ARCHLine.XP® 2025

ARCHITECTURAL

INTERMEDIATE TUTORIAL

This tutorial was produced using Microsoft Word and ARCHLine.XP®.

Contents

Introduction

What is ARCHLine.XP®

ARCHLine.XP® is a powerful 3D BIM software for **architecture, site design, interior design, and rendering**.
It includes a fully integrated **Open BIM interface**, giving you tools to create coordinated, computable building models.

All your project elements — floor plans, sections, elevations — live in one consistent model, so you don't need to manually sync anything.

Architectural Design

ARCHLine.XP® enables designing everything from single-story buildings to complex multi-level structures.

- Draw **single or multi-layered, even sloped walls** in both 2D and 3D using the flexible **Wall** command.
- Use **parametric doors and windows** that automatically update when resized.
- Edit **stairs and railings** using intelligent design rules.
- Create **unique ceiling profiles** (barrel vaults, cross vaults).
- Pick from many roof styles (gable, hip, mansard, curved, etc.).
- Use **Wall Detection** from point cloud data to accelerate converting surveys into BIM models.
  help.archlinexp.com

💡 **Tip:** These intelligent tools reduce manual work and help maintain model consistency.

Furnishing Spaces

ARCHLine.XP® offers robust interior tools:

- Lighting & shading
- Curtains & blinds
- Flooring, baseboards, decorative moldings
- Suspended ceilings
- Switches, outlets, and **parametric kitchen design**
- Import objects from **3D Warehouse** for rich, realistic interiors

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Documentation

Use the **Plan Sheet** tool to produce technical documents:

- Floor plans, elevations, sections, detailed views
- Rendered images at various scales

📝 **Note:** Because everything links to a single BIM model, your documentation is always consistent and up-to-date.

Visualization

With one click, move your model into **ARCHLine.XP LIVE** to:

- Create interactive walkthroughs
- Generate high-quality render images and videos
- Add realistic people, vegetation, water, and effects

This creates a virtual experience — like guiding your client through their future space.

2025 Innovations

⚠️ **Important:** The 2025 version adds many new features: help.archlinexp.com

- **Wall Detection from Point Cloud** for faster survey-to-BIM workflows.
- **Export to Revit (RVT)** with full geometry and BIM data.
- Integrated **bSDD** service for advanced data definitions.
- **Automatic Floor Plan Generator** to speed up layout design.
- Direct link to **D5 Render** for improved visualization
- **AI Render** for rapid ideation & style exploration
- New **Graphical Crop view**, **MEP conduit support**, and many interface/documentation enhancements.

How to Use This Tutorial

In this tutorial, we will guide you step by step through the process of designing a residential building.
This material is designed to help you gain confidence and practice by working on a **realistic architectural example**.
In this course, we will build the BIM modell of **Bari Residential Park** consisting of 4 buildings. Through this example, we present the process of planning a multi-story building in the ARCHLine XP BIM program. We start BIM modeling with ARCHLine XP CAD tools, with which we create the architectural grid, and then continue with parametric BIM objects, such as walls, slabs, foundation, doors, windows and stairs. Each BIM tool has its own style, which contains BIM-related parameters, geometry, materials and other important settings such as layers and classifications.

💡 **Tip:** Follow the steps in order, and try to complete each exercise. This will help you build a solid workflow.

It is recommended to **start by downloading and installing** the *Architectural Preliminary Course Project Installer*.
This package contains all the project files used throughout the course.

💡 **Tip:** For the best learning experience, watch the **instructional video** for each workshop first.
Then, follow the step-by-step instructions to create the design yourself in **ARCHLine.XP 2025**.

The course consists of 10 Workshops:

Workshop 1 – Project Setup & Construction Grid

- Introduction to the BIM workflow.
- Setting up a project for 4 building locations.
- Creating and customizing the **construction grid**.
- Understanding grid spacing (equal vs. custom steps).
- Set the Floor Structure

Workshop 2 – Walls and Partitions

- Create a **multi-layer wall style**
- Draw **external walls** using the Wall tool with the new style
- Add **load-bearing interior walls** with reference line adjustments
- Insert **partition walls** (100 mm thickness)
- Fix intersections using the **X connection**

Workshop 3 – Slabs and Foundations

- Define a **Multi-Layer Slab Style**
- Place multi-layer slabs under walls with one click
- Adjust slab contours in the **3D view**
- Create the **foundation level** and set strip footings

Workshop 4 – Doors and Windows

- Set the door properties and save the door styles
- Place different types of doors and set reference points
- Set the widow properties and save the window style
- Position windows in 3D view
- Adjust distances, opening directions, and parameters
- Animate doors in perspective view

Workshop 5 – Stairs and Railings

- Choosing a U-shaped staircase
- Editing with the Stair Calculator (height, width)
- Adding walls under the stair and cutting them automatically
- Placing railings from styles

Workshop 6 – Multi-Story Buildings

- Copying entire floor plans to upper levels
- Creating slab opening for staircase
- Editing facade walls and balconies on the first floor
- Adding new doors and windows on upper levels

Workshop 7 – Sections & Level Parameters

- Creating A & B section views
- Identifying problems with wall connections
- Adjusting Top/Bottom of Structure (TS/BS) parameters
- Updating all walls via Style Manager

Workshop 8 – Roof Terrace & Coloring

- Copying walls and slabs to the 2nd floor
- Converting it into a roof terrace (1000 mm wall height)
- Applying materials and coloring walls
- Using the “Tiling as coloring” option

Workshop 9 – Documentation

- Setting up dimension styles
- Automatic placement of room stamps
- Applying color schemes by apartment
- Adding callouts for detailed drawings
- Creating elevations and Section Views
- Plot Layouts and Printing Multi-Page PDF
- Updating layouts automatically

Workshop 10 – Environment, Rendering & Finalization

- Adding surroundings: fences, gardens, trees
- Saving **perspective views**
- Creating **photorealistic renders** with background images
- Using progressive rendering and noise filtering

Workshop 11: Managing Multiple Buildings

- Copying and placing additional buildings (to reach 4)

Presenting the final animation

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1. Workshop: Project Setup & Construction Grid

In this workshop we will go through on the next steps:

- Introduction to the BIM workflow.
- Setting up a project for 4 building locations.
- Creating and customizing the **construction grid**.
- Understanding grid spacing (equal vs. custom steps).
- Set the Floor Structure

Let's Get Started!

First, watch the **Bari Project: Project Setup & Construction Grid** tutorial video.
If you haven't already, download and install the **Architectural Preliminary Course – Workshop Projects 2025** package.
This contains all the projects used during the course.

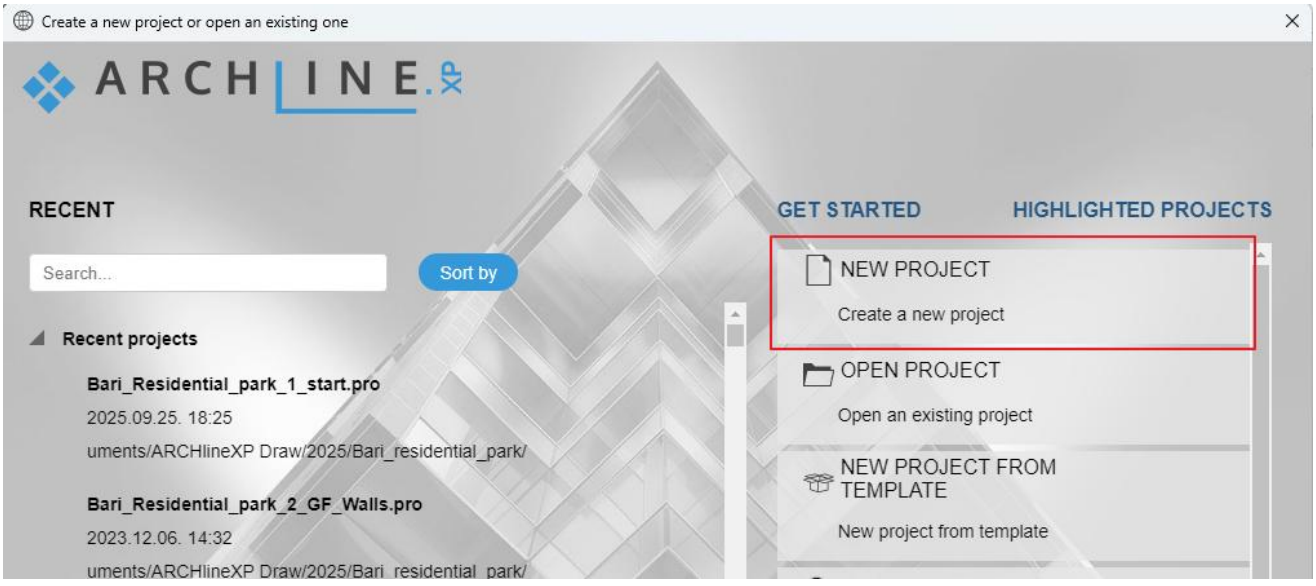
1.1. Start a New project / Save project

Launching ARCHLine.XP

When you launch ARCHLine.XP®, the Welcome Screen appears.
Here, you can choose how to start your work.

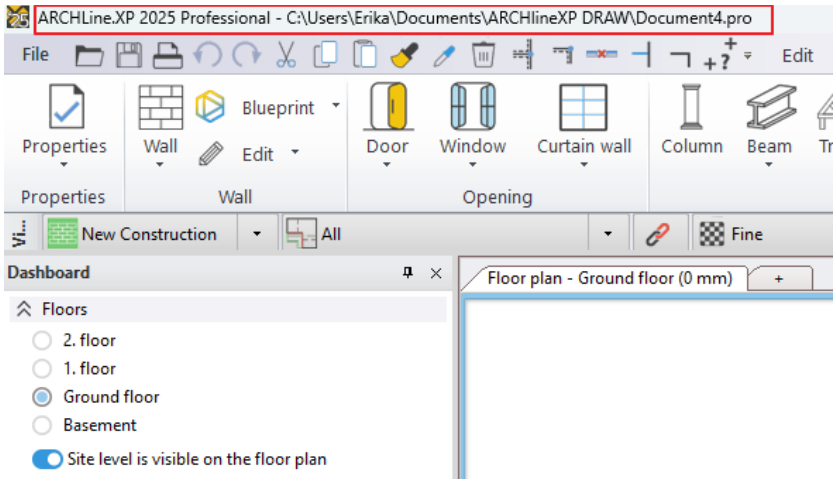
Start a New Project

1. Click on **New Project** in the Welcome dialog.



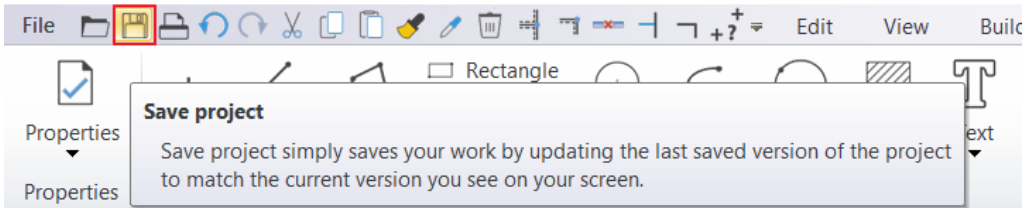
A new blank project opens with an empty floor plan where you can start working:

📝 **Note:** By default, during installation, ARCHLine.XP creates an **ARCHLine.XP Draw** folder under your computer's **Documents** folder.



Save Project

When you create a new project, it is **not saved automatically** — you need to save it manually the first time. When saving for the first time, the program opens the **Save Project** dialog where you can name your project and choose the folder where it will be stored.

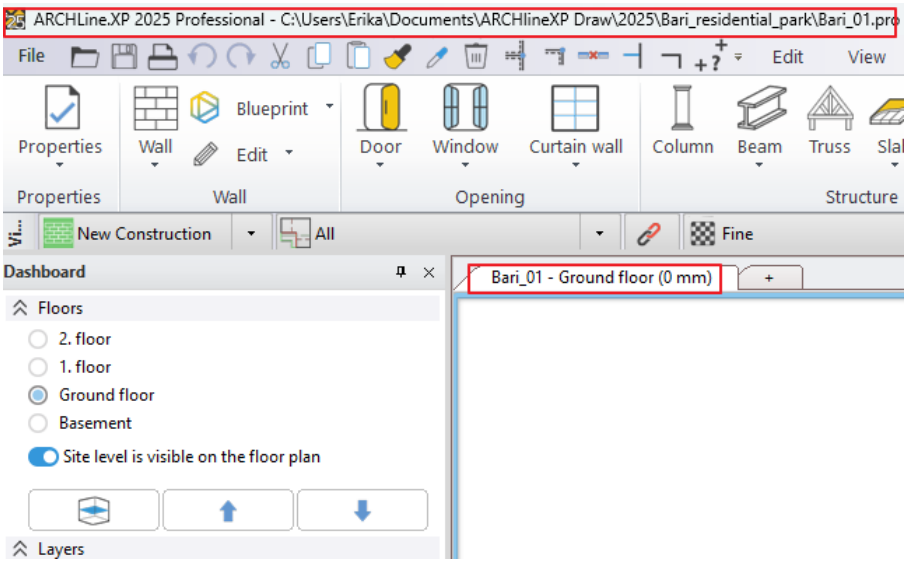


1. Click **Save Project** on the Quick Access Toolbar.
2. Create a new folder under **ARCHLine.XP Draw\2025** using the **New Folder** button.
   Name it: **Bari_residential_park**.
3. Open the new folder and type the filename: **Bari_01**.
4. Click **Save**.

From now on, clicking the **Save Project** button will automatically update *Bari_01* with your latest changes.

💡 **Tip:** Save your work frequently — for example, every 10–15 minutes.

⚠️ **Important:** It's a good practice to create a backup copy of your project from time to time.

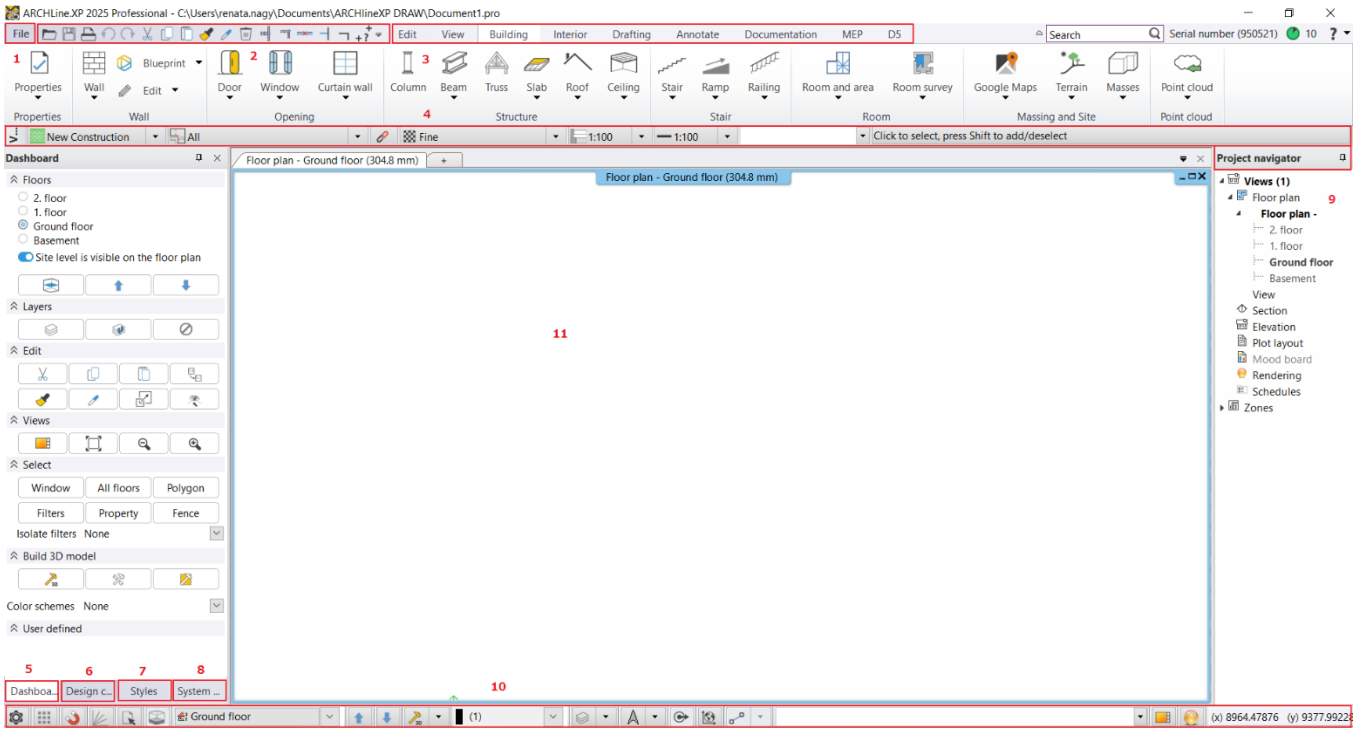


1.2. User Interface

Before you begin drawing, take a moment to explore the ARCHLine.XP® interface.
Knowing the main parts of the workspace will make it much easier to follow the tutorial later.

The interface contains the following main elements:

- File menu (1)
- Quick Access Toolbar (2)
- Ribbon Bar (3)
- View Control Bar (4)
- Side Menu: Dashboard (5), Design Center (6), Styles (7), System Browser (8), Project Navigator (9)
- Coordinate Bar (Status Bar) (10)
- Drawing Area (11)

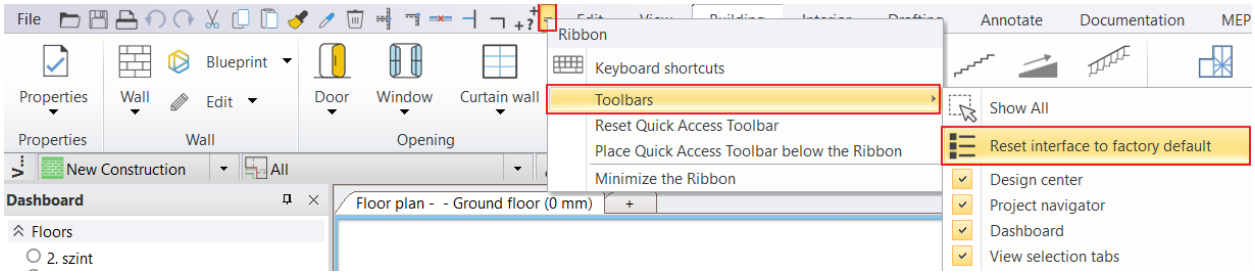


Note:

For the best learning experience, we recommend using the **default layout** of ARCHLine.XP®.

If your interface looks different, click the arrow at the end of the Toolbar → choose **Toolbars → Reset interface to factory default**.

This will restore the original layout.



Main Interface Areas

- **Side Menu, Ribbon Bar, Drawing Area** – these are the most frequently used parts of the interface.
- **Ribbon Bar** – a logical, well-organized catalog of commands grouped by topic (Building, Drafting, Interior tools, etc.).
  Only one group is open at a time, so you always see the most relevant tools.
- **Dashboard** – a customizable collection of frequently used commands related to the current view.
  You can add your own commands, assign unique icons, and quickly access favorite tools and styles with one click.

Tip: Placing your most-used commands and styles on the Dashboard saves a lot of time during daily work.

1.3. Basic Drafting tools, Basic Navigation, and Selection

1.3.1. Drawing in ARCHLine.XP®

Before you begin, take a moment to get familiar with how drawing works in ARCHLine.XP®. In this section, we'll go over the key concepts you'll need.

Let's start by creating two simple lines with the Line tool.

Using the Mouse – Click & Release

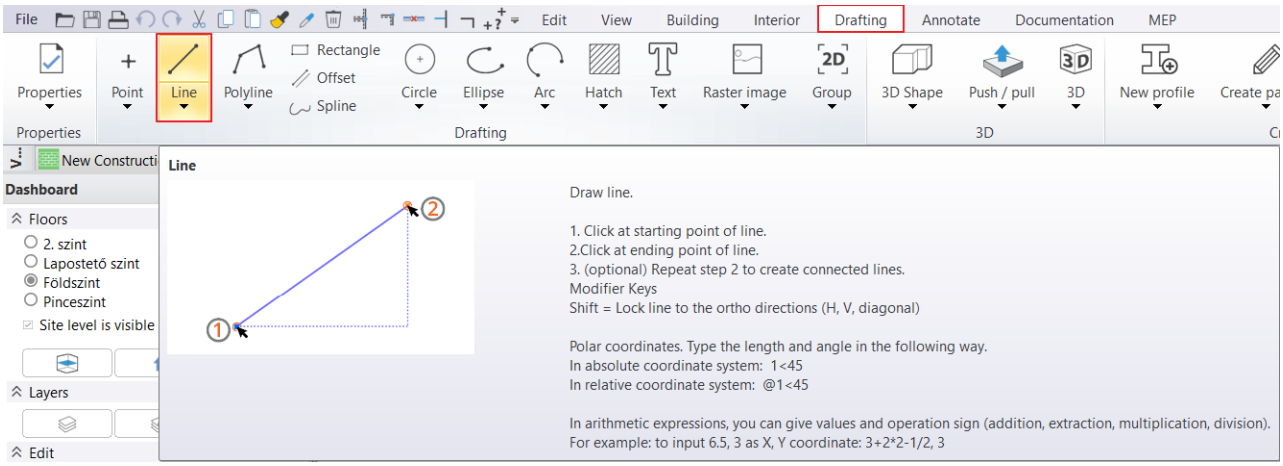
In this tutorial, a **click** means:

Click: Press the left mouse button once and release it right away.

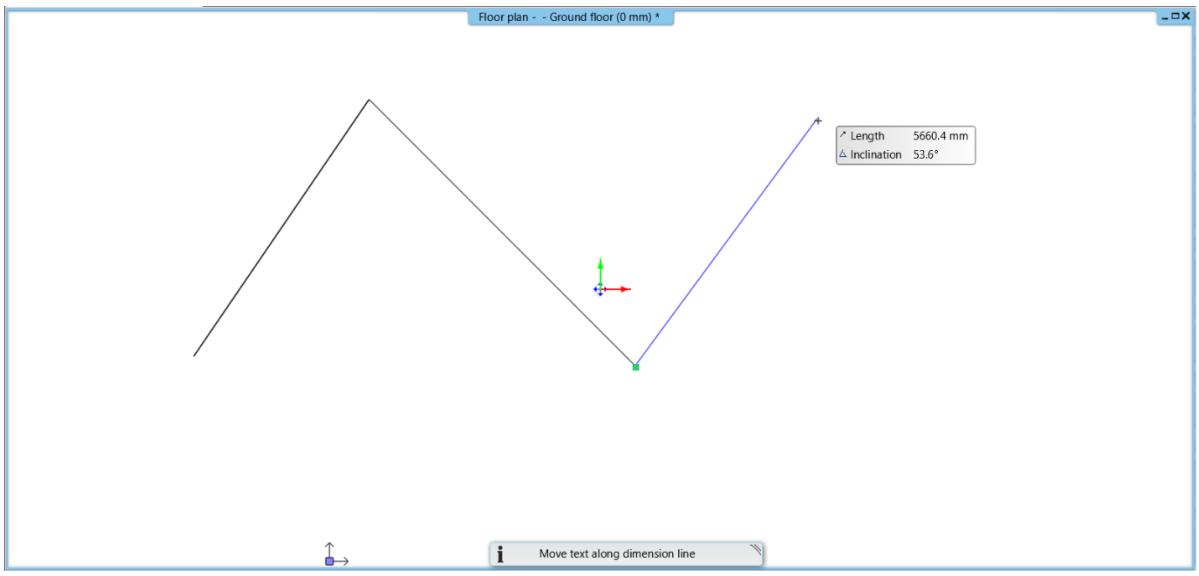
Drawing Lines

1. Go to Ribbon bar → Drafting → Line.
2. Move your mouse over the drawing area. The cursor changes shape, showing that you can now draw.
3. Click anywhere on the left side of the drawing area to place the first point.
4. Move the mouse to the right and click again. You've drawn your first line — it appears as a solid black line.
5. Move the mouse again. The endpoint of the previous line is automatically used as the starting point of the next line.
6. Click again to finish the second line.

That's it — you've created two connected lines!



💡 **Tip:**
Always use simple clicks (press and release quickly). You don't need to hold the mouse button down. Drawing uses only the **left mouse button**, just like browsing the web or editing a Word document.



The drawing contains two lines and a third line has started to be drawn.

Exiting the Tool

In our example, a third line is already waiting to be drawn — but we only want two. To stop drawing, you can:

- **Press Enter:** This finishes the current chain of lines. Press Enter again if you want to start fresh.
  or
- **Press ESC:** This completely exits the tool.

After exiting, you'll see the blue guideline disappear, and the cursor returns to its normal arrow shape.

❗ **Remember:**
Whenever you want to stop using a tool, press the **ESC** key on your keyboard.

1.3.2. Undo and Redo

ARCHLine.XP® automatically remembers your last 16 actions. Right now, you have made two actions by drawing two lines. If you want to remove the last action, use the Undo command.

The "Undo" command on the Quick Access Toolbar

Using Undo

- Click **Undo** on the Quick Access Toolbar. The last line disappears.
- Click **Undo** again, and the first line disappears as well.

When there are no more actions to undo, the Undo button turns light grey. Remember, you can only go back 16 steps — you cannot undo beyond that.

Using Redo

Redo is the opposite of Undo. It restores the actions you have just undone.

- The **Redo** button is located next to Undo on the toolbar.
- If you go back too many steps, just click Redo to bring the lines back.

💡 **Tip for Small Mistakes:**
If you notice an item is in the wrong place:

1. Press **ESC** to stop your current command.
2. Click **Undo** as many times as needed until the drawing looks correct.
3. If you go too far back, use **Redo** to restore the steps you need.

Practice

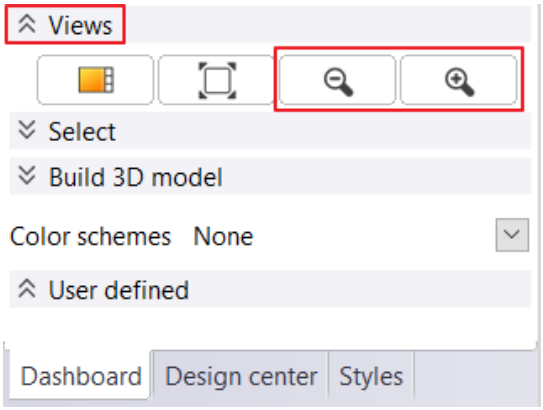
Use **Undo** and **Redo** now to remove the two lines you drew earlier and then make them reappear again.

💡 **Tip:** Try drawing circles of different sizes to practice using the Ribbon bar → Drafting → Circle tool.

1.3.3. Zoom in, Zoom out and Optimal Zoom

You can zoom in and out of your drawing using the **magnifier tools** on the Dashboard:

- The first magnifier zooms the drawing **out to 70%**.
- The second magnifier lets you select an area and zoom it to **fill the entire drawing window**.



Using the Mouse Wheel

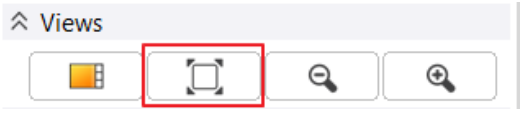
There is a much faster way to zoom in and out: using your **mouse wheel**.

1. Move the mouse over the 2D drawing.
2. Scroll **down** to zoom out – each scroll step makes the drawing smaller.
3. Scroll **up** to zoom in – each scroll step makes the drawing larger.

💡 **Tip:**
This works just like scrolling in a Word document, except it zooms instead of moving the page.

Optimal Zoom

You can quickly reset the view so that the entire drawing fits perfectly in the window.



- On the Dashboard, go to **Views → Optimal Zoom** and click the icon.
- Or, **double-click the mouse wheel** to instantly fit the whole drawing to the screen.

Now your entire project is visible again.

Why the Drawing "Moves"

When you zoom, it may look like the drawing is “sliding” off the screen.

📝 **Note:**
This happens because the **zoom center is always the mouse position**. When you scroll, the software zooms in or out relative to where the cursor is.

⚠️ **Important:**
If you want to focus on a specific point, make sure your mouse is directly over it before zooming.

Zooming Into a Specific Area

1. Move the cursor to the corner where the two lines meet.
2. Scroll up with the mouse wheel to zoom in.
3. If the corner moves away, reposition the mouse over it and scroll up again.
4. When you are done, double-click the mouse wheel again to reset to Optimal Zoom.

💡 **Tip:** This way, you can completely control which part of the drawing is magnified.

Panning the Drawing

Sometimes you need to move the 2D drawing — just like sliding a sheet of paper around on your desk.
This is called **panning**.

Panning with the Mouse Wheel

1. Move the mouse over the drawing.
2. Press and hold the mouse wheel (middle button).
3. While holding it, move the mouse left, right, up, and down.
   Watch how smoothly the drawing moves.
4. Release the wheel — the drawing stays where you placed it.

💡 **Tip:** This is the fastest way to look at different parts of your drawing without zooming in or out.

Summary of Mouse Wheel Functions

- **Scroll up** = Zoom in
- **Scroll down** = Zoom out
- **Double-click the mouse wheel** = Optimal Zoom
- **Hold down the mouse wheel and drag** = Pan the drawing

📝 **Note:** Once you get used to these actions, you'll navigate around your drawings much faster.

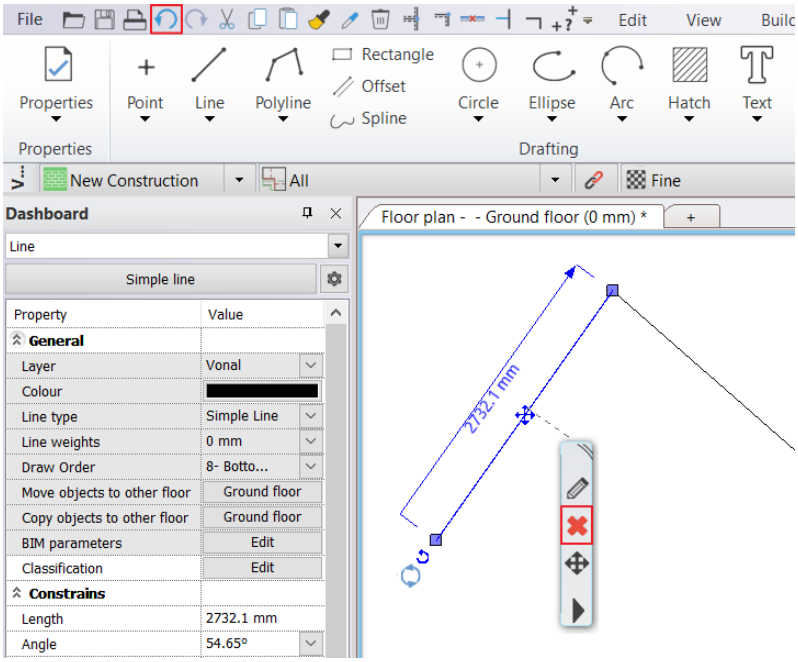
1.3.4.Simple Selection and Delete

It's important to know how to delete a specific item in your drawing.
In this example, we want to remove **only the first line** while keeping the second one.

Simple Selection

1. Move your mouse over the first line.
2. Click once.

The program highlights the selected element and displays small colored icons (called **markers**) around it.
Markers let you perform common actions directly, without opening menus or toolbars.
You'll also see a floating icon menu with more options, like editing properties or deleting the item.
Item properties are shown on the Dashboard.



Delete

1. Click the ✖ **Delete** icon in the floating menu – the line disappears.

💡 **Tip:** You can use the floating menu for other quick actions, like changing properties.

Undo

1. Click **Undo** – the deleted line reappears.

📝 **Note:** Undo is very useful when you accidentally delete or modify something.

1.3.5. Select Multiple Items

When editing, you often need to select more than one item at once.
If you just click a new item, the previous selection disappears.
To select multiple items at the same time, use the **CTRL key**.

Multiple Selection

1. Select the first line.
2. Hold down **CTRL** on your keyboard.
3. Click the second line.
4. Release **CTRL** – now both lines are selected.

💡 **Tip:** Use this method to select any combination of items for editing or deleting.

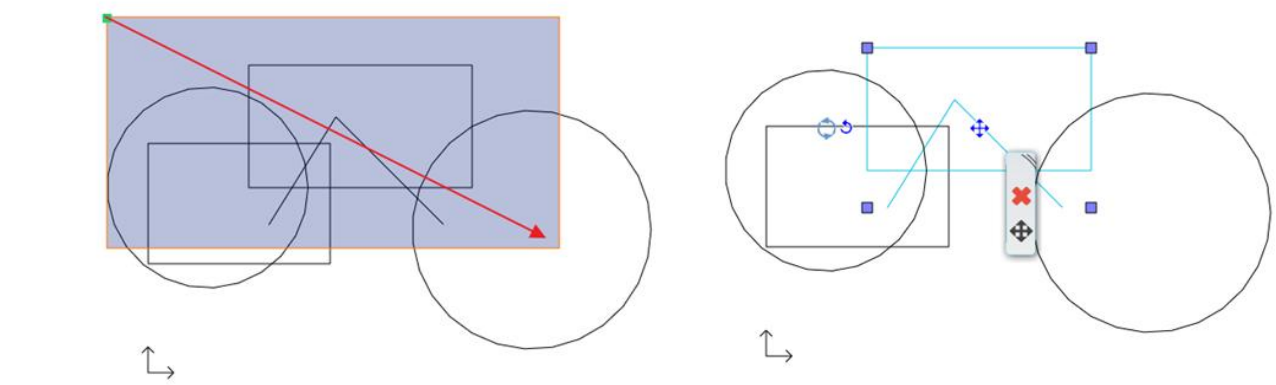
1.3.6. Selection by Rectangle

You can also select multiple items by dragging a **selection rectangle**.

Left-to-Right Selection (Blue Rectangle)

1. If a command is active, press **ESC** to close it.
2. Click on a blank area in the **upper-left corner** of the drawing.
3. Move the mouse down and to the right to create a **blue semi-transparent rectangle**.
4. Click again to finish the selection.

Result: Only the elements **completely inside** the blue rectangle are selected.

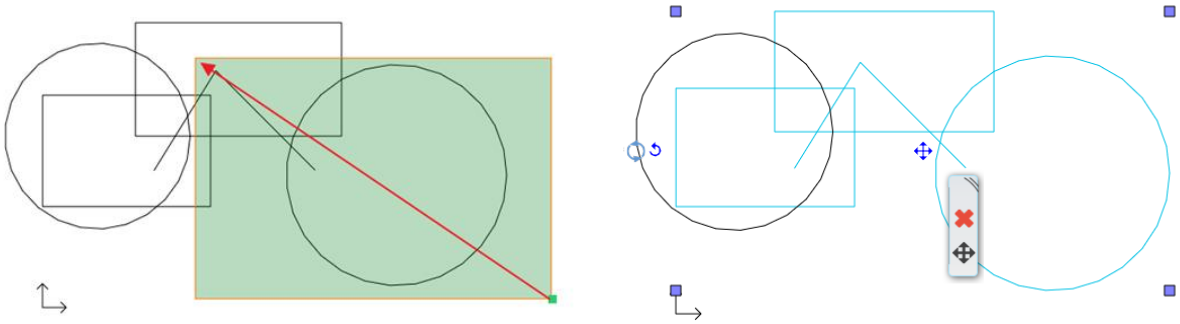


Selection by rectangle from left to right – we deliberately left out the bottom part of the drawing.

Right-to-Left Selection (Green Rectangle)

1. Press **ESC** to end the previous selection.
2. Click on a blank area in the **bottom-right corner** of the drawing.
3. Move the mouse up and to the left to create a **green semi-transparent rectangle**.
4. Click again to finish the selection.

Result: All elements inside or intersecting the green rectangle are selected.



Selection from right to left. We left out the top part of the drawing.

Comparison

- **Left to right (Blue):** Selects only elements **fully inside** the rectangle.
- **Right to left (Green):** Selects elements **inside or crossing** the rectangle edges.

💡 **Tip**:

- Use left-to-right selection when you want to isolate items precisely.
- Use right-to-left selection to catch everything in an area, even if it is partly outside the rectangle.

1.3.7. Selection by Type

You can select **all items of the same type** with one click:

1. Right-click on the item type icon in the Ribbon bar (for example, **Line**).
2. Choose **Select all** – all items of that type are selected in the drawing.

Exercise:

- Right-click the **Line** icon in the Ribbon bar.
- Click **Select all** – now all lines are selected.
- Use the ✖ **Delete** icon to remove all lines, circles, and other selected items.

1.3.8. Direction Enforcement – Angular Attraction – Shift

When drawing, **Ortho Mode** constrains the second point relative to the first point, snapping it to the nearest fixed angle.
The default angles are **0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°**.

💡 **Tip:**
The easiest way to enable Ortho Mode is to **hold down the SHIFT key**.
While holding SHIFT, your cursor locks to the nearest predefined direction (horizontal, vertical, or diagonal).
Release SHIFT to continue drawing freely.

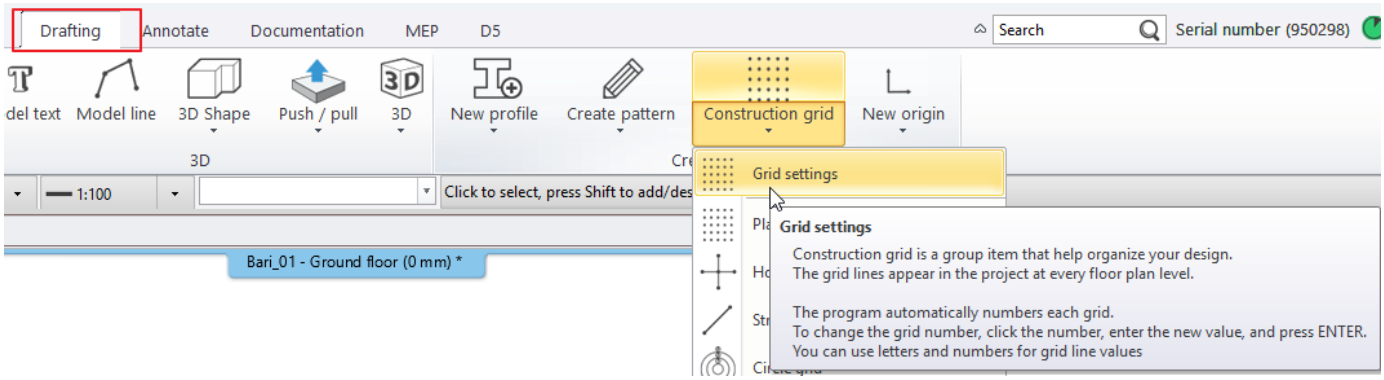
1.4. Create Construction Grid

Now we begin building the **Bari Residential Park** project using the **2D construction grid**.
First, we will specify the grid distances that will later serve as a reference for drawing the exterior walls.

In the **Grid Properties** dialog, you can define the grid either with **uniform steps** (equal spacing) or with **custom step values** horizontally and vertically.
In this exercise, we will use **custom step values**.

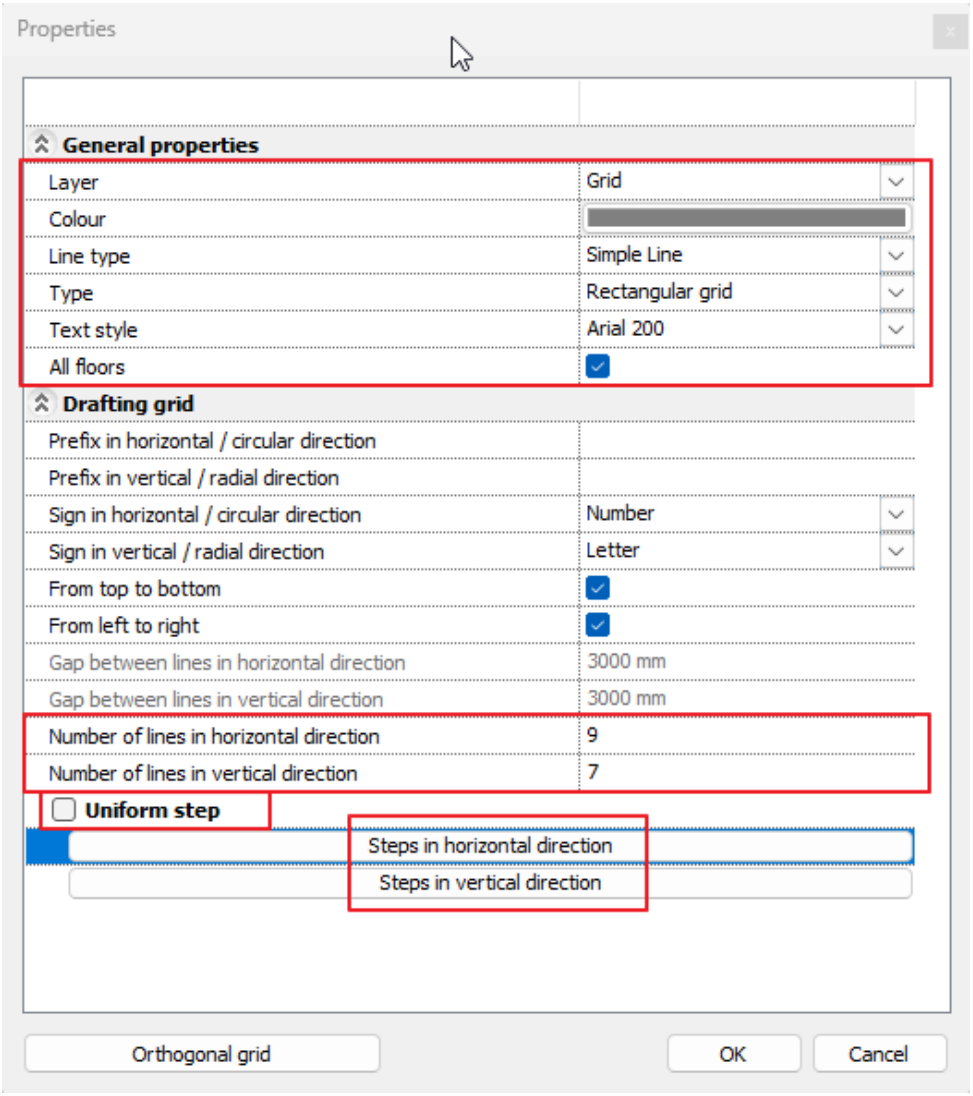
Steps to Create the Grid

2. Go to **Ribbon bar → Drafting → Construction Grid → Grid Setting**.

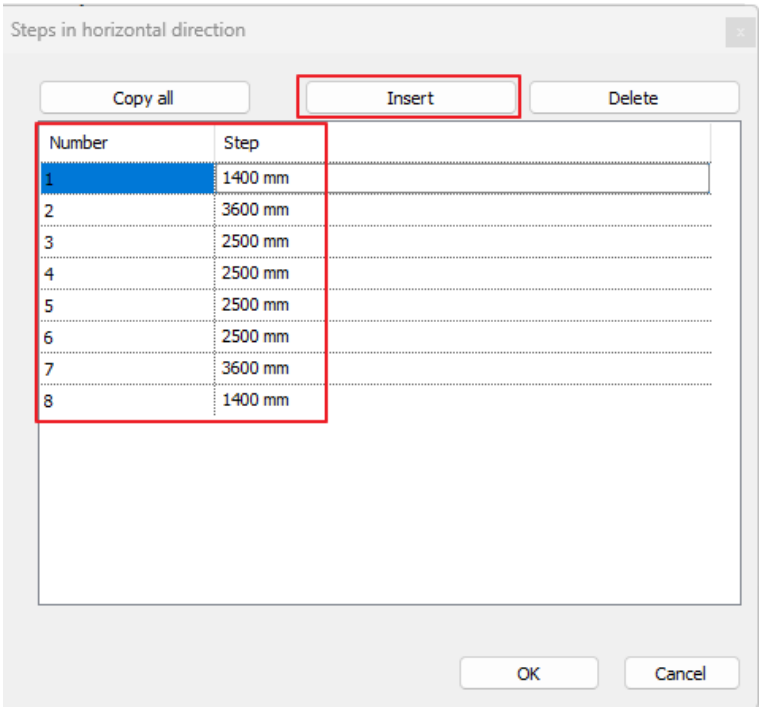


3. Set the parameters as shown in the figure:
   Number of lines: Horizontal = 9, Vertical = 7

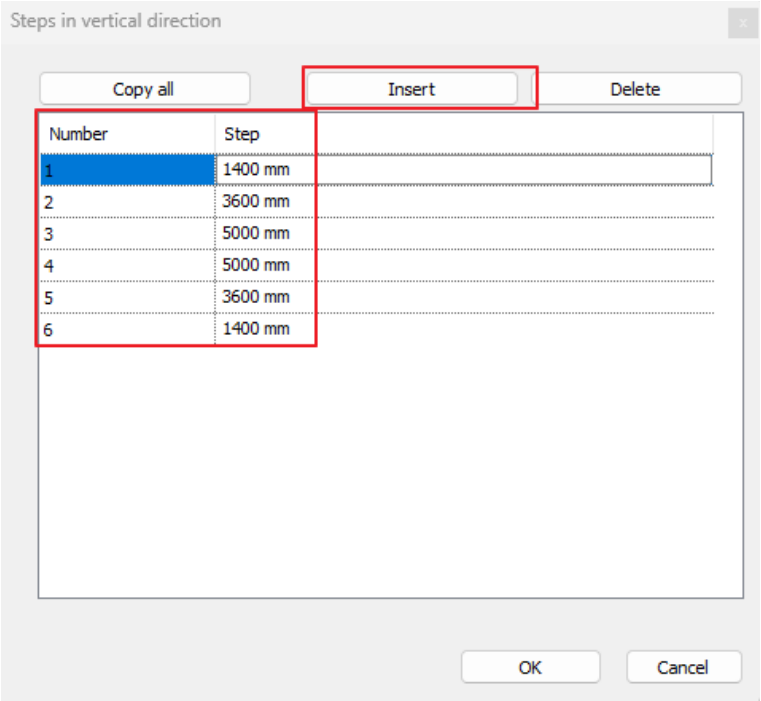
4. Switch off the *Uniform Steps* option.



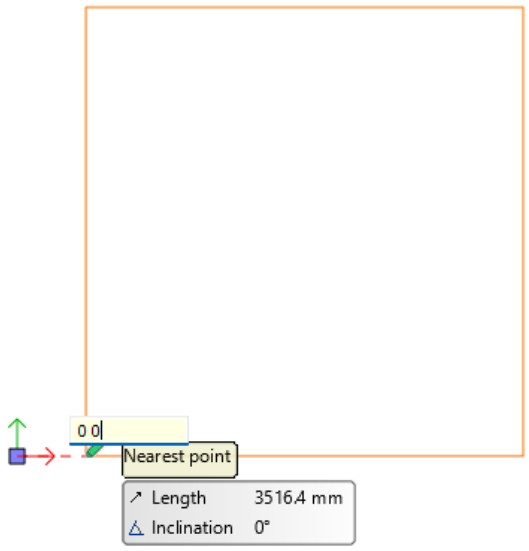
5. Click **Step in Horizontal Direction** and enter the following values (in mm) using the Insert button: 1400, 3600, 2500, 2500, 2500, 2500, 3600, 1400 → Click OK

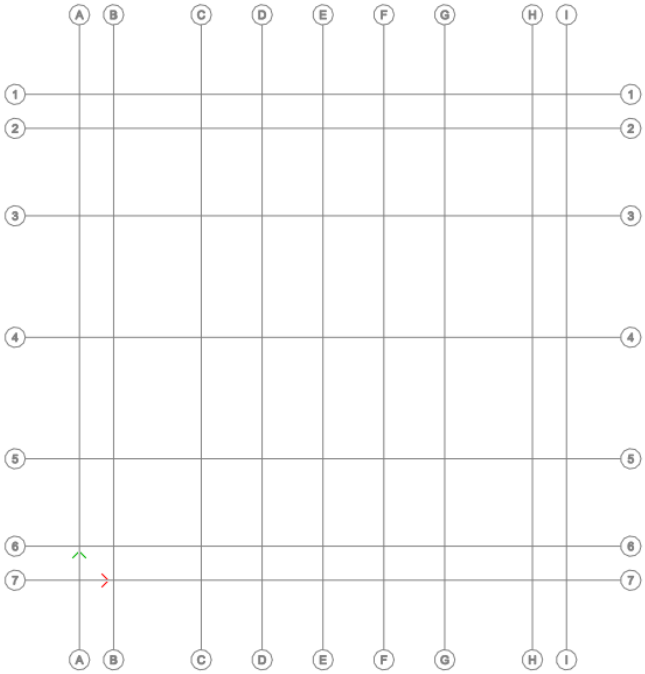


6. Click **Step in Vertical Direction** and enter the following values:
   1400, 3600, 5000, 5000, 3600, 1400 → Click OK



7. Place the construction grid in the center of the drawing by typing the coordinate:
   0,0





1.5. Set the Floor Structure

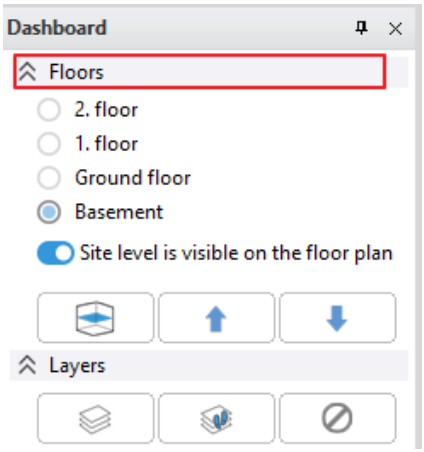
In our example, the building has **4 floors**. We will first define these levels in the project.

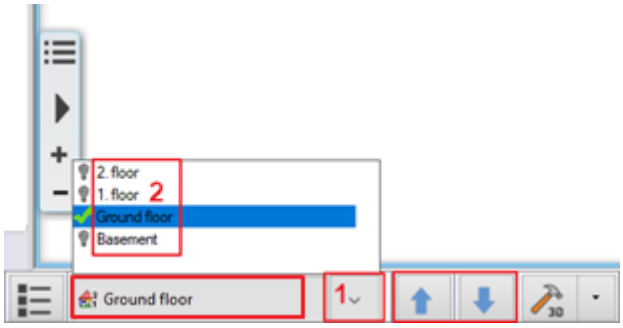
In architecture, **floors** (or levels) represent the horizontal planes of a building.
Each level defines the **reference height** for elements such as walls, columns, roofs, slabs, and ceilings.

Just as in reality a building is constructed floor by floor, in ARCHLine.XP® the plan is also organized floor by floor. When you open a new project, **four floors are automatically created**. Additional floors can be added later according to the needs of the design.

Navigating Between Floors

- In the **Dashboard**, use the **blue arrows** to move up or down between the floors of the active building.
- You can also use the **blue arrows** or the **drop-down list** in the **status bar** to switch levels.
  - The arrow buttons move the floor plan view one level up or down.
  - The drop-down list allows you to directly select the active floor.

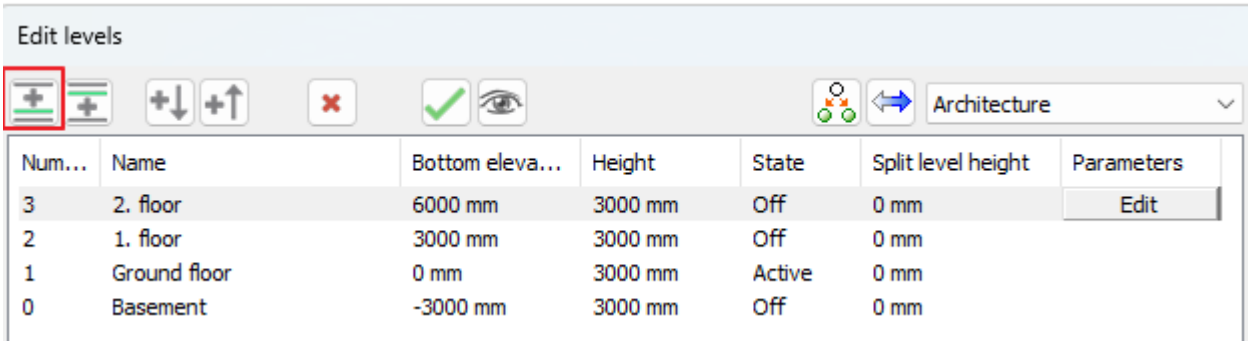




💡 **Tip:** Quick navigation between floors helps you work faster when editing multi-storey buildings.

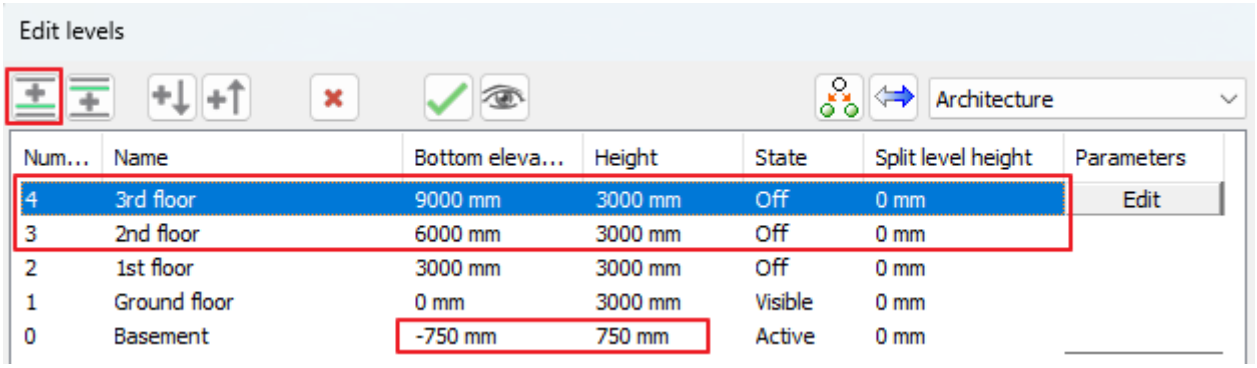
Edit Levels Dialog

1. Click on the **Floor button** (e.g., *Ground Floor*) to open the **Edit Levels** dialog.



2. Set the **height of the basement** to **750 mm**.
3. Add **one more floor** using the **first icon** in the dialog.
4. Rename the floors according to the figure below.

📝 **Note:** Consistent floor naming (Ground Floor, 1st Floor, 2nd Floor, etc.) ensures clarity in drawings and documentation.



⚠️ **Important:** Always check that the floor heights match the structural design before continuing with walls and slabs.

❗ **Remember:** The floor structure defines the backbone of your building model — all architectural elements will be placed relative to these levels.

❗ **Remember:** Save your project on the Quick Access Toolbar to preserve your project before moving on to the next steps.

---

2. Workshop: Walls and Partitions

We will design the walls using the architectural grid.

In this workshop, we will go through the following steps:

- Create a **multi-layer wall style**
- Draw **external walls** using the Wall tool with the new style
- Add **load-bearing interior walls** with reference line adjustments
- Insert **partition walls** (100 mm thickness)
- Fix intersections using the **X connection**

2.1. Define Multi-Layer Wall Style

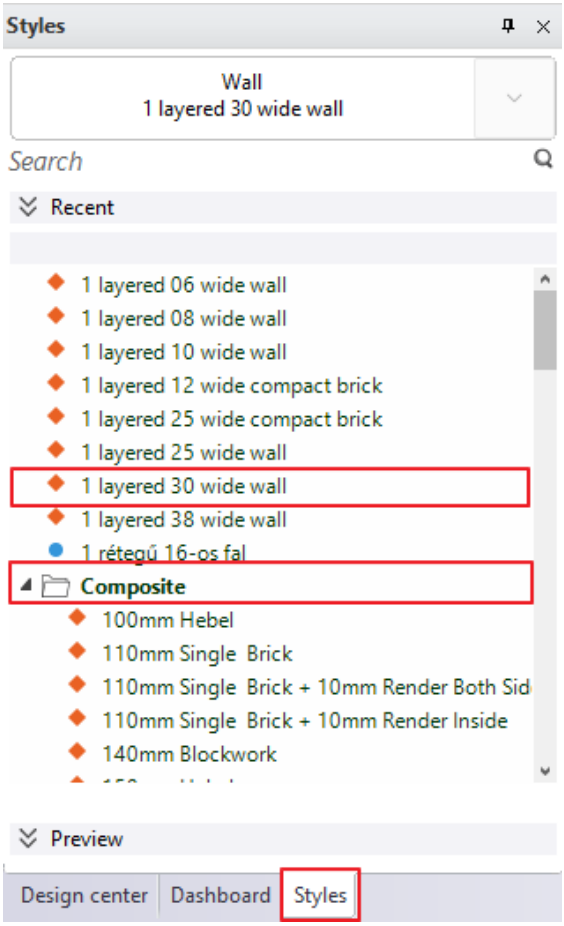
Next, we will draw the **external walls** using the wall styles

Walls are organized into **styles** – each style has a predefined thickness and materials assigned to its layers.
Wall styles can be **single-layer** or **multi-layer**.

💡 **Tip:** Multi-layer wall styles allow you to design realistic building envelopes (e.g., brick + insulation) that are easier to document later.

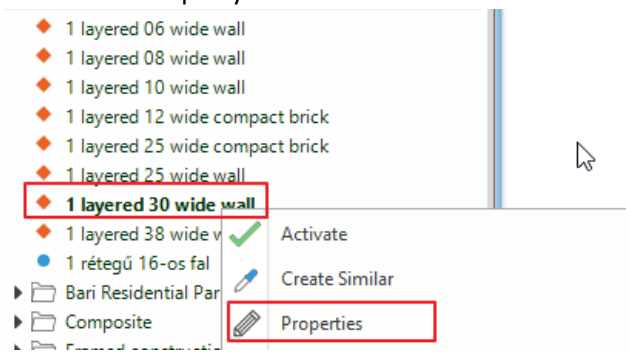
In this example, instead of a single-layer wall, we will create a **simple multi-layer wall style** with:

- **Layer 1:** Brick – 300 mm thick, 2700 mm high
- **Layer 2:** Thermal insulation – 100 mm thick, 2700 mm high

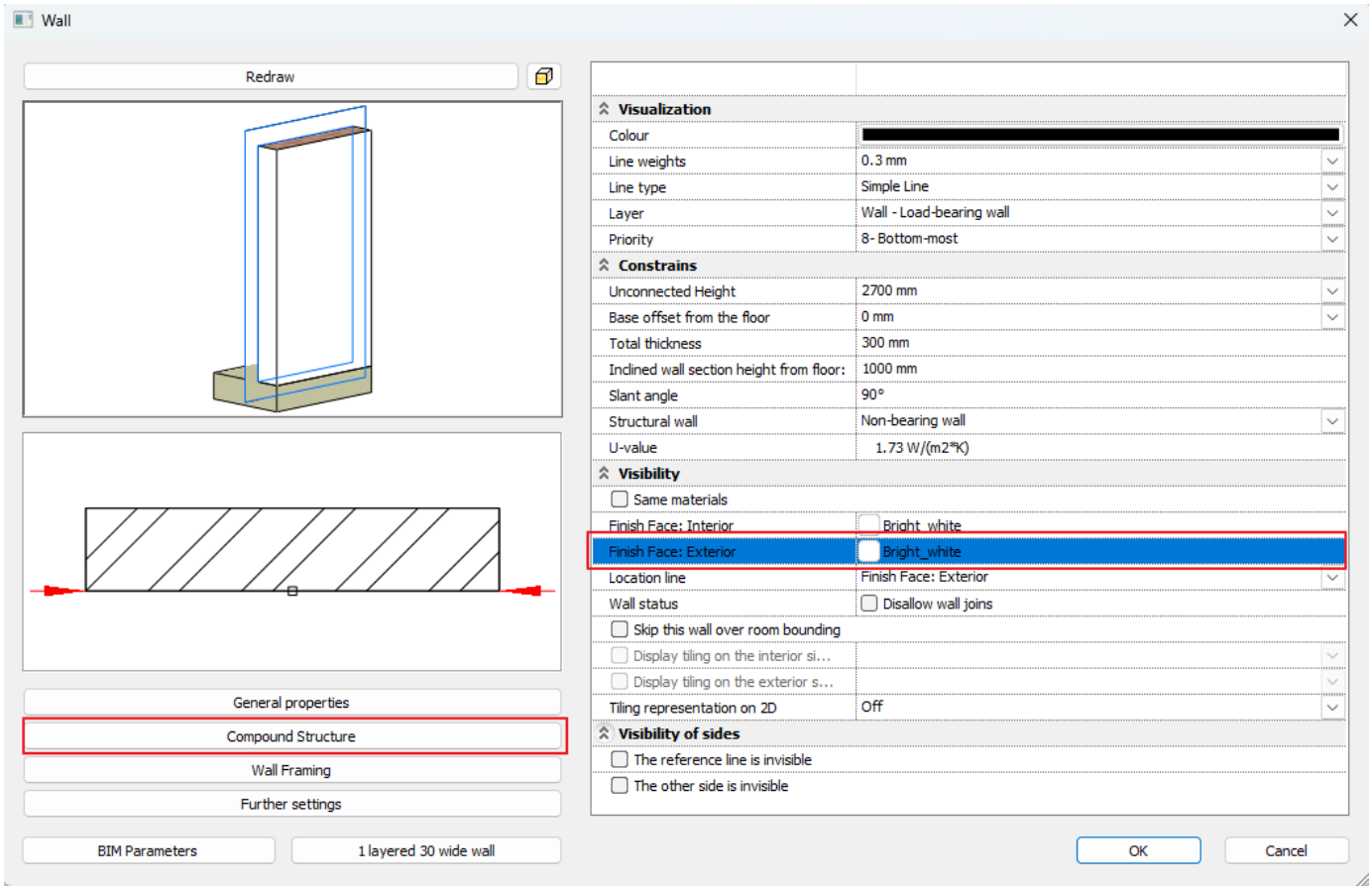


Steps to Define the Wall Style

5. Open Side Menu → Styles→ Architectural element → Wall.
   You will see both single-layer and composite wall styles listed.
6. Right click on the the **1-layer 30 wide** wall style and choose the Property.

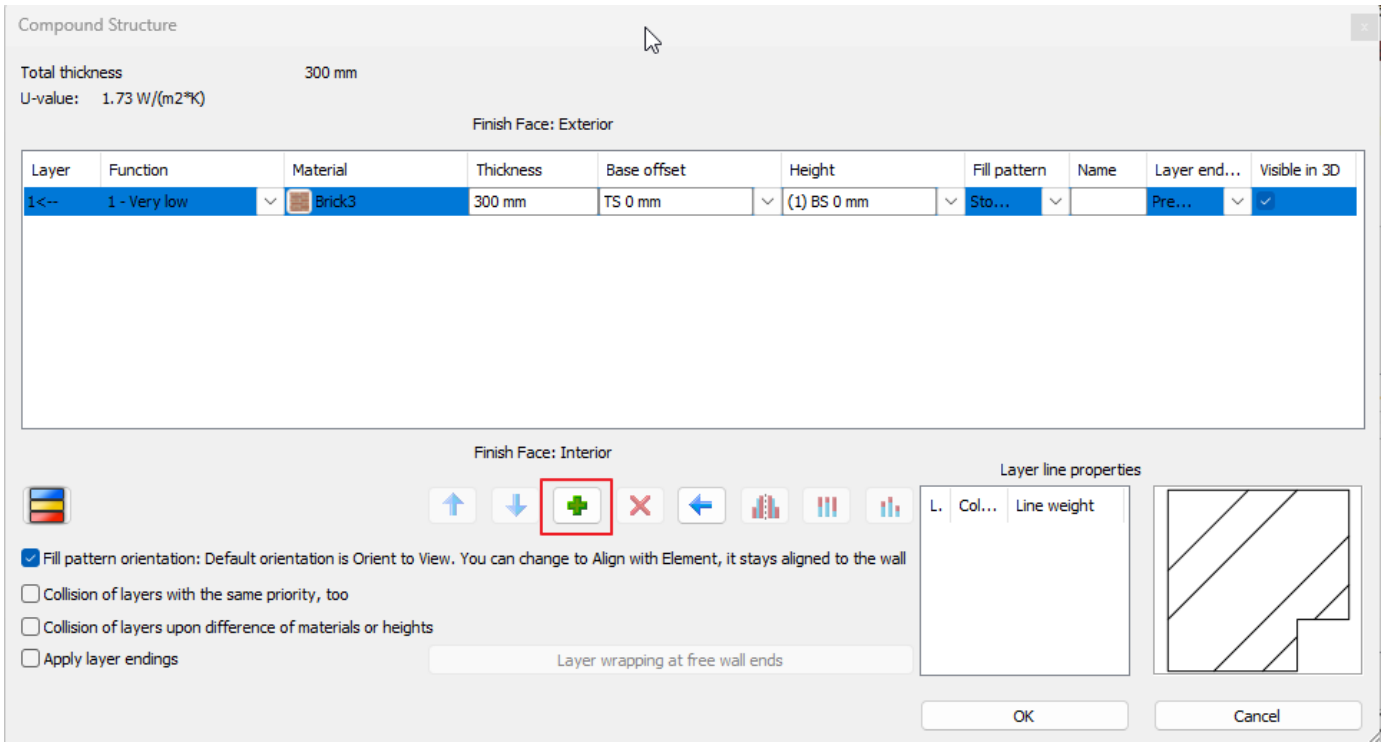


The Wall Properties dialog appears.

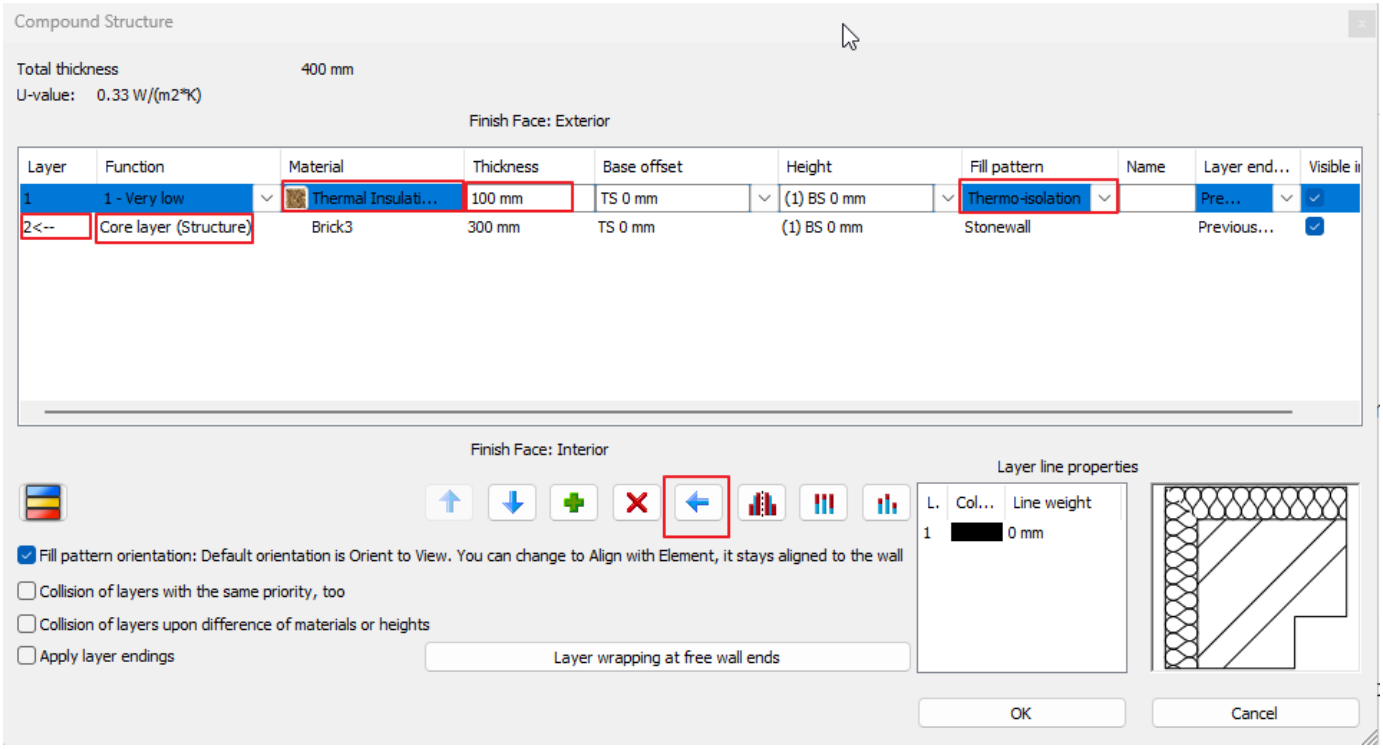


7. Set the material:
   Finish Face Exterior: Bright_white

8. Click **Compound Structure**.
   The core layer (brick) is already defined — we will now add the insulation layer.



9. Click the **+** icon to add a new layer.
    - Set the material to **Thermal Insulation**
    - Thickness: **100 mm**
    - Fill pattern: **Thermo-isolation**
      A Fill pattern mező felelős a layer alaprajzi megjelenéséért
    - Change the **Function** of the brick layer to **Core Layer**
    - Make the insulation layer the **displayed layer** by clicking the blue horizontal arrow



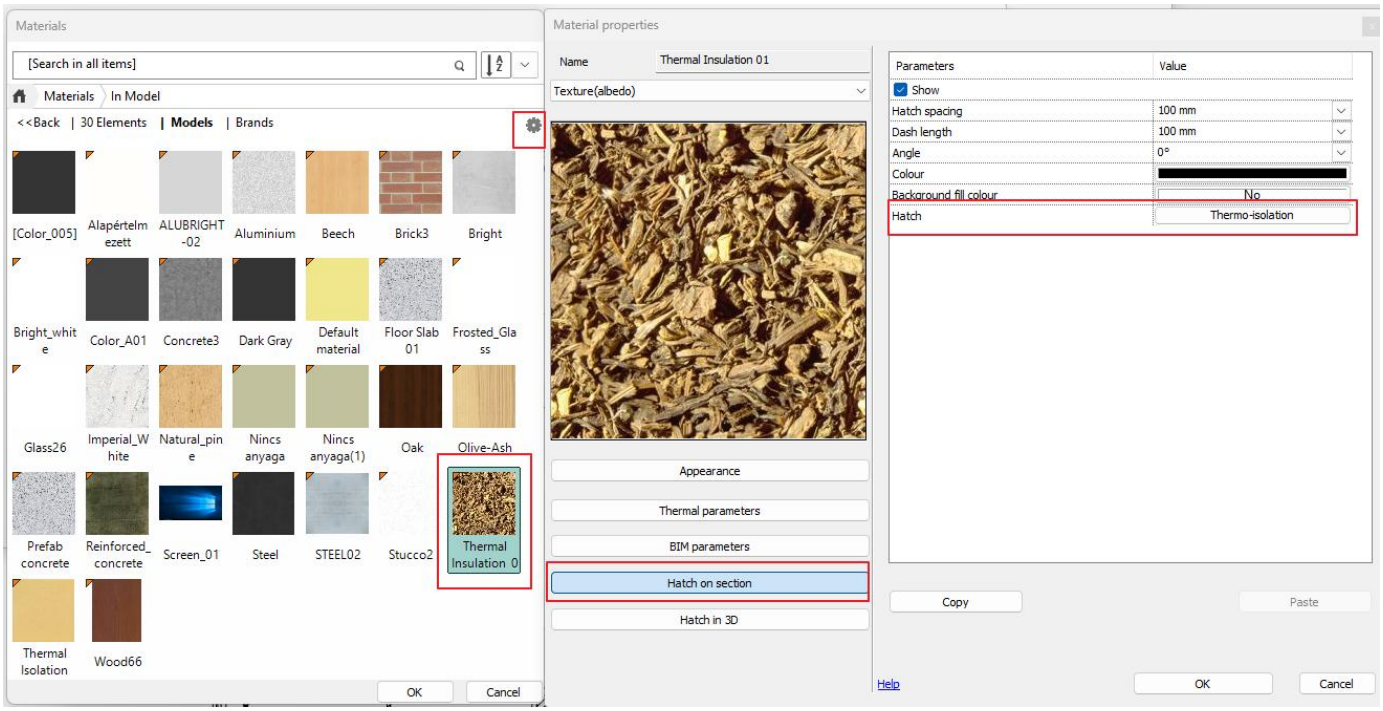
📝 Note: Fill Pattern

The **Fill pattern** field defines how the **layer appears in the floor plan view**.
For example, set the **Fill pattern** to *Thermo-isolation* for insulation layers.

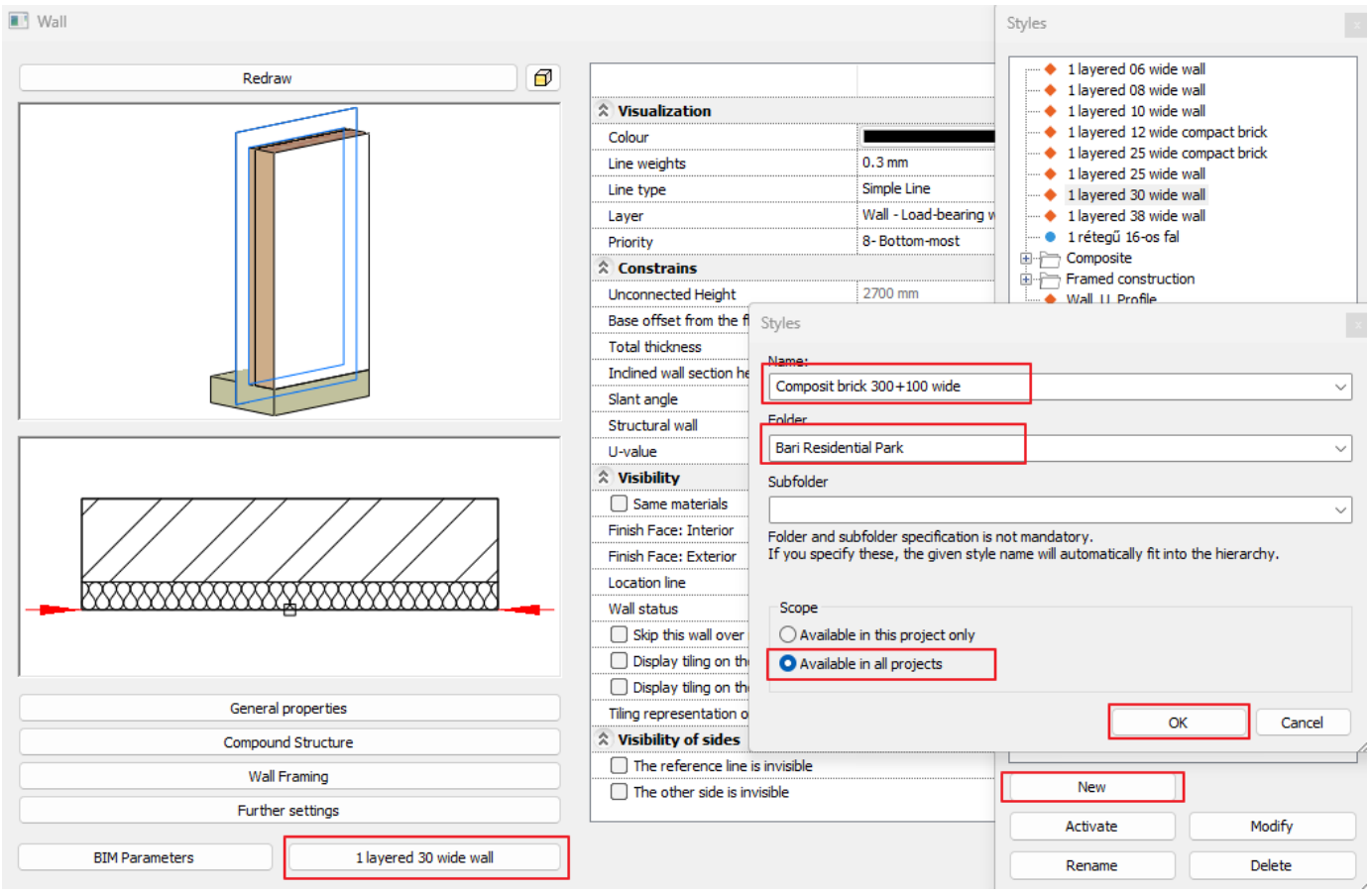
⚠️ Important: Hatch on Section

When selecting the **material of a layer**, make sure that the material has the **appropriate hatch pattern** assigned to represent it correctly in the section view.
This can be set in the **Material Properties** dialog under the **Hatch on Section** tab.

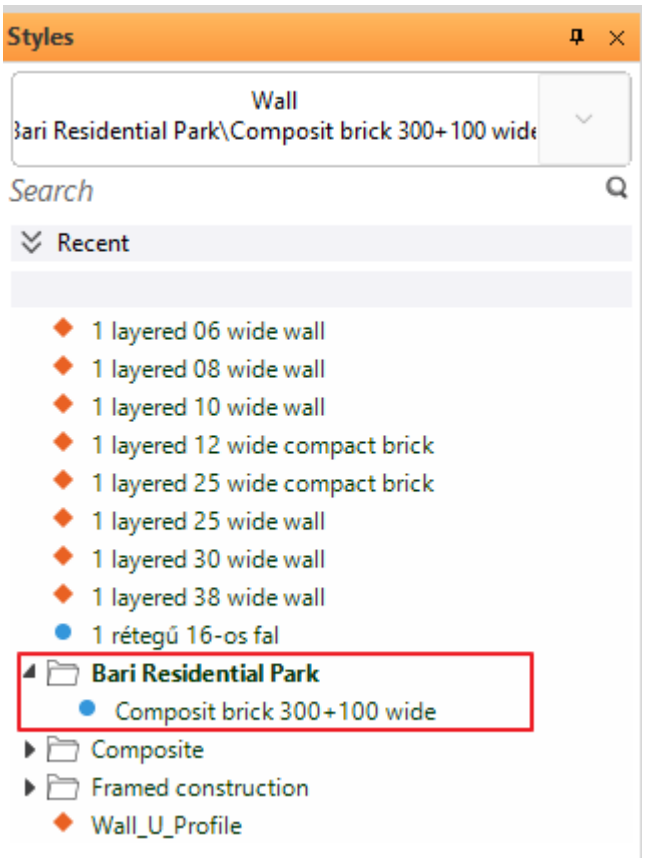
Example: *Thermal Insulation* material - Set the hatch pattern to *Thermo-isolation* (same as in the floor plan view).



10. When you are done, click **OK**.
11. Save the new style:
    - Click the **1-layer 30 wide wall** button, then click **New**
    - Enter the style name: **Composite brick 300+100**
    - Save it under the folder: **Bari Residential Park**



The new wall style will now appear in the Styles list and can be used in all your projects.



2.2. External Walls

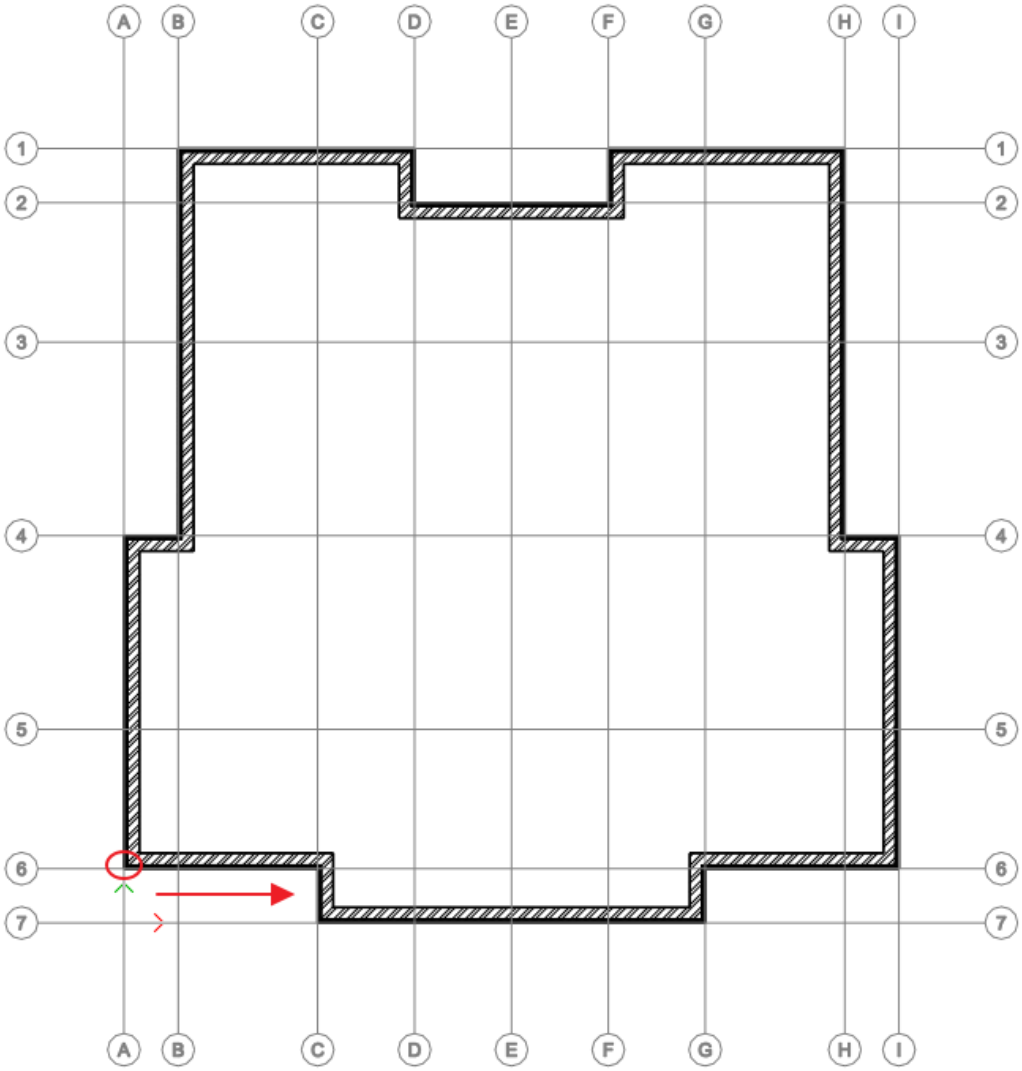
Next, we will draw the **external walls** using the newly created **Composite brick 300+100** style.
We will use the construction grid points as reference.

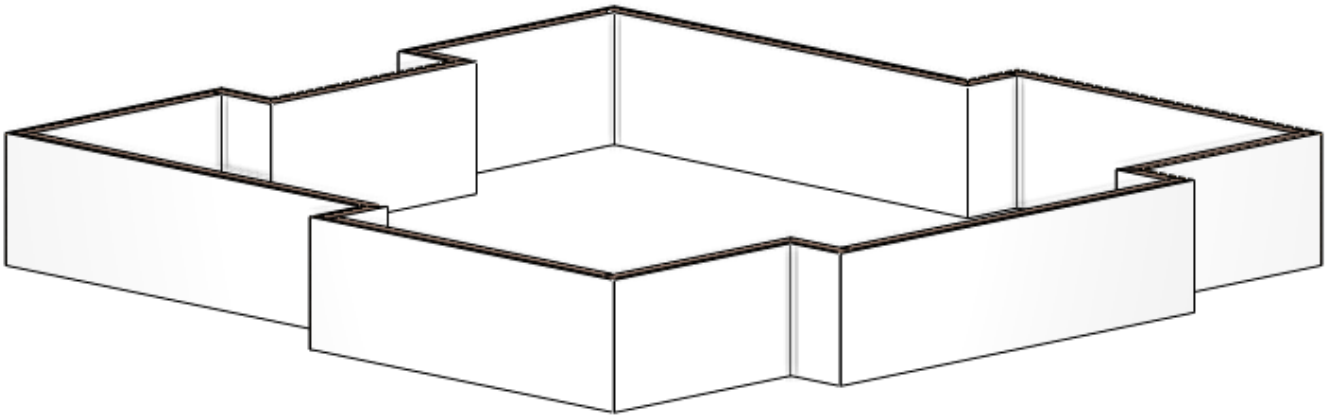
Steps to Draw the External Walls

1. Click on the Wall Tool under Ribbon bar → Building commands.
2. From the Style Menu, choose the Composite brick 300+100 wall style you created.
3. Click on the following grid points in order:
   B6, C6, C7, G7, G6, I6, I4, H4, H1, F1, F2, D2, D1, B1, B4, A1, A6

With the last click, you will close the building contour. The walls will automatically connect at the corners.

ARCHLine.XP instantly updates the **3D model view** to match your floor plan.





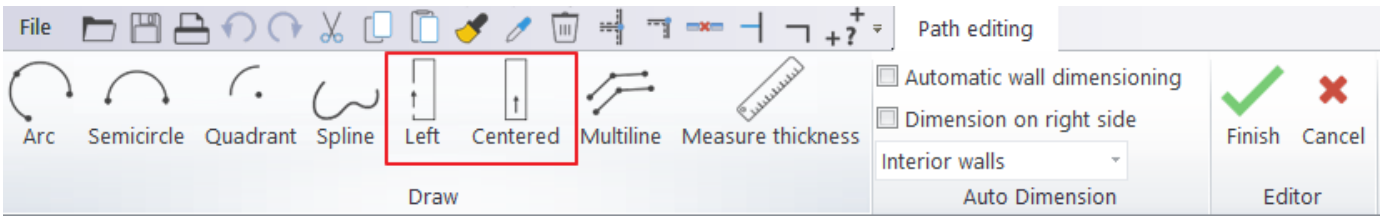
Note:

The wall is drawn along a **blue reference line**, which changes color depending on direction:

- For vertical directions, it becomes **dashed green**
- The green pencil at the end represents the endpoint of the wall
- The orange line represents the wall's thickness

Wall Reference Line

The **reference line** can be positioned on the **left side**, **center**, or **right side** of the wall.



You can switch the reference line position by:

- Using the **Draw Menu Bar** → Left / Center / Right
- Pressing **F5**
- Pressing the **Space bar**

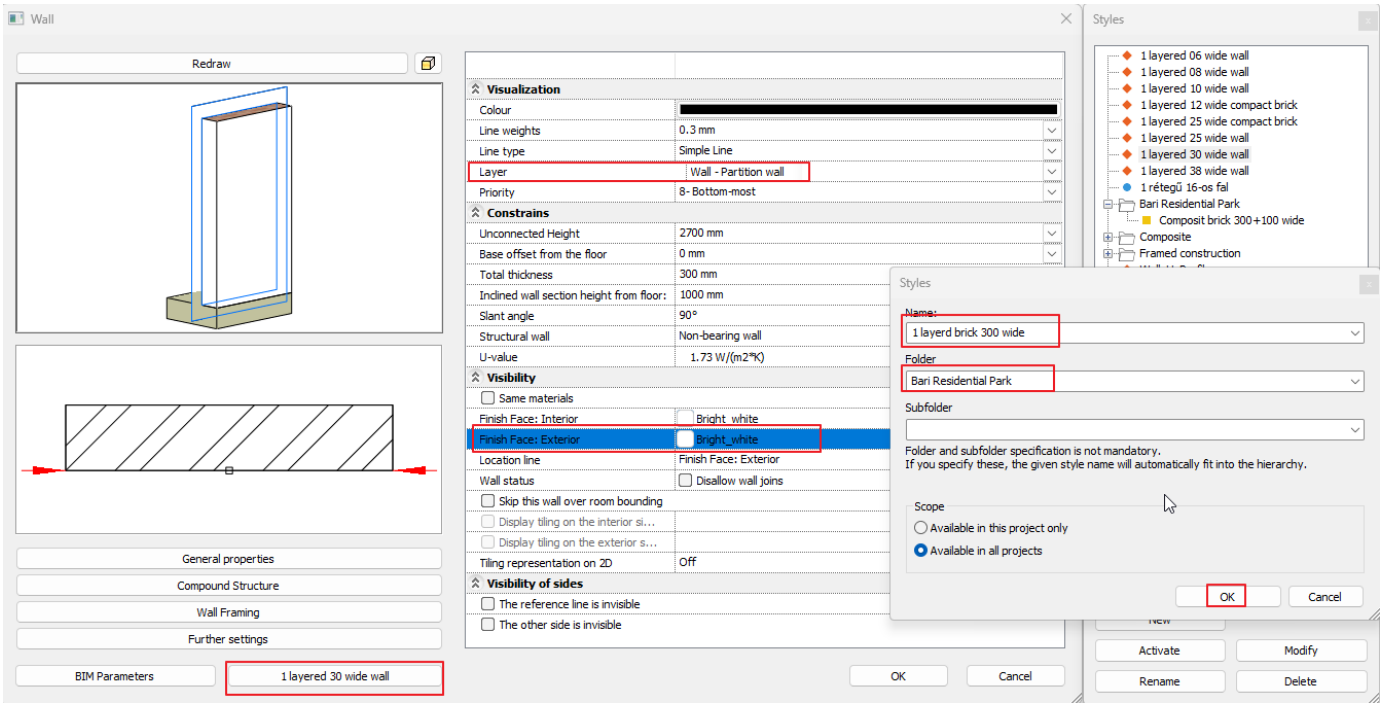
💡 **Tip:** When the reference line is set to the **right side** and you draw **counterclockwise**, you can draw along the **outer edge** of the wall.
Try switching the reference line while drawing a new wall to see how it affects the wall's placement.

2.3. Load-bearing interior walls

After drawing the building contour, we continue with the **inner load-bearing walls**.
For this, we first define a **single-layer wall style** and then draw the walls step by step.

Define the One-Layer Wall Style

1. Open Side Menu → Styles.
2. Select the 1-layer 30 wide wall style.
   The Wall Properties dialog appears.
3. Set the material: **Finish Face Exterior:** Bright_white
4. Set the Layer: **Wall – Partition wall**
5. Save the new style:
   - Click the **1 layered 30 wide wall** button, then click **New**
   - Enter the style name: **1 layered brick 300 wide**
   - Save it under the folder: **Bari Residential Park**



The new style will now be available for all projects under the Styles menu.

Drawing the Walls

Zoom in on **Point 1**, the starting point of the first inner wall.

1. Click on the **Wall Tool under Ribbon bar → Building** commands.
2. From the Style Menu, choose the **1 layered brick 300 wide** wall style you just created.
3. Click **Point 1**.
    - Make sure the reference line is set to Right.
    - If not, choose **Right** option from the menu.
    - Connect the wall to **Point 2** and press Enter.

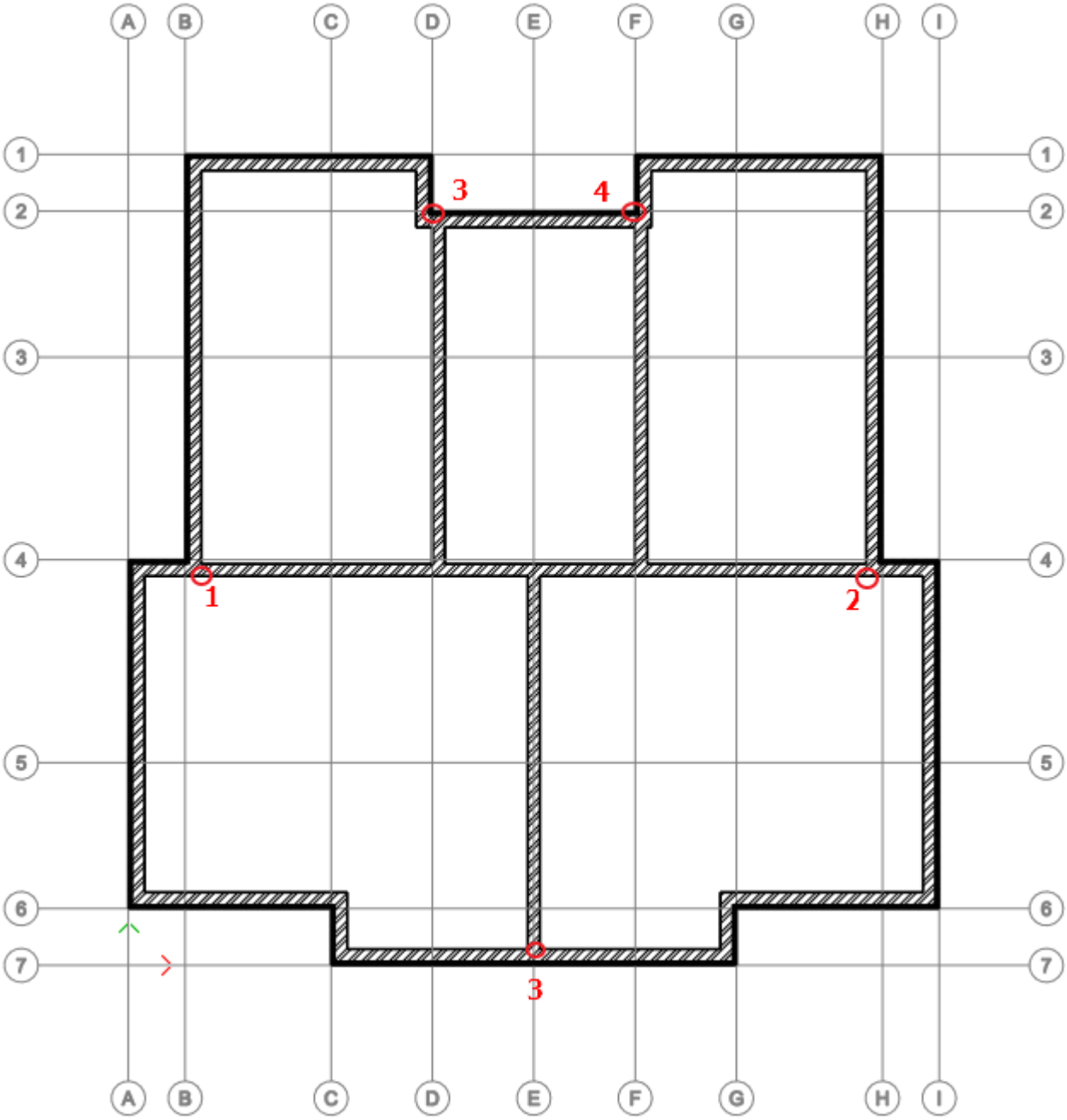
Next, we start the second wall from the **midpoint of the outer wall**:

4. Click **Point 3** and choose **Center** option from the menu.
    - Connect the wall to **Point 4**. Enter.

For the next walls:

5. Click **Point 4**.
    - Set the reference line to **Right**, then connect. Enter
6. Click **Point 5**.
    - Set the reference line to **Left**. Enter

The program will automatically connect the walls.



💡 **Tip:** Switching the reference line (Left / Right/Center) ensures your walls are aligned correctly

📝 **Note:** You can use **F5** or the **Space bar** to quickly change the reference line direction while drawing.

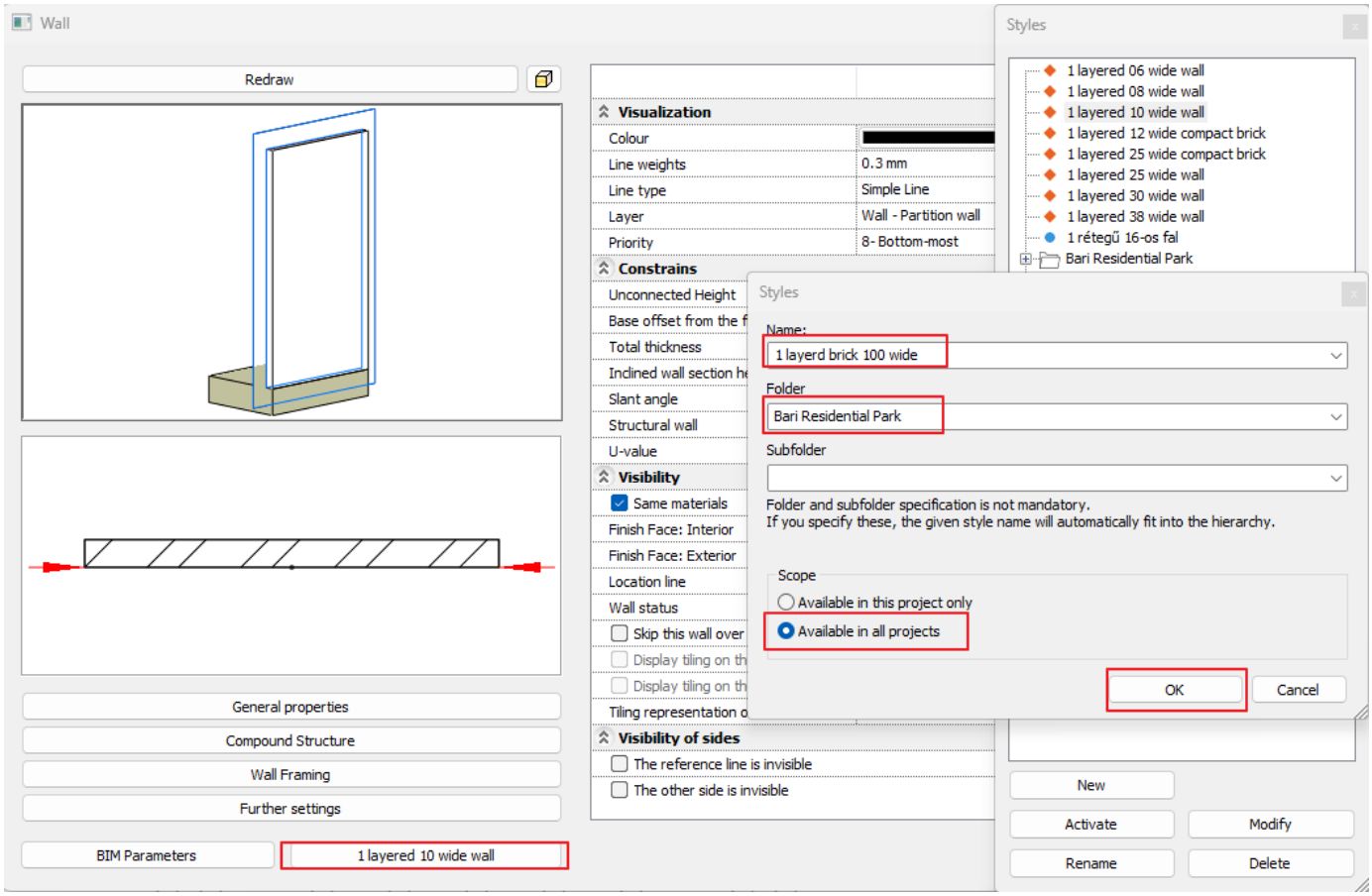
2.4. Partition walls

Next, we continue by drawing the **100 mm wide partition walls**.
First, we define a wall style for the partitions, then we draw them step by step.

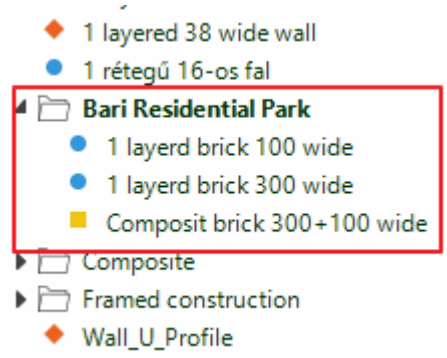
Define the 100 mm wide Wall Style

1. Open Side Menu → Styles.

2. Select the **1 layered 10 wide wall style**.
   The Wall Properties dialog appears.
3. Set the material: **Finish Face Exterior:** Bright_white
4. Set the Layer: **Wall – Partition wall**
5. Save the new style:
   - Click the **1-layer 10 wide wall** button, then click **New**
   - Enter the style name: **1 layered brick 100 wide**
   - Save it under the folder: **Bari Residential Park**



The new style is now available for all projects under the Styles menu.



Drawing the Partition Walls

We will draw the first partition wall at a **distance of 2760 mm** from the corner of the main wall.
For this, we place a **temporary reference point** at the corner and measure from there.

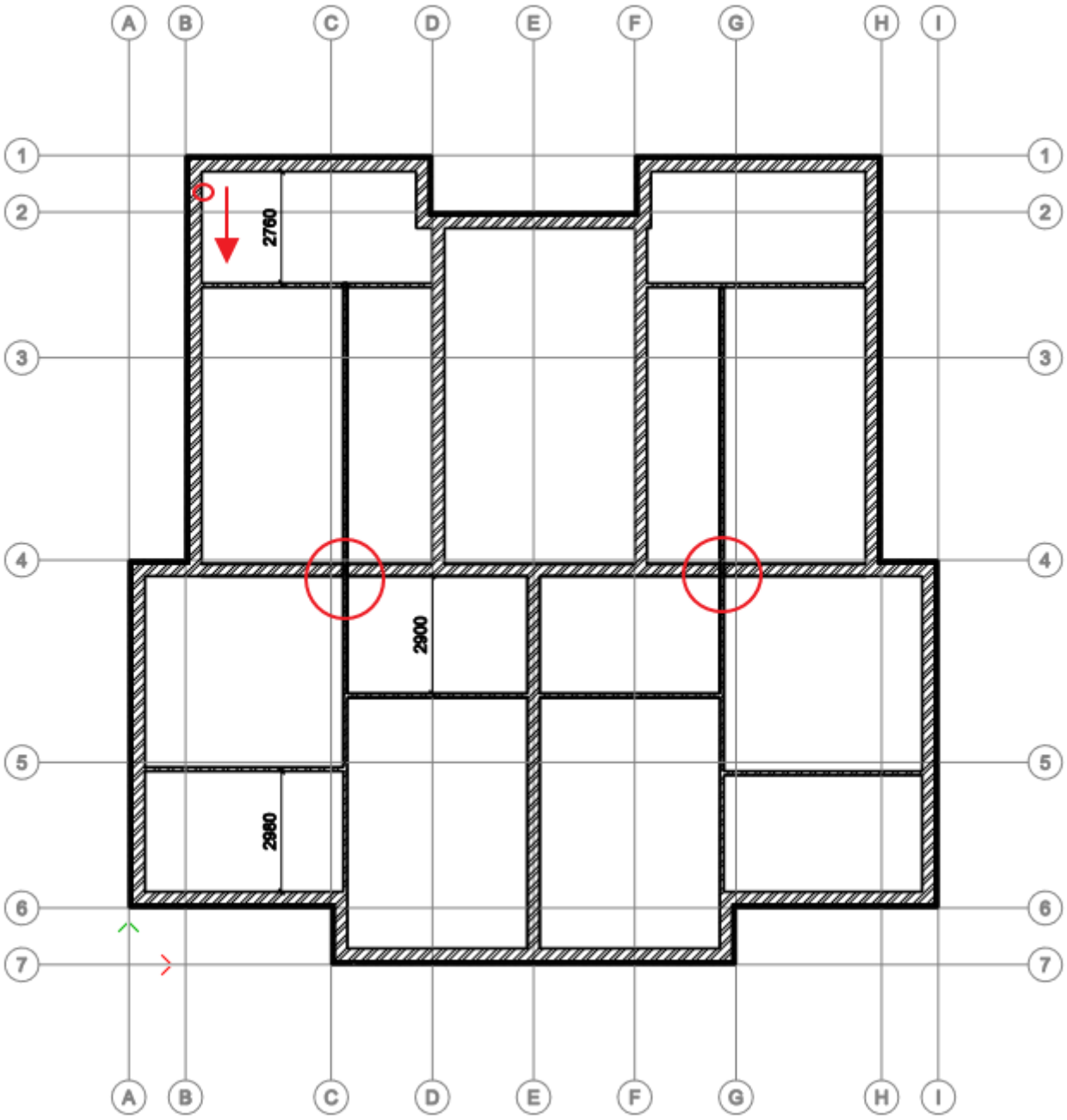
1. Click on the **Wall Tool** under Ribbon bar → **Building** commands.
2. From the **Style Menu**, choose the **1 layered brick 100 wide** style you just created.
3. Select the **Reference** command from the **Status Bar.** 
4. Click slightly below **Point 1** — not exactly on the corner point, so it's clear which wall you are referencing.
5. Move the mouse **vertically downwards, type 2760**, then press **Enter**.
   The program measures 2760 mm downwards from the reference point and places the starting point of the wall.
6. Move the mouse **horizontally**.
   - Make sure the reference line is set to **Left**.
   - When the **perpendicular point** on the opposite wall is recognized, click once to place the endpoint, then press **Enter**.

📝 **Note:** Continue drawing the remaining partition walls following the layout in the figure.

The walls are connected automatically — except where we will use the X connection.

💡 **Tip:** Using a reference point and a precise distance ensures your partitions are perfectly aligned and meet exact design requirements.

⚠️ **Important:** Make sure the reference line is on the correct side before clicking, otherwise the wall will be placed incorrectly.



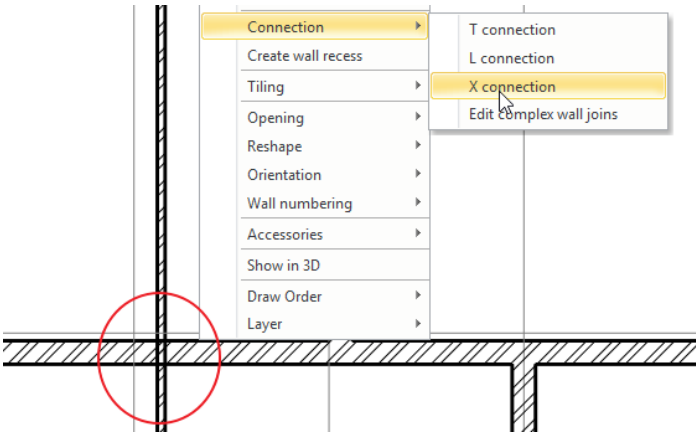
2.5. Fix Intersections Using the X Connection

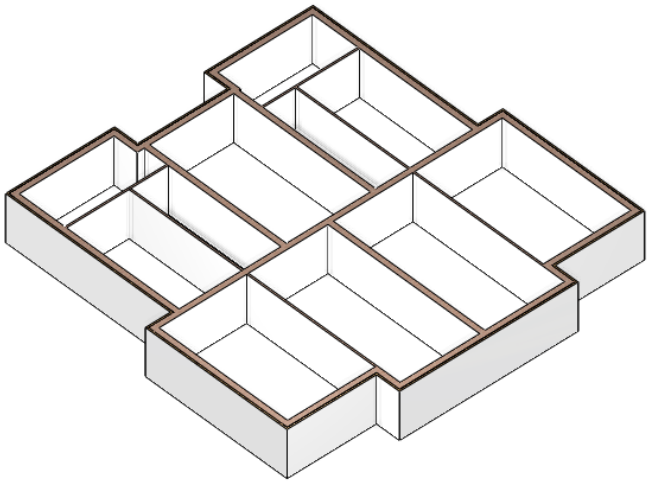
Although most walls connect automatically, some intersections need to be fixed manually.
For this, we use the **X Connection** tool.

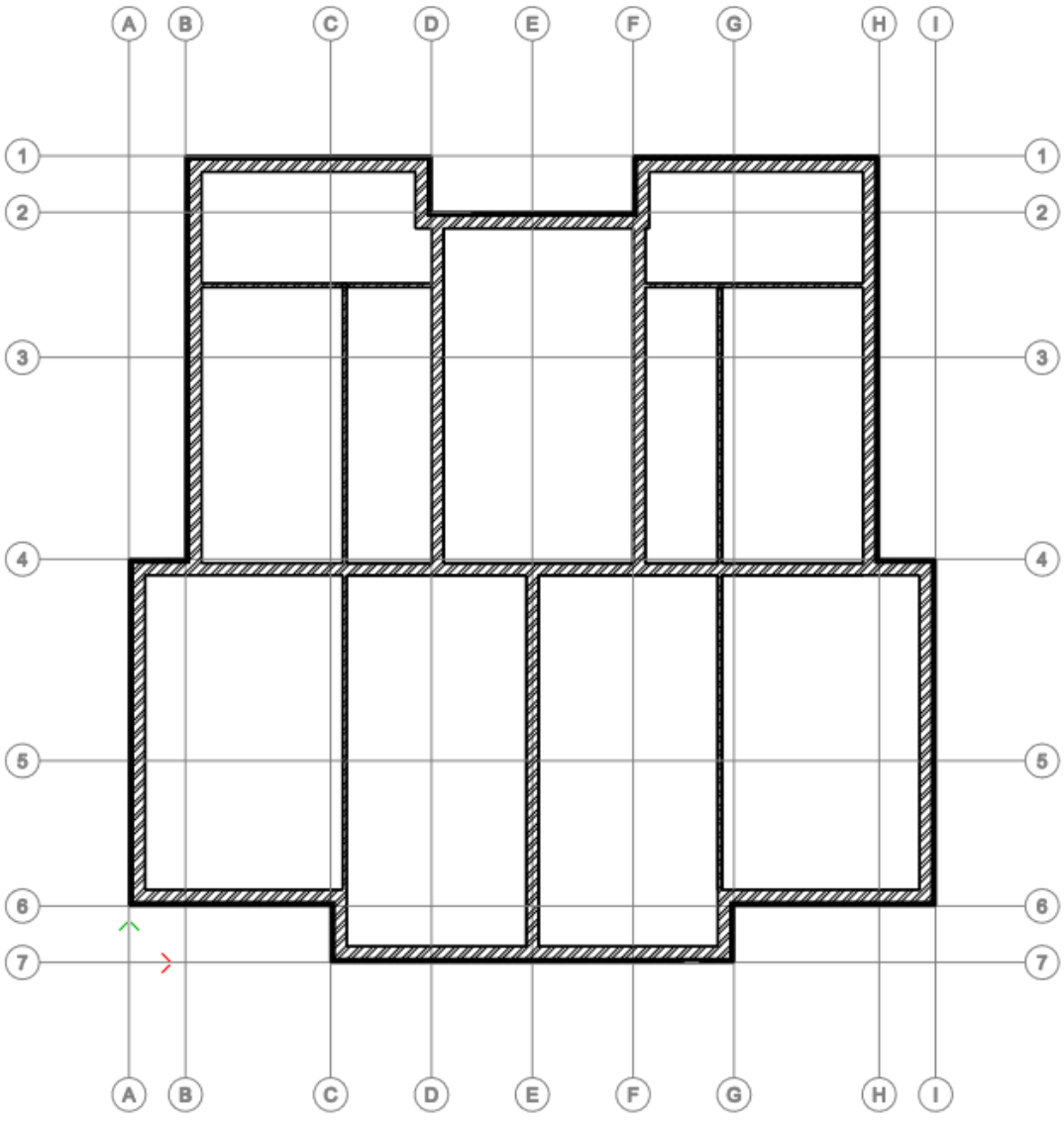
1. Right-click on the intersection point.
2. Choose **Connection → X Connection**.
3. Repeat the same step for the second intersection.

The walls are now properly joined and the intersection is corrected.

💡 **Tip:** Use **X Connection** whenever two walls don't meet cleanly – this keeps the geometry tidy and accurate.







❗ **Remember:** Using the **File menu → Save project as** command save your project under a new file name (for example, *Bari_02*) to preserve your project before moving on to the next steps.

3. Workshop: Slabs and Foundations

We continue the design process by creating the **layered slab** and the **foundation level**.
In this workshop, you will learn how to:

1. Define a **Multi-Layer Slab Style**
2. Place multi-layer slabs under walls with one click
3. Adjust slab contours in the **3D view**
4. Create the **foundation level** and set strip footings
5. Switch layer visibility for better editing

3.1. Define Multi-Layer Slab Style

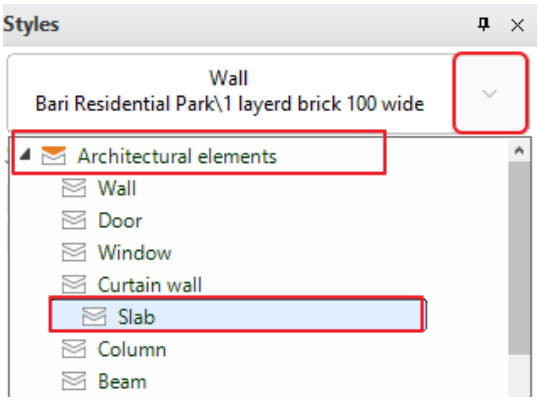
We will draw the slab under the entire building using **slab styles**.
Slabs can be **single-layer** or **multi-layer**, each with predefined thicknesses and materials.

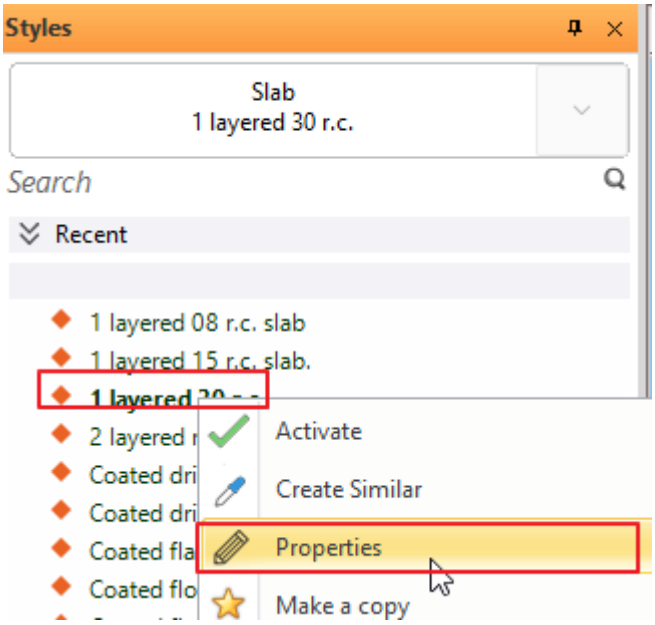
In this example, we will create a **multi-layer slab style** with:

1. **Layer 1:** Reinforced concrete – *200 mm thick*
2. **Layer 2:** Concrete – *100 mm thick*

Steps to Define the Slab Style

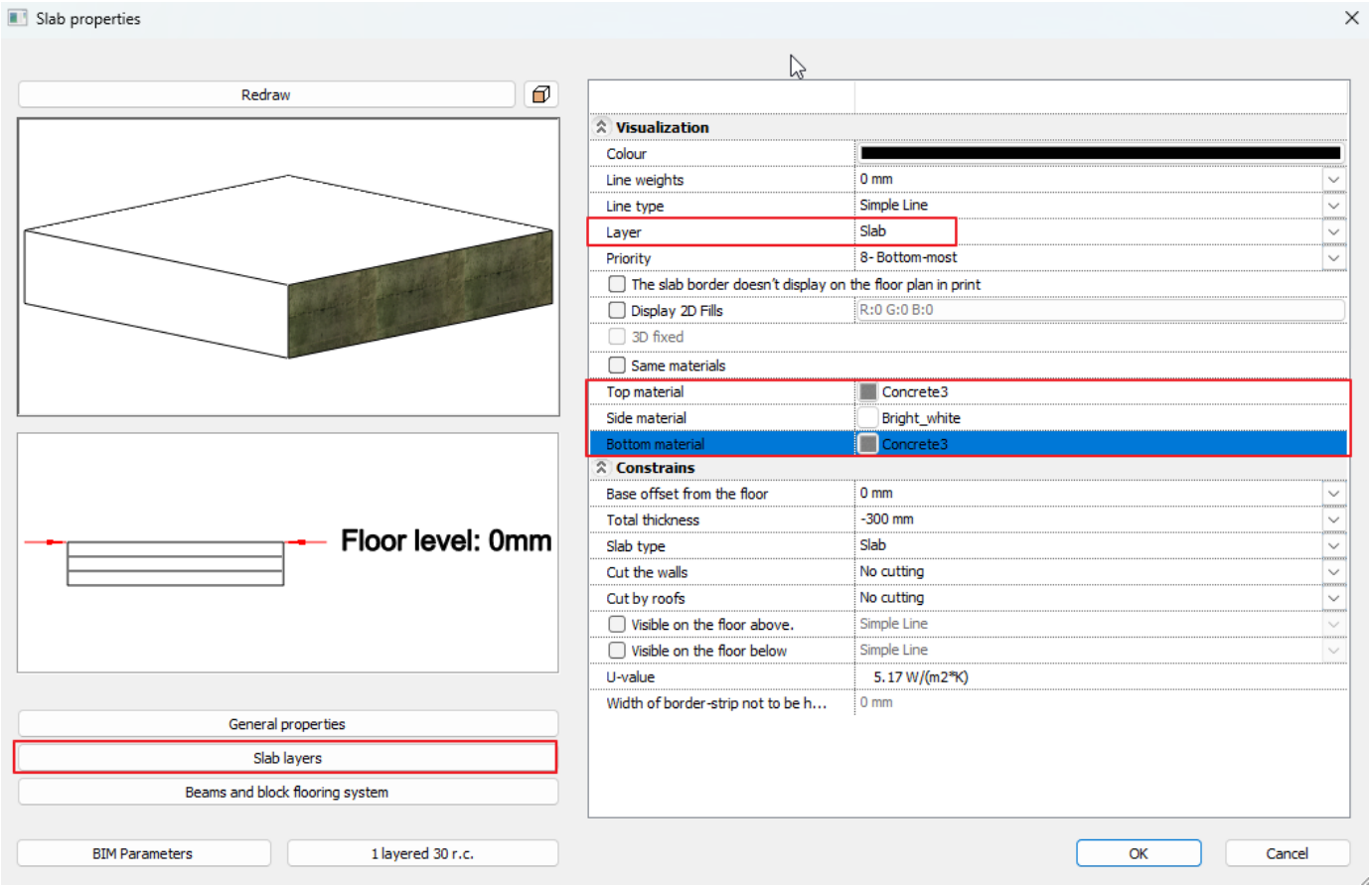
1. Open **Side Menu → Styles → Architectural element → Slab**
   Here you will see both single-layer and composite slab styles.





2. Right-click on **1-layered 30 r.c. slab** and choose **Property**.
   The *Slab Properties* dialog will appear.

3. Set **Materials** to: *Concrete3, Bright white, Concrete3*

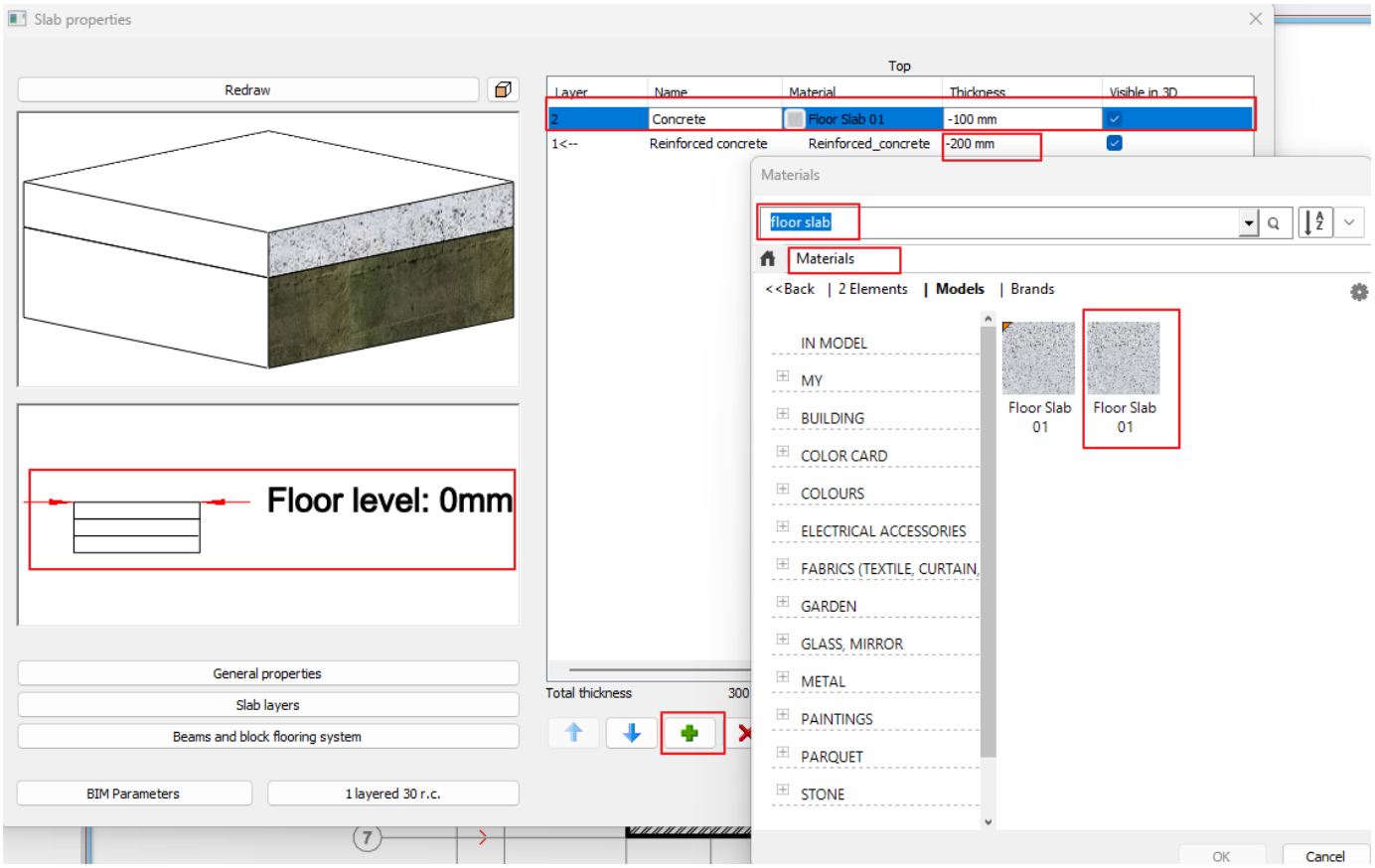


4. Click the **Slab layers** button.
   The reinforced concrete layer is already defined.
   Now add a new layer.

5. Click the **+** icon to add a new layer:

   - Material: Floor Slab 01
   - Thickness: -100 mm
   - Set the reinforced concrete layer as the displayed layer (blue arrow).

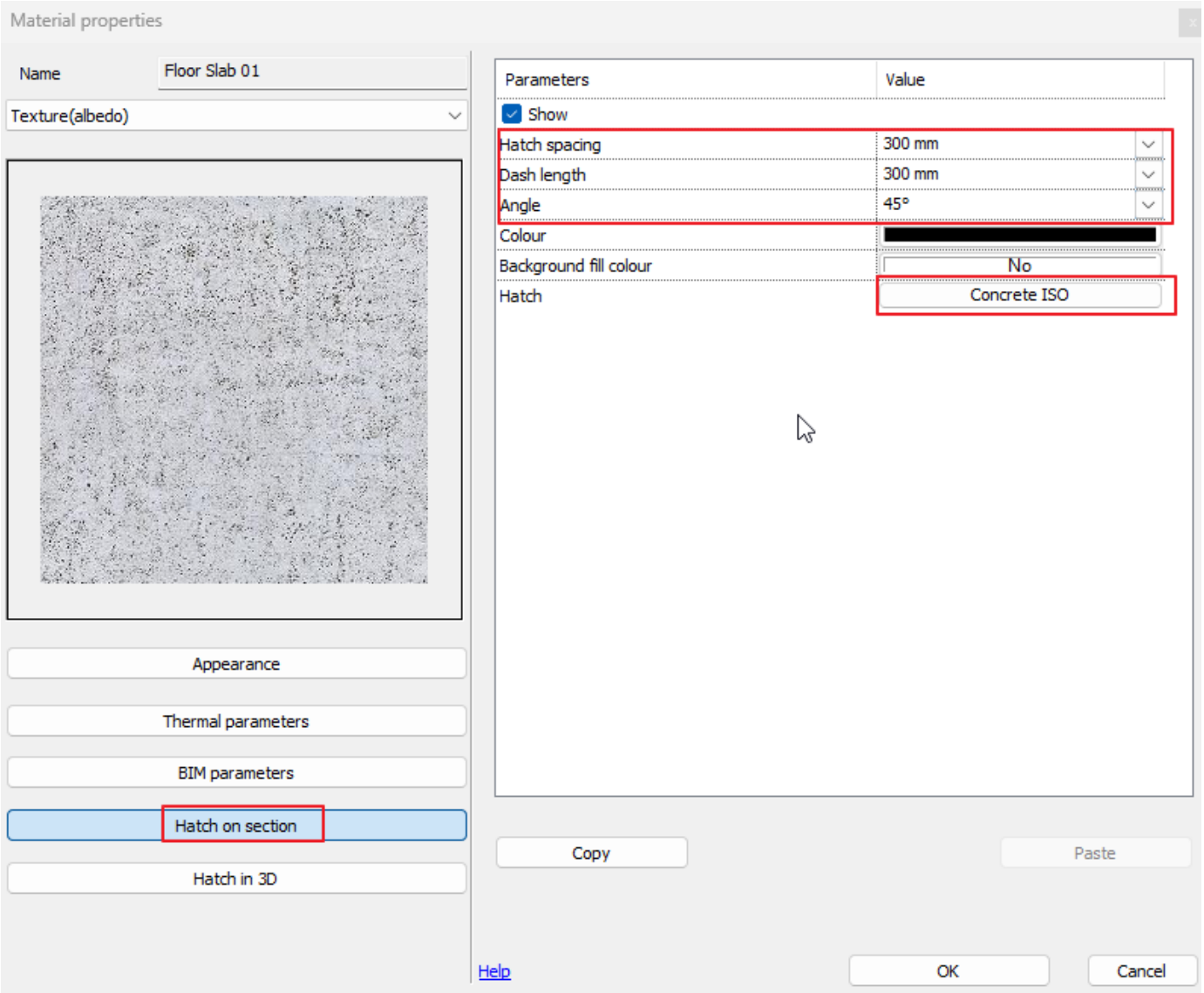
6. Change the thickness of the reinforced concrete layer to **-200 mm**.



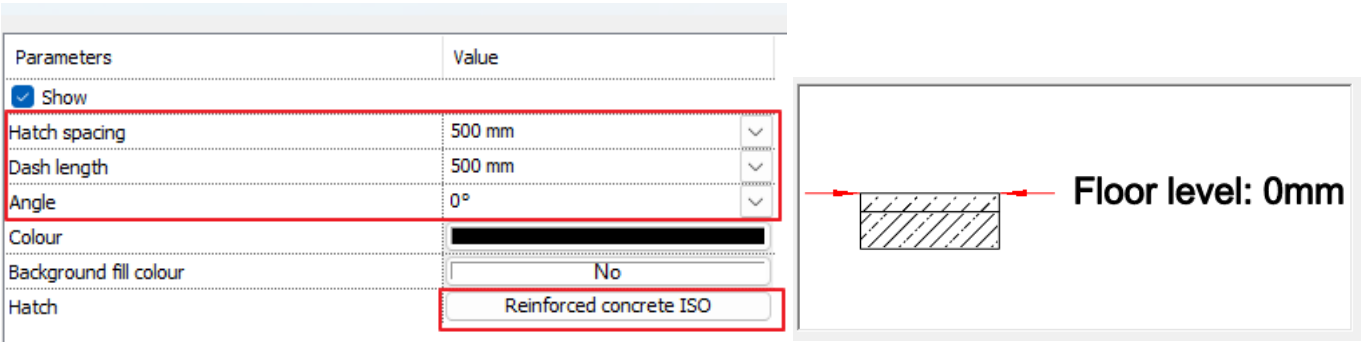
Adjusting Section Hatching

At this point, the **hatching in section view** may look incorrect.
We must set the hatching pattern for each material.

1. Select the *Floor Slab 01* material → click the gear icon → **Edit material**.
2. In *Material Properties*, click **Hatch on section** → choose *Concrete ISO*.
   Adjust distance and angle as needed.



3. Repeat for *Reinforced concrete*, selecting *Reinforced concrete ISO*.



Now the hatching will appear correctly in the section.

4. When finished, click **OK**.

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5. Save the new style:
    - Select the **1-layered 30 r.c. style** → click **New**
    - Enter the name: *Composite concrete 200+100*

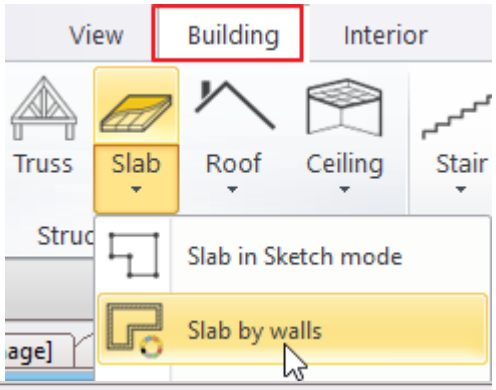
- Save it under the folder: **Bari Residential Park**

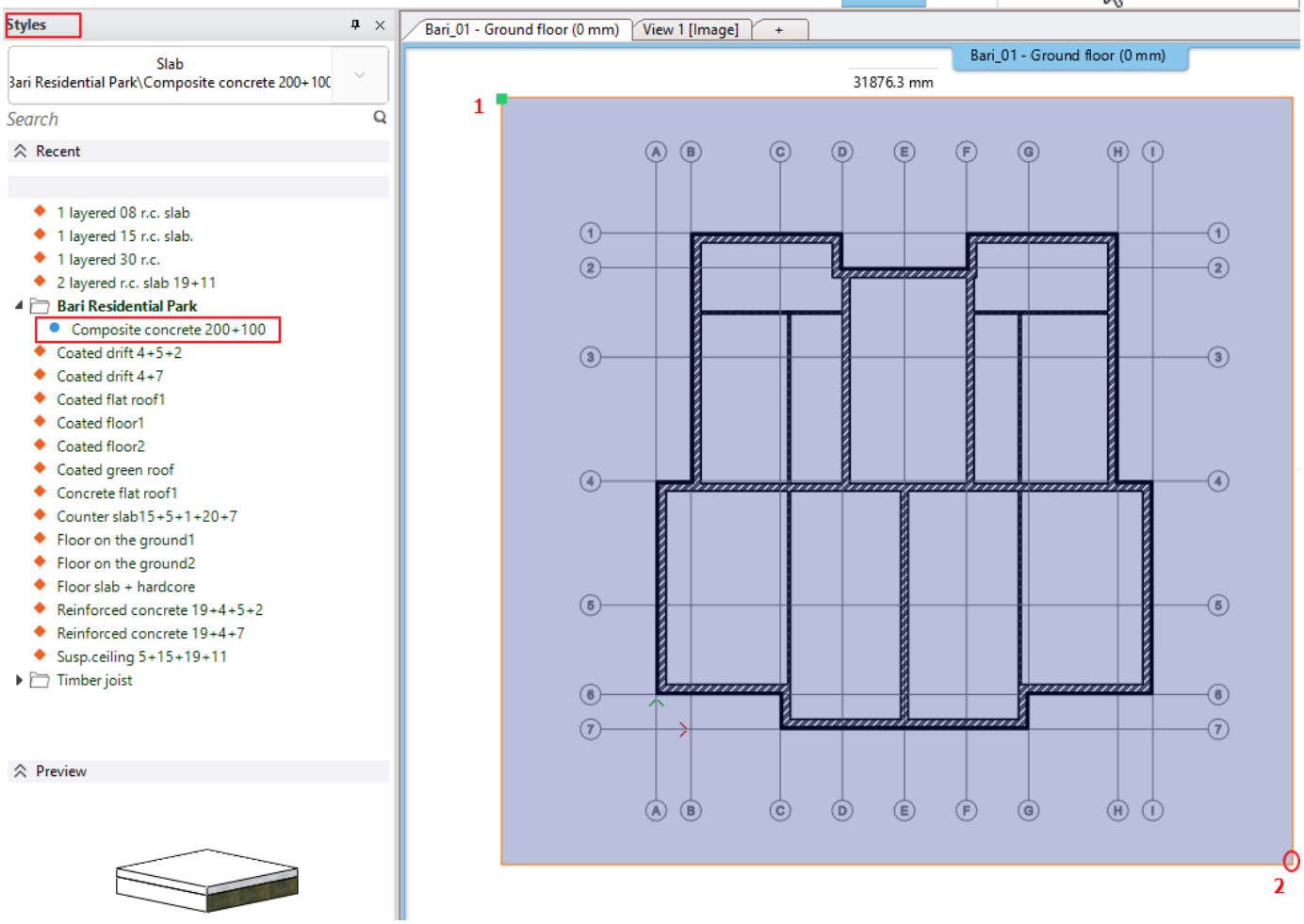
💡 **Tip:** The new style will now appear in the **Styles list** and can be reused in any project.

3.2. Place the Slab

Now we place the slab under the walls with just one click using the newly created **Composite concrete 200+100** style.

1. On the Ribbon bar, go to Building → Slab → Slab by wall.
2. Select the style: *Composite concrete 200+100*.
3. Select the entire building outline (see points 1 and 2 in the figure below)

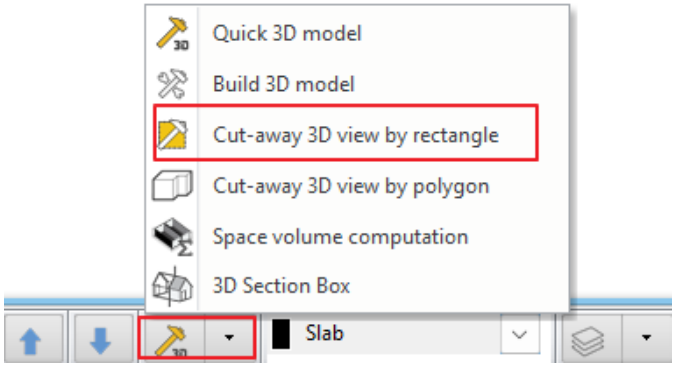




📝 **Note:** The program automatically places the slab under the walls based on the selected style.

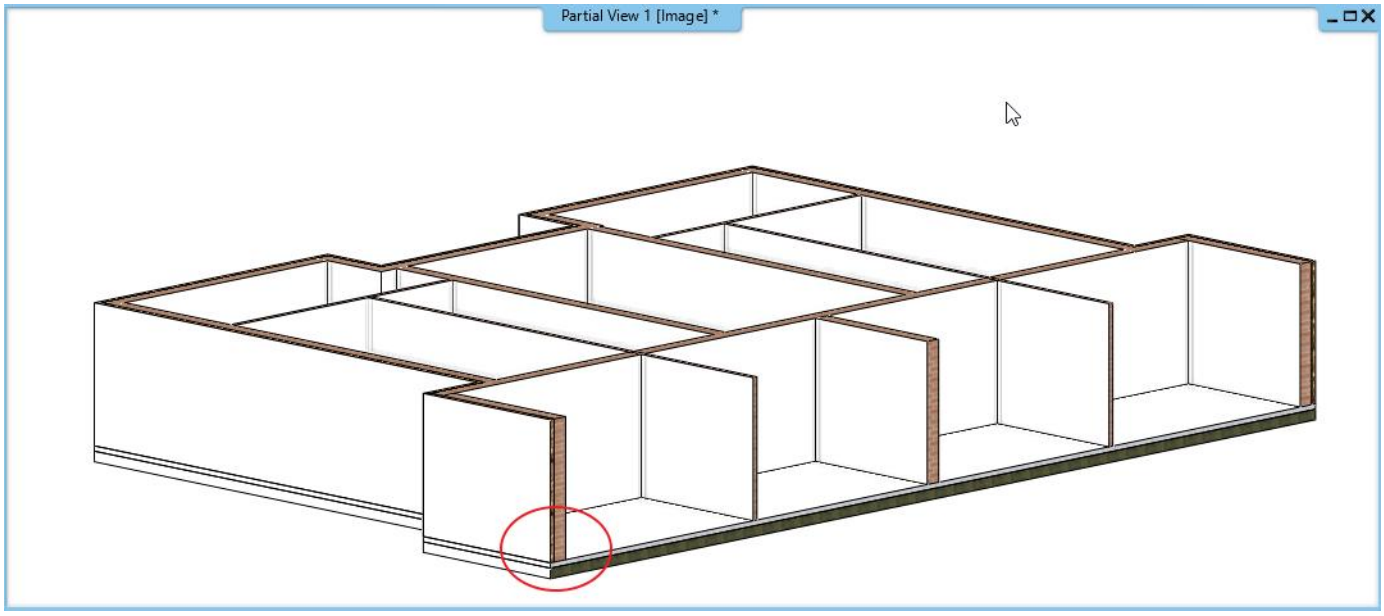
The slab is now completed.

3.3. Adjust Slab Contours in 3D View



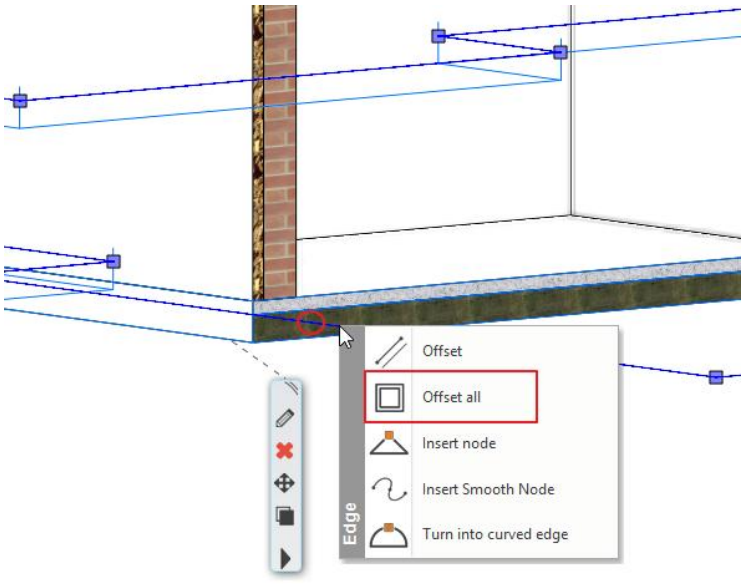
To refine the slab, let's adjust its contour in 3D.

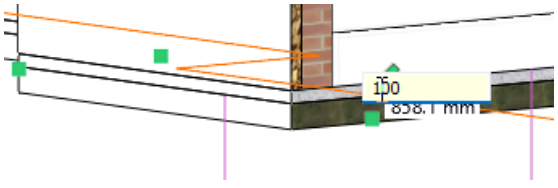
1. Use **Cut-away 3D view by rectangle** to isolate part of the model.
   - Draw a rectangle on the floor plan to select the area.
   - The *Partition View* will appear.



The slab edge must not extend under the wall insulation. Instead, it should align with the **load-bearing wall layer**.

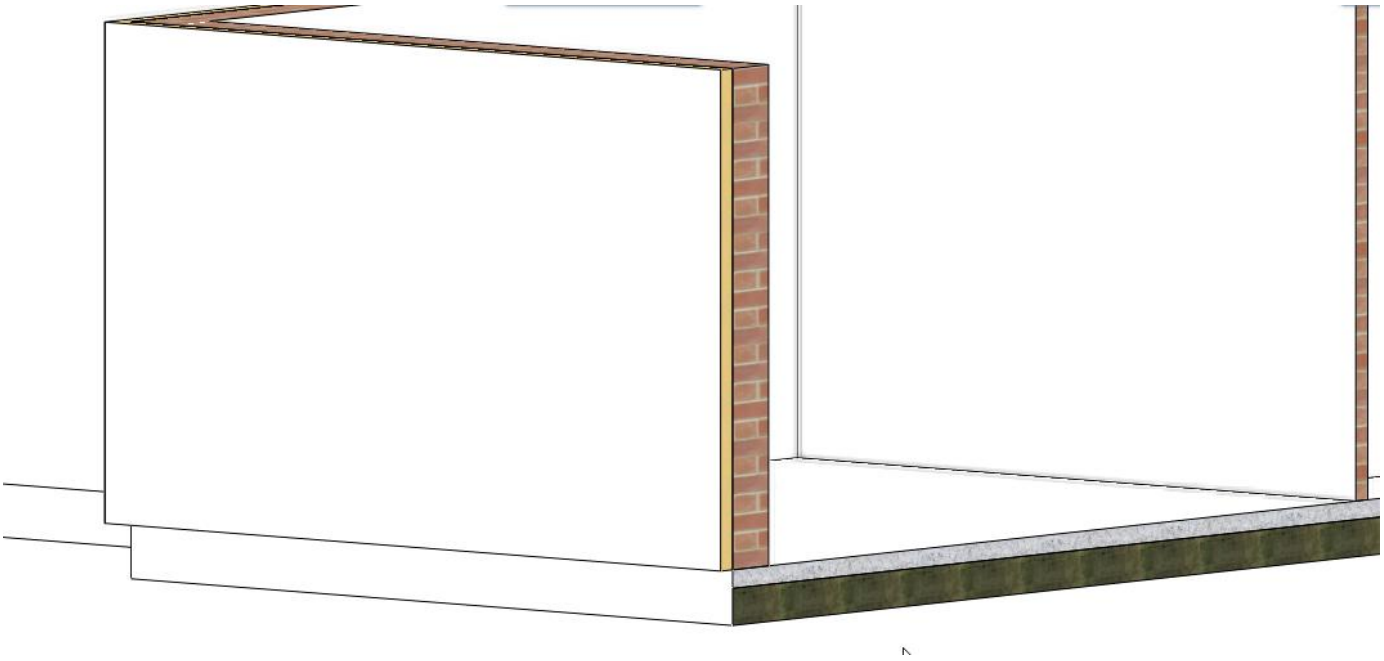
2. Click on the **slab** → select the **blue contour line** → choose **Offset All** from the Marker menu.
3. Move the cursor to the right and type: **100**.





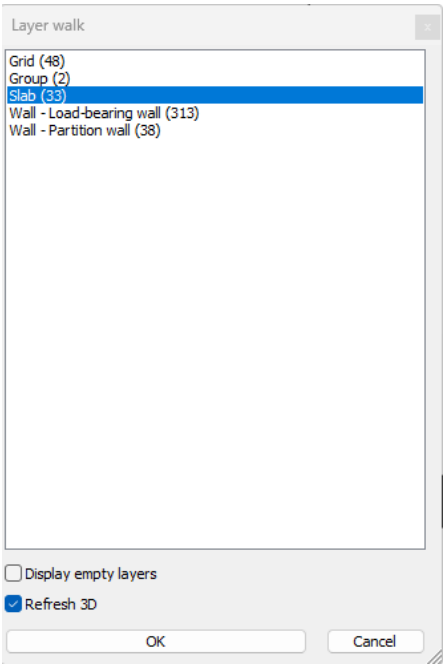
! **Remember:** Adjusting slab contours ensures correct alignment with walls and avoids construction errors later.

The slab contour is now corrected.



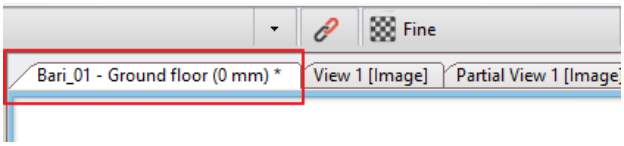
3.4. Create the Foundation Level and Set Strip Footings

In this step, we will work with the **strip footings**.
To do this, only the **slab layer** should remain visible.

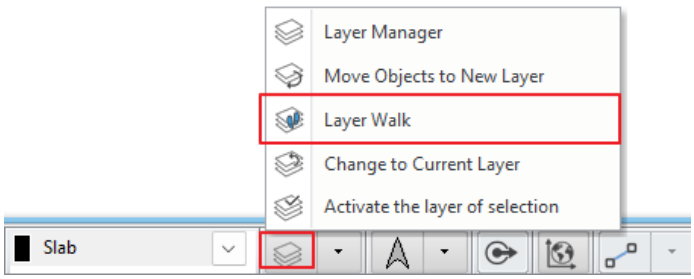


Layer Walk

1. Activate the **Floor Plan** by clicking on its tab.



2. In the **Status Bar**, go to **Layer → Layer Walk**.

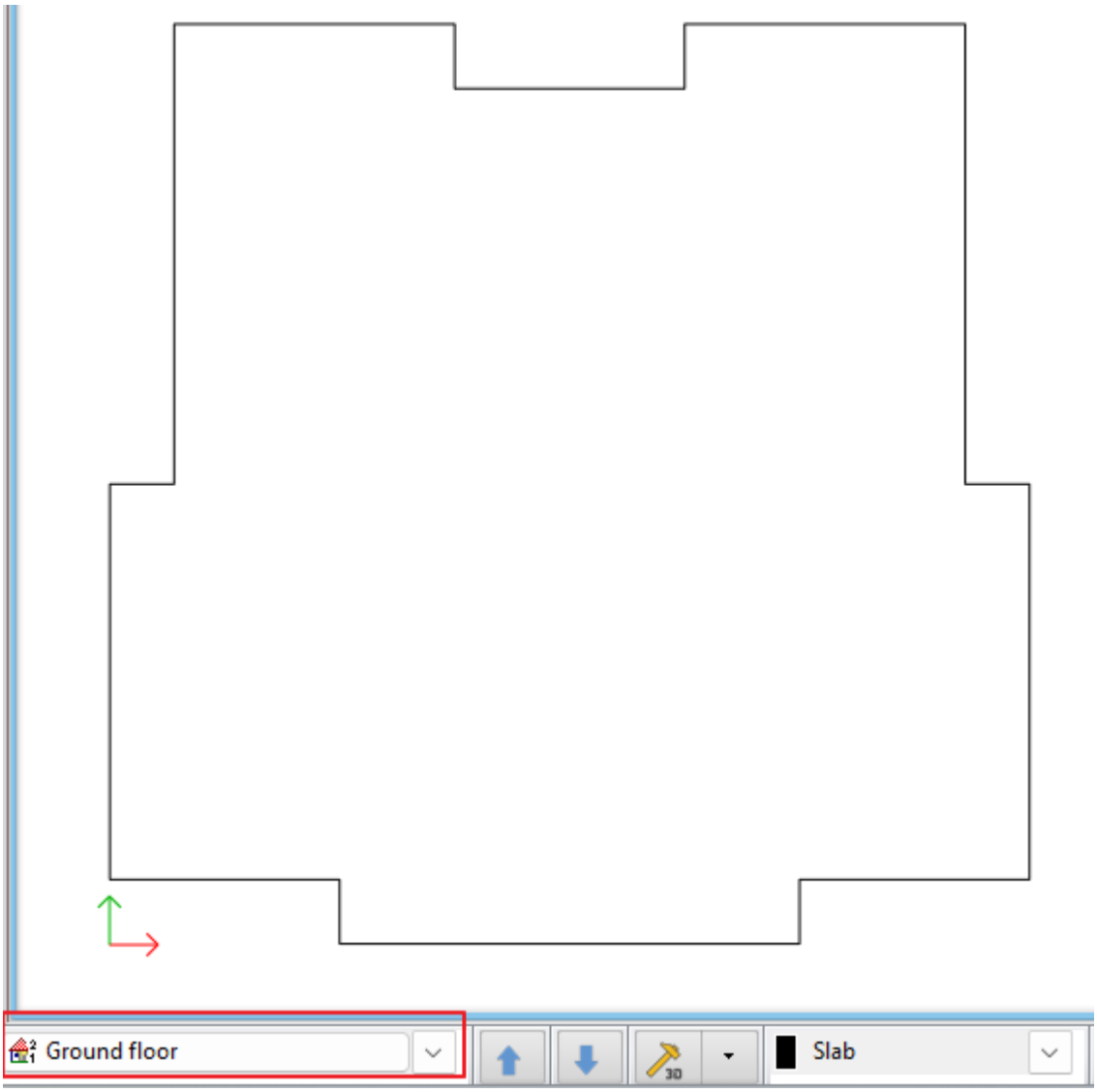


3. Select the **Slab layer** to turn off the visibility of all other layers.
   Now only the slab is visible on the floor plan.

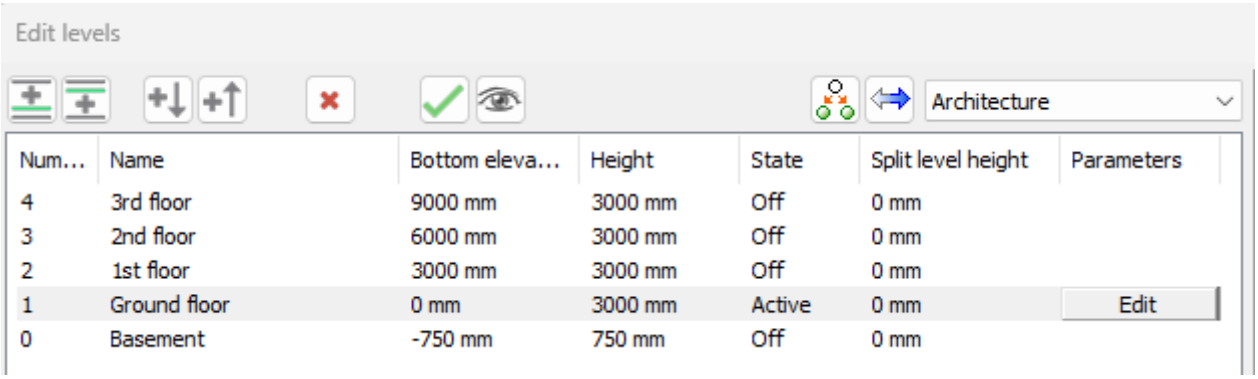
💡 **Tip:** Hiding unnecessary layers helps you focus on the foundation geometry without distractions.

Floor Structure

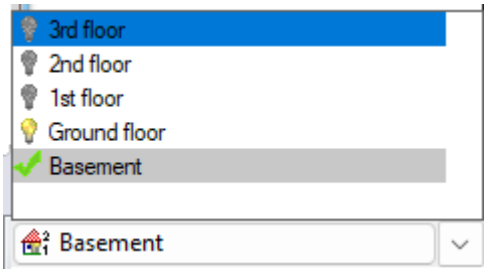
The **floor structure** of the building has already been defined. So far, we have been working on the **Ground Floor**.



1. Click on the **Floor button** (*Ground Floor*) to check the floor structure, then press **OK**.



2. Now make the **Basement** level active while keeping the **Ground Floor** visible:



   - Click the arrow on the **Floor button**
   - Activate **Basement**
   - Set **Ground Floor** to *Visible*

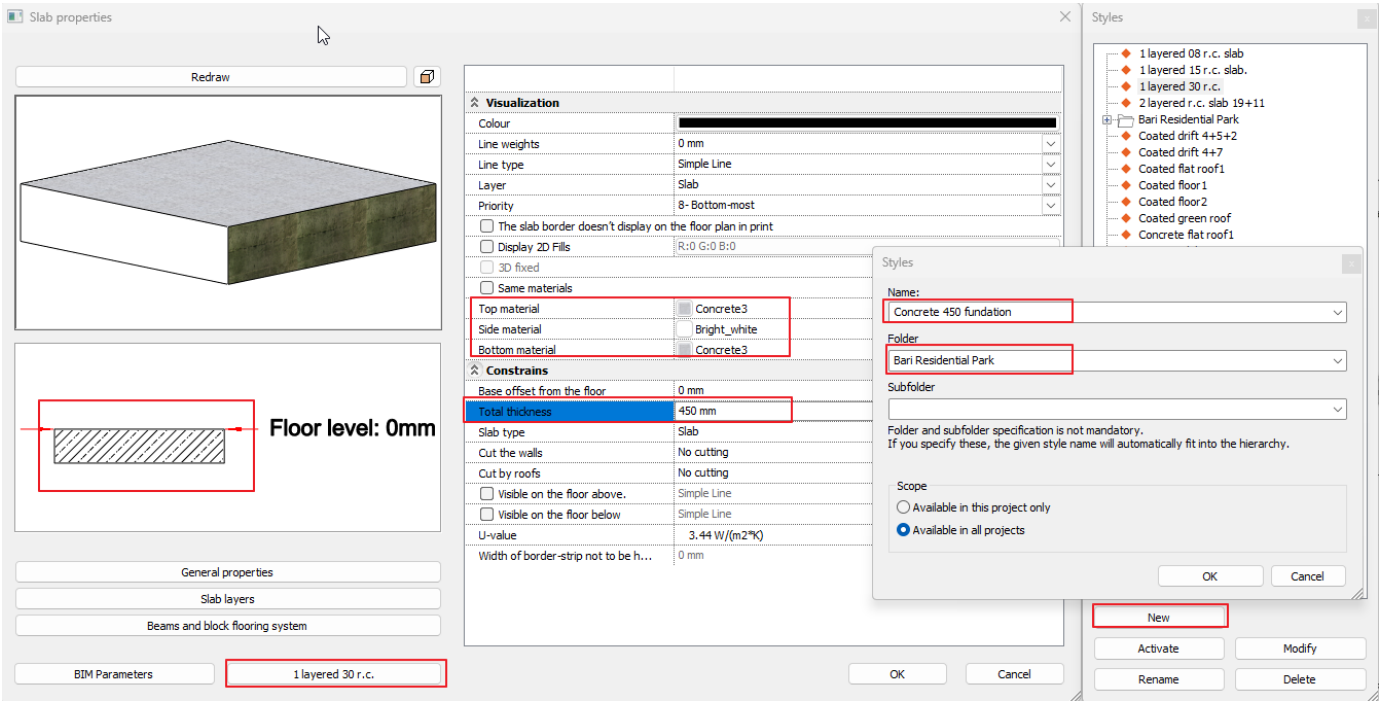
📝 **Note:** Keeping the Ground Floor visible helps you align the foundation correctly with the slab above.

Foundation / Set Strip Footings Style

Starting from the **1-layered 30 r.c. slab**, create a new **strip footing style**:

- Height: **450 mm**
- Save the new style as: **Concrete 450 foundation**

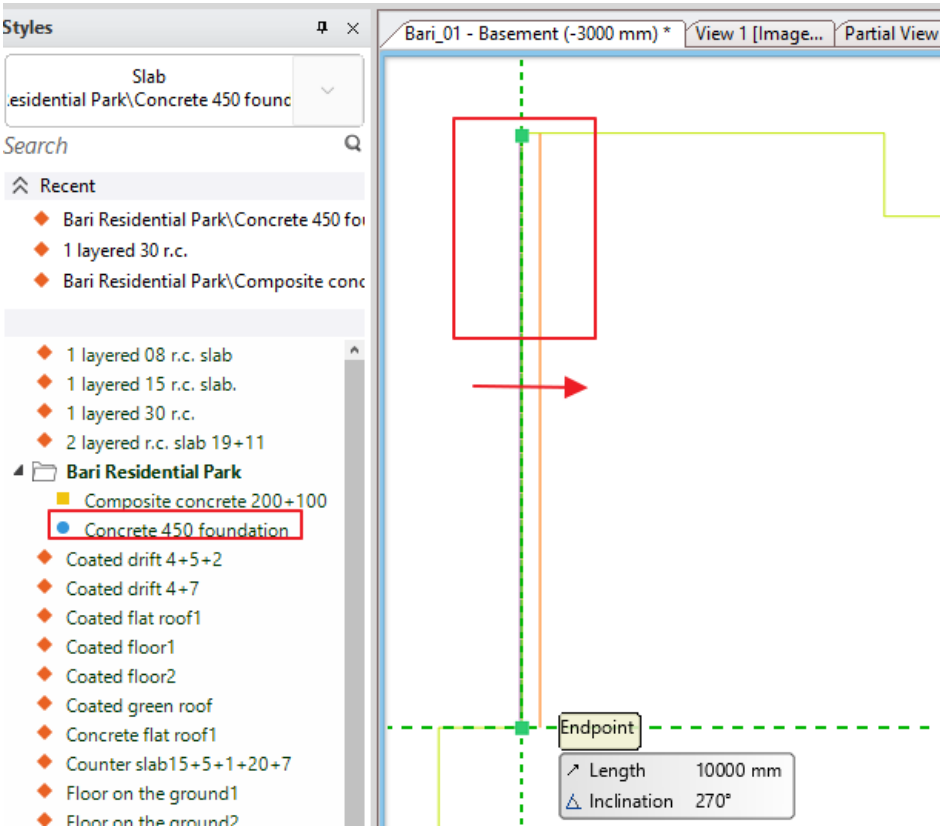
⚠️ **Important:** Always create a dedicated foundation style to ensure consistent thickness and material settings across the project.

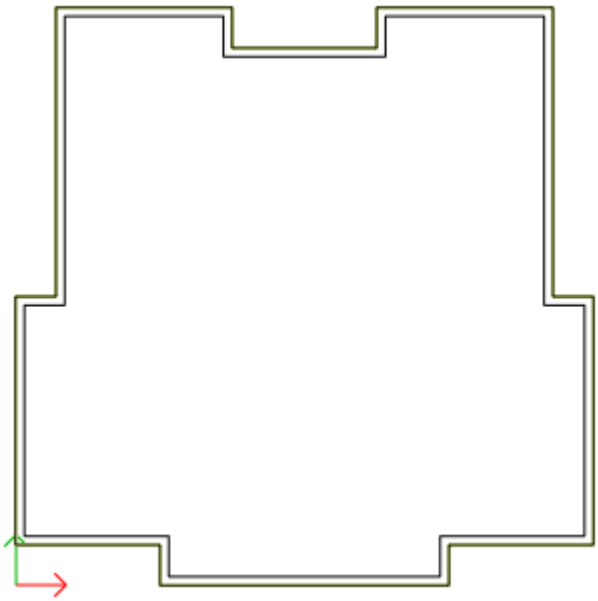


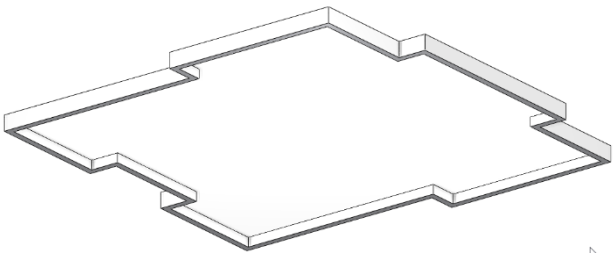
Draw Foundation

1. On the Ribbon bar, go to Building → Slab → Closed foundation.
2. Set the thickness to 300 mm.
3. Select the Concrete 450 foundation style from the Styles tool.
   (You may need to set the thickness again.)
4. Follow the slab contour by clicking on the edges of the slab above (one level higher).

❗ **Remember:** The **reference line** of the foundation must be set.
Press **F5** or **Space** to switch and use the correct reference side.







Draw Other Strip Footings

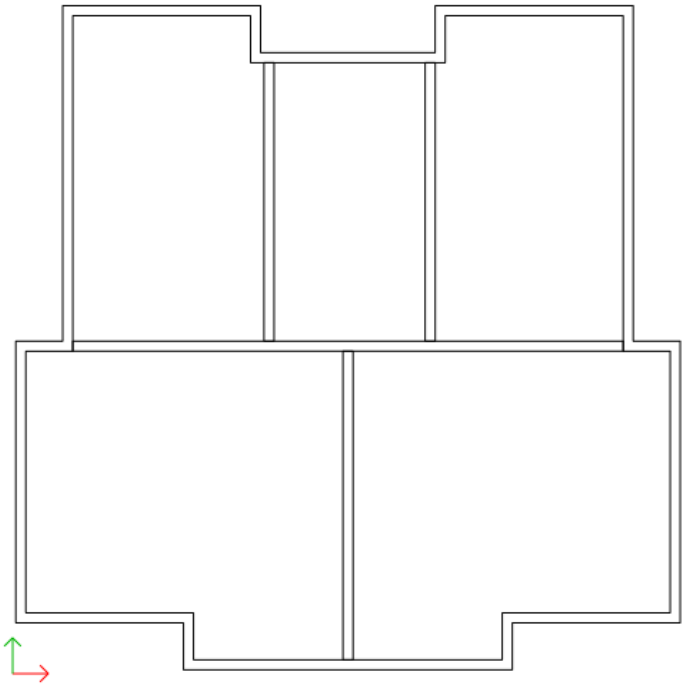
Now, let's create the additional strip footings under the load-bearing walls.

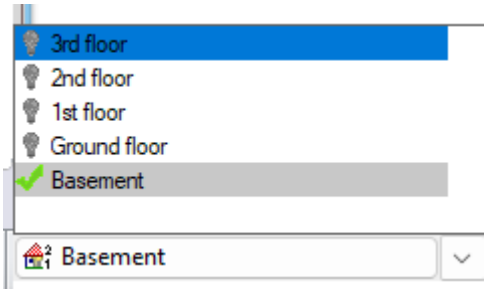
1. Use the **Layer Walk** icon to turn on the layer of the **load-bearing walls**.
2. On the **Ribbon bar**, go to **Building → Slab → Open foundation**.
3. Set the **thickness** to **300 mm**.

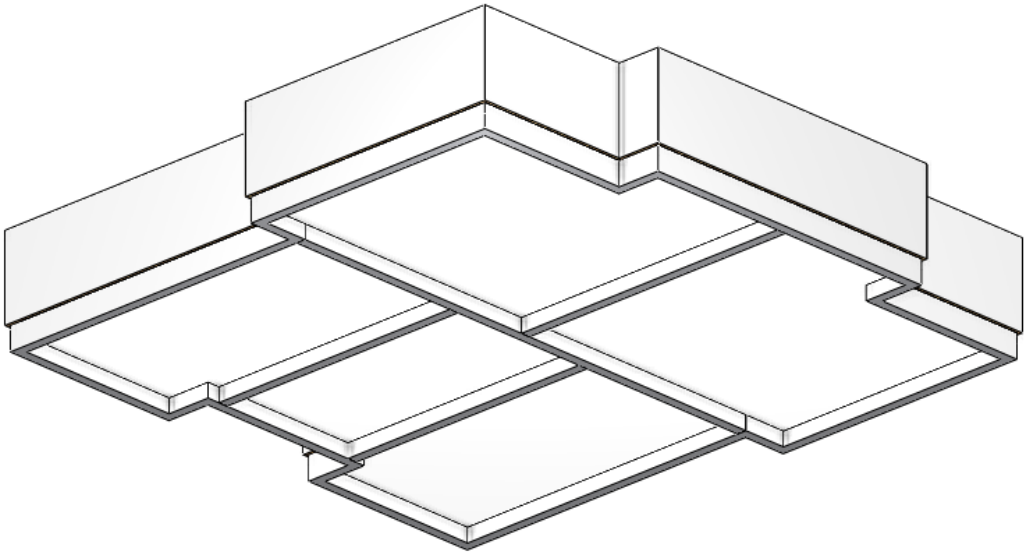
4. Follow the **load-bearing wall lines** by clicking on their edges.

Remember: Again, set the **reference line** properly (F5 or Space key) to ensure correct placement.

5. Finally, switch off the visibility of the **Ground Floor**.







Remember: Save your project under a new file name (for example, *Bari_03*) to preserve your project before moving on to the next steps.

4. Workshop – Doors and Windows

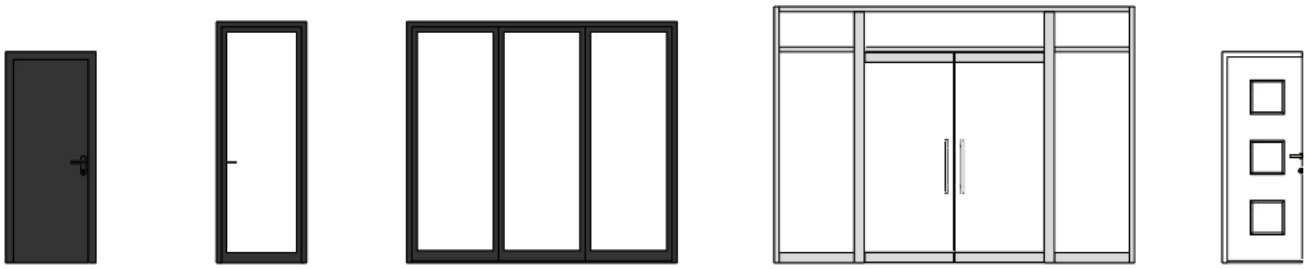
Let's continue the design by placing the **doors and windows**, which are also BIM parametric objects.

In this workshop, you will learn how to:

- Set the door properties and save the door styles
- Place different types of doors and set reference points
- Set the widow properties and save the window style
- Position windows in 3D view
- Adjust distances, opening directions, and parameters
- Animate doors in perspective view

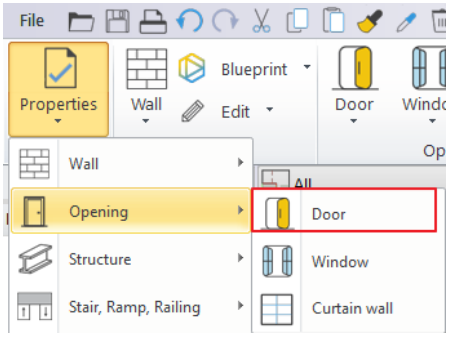
In this project we will use these five door types and one window type:

1. **Internal door**
2. **One-leaf balcony door**
3. **Three-leaf balcony door**
4. **Staircase entrance door**
5. **Entrance door**



6. **Double leaf window**

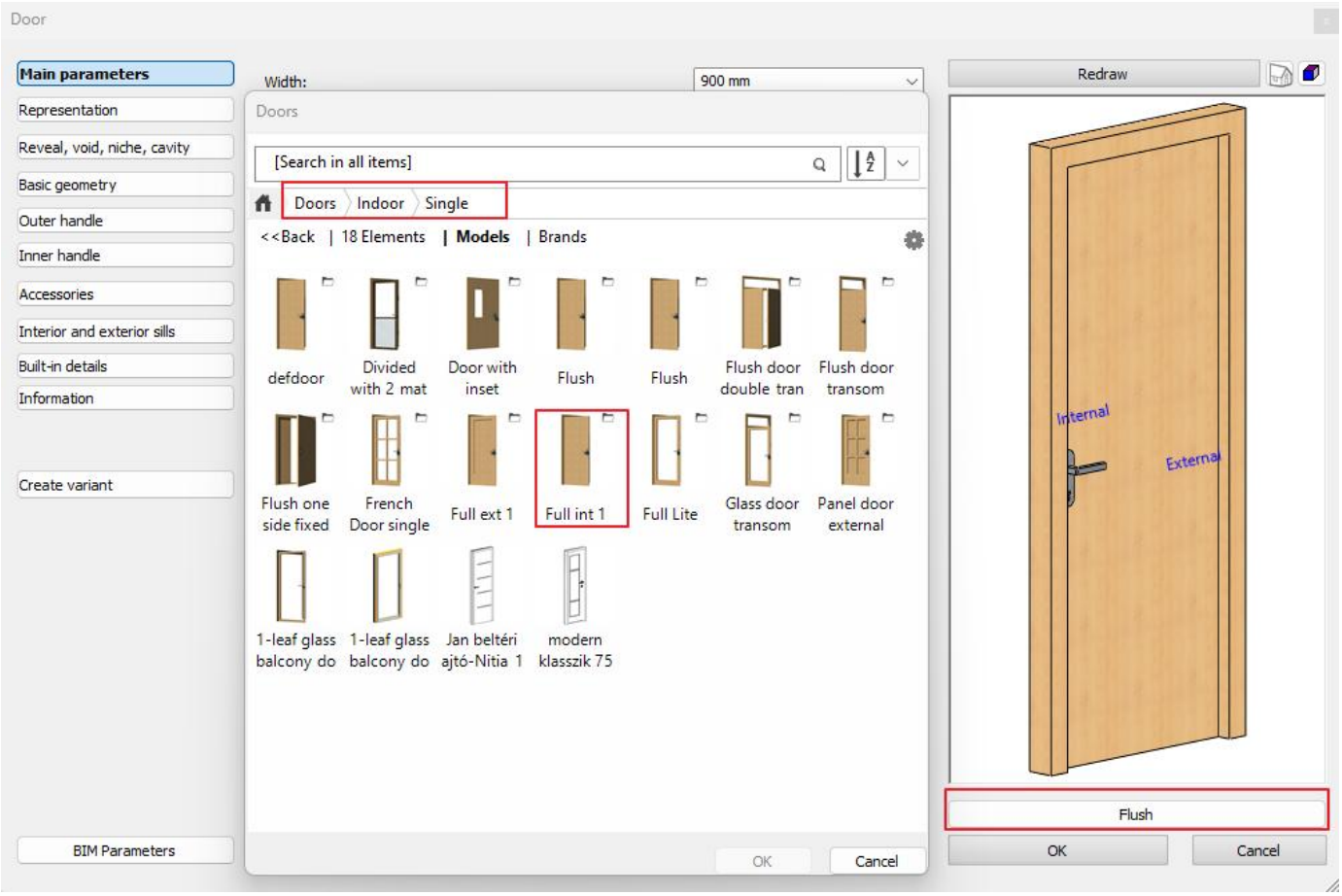
4.1. Set Door Properties



4.1.1. Internal Door 900x2100

First, we will set the properties of the **Internal door**.

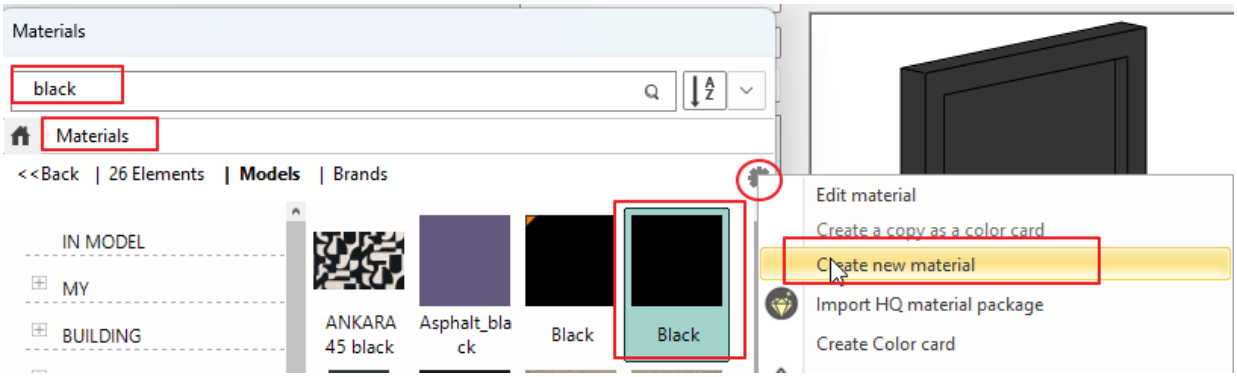
1. Go to the Ribbon Bar → Building → Properties → Openings → Door.
2. In the Property Window, choose the door type:
   - Click on the **Flash** (Door type).
   - Select: **Doors → Indoor → Single → Full Int 1**.



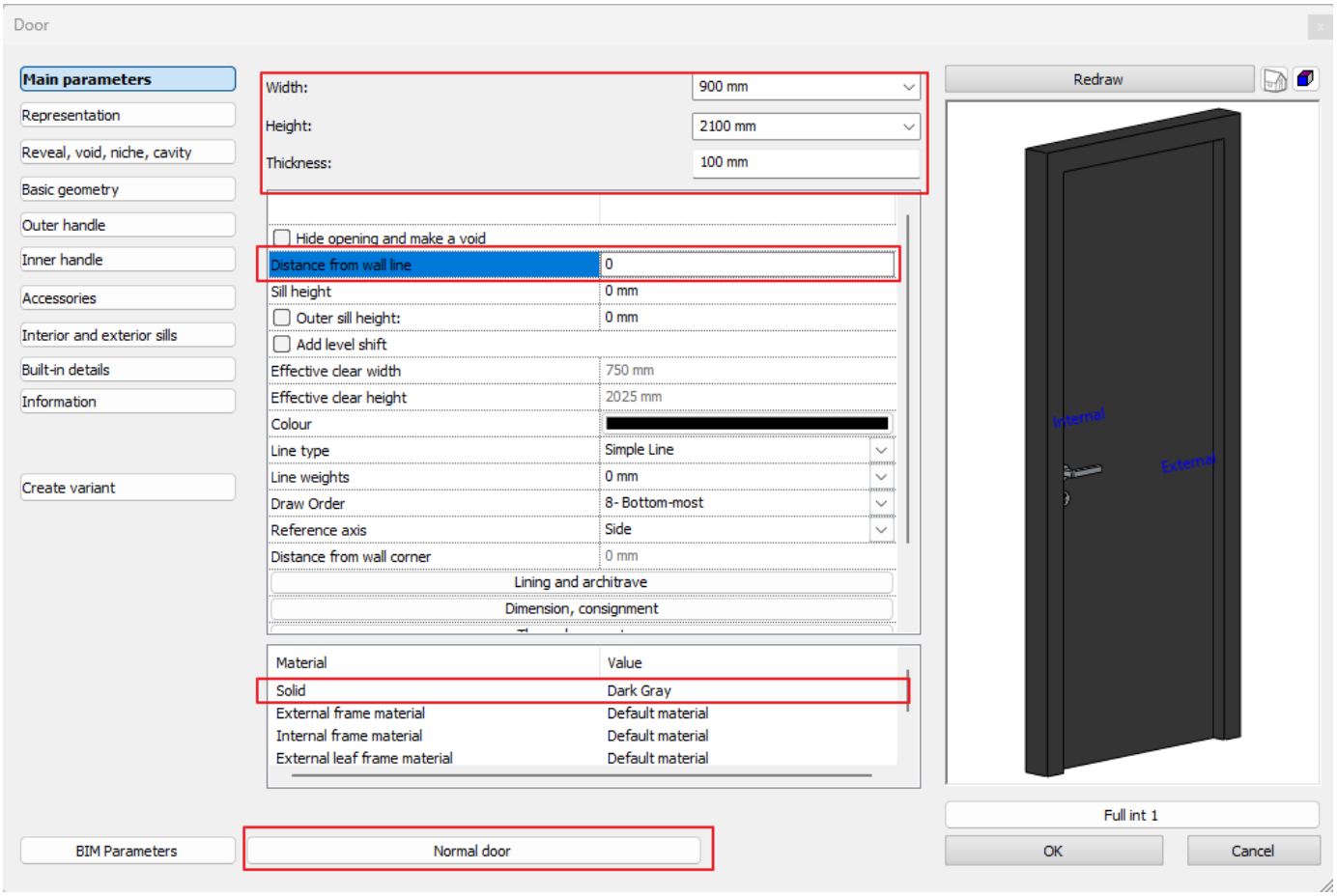
Adjusting Parameters

3. **Distance from wall line**: 0 mm
4. **Solid material:** Dark gray (or black)

- 📝 **Note:** When the **Material** category is active, type *black* in the search field. Select the Black color.
- Click on the **gear icon** ⚙ and create a new material based on the black color: **Dark Gray (RGB: 52, 52, 52)**.

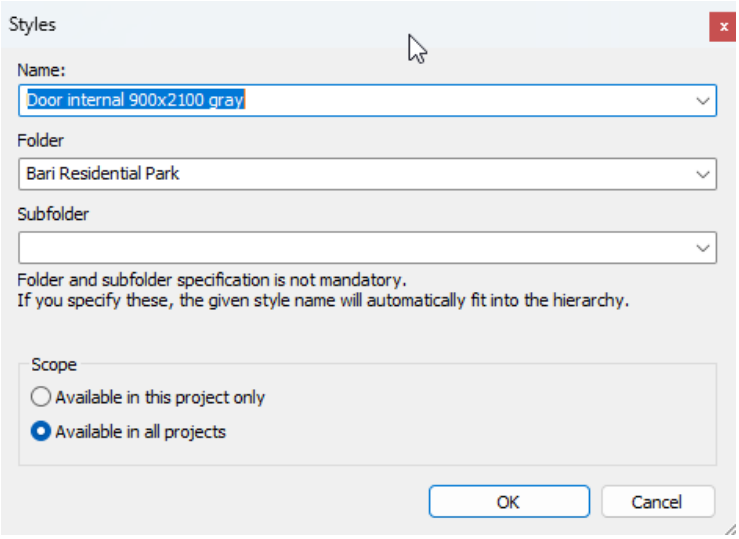


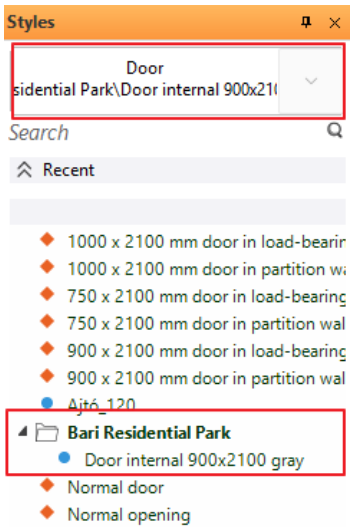
Tip: Creating your own custom material ensures a consistent look across all doors in the project.



Saving the Style

1. Click on the **Style** button (*Normal door*).
2. Save the style under the name:
   Internal door 900×2100 gray
3. Save it in the folder: **Bari Residential Park**.
4. Press **OK**, then **OK** again.





The new internal door style has been created successfully.

📝 **Note:**
After setting the parameters of the openings, it is **recommended to save them as a style** and then place the elements in the project.

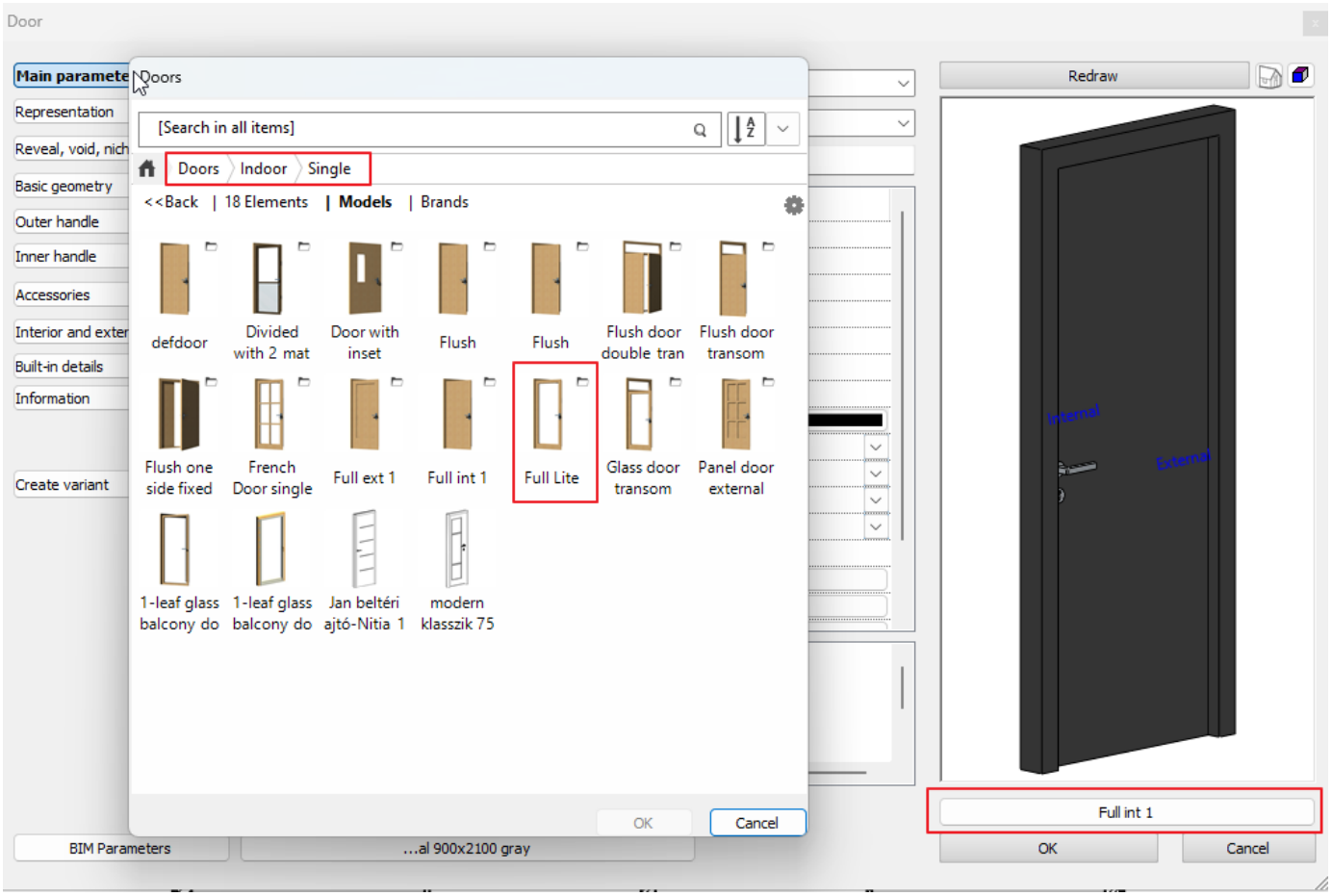
However, this is **not mandatory**: you can also work without using styles by setting the parameters and placing the openings directly.

Using **styles** is especially useful in larger projects, as it makes the design process faster, more consistent, and easier to manage.

4.1.2. One-leaf Balcony Door - 900x2400

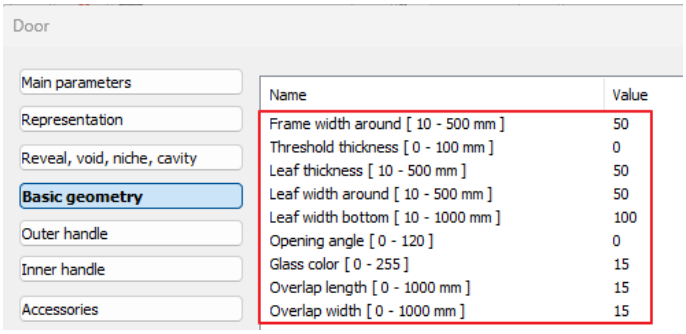
We will set the properties of the one-leaf balcony door.

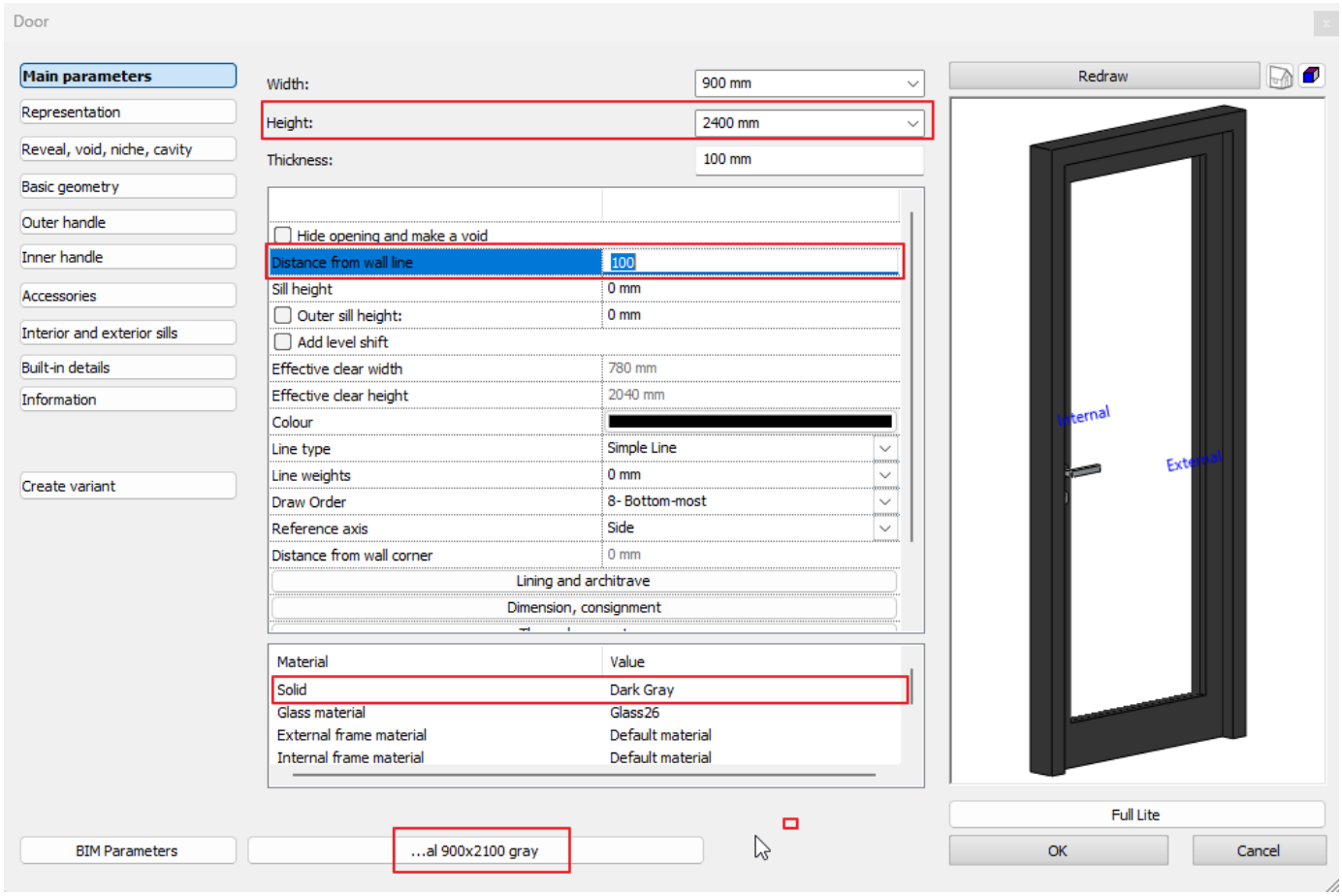
1. Go to the Ribbon Bar → Building → Properties → Openings → Door.
2. In the **Property Window**, choose the door type:
   - Click on the **Full int1** (Door type).
   - Select: **Doors → Indoor → Single → Full Lite**.



Adjusting Parameters

1. Set the **Basic geometry** as shown in the figure:
2. Set the **Main parameters**:
   - **Height:** 2400 mm
   - **Distance from wall line**: 100 mm
   - **Solid material:** Dark gray





Saving the Style

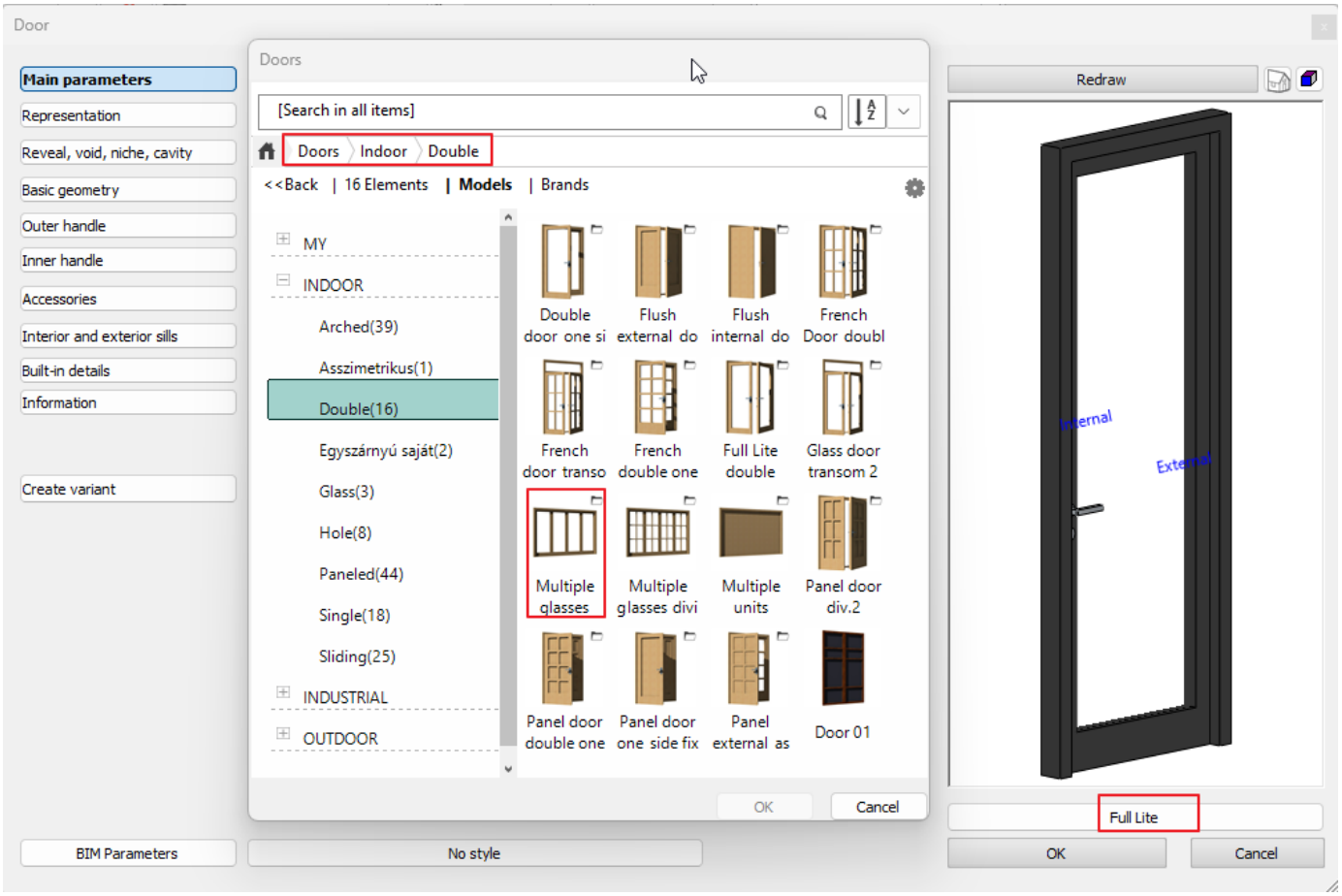
1. Click on the **Style** button.
2. Save the style under the name:
   One-leaf balcony door 900×2400 gray
3. Save it in the folder: **Bari Residential Park**.
4. Press **OK**, then **OK** again.

The new balcony door style has been created successfully.

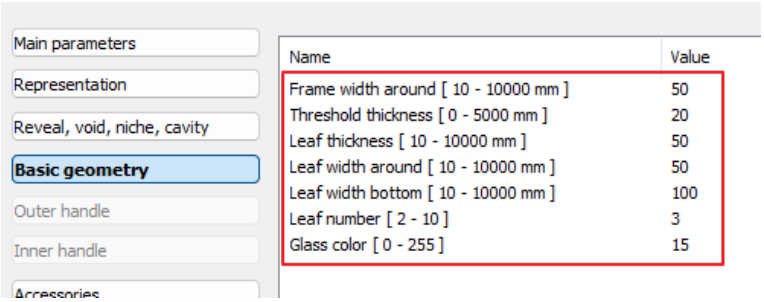
4.1.3.Three-leaf Balcony Door - 2700x2400

We will set the properties of the multiple-leaf balcony door.

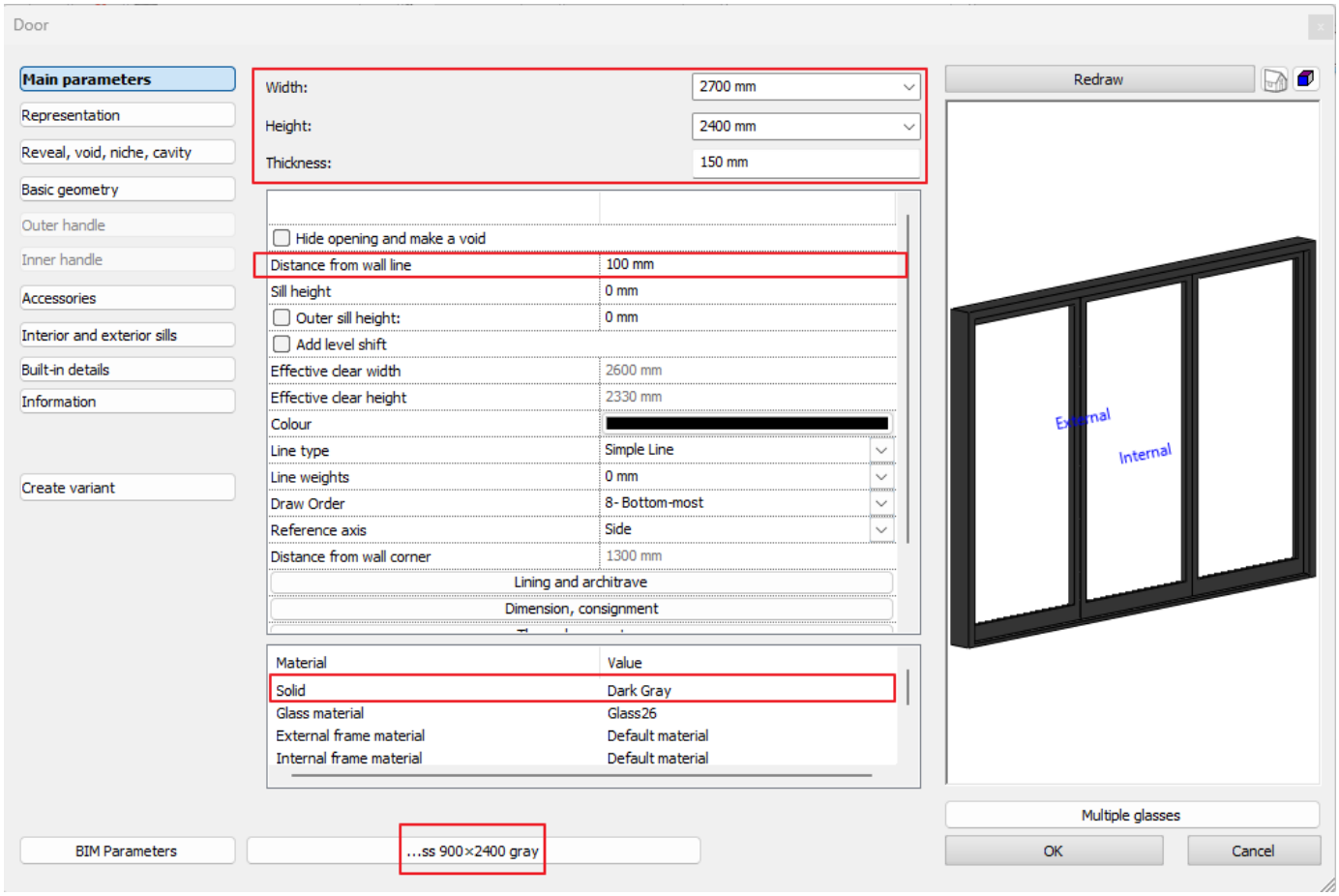
1. Go to the Ribbon Bar → Building → **Properties → Openings → Door.**
2. In the **Property Window**, choose the door type:
   - Click on the **Full lite** (Door type).
   - Select: **Doors → Indoor → Double → Multiple glass**.



Adjusting Parameters



1. Set the **Basic geometry** as shown in the figure:
2. Set the **Main parameters**:
   - **Width:** 2700 mm
   - **Height:** 2400 mm
   - **Thickness**: 150 mm
   - **Solid material:** Dark gray



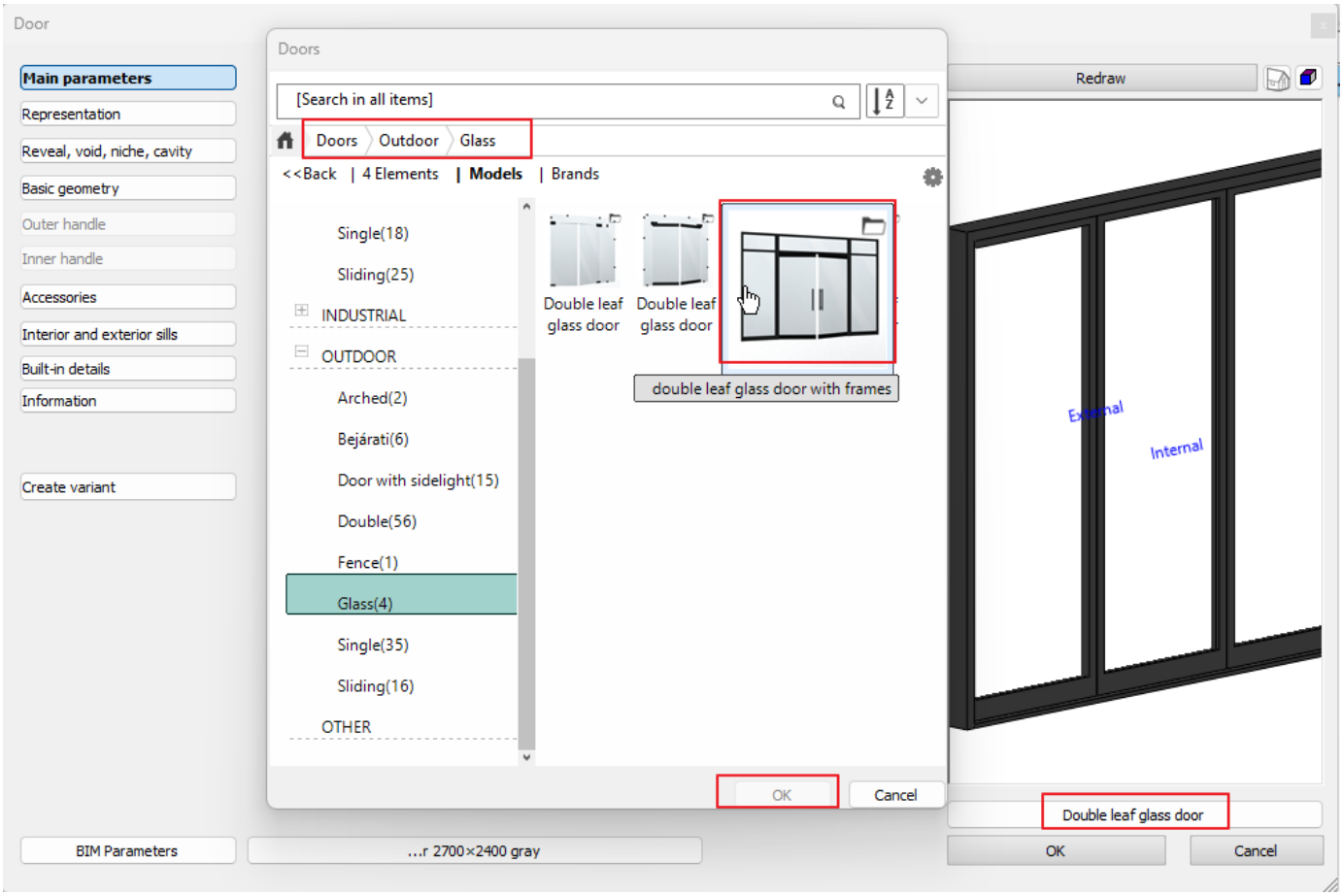
Saving the Style

1. Click on the **Style** button.
2. Save the style under the name:
   Three-leaf balcony door 2700×2400 gray
3. Save it in the folder: **Bari Residential Park**.
4. Press **OK**, then **OK** again.

4.1.4.Staircase Entrance Door - 3600x2550

We will set the properties of the staircase entrance door.

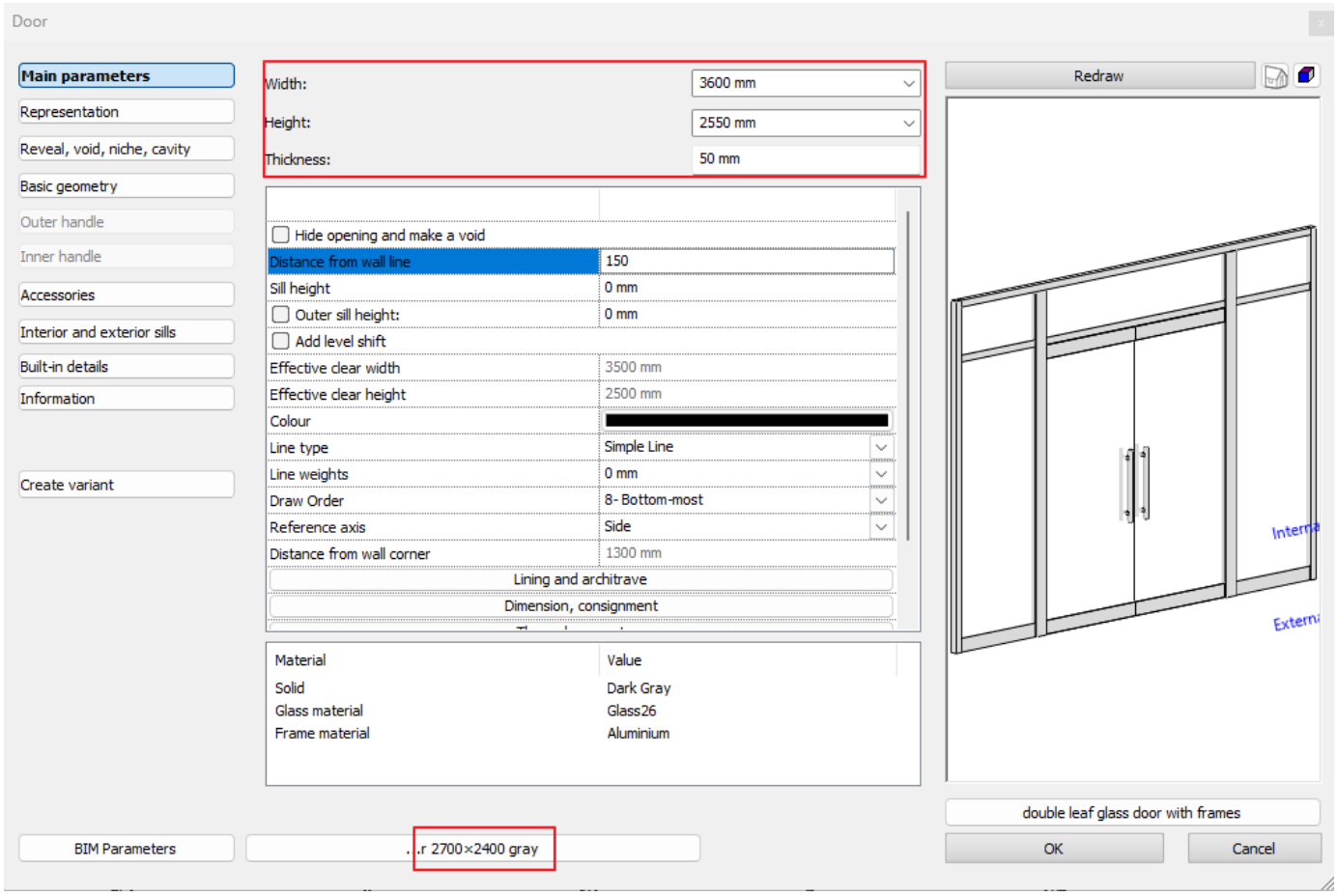
1. Go to the Ribbon Bar → Building → **Properties → Openings → Door.**
2. In the **Property Window**, choose the door type:
   - Click on the door type.
   - Select: Doors → Outdoor → Glass → **Double leaf glass door with frames**.



Adjusting Parameters

1. Set the **Basic geometry** as shown in the figure:
2. Set the **Main parameters**:
   - **Width:** 3600 mm
   - **Height:** 2550 mm
   - **Thickness**: 50 mm
   - **Solid material:** Dark gray

Name	Value
Frame width around [10 - 500 mm]	50
Divider width [10 - 500 mm]	100
Threshold height [0 - 100 mm]	0
Glass thickness [8 - 17 mm]	10
Glass color [0 - 255]	15
Opening angle [-90 - 90]	0
Top rail height [20 - 800 mm]	100
Bottom rail height [20 - 800 mm]	100
Door width [400 - 3600 mm]	1800
Door height [400 - 4000 mm]	2100
Handle diameter [10 - 100 mm]	30
Panel on side [0 - 3]	3



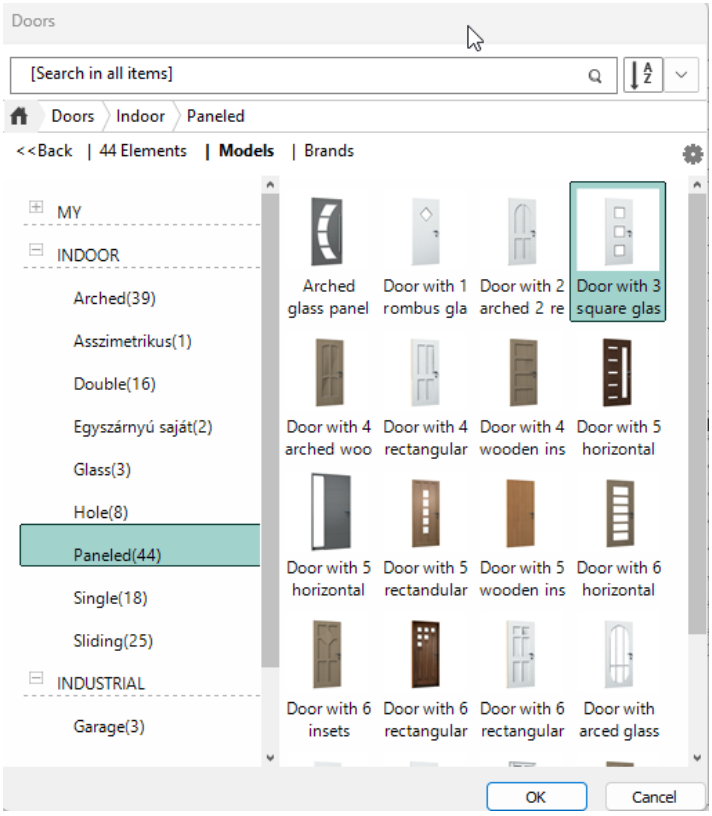
Saving the Style

3. Click on the **Style** button.
4. Save the style under the name:
   Staircase entrance door - 3600x2550
5. Save it in the folder: **Bari Residential Park**.
6. Press **OK**, then **OK** again.

4.1.5. Entrance Door - 1100x2100

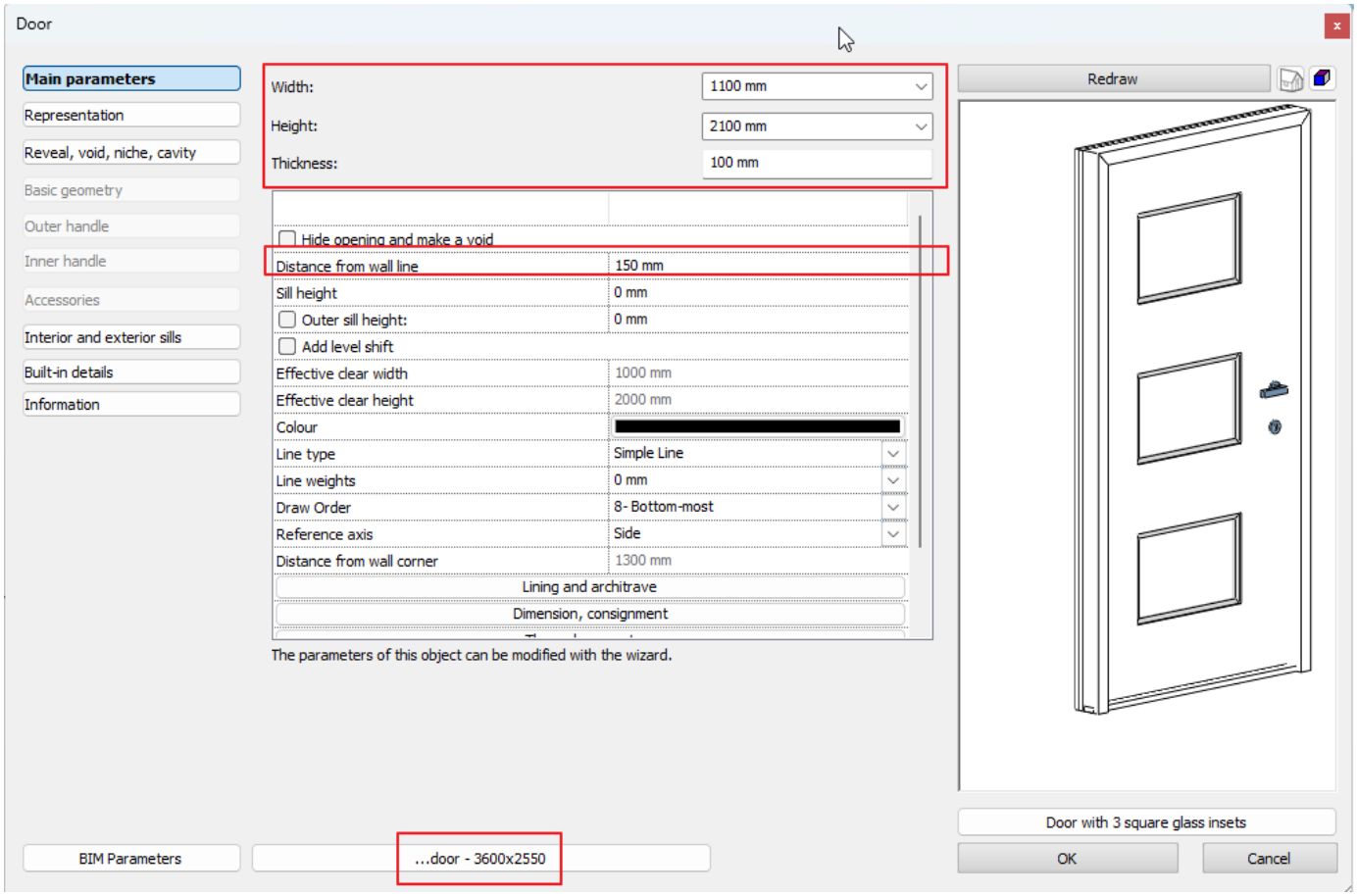
We will set the properties of the entrance door.

1. Go to the Ribbon Bar → Building → **Properties → Openings → Door.**
2. In the **Property Window**, choose the door type:
   - Click on the door type.
   - Select: Doors → Indoor → Paneled → **Door with 3 square glass insets**



Set the Main parameters:

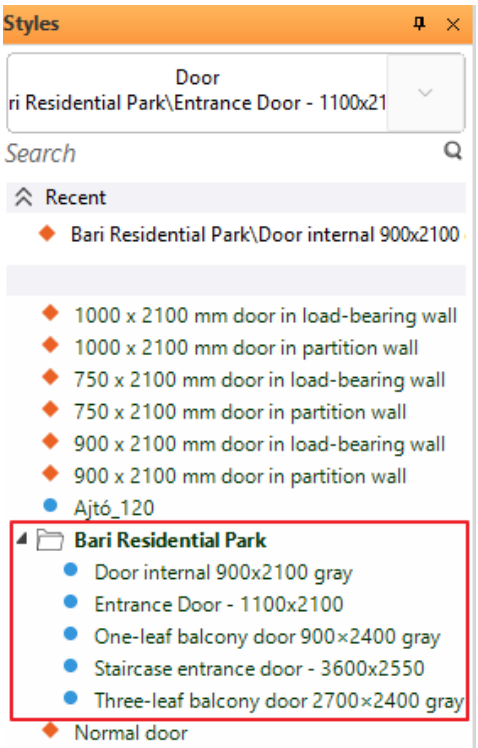
- **Width:** 1100 mm
- **Height:** 2100 mm
- **Thickness**: 100 mm



Saving the Style

1. Click on the **Style** button.
2. Save the style under the name: **Entrance Door - 1100x2100**
3. Save it in the folder: **Bari Residential Park**.
4. Press **OK**, then **OK** again.

Now all five door **styles** have been created successfully.



4.2. Placing Doors

Let's continue the design by placing the doors.
Doors can be selected either from the **Design Center** or from the **Door Styles** panel.

- In the **Design Center**, various types of doors are organized.
- From the **Style Tool**, you can access and use the **door styles** that were created earlier.

After placing a door, you can:

- Set its opening direction
- Adjust its size
- Modify a parameter to display it as open or closed

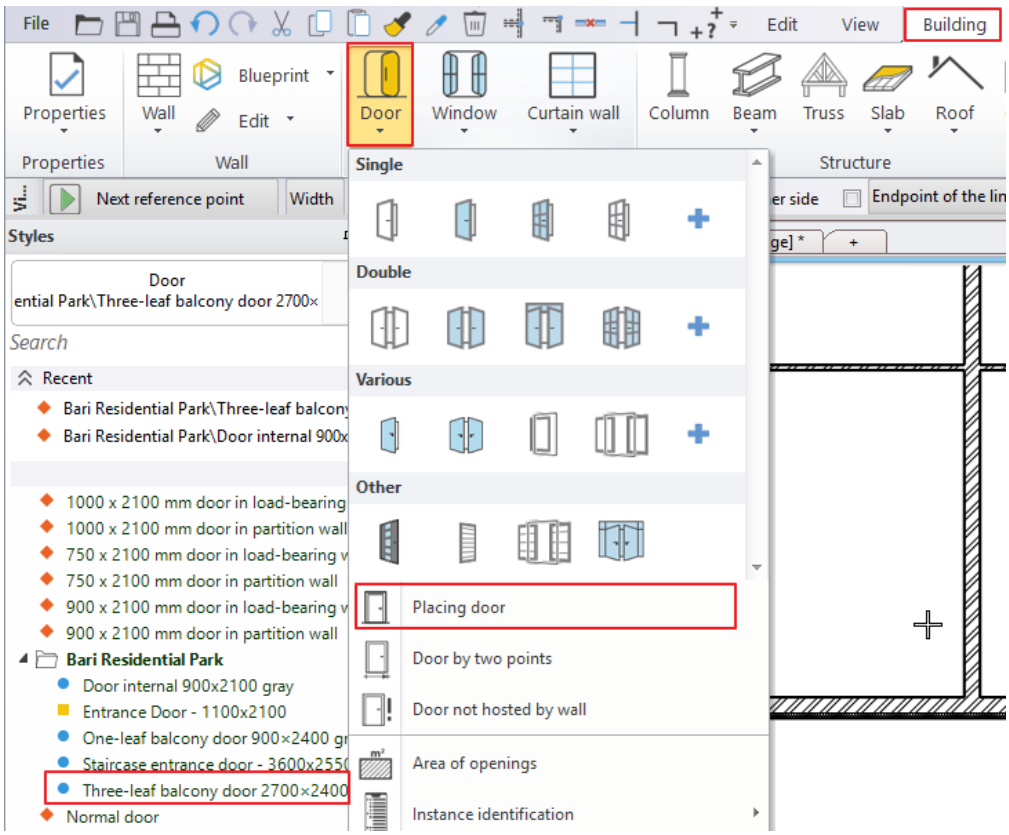
📝 **Note:**
All door parameters remain editable even after placement.

4.2.1. Place the Three-leaf Balcony Doors

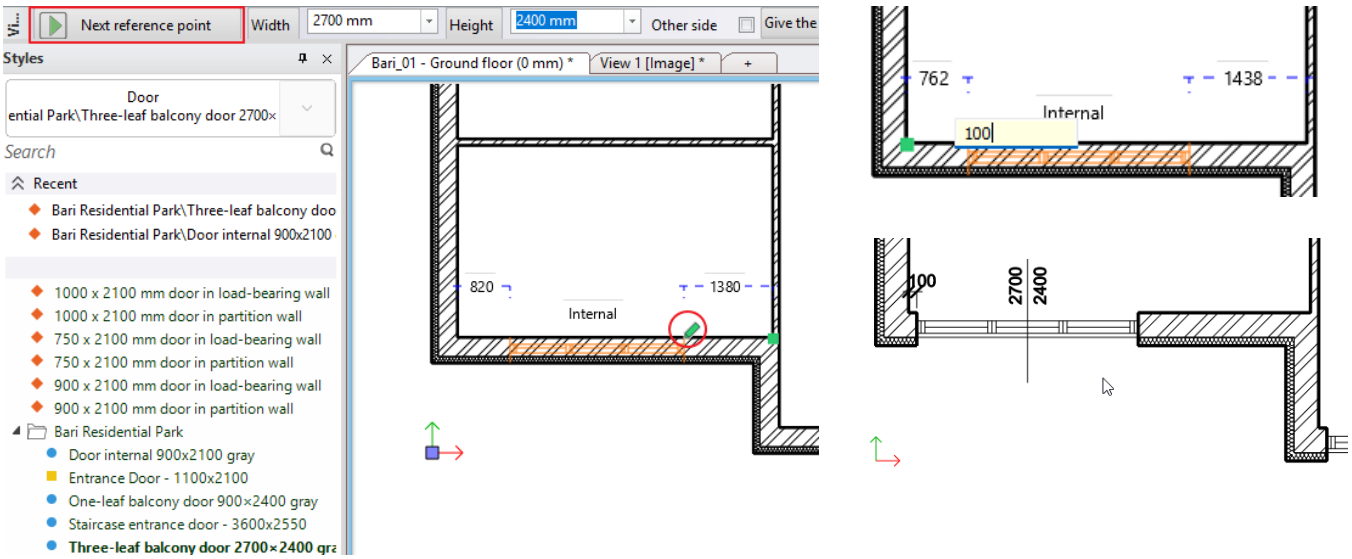
Let’s start with the **three-leaf balcony door**.
Before placing it, we will **change the reference point** to ensure the door is positioned correctly relative to the corner.
The distance from the wall corner will be **100 mm**, and we will place **four** doors of this type.

Steps to Place the Door

5. Go to the **Ribbon Bar → Building → Door → Placing Door** command.
6. From the **Style Tool**, select the **Three-leaf Balcony Door** style.



7. Click on the **internal side** of the wall — a preview of the door will appear.

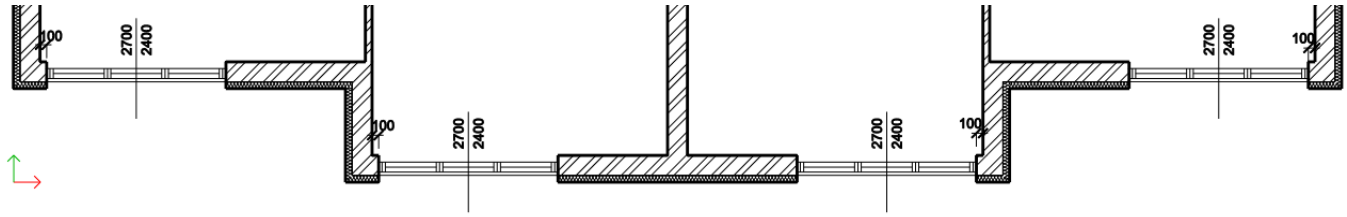


1. During placement, switch the reference point using **New Reference Point** from the **View Control Bar** (or press **F5** or the **Spacebar**) twice so you can position it with the left reference point.
2. Set the **distance from the wall corner** to **100 mm**.
3. Define the **opening direction**, then press Enter.
4. Continue to place the remaining three doors of the same type.
5. Press **Enter** again to close the command.

Note:
While the **Door Placement** command is active and the **Style** is selected, it's enough to:

- Click on the internal side of the wall,
- Change the reference line, and
- Type the distance (**100 mm**).

📝 **Note:**
Doors automatically **cut through the wall thickness** and are automatically aligned to the **floor level**.



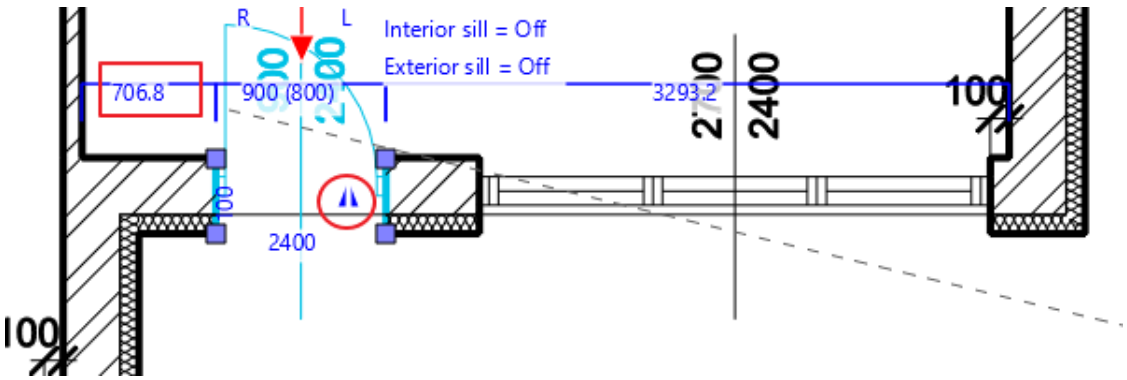
4.2.2. Place One-leaf Balcony Doors

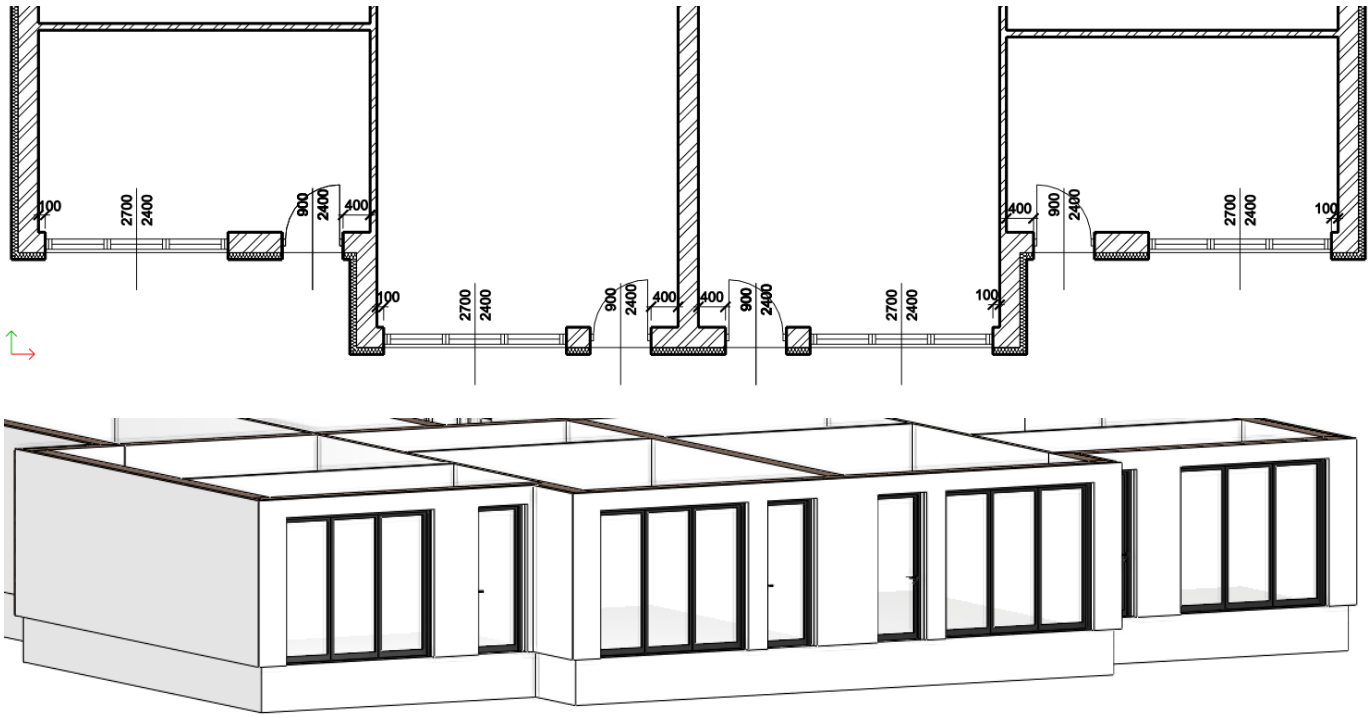
Let's continue with the **One-leaf Balcony Door**.
The distance from the wall corner will be **400 mm**, and we will place **four** doors of this type.

Steps to Place the Door

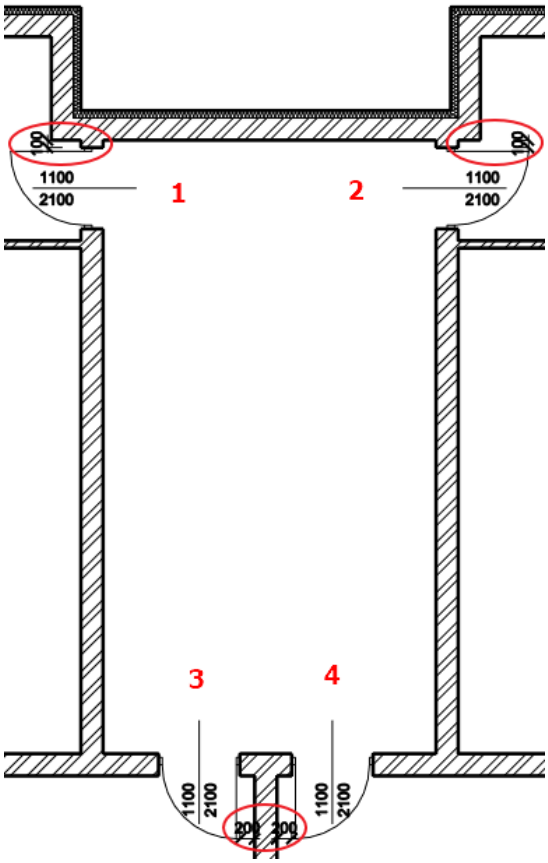
1. Go to the **Ribbon Bar → Building → Door → Placing Door** command.
2. From the **Style Tool**, select the **One-leaf Balcony Door** style.
3. Click on the **internal side** of the wall — a preview of the door will appear.
4. Switch the reference point to position it using the right reference point.
5. Set the **distance from the wall corner** to **400 mm**.
6. Define the **opening direction**, then press Enter.
7. Continue to place the **remaining three** doors of the same type.
8. Press **Enter** to close the command.

💡 **Tip:**
When placing the **fourth door**, you can simply place it on the wall as desired, then **adjust the distance from the corner** and **change the opening direction** afterwards if necessary.





4.2.3. Place the Entrance Doors



Let's continue with placing the entrance doors located in the staircase area.
The distance from the wall corner will be 100 mm (or 200 mm, depending on the wall layout), and we will place four doors of this type.

Steps to Place the 1st Entrance Door

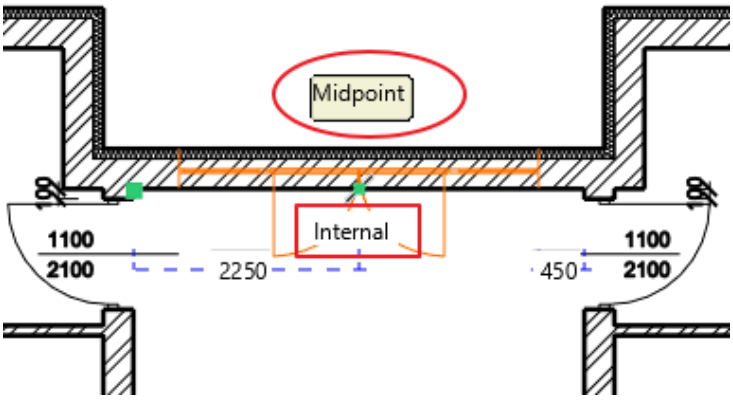
1. Go to the **Ribbon Bar → Building → Door → Placing Door** command.
2. From the **Style Tool**, select the **Entrance Door** style.
3. Click on the **side of the wall** where the door should be placed.
4. Switch the reference point to position it using the **right reference point**.
5. Set the **distance from the wall corner** to **100 mm**.
6. Define the **opening direction**, then press Enter.
7. Continue to place the **remaining three** doors of the same type according to the **layout shown in the figure.**
8. Press **Enter** to close the command.

❗ **Remember:** Doors can be **repositioned**, and their **properties** and **opening directions** can be modified at any time — even **after placement**.

4.2.4. Place the Staircase Entrance Door

Let's continue by placing the building's main door, also known as the staircase entrance door.
This door will be positioned in the middle of the wall to create a balanced and symmetrical entrance.

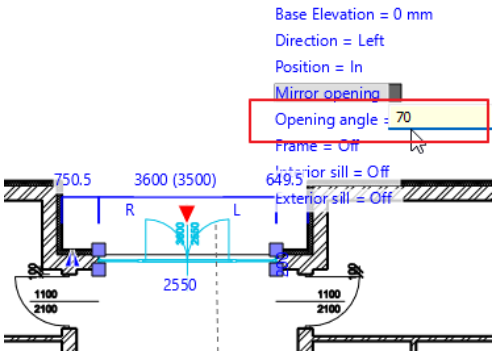
Steps to Place the Staircase Entrance Door

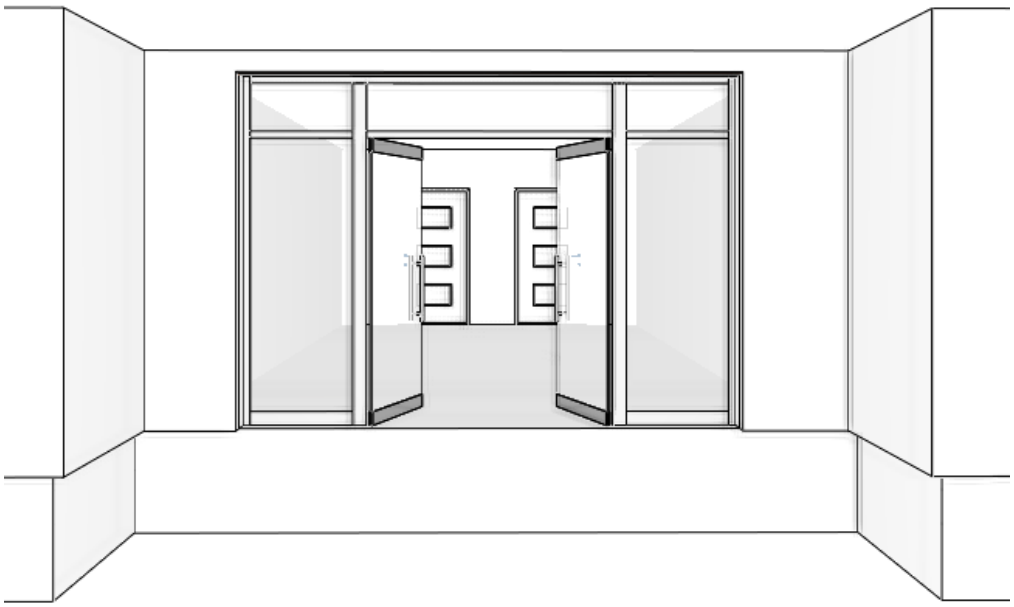


1. Go to the **Ribbon Bar → Building → Door → Placing Door** command.
2. From the **Style Tool**, select the **Staircase Entrance Door** style.
3. Click on the **internal side** of the wall where the door should be placed.
4. Switch the reference point to position it using the **Internal reference point**.
5. Move the cursor to the **midpoint of the wall side** and click to place the door
6. Define the **opening direction**, then press Enter.
7. Press **Enter** to close the command.

❗ **Remember:**
Doors can be **repositioned**, and their **properties** and **opening directions** can be modified at any time — even **after placement**.

💡 **Tip:**
By clicking on the door (either in the **Floor Plan** or in the **3D view**), you can open it by typing the desired **opening angle** in the **marker menu**.





4.2.5. Place the Internal Doors (Independent Exercise)

Finally, we will place all the **internal doors** on the **Ground Floor** of the building.

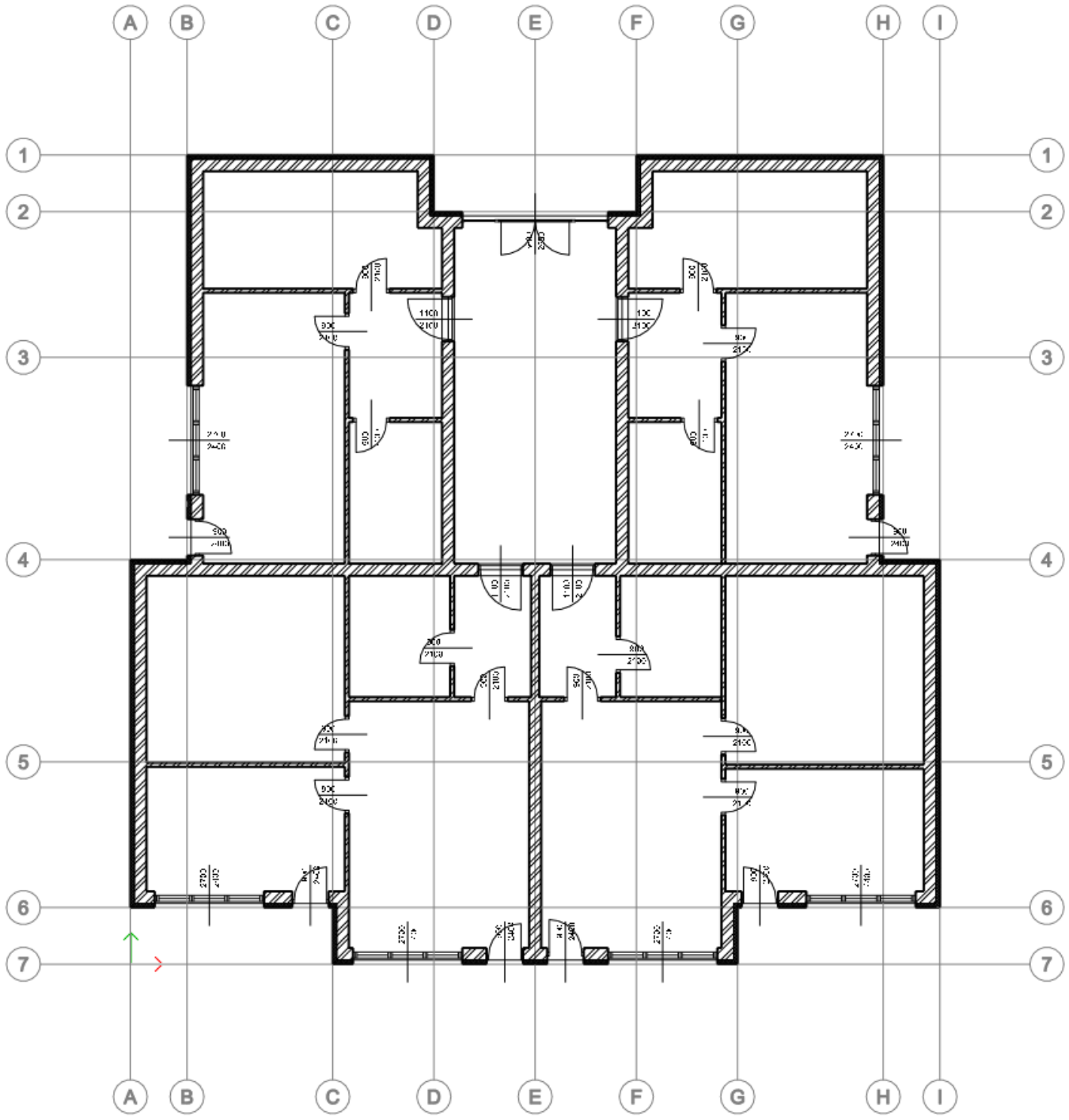
This task is an **independent exercise**, allowing you to apply everything you have learned so far about door placement, reference points, and alignment.

The **figure below** will help you identify the correct **door locations** and **opening directions**.

💡 **Tip:**
Follow the same workflow as before — choose the proper **door style**, **set the reference point**, and **define the correct distance** from walls or corners for precise placement.

📝 **Note:**
Place the remaining balcony doors according to the layout shown in the figure.

Now we can see all the doors placed on the Ground Floor and in 3D view:


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7

4.3. Set Window Properties - Double Leaf Window

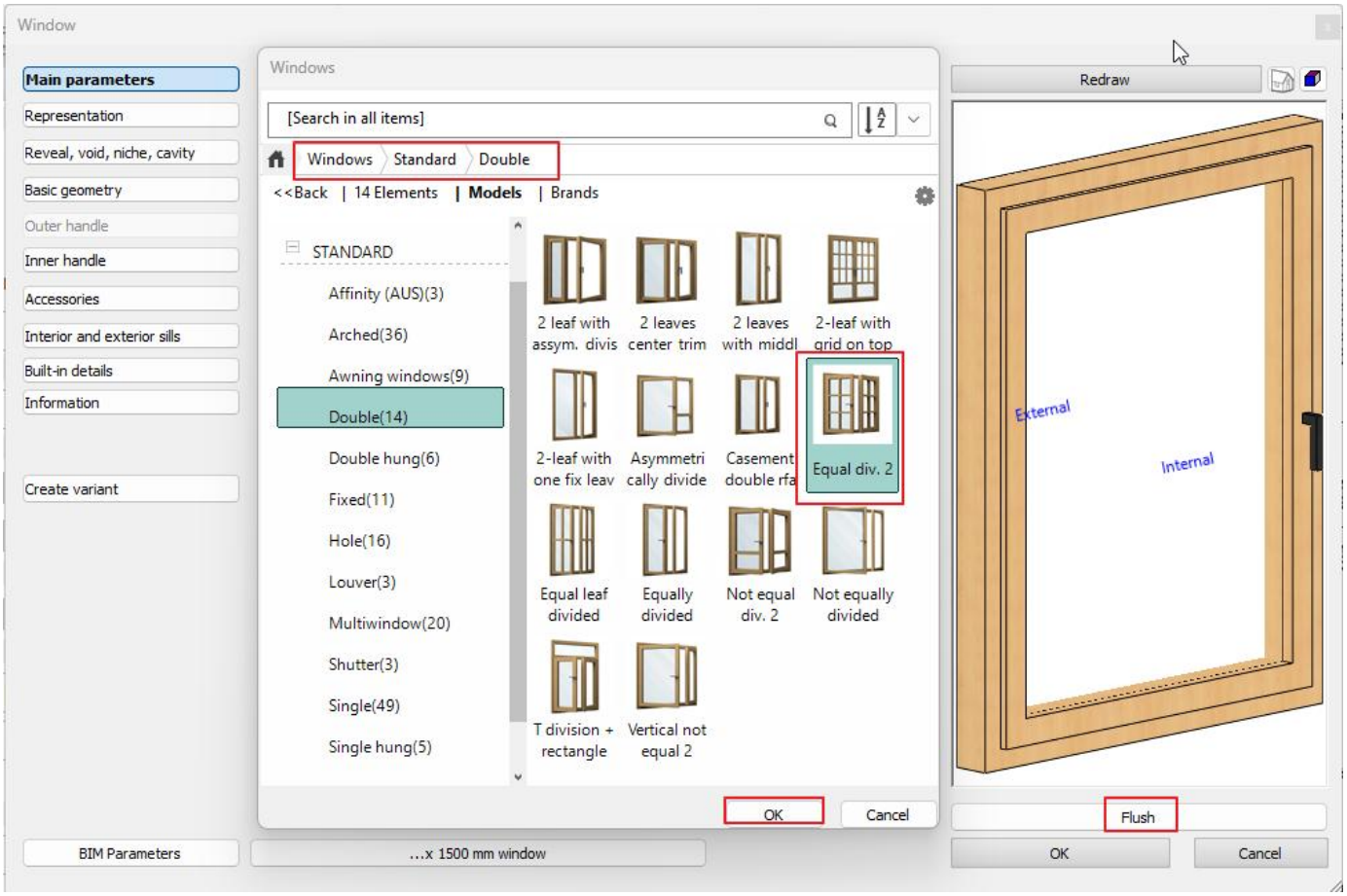
First, we will set the **properties of the window**.
The process of setting the window properties is **the same as for the doors**.

In this example, we will use one type of window:
Double Window 1500×1500 gray

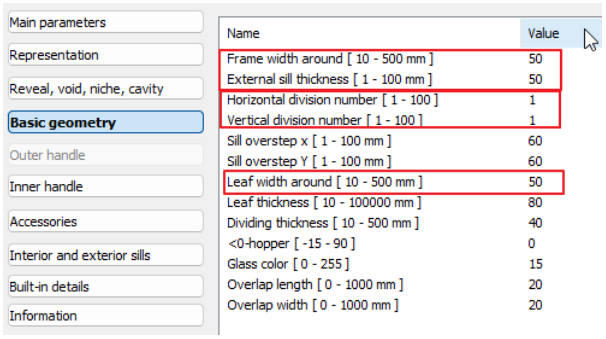
Steps to Set the Window Properties

We will set the properties of the staircase entrance door.

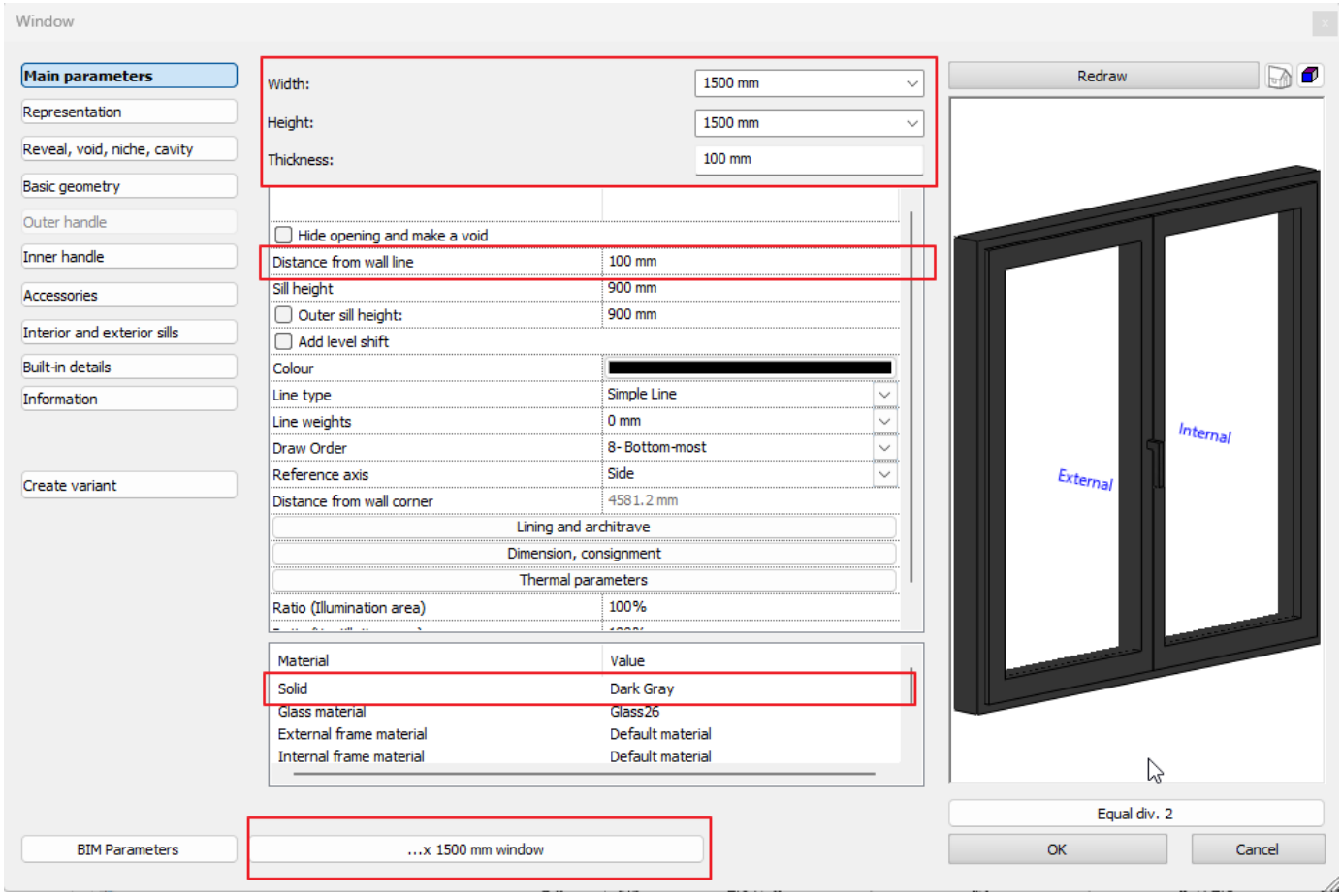
1. Go to the Ribbon Bar → Building → **Properties → Openings → Window.**
2. In the **Property Window**, choose the window type:
   - Click on the window type: Flush
   - Select: Window → Standard → Double → **Equal div.2**. Press OK

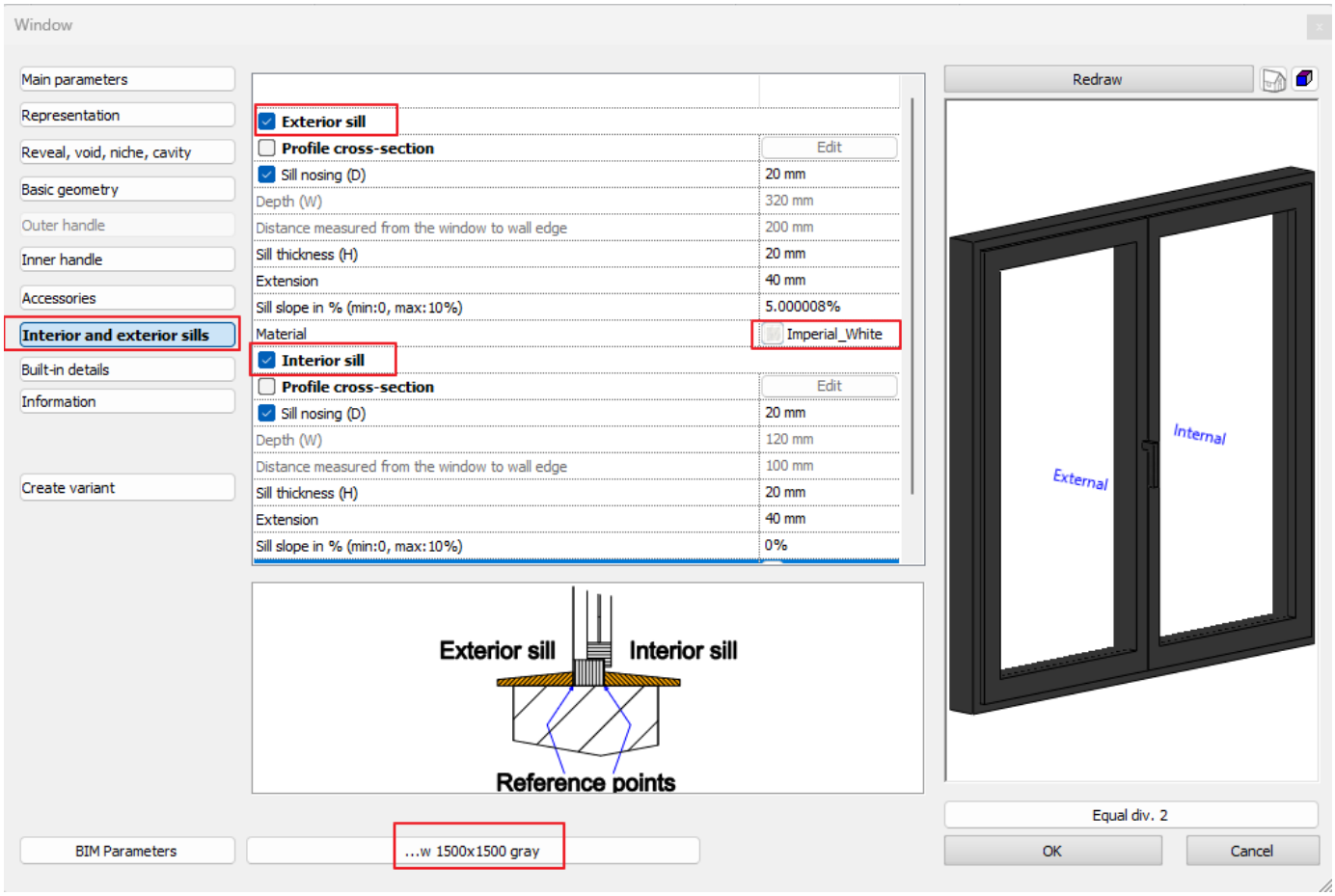


Adjusting Parameters

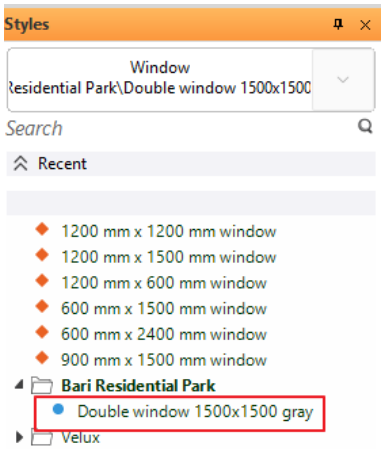


3. Set the **Basic geometry** as shown in the figure:
4. Set the **Main parameters**:
   - **Width:** 1500 mm
   - **Height:** 1500 mm
   - **Thickness**: 100 mm
   - **Distance from wall line**: 100 mm
   - **Solid material:** Dark gray
5. Set the **Internal and External Sill** parameters:
   - Choose **Imperial_white** marble material for both **Internal and External Sill**


Window
Main parameters
Representation
Reveal, void, niche, cavity
Basic geometry
Outer handle
Inner handle
Accessories
Interior and exterior sills
Built-in details
Information
Create variant
Width: 1500 mm
Height: 1500 mm
Thickness: 100 mm
Hide opening and make a void
Distance from wall line 100 mm
Sill height 900 mm
Outer sill height: 900 mm
Add level shift
Colour
Line type Simple Line
Line weights 0 mm
Draw Order 8- Bottom-most
Reference axis Side
Distance from wall corner 4581.2 mm
Lining and architrave
Dimension, consignment
Thermal parameters
Ratio (Illumination area) 100%
Material Value
Solid Dark Gray
Glass material Glass26
External frame material Default material
Internal frame material Default material
Redraw
External
Internal
Equal div. 2
BIM Parameters
...x 1500 mm window
OK
Cancel


Window
Main parameters
Representation
Reveal, void, niche, cavity
Basic geometry
Outer handle
Inner handle
Accessories
Interior and exterior sills
Built-in details
Information
Create variant
Exterior sill
Profile cross-section Edit
Sill nosing (D) 20 mm
Depth (W) 320 mm
Distance measured from the window to wall edge 200 mm
Sill thickness (H) 20 mm
Extension 40 mm
Sill slope in % (min:0, max:10%) 5.000008%
Material Imperial_White
Interior sill
Profile cross-section Edit
Sill nosing (D) 20 mm
Depth (W) 120 mm
Distance measured from the window to wall edge 100 mm
Sill thickness (H) 20 mm
Extension 40 mm
Sill slope in % (min:0, max:10%) 0%
Exterior sill
Interior sill
Reference points
Redraw
External
Internal
Equal div. 2
BIM Parameters
...w 1500x1500 gray
OK
Cancel

Saving the Style



6. Click on the **Style** button.
7. Save the style under the name: **Double Window 1500x 1500 gray**
8. Save it in the folder: **Bari Residential Park**.
9. Press **OK**, then **OK** again.

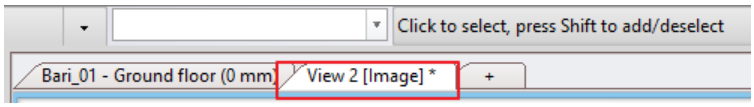
The new double window style has been created successfully.

4.4. Placing Windows in 3D

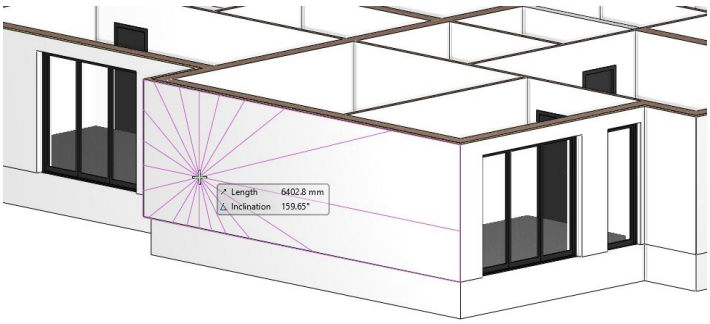
Windows can also be selected from the **Design Center** or from the **Window Styles**.

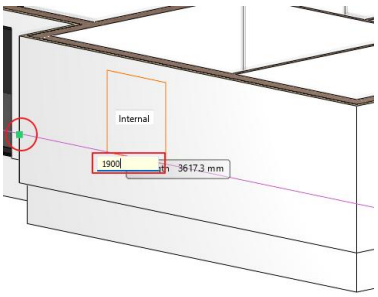
Now we will place the window in **3D view** by dragging it onto the appropriate wall surface and specifying the distance from the corner point.

Steps to Place Double Leaf Window in 3D



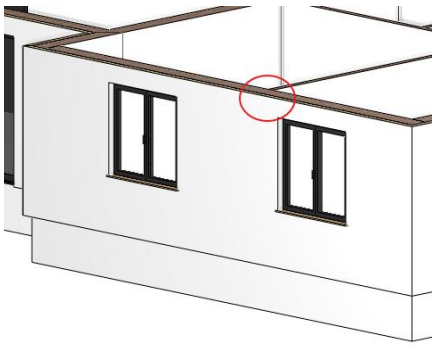
1. Activate the 3D view clicking on the View2 Tab
2. Go to the Ribbon Bar → Building → Window → **Placing Window** command.
3. From the **Style Tool**, select the **Double window 1500x1500x gray** style.
4. Click on the **appropriate wall side** — a preview of the window will appear.



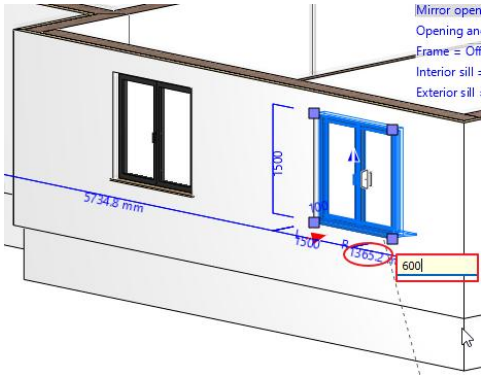


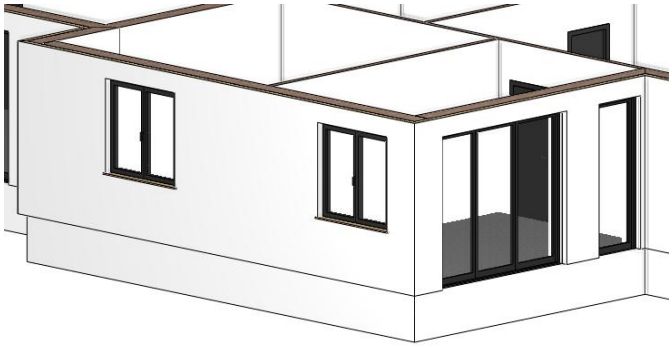
5. Switch the **reference point** (using F5 key) to position from the left wall corner.
6. Type the distance from the wall corner to **1900 mm**.

Continue placing the second window**:**



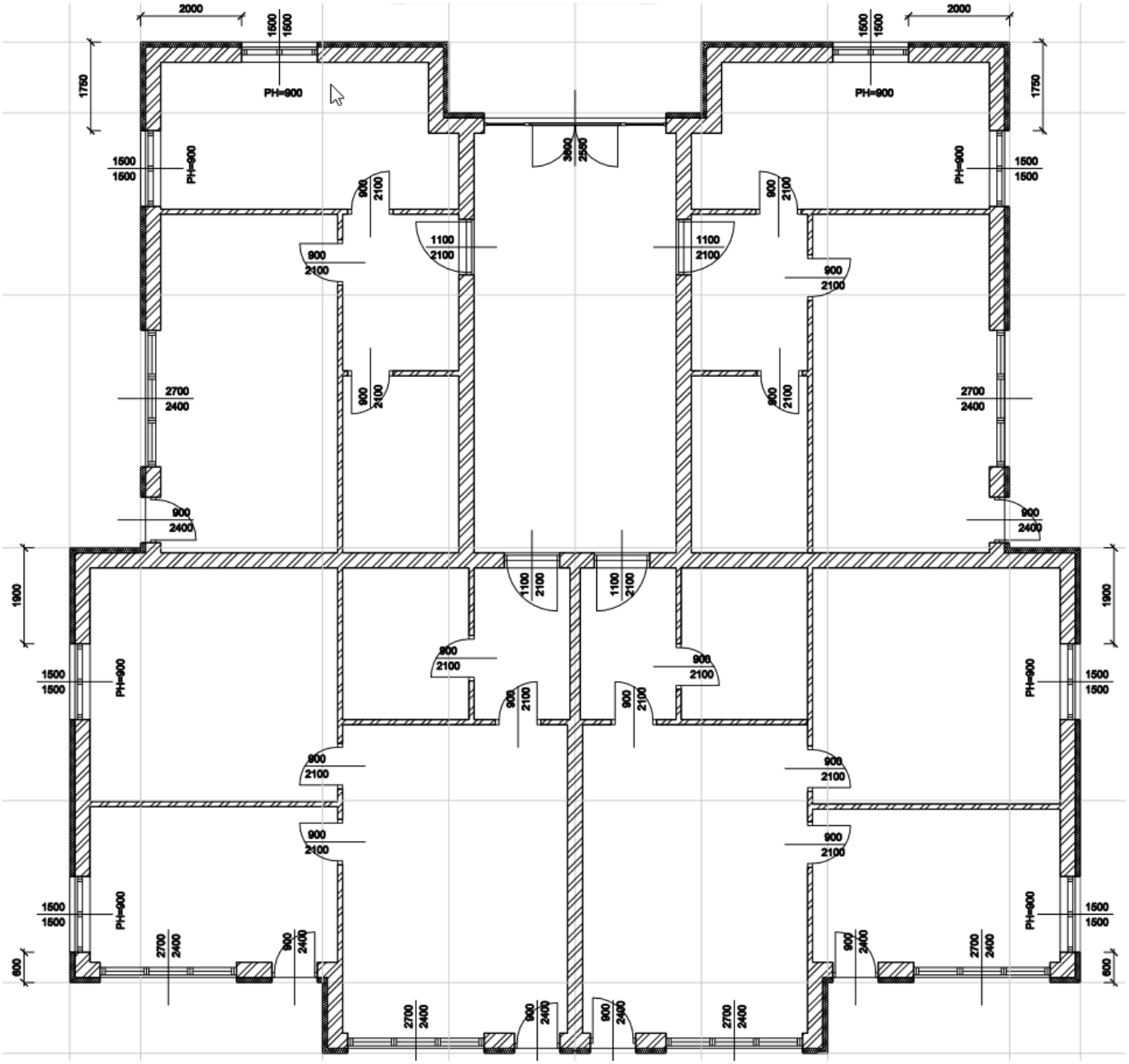
7. Click on the appropriate wall side and simply place it on the wall as desired. Later you can adjust the distance from the corner later. Please **avoid the internal wall connection** when placing.
8. Press Enter to close the command.
9. Click on the second window, then click on the **right-side distance marker** and type the distance from the wall corner: **600 mm**





10. Press **Esc** to close the selection.

Continue to place all the windows that appear on the floor plan below:


2000
1500
1500
PH=900
1750
1500
1500
PH=900
3600
2550
900
2100
1100
2100
2700
2400
900
2400
1900
600

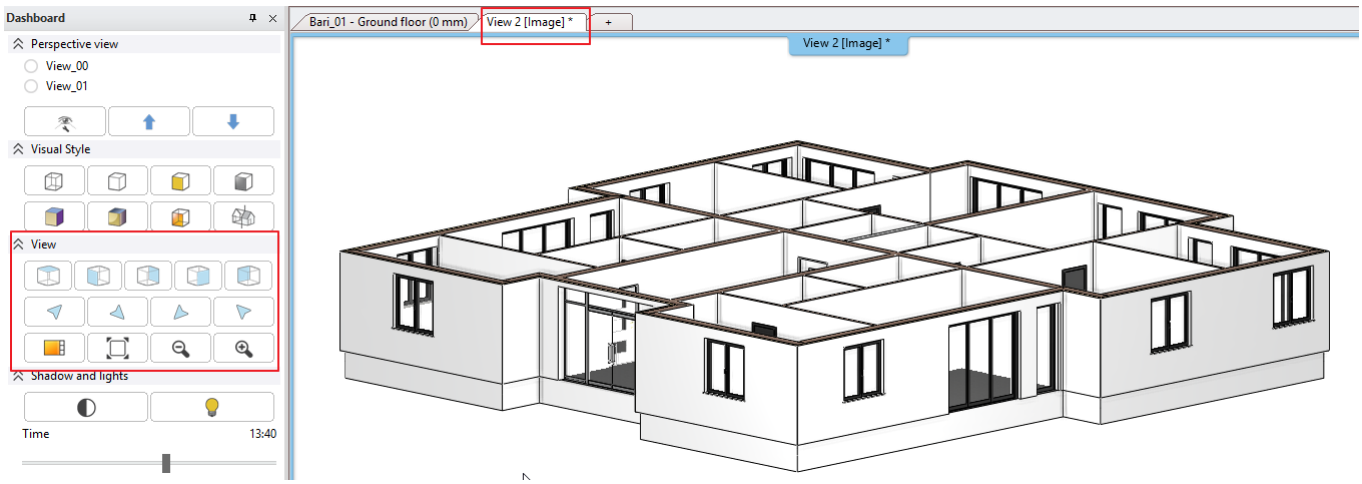
Now we can see all the openings placed on the Ground Floor.

4.5. Visualization: Perspective View and Animation

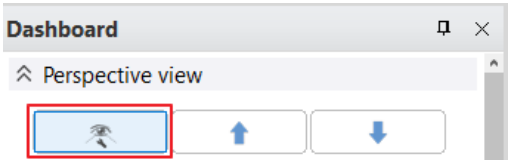
Let's take a look at our work so far.
Switch to **Perspective view**, **rotate around** the target point, and open the **staircase entrance door** using animation.

Axonometric Views

So far, we have been working in **axonometric view**.
Make sure the **3D view** is active and that **no element is selected**.
At this point, you can choose between different axonometric views on the **Dashboard** — try them out!

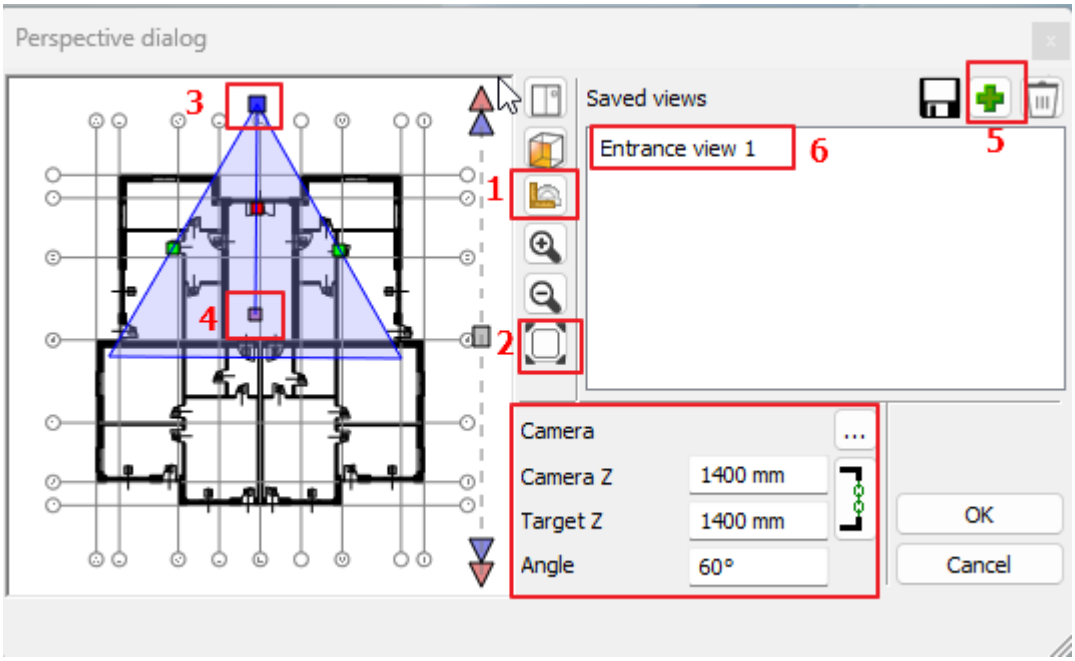


4.5.1. Setting up the perspective view

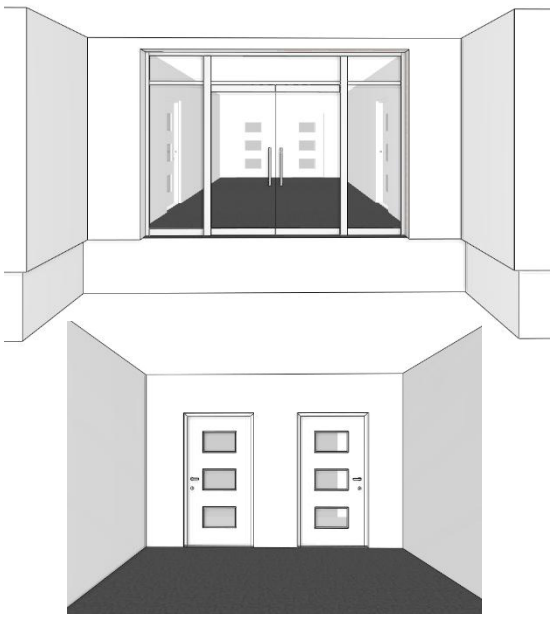


Now let's set up a **perspective view**.
A perspective view is defined by specifying the **camera position (Viewpoint)**, the **target position (Target point)**, and the **camera angle**.

1. On the **Dashboard**, click the **Perspective View → Eye icon**.
   In the Perspective dialog, the model is displayed in top view.
   We recommend switching to the floor plan view for easier setup:
2. Click on the **2D View (1)** button – the top view is replaced by the Ground Floor plan.
3. Press the **Fit to view (2)** button.
4. Click and hold the **Camera point (3)** and move it to the desired position.
5. Click and hold the **Target point (4)** and move it to the center of the model.

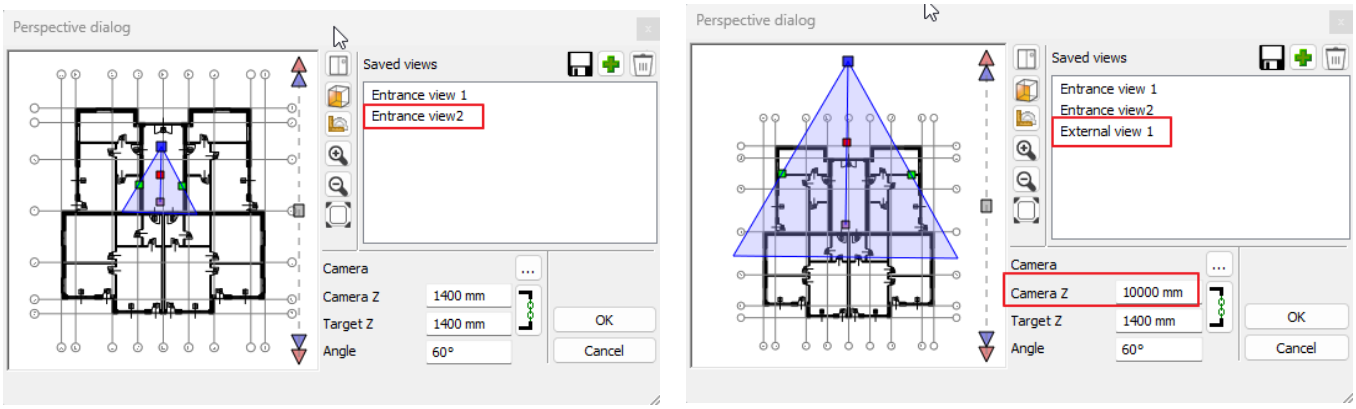


1. Adjust the **Camera height** and **Target height** to **1400 mm**, and set the **angle** to **60°**.
2. Save this perspective by clicking the **green plus (5)**.
   The program saves the view as *View_00*.
3. Double-click the view name. In the dialog box that appears, rename it to **Entrance view 1**, then press **OK**.
4. Press **OK** again to close the dialog.

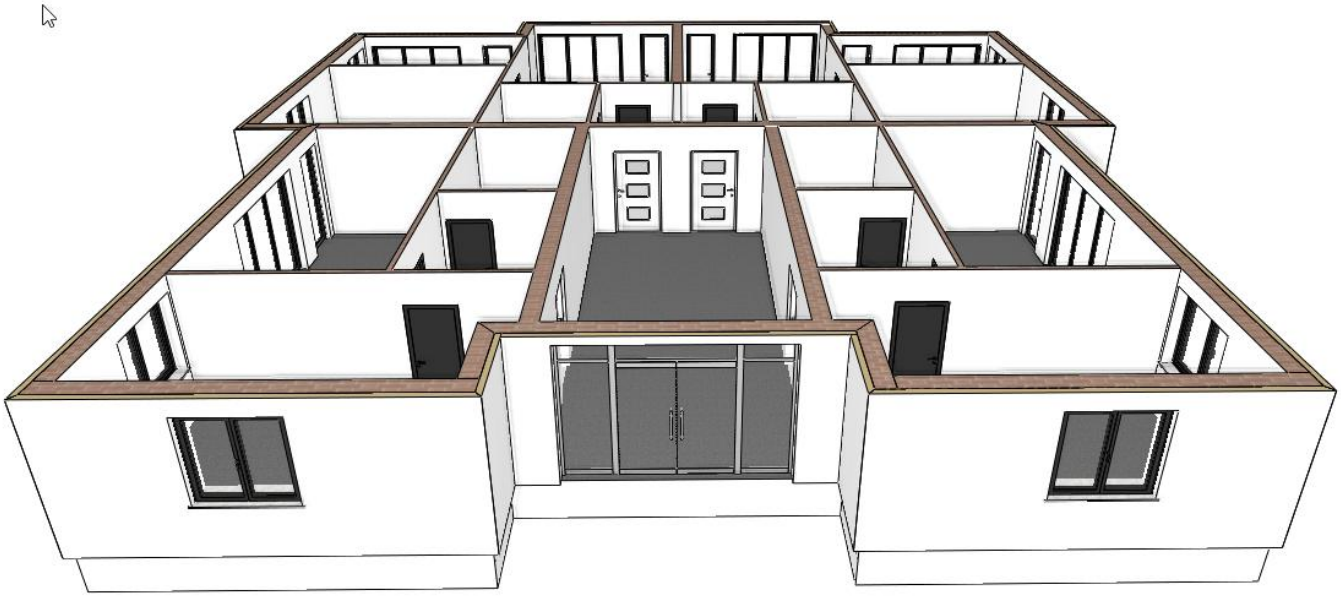


The first perspektív view is ready.

Create **two more perspectives** based on the figures provided.

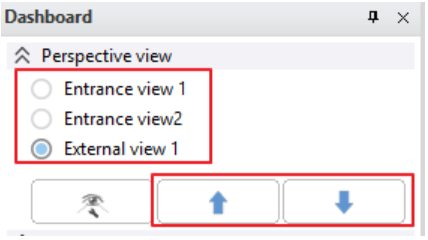


Note: For the **External view 1**, set the **Camera height** to **10,000 mm**.

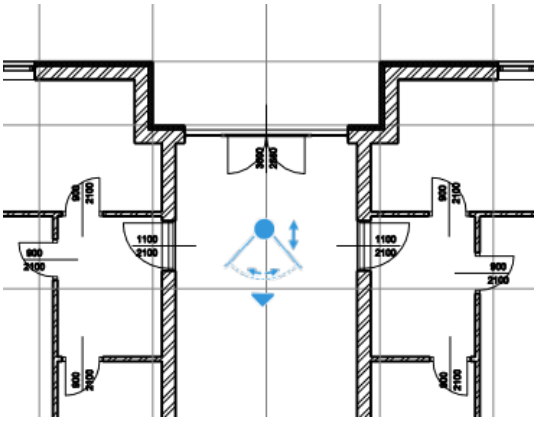


Tip: Perspective views can be selected in several ways:

- From the **Dashboard** (by name or using the blue arrows),
- From the **Status bar** (by name or blue arrows),
- Or by pressing the **Page Up** and **Page Down** keys on the keyboard.



Quick Perspective Views



After creating perspective views, an additional icon appears on the **Floor Plan**.
This allows you to set up **Quick Perspective Views** directly from the plan.

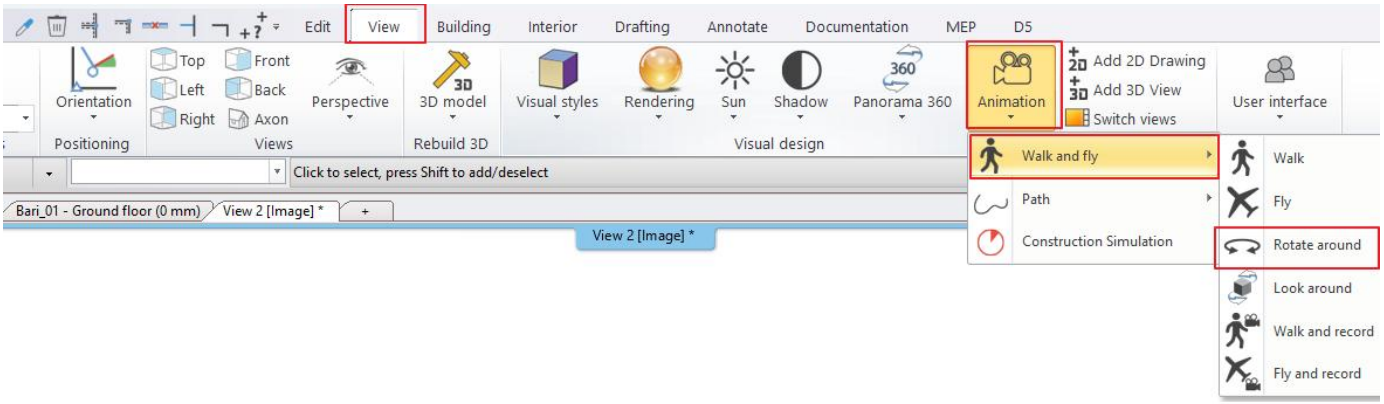
The **camera icon** shows what you would see from the camera's position.
You can move the camera icon by dragging the **circle**, and you can rotate it by dragging the **triangle**, which adjusts the field of view.

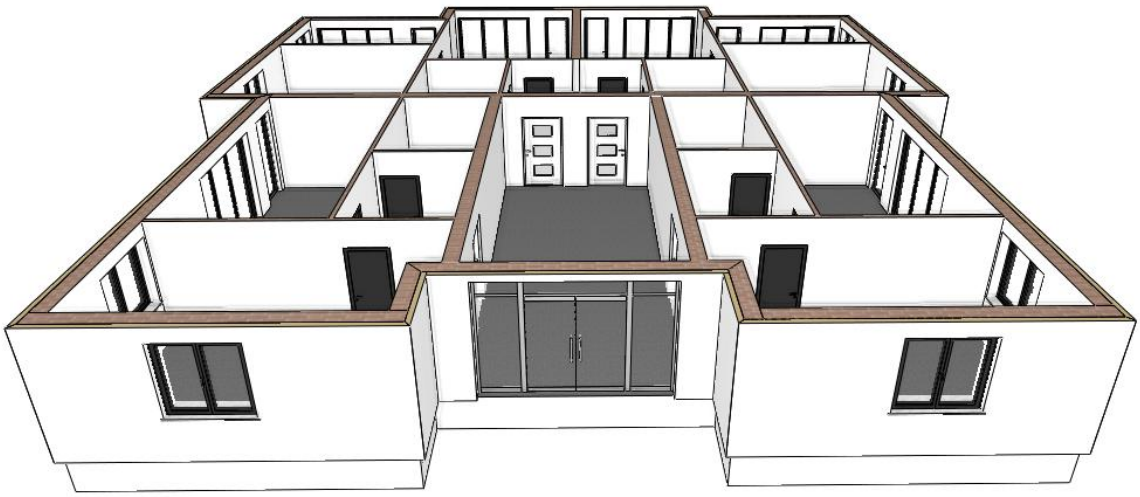
4.5.2.Animation

Rotate the model

In the next step, we will rotate the model around the **Target point**.

1. Make sure the **3D view** is active and choose the **External perspective 1**.
2. Go to the **Ribbon Bar → View → Animation → Walk and Fly → Rotate around**.





The model will rotate around the **Target point**.

Press any key to stop the rotation.

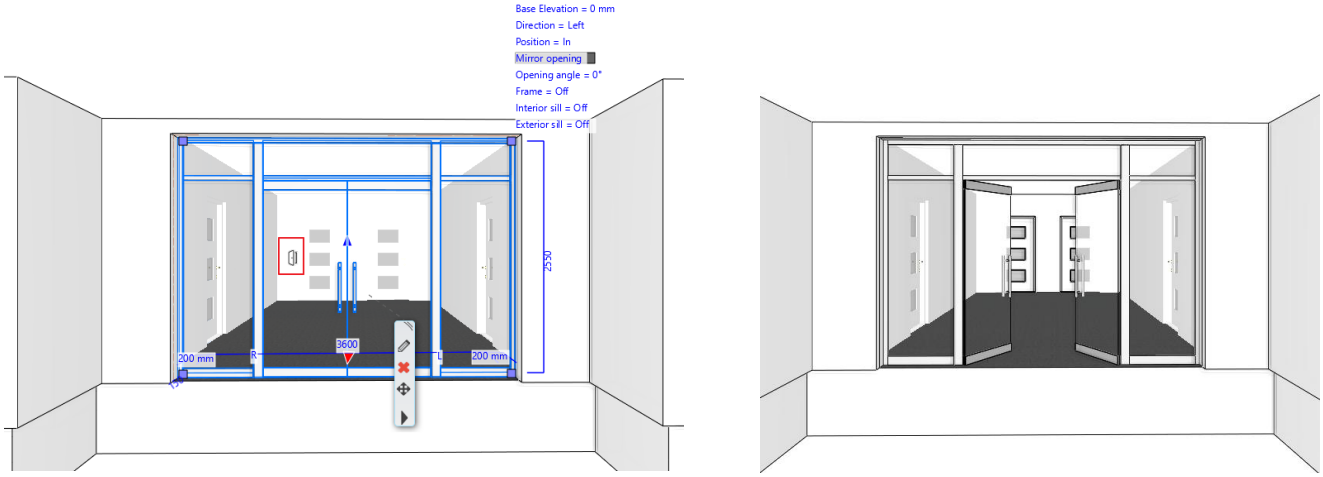
💡 **Tip: Independent Exercise**

Try out the other commands in the **Walk and Fly** menu as well.

Open the Staircase Entrance Door Using Animation

1. Make sure the **3D view** is active and choose the **External perspective 1**.
2. Click on the **door**, then click on the **opening marker**.

The **door opening animation** will start automatically.

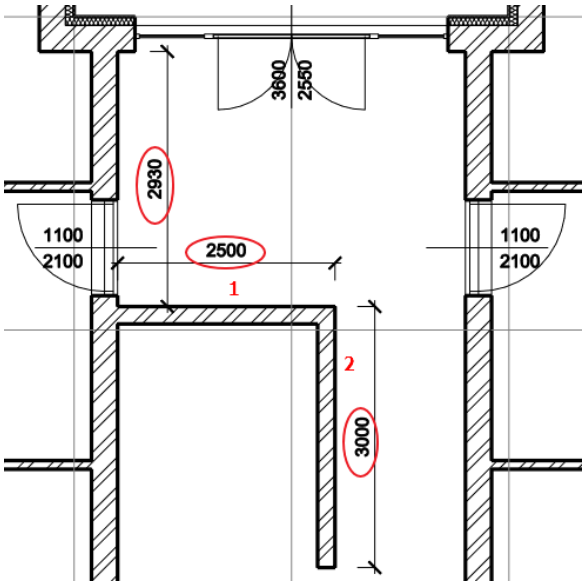


Now the model is ready with all doors, windows, and perspective views created.

Practice Task – Individual Work

To prepare for the next *Stair* workshop, **set up the staircase area** by drawing two new walls with a **thickness of 200 mm**.

1. Create a new wall style based on 1 layered brick 100 wide, and name it **1 layered brick 200 wide**.
2. Then, draw the two walls using the **dimensions shown in the figure**.



❗ **Remember:** Save your project under a new file name (for example, *Bari_04*) to preserve your project before moving on to the next steps.

5. Workshop 5 – Stairs and Railings

In this workshop, we will create a **U-shaped staircase** connecting the **Ground Floor** and the **First Floor**.
We will edit its geometry, set the correct heights, add supporting walls underneath, and place a railing.

- Choosing a U-shaped staircase
- Editing with the Stair Calculator (height, width)
- Adding walls under the stair and cutting them automatically
- Placing railings from styles

5.1. Understanding Stairs in ARCHLine.XP

The **stair tool** in ARCHLine.XP is a powerful and flexible feature designed to create stairs quickly and precisely for both architectural and interior design projects.
It offers a variety of methods and styles — from simple straight stairs to complex **U-shaped, L-shaped, or curved designs** — and allows you to control every geometric and visual aspect of the stair.

ARCHLine.XP provides several ways to define a staircase:

- **Using predefined stair types**, then setting the desired parameters.
- **Graphically**, by defining the staircase boundary — clicking points on the floor plan to shape and size the stair.
- **Step-by-step**, based on an existing staircase. *(Ideal for reconstruction or surveying old buildings.)*

The Logic Behind the Stair Tool

When you start creating a stair, ARCHLine.XP generates a **3D parametric object** that automatically connects two building levels.
The **floor height difference** determines the **total stair height**, while the program calculates the **number of risers and treads** to meet ergonomic standards.

The **Stair Calculator** is the main control panel for this process. Here, you can:

- Modify the riser height, tread depth, and stair width
- Adjust landing size, turn type, and support options
- Define whether the stair should cut walls below
- Customize the 2D symbol and 3D material appearance

📝 **Note:** ARCHLine.XP continuously checks stair ergonomics.
If a design exceeds comfort limits (for example, the stair is too steep or too shallow), the software highlights the parameter in **red**, alerting you to adjust dimensions as needed.

Smart Integration with the Building Model

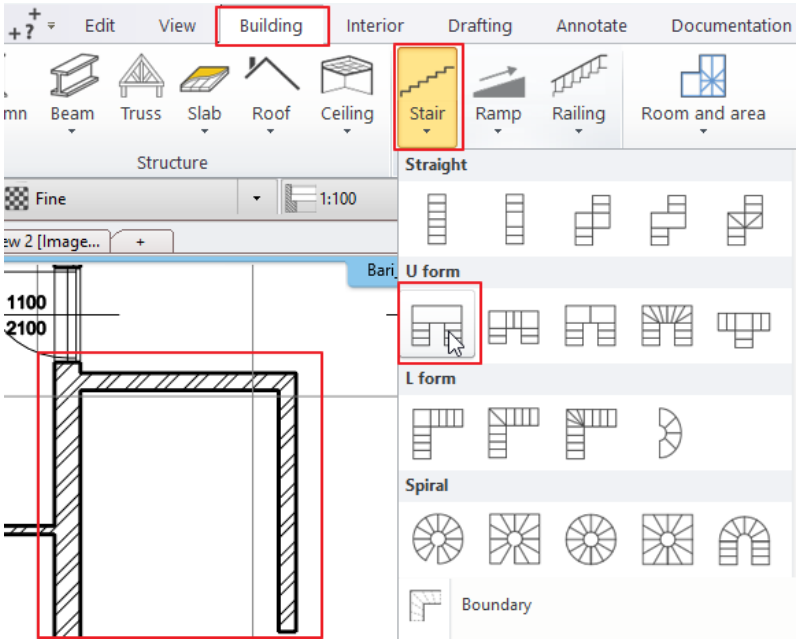
One of ARCHLine.XP's key strengths is the **intelligent interaction** between the stair and the rest of the model.

- When placed between levels, the stair **automatically adapts** to the floor height difference.
- When positioned above walls, activating **"Cut the walls – Own floor and below"** makes the stair **cut those walls automatically** in 3D.
- You can also add **railings, handrails, or walls under the stair**, which will follow its slope automatically.

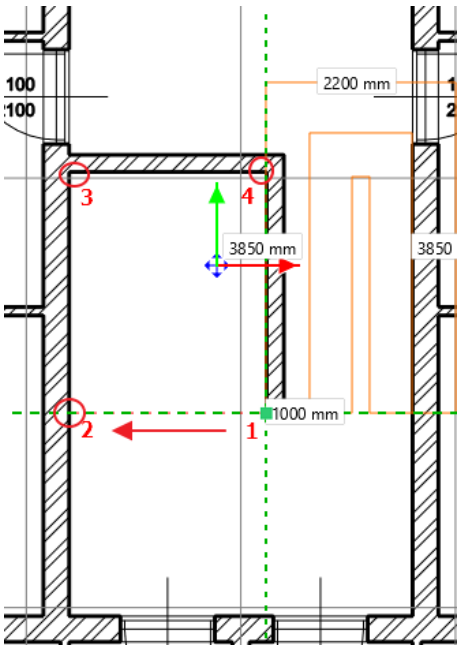
❗ **Remember:** All stairs in ARCHLine.XP are **intelligent BIM objects**, meaning they remain editable, maintain level connections, and appear automatically in **sections, elevations, and schedules**.

5.2. Choosing and Placing a Stair

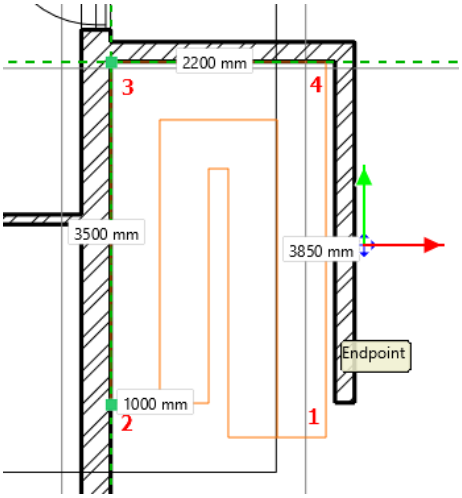
1. Activate the **Ground Floor** by clicking on the *Ground Floor View* tab.
2. Go to **Building → Stair** on the Ribbon.
3. Choose **U-shaped Stair** from the available types.



The cursor now takes the shape of the stair.



4. Define its position graphically:
   - Move the cursor to the **first point** shown in the figure.
     A green dashed horizontal line appears, helping you define the next point.
   - Click the **second point** where the green line intersects the wall.
   - Then click the **third** and **fourth points**, and finally click again on the **first point** to close the shape.



The stair appears automatically using default parameters. You can modify its dimensions later in the **Stair Calculator**.

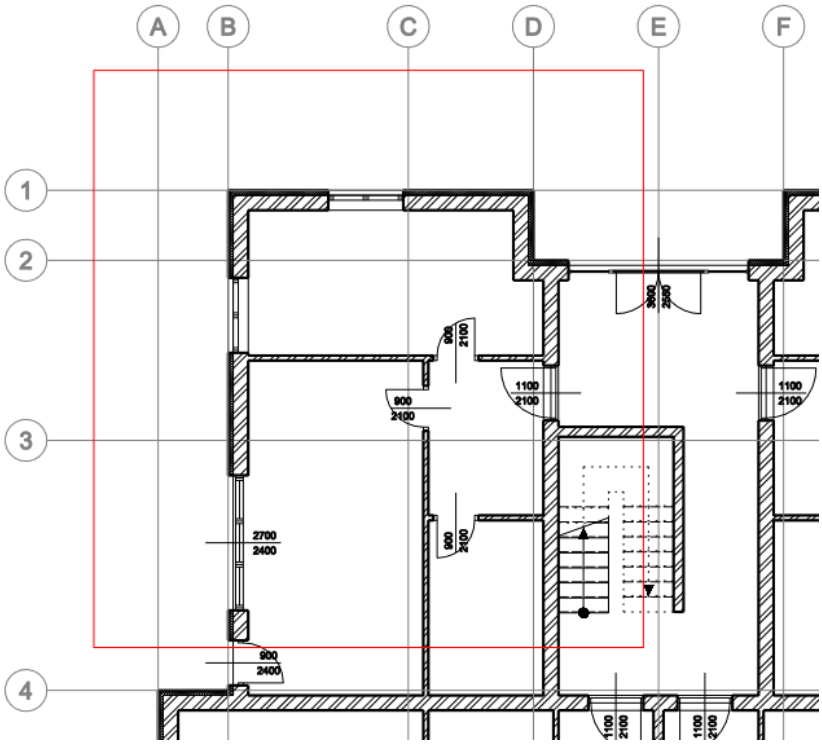
💡 **Tip:** Press **F5** or the **Space bar** before placement to set the **reference point** of the stair (for example, “At left side” or “At center”).
This makes it easier to align the stair precisely with nearby walls.

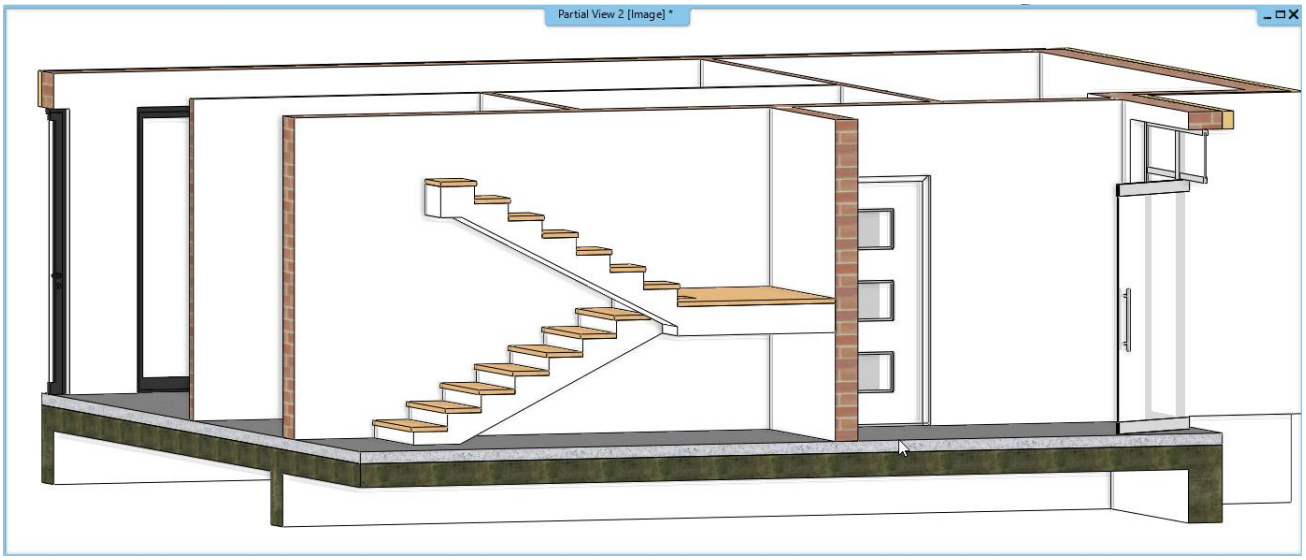
Creating a Partial 3D View

To see the stair more clearly in 3D, let’s create a **Partition View**.

1. On the Status Line, choose Rebuild 3D → Cut Away 3D View by Rectangle.
2. Define the cutting rectangle so that it slices through the stair.

This creates a 3D section view showing only the stair area.

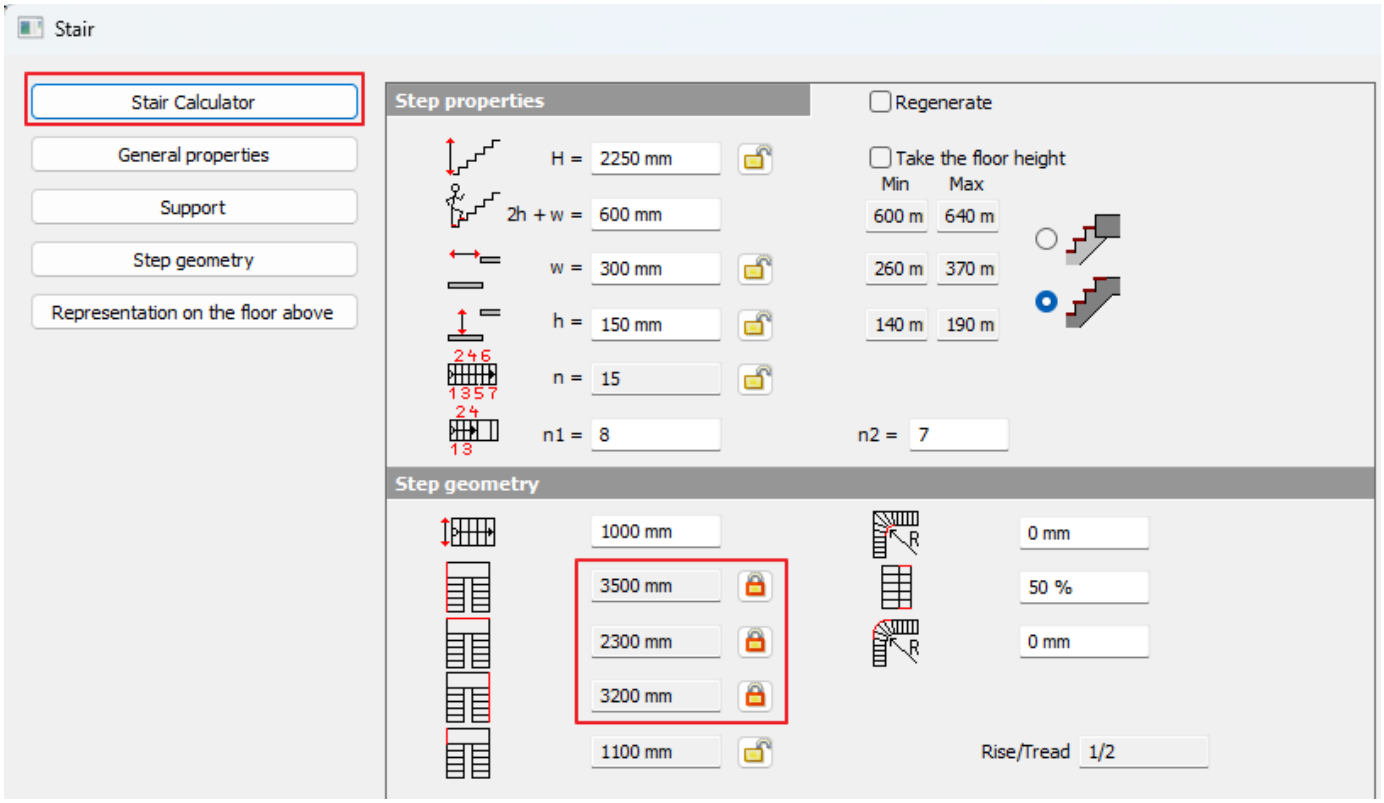




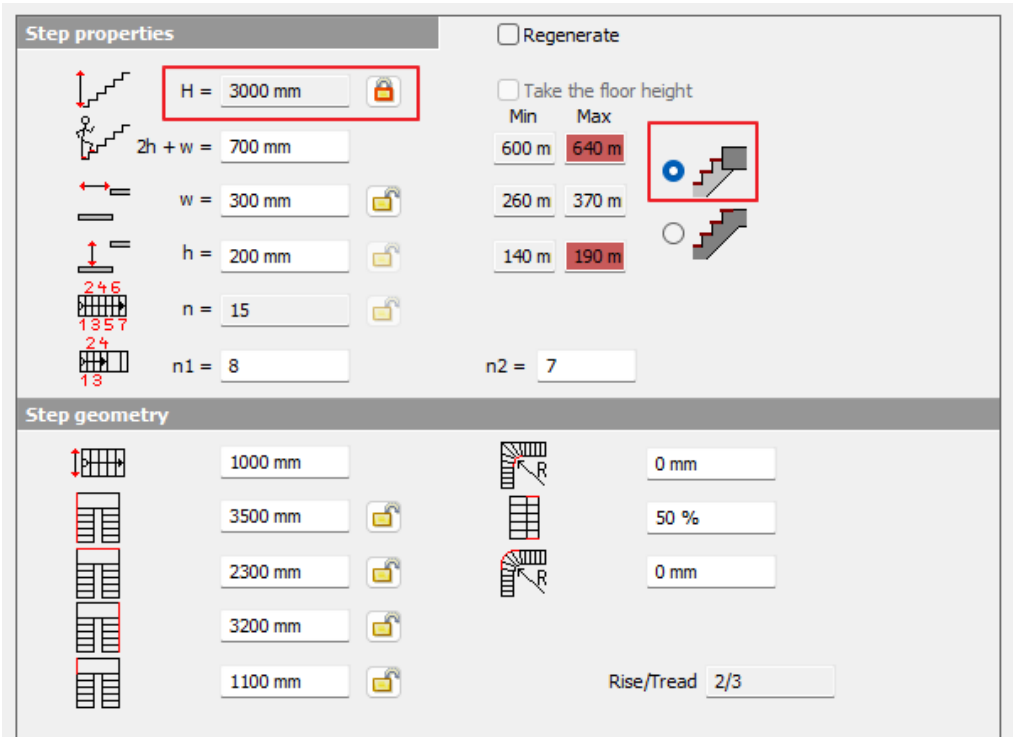
Editing Stair Parameters - Stair Calculator Dialog

In the Partial View, you can see that the stair does not yet reach the next floor level.
We will correct this using the **Stair Calculator**.

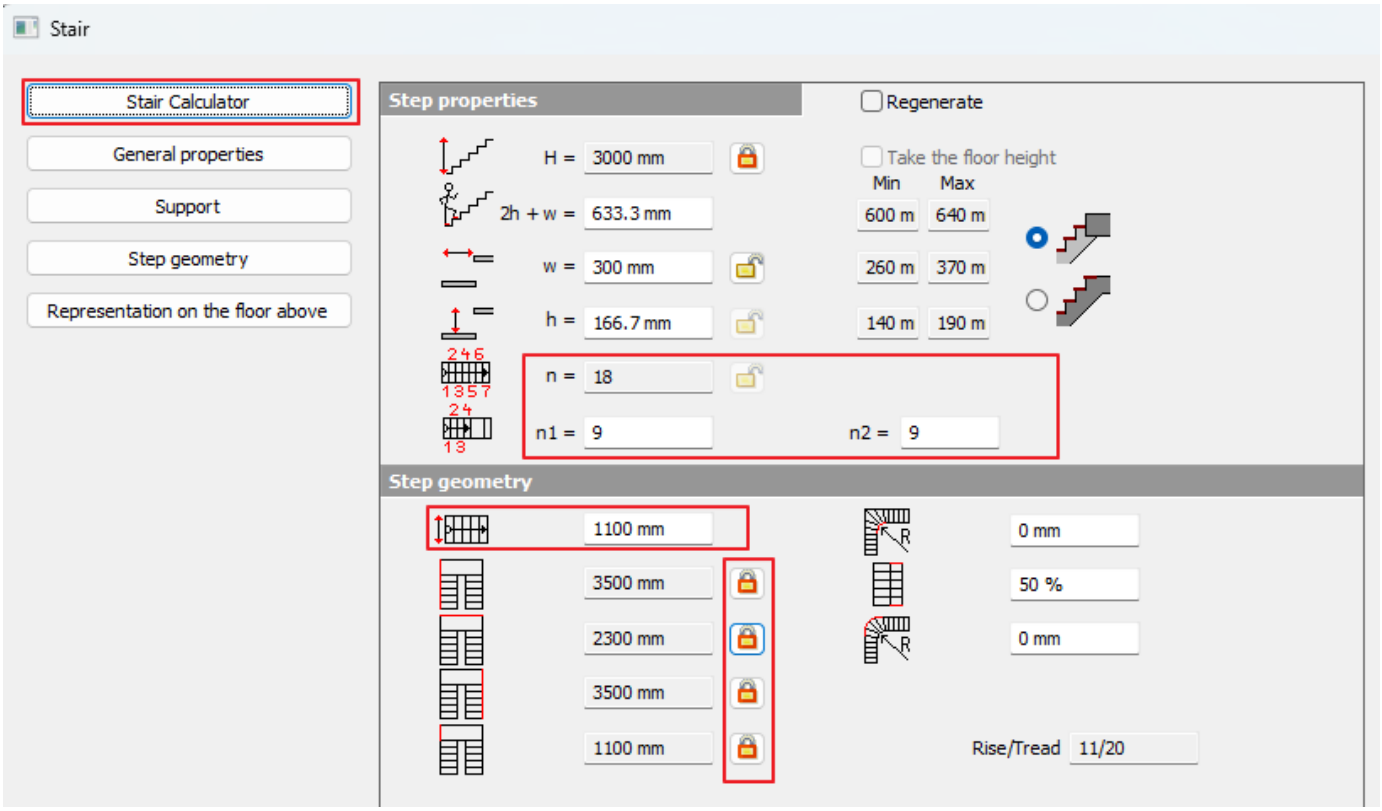
1. Activate the **Partial View**.
2. Select the stair and click the **Pencil icon** to open the *Stair Properties* dialog.
3. Choose the **Stair Calculation** tab.
4. Adjust the following values:
   - Unlock the three padlocks



   - Height: Set to 3000 mm, corresponding to the floor level difference, then close the padlock.
   - Choose the first icon on the right side — this means the last step reaches the slab level.
     The stair calculator warns you with **red fields** that the stair is not yet ergonomic.



- Number of steps: Type 9 + 9 = 18.
- Flight width: Change to 1100 mm.
- Lock the padlocks again in the Step Geometry section.

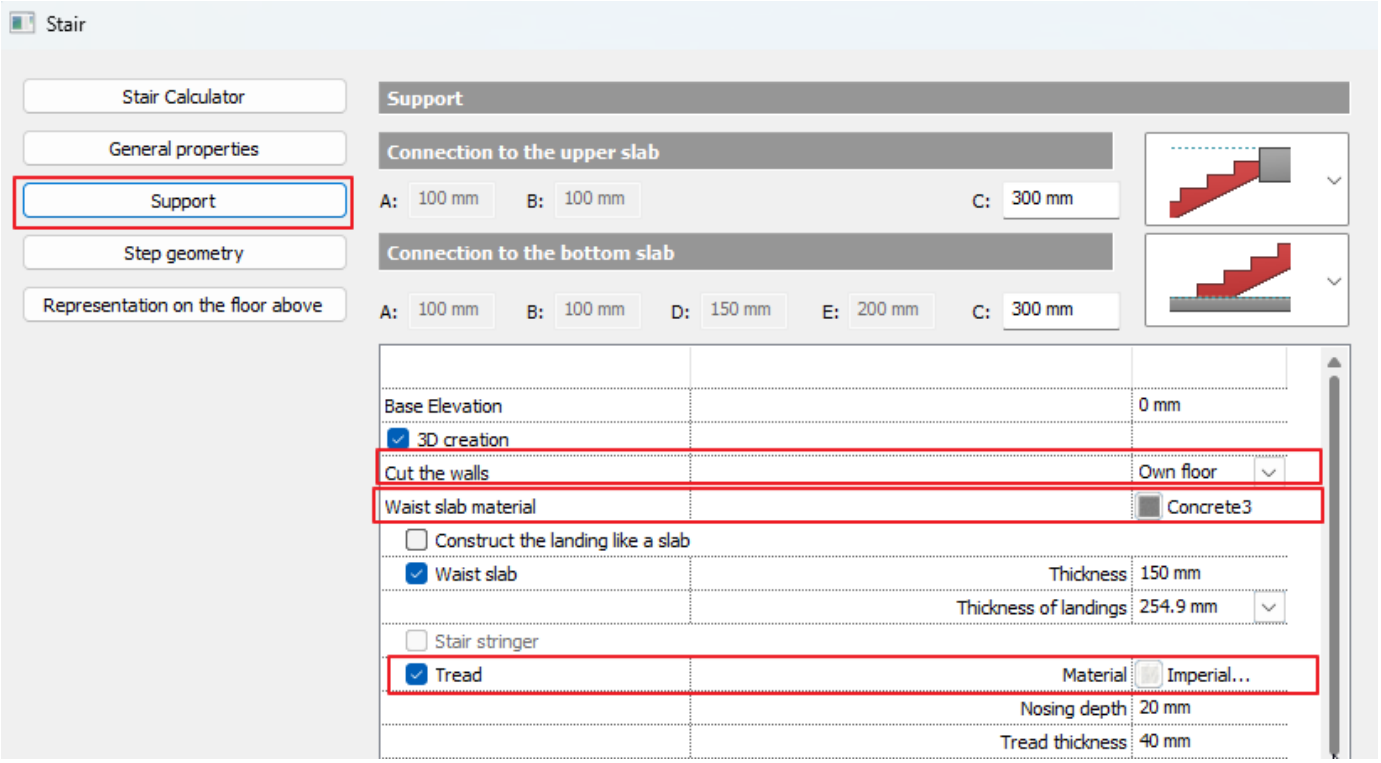


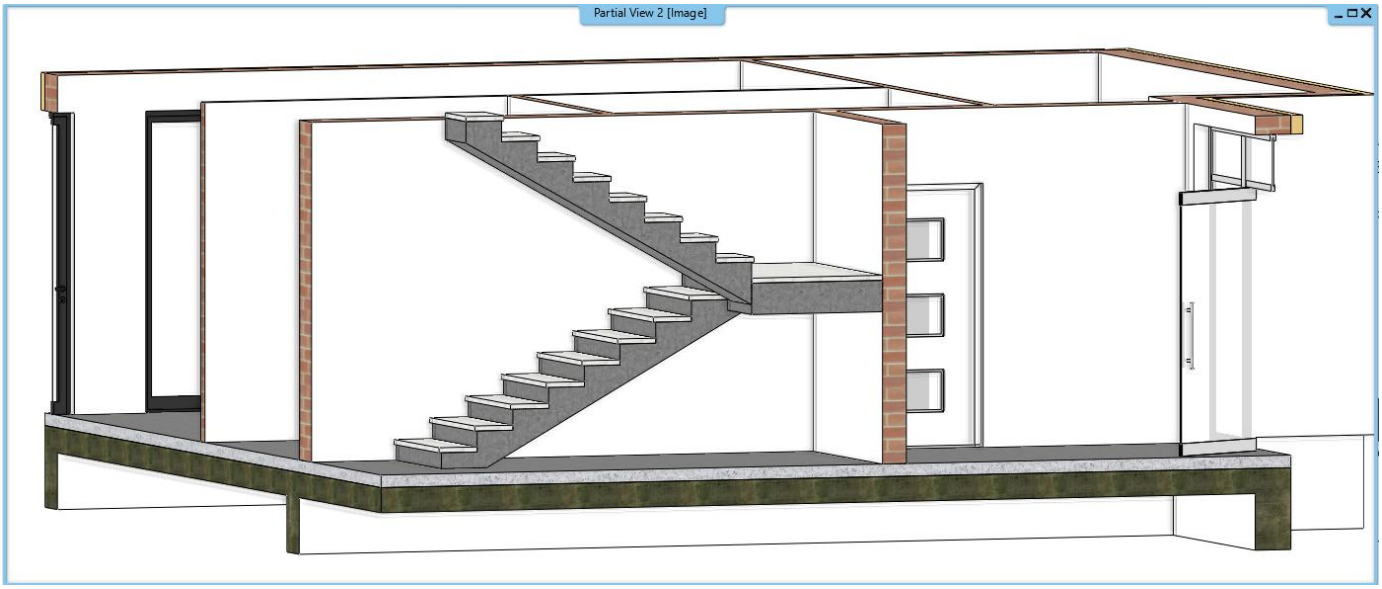
- **Path position:** Keep it at **50%** for a central walking line.

Note: The Stair Calculator continuously checks ergonomic proportions and displays any non-compliant values in **red** for easy identification.

Adjusting 3D Representation

1. Under the **Support** tab, enable **Cut the walls – Own floor** to allow the stair to cut the walls automatically.
2. Set the **Waist slab material** to **Concrete 3**.
3. Set the **Tread material** to **Imperial White**.





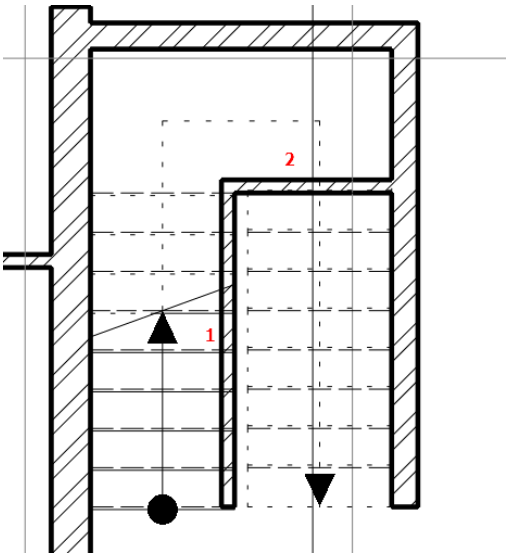
The stair now reaches the first floor correctly.

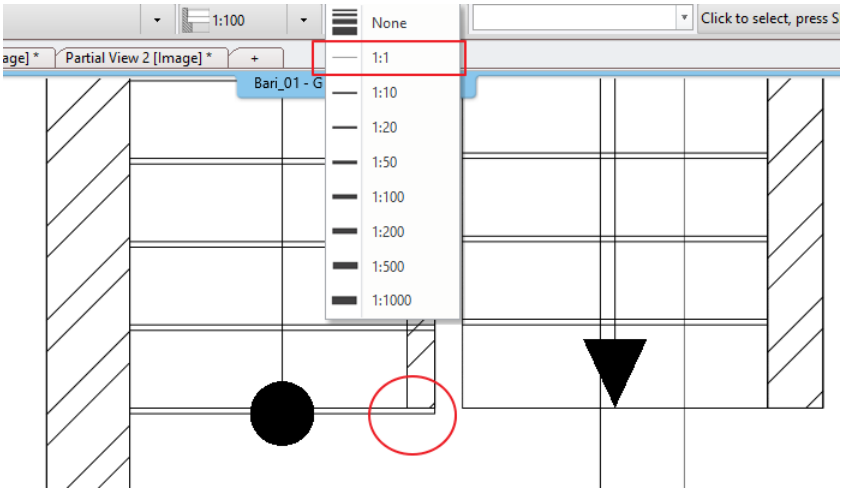
5.3. Adding Walls Under the Stair

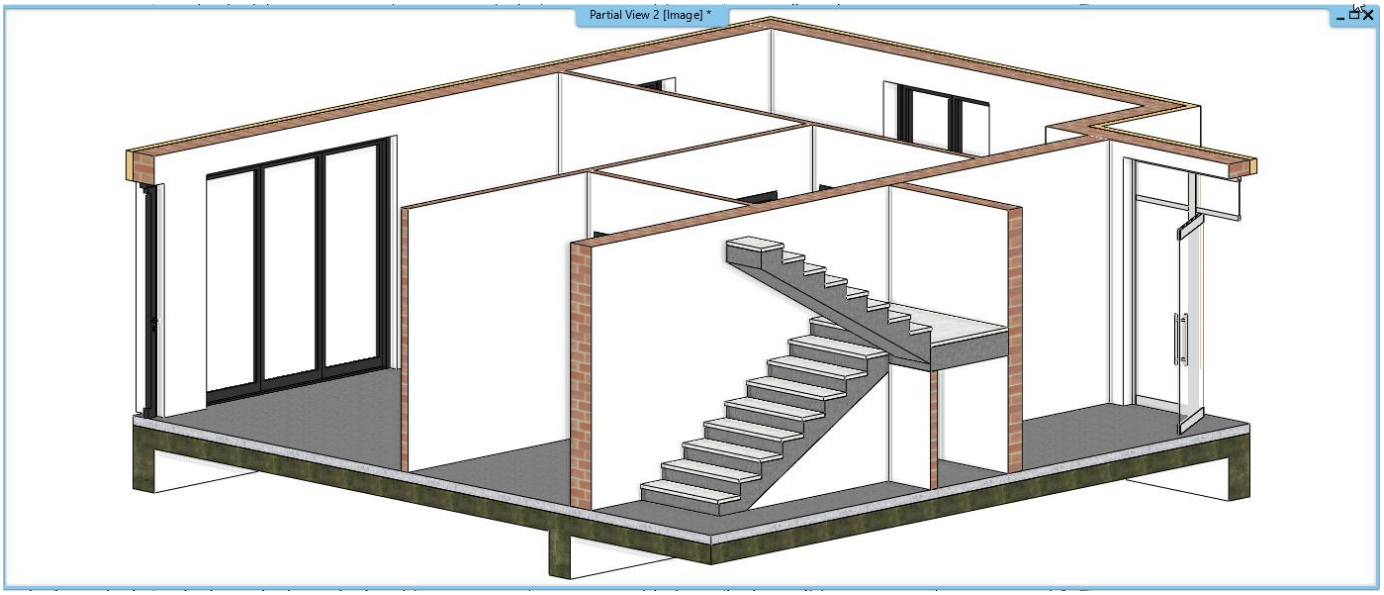
1. On the **Ground Floor plan**, draw the walls under the stair using the **1 layered brick 200 wide** wall style.
2. When the stair overlaps them, ARCHLine.XP automatically **cuts the walls** along the stair's slope.

⚠ **Important:**

- Ensure that the **wall and stair heights** are consistent to display accurate cutting in 3D.
- Make sure that the **starting point of the first wall** coincides with the **starting point of the stair flight**, **not** with the nosing line.
  If you set the **Line width scale** to **1:1**, the starting point will be displayed more precisely.





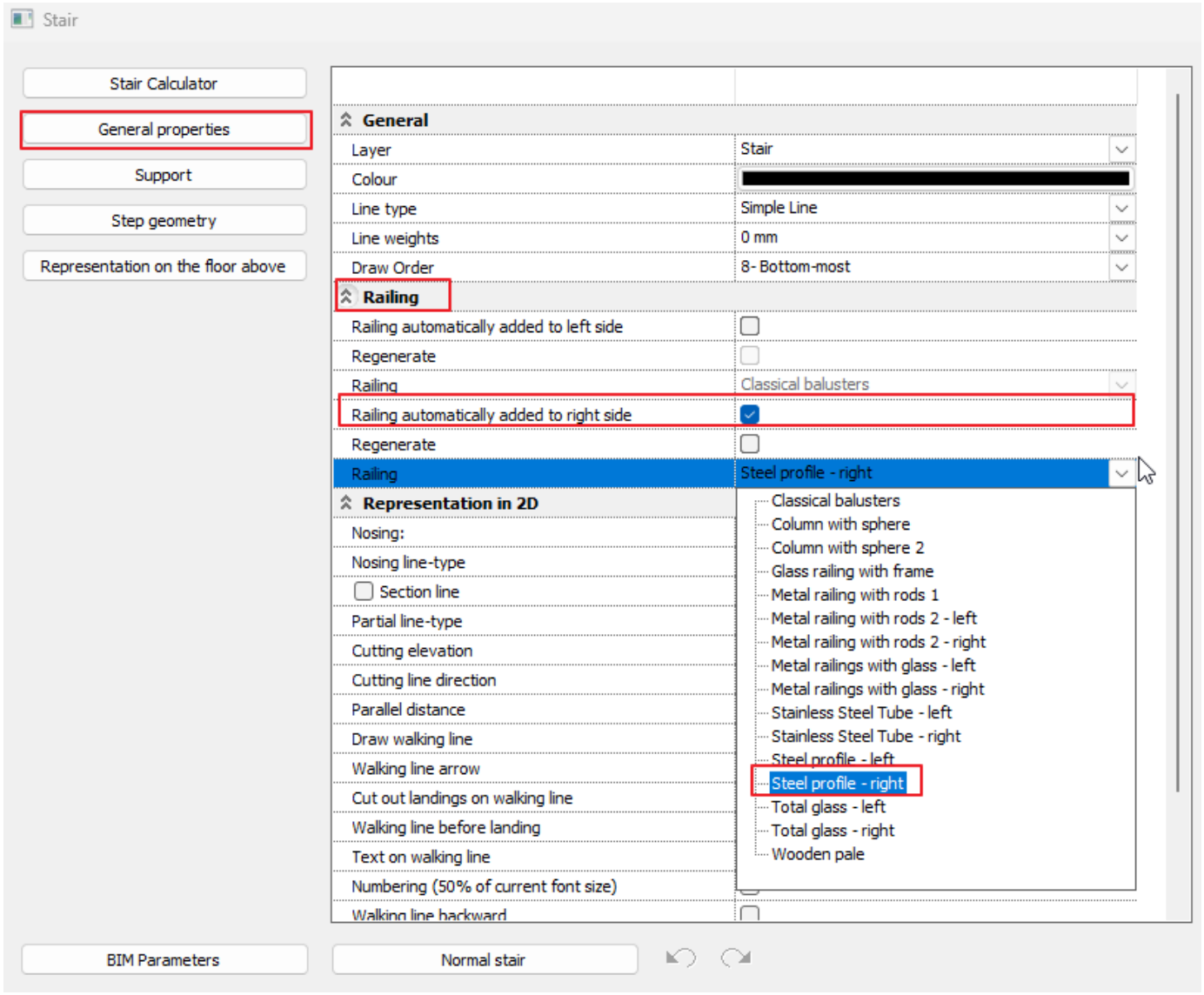


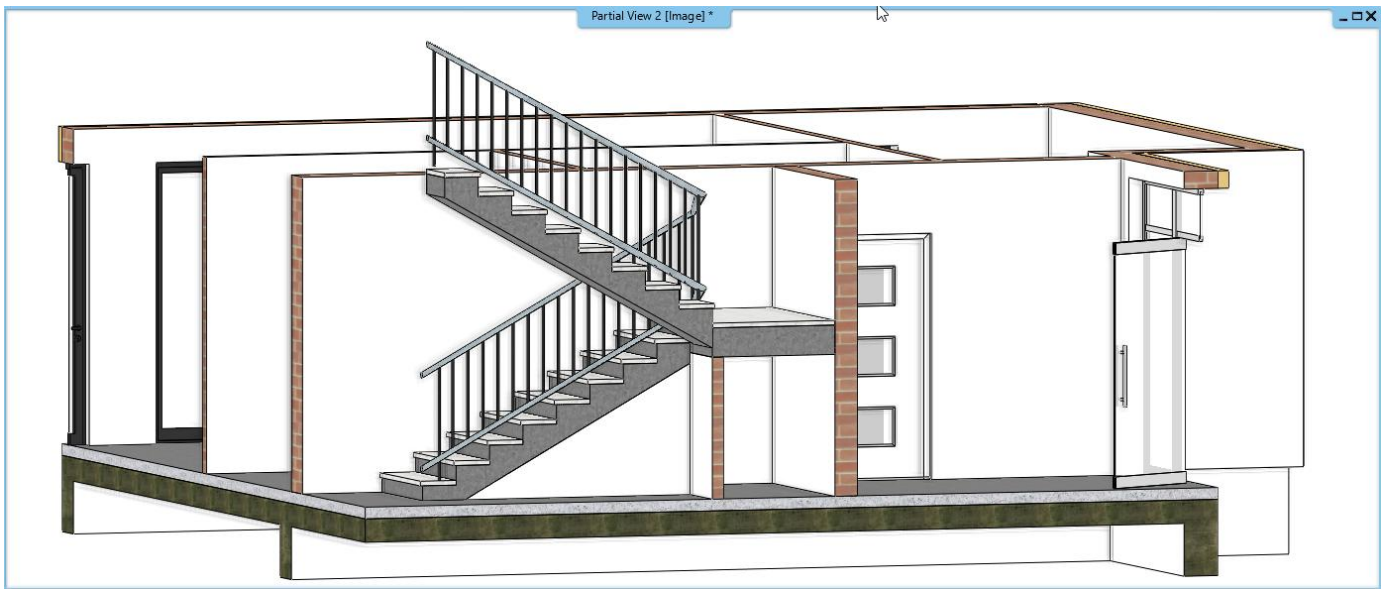
5.4. Adding a Railing

1. Select the stair and click the **Pencil icon** to open the **Stair Properties dialog**.
2. Choose the General → **Railing**.

3. Place the railing on the right side only.
4. Select a suitable **railing style** from the library: Steel profile - right.

Note: You can detach the railing later for individual editing or design customization.





Result:
You have created a **U-shaped stair** with accurate geometry, automatic wall cutting, and a custom railing — fully integrated into the BIM model.

❗ **Remember:** Save your project under a new file name (for example, *Bari_05*) to preserve your project before moving on to the next steps.

6. Workshop: Multi-Story Building

We want to develop the project into a **multi-storey building**.
In this chapter, we will cover the following topics:

- Copying entire floor plans to upper levels
- Creating slab opening for staircase
- Editing facade walls and balconies on the first floor
- Adding new doors and windows on upper levels

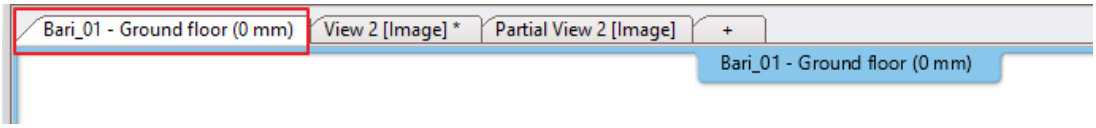
💡 **Tip:** This workshop focuses on extending your project vertically — learning how to manage and modify multiple building levels efficiently.

6.1. Copying Elements to the First Floor

We will start by creating the **first floor** from the existing **ground floor** layout.
To do this, we'll use the **Copy Level** command to duplicate all building elements to the upper level.

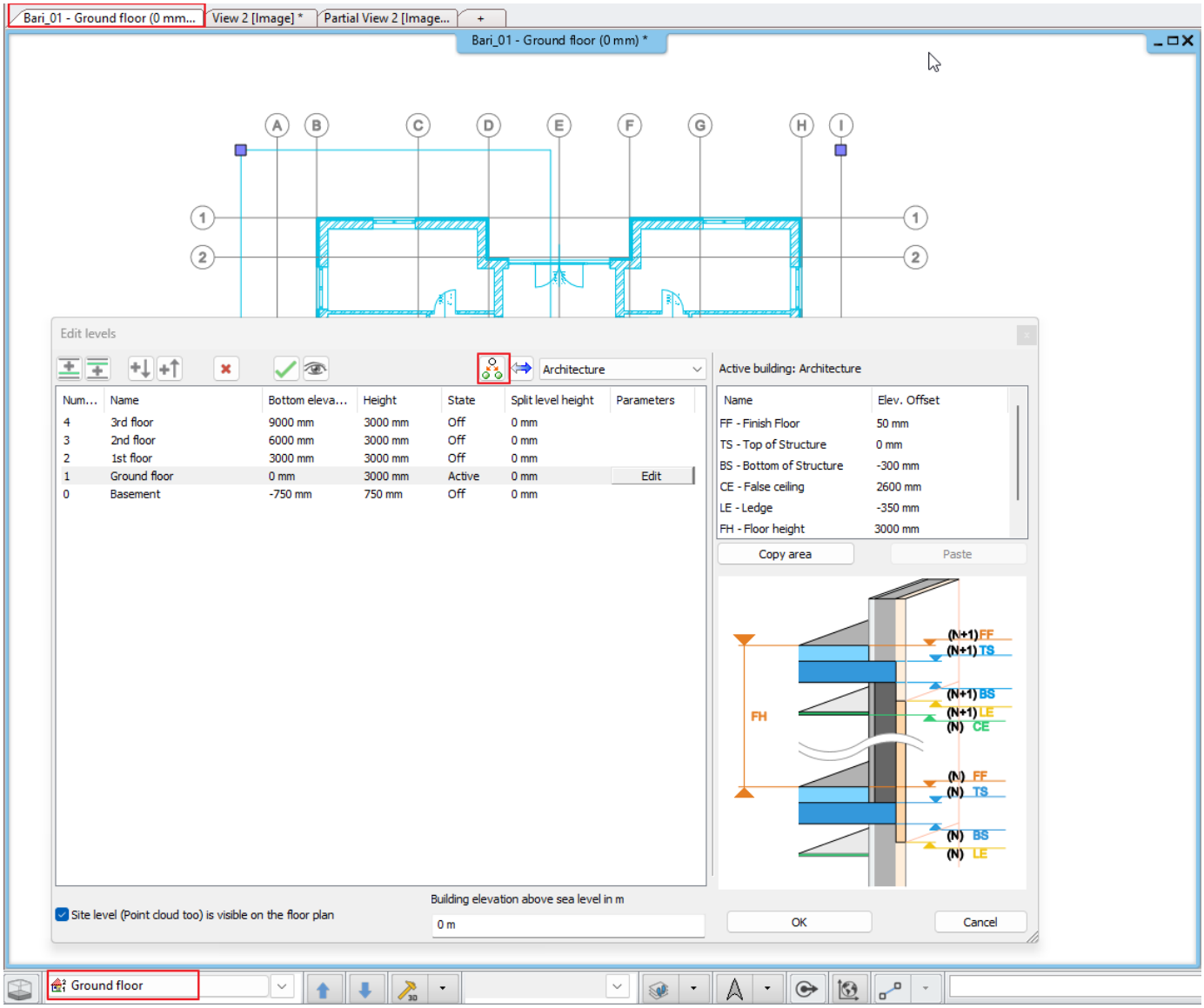
Steps to Copy the Ground Floor

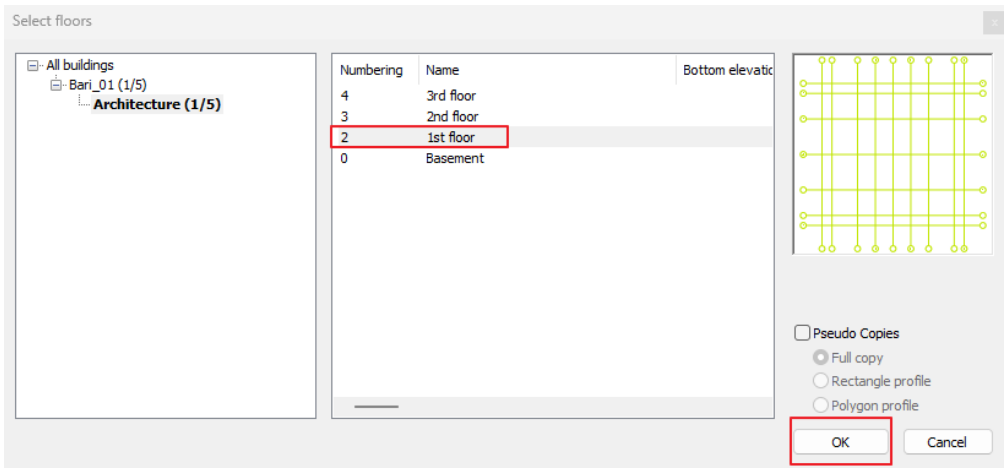
1. Select the **Ground Floor** tab to make the ground floor active



2. Select **all elements** on the ground floor (*except the architectural grid*).
3. Click the **Floor** button – the **Edit Levels** dialog appears.
4. Choose the **Copy Objects to Other Floor** icon.
5. Set the target level to **"1st Floor"**.
6. Click **OK** to complete the copy.

💡 **Tip:** The *Copy objects to other floor* function automatically duplicates the selected elements — including walls, slabs, doors, and windows — maintaining their correct positions between levels.

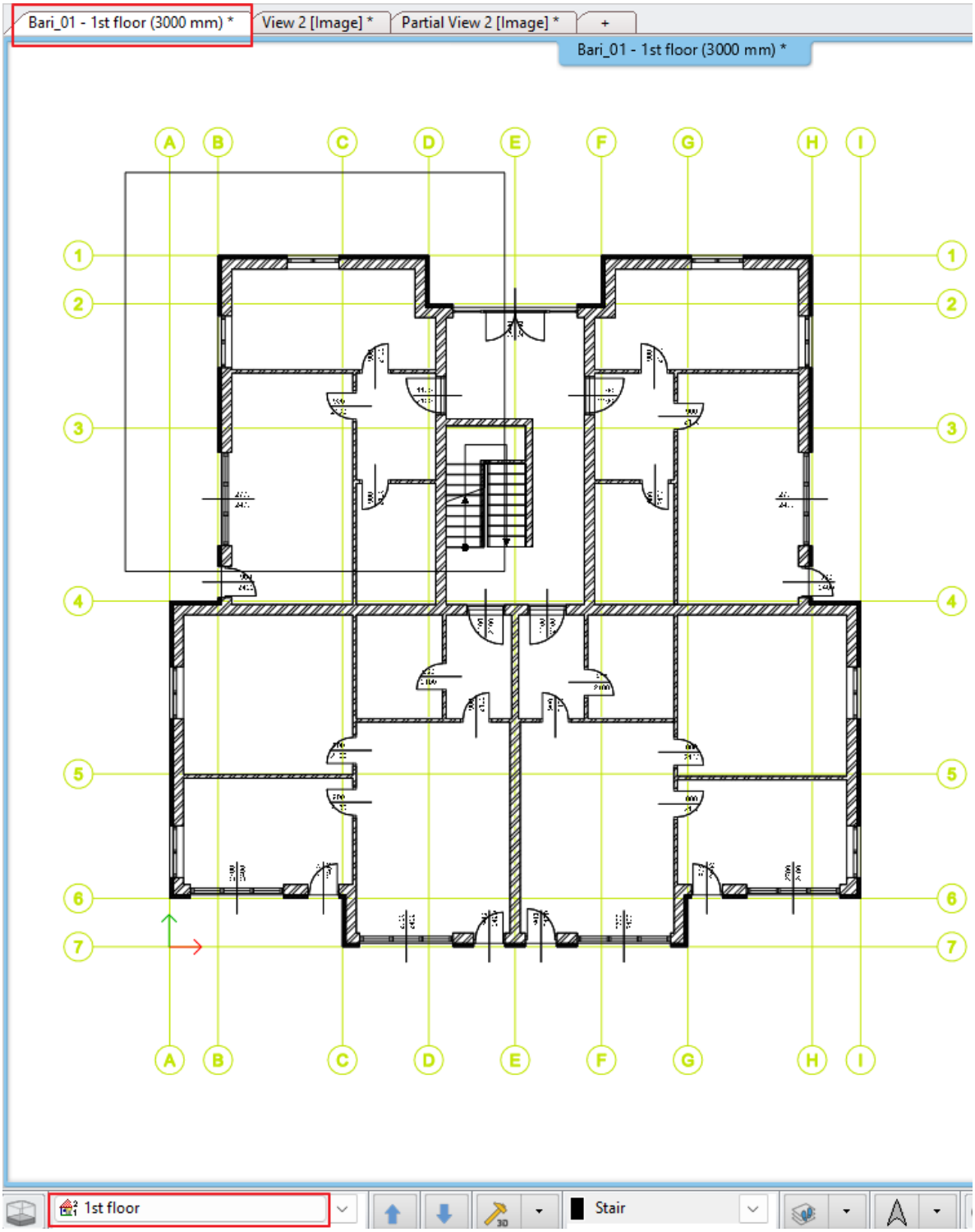


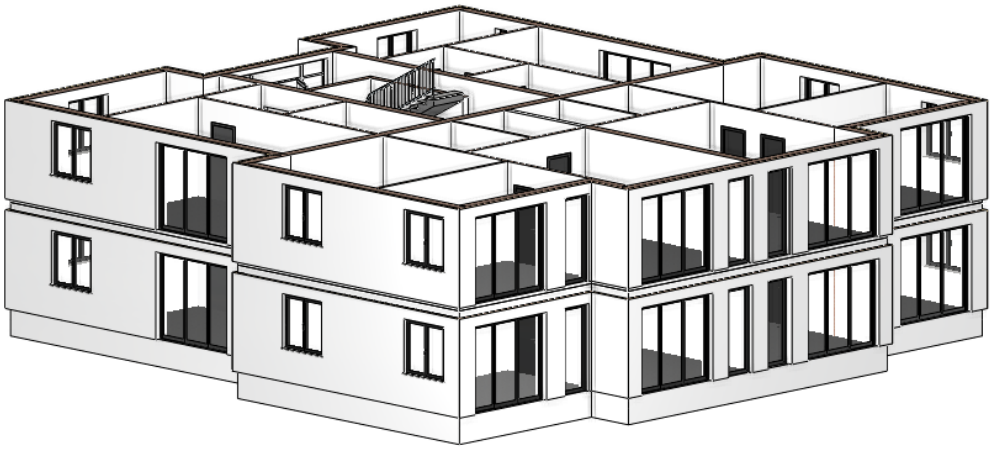


Checking the Result

After copying, the **1st Floor** plan view become active.
You will see that all architectural elements from the ground floor are now duplicated.

📝 **Note:** Some elements, such as **staircase openings** (slab holes), may need to be adjusted manually on the new level.



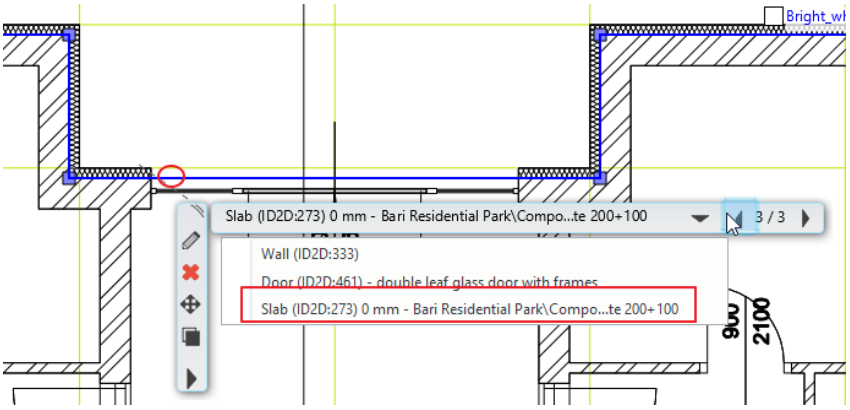


6.2. Creating the Staircase Opening

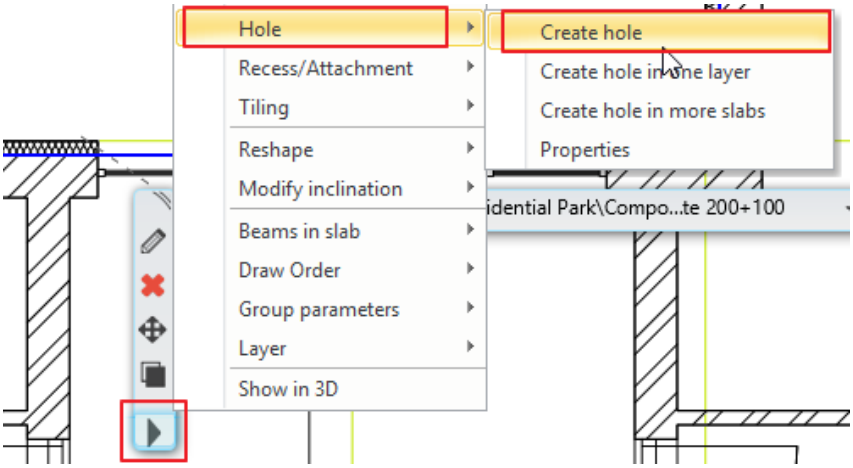
At this point, the **staircase opening** is missing from the first-floor slab.
Let's fix this before continuing.

1. Switch to the **Partial view**.
2. Delete two **unnecessary walls** under the stair.

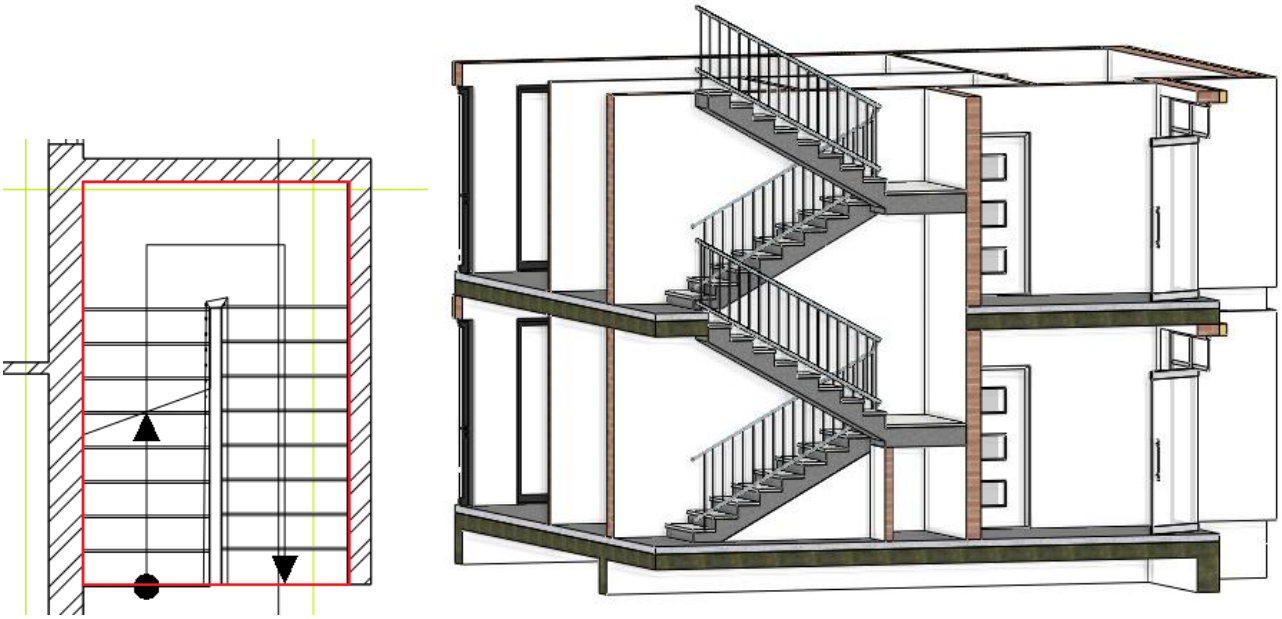
3. Switch back to the **1st Floor view.**
4. Select the **slab** by clicking on its contour.
   If there are multiple overlapping elements on the plan, use the **Selection List** to pick the correct one.



5. Once the slab is selected, click the **arrow** on the floating toolbar.
6. From the pop-up menu, choose **Hole → Create Hole**.



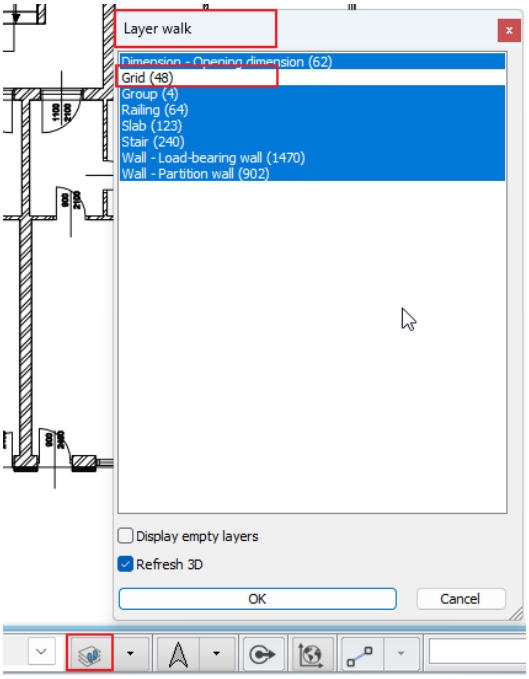
Draw a **rectangular contour** to define the **slab opening** as shown in the image below.



The staircase opening is now complete, allowing vertical connection between floors.

⚠️ **Important:** Always double-check that the opening aligns precisely with the stair position below to avoid mismatched geometry in 3D.

6.3. Modifying the First-Floor Model

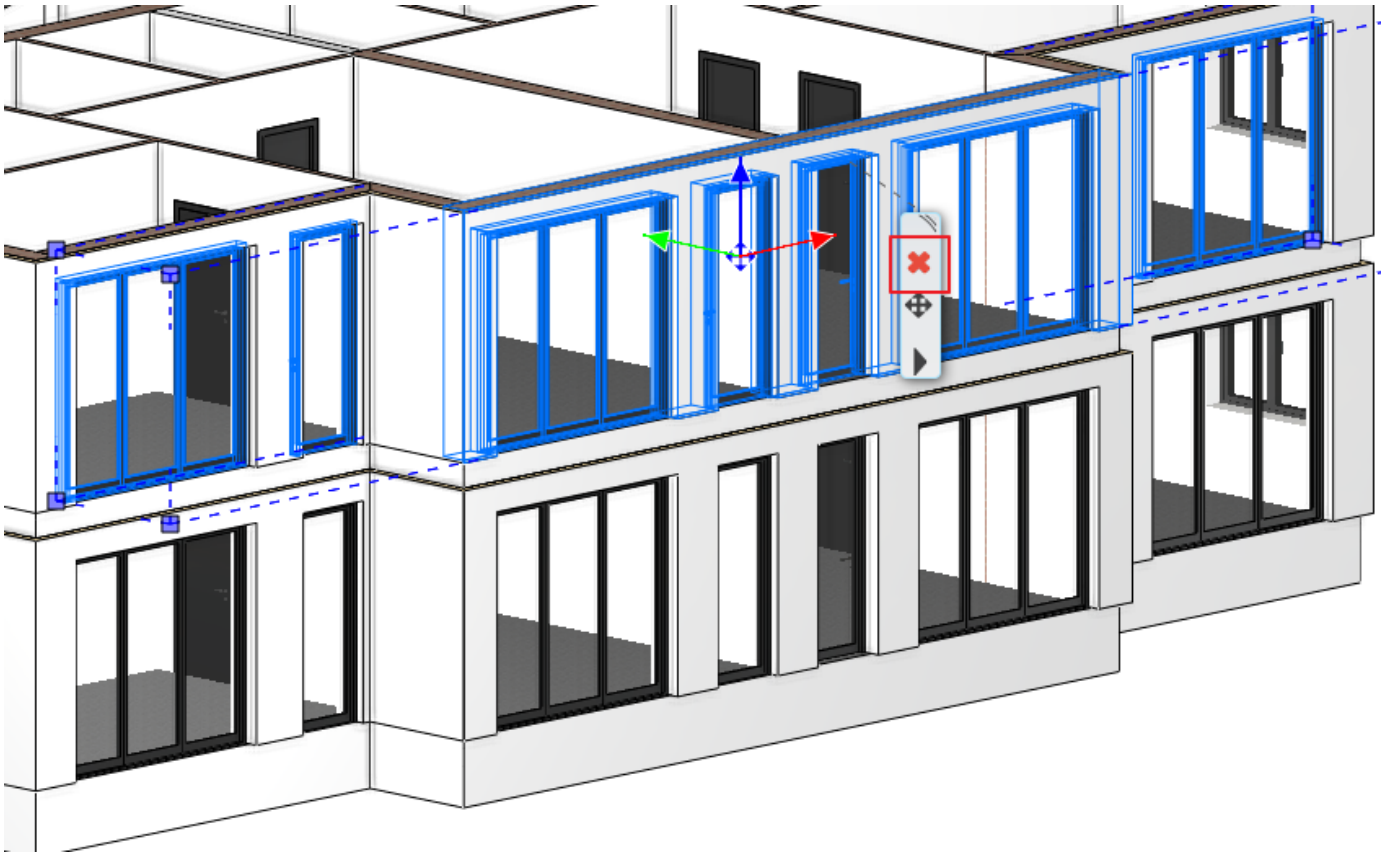


Now that the first floor has been created, we will make some adjustments to its layout and façades.
To do this, we first **delete the balcony doors**.
After that, we will **modify the facade walls** on the floor plan.

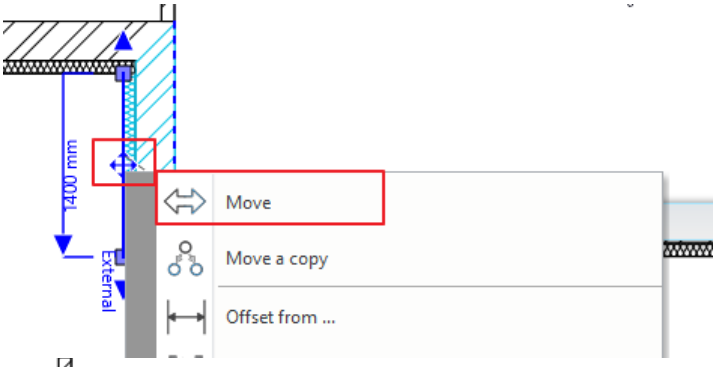
Before starting, **turn off the visibility of the** *Architectural Grid* layer, as we no longer need it for this stage of the work. To do this, make sure that the **floor plan view** is the **active window** before changing the layer visibility.

6.3.1. Delete the balcony doors

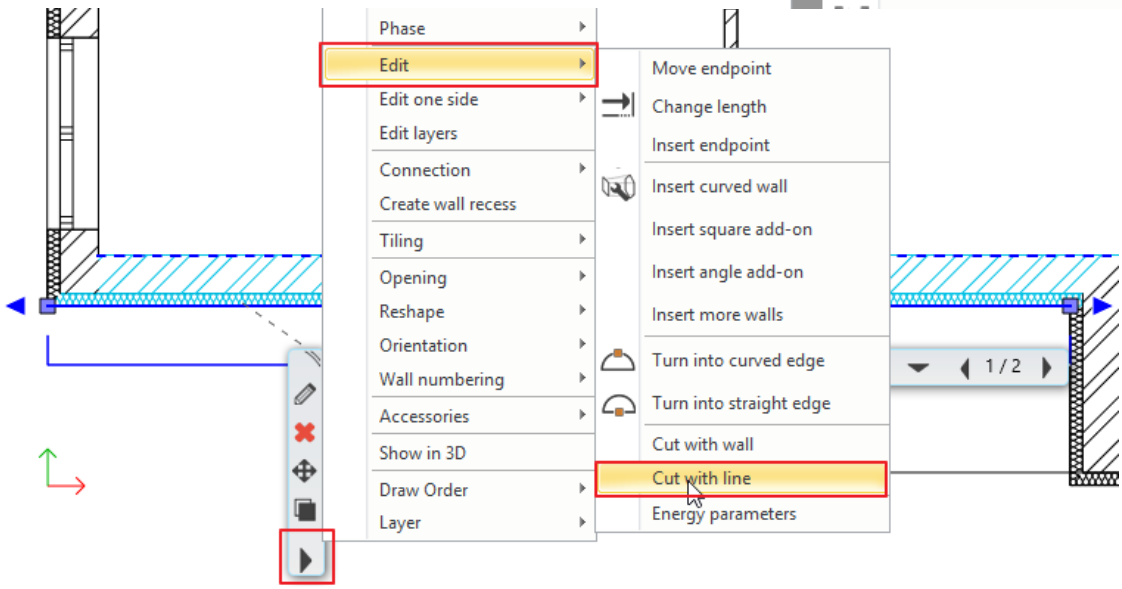
1. Switch on the **3D View**.
2. Delete the **balcony doors** that are not required on this floor.



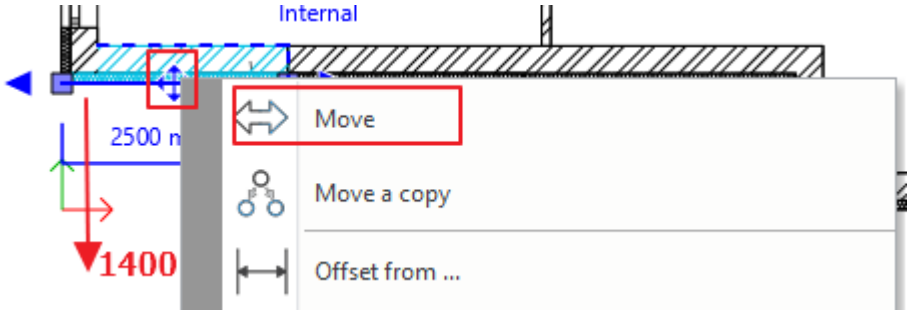
6.3.2. Editing the Walls and Slab



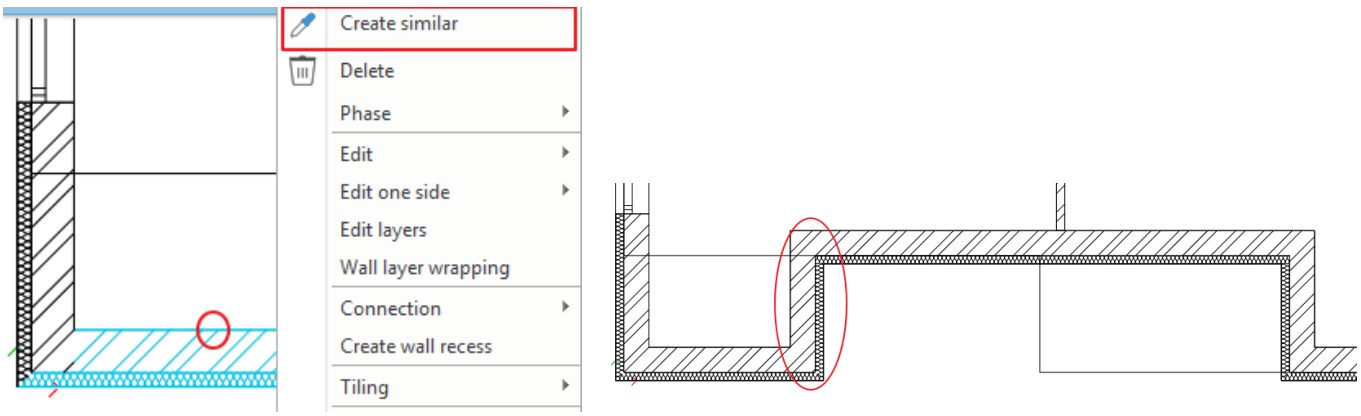
1. Make sure the 1st Floor View is active.
2. Select the wall and move it 3000 mm to the right.
3. Cut the left wall using a line, 2500 mm from its left endpoint, by applying the Reference Point option from the Status Bar.



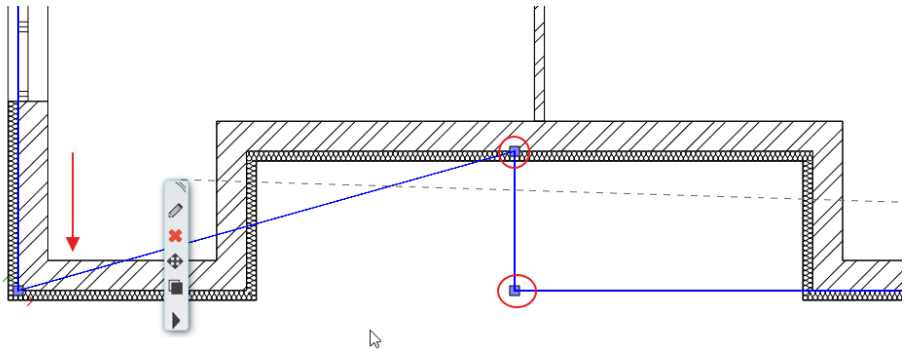
4. Move the first wall segment downward by 1400 mm.



5. Using the **Create Similar** command, connect the previous two wall segments with the **same wall type**.



6. Move the **left corner point** of the slab and delete the **other two corner points** to match the new wall layout.

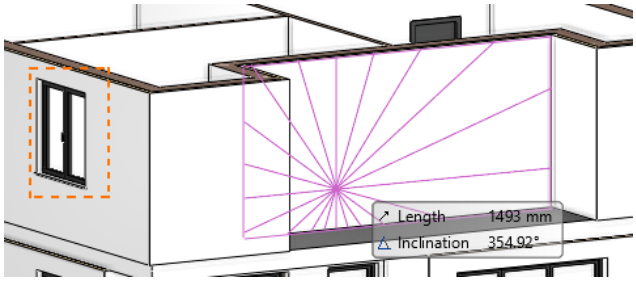


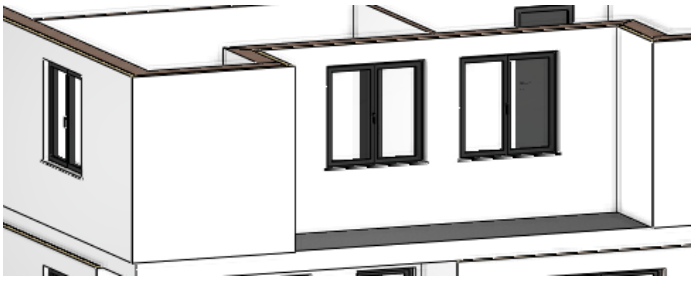
📝 **Note:** Adjusting the slab corner ensures proper alignment between the wall and floor edges in both plan and 3D views.

6.3.3. Placing Windows and Balcony Doors

Next, switch to the **3D view** to place new openings.

1. Select the **left-side window** and use the **Create Similar** command to insert **new windows** at the desired positions.
2. Modify their **distance from the wall corner** to **500 mm**.



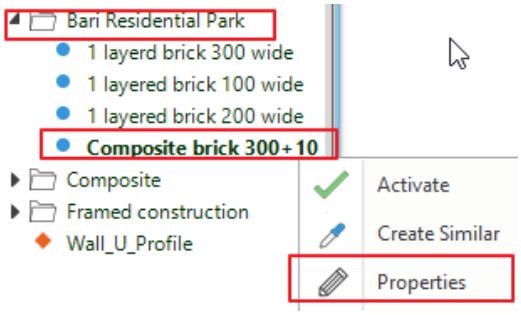


3. Add **two balcony doors** where required.
   If necessary, **change the reference point** before placement — just as you did earlier on the floor plan.

💡 **Tip:** Changing the reference point helps when placing mirrored or symmetrically positioned elements on facades.

6.3.4. Defining and Placing Balcony Wall

In the next step, we will create a **1,000 mm high composite balcony wall style** and place it on the balcony.

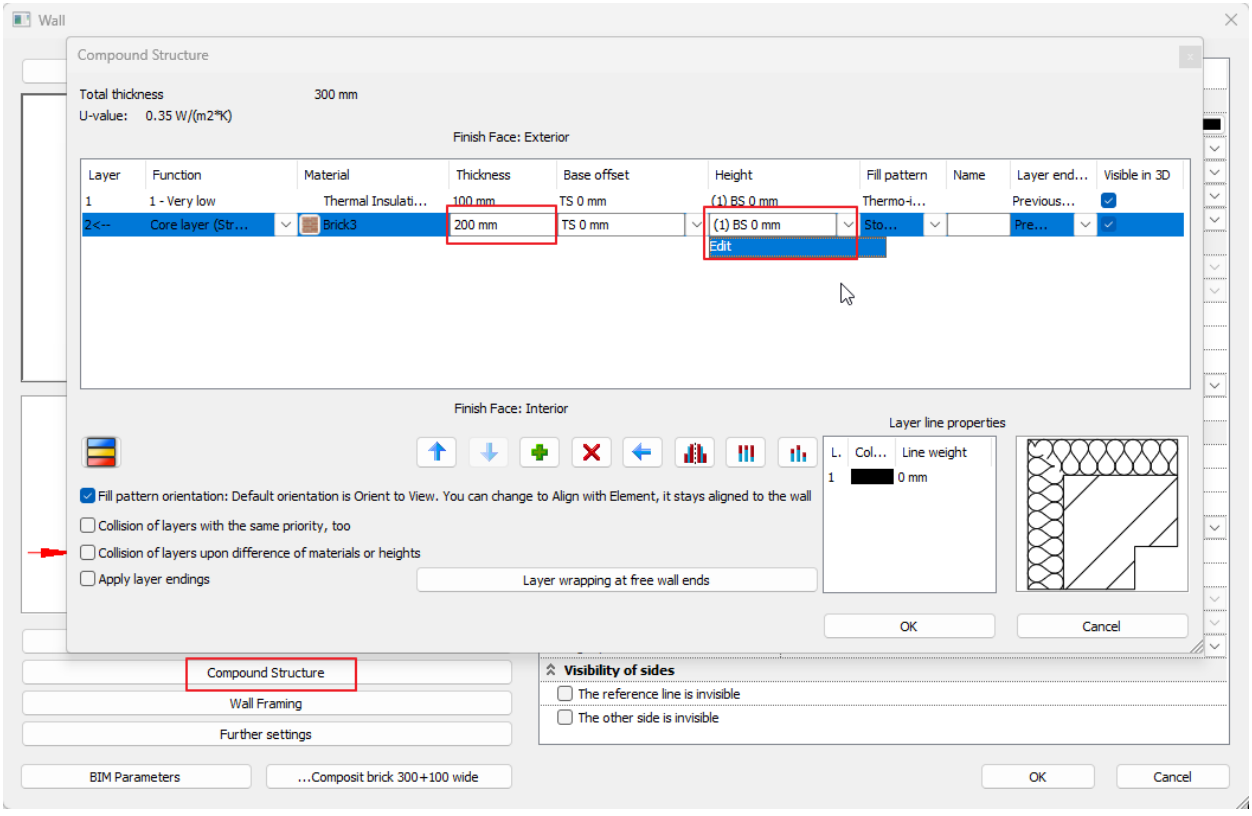


Steps to Define the Balcony Wall Style

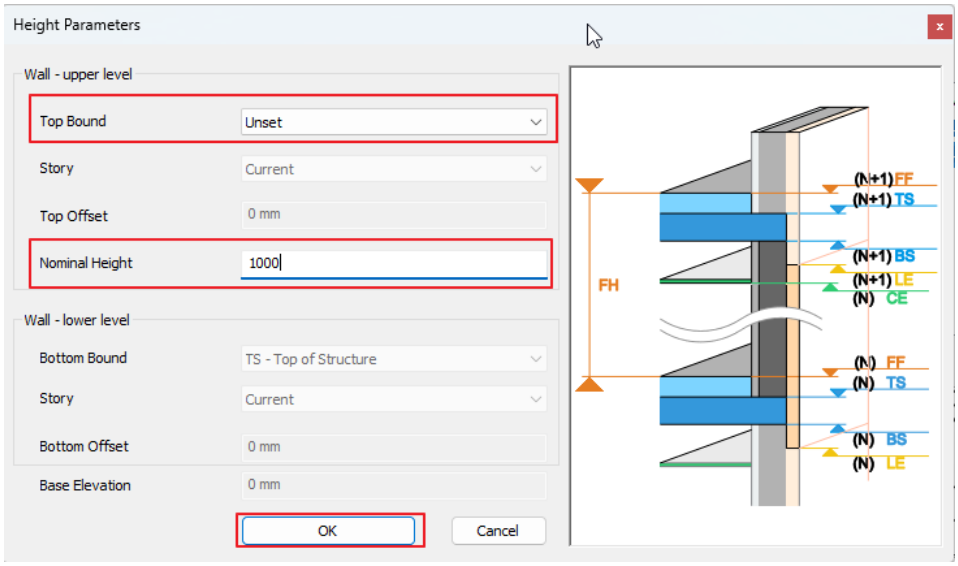
1. Open Side Menu → Styles→ Architectural element → Wall.
2. Right click on the the Bari Residental Park / **Composite brick 300+100 wide** wall style and choose Property.

The Wall Properties dialog appears.

3. Click on the **Compound Structure** button.
4. Change the **thickness** of the brick layer to 200 mm.
5. Edit the height of both layers by clicking **Edit**.

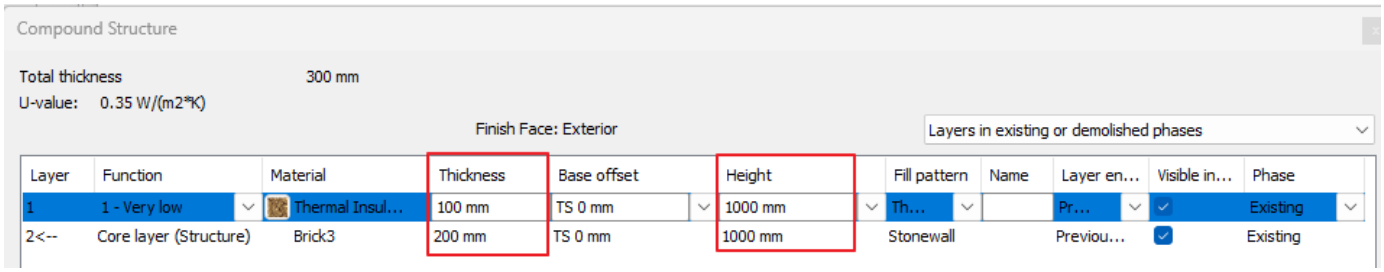


6. Change the **Top bound** to *Unset* and set the **Normal height** to **1000 mm**. Press **OK**.

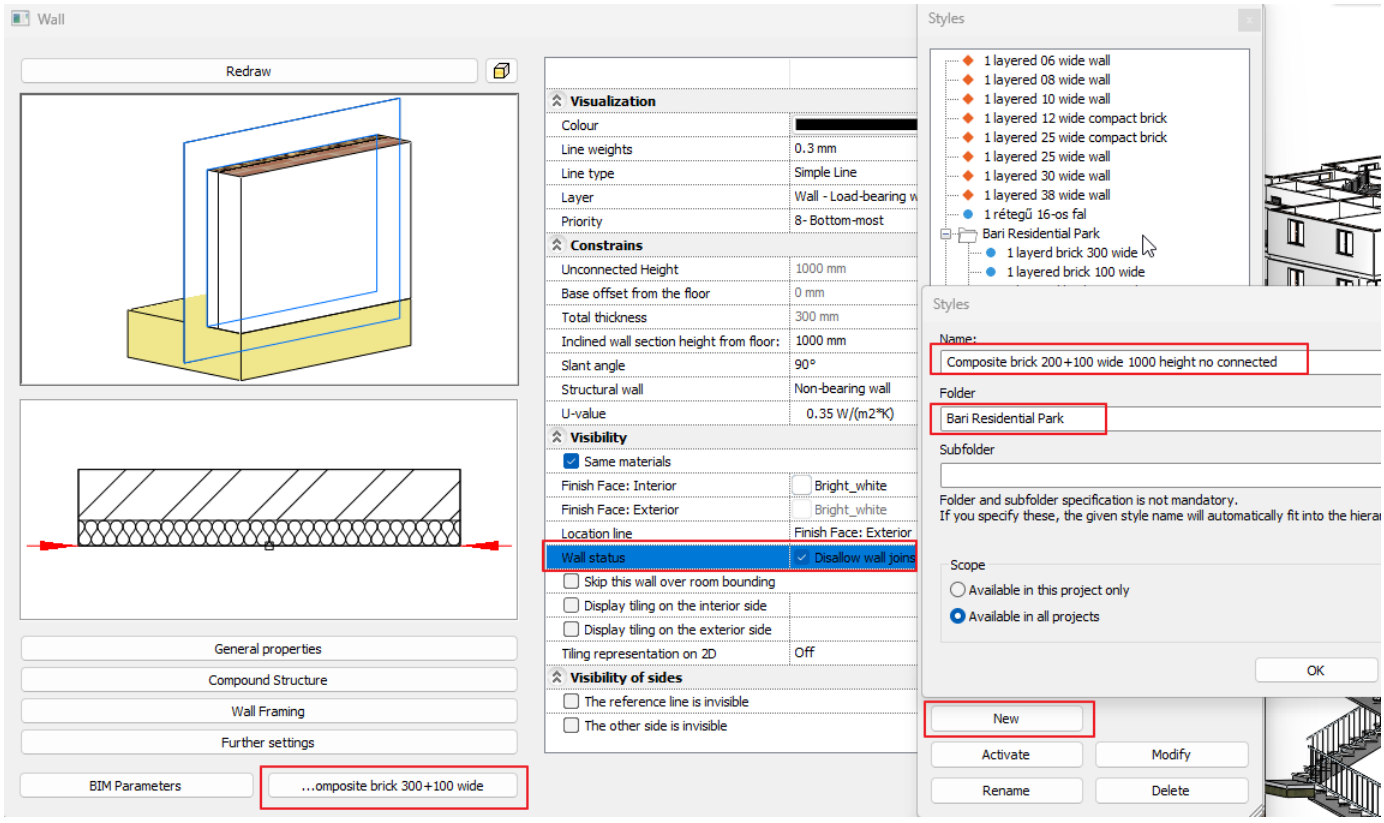


💡 **Tip:** Setting the top bound to *Unset* allows you to define a custom wall height independent from the story level.

See the result in the image below, then press **OK**.



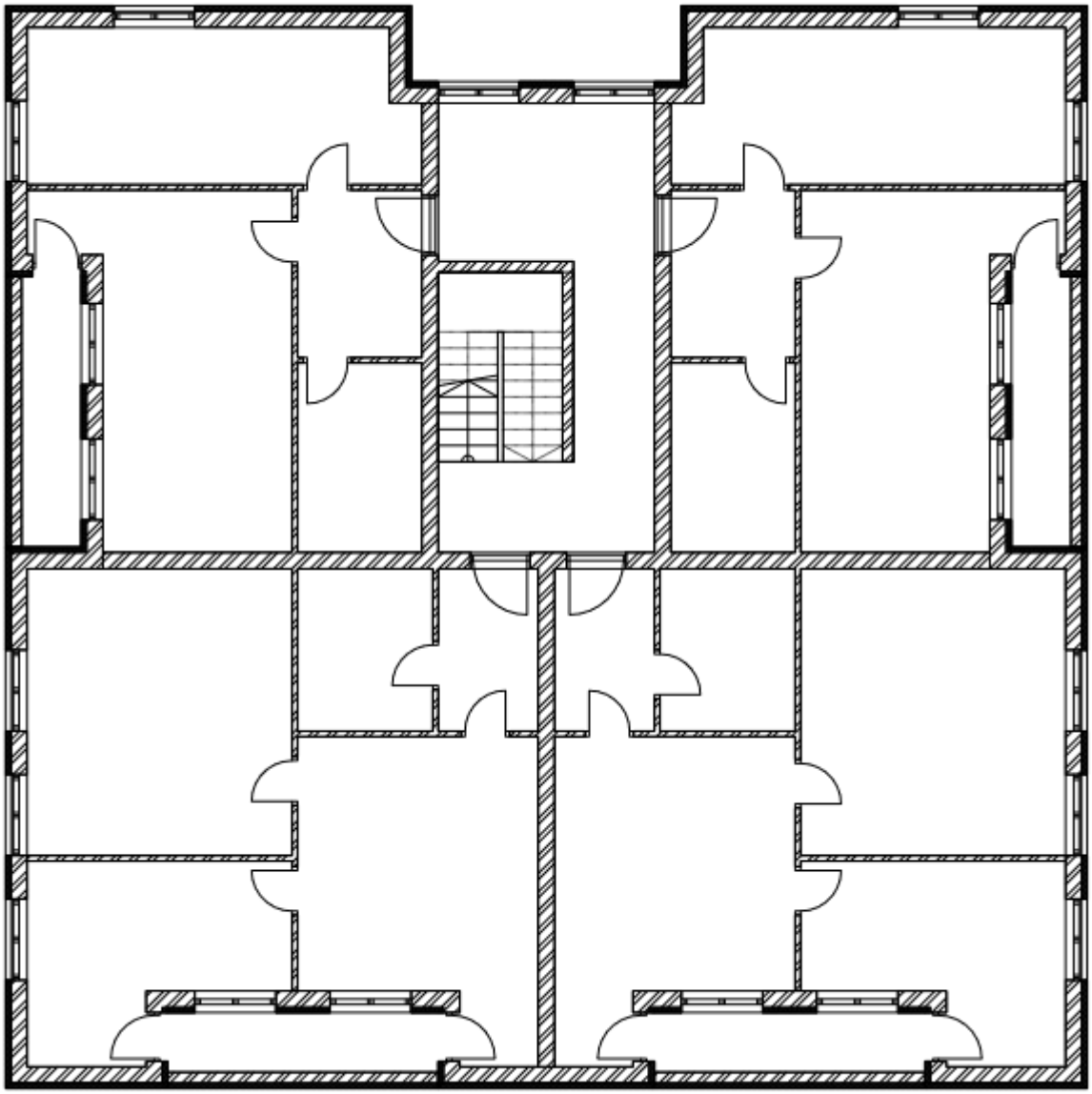
7. Turn on the **Disallow wall joins** option.
8. Save the new wall style with the name: **Composite brick 200+100 wide 1000 height no connected**



9. Draw the wall on the balcony using this new style.

Independent Exercise

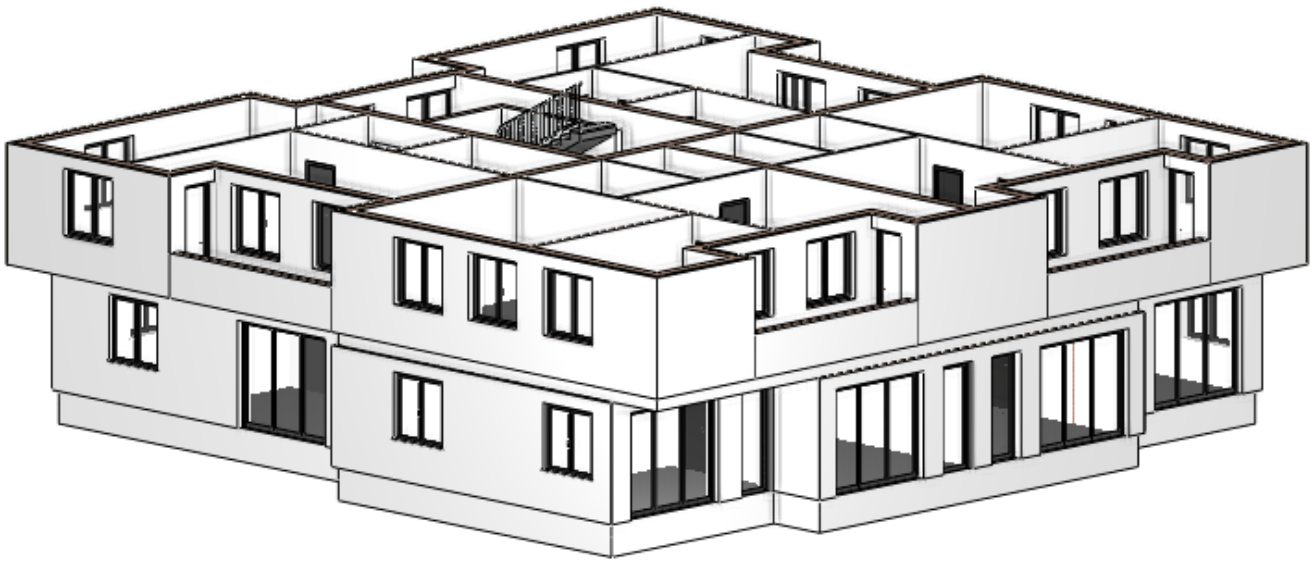
Continue designing the **balconies** according to the layout shown below.



Reviewing the Result

This completes the **modification of the first floor**.
You can now see the **final model** with correctly adjusted walls, slab, and facade openings.

10. ! **Remember:** Save your progress under a new file name (for example, *Bari_06*) to preserve your project before moving on to the next steps.



7. Workshop: Sections & Level Parameters

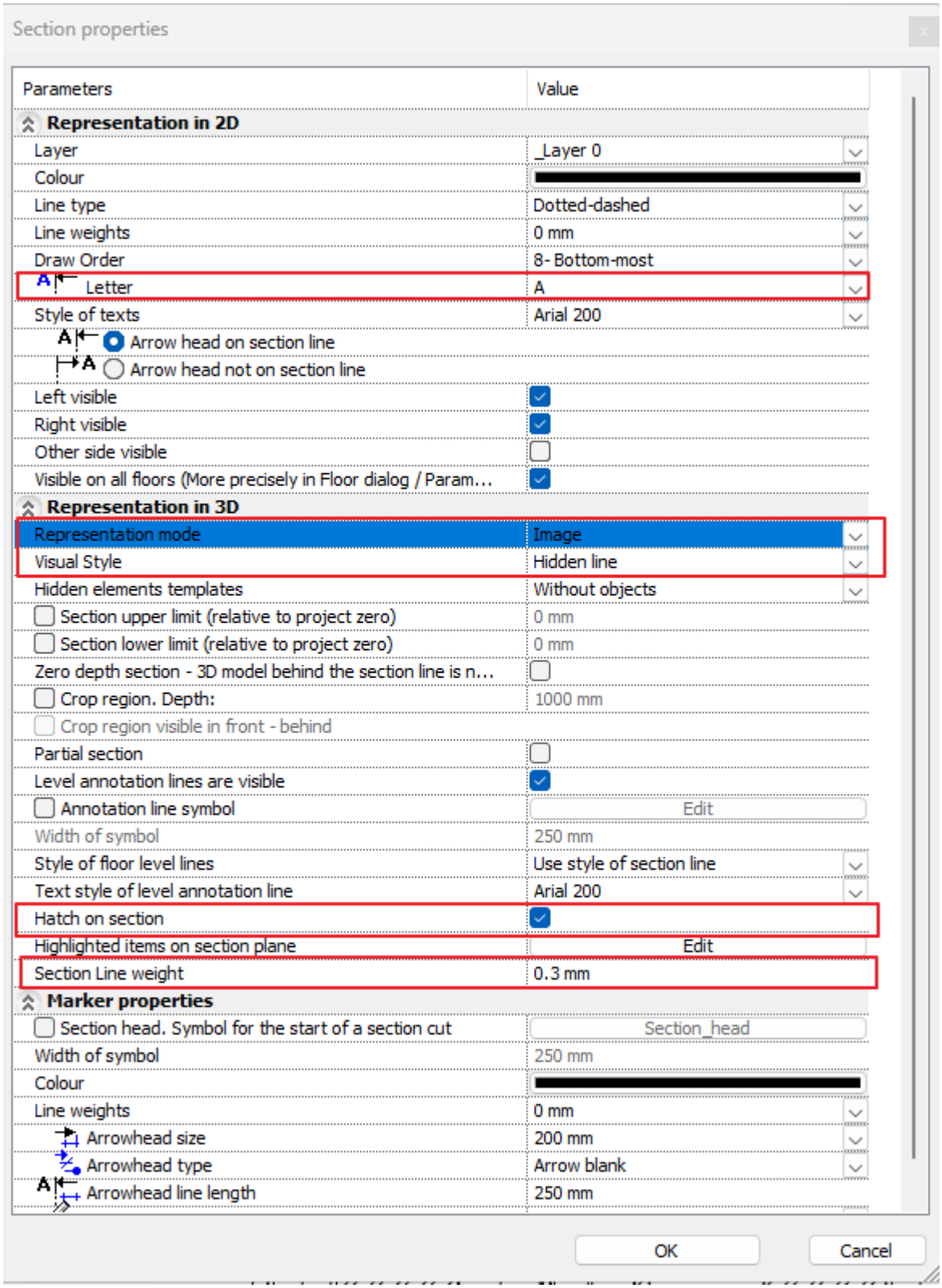
In this workshop, we will create and analyze section views to identify and correct wall connection issues using level parameters.

- Creating A & B section views
- Identifying problems with wall connections
- Adjusting Top/Bottom of Structure (TS/BS) parameters
- Updating all walls via Style Manager

7.1. Creating the Section

1. Go to the **Documentation** tab and choose **Section**.
2. In the **Section Properties** dialog, set up the following:
    - Section letter: **A**
    - **Section Type:** *Image section*
    - Representation: *Hidden line*
    - **Hatch on section:** *switch on*
    - **Line Thickness:** *0.3 mm*

💡 **Tip:** You can also choose a *vector section* if you need a vector drawing. For now, we'll use an *image section* for faster display performance.



Drawing the Cutting Line – Section "A"

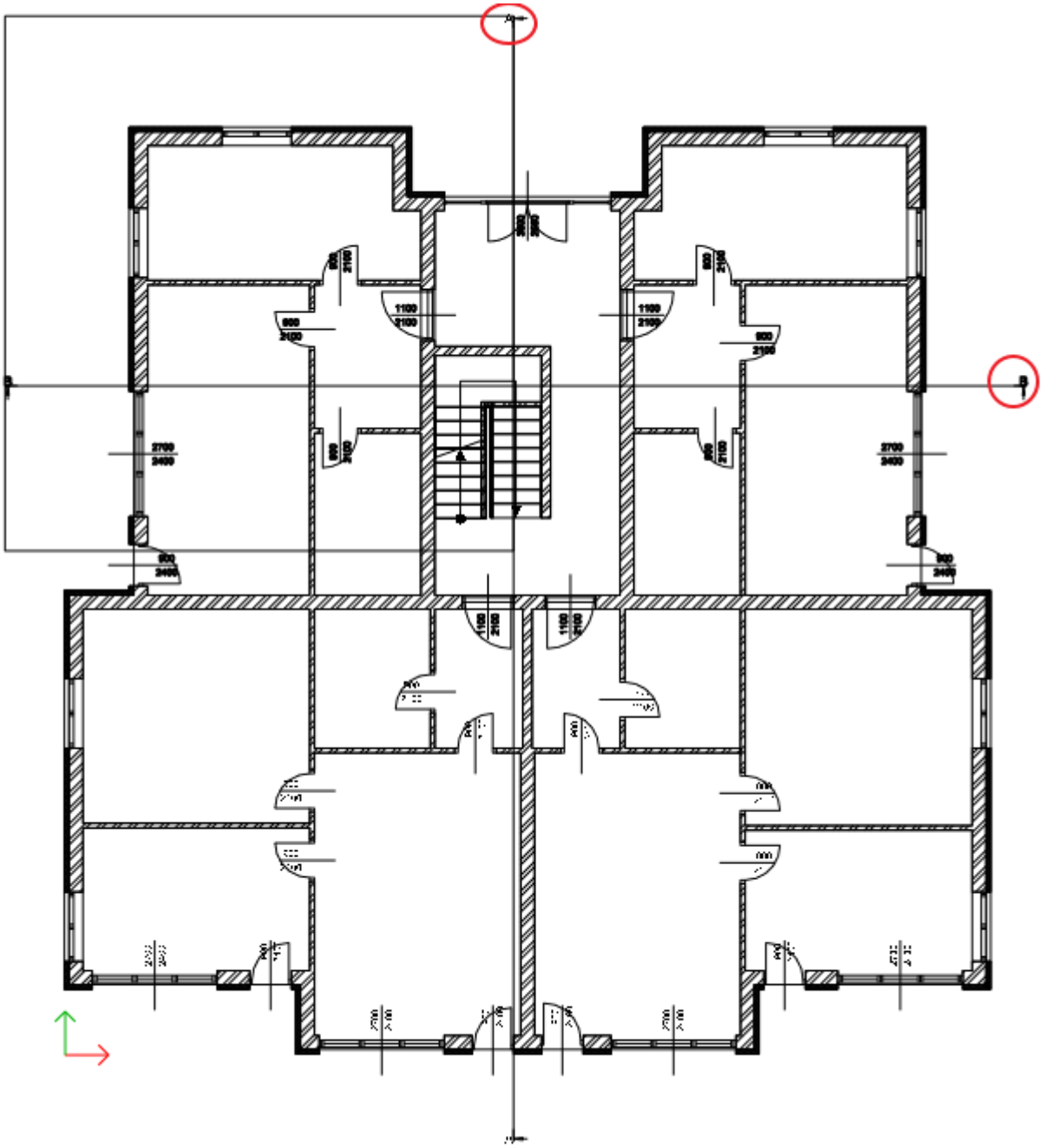
1. Draw the **cutting line** through the building where you want to see the cross section.
2. Label it as **Section A–A**.
3. Specify the **view direction** by clicking on the side you want the section to look toward.

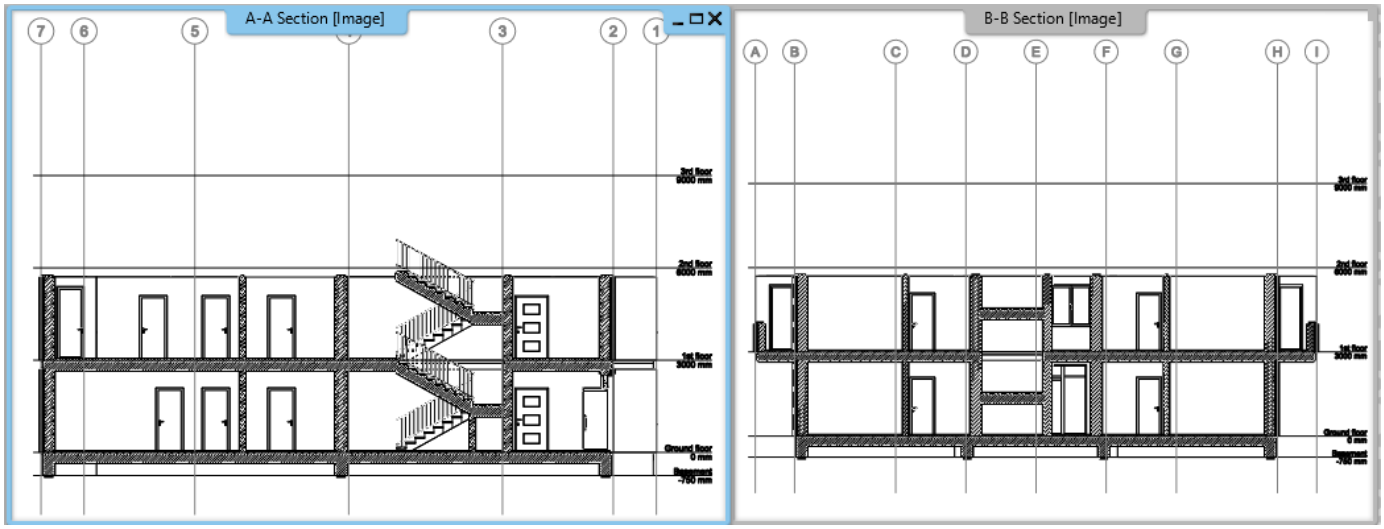
📝 **Note:** The arrows on the cutting line show the direction in which the section is viewed.

Creating Section "B"

Repeat the same steps to create **Section B–B.**

Both section drawings are now ready.





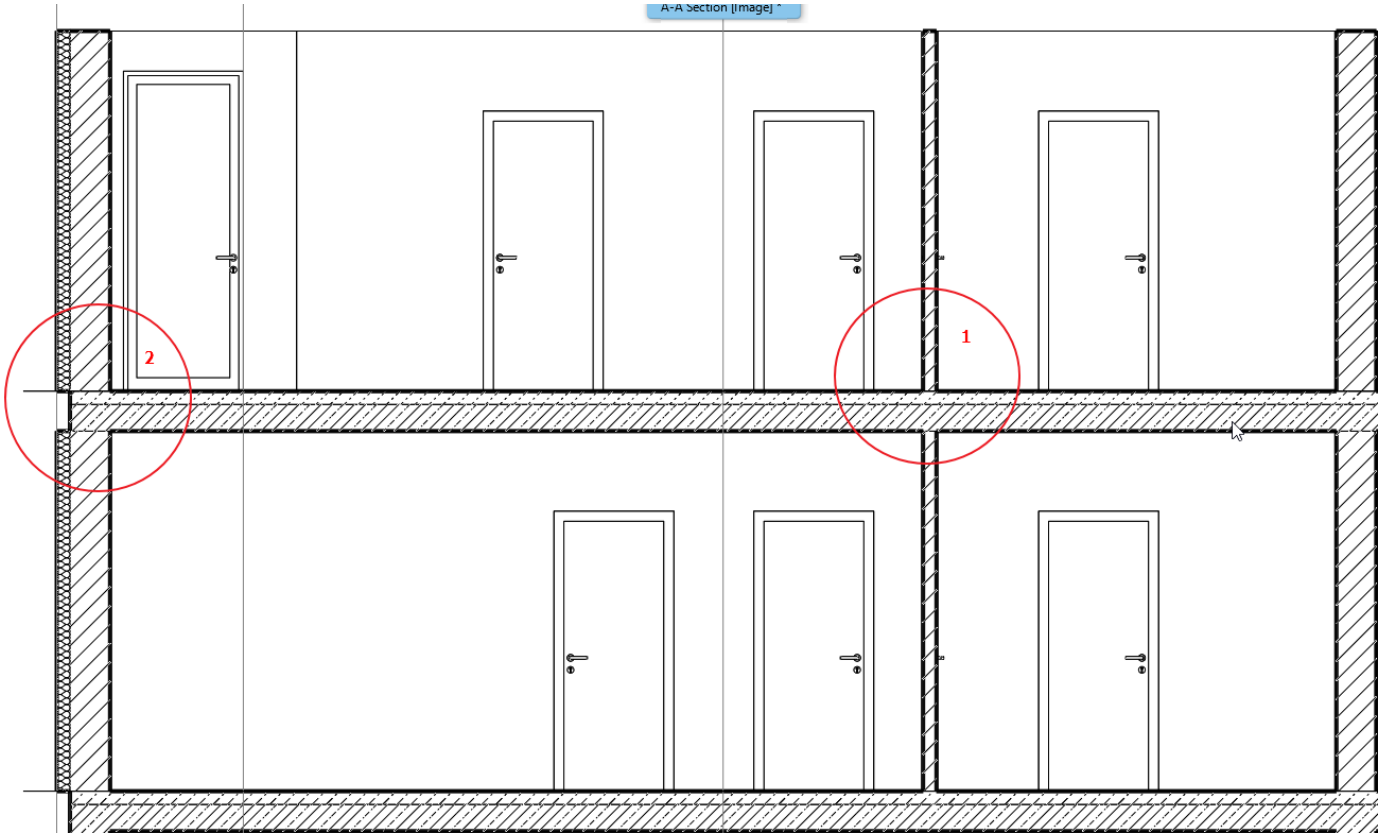
7.2. Inspecting the Section

Open **Section A** to review it in detail. You may notice a few issues:

- The load-bearing walls and partitions are positioned on the base concrete, instead of the load-bearing layer.
- The insulation wall layer does not extend down to the bottom of the slab.
- The base concrete layer of the slab extends under the load-bearing layer of the exterior wall.

⚠️ **Important:**

These construction errors affect how the building transfers loads and maintains insulation continuity.

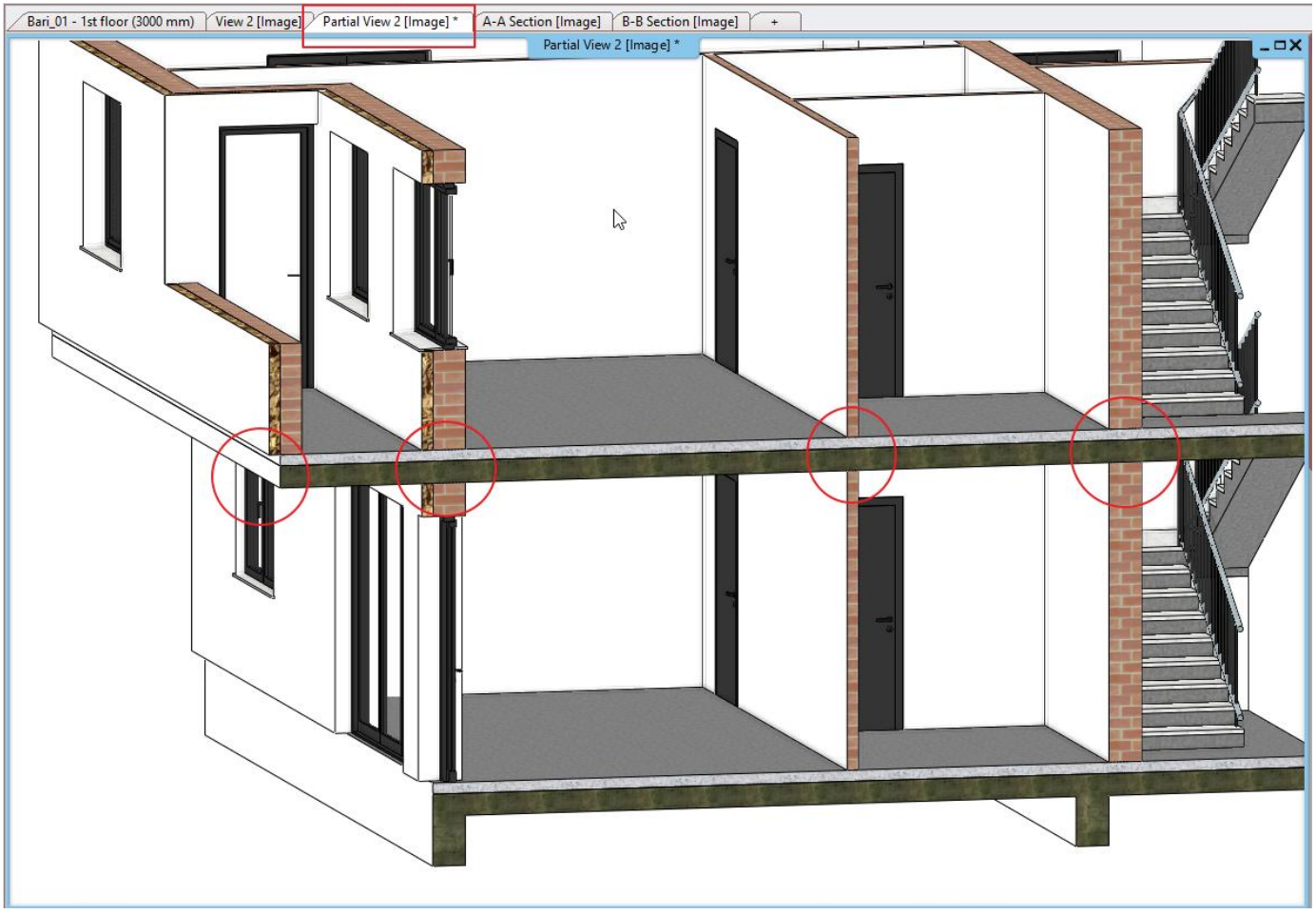


⚠ **Important:**
If the **section hatch** does not match the example shown above, check the **Hatch on Section** settings in the **Material Properties** dialog to ensure that each wall layer material has the correct hatch pattern assigned.

Using the Cut-Away 3D View/Partial View

Now switch to **Partial View** to visualize the problem areas in the 3D model.
Observe how the walls and insulation layers are positioned relative to the slab.

❗ **Remember:** The 3D cut-away is an excellent diagnostic tool. Use it often to verify the correctness of your design before continuing with adjustments.

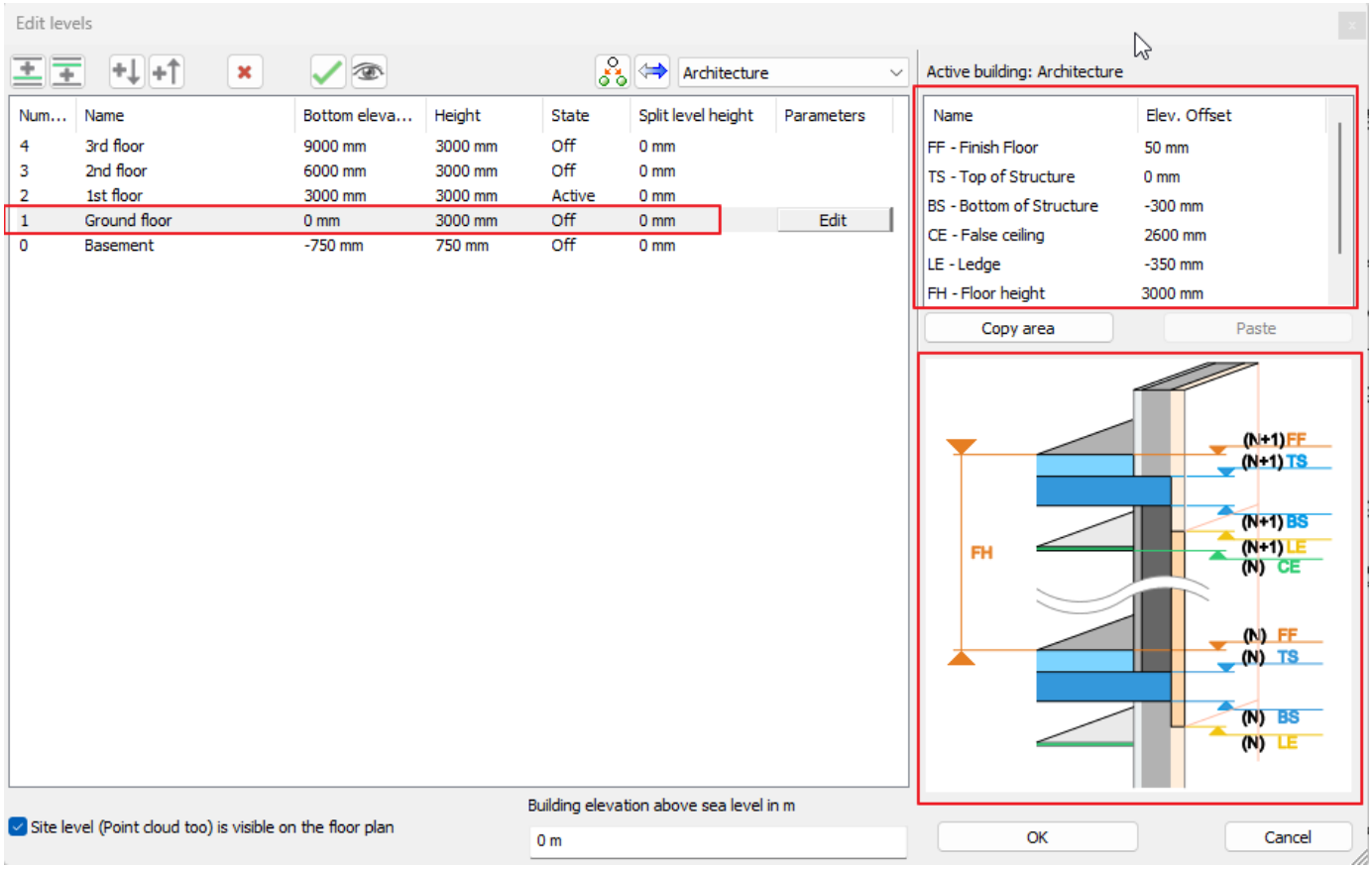


7.3. Adjusting Level Parameters (TS / BS) and Wall/Slab parameters

In **ARCHLine.XP**, we use a **parametric level structure**.
In the **Level Structure** dialog, you can view all **parameters linked to the active level**.

These parameters control how the **walls and slabs** are positioned and connected to the level's reference points.
On the **right side**, you can see the **names of the connection points**, and their **heights** can be adjusted using the **preview image**.

These connection points can later be **assigned to wall and slab layers** in the **Properties Manager**.



Common Level Parameters

Code	Meaning	Description
FF	Floor Finish	Level of the top finish layer
TS	Top of Structure	Top of the load-bearing layer
BS	Bottom of Structure	Bottom of the load-bearing layer
FS	False Ceiling	Level of suspended ceiling
LE	Ledge	Extension of the wall insulation layer
FH	Floor Height	Total level height

7.3.1. Solving Problem 1 - Wall Position on the Slab

As we saw in the section view, the load-bearing walls and partitions are positioned on the base concrete instead of the load-bearing layer.
Now, let’s solve this problem.

Reviewing the Ground Level

Now the **Ground Floor** is the active level.
Let’s focus on the **TS (Top of Structure)** and **BS (Bottom of Structure)** parameters:

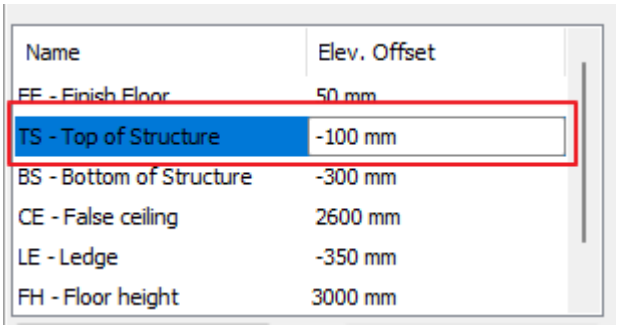
- **TS – Top of Structure:** Defines the top of the load-bearing layer.
- **BS – Bottom of Structure:** Defines the bottom of the load-bearing layer, relative to the level's zero height.

In our case:

- **BS = –300 mm**, which is correct because the slab thickness is **300 mm** (200 mm concrete + 100 mm base concrete).
- **TS = 0 mm**, which causes the **walls to stand on top of the base concrete** instead of the load-bearing layer.

⚠️ **Important:**
To correct this, set the **TS parameter to –100 mm**.
This ensures the **load-bearing layer is positioned exactly one base-concrete thickness lower**.

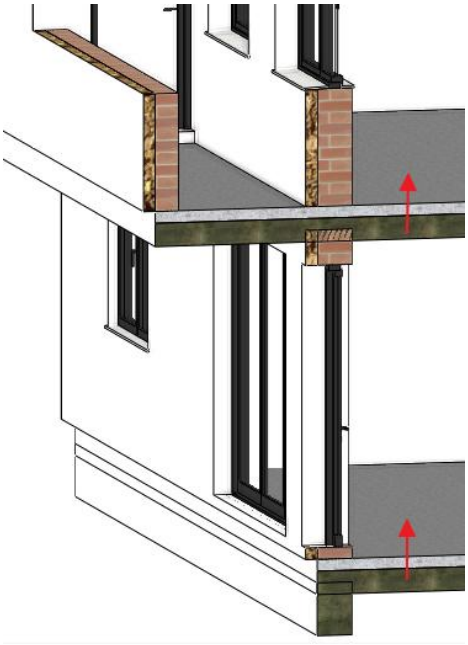
Apply the same **TS = –100 mm** setting on the **1st Floor** as well.

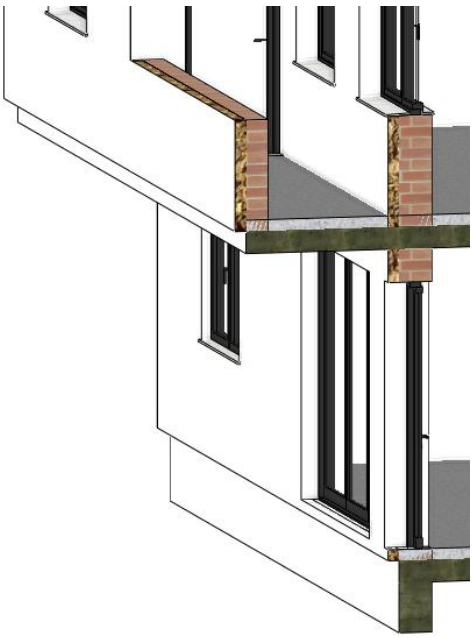


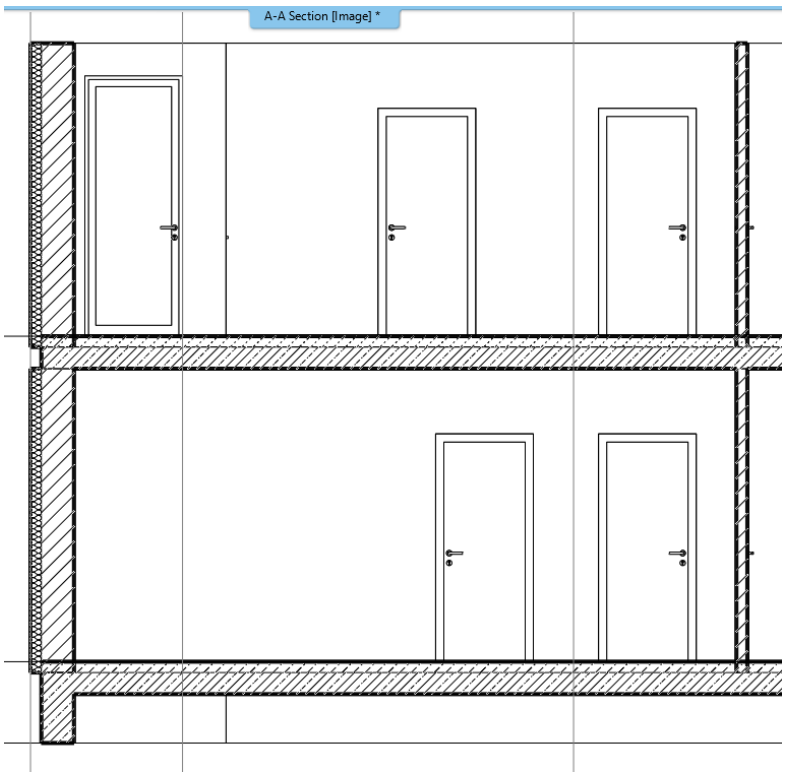
Adjusting the Slab Position

When the **TS value changes**, the **slabs automatically shift 100 mm lower**.
To restore their correct position, **reset the relative height of the slab** to **0 mm** on **both levels**.

💡 **Tip:**
Always verify slab positions in both **section** and **3D views** after adjusting level parameters.
This helps ensure consistent wall–slab connections across all levels.







Checking the Result

After the adjustment, the **first problem is solved**. The **walls now rest correctly on the load-bearing structure**, as intended.

7.3.2.Solving Problem 2 – Wall Insulation Base

Now we'll address the **second problem**, which concerns the **bottom of the wall insulation**.

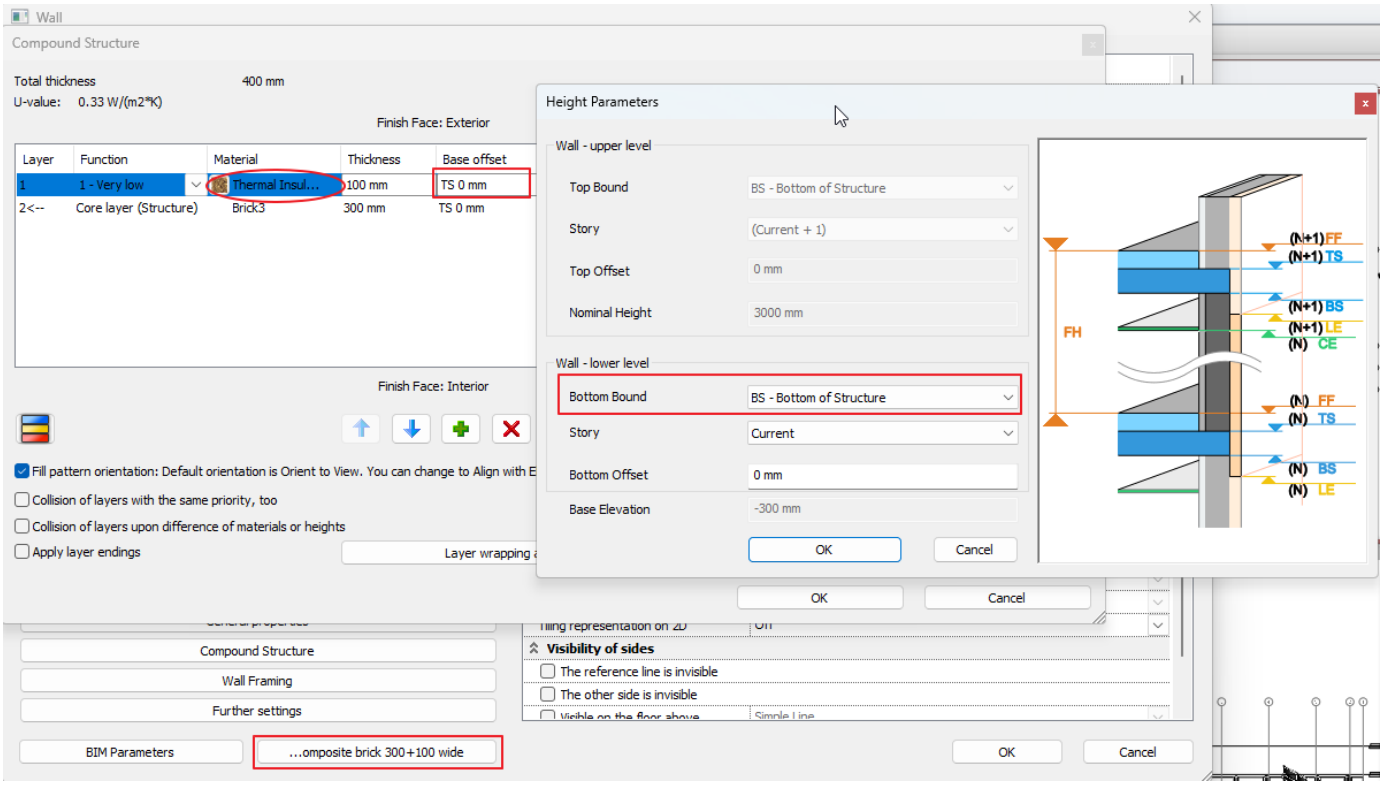
Adjusting the Exterior Wall Insulation Base

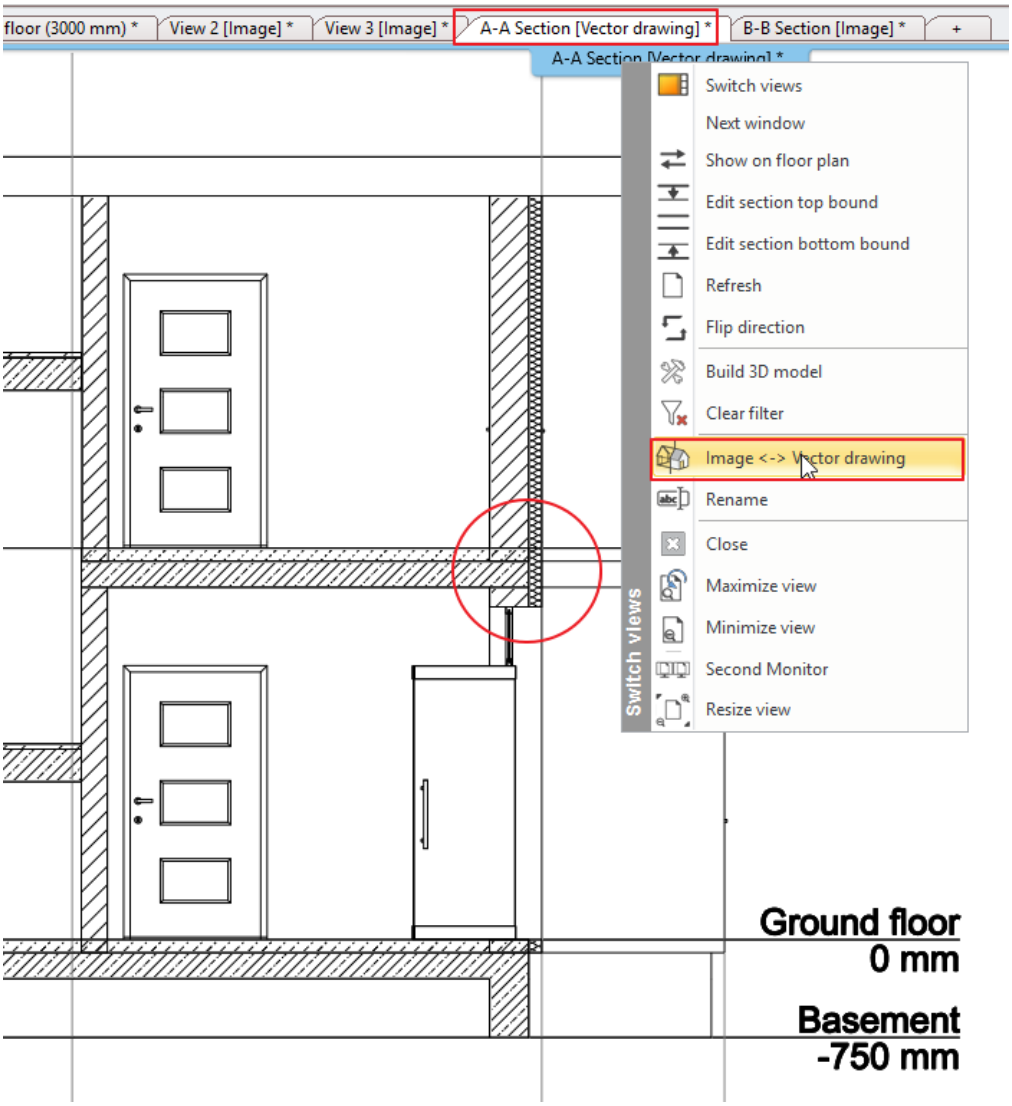
Let's examine the **layer structure** of the **exterior wall** by clicking on one of them.
Currently, the bottom of the insulation is linked to the **TS (Top of Structure)** parameter in the **Properties dialog**.
This should be changed to **BS (Bottom of Structure)** so that the insulation layer extends down to the bottom of the slab.

The **top of the insulation** is already correctly set — it reaches the **bottom of the slab on the level above**.

Once the change is complete, **update the wall style** (Composite brick 300+100 wide) to apply the modification.

💡 **Tip:**
After applying the change, check the section view — you'll see that the **insulation of the wall now reaches the bottom of the slab**, as intended.


Wall
Compound Structure
Total thickness 400 mm
U-value: 0.33 W/(m2*K)
Finish Face: Exterior
Layer Function Material Thickness Base offset
1 1 - Very low Thermal Insul... 100 mm TS 0 mm
2<-- Core layer (Structure) Brick3 300 mm TS 0 mm
Finish Face: Interior
Fill pattern orientation: Default orientation is Orient to View. You can change to Align with E
Collision of layers with the same priority, too
Collision of layers upon difference of materials or heights
Apply layer endings
Layer wrapping
Compound Structure
Wall Framing
Further settings
BIM Parameters
...omposite brick 300+100 wide
OK
Cancel
Visibility of sides
The reference line is invisible
The other side is invisible
Height Parameters
Wall - upper level
Top Bound BS - Bottom of Structure
Story (Current + 1)
Top Offset 0 mm
Nominal Height 3000 mm
Wall - lower level
Bottom Bound BS - Bottom of Structure
Story Current
Bottom Offset 0 mm
Base Elevation -300 mm
OK
Cancel
FH
(N+1) FF
(N+1) TS
(N+1) BS
(N+1) LE
(N) CE
(N) FF
(N) TS
(N) BS
(N) LE


floor (3000 mm) *
View 2 [Image] *
View 3 [Image] *
A-A Section [Vector drawing] *
B-B Section [Image] *
+
A-A Section [Vector drawing] *
Switch views
Next window
Show on floor plan
Edit section top bound
Edit section bottom bound
Refresh
Flip direction
Build 3D model
Clear filter
Image <-> Vector drawing
Rename
Close
Maximize view
Minimize view
Second Monitor
Resize view
Switch views
Ground floor
0 mm
Basement
-750 mm

💡 **Tip:**
For better visibility, switch the **section view** from *image* to *vector* mode, then **refresh the section** by clicking the **Quick 3D Model** icon.

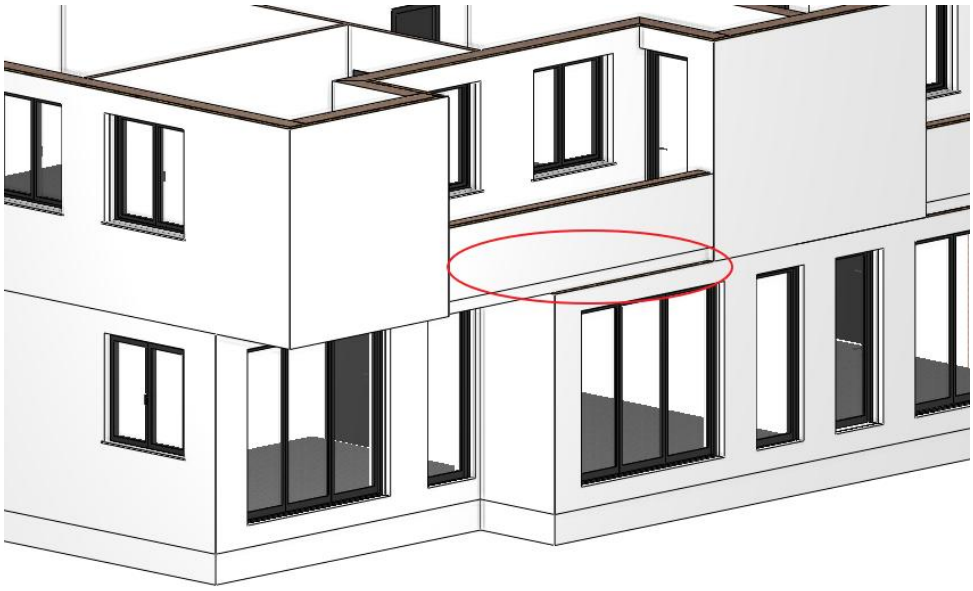
Updating All Exterior Walls

Switch to the **full 3D model** to confirm the results.
You'll notice that **the other exterior walls** also need the same adjustment.

The easiest way to apply it to all of them:

1. Open the **Style Manager** on the left panel.
2. Select the **modified wall style (**composite brick 300+100 wide).
3. Right-click and choose **"Update all instances."**

The change is now applied to **all exterior walls** in the project, **except for the balcony parapet walls**.

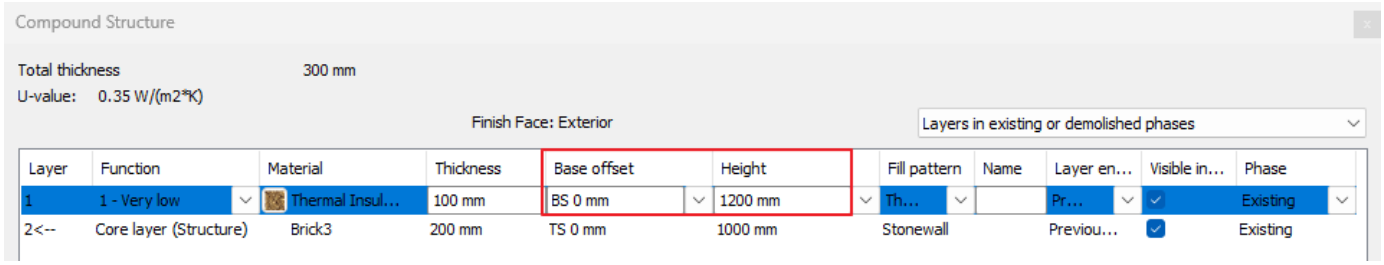


Modifying Parapet Walls on Balconies

Let's also modify the **parapet walls** on the balconies.
Here, too, replace **TS (Top of Structure)** with **BS (Bottom of Structure)**.

However, note the difference:
The **wall height** is not linked to a connection point but is defined by a **fixed value** — *1000 mm*.

In this case, the **height of the insulation layer** must be **increased by 200 mm**, making the total **1200 mm**.



After adjusting, **update the wall style**, and again use **"Update all instances"** in the **Style Manager**.

📝 **Note:**
This ensures consistency across all parapet walls without having to edit each one manually.

7.3.3. Solving Problem 3 – Adjust Slab contour

The base concrete layer of the slab extends under the load-bearing layer of the exterior wall.

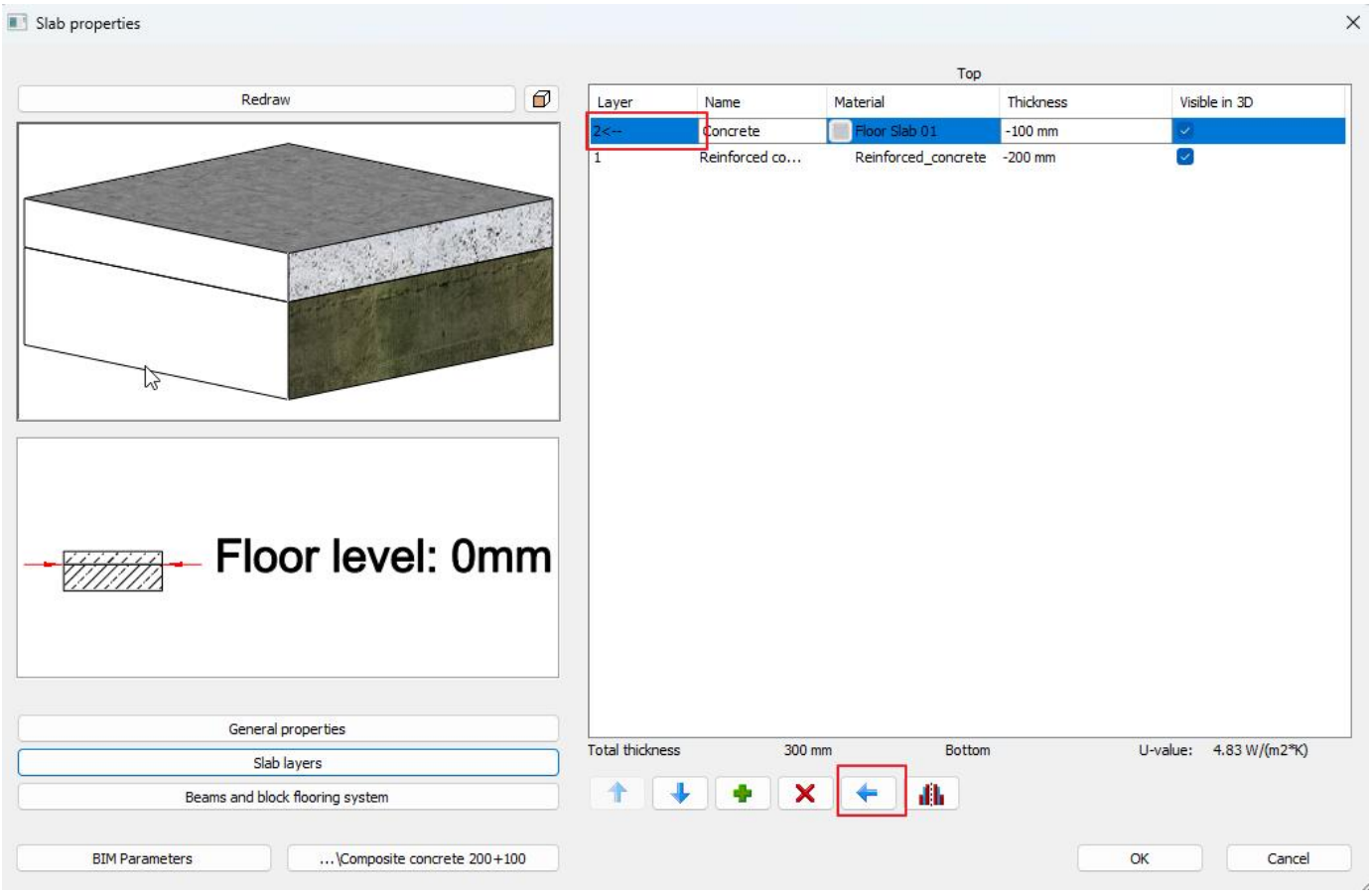
Now, let's solve this problem.

We have already modified the slab contour, but now we will adjust **only the contour of the base concrete layer**. This will be done in **one step**: we will **offset it inward by 300 mm**, corresponding to the **thickness of the brick structural layer** of the exterior wall.

Then, for the **balconies**, we will adjust the contour **individually**, since the brick wall there is only **200 mm thick**.

7.3.4.Adjusting the Base Concrete Contour

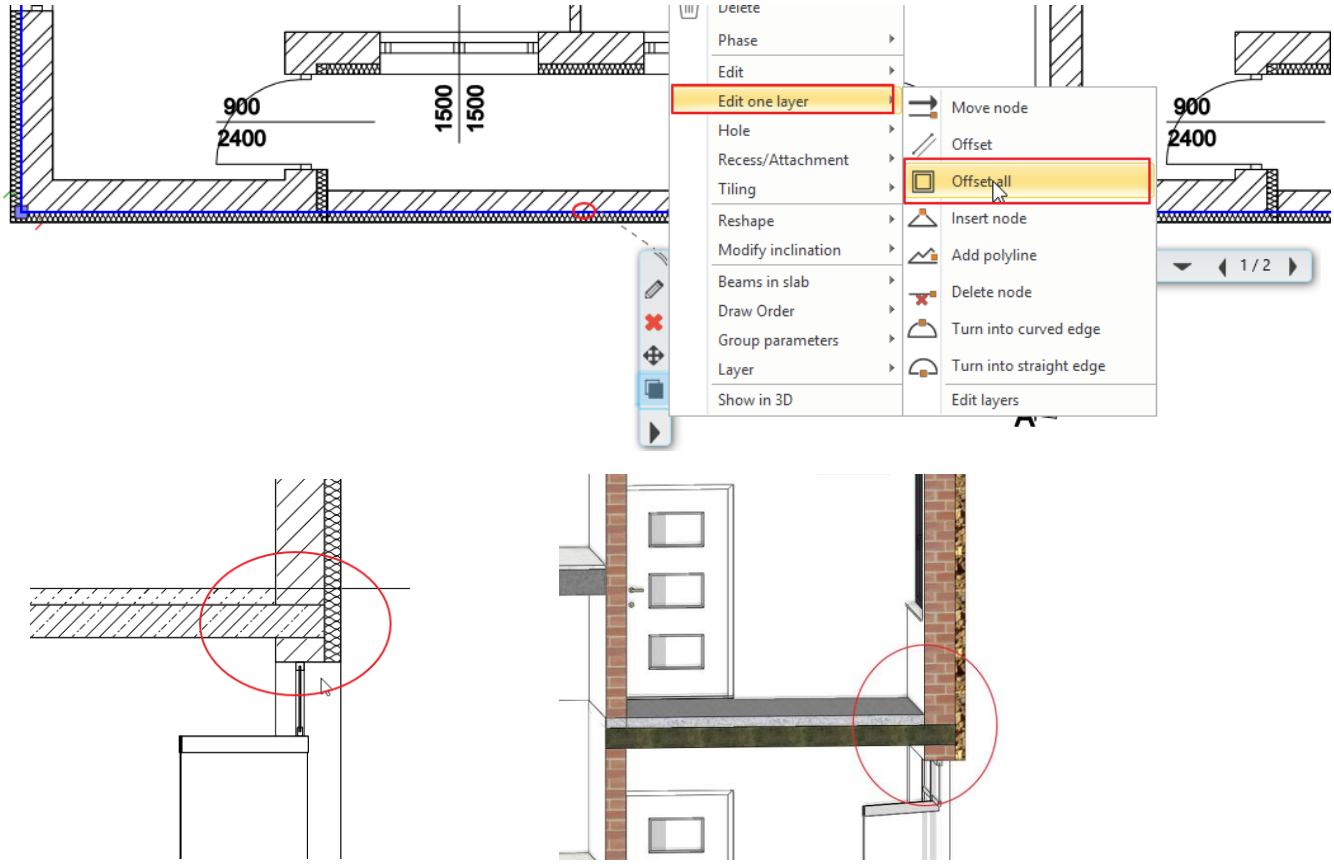
1. In the **Slab Properties dialog**, set the **displayed layer** of the slab to **Layer 2 (base concrete)**.



2. Click on the slab, and from the **context menu**, choose **Edit one layer → Offset All**.
3. Move the cursor **toward the interior of the building** and enter the offset value: **300 mm**.

💡 **Tip:**
Modify the contour of the base concrete layer of the **ground floor slab** in the same way as described above, to ensure consistency across all levels

The slab contour is now offset **300 mm inward** around the building.

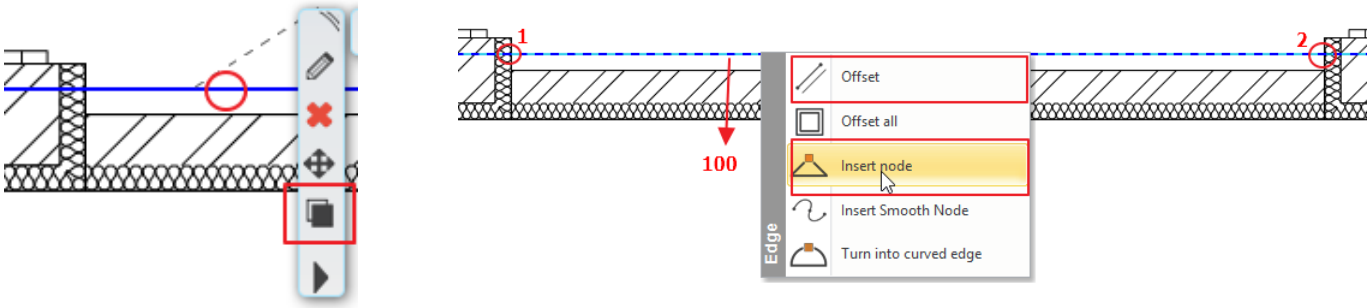


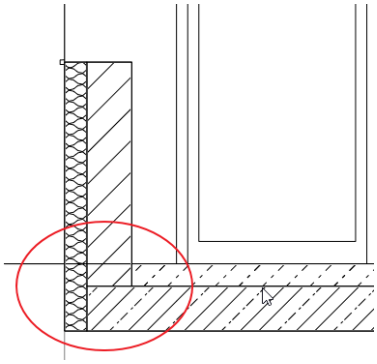
7.3.5. Adjusting the Balcony Slabs

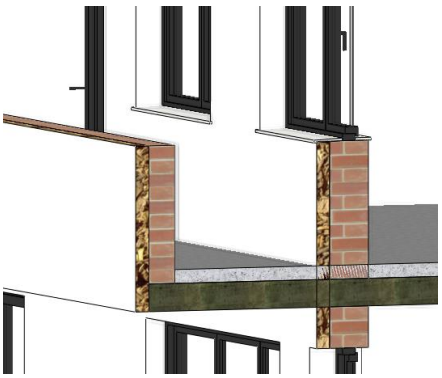
On the balconies, the **base concrete contour** must be offset **back by 100 mm**.
To do this, we'll use a **different editing method**:

1. Click on the **balcony slab**, and from the **marker menu**, select the **Composite** icon.
2. Click again on the contour, then insert **two points** using the **Insert Node** command.
3. Move the **segment between the two points** by **100 mm** using the **Offset** command.
4. Repeat this process for the **other three balconies**.

💡 **Tip:**
Using the **Insert Node** and **Offset** tools together gives you precise control over local contour adjustments — ideal for balconies or irregular slab edges.







📝 **Note:**
Don't forget — in the **Slab Properties** dialog, set the **displayed layer** of the slab to **Layer 1 (Reinforced Concrete)**.

Rebuilding the 3D Model

Once all changes are made, **rebuild the entire model in 3D**.
This process updates all geometry and removes any overlapping surface intersections.

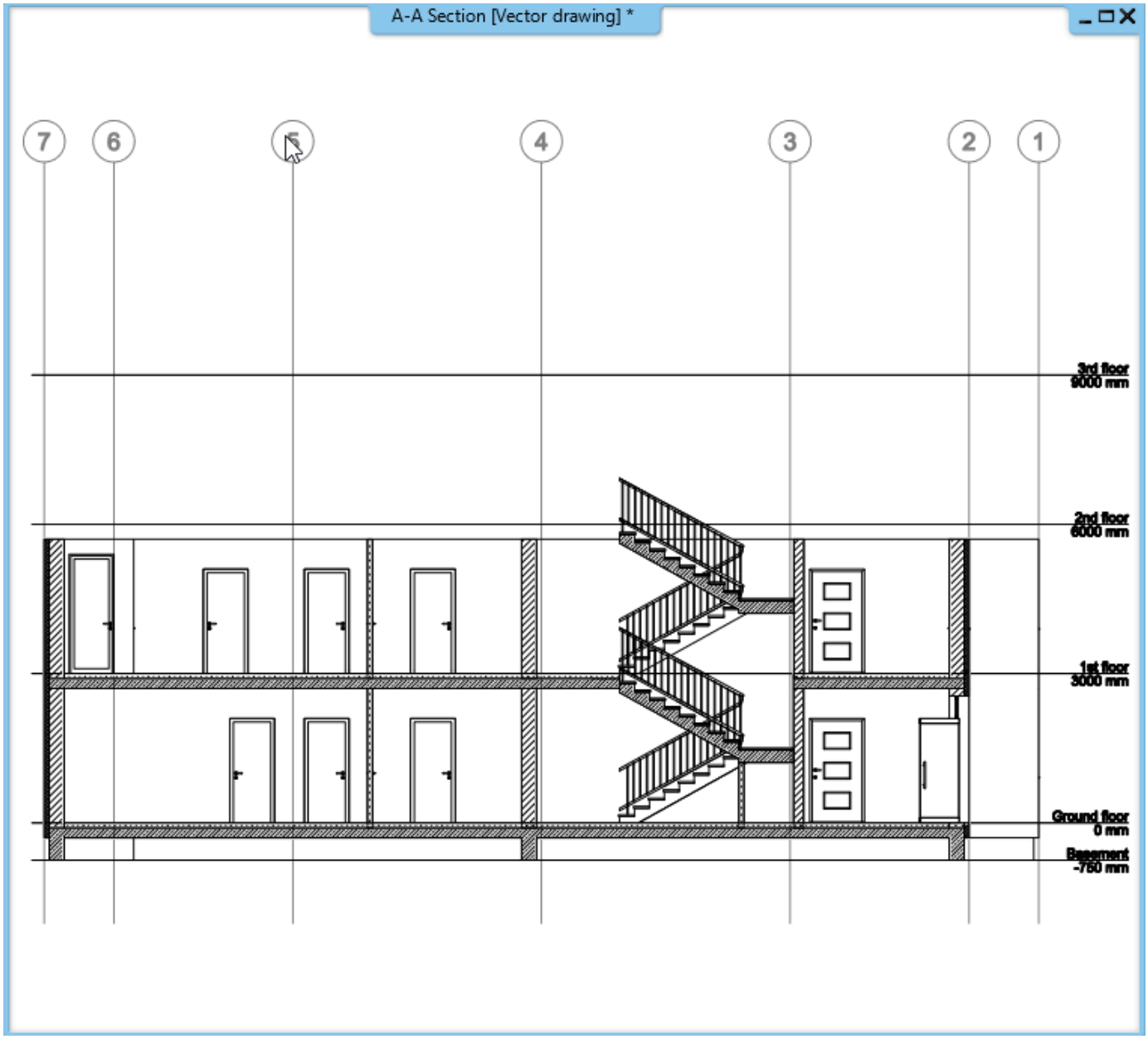
1. Rebuild the model.
2. Rotate and inspect it in 3D to verify that all surfaces and connections are correct.

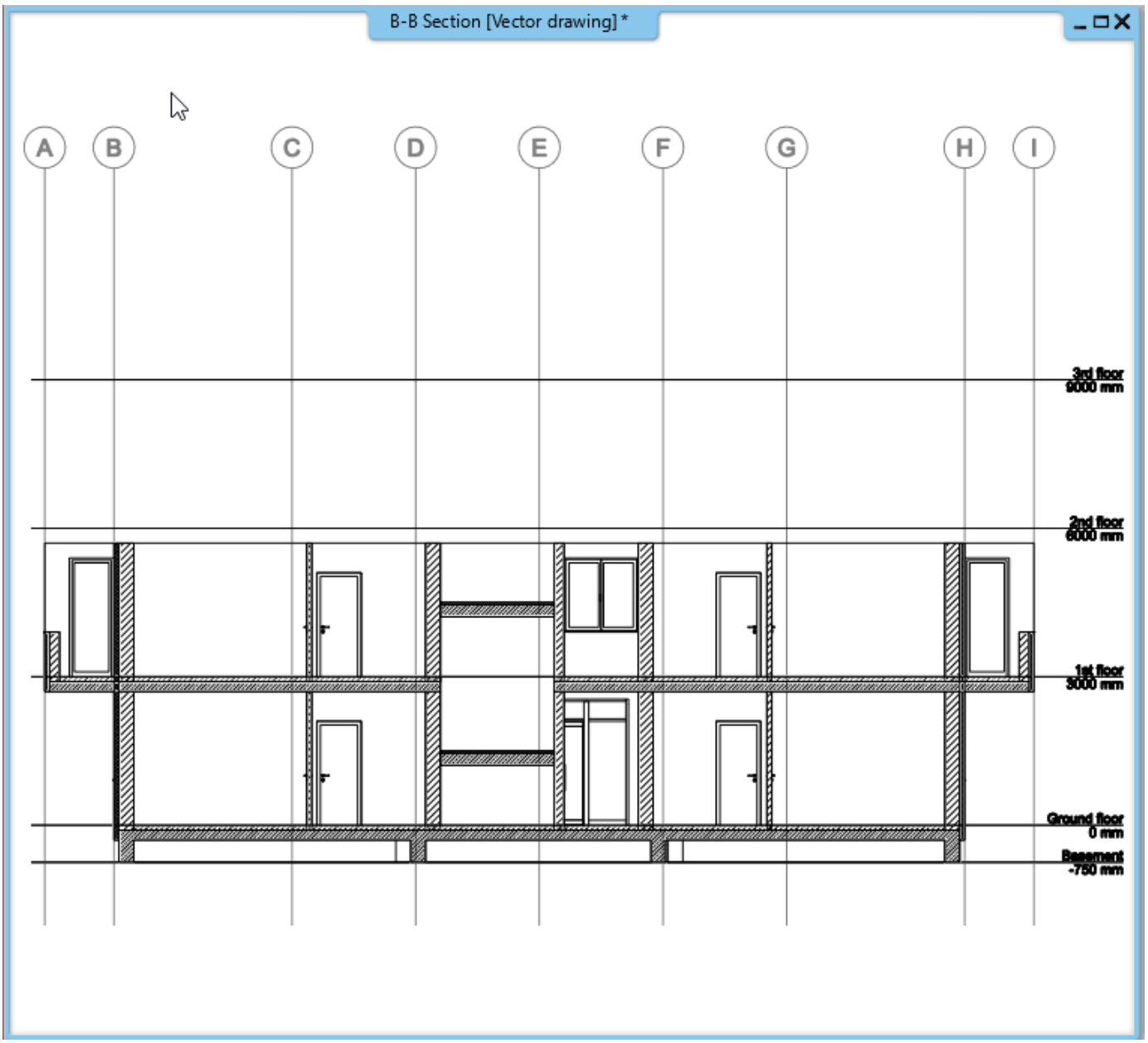
❗ **Remember:**
Always rebuild after major structural adjustments — this keeps the model clean and up to date.

Final Check – Section View

Finally, return to the **section view** to verify the results.
You'll see that the **connection points** are now correctly formed and that the **wall insulation** extends properly to the slab.

Three problems are now solved — the **load-bearing walls** stand on the **load-bearing layer**, the **insulation** reaches the **bottom of the slab**, and the **slab layer contour** fits perfectly to the **exterior walls**.




B-B Section [Vector drawing] *
A
B
C
D
E
F
G
H
I
3rd floor
9000 mm
2nd floor
6000 mm
1st floor
3000 mm
Ground floor
0 mm
Basement
-750 mm

8. Workshop 8: Roof Terrace & Coloring

In this workshop, we will continue modeling on the **second level**, where we'll create the **roof terrace**.
You will learn how to copy structural elements from the first floor, adjust wall heights, and apply colors using the **Like painting or grouting** option.

Topics covered:

- Copying walls and slabs to the 2nd floor
- Converting it into a roof terrace (1000 mm wall height)
- Applying materials and coloring walls
- Using the "Tiling as coloring" option

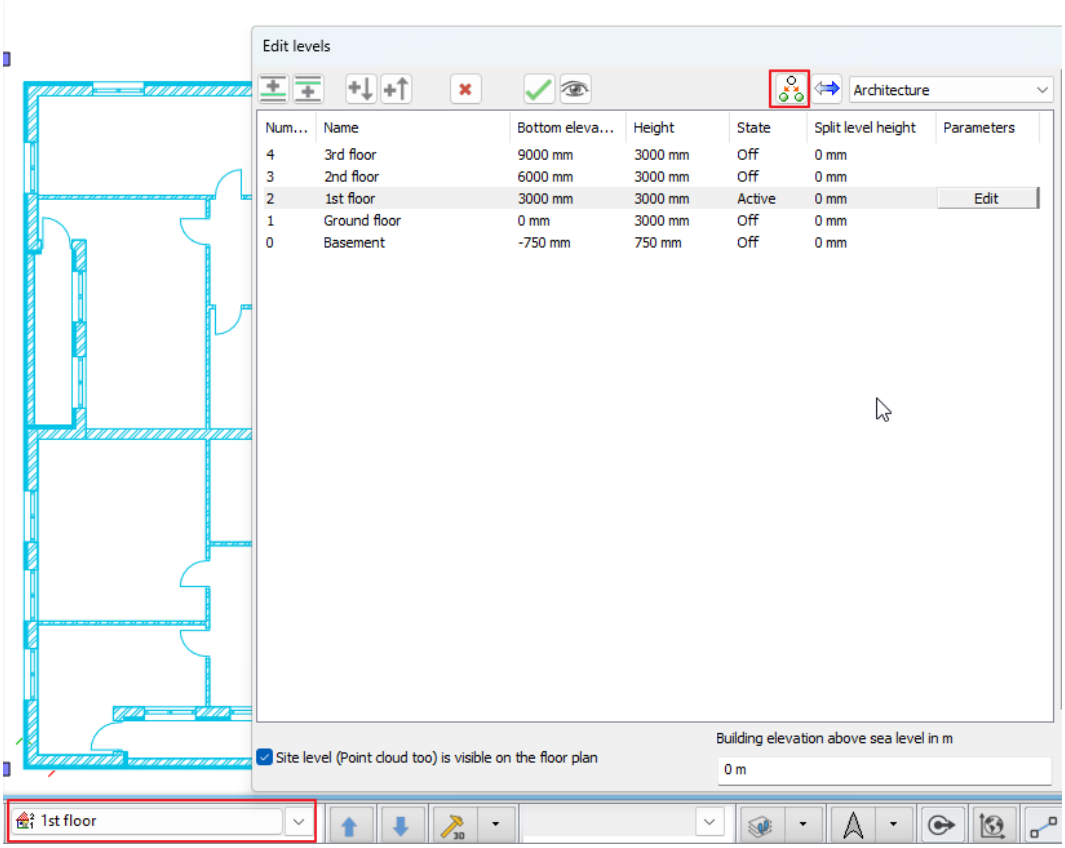
8.1. Creating the Roof Terrace

8.1.1. Copying Walls and Slabs to the Second Floor

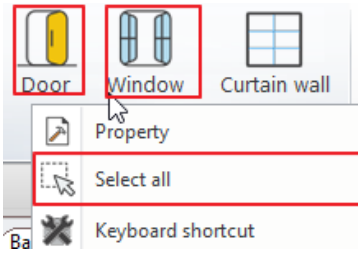
Let's start by preparing the second level.

1. Go to the 1st floor plan.
2. Turn off the layers of all elements except the walls and slab using the **Layer Walk** command.
   This will make it easier to select only the necessary elements.
3. Using the **selection rectangle**, select the walls and slab.
4. Copy them to the 2nd floor using the **Edit Levels** dialog.

💡 **Tip:** Turning off unnecessary layers helps you avoid selecting unwanted elements and keeps your workspace clean.



8.1.2.Converting to a Roof Terrace



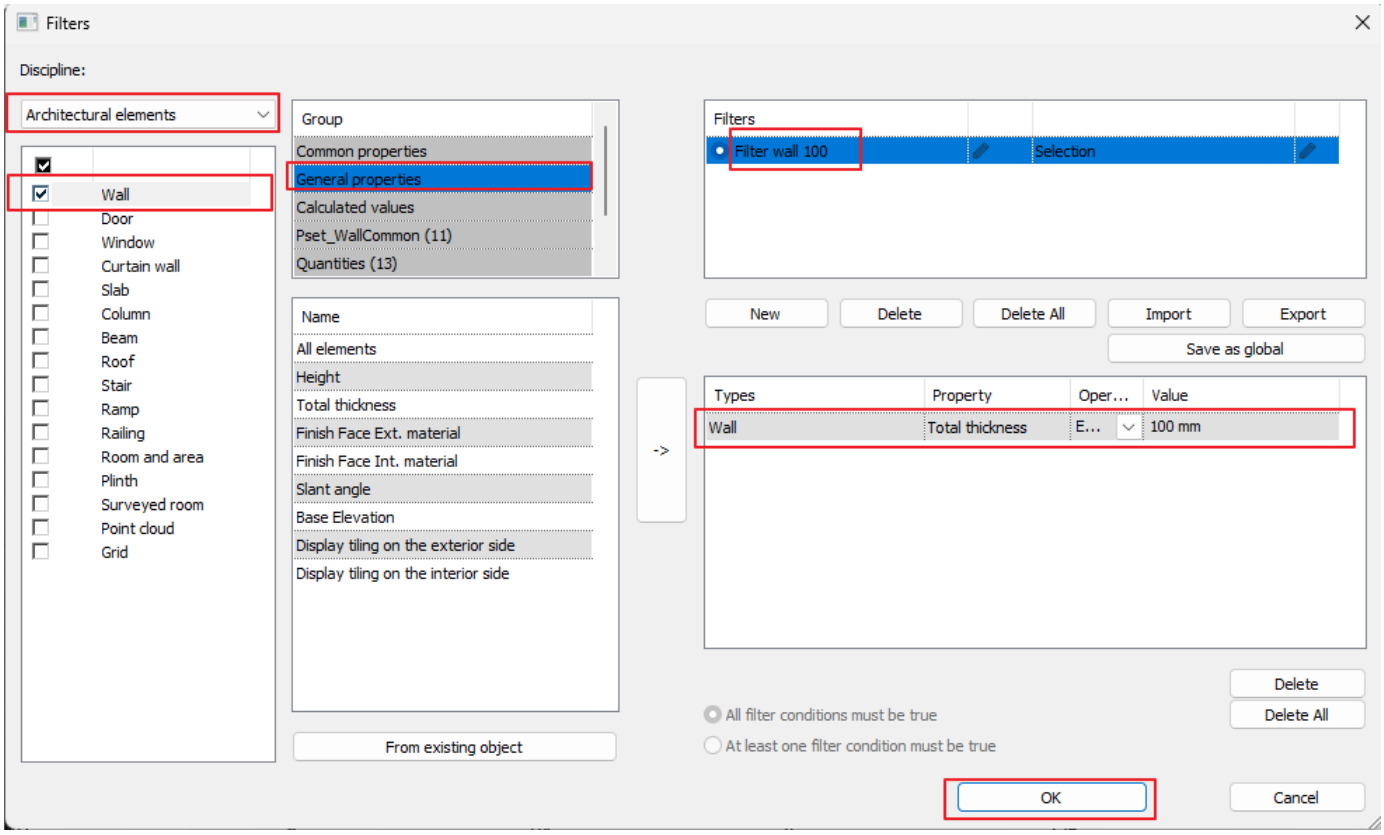
Now let's turn the copied structure into a **roof terrace**.

1. On the **2nd floor**, delete all **openings** (doors and windows).
   To do this, use the **Selection by Type** command.
   Since this level will serve as a terrace, these elements are not needed here.

Deleting Partition Walls Using the Selection Menu

Next, we will delete all **100 mm thick partition walls** on the second level.
For this, we'll use the **Selection menu**, which allows you to choose between various selection modes and create filters.

1. Click the **Selection** menu on the **Status Bar** and choose **Filter**.
2. Set up the **filter properties** as shown in the figure below.
3. Delete all **100 mm thick walls** that were selected.
4. Delete the **four balcony walls** as well.



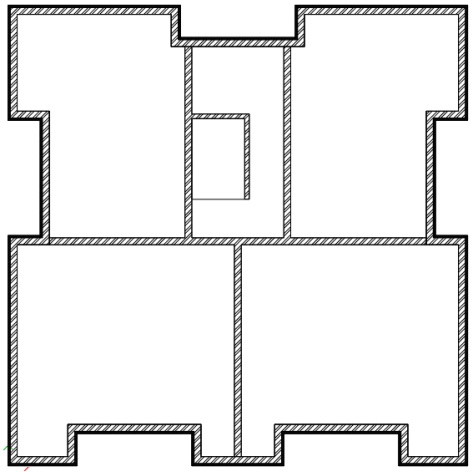
Creating a New Slab (Independent Exercise)

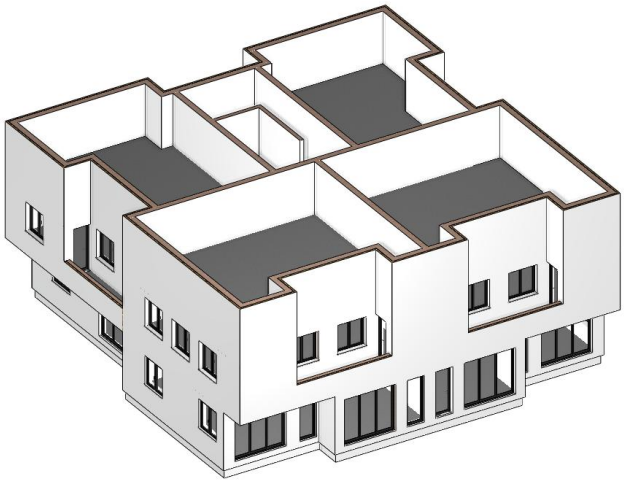
Since the slab on the first floor was modified for the balcony area, it is easier to **delete** the copied slab and **create a new one on the 2nd floor**.
You will need to redraw both the **Slab Contour** and the **Base Concrete Contour** — this can be done quickly using the **Offset All** option.
Also, create the **staircase opening** at this stage.

💡 **Tip:** Using the Offset All option allows you to generate both contours quickly and precisely.

Using the methods you have already learned, **perform these steps** to complete the new slab.

📝 **Note:**
Don't forget to set the **TS parameter** of the 2nd level to **–100 mm**, and the **Base elevation** of the slab to **0 mm**.

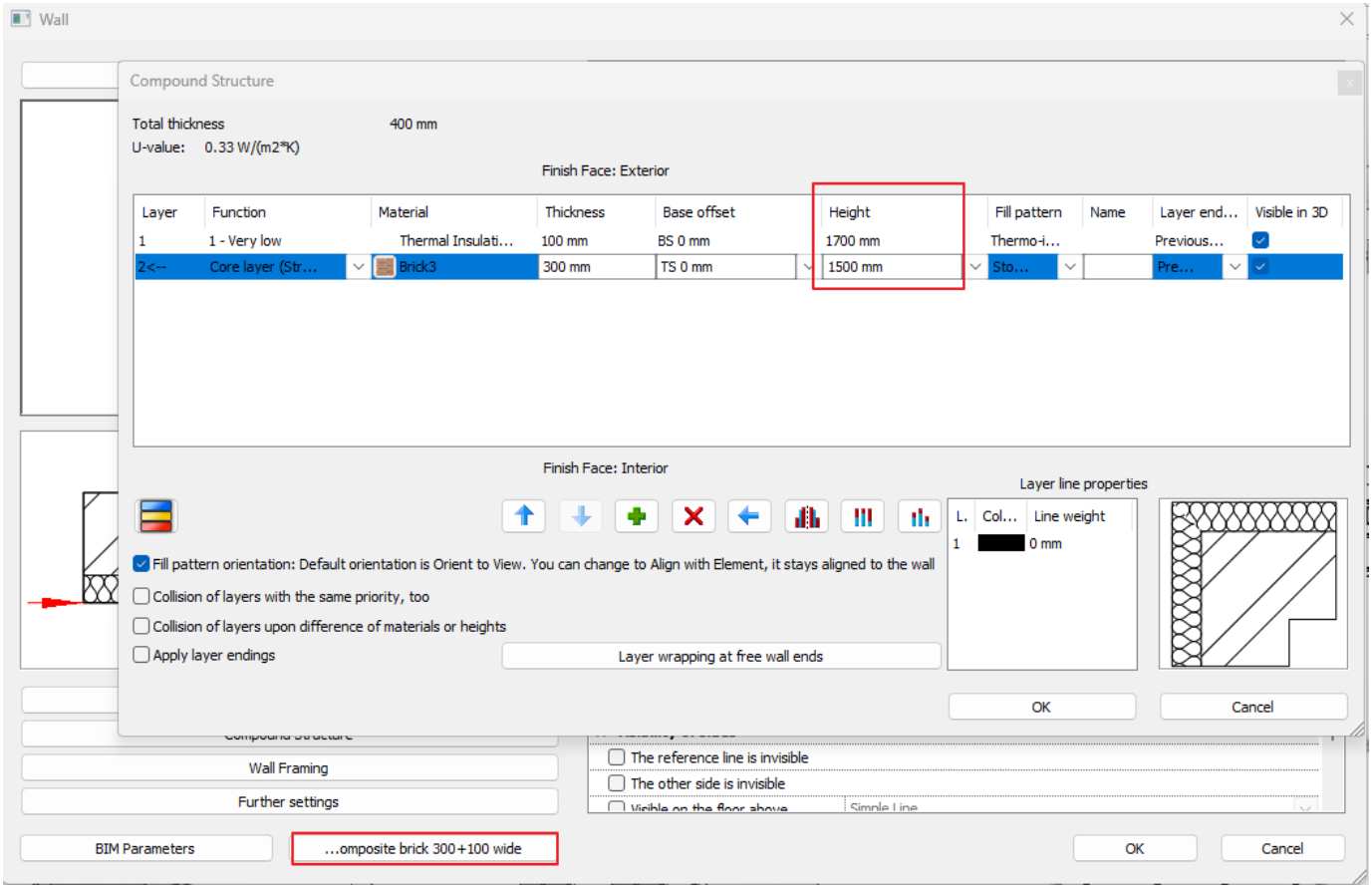




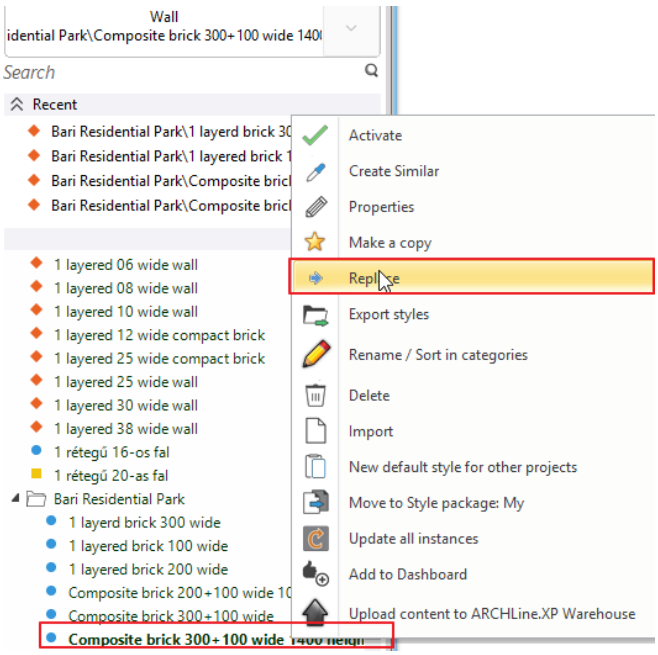
Defining the Wall Style with 1400 mm Height

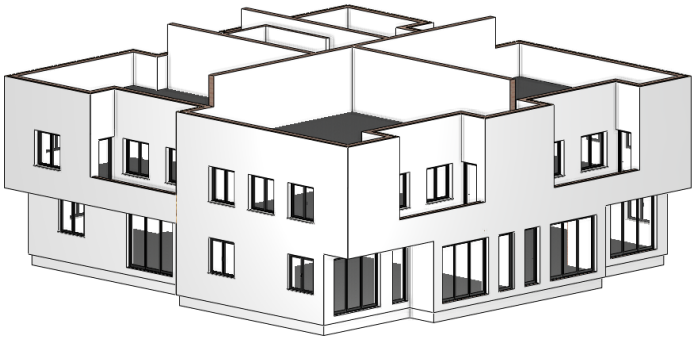
For the exterior walls, we will use **terrace parapet walls** with a height of **1400 mm**.
The easiest way to achieve this is to create a **new wall style** based on the existing **Composite brick 300+100 wide** wall type, and then replace the exterior walls with this new style.

1. Click on one of the exterior walls in the floor plan.
2. Modify the **height parameters** by layer as shown in the figure.
3. Save the new wall style as **Composite brick 300+100 wide 1400 height**.



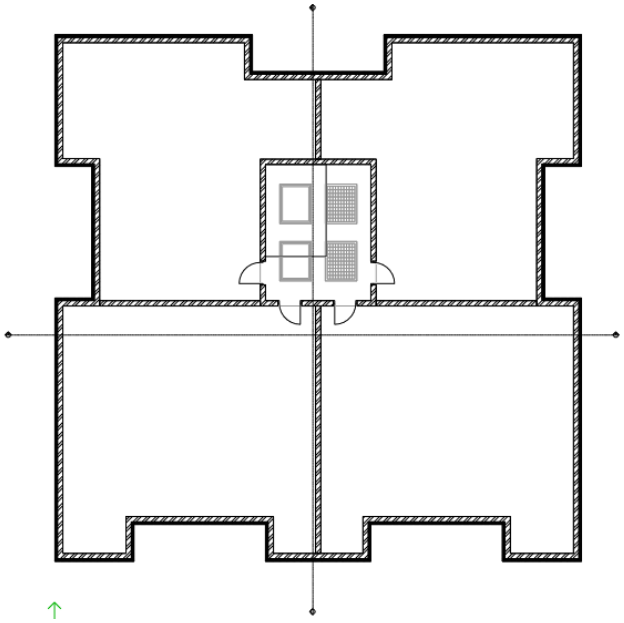
4. Turn off the **Wall – Partition wall** layer using the **Layer Walk** icon.
5. In the **Style tool palette** on the left, select the new wall style, right-click, and choose **Replace**.
6. Select all **exterior walls** to apply the new style.
7. Turn the **Wall – Partition Wall** layer back on.





Staircase Exit (Independent Exercise)

Using the methods you have already learned, create the staircase exit to the roof terrace as shown in the reference image. Then, place the staircase roof slab on the third level.



Review the result in 3D view.

1. Switch to **3D view** and review the result.
   You should now see the completed **roof terrace**.
2. Using the **Ribbon Bar → View → Animation → Walk and Fly → Rotate around** command rotate the model to examine it from all angles.

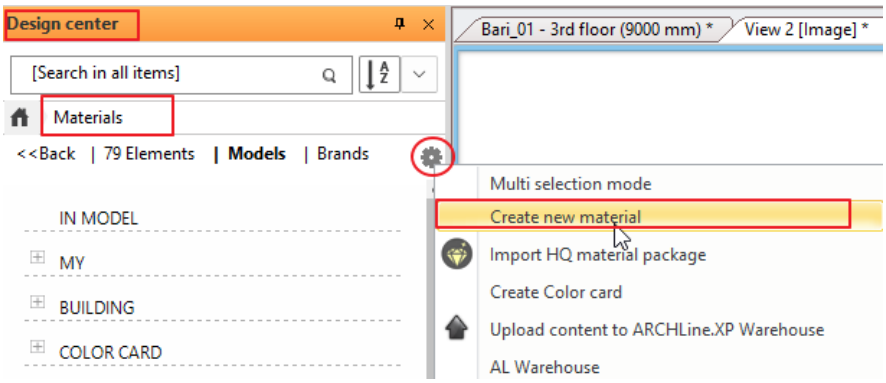
8.2. Coloring the Building

Next, we will apply **colors and materials** to the exterior surfaces of the building.

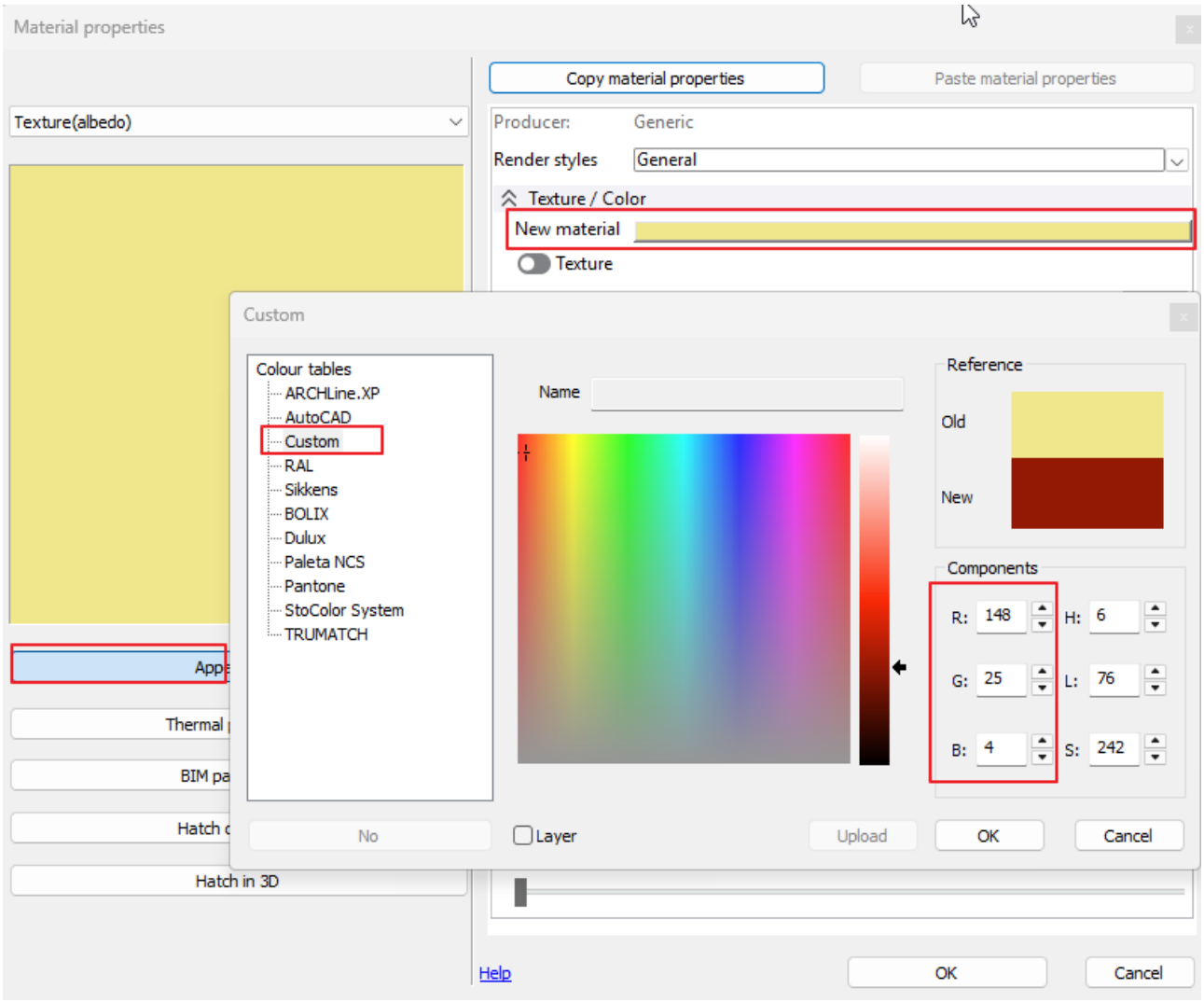
In this exercise, we will first **create a new material** based on a custom color — **Deep Orange** — and then apply it to the terrace and balcony walls.

8.2.1. Creating a New Material

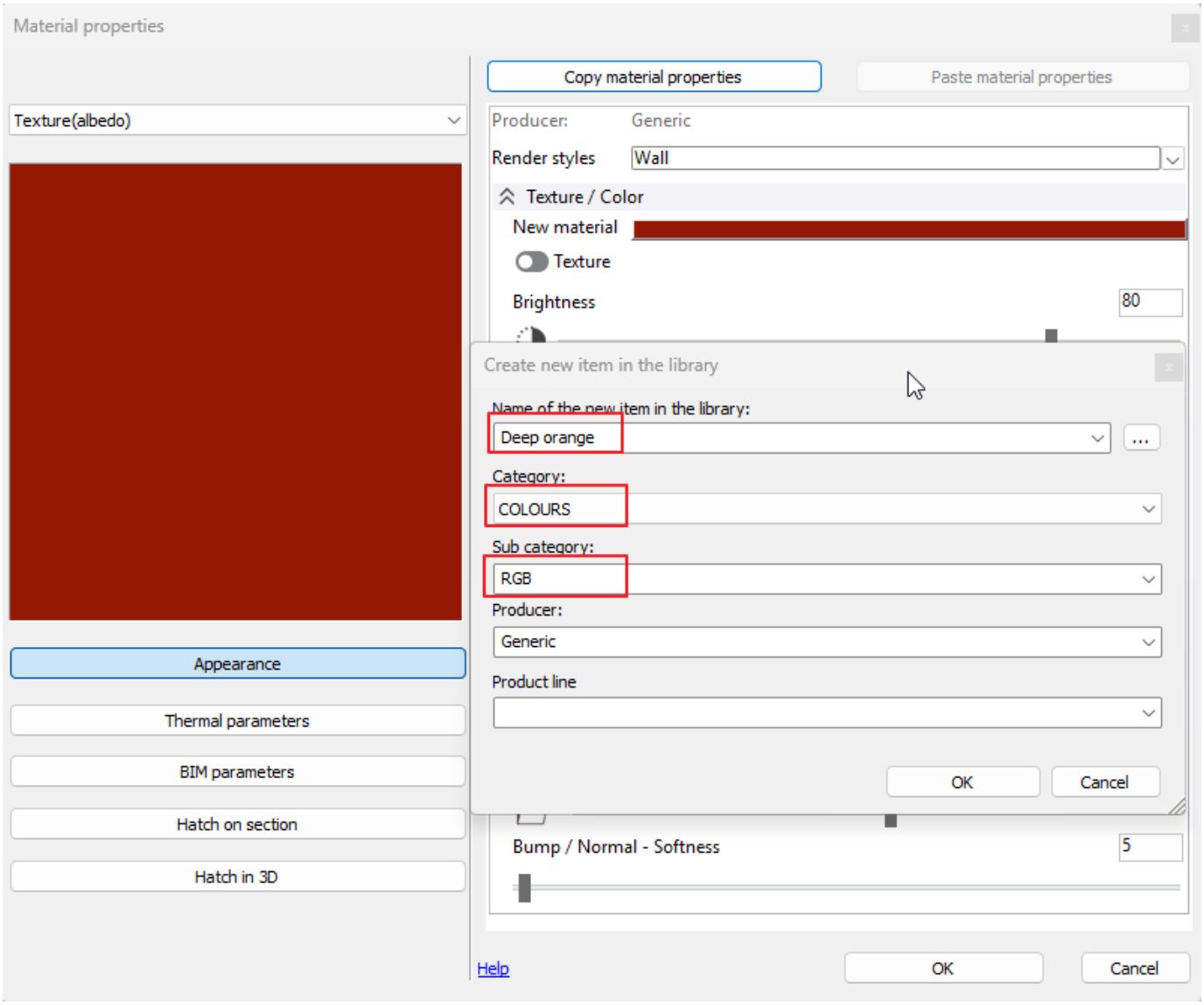
1. Open the **Design Center → Materials** panel.
2. Click the **black gear** icon and select **Create Material**.



3. In the **Material Properties** dialog, open the **Appearance** tab and click **New Material**.
4. In the **Custom Color** table, set the **RGB parameters** as follows: **R: 148, G: 25, B: 4**



5. Save the material with the name **Deep Orange** in the **Material Library → Colors → RGB** subcategory.



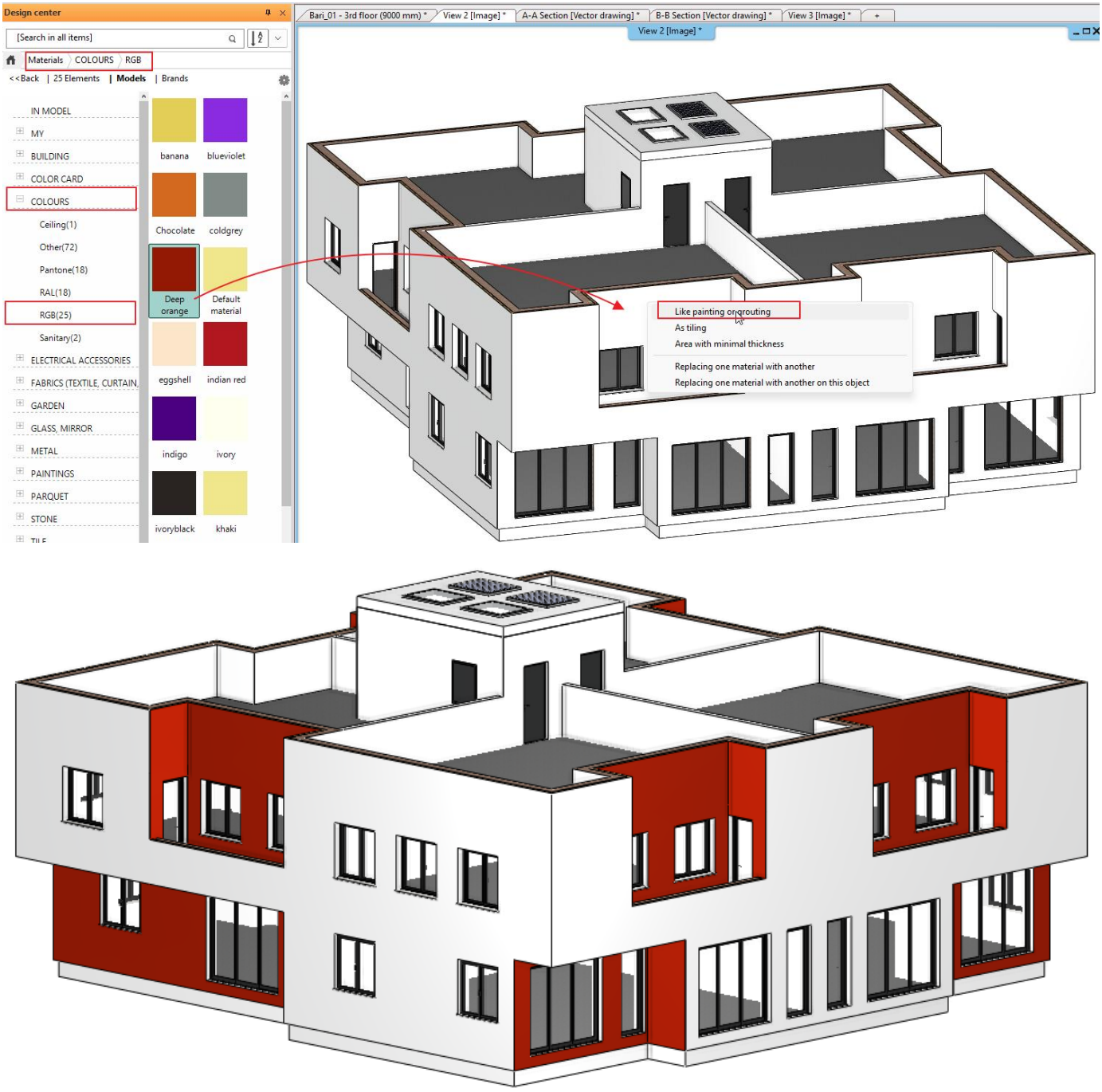
You have now successfully created the **Deep Orange** material.

8.2.2. Applying the New Material

1. Make sure the **3D View** is active.
2. In the **Design Center**, select the **Deep Orange** material.
3. **Drag and drop** the material onto the **balcony and terrace wall surfaces**.
4. In the dialog that appears, choose the **Like painting or grouting** option.

Note:

The **Like painting or grouting** option allows you to recolor walls quickly without altering their structural properties.



8.2.3. Finalizing the Roof Terrace

Once the color is applied, check the results in **3D view**.
Rotate the model to observe how the colors interact with the surfaces.

You have now completed the **roof terrace and coloring** stage.

9. Workshop: Documentation

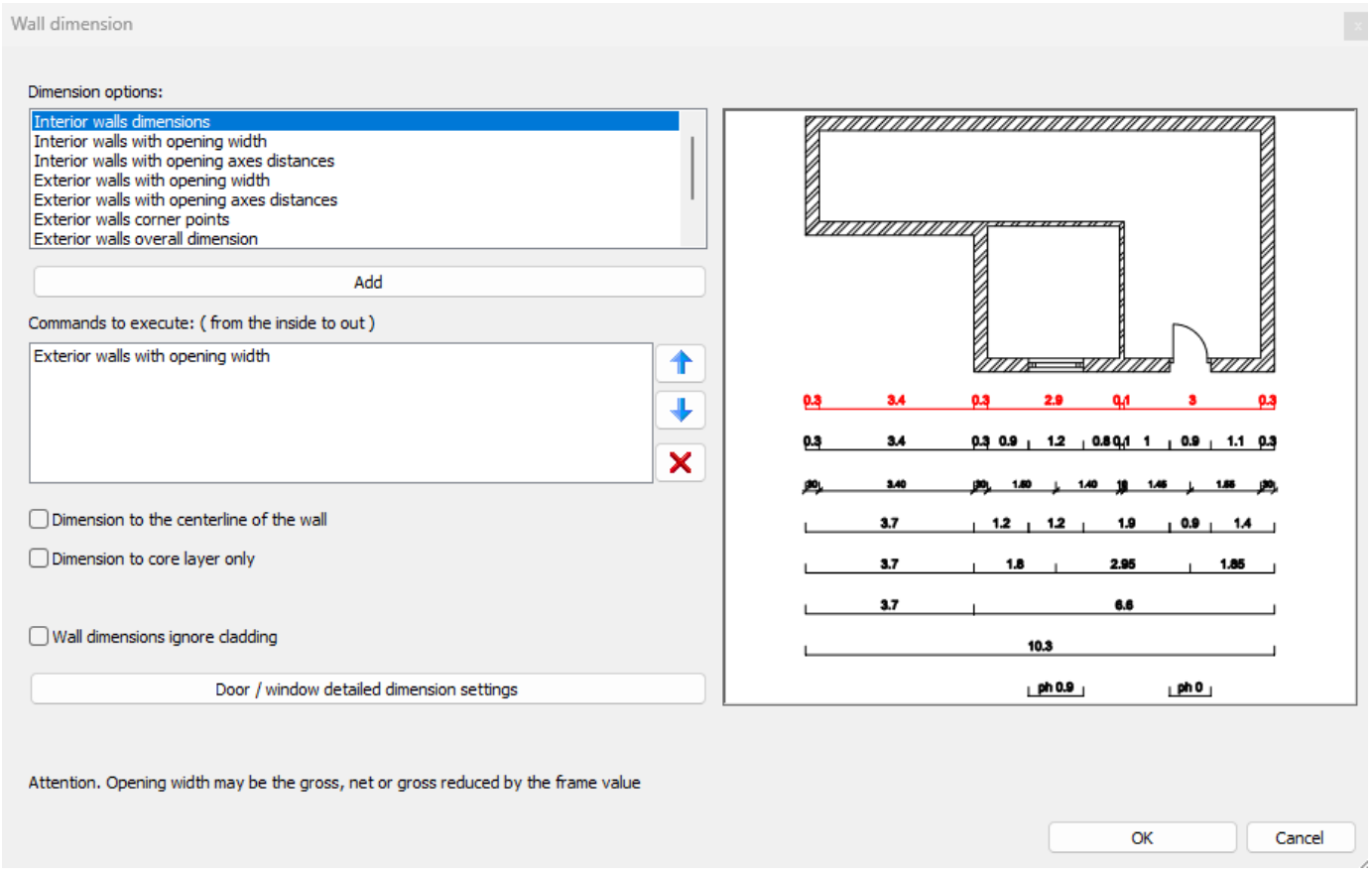
In this workshop, we'll prepare the **final project documentation**.
You'll learn how to create dimension drawings, add room stamps, apply color schemes, and prepare sheets for printing.

- Setting up dimension styles
- Automatic placement of room stamps
- Applying color schemes by apartment
- Adding callouts for detailed drawings
- Creating elevations and Section Views
- Plot Layouts and Printing Multi-Page PDF
- Updating layouts automatically

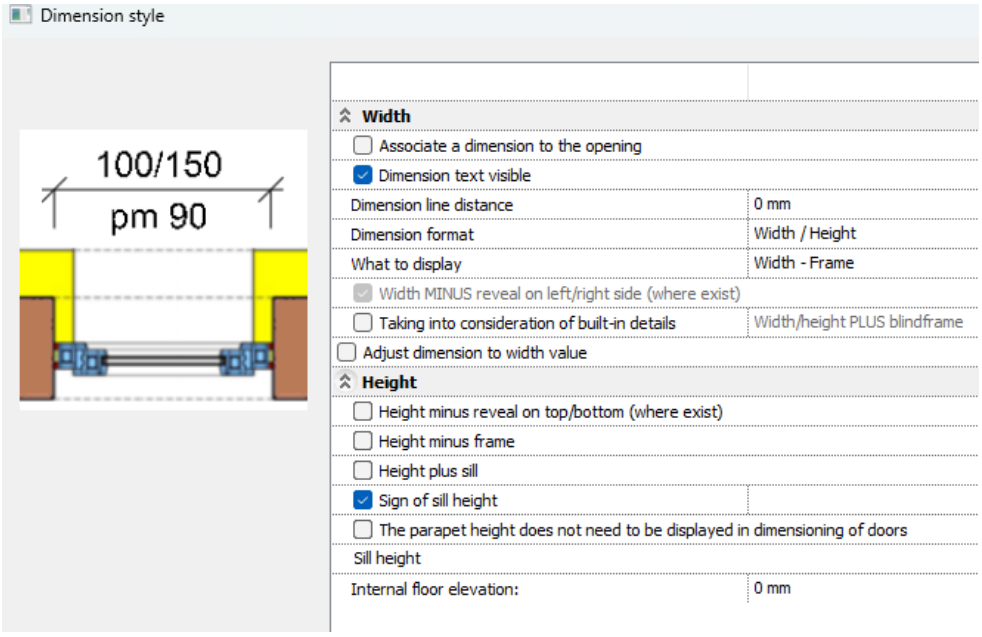
9.1. Setting Up Dimensions

Let's continue working with **dimensions**.

1. First, check the **properties** of the dimensions.
2. Go to the **Building Dimension** and set the **dimension style**.
3. Choose the **"External wall"** style.

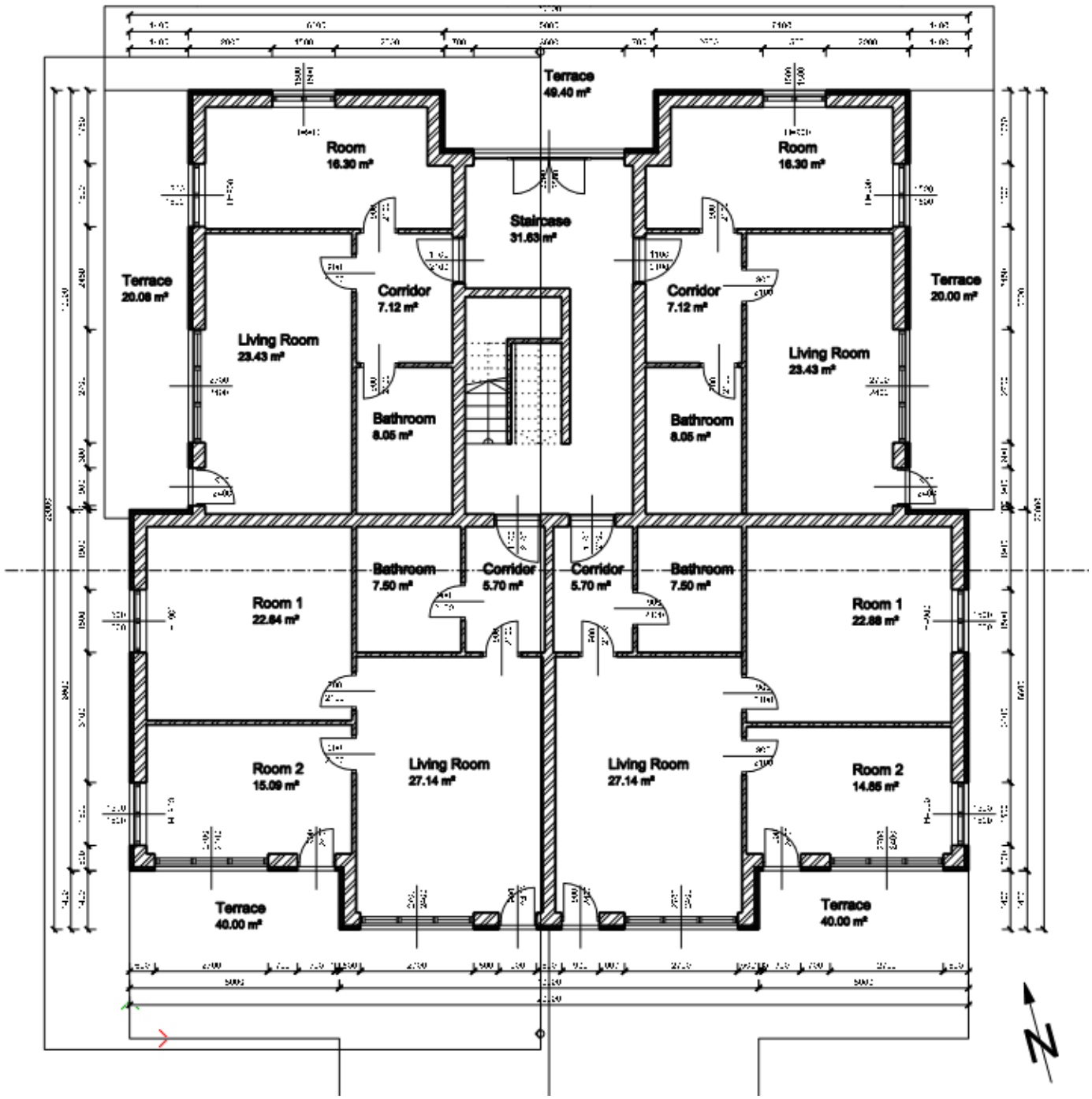


Now take a closer look at what this style includes — notice the **parallel dimensions**, and how the **windows and doors** are dimensioned.



This setup will be suitable for our project.
From now on, we will use this style to **dimension all external walls**.

💡 **Tipp:** Dimension styles allow you to maintain consistency across your drawings. Once you find a configuration that works, save it for future projects.



9.2. Placing Room Stamps

Next, we'll place **room stamps**.
The properties of a room stamp can be **preset and saved** as a style. Select the appropriate style from the list.

1. Use the **"Automatic Room Creation"** command to place all room stamps on this level in one step.
2. There are **four apartments** on this floor.
3. In the first apartment, rename the room names to their correct values.

📝 **Note:** Automatic placement saves a lot of time when you're working with multi-apartment projects.

Setting Apartment Properties

In the **Room Properties** dialog, set this room to belong to the **first apartment**.
Then copy this property to the **other rooms** of the same apartment.
Repeat this process for the **other apartments** as well.

💡 **Tipp:** You can use the **Property Painter** tool to copy room attributes quickly between similar rooms.

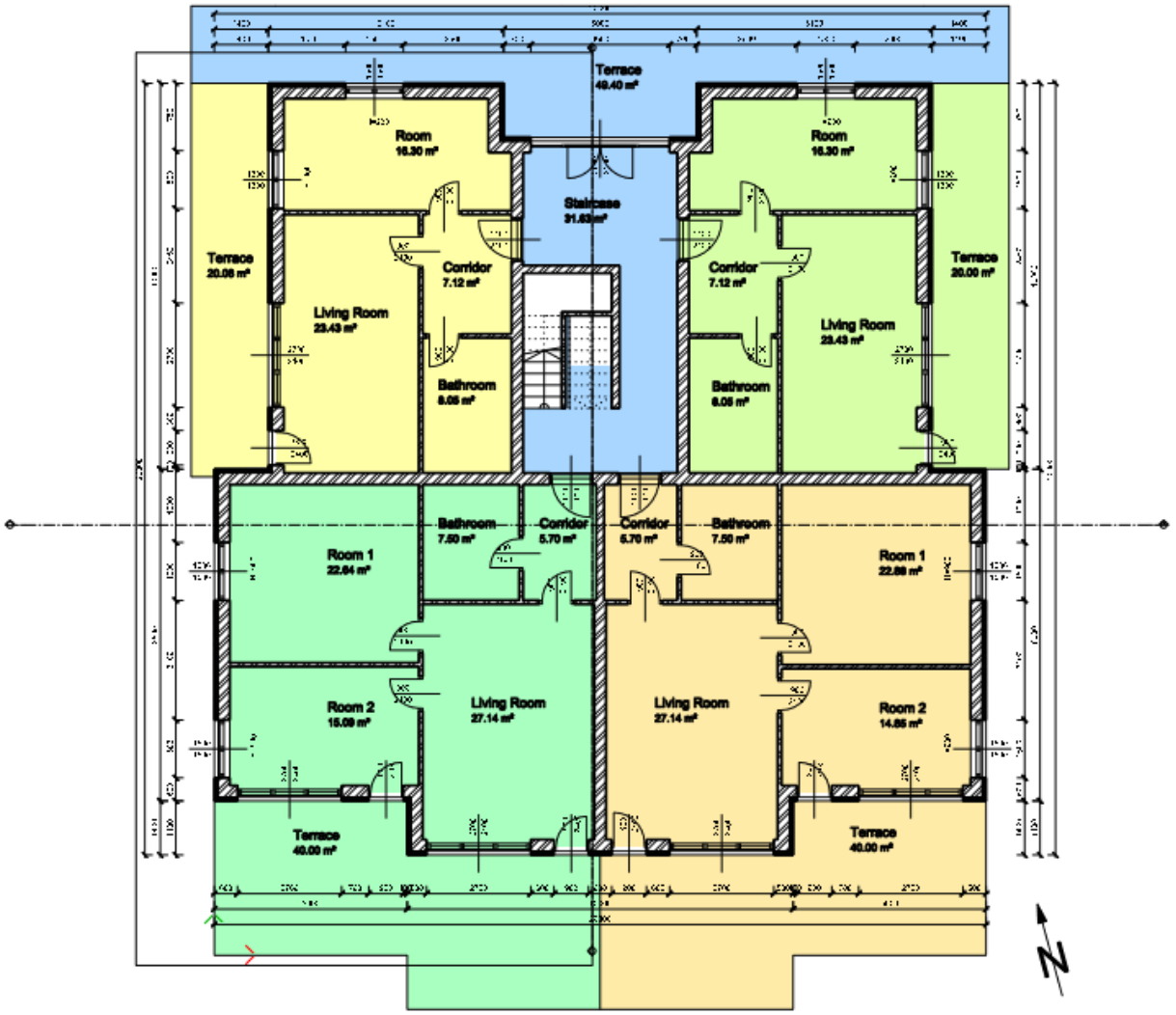
9.3. Applying Color Schemes

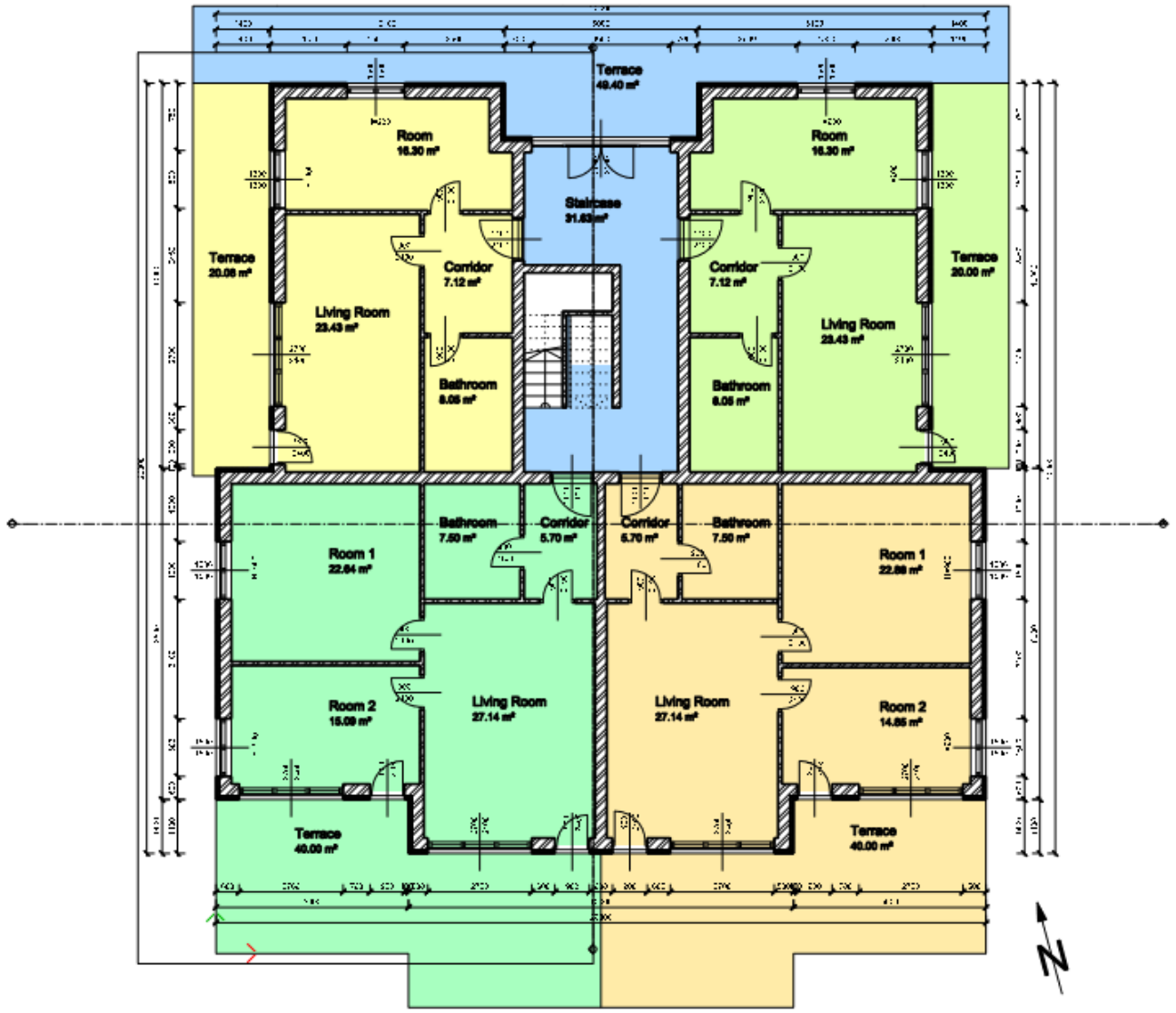
Now that all room stamps are ready, let's visually organize the apartments.
We will use a **Color Scheme** to display rooms belonging to the same apartment in matching colors.

Color schemes let you display rooms in different colors based on various criteria — for example, **gross area**, **net area**, or **apartment grouping**.

In this case, we'll color-code the rooms of the **four apartments** and the **staircase** with different colors.
Repeat this setup on the **first floor** as well.

⚠️ **Important:** Use color schemes only for visual presentation — they don't affect any physical model properties.


Terrace
49.40 m²
Room
16.30 m²
Room
16.30 m²
Staircase
31.63 m²
Terrace
20.08 m²
Corridor
7.12 m²
Corridor
7.12 m²
Terrace
20.00 m²
Living Room
23.43 m²
Living Room
23.43 m²
Bathroom
8.05 m²
Bathroom
8.05 m²
Bathroom
7.50 m²
Corridor
5.70 m²
Corridor
5.70 m²
Bathroom
7.50 m²
Room 1
22.84 m²
Room 1
22.88 m²
Room 2
15.09 m²
Living Room
27.14 m²
Living Room
27.14 m²
Room 2
14.85 m²
Terrace
40.00 m²
Terrace
40.00 m²
N



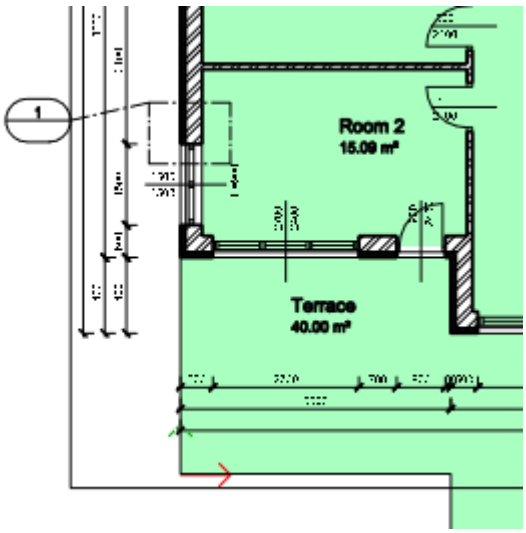
9.4. Creating Callouts for Details

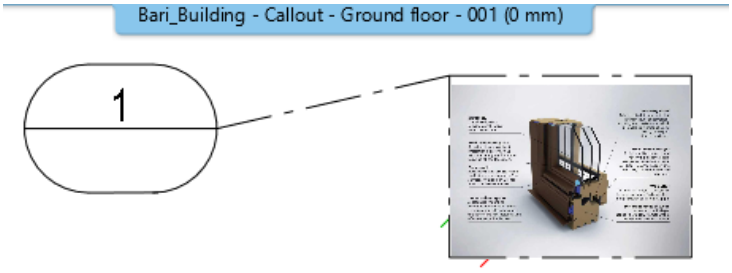
Let's continue the documentation by turning **off the Color Scheme** display temporarily.
To show a **detailed part of the drawing**, use the **Callout** command.

1. Adjust the Callout properties.
2. Draw a rectangle around the part you want to highlight.
3. The program creates a new view for this detail automatically.
4. Replace its content with a suitable detail drawing or image.

In this example, we've inserted an image showing the **window structure detail**.

💡 **Tipp:** Callouts are great for referencing details — they automatically stay linked to the main drawing.





9.5. Creating Elevations and Section Views

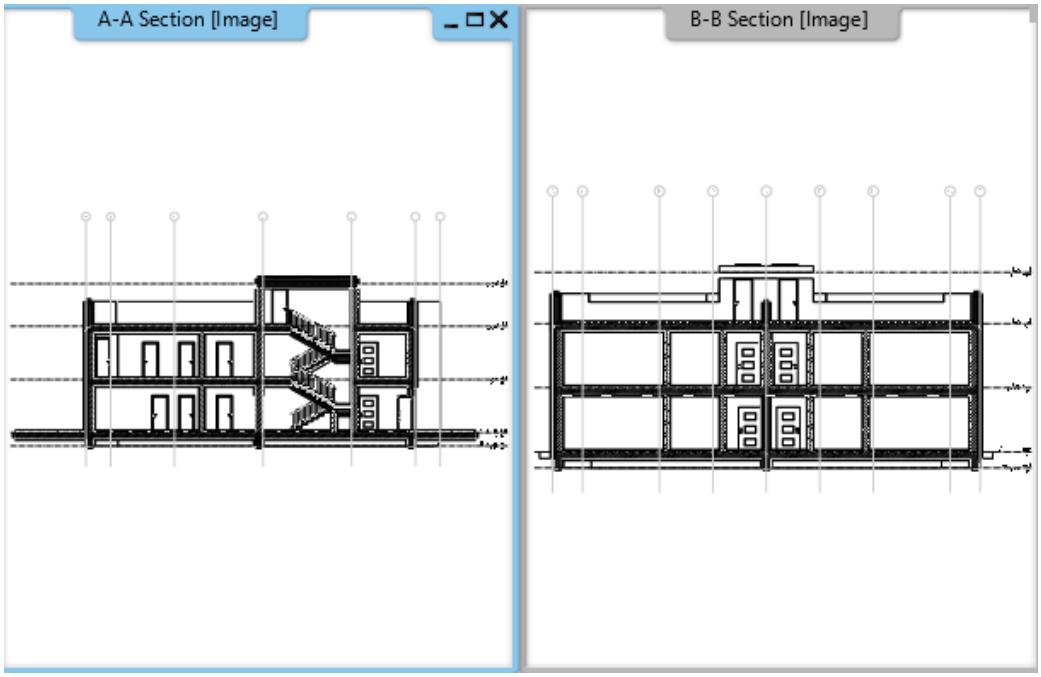
Now let's turn on the **sections** and the **cutaway view** we have already created.
These will form part of our project documentation.

Next, we'll move on to creating **elevation views**.

1. Set the **properties** of the elevation views.
2. Choose **Textured** representation to display materials more realistically.
3. Generate the elevation views one by one — for example, the **North**, **South**, **East**, and **West** facades.

Check one of the elevations to verify that it displays correctly.
At this point, we have completed both the **section** and **elevation** views.

💡 **Tipp:** Consistent elevation naming (e.g., *East Elevation – Courtyard side*) helps keep your documentation organized when you prepare print layouts.



9.6. Plot Layouts and Printing Multi-Page PDF

9.6.1. Creating Plot Layouts

Now let's prepare the **plot layouts** for printing.

1. Select the **sheet size** — choose **A3 landscape**.
2. Specify how many plan sheets will appear in one **Print Layout View** — in this case, **eight**.
3. Select the appropriate **title block (stamp)**.
4. The program then automatically creates the **Print Layout View** containing eight plan sheets.

📝 **Note:** Each plan sheet represents one printable drawing — for example, a floor plan, section, or elevation.

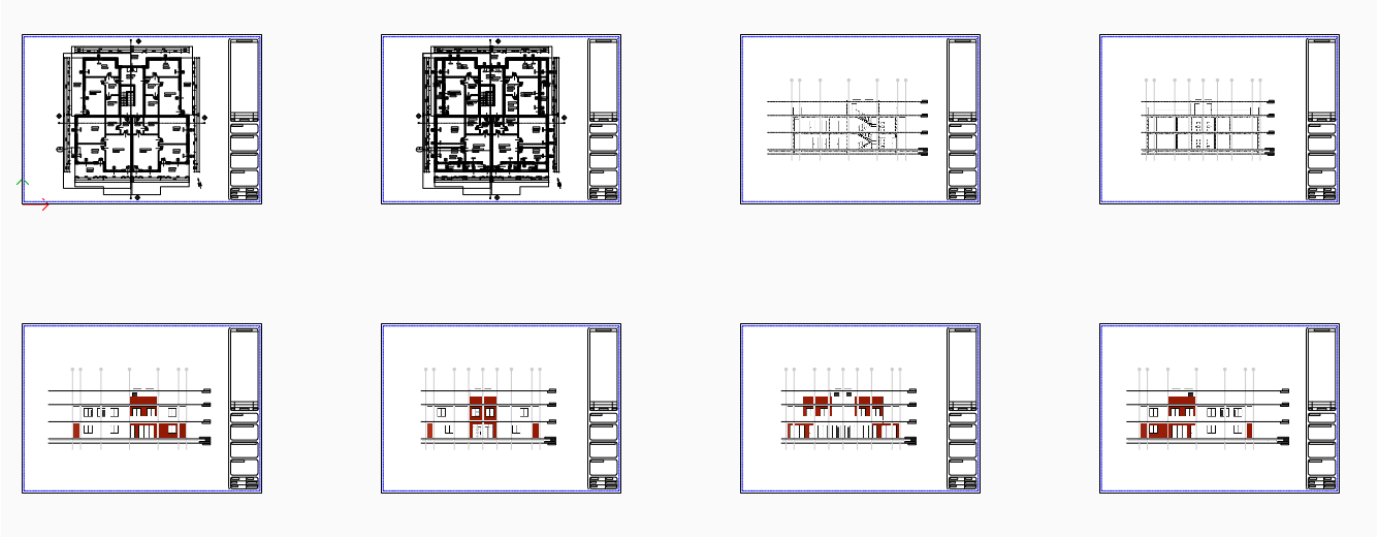
9.6.2. Placing Drawings on the Sheets

From the **Project Navigator**, drag the drawings onto the layout sheets one by one, selecting the appropriate **scale**.

We'll use a **1:100 scale** here.

1. Place the **floor plans** first.
2. Then add the **sections**.
3. Finally, place the **elevations**.

💡 **Tipp:** When positioning drawings, align them carefully on each sheet — this helps achieve a clean, professional look in your printed documentation.



9.6.3. Printing to a Multi-Page PDF

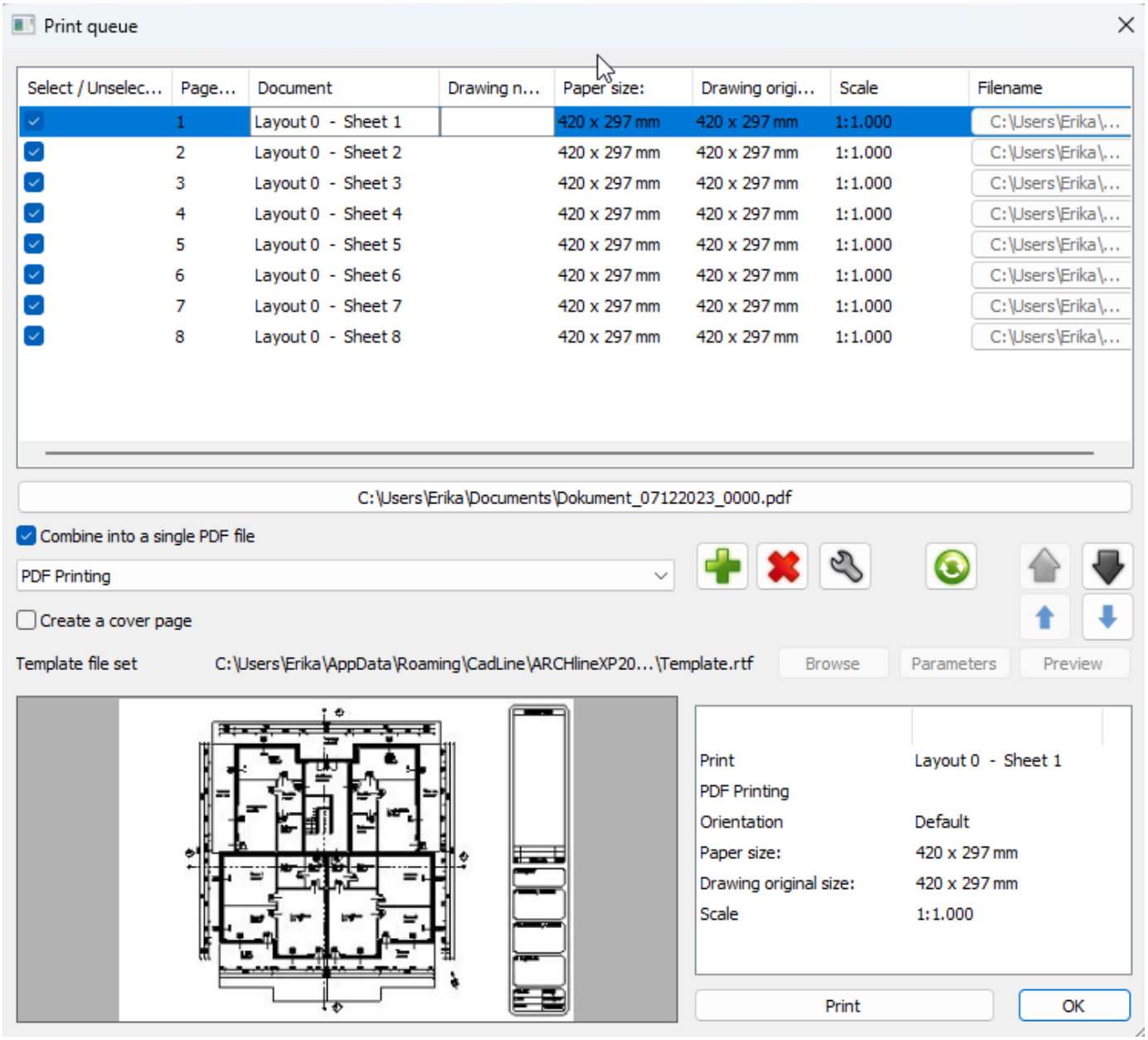
Next, let's create a **print queue** to produce a single multi-page PDF.

1. Choose the **Print Layout View** containing the eight sheets.
2. Set the **printing parameters**:
   - Paper size: **A3**
   - Orientation: **Landscape**
   - Scale: **1:1**
   - Rotation: **None**
   - Position: **Centered**
   - File name: e.g., *Bari_residential_park.pdf*
3. Click **Apply** — the program will copy these parameters to all sheets.

⚠️ **Important:** Always verify the print scale and orientation before exporting to PDF to avoid misaligned or cropped drawings.

Now print all eight sheets into a **combined PDF** and check each page.

You've now generated a complete documentation package in one file.



9.7. Updating Layouts

9.7.1. Updating Layouts After Model Changes

Let's test how the documentation responds to **model updates**.

In the **elevation view**, change some surfaces from **Deep Orange (RAL)** to **Light Ivory**.
You'll notice that **all views** in the project automatically reflect this change.

To update the printed sheets:

1. Click on any drawing on the **plot layout**.
2. Select **Refresh All Layouts**.

3. The content of each sheet will be **updated** instantly.

❗ **Remember:** Keeping your layouts refreshed ensures that your printed documentation always matches your current model.

9.7.2. Displaying Color Schemes on Layouts

As a final example, let's show how to display the **color scheme** on the layout even if it's turned off in the plan view.

1. Open the plan sheet where you want to show colors.
2. In the drawing's **Properties**, under **Color Scheme**, select the previously used scheme style.

The sheet now displays the **apartments in color**, while the model view remains unaffected.

💡 **Tipp:** You can use different visual settings for model views and layouts to make your documentation clearer and more visually appealing.

With this, you've completed **Workshop 9 – Documentation**.
You now know how to:

- Dimension external walls
- Place and group rooms by apartment
- Apply color schemes
- Add callouts and detail views
- Create and print full documentation sets
- Automatically update layouts after any design change

10. Workshop 10: Environment & Rendering

In this workshop, we complete the project by modeling its surroundings and creating presentation materials. You will learn how to add vegetation and render photorealistic images.

- Adding surroundings: fences, gardens, trees
- Saving perspective views
- Creating photorealistic renders with background images
- Using progressive rendering and noise filtering

10.1. Creating the Environment

Let's continue the modeling process by creating the **building's environment**.

1. Display only the **environmental level** in the 3D view.
2. Load the **prepared garden** that belongs to the building — it includes the **stairs and fences**, but no plants yet.
3. Show the **entire building again** and rotate it to review the overall composition.

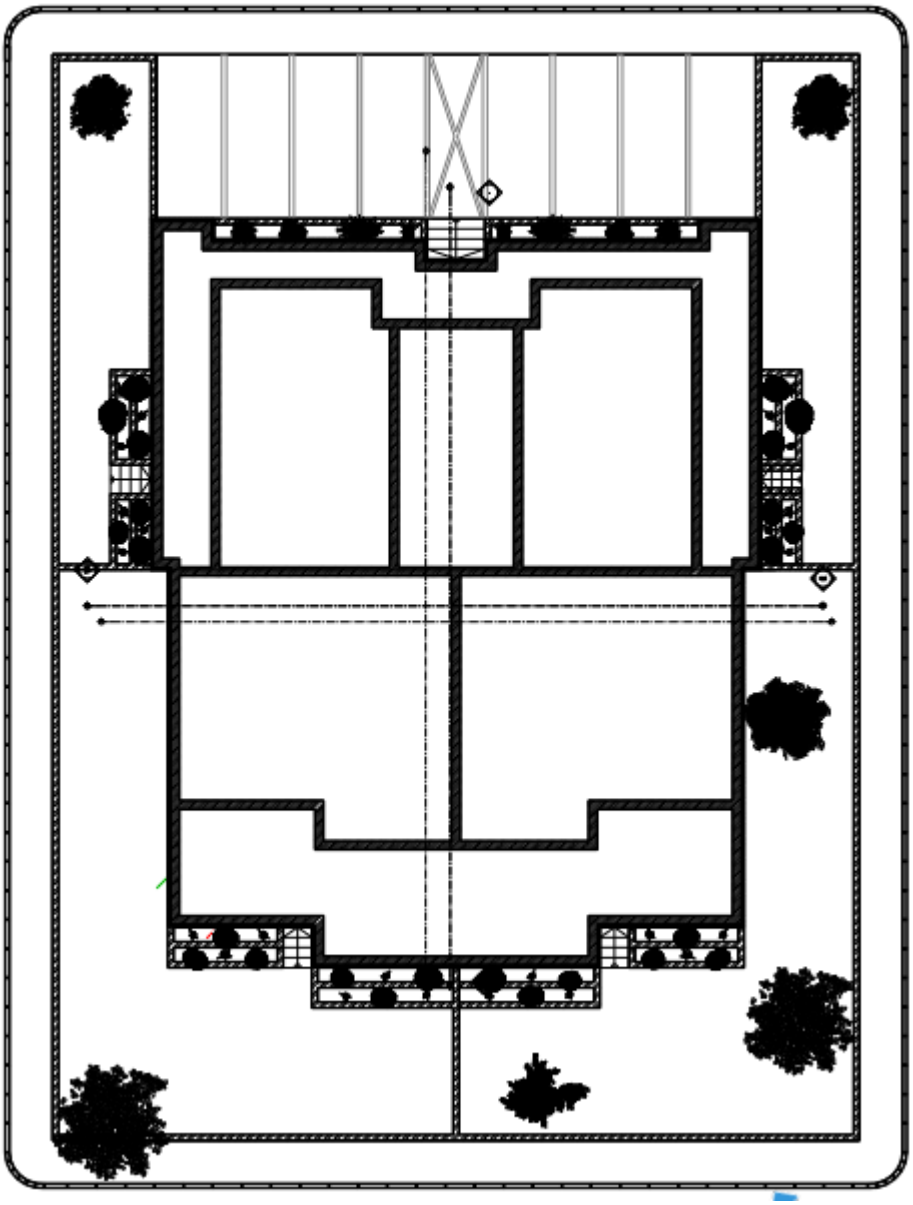
💡 **Tipp:** Keeping the model lightweight at this stage helps you adjust surroundings more easily before adding vegetation or detailed objects.

10.1.1. Adding Trees and Plants

Next, we'll add natural elements to complete the outdoor setting.

1. Open the **Library** and place **trees and plants** around the building.
2. Use a mix of species and sizes for a more realistic result.
3. You can duplicate and rotate individual plants to create a natural variation.

📝 **Note:** The vegetation objects in the library already include basic 3D geometry optimized for rendering — no need for manual adjustments.



10.1.2. Saving Perspective Views

In the **Perspective** dialog, we've already set up and saved several viewpoints.
You can easily **switch between these perspectives** using the arrows displayed on the 3D view.

💡 **Tipp:** Always save multiple perspectives — front, corner, and aerial views — to quickly compare lighting and camera effects before rendering.

10.2. Creating Photorealistic Renders

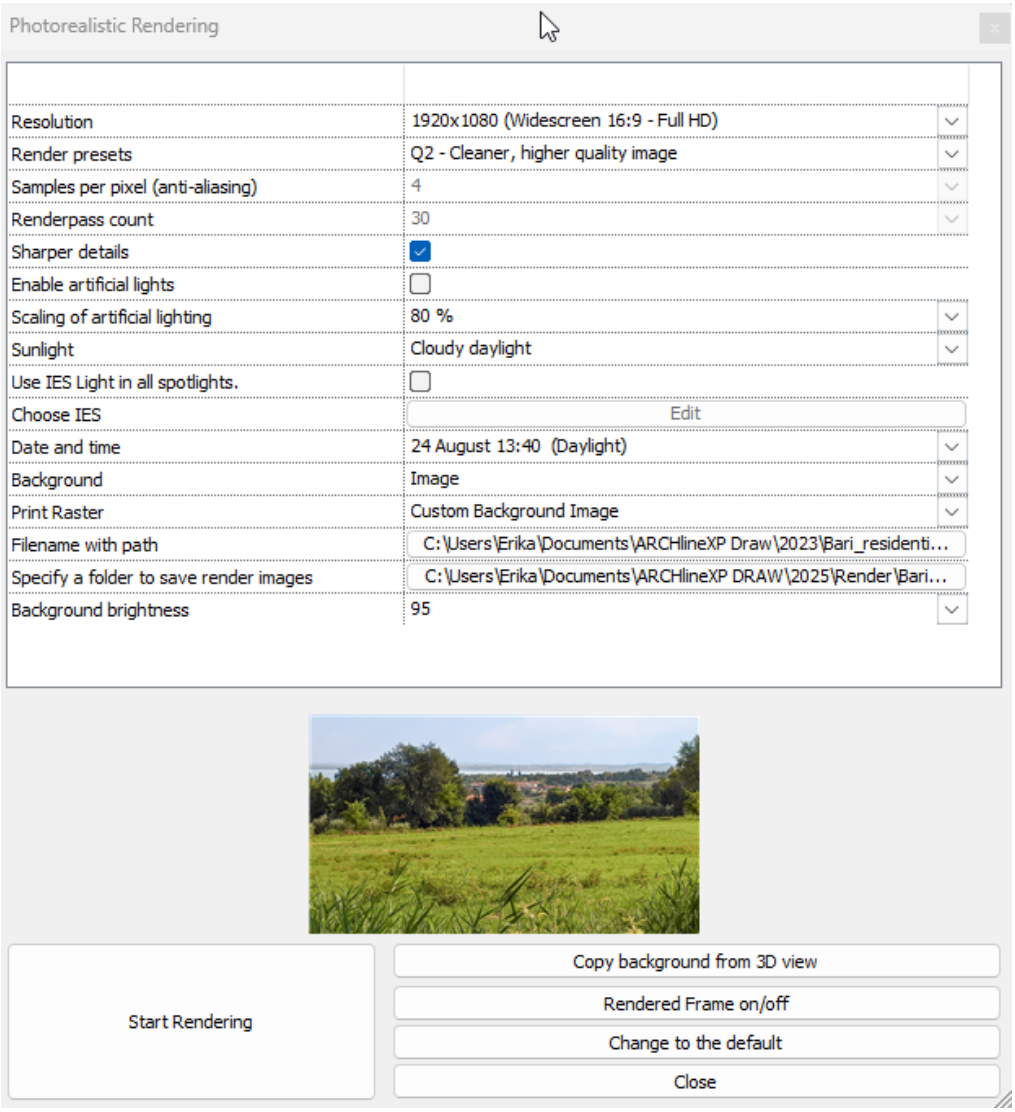
Now let's create a **photorealistic render** from one of the saved perspectives.

1. Select the **desired view**.
2. Set the **resolution** to **Full HD (1920×1080)**.
3. Choose the **Q2 quality setting** — high-quality but fast to calculate.
4. Add a **background image** that complements your scene.
5. Start the **rendering process**.

Rendering setup is simple, and the process itself is fast and easy to learn.
The rendering engine uses a **progressive rendering method**, which refines the image step by step until it reaches the desired quality.

Once the render is complete, the image is **saved automatically**.

⚠️ **Important:** Avoid using extremely large image resolutions unless necessary — they may increase rendering time significantly.



10.3. Applying Noise Filtering

Select another saved view and **render it as well**.
After rendering is complete, the noise filter automatically cleans the image, removing any graininess or blotchiness from the scene.
The result is a **smooth, clear render** with well-defined details.

Save this second image and review both renders.

💡 **Tipp:** Noise filtering is especially useful when rendering scenes with artificial lighting or low-light conditions.

11. Workshop: Managing Multiple Buildings

In this workshop, we focus on handling projects that include multiple buildings.
You will learn how to create, duplicate, and manage several building structures within a single project, ensuring that each stays organized and coordinated throughout the design process.

- Copying and placing additional buildings (to reach four)
- Presenting the final animation in D5 Render

11.1. Duplicating and Placing Additional Buildings

In this residential park, there are **four buildings** in total.
We've modeled only one so far, so let's create the remaining three.

1. Open the **Levels** dialog.
2. In the **Building List**, create **three additional logical buildings**.
3. All buildings share the **same level structure** as the first one.
4. The **active building** is always the one currently selected — at the moment, that's **Building 1**.

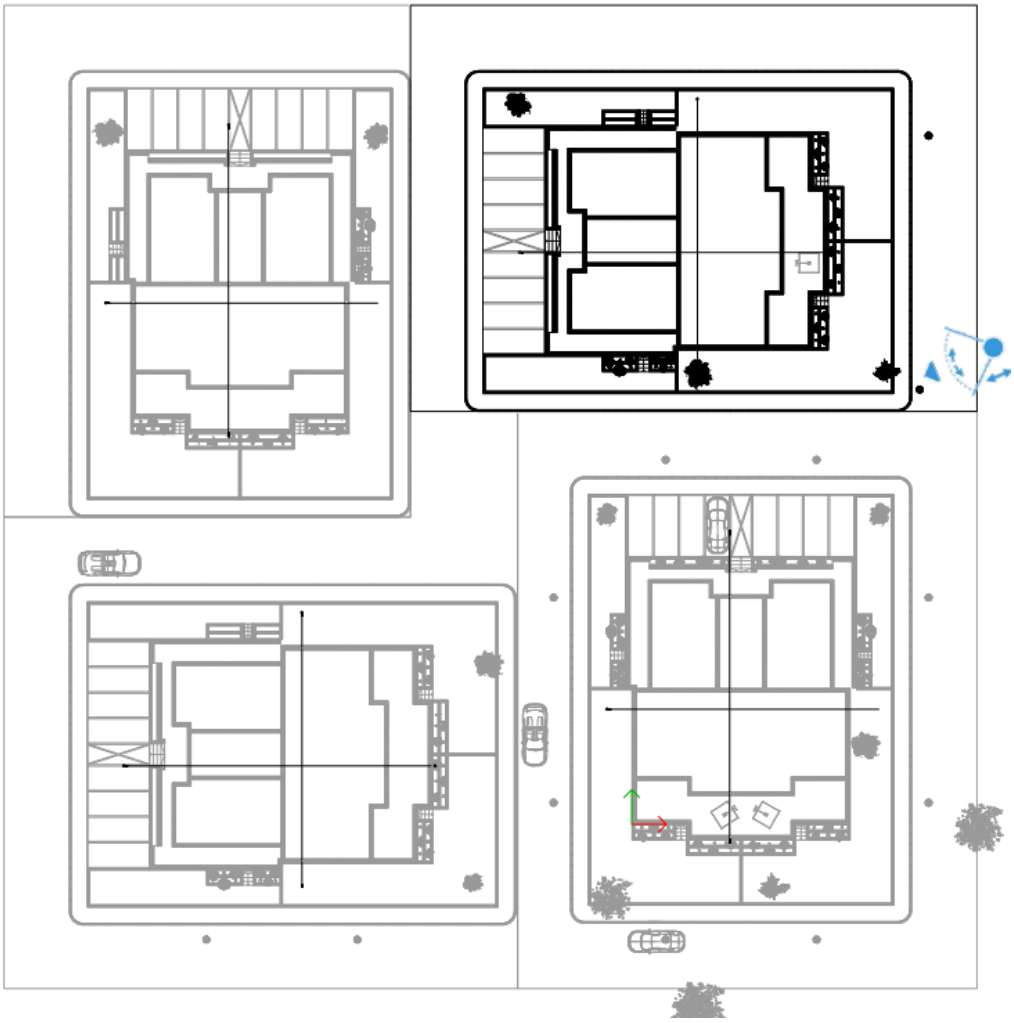
📝 **Note:** Keeping building structures consistent ensures that copied elements align perfectly across the entire site.

11.1.1. Copying the First Building

1. We've already defined the **locations** for the other buildings on the site plan.
2. Select **all levels** of Building 1 and copy them using a **reference point**.
3. Activate **Building 2**, then **paste** the copied structure at the predefined reference location.

You'll notice that **Building 1 turns gray**, indicating it's now **inactive**, while **Building 2** is **active** and ready for editing.

Building 2 is now active and ready for editing.

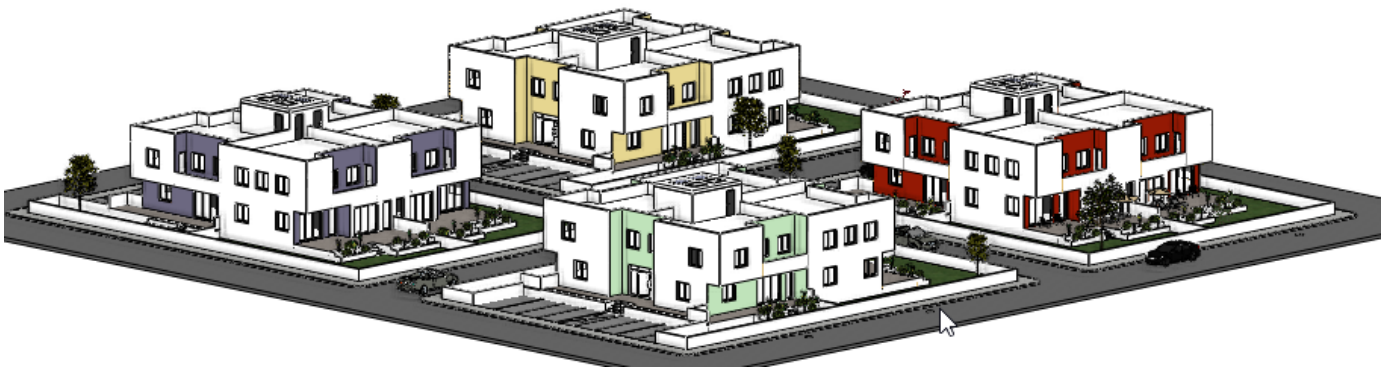


11.1.2. Adjusting Colors

Change the **color scheme** of Building 2 to the appropriate color, and repeat the process for **Buildings 3 and 4**.

After completing these steps, all **four buildings** of the residential park are ready.

💡 **Tipp:** Varying façade colors slightly between buildings helps the complex look more dynamic and realistic in renders.



11.2. Rendering and Presentation

All four buildings are now in place.
Let's explore some of the saved perspectives and review the final **rendered images**.

In **D5 Render** (using the **ARCHLine.XP–D5 Plugin**), we can also create a **walkthrough animation** of the residential park — complete with **lighting effects and camera paths**.

❗ **Remember:** D5 Render allows real-time visualization, so you can explore the project interactively.