desired text, such as "Ground Floor", then press the OK button.



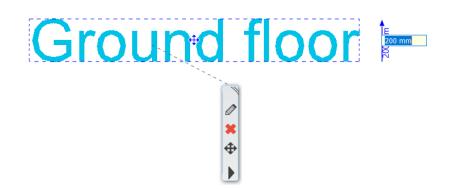
- An orange rectangle appears, with one of its corners anchored for moving with the mouse. Using this corner point, you can
 place the text anywhere on the drawing.
- After placing the text, the text input window reappears. Close it by clicking on the Cancel button.

Architectural tutorial

The default text height is 200 mm, which is suitable for displaying texts in 1:50 or 1:100 scale drawing content.

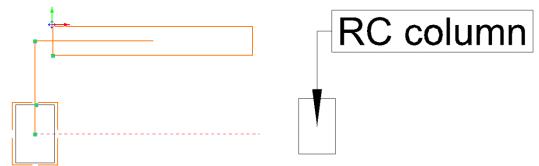
- The selected text height can be changed by clicking on the height value and typing in the new value.
 - Change the text height to 400 mm.

Ground floor



5.8.1. Text with pointer

- Select the Ribbon Menu / Drafting / Text / Text with pointer command. The text is: "Reinforced Concrete Column".
- Mark one of the columns, then place the text with the first click and determine the position of the arrow with subsequent clicks.



Copy the text to the other two columns. Select the text, then copy it with Ctrl + C, specify the copy's reference point (grip point), and paste it to the two columns with Ctrl + V.

5.8.2. Serial dimensioning

Let's add dimensioning to the previously created elevation. Select the West elevation.

Serial in horizontal

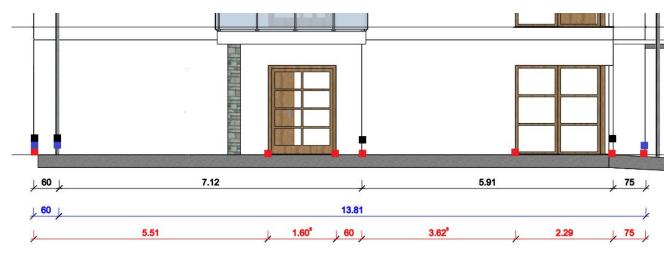
• Select the Ribbon Menu / Annotate / Serial in horizontal command.

	<u>- _ +?[†] ₹</u> Ed	it View	Building	Interior	Drafting	Anno	tate
	Serial in horizonta		🗳 Elevatio	on on floor pla	an (\square	۲.
its I	abch Labels	Building •	는 Elevatio	on on section	Arc	Angle	Cal
	General dimen	sions					

- Click on the first point in the 2D elevation drawing to start dimensioning (1).
- Click on the second point to get the distance from the first point.
- The horizontal projection of the distance appears on the drawing with a dotted line, which can be placed at any distance.
- Due to the settings of Serial in horizontal, the second point of the previous dimension coincides with the first point of the next one. Therefore, you need to continuously determine each point one by one.
- Click one by one to add more points. The horizontal distance between the two previous points will appear on the dimension line along with the previous dimensions.
- Dimension the elevation as follows:



- Black: Wall corner points and projections
- Blue: Total length
- Red: Wall corner points and projections, window/door width

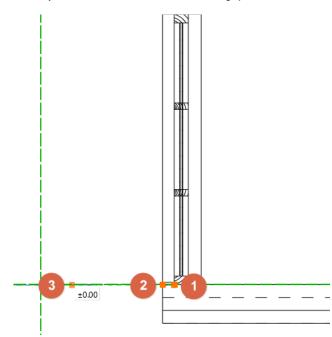


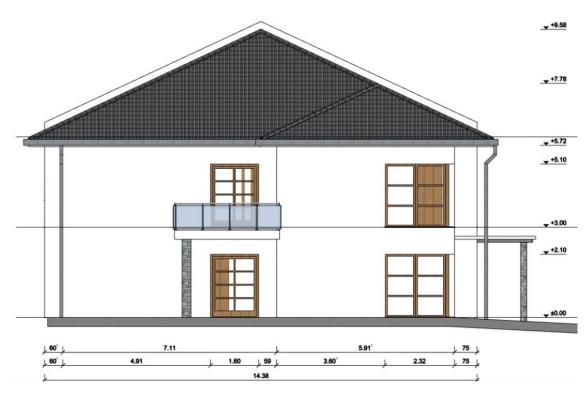
• Once you are finished with dimensioning, press ENTER.

Elevation on section

The **Elevation on section** command can be found under the **Ribbon Menu / Annotate** submenu. The process for dimensioning is as follows:

- Initiate the command, then select the starting height on the elevation wall by clicking on the junction point of the wall and the floor.
- To display the 0 height value, click again at this point or at the same height position, then determine the dimensioning position next to the elevation wall. Click at the preferred location, so the 0,0 value appears next to the elevation wall at the desired position.
- Additional points can be determined with a single click, and the height dimension will appear on the elevation wall.
- When you are finished with dimensioning, press ENTER.

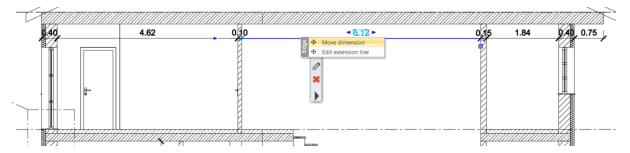




• Place a text here as well, indicating the West elevation.

Let's create the dimensions in the B-B section using the commands for Serial in horizontal, Serial in vertical, and Elevation on section.

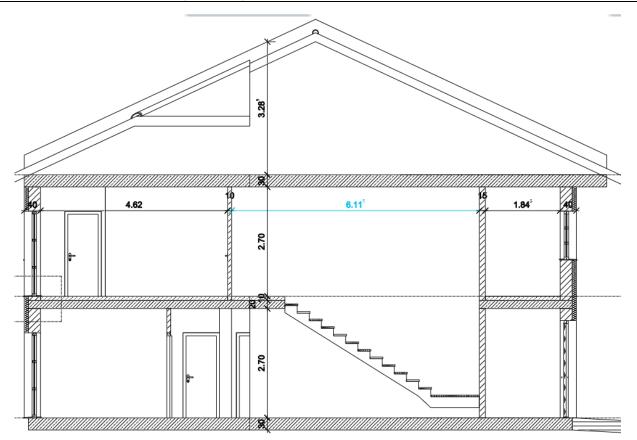
 Select the Ribbon Menu / Dimensioning / Serial in horizontal command. Dimension the wall thicknesses according to the picture.



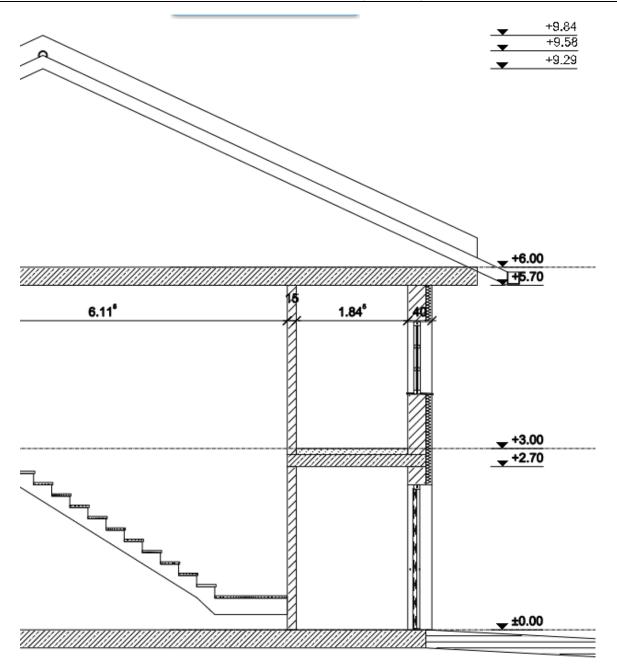
B

The linear dimensions can be moved together if we select the dimensioning and then, with the left mouse button, click once more. Using the Move Dimension command, we can move the entire chain of dimensions.

• Select the **Ribbon Menu / Annotate / Serial in vertical** command. Dimension the floor slab thicknesses and the room heights according to the picture.



• Select the **Ribbon Menu / Annotate / Elevation on section** command. Dimension the bottom and top of the floor slabs and the roof, and display the height of the firewall according to the picture.



For better clarity of the dimensions, it is possible to modify the arrowheads and the position of the values.

- Click on the 2.7 m height dimension and select its properties.
- Choose "Below" in the Dimension text properties,
- On the Arrowhead tab, select the upward-pointing arrow.

145

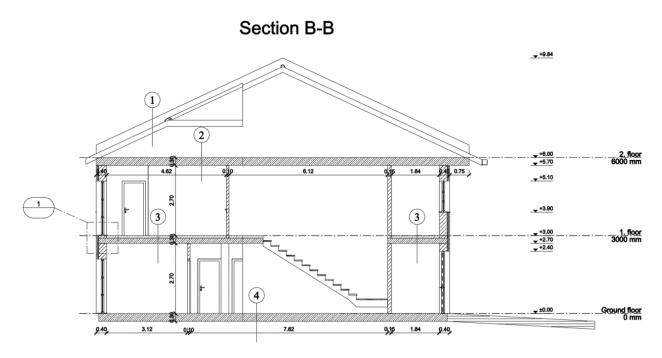


	Dimension properties		×
	Dimension general properties		* *
	Text properties		• •
	Dimension text properties		• •
	3D dim text alignment fixed	Text alignment Parallel V	
★ +3.00	Below V	Dim text on the other side, start angle (between this angle and this angle +180 degree)	
	▼ Arrowheads /		• •
+ 2.70	1. 	A⊫ □ ^{0 mm} ·	
	📃 0 mm 🗸 📩 200 mm 🗸	Extension lines are displayed as (until 90°)	
	Format properties		* •
	Dimension line		* •
	BIM Parameters Elevation dimension	ОК	Cancel

• Place text here as well, B-B section. Set the text height to 400 mm.

5.8.3. Numbering

• Select the **Design Center / Groups / Signs / Circle signs** folder. Drag the numbers to the various elements. This way, you can easily mark the layer orders.



We will also place numbers on the West Elevation.

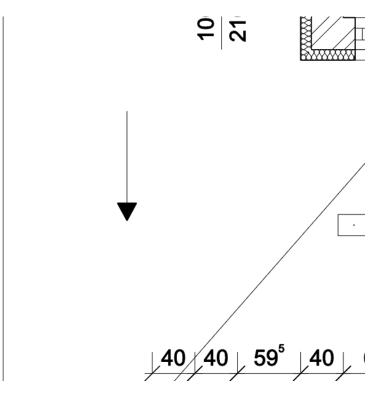
• Select the **Design Center / Groups / Signs / Square signs** folder. Drag the numbers to the various elements. This way, you will be able to easily prepare the material consignment.



5.8.4. Inclination Angle of the Ramp

Let's create the marking for the inclination angle of the ramp.

- Activate the floor plan and navigate to the ground floor.
- Select the Ribbon Menu / Drafting / Line command, then choose the Simple Line + Arrowhead style from the sidebar menu.
- Use the first click to indicate the starting point of the line and the second click to indicate the endpoint of the arrowhead.



5.9. Tags

Using tags, you can display information about selected elements on the floor plan. The displayed information can be customized.

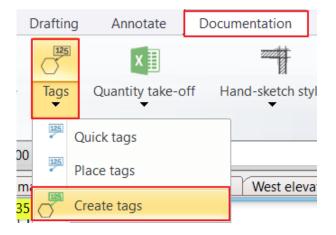


We will display the bottom elevation of the ramp, the upper elevation, and its inclination angle using a tag.

Placing a Tag

In this section, we will place a tag in ARCHLine.XP. The items within the tag will automatically update when the linked elements change, and by modifying the parameters in the list, the elements can be altered.

Select the Ribbon Menu / Documentation / Tags / Create Tag command.

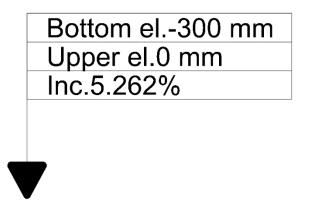


- In the pop-up window, on the left side, select **Architectural Elements** from the disciplines (1), then select **Ramp** (2). Choose the **Upper Level Elevation** (3) from the middle column and move it to the right column using the arrow (4). On the right side, uncheck the boxes for all properties except for Elevation, Upper level elevation, and Inclination. Select the Upper Level Elevation (5), and use the Up (6) button to change the order so that Upper Level Elevation comes after Elevation. Fill in the prefixes as follows: Bottom el.: ; Upper el.: ; Inc.: (7).
- Close the window by pressing Apply and then OK.

Tag creation								
Discipline:	Group		Tags		Ramp tag		~ New	Delete
Architectural elements 1	Common properties				Import	Export	Export all	Delete A
	General properties				aniport.	Lighter	Diport un	
Types	Calculated values		Tag p	arameters				
Wall	Pset_RampCommon (8)			Parameter Na	me	Visible	Prefix	Suffix
Door	ARCHline.XP Common (5)		1	ID				
Window			2	Floor				
Corner window			3	Style				
Curtain wall	Name		4	Name:			7	_
Slab	Name:		5	Elevation		\checkmark	Bottom el.	
Column	Elevation		6	Upper level ele	vation: 5	\checkmark	Upper el.	
Beam	Upper level elevation: 3	->	7	Width				
Roof	Waist slab material		8	Inclination:		\checkmark	Inc.	
Stair	Thickness	4						
Ramp 2	Railing automatically added to left side							
Railing	Railing automatically added to right side							
Room and area	Connection to the bottom slab							
Plinth	View							
Surveyed room								
Group								
Rebars								
				UP 6 Do	own			Delete
	From existing object					ОК	Cancel	Apply

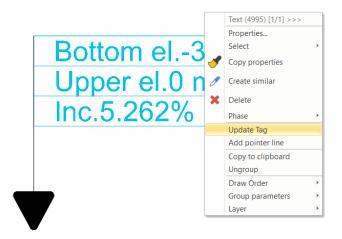
• Click on the Ribbon Menu / Documentation / Tags / Place Tags command.

In the appearing window, you can modify the properties set earlier. Accept it with OK. In the next window, you can adjust the style of the cells, font size, etc. Accept it with OK. Select the element you want to tag, in this case, the ramp.



The line connecting the tag to the element can be deleted, while the connection between the element and the label remains intact. Upon updating, the tag will track any modifications made to the element.

You can access the update of the tag from its local menu.



Useful Tip: BIM parameters can also be displayed in labels.

- First, set the BIM parameter of the wall.
- Click on the wall, access its properties, and click on the BIM Parameters button.
- In the pop-up window, select the option Pset_WallCommon (10) and set the AcousticRating value to STC 50, indicating
 good sound insulation.
- Click "OK" to accept the changes.

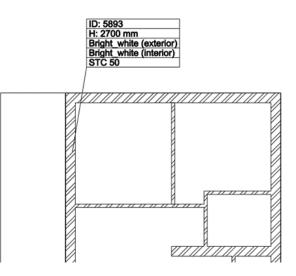
Properties		• ×	Manage Parameters						
				Choose from the sh	ared parameters t	io add			
No style		\$	Parameter group: (grey means not editable)	Choose from the sh	area parameters t		: The red coloured parameters are calculated val		
Property V	alue	^				Note: In	ie red coloured parameters are ca	culated valu	
* General			Group Pset WallCommon (10) 2						
Layer W	/all - Load	~							
Colour			Quantities (13)						
Line type	Simple Line	~	ARCHline.XP Common (5)						
Line weights 0.	.3 mm	~							
Draw Order 8-	Bottom-most	~							
Move objects to other floor	Ground floor								
Copy objects to other floor	Ground floor								
BIM parameters	Edit	1	Name	Туре	Value		Description	_	
Height 27	700 mm	~	AcousticRating	IfcLabel	STC 50	3	Acoustic rating for this obje	ct. It	
Base Elevation 0	mm	~	Combustible	IfcBoolean	510 50		Indication whether the obje		
Classification	Edit		Compartmentation	IfcBoolean			Indication whether the obje		
Constrains			ExtendToStructure	IfcBoolean	\checkmark		Indicates whether the object		
Absolute elevation 0 I	mm		FireRating	IfcLabel	<u> </u>		Fire rating for this object. I		
Total thickness 40	00 mm		IsExternal	IfcBoolean			Indication whether the elem	<u> </u>	
Structure	Edit		LoadBearing	IfcBoolean	Ť		Indicates whether the object		
Wall Framing	Edit		Reference	IfcIdentifier	- 		Reference ID for this specifi		
Slant angle 90	Do		SurfaceSpreadOfFlame	IfcLabel			Indication on how the flame		
Fill pattern orientation: Default of	orientation is O		ThermalTransmittance	IfcThermalTra	0.338080		Thermal transmittance coel		
✓ Same materials			Therman ransmittance	incriterindirid	0.550000		Therman a anomation course	induction of the second s	
Finish Face: Interior	Bright_white								
Finish Face: Exterior	Bright_white								
Disallow wall joins									
Colouring on the floor plan	No								
Mirroring									
Skip this wall over room boundi	ng								
Structural properties No	on-bearing wall	~ ~	Delete parameter group Make Excel repo	ort Import from Excel	Add (parameter	OK	Cancel	



- In the Create Tags window, select the wall option from the left-hand list, the Pset_WallCommon (10) option from the middle column, and add the AcousticRating data to the label using the arrow.
- Click OK to accept the changes.

Tag creation								
Discipline:	Group		Tags		Wall tag	~	New	Delete
Architectural elements	✓ General properties				Import	Export	Export all	Delete Al
	Calculated values		_		Inport	Lapore	Laport on	D didte / a
Types	Pset_WallCommon (10)		Tag p	parameters				
Wall	Quantities (13)			Parameter Na	me	Visible	Prefix	Suffix
Door	ARCHline.XP Common (5)		1	ID		\checkmark	ID:	
Window			2	Height		\checkmark	H:	
Corner window			3		xterior material	\checkmark		(exterior)
Curtain wall	Name		4	Finish Face: Ir	nterior material	\checkmark		(interior)
Slab	AcousticRating		5	AcousticRating	1	\checkmark		
Column	Combustible							
Beam	Compartmentation	->						
Roof	ExtendToStructure							
Stair	FireRating							
Ramp	IsExternal							
Railing	LoadBearing							
Room and area	Reference							
Plinth	SurfaceSpreadOfFlame							
Surveyed room	ThermalTransmittance							
Group				UP	own			Delete
	From existing object					ОК	Cancel	Apply

- Place the label on the floor plan.
- The label now includes the acoustic rating as well.



5.10. Schedules

Schedules are dynamic lists of building components that can be generated based on the content of the project. Schedules have a two-way relationship with the drawings. This means that changes made to the project are reflected in the schedules, and modifying the data in the schedules affects the corresponding elements in the drawing. Let's see how this works in practice.

- Click on the Ribbon Menu / Documentation / Schedules / Define Schedule command.
- In this dialog, you can customize the schedule, selecting which elements and what information you want to display. For now, we will place a default schedule, so close the window with the Cancel button.

scipline:	Group	^		Sche	dules	Window Sch	nedule	\sim	New	Delete
rchitectural elements	Common properties					Impor	t P	φort	Export all	Delete A
	General properties									
Types	Calculated values			Sche	dule parameters					
/all	Pset_WindowCommon (9)				Parameter Name		Calculat	Visible	Prefix	Suffix
oor	Quantities (4)			1	Instance ID			\checkmark		
/indow	ARCHline.XP Common (5)	~		2	Qty		\checkmark	\checkmark		
orner window				3	Nominal W x H			\checkmark		
urtain wall	Name	^		4	Style			\checkmark		
lab	Numbering			5	Name			\checkmark		
olumn	Width			6	View with scaling			\checkmark		
eam	Height		->	7	Sill height			\checkmark		
oof	Nominal W x H			8	Floor			\checkmark		
tair	Room name									
amp	Frame									
ailing	Exterior sill									
oom and area	Interior Sill									
linth	Shutter									
urveyed room	Leaf type									
roup	Threshold type									
ebars	Hardware type									
	Remote control				UP Dow	'n				Delete

- Select the Ribbon Menu / Documentation / Schedules / Placing Schedule command.
- From the architectural elements, select Door.

Schedule parameters								\times
Discipline:		Schedules	Door Schedule	9				~
Architectural elements $\qquad \qquad \lor$	Sche	dule param	eters					
Types		Paramet	er Name	Calculat	Visible	Prefix	Suffix	
Wall	1	Instance	ID		\checkmark			
Door	2	Qty		\checkmark	\checkmark			
Window	3	Nominal	WхH		\checkmark			
Corner window	4	Area		\checkmark	\checkmark			
Curtain wall	5	Name			\checkmark			
Slab	6	View with	n scaling		\checkmark			
Column	7	Floor			\checkmark			
Beam								
Roof								
Stair								
Ramp								
Railing								
Room and area								
Plinth								
Surveyed room								
Group								
Rebars								
				ОК		Cancel	Apply	

- After pressing OK, you can set the display properties of the schedule in the pop-up window. Accept it with OK.
- Place the schedule next to the floor plan with a single click.

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151

Door Sch	nedu	le				
Instance ID	Qty	Nominal W x H	Area	Name	View with scaling	Floor
N/A	1	1300 x 2400 mm	3.12 m ²	Door5		Ground floor
N/A	1	1500 x 2100 mm	3.15 m ²	Door4	<u>M</u>	Ground floor
N/A	1	1600 x 2100 mm	3.36 m ²	Door4	Ē	1. floor
N/A	1	1600 x 2100 mm	3.36 m ²	Door4	Ē	Ground floor
N/A	1	900 x 2100 mm	1.89 m ²	Door1		Ground floor
N/A	1	900 x 2100 mm	1.89 m ²	Door2		Ground floor
N/A	1	900 x 2100 mm	1.89 m ²	Door3		Ground floor
N/A	6	900 x 2100 mm	1.89 m ²	Door4		1. floor

Place another schedule for windows as well. Select the Placing Schedule command, then choose Windows. Place the schedule on the floor plan.

Window	Sch	edule					
Instance ID	Qty	Nominal W x H	Style	Name	View with scaling	Sill height	Floor
N/A	8	1000 x 2100 mm		Window5		0 mm	1. floor
N/A	8	1000 x 2100 mm		Window5	Ę.	0 mm	Ground floor
N/A	2	700 x 1200 mm		Window5		900 mm	1. floor

Locating and Modifying an Item in the Schedule

Identifying elements in the drawing through the schedule is straightforward with the selection of content.

- Select the previously placed schedule and find one of the doors on the ground floor within the list.
- Click on the small magnifying glass icon on the left side of the schedule, and the software will draw an arrow pointing to the selected item.
- Find the width value of the door in the schedule and click on it.
- Enter a slightly smaller or larger value (e.g., 850 mm or 1000 mm), then press ENTER. The software will then modify the width of the door on the drawing as well.

5.11. Quantity take-off

Quantity take-off is an excellent tool for extracting various data from the plan in Excel format for further calculations.

Let's create an Excel list for Building calculations.

Building Calculations list:

- Use the Ribbon Menu / Documentation / Quantity take-off / Excel list command.
- Select the Building Calculations option.
- Keep all options enabled except for the "Export BIM parameters" option, then press the OK button.
- Name the file BuildingCalculations.xlsx and save it by pressing the Save button.
- Microsoft Excel will automatically open this file if the application has been previously installed on the computer.

Make Excel report ×
Building calculation
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5.12. Managing phases

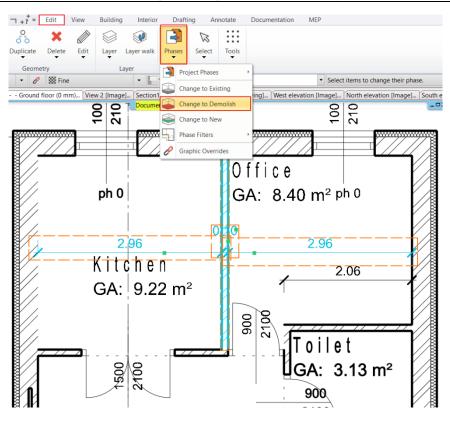
Using phases and phase filters, we can create a new design based on an existing design state. Phases can be tracked throughout the entire documentation, ensuring that 3D views, sections, and schedules follow the current phase.

• Select the Ribbon Menu / Edit / Phases command.

Here, we have the option to switch the appropriate elements to Existing, Demolished, or New status. This can be done for windows, walls, 2D symbols, etc.

• Initiate the **Change to Demolish** command, then select the upper partition wall and the associated dimension lines. Accept with Enter.

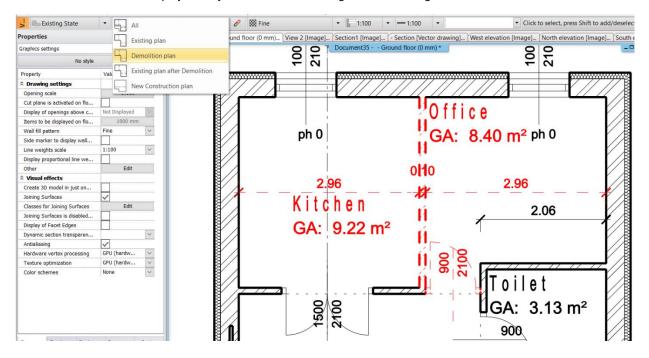




To display the modification, we need to use the phase filter.

Modify	Create similar	Paste	 Cut Copy Copy properties 	< ⇒ Move	O Duplicate	X Delete	Edit	Layer	Layer walk	Phases	\ Select ▼	Tools	
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- All: Displays existing, new, and demolished elements.
- Existing plan: Displays existing elements. (Before demolition)
- Demolition Plan: Displays demolished elements in red.
- Existing Plan after Demolition: Demolished elements do not appear in the plan.
- New Construction Plan: Displays newly added elements alongside the existing ones.



Workshop 6: Plan sheets, stamps, publishing multi-page PDFs and DWG/IFC export.



6. Workshop: Plan sheets, stamps, publishing multi-page PDFs and DWG/IFC export

In this workshop, we will familiarize ourselves with the process of compiling the plan sheets, where the completed drawings, floor plan, section, and elevation will be included. Additionally, we will create a stamp and examine how to print all of this arranged in a single PDF file.

Before starting the workshop, please watch the tutorial video Documents in Layout.

6.1. Printing to PDF

It is important that we can publish the drawings previously prepared in the project. The following options are available:

- print the current drawing, or
- print the current sheet set, which has been compiled from multiple drawings.

The result can be a printed copy or a PDF file, depending on what we want to deliver to the client. Let's quickly review the Print dialog box:

• Initiate the command Print to PDF under Ribbon Menu / Documentation.

nt		
Printer/plotter		
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	Plot Line weight ON/OFF	
Center the plot 5		
	Replace halftone with thin lines	
		6 Consult Larks
PDF ISO A4 portrait	Preview	OK Cancel Apply

Printer/plotter

Here are all the available PDF printing options and the list of printers. Choose the option that you need here.

Available paper sizes (1)

Here you can set the paper size and orientation.

Orientation (2)

Determines the position of the drawing. You can choose between default or rotated drawing options.



158 Workshop 6: Plan sheets, stamps, publishing multi-page PDFs and DWG/IFC export

Do not confuse Orientation with the orientation of the paper. The first refers to the drawing, the second to the sheet of paper.

What to print (3)

You can specify the area to be printed on the drawing.

What to print		
Entire drawing		
O Current view		
View		
0		
	View	
O Printable Area:	View	

Scale (4)

You can select the default scale, e.g., 1:100. The optimal setting calculates the most suitable ratio for the drawing content to fit well on the current paper size.

If you want to display the print plan in its actual size, set the scale to 1:1 as the floor plan is a real-size virtual paper, eliminating the need for further resizing.

Center the plot (5)

Moves the drawing's center to the center of the paper.

Print (6)

By clicking the print button, you can start printing the content according to the parameters set in the Print dialog. Depending on the selected printer, the result can be paper-based or a PDF file.

6.2. Creating Plot Layout

The Prepare Plot layout command is available under Ribbon Menu / Documentation / Plot layout.

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Print	Prepare plot layout Documentation											
		ie plot layor			-	🥔 🕅 Eine		1.10	n –	— 1·100 -		Click to selec

This command allows you to create a large number of drawing sheets in a matrix with the same stamps, for example, multiple A3 sheets in one go.

With the Print Queue command, the program automatically combines the contents placed within the dashed lines into one PDF document with the click of a button, based on the name of the plan sheet.

Now, we will place multiple sheets within one plan sheet layout.

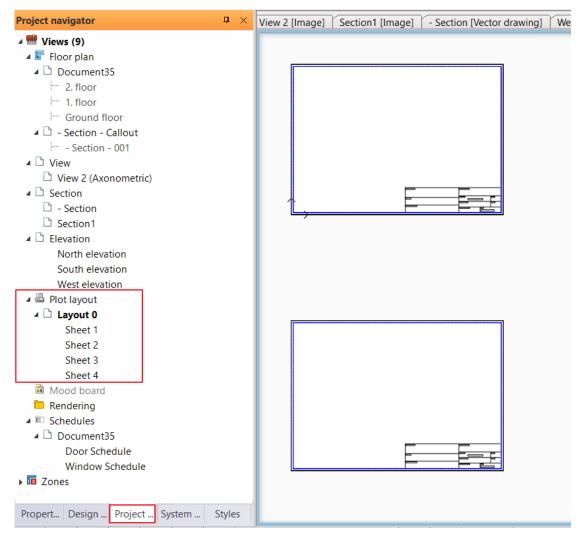
- Set the A3 size for the sheet size and landscape orientation.
- As we want to create 4 sheets, both the rows and columns should be set to 2.
- Select the Print Stamp, for example, **English1_horizontal**.
- Click OK to generate the 4 empty print sheets.

Forms	ISO A3 297x420 mm			~	
		Number of sheets	in columns, rows		
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You can manage the plan sheets using the Project Navigator on the left side. Under the Plan Sheets, you can find the Print Sheet along with the 4 sheets.



160 Workshop 6: Plan sheets, stamps, publishing multi-page PDFs and DWG/IFC export



These can be easily renamed by right-clicking and selecting Rename. Let's rename them as follows:

A 🖶 Plot layout

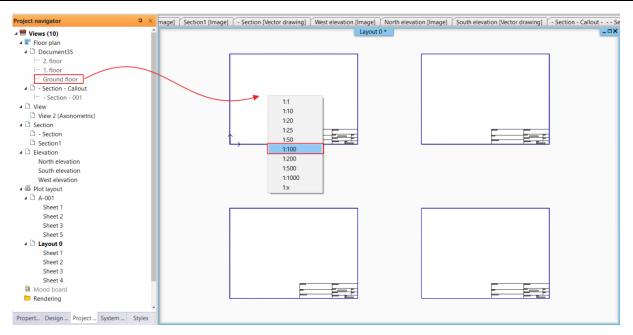
- A Documentation
 - 1_plan 2_Elevation 3_Section 4_Schedule

Even when working with numerous plan sheets simultaneously, it's easy to find a specific one: clicking on its name will prompt the program to show us which sheet it is and what it contains.

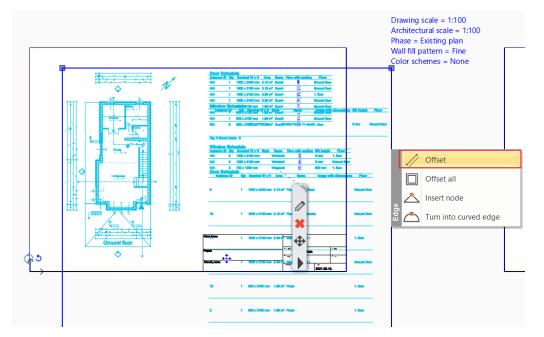
From the Project Navigator located on the left side, let's find the Floor Plan / Ground Floor section.

Using the "drag and drop" method, place the Ground Floor plan onto the empty page and select a 1:100 scale.

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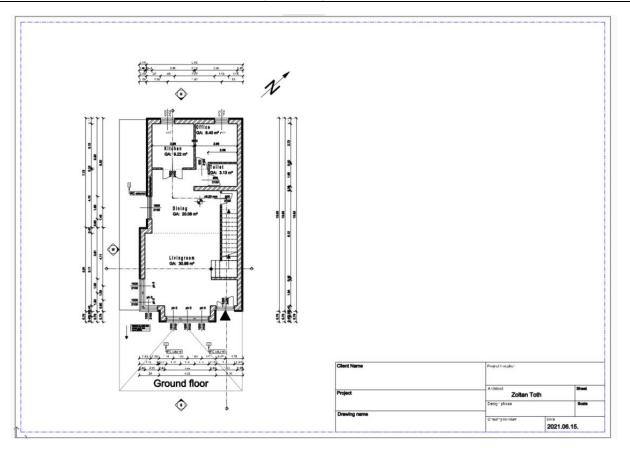


- Place the floor plan! We can see that the program has placed the entire content of the ground floor view on the plan sheet.
- This is not correct; we need to modify this. Click on the drawing, then on the edge marker, and select the Offset command.



- Drag the edges until the point where you want to see the drawing.
- Click on the final drawing, then use the Move command to place the content onto the empty space of the plan sheet.





- This method allows you to place different drawings with different scales on the plan sheet.
- Next, place a section of the floor plan next to the Ground Floor plan on the sheet, showing the phase of the demolition plan.

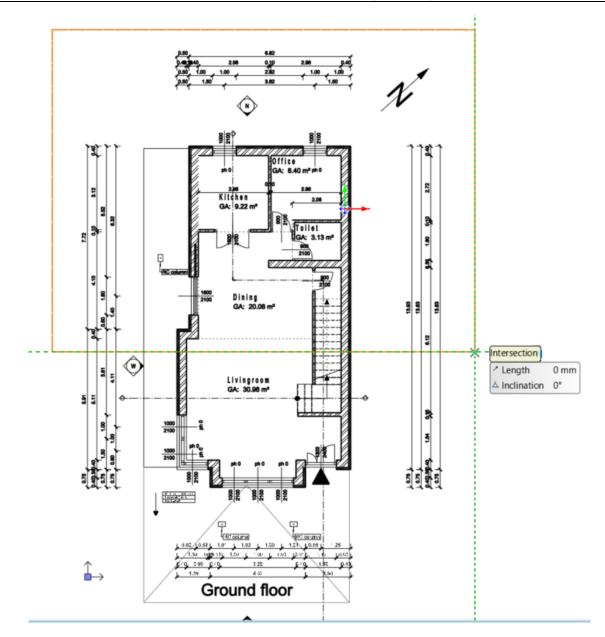
If you only want to copy a portion of the floor plan onto the plan sheet, follow these steps:

- Activate the window whose content you want to copy (in this case, the floor plan window).
- Select the Ribbon Menu / Documentation / Plot layout / Copy part to plot layout by rectangle command.

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- Highlight the portion of the floor plan that you want to copy.
- Then, on the third click, determine the reference point by which you will grab the selected portion and place it on the plan sheet.

Ð



- Activate the Plot layout.
- Select the Place to plot layout command from the Ribbon Menu / Documentation / Plot layout group, then specify the scale for placing it on the plan sheet.

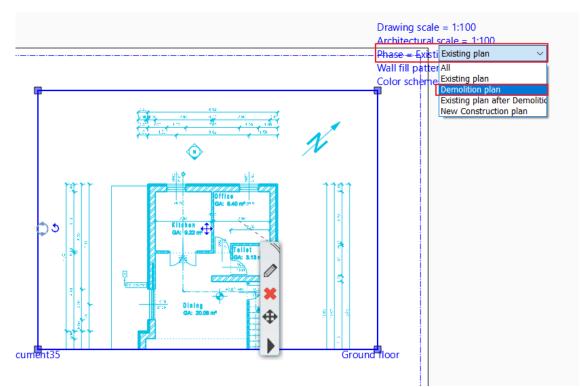


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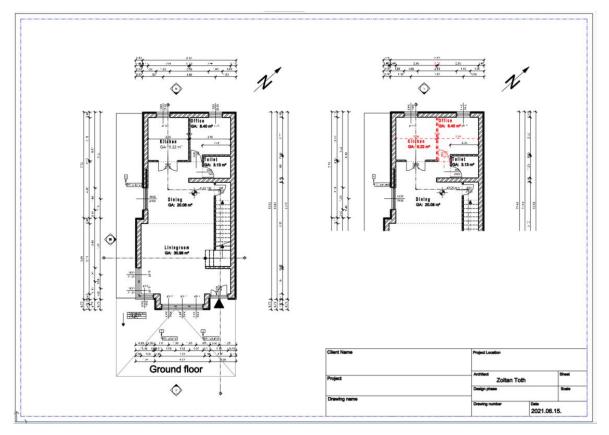
- Place the selected portion.
- If later we want to see a larger detail from this drawing, we can modify it in the same way as in the previous example, using commands like Offset.

To select the phase of the demolition plan:

- Clicking on the floor plan reveals various data modification options in the upper right corner.
- Click on Existing Plan, then from the drop-down menu, select the **Demolition Plan**.



• At this point, the walls to be demolished will appear in red.



The Plan Sheet is a dynamic drawing, so if changes are made in the original drawing, they can be reflected on the plan sheet. To do this, select the content of the Plan Sheet and click on the **Refresh this** command.

6.3. Creating Additional Plan Sheets

Placing the Elevation:

B

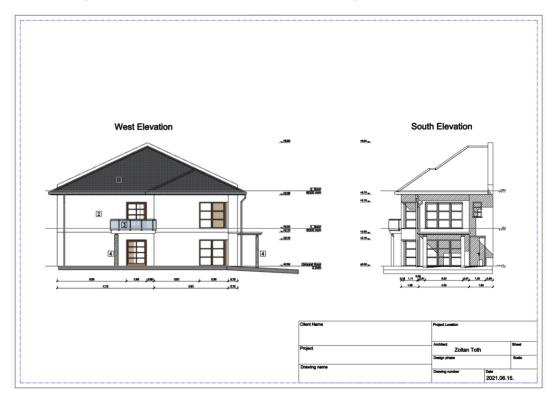
Let's continue placing the elevations!



166 Workshop 6: Plan sheets, stamps, publishing multi-page PDFs and DWG/IFC export

- Using the "drag and drop" method, place the West Elevation in a 1:100 scale onto the second empty sheet from the Project Navigator.
- Then, place the South Elevation on the same sheet.
- Switch to the South Elevation view, recreate the technical shadow, which we have already covered in the previous (4.1.3. Elevation Views) section.
- Use the **Copy part to plot layout by rectangle** command under the Documentation Plot layout, and then place it on the plan sheet using the **Paste to plot layout** command in a 1:100 scale.

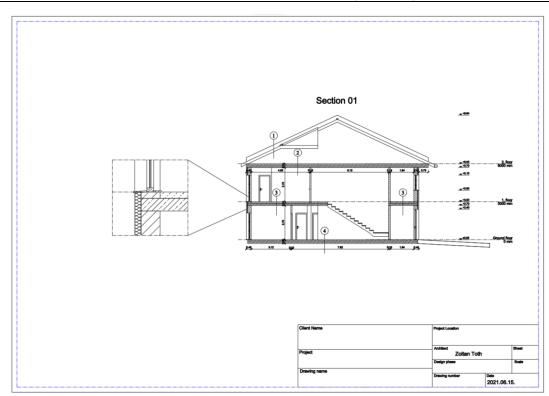
The difference between Copy part to plot layout and Copy part to plot layout by rectangle is that in the first case, we can specify a polygon shape, while in the second case, only a rectangular shape can be selected.



Placing the Section:

On the third sheet, let's place a section!

- Using the "drag and drop" method, pull the B-B Section to the right side in a 1:100 scale from the Project Navigator.
- On the left side, add a detail drawing: In the B-B Section Elevations tab, choose the Documentation Plot layout Copy part to plot layout by rectangle command as before, then copy it onto the plan sheet.
- Use the Offset command to trim the pointer line from the elevation drawing, then create one manually. Connect the elevation to the appropriate location of the B-B Section with a dashed line.



Placing the Schedule:

On the fourth sheet, we want to place the schedule, but on an A4 sheet in portrait format. To do this, first select the already created plan sheet and delete it.

- Now, let's create a completely new plan sheet!
- Select the Documentation Plot layout Prepare Plot layout command, then set the following:
- The format should be A4, Portrait orientation, and the number of sheets should be 1 column and 1 row. All other settings can remain as default. Accept with OK.

Plot Layout Setup			×
Paper setting			
Forms ISO A4 210x297	mm	~	
	Number of sheets in colu	imns, rows	
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Height 297]	Rows 1	
Plot layout name (A-):		002	
Orientation			
Portrait Landscape			
Non-printable Margin			
dX: 4]	dY: 4	
✓ Include plot stamp			
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	ОК	Cancel	





- The program will inquire whether to create a new print plan sheet (Yes) or add a next page to this layout (No). Choose No as it will add it to the existing ones.
- In the Project Navigator, this sheet will appear as "Sheet 5" (since we deleted Sheet 4). Rename it to 4_Schedule.
- Go back to the floor plan, then place the schedule found here using the Documentation Plan Copy part to plot layout by rectangle command based on what you have learned so far.
- When placing it, select a 1:200 scale.

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From a printing perspective, it is crucial that the printability of all (necessary) sheets is enabled. You can check this by clicking on Used Layers in the Layer Manager.

Similarly, the plan sheets also have layer settings, so it is worth checking there whether all layers are printable.

Filling in the Print Stamp

Using a print stamp can standardize the formal appearance of the documentation, providing a perfect frame for the presented plan.

The program has already created the print stamps on the plan sheets, so we just need to fill them out. This can be done by simply clicking on the stamp and then filling in the necessary information one by one. However, this can be time-consuming.

Automatic filling makes this task much faster:

- Select the File BIM Project Parameters command.
- Fin the necessary information here, then accept with OK.
- If you want to fill out a single stamp, click on the stamp, then choose the option in the local menu Edit Text in group.
- Click the Update Project parameters button, then click OK.
- The program will immediately fill in the specific print stamp in this case.

Cilent Name	Project Location	Project Location				
John Smith		El Cerrito				
	CA-2345					
	Architect	Sheet				
Project	Zoltan	Toth				
Elata Nova	Design phase	Scale				
Drawing name						
	Drawing number	Date				
		10.19.2023.				

However, if you have multiple stamps, the program also provides the option to fill them all at once.

- Select the Plot layout Update Project Parameters command. If you need to provide additional parameters here, you can do so. Accept with OK.
- You will then see the program filling in all the stamps in the project.

6.4. Print Queue

The print queue is simply a list of printing tasks that can be compiled and saved with the project. This is an extremely useful tool when plans and drawings need to be repeatedly printed, as the print queue stores the printing settings for each added content in the program.

Creating a print queue by selecting multiple sheets at once:

- Start the Ribbon Menu / Documentation / Print / Print Queue command.
- Click on the **Green plus** button, then you can select the Views / Drawings / Plan Sheets to be added to the Print Queue from the Project Navigator. These will appear in green.

Project Navigator		
4 🖷 Views (10)		
🔺 🐷 Floor plan		
 Document35 		
2. floor		
1. floor		
Ground floor		
 Section - Callout 		
- Section - 001		
▲ View		
View 2 (Axonometric)		
 Section 		
- Section		
Section1		
 Elevation 		
North elevation		
South elevation		
West elevation		
🖌 🖶 Plot layout		
Documentation		
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2_Elevation		
3_Section		
4_Schedule		
🖿 Layout 0		
Mood board		
📁 Rendering		
	OK	Cancel

• Click on the created plot layout (in this case, **Documentation**). With this option, the program automatically prepares the print settings for all associated plan sheets at once. Pressing the OK button will bring up the print dialog.

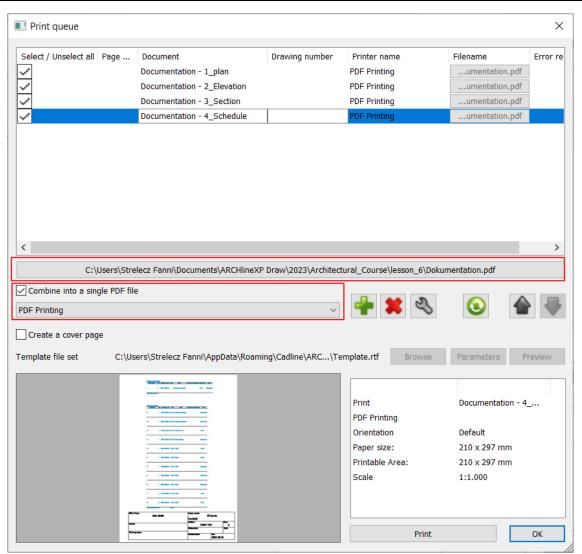


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View	Rotated drawing		
View	Upside-down	d Cruai far	
O Printable Area: Scale:			
420x297 🔘 Scale fact	tor	· · · · · · · · · · · · · · · · · · ·	
1:	1 ~		
Plot offset 🕖 User defin			
X: 0.0 mm 1: 1.0			
	e weight with scale factor		
Center the plot	weight ON/OFF		
Replace h	alftone with thin lines		
PDF ISO A4 portrait			

• Set the print properties in the dialogue box that appears and close it by pressing the Apply button.

The program automatically resizes the plan sheets and displays the scanned sheets in the list. You can print the documents in a multi-page PDF file by checking the option to **Combine into a single PDF file**. The order of the plan sheets can be modified, their settings can be edited later, and they can also be deleted from the list.

By clicking the print button, the program starts the printing process. When finished, the program automatically pops up the completed PDF file. You have completed the documentation creation process.



6.5. Exporting DWG/IFC Files

If we want to hand over the project to a fellow planner, we can do this using DWG/IFC files.

Exporting to DWG file

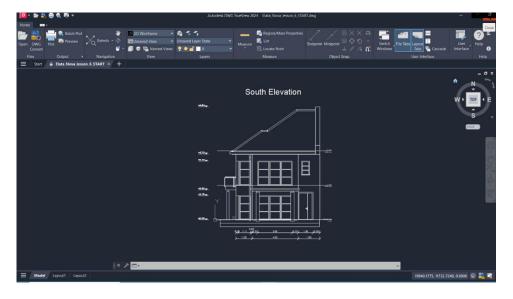
- Make the South Elevation window active.
- Select the File Export DWG command.
- Specify the location within the folder system where you want to export this file.
- Clicking the Save button will bring up the DWG export dialog.



172 Workshop 6: Plan sheets, stamps, publishing multi-page PDFs and DWG/IFC export

DWG export		
Unit:	mm	
File version:	Release 2004-2006	Copen Design
Export building	All buildings	Alliance
Phase Filters	All	\checkmark
Others		
Export dimension measured value as text	Colour conversion:	Off ~
Ignore invisible layers and its items	Keep black and w	hite (no inverse)
Export group IDs as attribute	Convert text to	single and multi line $\qquad \lor$
Create log and audit files		
Apply phase graphic override		
Export from visible floors		
Export BIM parameters as block attributes		
Show more options		OK Cancel

- Here, we can set different file versions depending on the software the recipient will use to read our file. I accept it by clicking OK.
- We can check the result of the export and view it in a free DWG viewer program like Autodesk DWG TrueView.
- Open the generated DWG file and check what content the program has exported. We cannot edit it, only view and verify it.



B

From the program, we can export many other file formats under the File menu - Export - Export command.

Exporting to IFC file

- Activate the 3D model!
- Set the level of detail you want to export this model with: you can do this using the **Build 3D model** command with the 3D hammer.
- Now select the **Documentation** option and accept it with OK.

Level of Geometry settings		×
Views View View 2 (Axonometric) Section Section E- Section View 2 (Axonometric) Section Net elevation North elevation South elevation	Level of Geometry Symbolic Schematic Detailed Occumentation Construction	Others
	Content of 3D model Selecting floor plans by storeys for 3D model construction All	~
	Element types All	~
Surfaces 5226	ОК	Cancel

- Select the File menu Export IFC command, then set the location for saving. • I leave the IFC Export Properties as default in the pop-up window. •

It is important to know that IFC not only transfers the complete 3D model and the 2D floor plan but also all building information. Therefore, software capable of this will recognize walls, slabs, and openings created in ARCHLine as such.

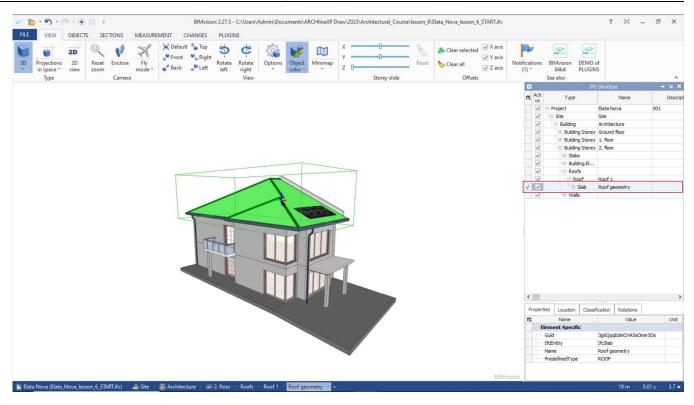
ARCHLine can do the same. If we import an IFC format file into the program, it is capable of recognizing these architectural elements.

- Exporting can take a few minutes depending on the complexity of the model. Once • the program is done exporting, it lists exactly what elements were exported in a new window.
- Let's check the end result in a free IFC viewer program (BIMvision)!
- If we click on any detail, the program recognizes the specific element. These also cannot be edited here.

			^
Properties			
Phase Filters	All	~	
Export base q	\checkmark		
Use mapped	\checkmark		
Use mesh ge			
Wall Framing	\checkmark		
LOG	Docu	~	
Items to export	rt		
Select all	classes		
Beam / IfcBeam	\checkmark		
Building Elem	\checkmark		
Building Elem	~		
Chimney / Ifc	\checkmark		
Civil Element	\checkmark		
Column / IfcC	\checkmark		~



174 Workshop 6: Plan sheets, stamps, publishing multi-page PDFs and DWG/IFC export



Workshop 7: Creating in-place mass model, reference to other projects



7. Workshop: Creating in-place mass model, reference to other projects

In this workshop, we will focus on environmental representation. For this purpose, we will import projects prepared by partner designers into the program, which were also created with ARCHLine.XP. We will explore how to schematically represent a building block.

In the previous workshops, we created a part of a row house, and now we will conceptually represent the additional members of the row using the mass modeling tool.

Before we start the workshop, please watch the tutorial video Creating in-place mass model.

7.1. Preparation

B

In the previous phase of the design, we created a floor plan, a print sheet, a section, and an elevation drawing. For the remaining part of the tutorial, we will only need the floor plan and the associated 3D model.

- Find and close all drawings except for the floor plan and the 3D model window.
- Use the Magnify view 📕 icon on the bottom left of the navigation bar to arrange the windows.

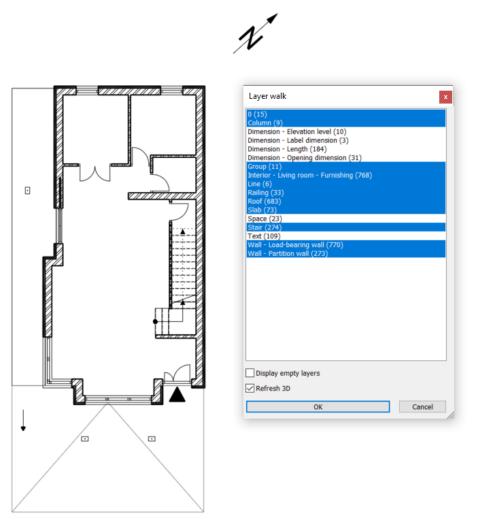
The closed windows can be accessed in the Project Navigator. The program indicates these windows with a red icon, indicating that they are not open. To open them, click on the desired item (Section, Elevation, or Plan) and select the 'Make Visible' command.

Elevation				
📁 North elevation				
🗖 South elevati 📃 Make vis	sible			
📁 West elevatic 🛛 Delete				
🔺 🖶 Plot layout				
🖿 A-001				
Mood board				
📁 Rendering				
Schedules				
🔺 🗋 Document35				
Window Schedule				
Door Schedule				
🕨 🗖 Zones				
Propert Design Project Sys	stem Styles			

We will make the floor plan more transparent.

- Open the Layer walk.
- Turn off the Dimension, Text, and Room Stamp layers, then click OK to confirm.

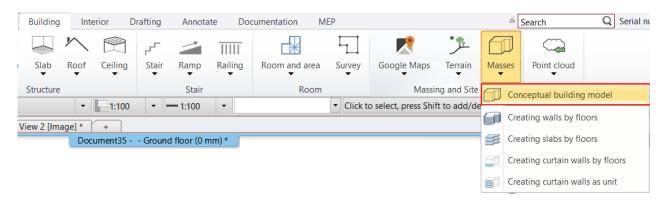




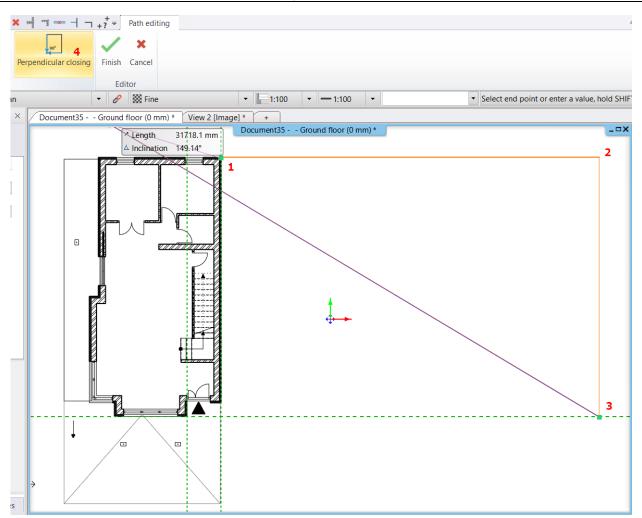
• Select the Optimal Zoom 🖾 icon next to the Navibar to center the floor plan.

7.2. Creating a Mass Model

• Choose the Building / Masses / Conceptual building model command.

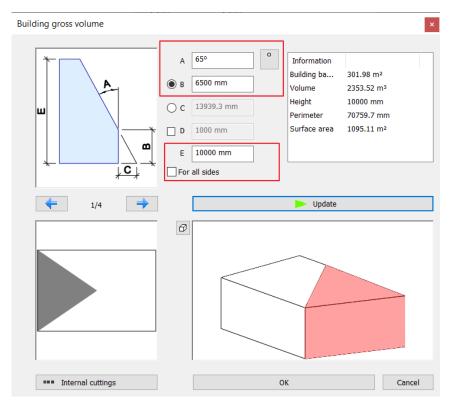


• Draw the outline size of the mass model on the floor plan. Select the upper right corner of the building (1), then click 21 meters to the right for the second point (2). Place the third point on the line of the building's protrusion (3) and close the drawing with the Perpendicular Closure command (4).



Set the properties of the mass model:

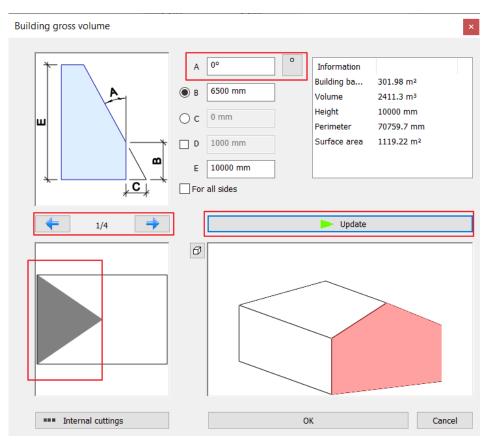
- Set the A value to 65 degrees. Activate the "For all sides" option, so this value will appear on all sides of the shape.
- Set the B value to 6500 mm on all sides. The E value should be 10000 mm. This is the total height of the building.





Modify the side facing the firewall.

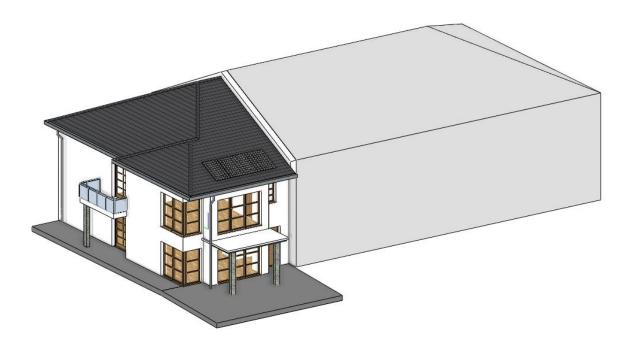
• Click on the left side in the top view or select the 1/4 plane using the arrows, and change the A value to 0 degrees. Click the Update button. This will create the gable.



• Close the dialog box by clicking the **OK** button.

You have now created a mass model with default height values and materials. Let's modify these.

• Select the 3D mass model and find its material on the left side of the Properties panel. Change the material to "Light_gray".



• Switch to the floor plan and click on the mass model. Change its color to "Light_gray" here as well, by clicking on the Color in the Properties menu on the left.

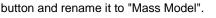
Properties		џ	×		
Building gross volume					
No style			¢		
Property	Value				
🎗 General					
Layer	Interior - Be	\sim	Ĩ		
Colour					
Line type	Simple Line	\sim			
Line weights	0 mm	\sim			
Draw Order	8- Bottom-most	~	ĺ		
Move objects to other floor	Ground floor		Ï		
Copy objects to other floor	Ground floor		ĺ		
BIM parameters	Edit		Ï		
Base Elevation	0 mm	\sim	Ĩ		
Classification	Edit]		

With the completion of the mass model drawing, let's create a new layer for it.

Select the mass model on the floor plan, then in the side Properties menu, open the Layer command. Choose the "Add • new layer" option from the bottom of the dropdown list.

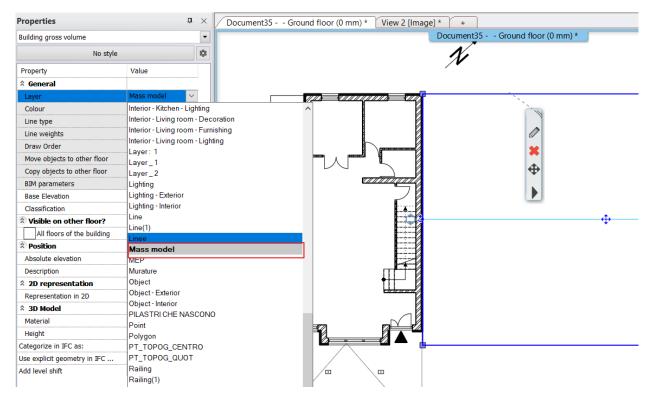
Properties	₽ × / Document35 Grour
Building gross volume	
No style	\$
Property	Value
* General	
Layer	Interior - Be 🗸
Colour	Object - Interior
Line type	PILASTRI CHE NASCONO
Line weights	Point
Draw Order	Polygon
Move objects to other floor	PT_TOPOG_CENTRO PT_TOPOG_QUOT
Copy objects to other floor	Railing
BIM parameters	Railing(1)
Base Elevation	Raster image
Classification	Roof
Xisible on other floor?	Roof(1)
All floors of the building	Room survey
* Position	Slab
Absolute elevation	Slab(1) Solai
Description	Solid model
2D representation	Space
Representation in 2D	Stair
* 3D Model	Stair(1)
Material	strada
	Terrain
Height	Text
Categorize in IFC as:	Text - Annotation Text - Notes
Use explicit geometry in IFC	Title box
Add level shift	Wall - Load-bearing wall
	Wall - Load-bearing wall(1)
	Wall - Partition wall
	Wall - Partition wall(1)
	Well02
Propert Design Projec	zretino marciapiedi
	Add new layer

In the appeared layer manager, add a new layer by clicking the "Add Layer" 🔯 button and rename it to "Mass Model". ٠



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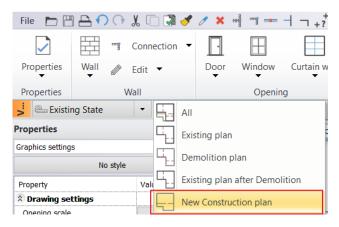
 Close the Layer Manager with the OK button, then select the Mass Model layer you created from the Properties menu. This will assign the mass model to this layer.



7.3. Urban Planning and Importing Neighboring Buildings

We will reference and import urban planning and neighboring building models prepared by partner designers.

• In the phase filters, select "New Construction Plan," where we will continue our work.



We will import the projects onto a new level positioned below the Ground Floor. Let's prepare this level.

• Open the Level Manager, select the Ground Floor (1), and then choose the "Insert Below" Stream command (2). Rename the new level to "Environment" and close the dialog with the OK button.

Edit le	evels								×
	*	\$			000	<⇒	List of buildings	Architecture	
Nu	Name	Bottom ele	Height	State	Split level height		Parameters	Name	Elev. Offset
3	2. floor	6000 mm	3000 mm	Off	0 mm			FF - Finish Floor	50 mm
2	1. floor	3000 mm	3000 mm	Off	0 mm			TS - Top of Structure	0 mm
1	Ground floor 1	0 mm	3000 mm	Active	0 mm			BS - Bottom of Structure	-300 mm
0	Enviroment 3	-3000 mm	3000 mm	Off	0 mm		Edit	CE - False ceiling	2600 mm
								LE - Ledge	-350 mm
								FH - Floor height	3000 mm
									5000 1111
								Copy area	Paste
Site	level is visible on the floor	nian			Building elevation ab	nve sea lei	vel in m	FH	(N+1)FF (N+1)TS (N+1)BS (N+1)LE (N) CE (N) FF (N) TS (N) BS (N) LE
				-	0 m			ОК	Cancel
					0 m			UK	Cancel

- Navigate to the new Environment level on the floor plan, then select the File menu / Link / Link Project command.
 Choose the file from the
- ...\Documents\ARCHlineXP Draw\2023\Architectural_Course\lesson_7\external_projects folder. Julien's project folder contains the Environment, while Tomasz's project folder contains the surrounding buildings.
- Let's start with Julien's project. Select the elata_nova_BT_surroundings file, then choose the drawing on the right side. Open the project by clicking on "Open".

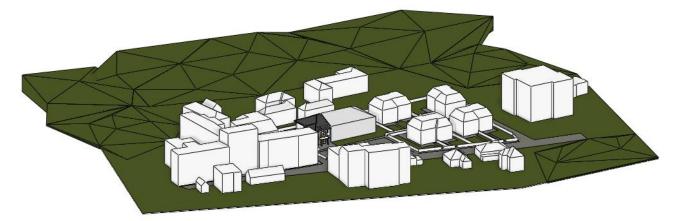
🚳 Open project	file						×
Hely:	📜 Julien		~	G B D T			
Fieiy: Gyors elérés Asztal Könyvtárak Ez a gép Hálózat	Név	surroundings	1	Módosítás dátuma 2021. 08. 17. 14:28	ι Τί	pus RCHXP Pro	Document2.asc (Tutorial_01) 2
	< Fájlnēv: Fájltīpus:	elata_nova_JL_s Project (*.pro)	surroundings	~ ~		> nyitás	3



• In the pop-up dialog, you can choose how the program adds the new drawing to your project. If you don't select any option, the program will automatically import the drawing with default settings. Therefore, do not select any option and simply accept the dialog by clicking the OK button.

	×
ОК	Cancel
	ОК

The environment has now been imported.



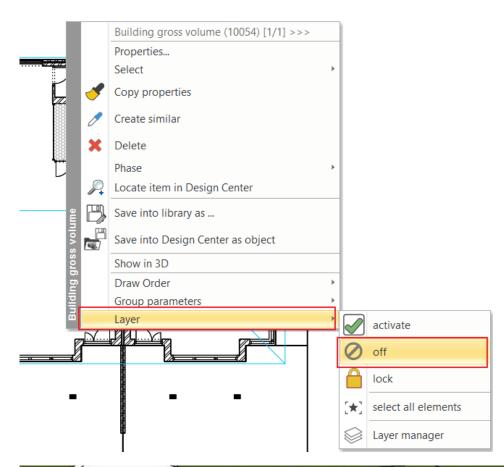
- Let's link the next file. Select the **File menu / Link / Link Project** command, then choose Tomasz's project folder from the ...\Documents\ARCHlineXP Draw\2023\Architectural_Course\lesson_7\external_projects folder, then the elata_nova_TS_Buildings.pro file. Click on the project, then choose the drawing on the right, and open it.
- Accept the pop-up dialog with the OK button for automatic placement.

The surrounding buildings have now been imported as well.

After the import, the mass model is no longer needed, so let's turn off its layer.

Architectural tutorial

 Activate the floor plan and go to the ground floor. Select the mass model, then from its local menu, choose the Layer, Off command. Rebuild the 3D model.





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185

7.4. Creating the Terrace in the Garden

Since the terrace is more of a visual element and not part of the documentation, we will create a very simple representation using the slab tool.

- Navigate to the 3D view to the back garden for a clear view of the process. Switch to the floor plan.
- If any layer has been reactivated that is not currently needed, turn it off in the Layer Manager or by clicking on the element in its local menu.

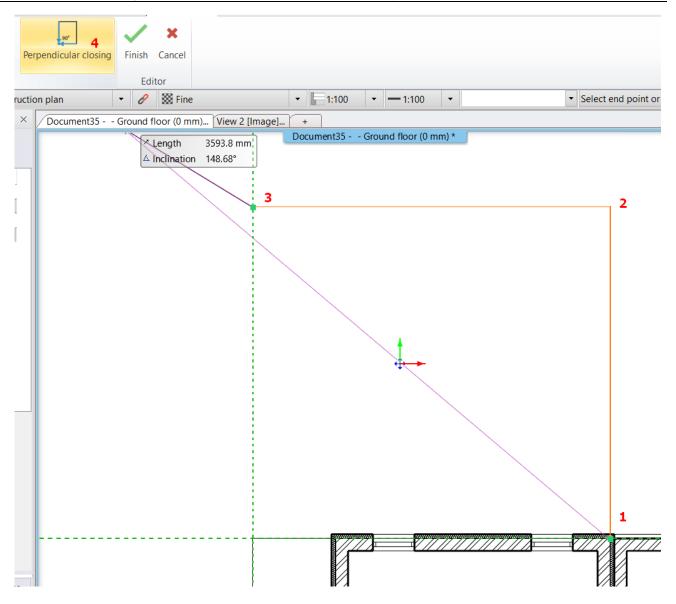


- Right-click on the Ribbon / Building / Slab command, and select its properties.
- The base offset from the floor should be 0 mm, with a total thickness of -300 mm (1). Turn off the option for identical materials (2). Set the lower and side material to *Bright_white*, and the upper material to *Deck_wood_11* (3).

Slab properties		×
✓ General properties		• •
0 mm 🗸 🛫 Slab 🗸		2
Simple Line 8- Bottom-most V		×
The slab border doesn't display on the floor plan in print	Bright_white	
Base offset from the floor 0 mm ~	Slant angle	0
Total thickness -300 mm -	Slab type Slab 🗸	
Slab layers	Cut the walls No cutting ~	
Beams and block flooring system	Cut by roofs No cutting ~	
	U-value: 15.50 W/(m2*K)	
	3D fixed	
	Display 2D Fills R:0 G:0 B:0	
	Width of border-strip not to be hatched 0 mm	
Visible on other floor?		
Visible on the floor above.	Visible on the floor below	
Simple Line	Simple Line	
BIM Parameters No style	OK Cance	el

• Draw the slab in Sketch mode. Start at the upper right corner of the building (1), then place the second point 8000 mm upwards (2). Align the third point with the left edge of the pavement (3), then finish drawing the slab with the Perpendicular Closure (4).



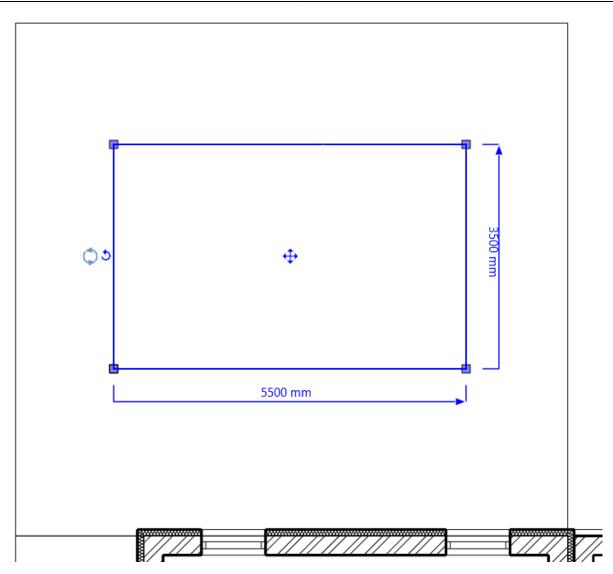


7.5. Creating the Pool area

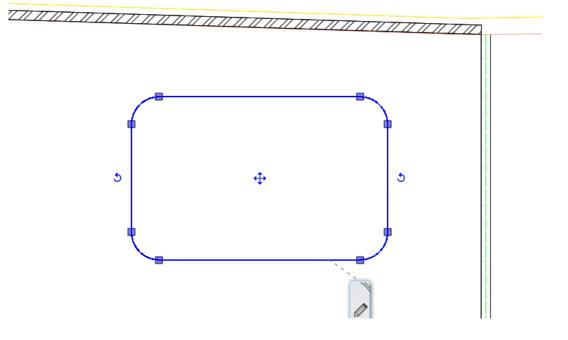
It's possible that the previously turned-off layers might reappear during work. This generally occurs when the selected tool uses a layer that was turned off earlier. In this case, the software activates the layer to create the element. Use the Walk or Layer Manager to turn off these layers.

Before creating the hole on the slab, let's design its shape using the classic Drafting tools.

- Select the Ribbon / Drafting / Rectangle tool.
- Draw a rectangle, then adjust its values. Its length should be 5500 mm and its width 3500 mm. Position it so that the pool is accessible from all sides.



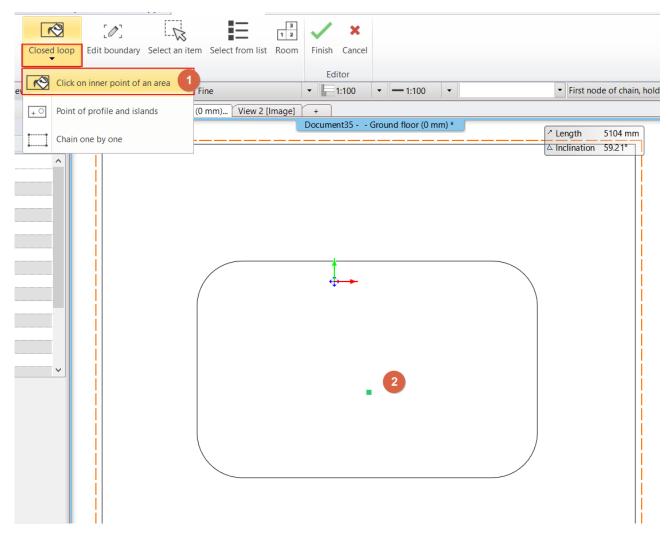
• Click on one of the corner points of the rectangle, then select the "Fillet All" command. Move the cursor to the position that gives the best visual result, then click to apply the rounding.





There are numerous advantages to creating a 2D drawing of a 3D form. Before the final version is created, it can be repositioned, modified, and used for visual ideation, and can be retrieved at any time in the future. Let's create the actual cutout in the slab structure based on the previously designed pool shape.

- Click on the contour line of the slab, and from the local menu, select the "Hole / Create hole" command.
- Look for the keyword **Closed Loop** in the top menu bar and click on it.
- Click inside the created rectangle shape so that the software recognizes the shape. This will create the pool cutout on the terrace slab.



7.6. Adding Water using the Slab Tool

The cutout has been created on the slab, which we want to fill with water.

• Right-click on the Slab command and set its properties. The base offset from the floor should be -100 mm, and the total thickness should be -200 mm. Connect the slab materials and select the *Water_1* material.

Slab properties					×
✓ General properties					• •
	Slab 🗸 🗸	\blacksquare	[Water_1	
Simple Line	8- Bottom-most 🗸 🗸			Water_1	8
The slab border doesn't display on the f	floor plan in print			Water_1	
Base offset from the floor	-100 mm 🗸 🗸	Slant angle		00	0
Total thickness	-300 mm 🗸 🗸	Slab type		Slab \lor	
Slab layers		Cut the walls		No cutting \sim	
Beams and block floorin	g system	Cut by roofs	Æ	No cutting \sim	
		U-value: 5.17 W/(n	m2*K)	1	
		3D fixed			
		Display 2D Fills		R:0 G:0 B:0	
		Width of border-strip to be hatched) not	0 mm	
Visible on other floor?					
Visible on the floor above.		Visible on the floor be	elow		
Simple Line		Simple Line			
BIM Parameters N	o style			OK Car	icel

Draw the slab in Sketch mode. Select Closed Loop from the top menu bar, then Click on inner point of an area.
 We have now completed the pool.

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7.7. Placing objects

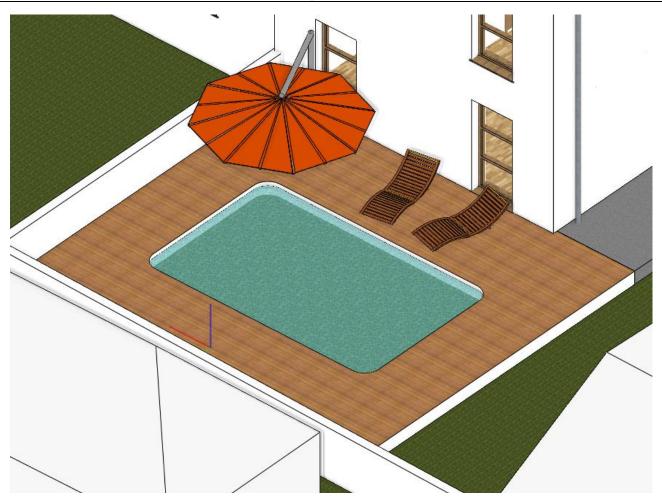
The ARCHLine.XP program comes with a built-in library of smaller objects that can be used at any time. One of the greatest strengths of the program is the ability to utilize and import various file formats, enabling users to search for the latest products online, whether free or commercial. Let's start with a built-in parametric object, the parasol.

- Find and launch the Ribbon / Interior / Soft furnishing / Parasol tool.
- Place it on the drawing with a single click and adjust its position if necessary.

Most built-in objects in ARCHLine.XP are parametric, meaning not only their material and size can be changed, but also other parameters. For the parasol, this could include the number of sides.

There are popular platforms that can be connected to through the program. Let's see how to use the free 3D Warehouse platform.

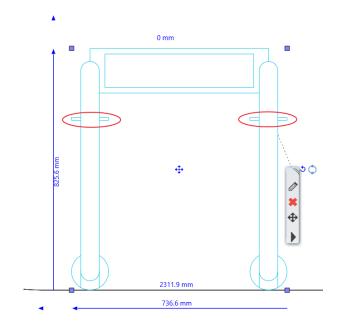
- Launch the Ribbon / Interior / 3D Warehouse tool.
- Search for a sun lounger. Use the keyword "liegestuhl" to find the model used in the tutorial material.
- Click on the thumbnail for a closer look and to download it. (It's important to download the model in the format suitable for your ARCHLine.XP version.)
- Place two instances on the drawing, then rotate and position them appropriately on the terrace.



For the pool, we need a ladder.

- Open the Warehouse and search for one.
- Click on the appropriate one and download it.
- Place it on the drawing and rotate it if necessary.

The floor plan top view will help precisely position the ladder at the edge of the pool. (Here you can see the ladder's bottom fitting point clearly.) While using the **Move from...** command, currently, we can only grip the ladder's four corners and its center. For precise fitting, we should grip other fitting points of the ladder.

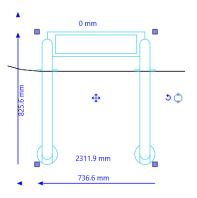


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• We need to modify a setting for this. Go to the settings and select the Snap and Grid tab. Under Object Snap settings, uncheck the box next to "Find the reference points of the objects, columns, and beams only." This will cause all nodes of the object to snap to the cursor, enabling us to grab each one of them.

🖵 Graphics							
Open and Save	* *Drafting grid						
	X spacing	500 mm					
Units and angles	Y spacing	500 mm					
Snap and grid	Frequency of main grid line	5 ~					
' Cursor and marker	Grid major lines						
	Grid minor lines						
User interface	Style	Dashed line 🗸					
Item settings	Adaptive grid						
	😵 Nudging elements with keyboard arrow keys						
	🕅 *Object Snap						
	✓ Object Snap Enabled						
	Object Snap is switching off above:	1000000					
	Size of the pickbox (in % relative to the screen size):	1.00					
	ORTHO (Angle snap) enabled						
	Angle snap increments	Edit					
	Snap in fixed direction						
	Distance	10 mm					
	Angle	5°					
	Snap to:						
	✓ Perpendicular						
	✓ Endpoint						
	✓ Midpoint						
	Center						
	✓ Nearest point						
	✓ Intersection						
	Focus point						
	Tangent						
	Find the reference points for objects, columns, beams only						
Close	Option saved with the project						
	the the test of test	Interior - L 🗡 🔬 -					

Select the Move from... command again, and grab the ladder by one of the points indicated in the image above. Fit it to the side of the pool, then place the ladder by clicking.

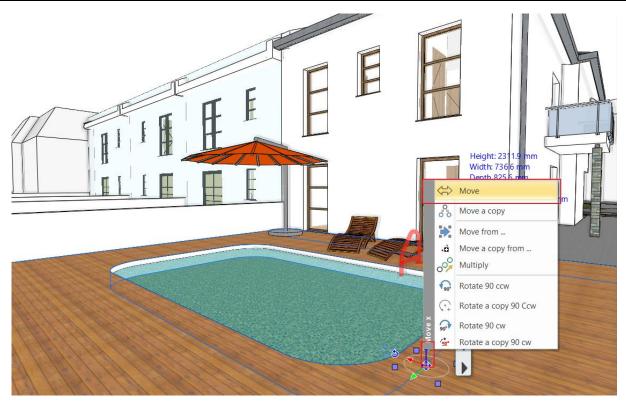


The previously used setting requires more complex calculations, potentially slowing down the program. It's advisable to switch it back after use.

- Go back to Settings, then to the Snap and Grid tab, and check the option "Find the reference points of the objects, columns, and beams only."
- Select the ladder in 3D, then click on the blue arrowhead.
- Choose the Move command and now move it vertically until you find the right position, then click to place it.

Let's take a look at how the entire building, its surroundings, and neighboring structures appear. With this, you have completed the representation of the complete environment. In the next workshop, we will create photorealistic renderings.

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Workshop 8: Rendering:



8. Rendering

